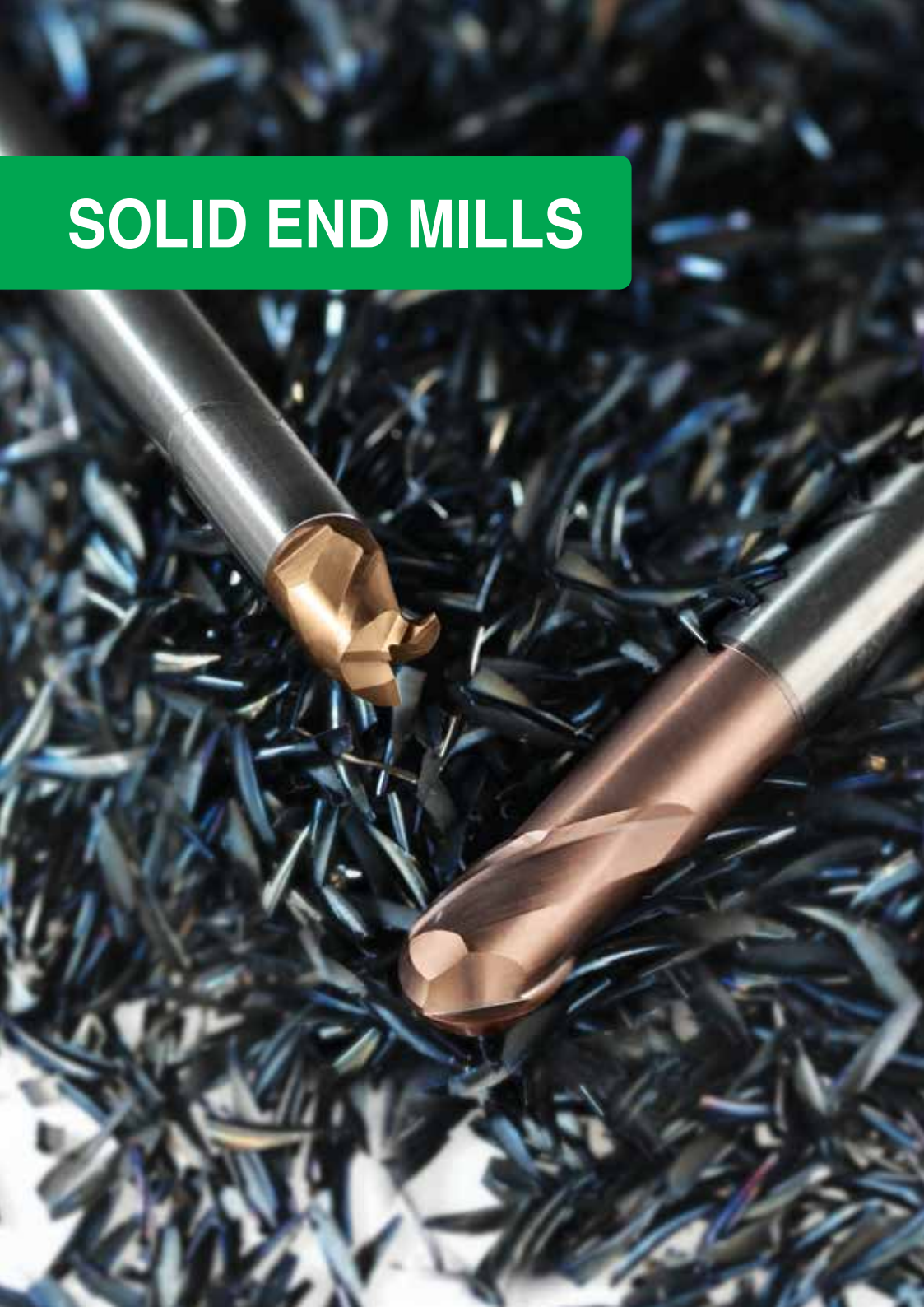


SOLID END MILLS



[illegible]

Guide to Icons



➤ Flutes



➤ Helix Angle



➤ Cutting Condition Page



➤ Ball Nose



➤ Corner Radius



➤ Wave Cutting Edge



➤ Head Page



➤ Wrench



Solid End Mill Line

Tool Selection Guide	F36
Grades	F43
Designation System	F44
End Mills	
HARD-MILL (High Speed and Hardened Materials)	F46
APEX-MILL (General Application)	F82
STAR-MILL (Difficult-to-Cut Materials - Stainless Steel, Titanium, Super Alloy and Steel)	F108
ALU-MILL (Aluminum and Non-Ferrous Materials)	F117
CERAMIC-SFEED (High Speed and Super Alloy Materials)	F126
DIA-MILL (Graphite and Composite Materials)	F128
Recommended Cutting Conditions	F134

MAXI-RUSH Line



Tool Selection Guide



Modular solid carbide end mill heads

	MXEE-03	MXEE(D)-04	MXEE-03	MXEE-I04	MXEE-R	MXEE-C04																																																																								
Series																																																																														
Type	Flat	Radius	Radius	Chamfer/Radius	Chamfer	Chamfer																																																																								
Flute																																																																														
Grades	TT5523	TT5523	TT5523	TT5523	TT5523	TT5523																																																																								
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	
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Diameter Range (mm)	Ø8 - Ø12	Ø6 - Ø20	Ø7.7 - Ø19.7	Ø8 - Ø25	Ø8 - Ø25	Ø8 - Ø25																																																																								
Pages	F10	F11	F12	F12	F13	F13																																																																								

	MXEE-A02	MXEE-A03	MXEE(D)-06	MXED-08/10	MXRB-02	MXRD-06																																																																								
Series																																																																														
Type	Radius	Radius	Radius	Radius	Radius	Radius																																																																								
Flute																																																																														
Grades	UF10	UF10	TT5523	TT5523	TT5523	TT5523																																																																								
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td>●</td><td></td><td></td><td></td></tr></table>	P	M	K	N	S	H			●				<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td>●</td><td></td><td></td><td></td></tr></table>	P	M	K	N	S	H			●				<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td>○</td><td>○</td><td>●</td><td>●</td></tr></table>	P	M	K	N	S	H			○	○	●	●	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td>○</td><td>○</td><td>●</td><td>●</td></tr></table>	P	M	K	N	S	H			○	○	●	●	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td></td></tr></table>	P	M	K	N	S	H	●	○	●	○	○		<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td></td><td>●</td></tr></table>	P	M	K	N	S	H	○	●				●
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Diameter range (mm)	Ø10 - Ø12	Ø8 - Ø20	Ø8 - Ø12	Ø16 - Ø25	Ø20	Ø8 - Ø16																																																																								
Pages	F14	F14	F15	F15	F16	F16																																																																								

● Recommended, ○ Suitable

Tool Selection Guide

Modular solid carbide end mill heads

	MXFX-02	MXBD-BG-02	MXBD(E)-BG-04	MXBB-SG-02	MXBE-BGA02																																																												
Series																																																																	
Type	Ball	Ball	Ball	Ball (Spherical)	Ball																																																												
Flute																																																																	
Grades	TT5523	TT5523	TT5523	TT5523	UF10																																																												
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	○	○
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Diameter range (mm)	Ø10 - Ø16	Ø8 - Ø16	Ø6 - Ø25	Ø12	Ø8 - Ø20																																																												
Pages	F17	F17	F18	F18	F19																																																												

	MXCP-02	MXCA-04/06	MXCW-02	MXCSL	MXCSO																																																												
Series																																																																	
Type	Chamfer	Chamfer	Chamfer	Lens shape	Oval shape																																																												
Flute																																																																	
Grades	TT5523	TT5523	TT5523	TT5523	TT5523																																																												
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	○	○
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Diameter range (mm)	Ø8 - Ø16.5	Ø10 - Ø20	Ø11.8	Ø8 - Ø16	Ø8 - Ø16																																																												
Pages	F19	F20	F20	F21	F21																																																												

● Recommended, ○ Suitable

Tool Selection Guide



Modular solid carbide end mill heads

	MXDP-02	MXGC-02	MXCR-02																																						
Series																																									
Type	Center drill	Counter Boring	Concave																																						
Flute	2	2	2																																						
Grades	TT5523	TT5523	TT5523																																						
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○		
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P	M	K	N	S	H																																				
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Diameter range (mm)	Ø3.28 - Ø6.46	Ø8 - Ø16	Ø8 - Ø20																																						
Pages	F22	F22	F23																																						

Modular solid carbide slotting heads

	TST-3	TST-4/6	TST-A45	TTB-C15	TTB-06																																																												
Series																																																																	
Type	Slot	Slot	Slot Chamfer	Slot	Slot																																																												
Flute	3	4,6	3,4	6	6																																																												
Grades	TT5543	TT5543	TT5543	TT5543	TT5543																																																												
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	○	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○
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P	M	K	N	S	H																																																												
●	○	●	○	○	○																																																												
Diameter range (mm)	Ø15.7 - Ø17.7	Ø21.7 - Ø27.7	Ø17.7 - Ø21.7	Ø13.5	Ø13.5 - Ø25																																																												
Width of cut (mm)	1.5-3.17	0.76-10.0	3.4-5.5	2	3-8																																																												
Pages	F24	F25	F26	F26	F27																																																												

● Recommended, ○ Suitable

Tool Selection Guide



Holders for MAXI-RUSH head

	MXSSD	MXSSD-W-A	MXTSD	MXTSD-W-A	MXSC-C	MXSTD
Series						
Shank Type	Straight & neck	Straight & neck	Straight & taper	Straight & taper	Straight	Straight
Shank material	Steel/Carbide	Tungsten	Steel/Carbide	Tungsten	Carbide	Steel
Internal coolant	X	●	X	X	●	●
Connection size	S05 - S15	S06 - S12	S05 - S15	S06	S06, S08	S05 - S10
Shank range (mm)	Ø8 - Ø25	Ø10 - Ø20	Ø12 - Ø32	Ø12 - Ø16	Ø10 - Ø12	Ø8 - Ø16
Pages	F28	F29	F30	F31	F31	F32

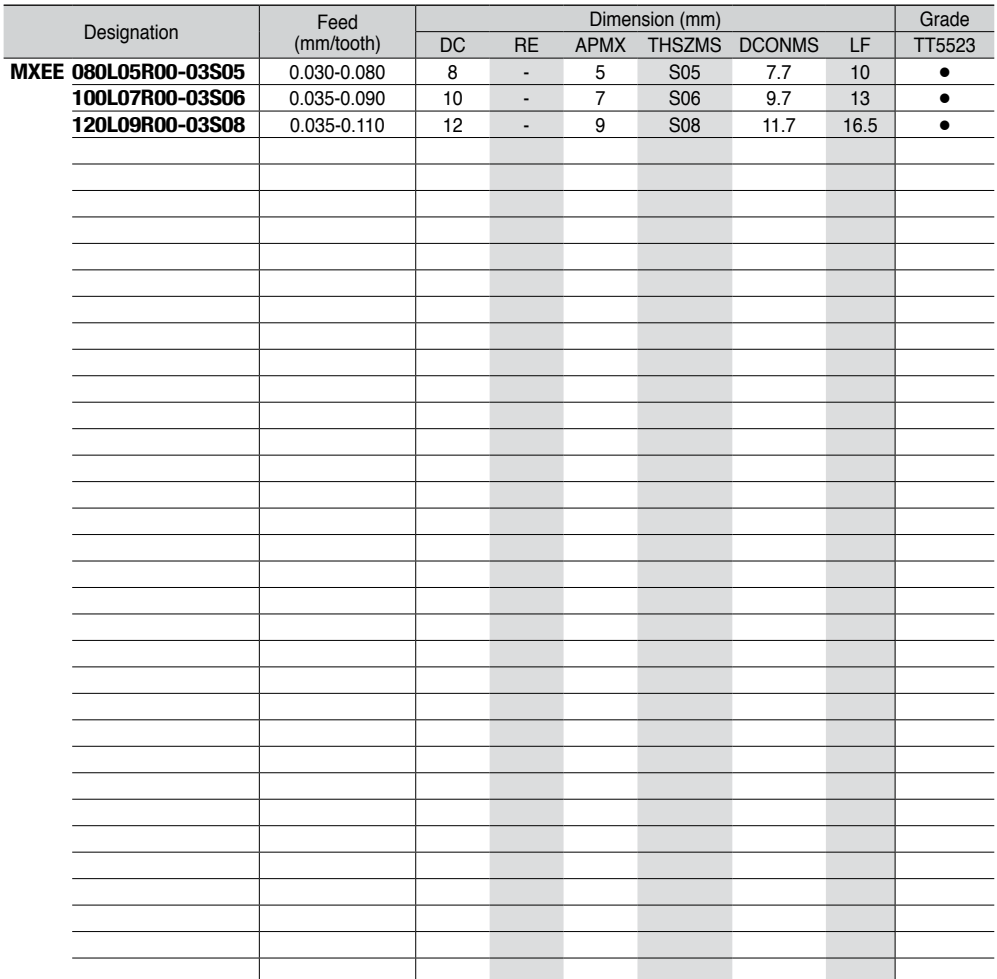
Adaptor for MAXI-RUSH head

	MXAD-M	MXER				
Series						
Shank Type	Adapter	Adapter				
Shank material	Steel	Steel				
Internal coolant	X	X				
Connection size	S08/M8 - M12	S05 - S08				
Shank range (mm)	-	-				
Pages	F33	F34				

MAXI-RUSH grades

Grades	ISO	Characteristics & applications
TT5523 PVD coated	P20 – P40 M20 – M40 S20 – S40	• High speed milling of steel, stainless steel and high-temp alloy
TT5543 PVD coated	P30 – P50 M30 – M50 S30 – S50	• Interrupted and rough machining of steel, stainless steel and high-temp alloy
UF10 Uncoated	P25 – P35 M25 – M35 N25 – N35	• General machining of steel, aluminum alloys, non-ferrous materials • Submicron substrate

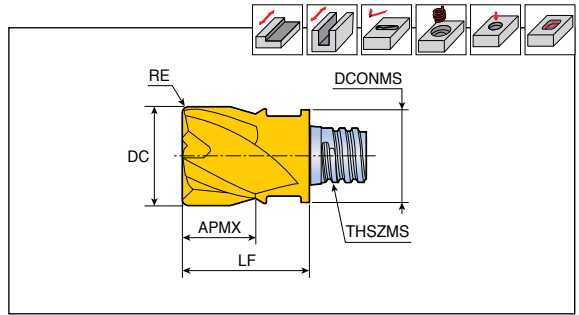
3 flute, for general purpose



●: Standard items

MXEE(D)-04

4 flute, for general purpose



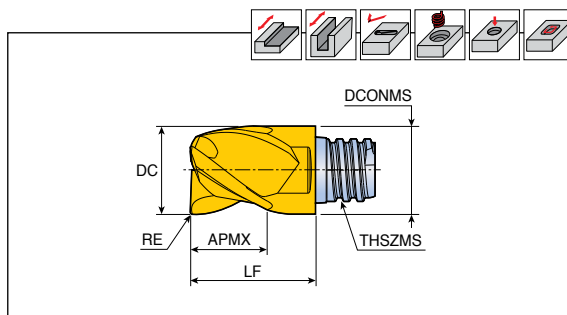
Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5523
		DC	RE	FHA	APMX	THSZMS	DCONMS	LF	
MXEE 060L05R00-04S05	0.025-0.060	6	-	45	5	S05	8.0	10	●
MXEE 080L05R00-04S05	0.030-0.080	8	-	45	5	S05	7.7	10	●
MXED 080L05R05-04S05	0.030-0.080	8	0.5	30	5	S05	7.7	10	●
MXED 080L05R10-04S05	0.030-0.080	8	1.0	30	5	S05	7.7	10	●
MXED 080L05R15-04S05	0.030-0.080	8	1.5	30	5	S05	7.7	10	●
MXEE 100L07R00-04S06	0.035-0.090	10	-	45	7	S06	9.7	13	●
MXED 100L07R05-04S06	0.035-0.090	10	0.5	30	7	S06	9.7	13	●
MXEE 100L07R05-04S06	0.035-0.090	10	0.5	45	7	S06	9.7	13	●
MXED 100L07R10-04S06	0.035-0.090	10	1.0	30	7	S06	9.7	13	●
MXEE 100L07R10-04S06	0.035-0.090	10	1.0	45	7	S06	9.7	13	●
MXEE 120L09R00-04S08	0.035-0.110	12	-	45	9	S08	11.7	16.5	●
MXED 120L09R05-04S08	0.035-0.110	12	0.5	30	9	S08	11.7	16.5	●
MXEE 120L09R05-04S08	0.035-0.110	12	0.5	45	9	S08	11.7	16.5	●
MXED 120L09R10-04S08	0.035-0.110	12	1.0	30	9	S08	11.7	16.5	●
MXEE 120L09R10-04S08	0.035-0.110	12	1.0	45	9	S08	11.7	16.5	●
MXEE 160L12R00-04S10	0.040-0.130	16	-	45	12	S10	15.3	20.5	●
MXED 160L12R05-04S10	0.040-0.130	16	0.5	30	12	S10	15.3	20.5	●
MXEE 160L12R05-04S10	0.040-0.130	16	0.5	45	12	S10	15.3	20.5	●
MXED 160L12R10-04S10	0.040-0.130	16	1.0	30	12	S10	15.3	20.5	●
MXEE 160L12R10-04S10	0.040-0.130	16	1.0	45	12	S10	15.3	20.5	●
MXED 160L12R15-04S10	0.040-0.130	16	1.5	30	12	S10	15.3	20.5	●
MXEE 160L12R15-04S10	0.040-0.130	16	1.5	45	12	S10	15.3	20.5	●
MXED 160L12R20-04S10	0.040-0.130	16	2.0	30	12	S10	15.3	20.5	●
MXEE 160L12R20-04S10	0.040-0.130	16	2.0	45	12	S10	15.3	20.5	●
MXEE 160L12R30-04S10	0.040-0.130	16	3.0	45	12	S10	15.3	20.5	●
MXEE 160L12R40-04S10	0.040-0.130	16	4.0	45	12	S10	15.3	20.5	●
MXEE 200L15R00-04S12	0.050-0.150	20	-	45	15	S12	18.3	25.5	●
MXED 200L15R05-04S12	0.050-0.150	20	0.5	30	15	S12	18.3	25.5	●
MXED 200L15R10-04S12	0.050-0.150	20	1.0	30	15	S12	18.3	25.5	●
MXED 200L15R20-04S12	0.050-0.150	20	2.0	30	15	S12	18.3	25.5	●
MXED 200L15R30-04S12	0.050-0.150	20	3.0	30	15	S12	18.3	25.5	●

- Wrench should be ordered separately
- FHA: Flute helix angle

●: Standard items

MXEE-03

3 flute, for keyways



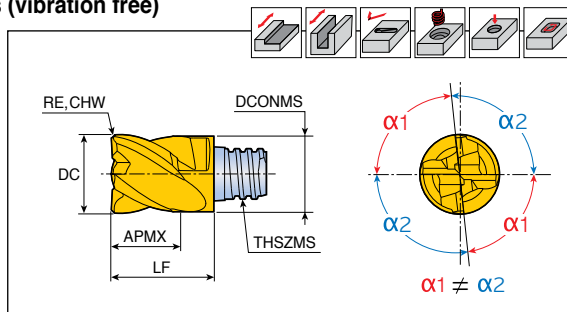
Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5523
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXEE 077L04R02-03S05	0.030-0.080	7.7	0.2	4	S05	7.7	10	●
097L05R03-03S06	0.035-0.090	9.7	0.3	5	S06	9.7	13	●
117L07R03-03S08	0.035-0.110	11.7	0.3	7	S08	11.7	16.5	●
157L08R03-03S10	0.040-0.130	15.7	0.3	8	S10	15.3	20.5	●
197L12R04-03S12	0.050-0.150	19.7	0.4	12	S12	18.3	25.5	●

• Wrench should be ordered separately

●: Standard items

MXEE-I04

4 flute, unequal spacing of cutting edges (vibration free)



Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5523
		DC	RE	CHW	APMX	THSZMS	DCONMS	
MXEE 080L05C30I04S05	0.030-0.080	8	-	0.3	5	S05	7.7	10
100L07C40I04S06	0.035-0.090	10	-	0.4	7	S06	9.7	13
120L09C50I04S08	0.035-0.110	12	-	0.5	9	S08	11.7	16.5
160L12C60I04S10	0.040-0.130	16	-	0.6	12	S10	15.3	20.5
200L15C60I04S12	0.050-0.150	20	-	0.6	15	S12	18.3	25.5
250L22C60I04S15	0.060-0.170	25	-	0.6	22	S15	23.9	37
250L22R00I04S15	0.060-0.170	25	-	-	22	S15	23.9	37
250L22R05I04S15	0.060-0.170	25	0.5	-	22	S15	23.9	37
250L22R10I04S15	0.060-0.170	25	1.0	-	22	S15	23.9	37
250L22R20I04S15	0.060-0.170	25	2.0	-	22	S15	23.9	37
250L22R30I04S15	0.060-0.170	25	3.0	-	22	S15	23.9	37

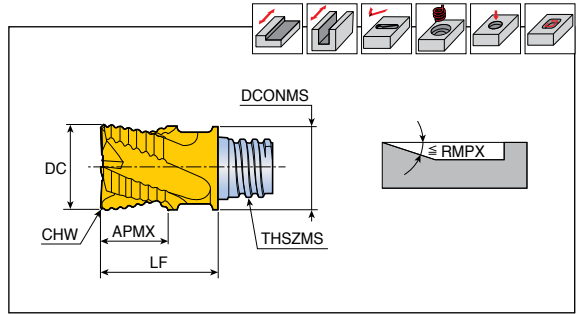
• Wrench should be ordered separately

●: Standard items

MXEE-R



4-6 flute, for roughing



	Designation	Feed (mm/tooth)	Dimension (mm)								Grade
			DC	NOF	APMX	CHW	THSZMS	DCONMS	LF	RMPX	TT5523
MXEE	080L05C25R04S05	0.030-0.080	8	4	5	0.25	S05	7.7	10	90	●
	100L07C30R04S06	0.035-0.090	10	4	7	0.30	S06	9.7	13	90	●
	120L09C35R04S08	0.035-0.110	12	4	9	0.35	S08	11.7	16.5	90	●
	160L12C40R05S10	0.040-0.130	16	5	12	0.40	S10	15.3	20.5	7	●
	200L15C40R06S12	0.050-0.150	20	6	15	0.40	S12	18.3	25.5	3	●
	250L22C50R06S15	0.060-0.170	25	6	22	0.50	S15	23.9	37	3	●

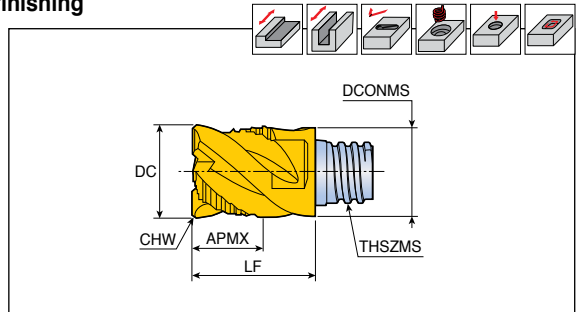
- Wrench should be ordered separately
- RMPX: Ramping angle maximum
- NOF: Number of flutes

●: Standard items

MXEE-C04



4 flute, combined edges for roughing & finishing



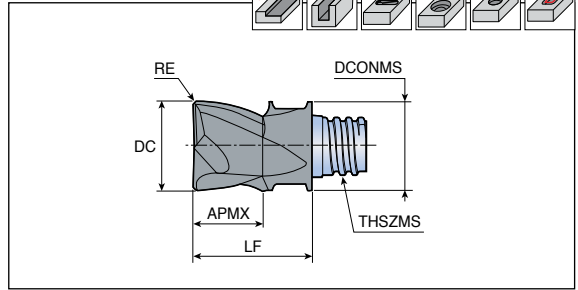
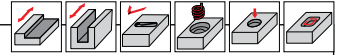
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	APMX	CHW	THSZMS	DCONMS	LF	TT5523
MXEE 080L05C30C04S05	0.030-0.080	8	5	0.3	S05	7.7	10	●
100L07C30C04S06	0.035-0.090	10	7	0.3	S06	9.7	13	●
120L09C40C04S08	0.035-0.110	12	9	0.4	S08	11.7	16.5	●
160L12C60C04S10	0.040-0.130	16	12	0.6	S10	15.3	20.5	●
200L15C60C04S12	0.050-0.150	20	15	0.6	S12	18.3	25.5	●
250L22C60C04S15	0.060-0.170	25	22	0.6	S15	23.9	37	●

- Wrench should be ordered separately

●: Standard items

MXEE-A02

2 flute, for aluminum machining



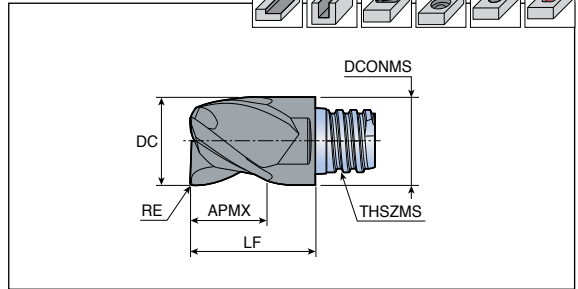
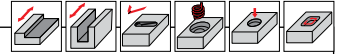
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXEE 100L07R05A02S06	0.035-0.090	10	0.5	7	S06	9.7	13	●
100L07R10A02S06	0.035-0.090	10	1.0	7	S06	9.7	13	●
120L09R05A02S08	0.035-0.110	12	0.5	9	S08	11.7	16.5	●

• Wrench should be ordered separately

●: Standard items

MXEE-A03

3 flute, for aluminum machining



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXEE 080L05R05A03S05	0.030-0.080	8	0.5	5	S05	7.7	10	●
100L06R05A03S06	0.035-0.090	10	0.5	6	S06	9.7	13	●
100L06R10A03S06	0.035-0.090	10	1.0	6	S06	9.7	13	●
120L08R05A03S08	0.035-0.110	12	0.5	8	S08	11.7	16.5	●
120L08R10A03S08	0.035-0.110	12	1.0	8	S08	11.7	16.5	●
160L10R00A03S10	0.040-0.130	16	-	10	S10	15.3	20.5	●
160L10R10A03S10	0.040-0.130	16	1.0	10	S10	15.3	20.5	●
160L10R20A03S10	0.040-0.130	16	2.0	10	S10	15.3	20.5	●
200L12R05A03S12	0.050-0.150	20	0.5	12	S12	18.3	25.5	●
200L12R10A03S12	0.050-0.150	20	1.0	12	S12	18.3	25.5	●
200L12R20A03S12	0.050-0.150	20	2.0	12	S12	18.3	25.5	●

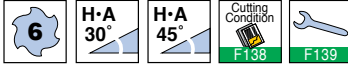
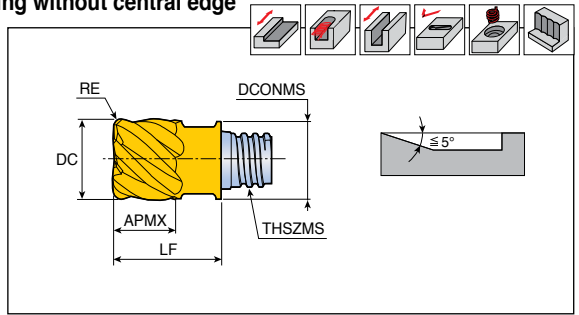
• Wrench should be ordered separately

●: Standard items

MXEE(D)-06



6 flute, for difficult-to-cut material machining without central edge



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	FHA	APMX	THSZMS	DCONMS	LF	TT5523
MXEE 080L05R05-06S05	0.030-0.080	8	0.5	45	5	S05	7.7	10	●
MXEE 080L05R10-06S05	0.030-0.080	8	1.0	45	5	S05	7.7	10	●
MXED 100L07R05-06S06	0.035-0.090	10	0.5	30	7	S06	9.7	13	●
MXED 100L07R10-06S06	0.035-0.090	10	1.0	30	7	S06	9.7	13	●
MXEE 100L07R05-06S06	0.035-0.090	10	0.5	45	7	S06	9.7	13	●
MXEE 100L07R10-06S06	0.035-0.090	10	1.0	45	7	S06	9.7	13	●
MXEE 100L07R15-06S06	0.035-0.090	10	1.5	45	7	S06	9.7	13	●
MXED 120L09R05-06S08	0.035-0.110	12	0.5	30	9	S08	11.7	16.5	●
MXEE 120L09R00-06S08	0.035-0.110	12	-	45	9	S08	11.7	16.5	●
MXEE 120L09R10-06S08	0.035-0.110	12	1.0	45	9	S08	11.7	16.5	●
MXEE 120L09R15-06S08	0.035-0.110	12	1.5	45	9	S08	11.7	16.5	●

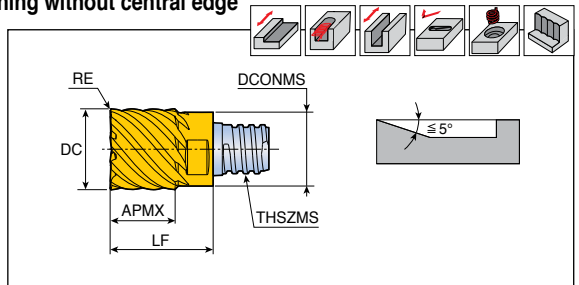
- Wrench should be ordered separately
- FHA : Flute Helix Angle

● : Standard items

MXED-08/10



8, 10 flute, for difficult-to-cut material machining without central edge



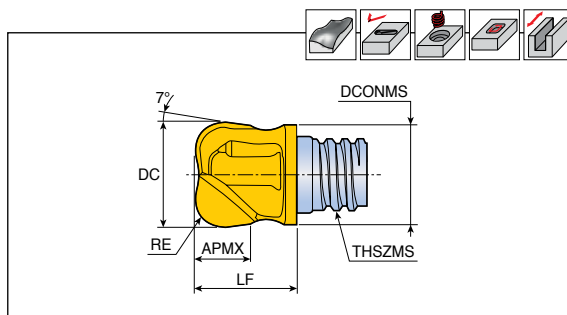
Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	NOF	RE	APMX	THSZMS	DCONMS	LF	TT5523	
MXED 160L12R05-08S10	0.040-0.130	16	8	0.5	12	S10	15.3	20.5	●	
160L12R10-08S10	0.040-0.130	16	8	1.0	12	S10	15.3	20.5	●	
160L12R20-08S10	0.040-0.130	16	8	2.0	12	S10	15.3	20.5	●	
200L15R10-10S12	0.050-0.150	20	10	1.0	15	S12	18.3	25.5	●	
200L15R20-10S12	0.050-0.150	20	10	2.0	15	S12	18.3	25.5	●	
250L22R10-10S15	0.060-0.170	25	10	1.0	22	S15	23.9	37	●	
250L22R20-10S15	0.060-0.170	25	10	2.0	22	S15	23.9	37	●	

- Wrench should be ordered separately
- NOF: Number of flutes

● : Standard items

MXRB-02

2 flute, 7° back taper flute



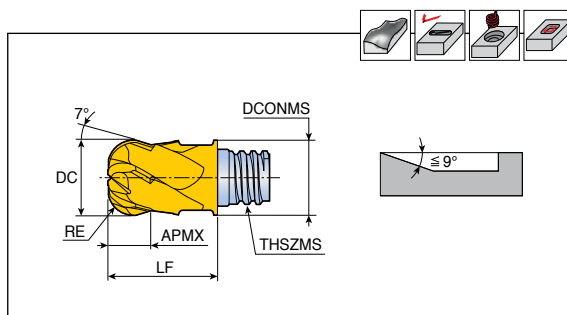
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	TT5523
MXRB 200L11R50-02S12	0.05-0.150	20	5	11.3	S12	18.3	17.3	●

• Wrench should be ordered separately

●: Standard items

MXRD-06

6 flute, 7° back taper sided ground flute



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	TT5523
MXRD 080L04R20-06S05	0.030-0.080	8	2	4	S05	7.7	10	●
100L05R30-06S06	0.035-0.090	10	3	5	S06	9.7	13	●
120L07R40-06S08	0.035-0.110	12	4	7	S08	11.7	16.5	●
160L09R50-06S10	0.040-0.130	16	5	9	S10	15.3	20.5	●

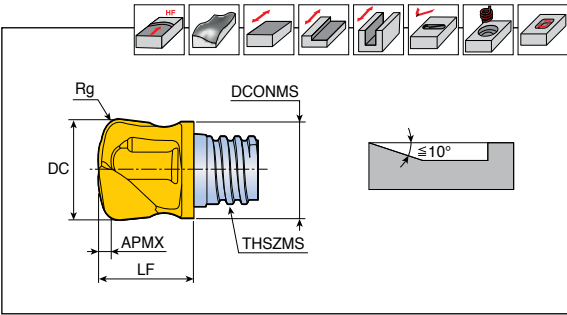
• Wrench should be ordered separately

●: Standard items

MXFX-02



2 flute, for high feed milling



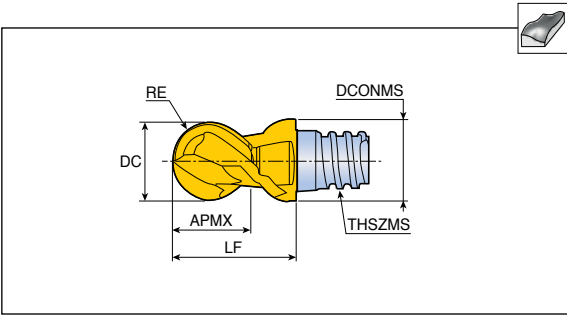
Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5523
		DC	Rg	APMX	THSZMS	DCONMS	LF	
MXFX 100L0.6R20-02S06	0.30-0.60	10	2.0	0.6	S06	9.6	12.5	●
120L1.0R25-02S08	0.50-1.00	12	2.5	0.68	S08	11.5	11.1	●
160L1.1R30-02S10	0.55-1.10	16	3.0	1.1	S10	15.2	20	●

- Wrench should be ordered separately
- Rg: Radius for programmers
- : Standard items

MXBD-BG-02



2 flute, for high precision machining



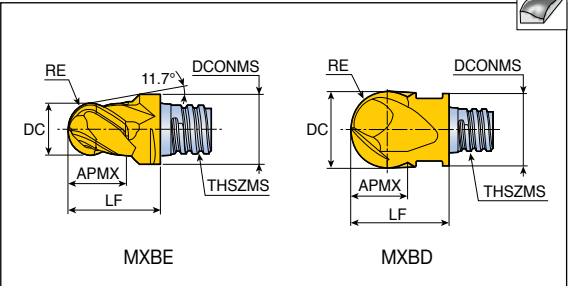
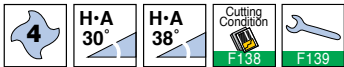
Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5523
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXBD 080L05-BG-02S05	0.030-0.080	8	3.982 ⁽¹⁾	5	S05	7.7	10	●
100L07-BG-02S06	0.035-0.090	10	4.982 ⁽¹⁾	7	S06	9.7	13	●
120L09-BG-02S08	0.035-0.110	12	5.978 ⁽²⁾	9	S08	11.7	16.5	●
160L09-BG-02S10	0.040-0.130	16	7.978 ⁽²⁾	9	S10	15.3	20.5	●

- Wrench should be ordered separately
- RE Tolerance: ⁽¹⁾ ± 0.01, ⁽²⁾ ± 0.012
- : Standard items

MXBD(E)-BG-04



4 flute, for high precision machining



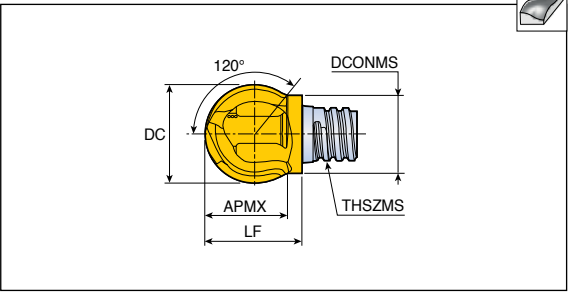
Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	RE	FHA	APMX	THSZMS	DCONMS	LF	TT5523	
MXBE 060L05-BG-04S05	0.025-0.060	6	2.987 ⁽¹⁾	38	5.5	S05	8.0	10	●	
MXBD 080L05-BG-04S05	0.030-0.080	8	3.982 ⁽¹⁾	30	5	S05	7.7	10	●	
100L07-BG-04S06	0.035-0.090	10	4.982 ⁽¹⁾	30	7	S06	9.7	13	●	
120L09-BG-04S08	0.035-0.110	12	5.978 ⁽²⁾	30	9	S08	11.7	16.5	●	
160L12-BG-04S10	0.040-0.130	16	7.978 ⁽²⁾	30	12	S10	15.3	20.5	●	
200L15-BG-04S12	0.050-0.150	20	9.972 ⁽²⁾	30	15	S12	18.3	25.5	●	
250L22-BG-04S15	0.060-0.170	25	12.470 ⁽³⁾	30	22	S15	23.9	37	●	

- Wrench should be ordered separately
- RE Tolerance: ⁽¹⁾ ± 0.01, ⁽²⁾ ± 0.012, ⁽³⁾ ± 0.02
- FHA: Flute helix angle
- : Standard items

MXBB-SG-02



2 flute, spherical designed edge



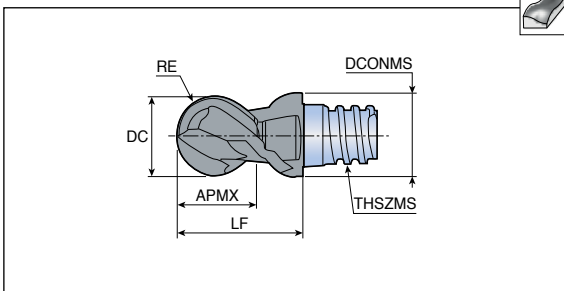
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	APMX	THSZMS	DCONMS	LF	TT5523
*MXBB 120L09-SG-02S06	0.035-0.110	12	9.0	S06	9.5	11.6	●

- Wrench should be ordered separately
- * Use a different size wrench: MX KEY-S08
- : Standard items

MXBE-BGA02



2 flute, spherical designed edge for aluminum machining



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXBE 080L05-BGA02S05	0.030-0.080	8	3.982 ⁽¹⁾	5	S05	7.7	10	●
100L07-BGA02S06	0.035-0.090	10	4.982 ⁽¹⁾	7	S06	9.7	13	●
120L09-BGA02S08	0.035-0.110	12	5.987 ⁽²⁾	9	S08	11.7	16.5	●
160L12-BGA02S10	0.040-0.130	16	7.978 ⁽²⁾	12	S10	15.3	20.5	●
200L15-BGA02S12	0.050-0.150	20	9.972 ⁽²⁾	15	S12	18.3	25.5	●

• Wrench should be ordered separately

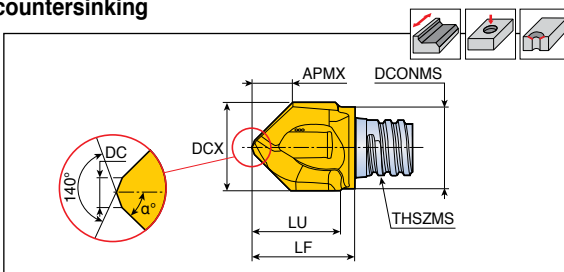
• RE Tolerance: ⁽¹⁾ ± 0.01, ⁽²⁾ ± 0.012

●: Standard items

MXCP-02



2 flute, for spot drilling, chamfering and countersinking



Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DCX	DC	APMX	THSZMS	DCONMS	LU	LF	α°	
MXCP 100L09A30-02S06	0.035-0.090	10	1.5	7.5	S06	9.5	8.5	11.75	30	●
120L12A30-02S08	0.035-0.110	12	1.5	9.2	S08	11.5	11	15.4	30	●
160L15A30-02S10	0.040-0.130	16	2.5	12	S10	15.2	16	20.2	30	●
080L07A45-02S05	0.030-0.080	8	1.0	3.7	S05	7.6	7.5	9.75	45	●
083L07A45-02S05	0.030-0.080	8.3	1.0	3.8	S05	7.6	7.5	10	45	●
100L09A45-02S06	0.035-0.090	10	1.5	4.4	S06	9.5	9.5	11.75	45	●
104L09A45-02S06	0.035-0.090	10.4	1.5	4.6	S06	9.5	9.5	11.75	45	●
120L12A45-02S08	0.035-0.110	12	1.5	5.4	S08	11.5	11.5	15.4	45	●
124L12A45-02S08	0.035-0.110	12.4	1.5	5.6	S08	11.5	11.5	15.4	45	●
160L15A45-02S10	0.040-0.130	16	1.5	7.1	S10	15.2	15	18.8	45	●
165L15A45-02S10	0.040-0.130	16.5	1.5	7.1	S10	15.2	15	18.8	45	●
100L09A60-02S06	0.035-0.090	10	1.5	2.7	S06	9.5	9.5	12.7	60	●
120L12A60-02S08	0.035-0.110	12	1.5	3.3	S08	11.5	11.5	15.2	60	●
160L15A60-02S10	0.040-0.130	16	1.5	4.4	S10	15.2	16	19.9	60	●

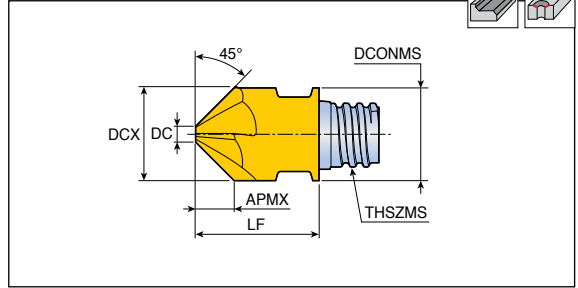
• Wrench should be ordered separately

●: Standard items

MXCA-04/06



4, 6 flute, chamfering and countersinking without central edge



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DCX	DC	NOF	APMX	THSZMS	DCONMS	LF	TT5523
MXCA 100L04A45-04S06	0.035-0.090	10	1.95	4	4.0	S06	10	13	●
120L05A45-04S08	0.035-0.110	12	1.95	4	5.0	S08	12	16.5	●
127L05A45-04S08	0.035-0.110	12.7	1.98	4	5.3	S08	12.7	16.5	●
160L06A45-06S10	0.040-0.130	16	3.0	6	6.5	S10	16	20.3	●
200L07A45-06S12	0.050-0.150	20	5.0	6	7.5	S12	20	25.5	●

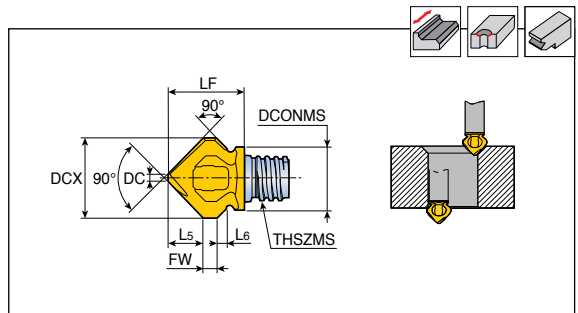
- Wrench should be ordered separately
- NOF: Number of flutes

●: Standard items

MXCW-02



2 flute, for double chamfering



Designation	Feed (mm/tooth)	Dimension (mm)								Grade TT5523
		DCX	DC	L5	L6	FW	THSZMS	DCONMS	LF	
*MXCW 118L05A45-02S06	0.035-0.110	11.8	1.2	5.3	1.2	2	S06	9.3	11.2	●

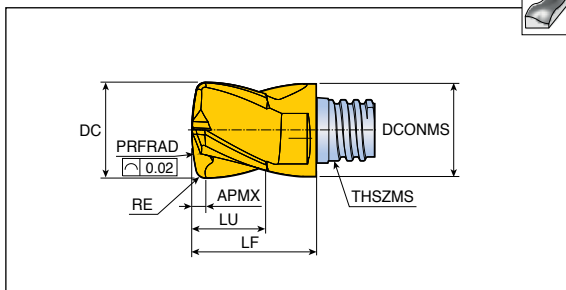
- Wrench should be ordered separately
- * Use a different size wrench: MX KEY-S08

●: Standard items

MXCSL



4 flute, lens shape for 5-axis profiling



Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	PRFRAD	RE	APMX	LU	THSZMS	DCONMS	LF	
MXCSL 4080R016-S05	0.02-0.08	8	16	0.5	0.9	5.5	S05	8	10	●
4100R020-S06	0.03-0.09	10	20	1	1.4	7.5	S06	10	13	●
4120R024-S08	0.03-0.10	12	24	1	1.6	9	S08	12	16.5	●
4160R032-S10	0.04-0.12	16	32	1	1.8	12	S10	16	20.5	●

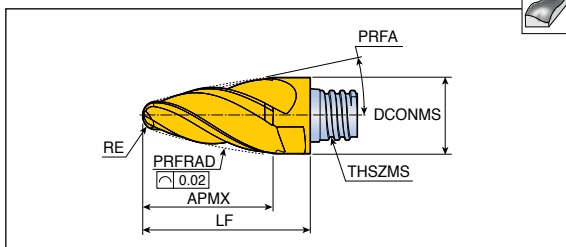
- Wrench should be ordered separately
- PRFRAD: Profile radius

●: Standard items

MXCSO



4 flute, oval shape for 5-axis profiling



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		PRFRAD	RE	APMX	PRFA	THSZMS	DCONMS	LF	
MXCSO 4080R080-S05	0.02-0.08	80	1.5	14.2	12	S05	8	18	●
4100R085-S06	0.03-0.09	85	2	16.5	12	S06	10	22	●
4120R075-S08	0.03-0.10	75	2	21.3	12	S08	12	27	●
4160R075-S10	0.04-0.12	75	3	27	12	S10	16	33.4	●

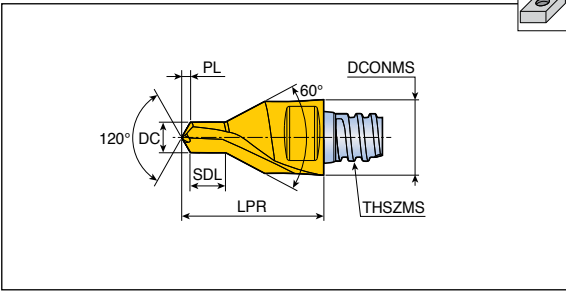
- Wrench should be ordered separately
- PRFRAD: Profile radius

●: Standard items

MXDP-02



2 flute, for center drilling



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	PL	SDL	THSZMS	DCONMS	LPR	
MXDP 328L04A30-02S05	0.04-0.08	3.28	0.85	3.75	S05	8	15	●
412L05A30-02S06	0.05-0.10	4.12	1.07	4.83	S06	10	19	●
513L07A30-02S08	0.05-0.12	5.13	1.32	5.88	S08	12	23	●
646L08A30-02S10	0.06-0.15	6.46	1.65	7.25	S10	16	28	●

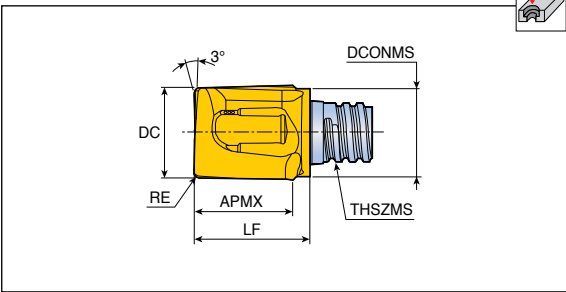
- Wrench should be ordered separately
- SDL: Step diameter length

●: Standard items

MXGC-02



2 flute, for counter boring



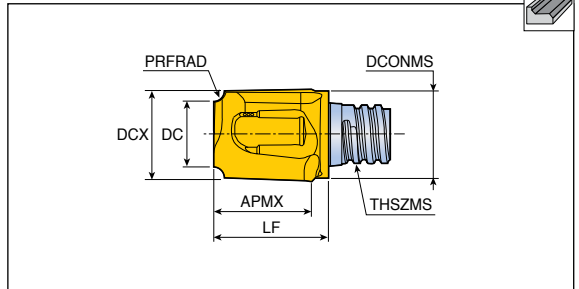
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	THSZMS	DCONMS	LF	
MXGC 080L08R04-02S05	0.030-0.080	8	0.4	7.7	S05	7.6	10	●
080L08R10-02S05	0.030-0.080	8	1.0	7.7	S05	7.6	10	●
100L09R04-02S06	0.035-0.090	10	0.4	9.0	S06	9.5	12.4	●
100L09R20-02S06	0.035-0.090	10	2.0	9.0	S06	9.5	12.4	●
120L10R04-02S08	0.035-0.110	12	0.4	10	S08	11.5	14.2	●
120L10R10-02S08	0.035-0.110	12	1.0	10	S08	11.5	14.2	●
120L10R20-02S08	0.035-0.110	12	2.0	10	S08	11.5	14.2	●
160L15R04-02S10	0.040-0.130	16	0.4	14.9	S10	15.2	19	●

- Wrench should be ordered separately

●: Standard items

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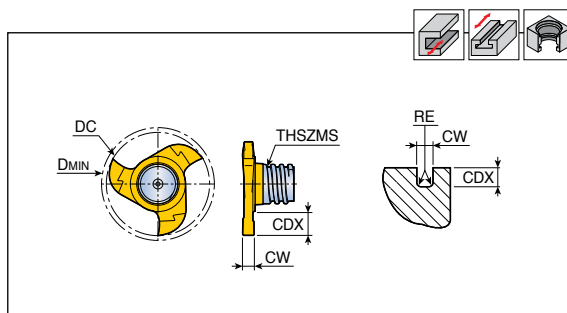
A 3D perspective diagram of a step in a surface profile. A red double-headed arrow is positioned above the step, indicating the vertical distance between the two levels.



- Wrench should be ordered separately
- PRFRAD: Profile radius

●: Standard items

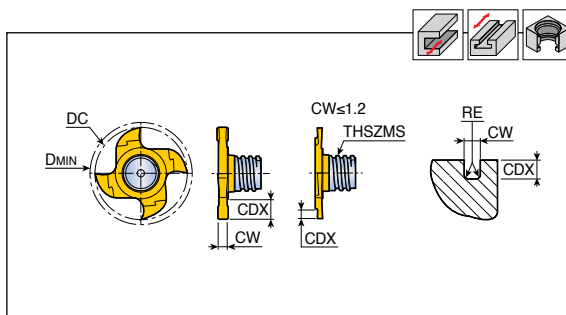
TST-3

[illegible]

- Wrench should be ordered separately
- ⁽¹⁾ CW for circle clips according to DIN 471/472

●: Standard items

4, 6 flute, for slotting

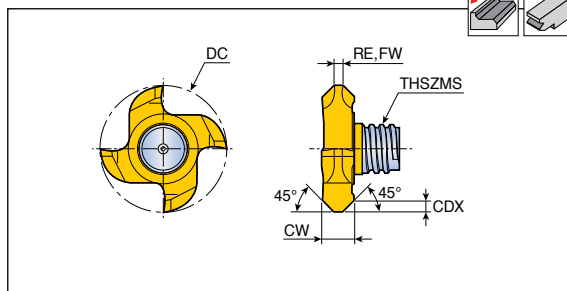


- Wrench should be ordered separately
- NOF: Number of flutes
- ⁽¹⁾ CW for circle clips according to DIN 471/472

●: Standard items

TST-A45

3, 4 flute, for chamfering



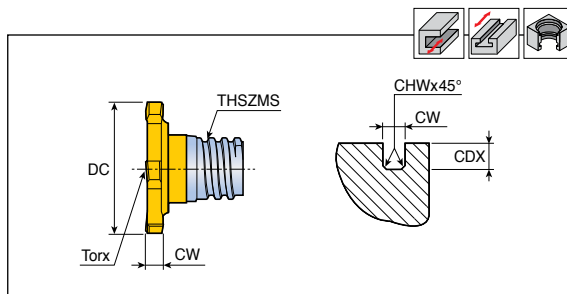
Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5543
		DC	NOF	CW	CDX	RE	FW	THSZMS	
TST 177L01.40A45-3S06	0.025-0.150	17.7	3	3.4	1.4	0.1	-	S06	●
217L01.70A45-4S08	0.025-0.170	21.7	4	5.5	1.7	-	1.5	S08	●

- Wrench should be ordered separately
- NOF: Number of flutes
- FW: Flat width

●: Standard items

TTB-C15

6 flute, for chamfered slotting



Designation	Feed (mm/tooth)	Dimension (mm)					Torx	Grade TT5543
		DC	CW	CDX	CHW	THSZMS		
TTB 135W2.0C15-06S05	0.025-0.120	13.5	2	2.65	0.15	S05	T20	●

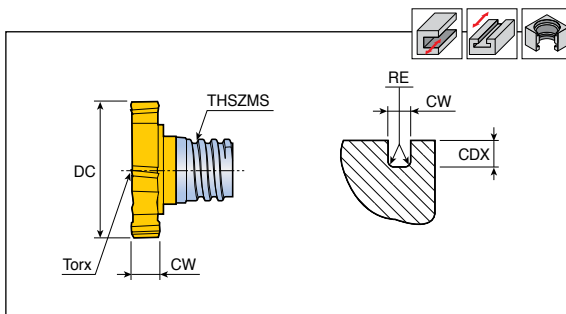
- Wrench should be ordered separately
- CHW: Corner chamfer width

●: Standard items

TTB-06



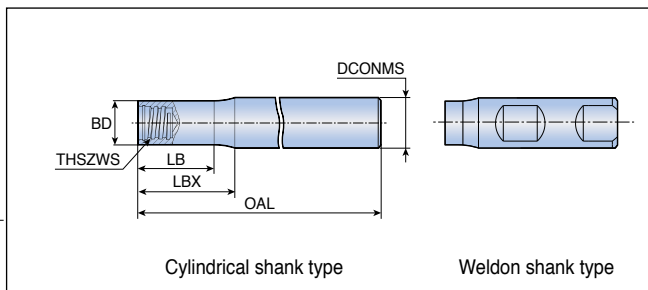
6 flute, for slotting

[illegible]

- Wrench should be ordered separately

●: Standard items

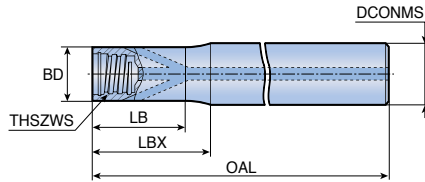
Straight shanks with neck



Designation	Dimension (mm)						Shank type	Shank material
	THSZWS	DCONMS	BD	OAL	LB	LBX		
MXSSD 08L060S05-S	S05	8	7.6	60	12.8	15	Cylindrical	Steel
08L070S05-C	S05	8	7.6	70	19	20	Cylindrical	Carbide
08L090S05-C	S05	8	7.6	90	39	40	Cylindrical	Carbide
08L110S05-C	S05	8	7.6	110	59	60	Cylindrical	Carbide
10L070S06-C	S06	10	9.6	70	18.5	20	Cylindrical	Carbide
10L075S06-S	S06	10	9.6	75	17.7	20	Cylindrical	Steel
10L090S06-C	S06	10	9.6	90	38.5	40	Cylindrical	Carbide
10L110S06-C	S06	10	9.6	110	58.5	60	Cylindrical	Carbide
10L150S06-C	S06	10	9.6	150	98.5	100	Cylindrical	Carbide
12L055W05-S	S05	12	7.6	55	-	3.8	Weldon	Steel
12L070S08-C	S08	12	11.5	70	17	20	Cylindrical	Carbide
12L090S08-C	S08	12	11.5	90	37	40	Cylindrical	Carbide
12L090S08-S	S08	12	11.5	90	13.6	16	Cylindrical	Steel
12L110S08-C	S08	12	11.5	110	57	60	Cylindrical	Carbide
12L130S08-C	S08	12	11.5	130	77	80	Cylindrical	Carbide
16L065W06-S	S06	16	9.6	65	-	6	Weldon	Steel
16L065W08-S	S08	16	11.5	65	-	4	Weldon	Steel
16L090S10-C	S10	16	15.2	90	38	40	Cylindrical	Carbide
16L100S10-S	S10	16	15.2	100	18	20	Cylindrical	Steel
16L110S10-C	S10	16	15.2	110	58	60	Cylindrical	Carbide
16L130S10-C	S10	16	15.2	130	78	80	Cylindrical	Carbide
16L150S10-C	S10	16	15.2	150	98	100	Cylindrical	Carbide
20L070W10-S	S10	20	15.2	70	-	4	Weldon	Steel
20L090S12-C	S12	20	18.3	90	37	40	Cylindrical	Carbide
20L120S12-S	S12	20	18.3	120	20.5	25	Cylindrical	Steel
20L130S12-C	S12	20	18.3	130	77	80	Cylindrical	Carbide
20L200S12-C	S12	20	18.3	200	117	120	Cylindrical	Carbide
25L075W12-S	S12	25	18.3	75	-	6	Weldon	Steel
25L120S15-C	S15	25	23.9	120	58	60	Cylindrical	Carbide
25L135S15-S	S15	25	23.9	135	33	35	Cylindrical	Steel
25L170S15-C	S15	25	23.9	170	98	100	Cylindrical	Carbide
25L250S15-C	S15	25	23.9	250	148	150	Cylindrical	Carbide

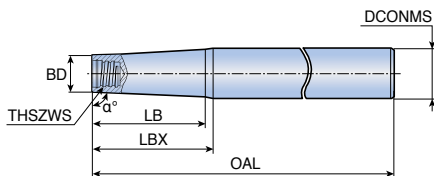
• THSZWS: Connection thread size

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- THSZWS: Connection thread size

Straight shanks with taper neck



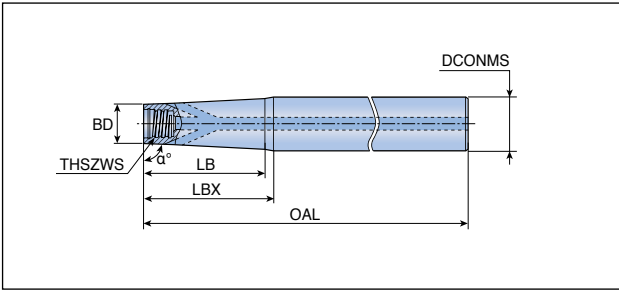
Designation	Dimension (mm)							Shank material
	α°	THSZWS	DCONMS	BD	OAL	LB	LBX	
MXTSD 12L080S05-S	85	S05	12	7.6	80	-	25	Steel
12L100S05-S	89	S05	12	7.6	100	31.0	35	Steel
12L110S05-C	89	S05	12	7.6	110	58.0	60	Carbide
12L130S05-C	89	S05	12	7.6	130	79.0	80	Carbide
16L125S06-S	85	S06	16	9.6	125	31.6	34	Steel
16L130S08-C	89	S08	16	11.5	130	78.8	80	Carbide
16L140S08-S	85	S08	16	11.5	140	19.3	22	Steel
16L150S05-C	89	S05	16	7.6	150	96.0	100	Carbide
16L150S06-C	89	S06	16	9.6	150	98.0	100	Carbide
16L150S08-C	89	S08	16	11.5	150	-	100	Carbide
16L160S06-S	89	S06	16	9.6	160	45.9	55	Steel
16L170S06-C	89	S06	16	9.6	170	119.0	120	Carbide
20L140S10-S	85	S10	20	15.2	140	-	27.5	Steel
20L170S08-C	89	S08	20	11.5	170	117.0	120	Carbide
20L170S08-S	89	S08	20	11.5	170	68.6	80	Steel
20L170S10-C	89	S10	20	15.2	170	-	120	Carbide
20L190S10-C	89	S10	20	15.2	190	-	140	Carbide
20L190S10-S	89	S10	20	15.2	190	73.0	80	Steel
20L210S10-C	89	S10	20	15.2	210	-	160	Carbide
25L160S12-S	85	S12	25	18.3	160	-	40	Steel
25L170S10-S	85	S10	25	15.2	170	-	56	Steel
25L180S12-C	89	S12	25	18.3	180	-	120	Carbide
25L210S12-S	89	S12	25	18.3	210	91.0	100	Steel
25L250S12-C	89	S12	25	18.3	250	-	140	Carbide
32L155S15-S	85	S15	32	23.9	155	40.0	45	Steel
32L190S12-S	85	S12	32	18.3	190	-	80	Steel
32L220S15-S	85	S15	32	23.9	220	-	100	Steel
32L250S15-C	89	S15	32	23.9	250	-	150	Carbide
32L300S15-C	89	S15	32	23.9	300	-	200	Carbide

• THSZWS: Connection thread size

MXTSD-W-A



Straight tungsten shanks with taper neck & internal coolant hole



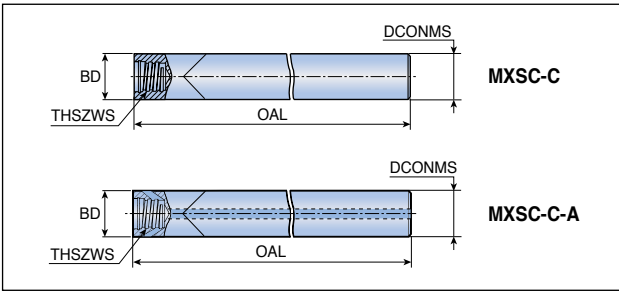
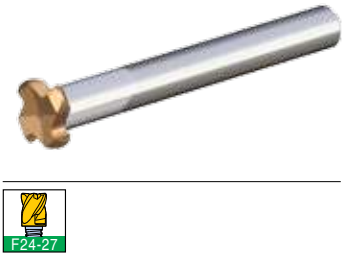
Designation	Dimension (mm)							Shank material
	α°	THSZWS	DCONMS	BD	OAL	LB	LBX	
MXTSD 12L110S06-W-A	89	S06	12	9.6	110	59	60	Tungsten
16L170S06-W-A	89	S06	16	9.6	170	116	120	Tungsten

- THSZWS: Connection thread size

MXSC-C



Straight carbide shanks for TST & TTB slotting head

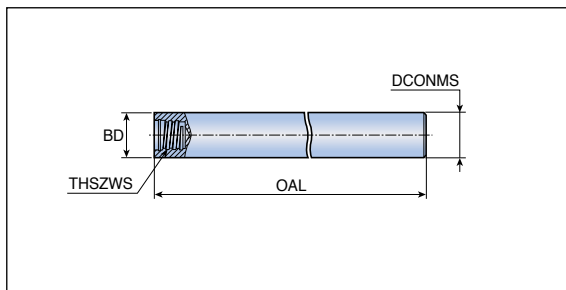


Designation	Dimension (mm)				Coolant hole	Shank material
	THSZWS	DCONMS	BD	OAL		
MXSC 100L100S06-C	S06	10	10	100	X	Carbide
120L100S08-C-A	S08	12	12	100	●	Carbide

- THSZWS: Connection thread size

Note:

- For MXSC type shank, it is recommended to use the TST & TTB slotting head only. If other heads are used on the MXSC shank, the depth of cut must be smaller than the max. ap in each head. The MXSC-C type shank does not have external clearance, so the shank may interfere with the work piece.

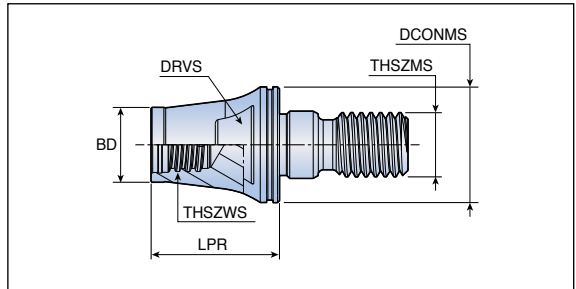


- THSZWS: Connection thread size

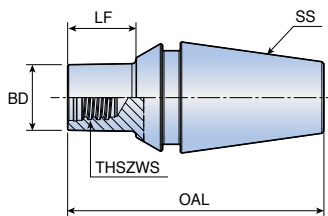
Note:

- For MXSTD type shank, it is recommended to use the TST & TTB slotting type head only. If other heads are used on the MXSTD shank, the depth of cut must be smaller than the max. ap in each head. The MXSTD type shank does not have external clearance, so the shank may interfere with the work piece.

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- THSZWS: Connection thread size
- DRVS: Clamping wrench size

[illegible]

- THSZWS: Connection thread size

Solid End Mill Line



Tool Selection Guide

Solid end mill

Series	HARDMILL																																																																																																							
	HSB 2								HSF 2																																																																																															
	HSB 2		HSB 2...S6		HSB 2...S/M		HSB 4...M		HSF 2		HSF 2...M																																																																																													
																																																																																																								
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Length	Long neck	Long neck	Short/Medium	Medium	Long neck	Medium																																																																																																		
Grades	TT5505	TT5505	TT5505	TT5505	TT5505	TT5505																																																																																																		
Application	* H.S.M	H.S.M	H.S.M	H.S.M	H.S.M	H.S.M																																																																																																		
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○
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Pages	F46 - F49	F50	F51 - F52	F53	F54 - F57	F58 - F59																																																																																																		

Series	HARDMILL																																																																													
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Type	Flat	Flat	Flat	Flat	Radius	Radius																																																																								
Flute																																																																														
Length	Long neck	Medium	Medium	Extra long	Long neck	Medium																																																																								
Grades	TT5505	TT5505	TT5505	TT5505	TT5505	TT5505																																																																								
Application	H.S.M	H.S.M	Finishing	Finishing	H.S.M	H.S.M																																																																								
Material	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○	<table><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr></table>	P	M	K	N	S	H	○	○	○	○	●	○
P	M	K	N	S	H																																																																									
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P	M	K	N	S	H																																																																									
○	○	○	○	●	○																																																																									
Range	Ø1.0 - Ø12.0	Ø1.0 - Ø12.0	Ø3.0 - Ø12.0	Ø5.0 - Ø12.0	Ø0.3 - Ø12.0	Ø0.3 - Ø12.0																																																																								
Pages	F60 - F61	F62	F63	F63	F64 - F70	F71- F73																																																																								

* H.S.M : High Speed Machining

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

HARDMILL					APEX MILL	
HSR 4		HSR 6		HSB 2CBN	SBE 2	
HSR 4	HSR 4...M	HSR 6	HSR 6...M		SBE 2...S	SBE 2/SBE 2...T
						
Radius	Radius	Radius	Radius	CBN Ball	Ball	Ball
						
Long neck	Medium	Long neck	Medium	Long neck	Short	Medium
TT5505	TT5505	TT5505	TT5505	TB7015	TT5515	UF10N/TT5515
* H.S.M	H.S.M	Finishing	Finishing	Finishing	General	General
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○
Ø1.0 - Ø12.0	Ø1.0 - Ø12.0	Ø6.0 - Ø12.0	Ø6.0 - Ø12.0	Ø0.4 - Ø4.0	Ø2.0 - Ø20.0	Ø1.0 - Ø20.0
F74 - F77	F78 - F79	F80	F80	F81	F82	F83 - F84

APEX MILL						
SBE 2		SBE 4	BES 2...T	BES 4...T	TSE 2...M	TSE 4...M
SBE 2...L	SBE 2...LT	SBE 4/SBE 4...T				
						
Ball	Ball	Ball	Ball (Spherical)	Ball (Spherical)	Flat	Flat
						
Long	Long	Medium	Medium	Medium	Medium	Medium
UF10N	TT5515	UF10N/TT5515	TT5515	TT5515	TT5515, TT5525, UF10	TT5515, TT5525, UF10
General	General	General	General	General	General	General
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ● ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○
Ø1.0 - Ø20.0	Ø2.0 - Ø16.0	Ø1.0 - Ø20.0	Ø3.0 - Ø16.0	Ø3.0 - Ø16.0	Ø1.0 - Ø25.0	Ø1.0 - Ø25.0
F85	F86	F87 - F88	F89	F89	F90 - F91	F92 - F93

• *H.S.M : High Speed Machining

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

Series	APEX MILL					
	HES 2		HES 4		HES 2-R	
	HES 2...LT	HES 2...XLT	HES 4...LT	HES 4...XLT	HES 2...T-R	HES 2...LT-R
						
Type	Flat	Flat	Flat	Flat	Radius	Radius
Flute	2	2	4	4	2	2
Length	Long	Extra long	Long	Extra long	Medium	Long
Grades	TT5525	TT5515, TT5525	TT5525	TT5515, TT5525	TT5515, TT5525	TT5515, TT5525
Application	General	General	General	General	General	General
Material	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○
Range	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø12.0
Pages	F94	F95	F96	F97	F98	F99

Series	APEX MILL					
	HES 4-R		HFM 2	HFM 4	CFM 4...M	REL ...L
	HES 4...T-R	HES 4...LT-R				
						
Type	Radius	Radius	Flat	Flat	Chamfer	Chamfer
Flute	4	4	2	4	4	3-4
Length	Medium	Long	Medium	Medium	Medium	Long
Grades	TT5515, TT5525	TT5515, TT5525	TT5515	TT5515	TT5525	TT5515
Application	General	General	* H.F.M	* H.F.M	General	Roughing
Material	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○	P M K N S H ● ○ ● ○ ○
Range	Ø3.0 - Ø20.0	Ø3.0 - Ø12.0	Ø4.0 - Ø12.0	Ø6.0 - Ø12.0	Ø6.0 - Ø25.0	Ø6.0 - Ø20.0
Pages	F100	F101	F102	F102	F103	F103

* H.F.M : High Feed Machining

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

APEX MILL					
FSM 4...M	CEM 2...-C60	CEM 2	CEM 2...-C120	ECEM 2	ECEM 4
					
Chamfer	Chamfer 60°	Chamfer 45°	Chamfer 30°	Chamfer 45°	Chamfer 45°
					
Medium	Long	Long	Long	Medium	Medium
TT5525	UF10	UF10, TT5525	UF10	UF10	UF10
Roughing+Finishing	General	General	General	General	General
					
					
Ø6.0 - Ø25.0	Ø4.0 - Ø20.0	Ø4.0 - Ø20.0	Ø4.0 - Ø20.0	Ø2.0 - Ø16.0	Ø6.0 - Ø12.0
F104	F104	F105	F105	F106	F106

APEX MILL		STAR MILL			
HCEM 5	SBT 3...U	SBT 4...U	SED 4		SED 4...-R
			SED 4...U	SED 4...UL	
					
Chamfer 45°	Ball	Ball	Flat	Flat	Radius
					
Medium	Medium	Medium	Medium	Long	Medium
TT5525	TT5515	TT5515	TT5515	TT5515	TT5515
General	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut
					
					
Ø0.8 - Ø16.0	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0	Ø3.0 - Ø20.0	Ø3.0 - Ø12.0	Ø2.0 - Ø16.0
F107	F108	F108	F109	F109	F110

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

Series	STAR MILL					
	SED 4...-C	SED 7		SER	REH	
		SED 7	SED 7...N		REH ...S	REH ...M
						
Type	Chamfer	Radius	Radius	Splitter	Chamfer	Chamfer
Flute						
Length	Medium	Medium	Medium	Medium	Short	Medium
Grades	TT5515	TT5515	TT5515	TT5525	TT5525	TT5525
Application	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Roughing	Roughing
Material						
Range	Ø4.0 - Ø12.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø3.0 - Ø20.0	Ø6.0 - Ø20.0	Ø4.0 - Ø25.0
Pages	F111	F111	F112	F113	F114	F115

Series	ALUMILL					
	REH	AES 2		AES 3		
		AES 2	AES 2...XL	AES 3	AES 3...ML	AES 3...XL
						
Type	Chamfer	Flat	Flat	Flat	Flat	Flat
Flute						
Length	Long	Medium	Extra long	Medium	Long	Extra long
Grades	TT5525	UF10	UF10	UF10	UF10	UF10
Application	Roughing	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Material						
Range	Ø6.0 - Ø20.0	Ø1.0 - Ø20.0	Ø2.0 - Ø20.0	Ø2.0 - Ø25.0	Ø3.0 - Ø20.0	Ø6.0 - Ø20.0
Pages	F116	F117	F118	F119	F120	F121

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

ALUMILL					
AES 2...-R	AES 3...-R	REMA 3/3...C	REA 3...L	AWE 3	
					
Radius	Radius	Radius	Chamfer	Wave Flat	Wave Flat
					
Medium	Medium	Long neck	Long	Medium	Long
UF10	UF10	UF10	UF10	UF10	UF10
Aluminum	Aluminum	Roughing	Roughing	Aluminum	Aluminum
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
●	●	●	●	●	●
Ø6.0 - Ø16.0	Ø6.0 - Ø16.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0
F122	F123	F124	F124	F125	F125

ALUMILL		CERAMIC SPEED		DIA MILL	
AWE 3...ML-R	CRF 4	CRF 6	CRH 4	DMB 2	DEB 2
					
Wave Radius	Radius	Radius	Radius	Ball	Ball
					
Long	Medium	Medium	Medium	Miniature	Short
UF10	TC3030	TC3030	TC3030	TTD620	TTD620
Aluminum	* H.S.M	* H.S.M	* H.F.M	Graphite	Graphite
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
●	●	●	●	●	●
Ø6.0 - Ø12.0	Ø6.0 - Ø16.0	Ø6.0 - Ø16.0	Ø6.0 - Ø16.0	Ø0.6 - Ø2.0	Ø3.0 - Ø12.0
F126	F126	F127	F127	F128	F128

• *H.S.M : High Speed Machining

• *H.F.M : High Feed Machining

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

Series					
	DEB 2		DER 3		
					
Type	Ball	Radius	Radius	Radius	Flat
Flute					
Length	Long	Miniature	Short	Long	
Grades	TTD620	TTD620	TTD620	TTD620	TTD610
Application	Graphite	Graphite	Graphite	Graphite	Roughing
Material	Graphite	Graphite	Graphite	Graphite	Composite material
Range	Ø3.0 - Ø12.0	Ø0.6 - Ø2.0	Ø3.0 - Ø12.0	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0
Pages	F129	F129	F130	F130	F131

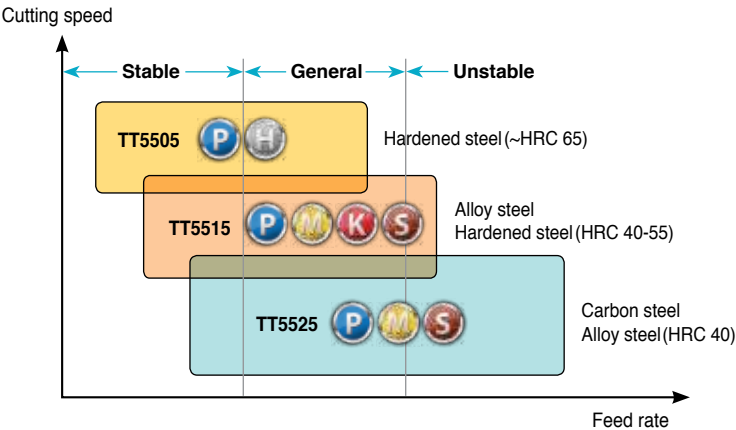
Series					
	RCFE	RCME	RCDE	RCOM	RDCF
					
Type	Flat	Flat	Chamfer	Flat	Flat
Flute					
Length					
Grades	TTD610	TTD610	TTD610	TTD610	TTD610
Application	Roughing	Medium	Drilling + Medium	Finishing	Finishing
Material	Composite material	Composite material	Composite material	Composite material	Composite material
Range	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0	Ø6.0 - Ø12.0	Ø4.0 - Ø12.0
Pages	F131	F132	F132	F133	F133

Grades

Solid end mill grades

Grades	ISO	Characteristics & applications
TT5505 PVD coated	P05 – P25 H05 – H25	• High wear and oxidation resistance that delivers exceptional productivity levels • Hardened steel, pre-hardened steel (Hardness < 65 HRC) • High speed machining
TT5515 PVD coated	P10 – P30 M15 – M30 K10 – K30 S10 – S30 H10 – H30	• An ultra wear resistant high performance grade covering all ISO ranges • Alloy steel, pre-hardened steel, stainless steel, high-temp alloy (45 < HRC < 55) • Medium to high speed machining
TT5525 PVD coated	P20 – P40 M20 – M40 S20 – S40	• Optimally balanced with wear resistant and anti-chipping properties • General machining of carbon steel, alloy steel, stainless steel, high-temp alloy (< 40 HRC) • Low to medium speed machining
TTD620 Diamond coated	Graphite	• High hardness and excellent wear resistance • Machining of graphite
TTD610 Diamond coated	Composite material	• Advanced nano diamond coating provides longer tool life and stability of machining • Excellent abrasive wear resistance (Hardness: more Hv 8000) • Machining of composite material
UF10N UF10 Uncoated	P25 – P35 M25 – M35 N25 – N35	• General machining of steel, aluminum alloys, non-ferrous materials • Submicron substrate
TC3030 Ceramic	S25 – S35	• SiAlON ceramic grade • High speed machining of nikel based super alloys

Selection guide for solid end mill grades



Designation System

HARDMILL

HSB 2 010 M 010 030

1 2 3 4 5/5* 6

1 End mill type

HSB Ball nose



HSF Flat



HSR Corner radius



2 No. of flute

2 2 Flutes



4 4 Flutes



6 6 Flutes



3 Cutting diameter

010 1.0 mm



100 10.0 mm



4 Cutting length type

-(none) Long neck

S Short

M Medium

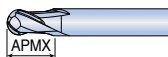
L Long

XLT Extra long

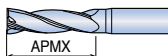
5 Length of cut

HSB / HSF type

010 1.0 mm



120 12.0 mm

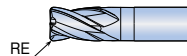


5* Corner radius

HSR type

005 R0.05 mm

020 R0.2 mm



6 Length of neck

030 3.0 mm

200 20.0mm

-(none) No undercut



Designation System



1 End mill type

SBE/SBT/DEB	Ball nose	
TSE/SED/AES	Flat	
DER	Corner radius	

2 No. of flute

2 2 Flutes	
4 4 Flutes	
6 6 Flutes	

3 Cutting diameter

010	1.0 mm	
100	10.0 mm	

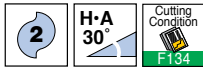
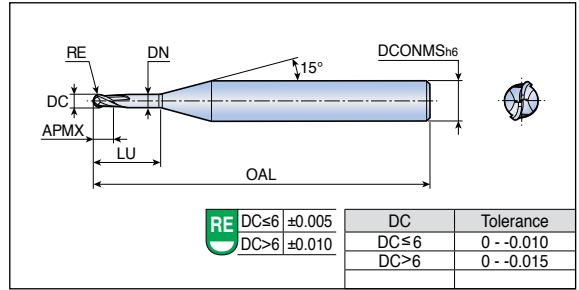
4 Overall length

S	Short length	
M	Medium length	
L	Long length	
XL	Extra long length	

5 Others

-□	Shank diameter
-R□□	Corner radius

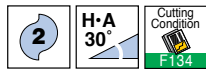
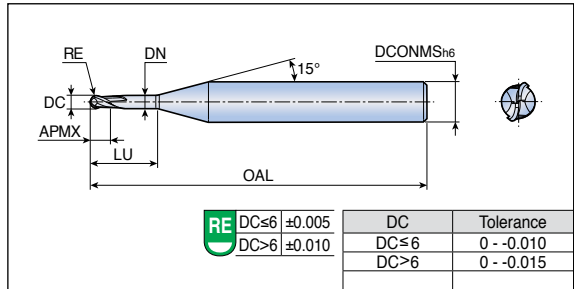
2 flute long neck ball



Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSB 2003 003 010	0.3	0.15	45	0.3	1.0	0.27	4.0	●
2003 003 020	0.3	0.15	45	0.3	2.0	0.27	4.0	●
2003 003 030	0.3	0.15	45	0.3	3.0	0.27	4.0	●
2004 004 010	0.4	0.2	45	0.4	1.0	0.36	4.0	●
2004 004 015	0.4	0.2	45	0.4	1.5	0.36	4.0	●
2004 004 020	0.4	0.2	45	0.4	2.0	0.36	4.0	●
2004 004 025	0.4	0.2	45	0.4	2.5	0.36	4.0	●
2004 004 030	0.4	0.2	45	0.4	3.0	0.36	4.0	●
2004 004 040	0.4	0.2	45	0.4	4.0	0.36	4.0	●
2005 005 010	0.5	0.25	45	0.5	1.0	0.45	4.0	●
2005 005 015	0.5	0.25	45	0.5	1.5	0.45	4.0	●
2005 005 020	0.5	0.25	45	0.5	2.0	0.45	4.0	●
2005 005 025	0.5	0.25	45	0.5	2.5	0.45	4.0	●
2005 005 030	0.5	0.25	45	0.5	3.0	0.45	4.0	●
2005 005 040	0.5	0.25	45	0.5	4.0	0.45	4.0	●
2005 005 050	0.5	0.25	45	0.5	5.0	0.45	4.0	●
2005 005 060	0.5	0.25	45	0.5	6.0	0.45	4.0	●
2005 005 080	0.5	0.25	45	0.5	8.0	0.45	4.0	●
2006 006 020	0.6	0.3	45	0.6	2.0	0.55	4.0	●
2006 006 030	0.6	0.3	45	0.6	3.0	0.55	4.0	●
2006 006 040	0.6	0.3	45	0.6	4.0	0.55	4.0	●
2006 006 050	0.6	0.3	45	0.6	5.0	0.55	4.0	●
2006 006 060	0.6	0.3	45	0.6	6.0	0.55	4.0	●
2006 006 080	0.6	0.3	45	0.6	8.0	0.55	4.0	●
2006 006 100	0.6	0.3	45	0.6	10.0	0.55	4.0	●
2008 008 020	0.8	0.4	45	0.8	2.0	0.75	4.0	●
2008 008 030	0.8	0.4	45	0.8	3.0	0.75	4.0	●
2008 008 040	0.8	0.4	45	0.8	4.0	0.75	4.0	●
2008 008 050	0.8	0.4	45	0.8	5.0	0.75	4.0	●
2008 008 060	0.8	0.4	45	0.8	6.0	0.75	4.0	●
2008 008 080	0.8	0.4	45	0.8	8.0	0.75	4.0	●
2008 008 100	0.8	0.4	45	0.8	10.0	0.75	4.0	●
2008 008 120	0.8	0.4	45	0.8	12.0	0.75	4.0	●

●: Standard items

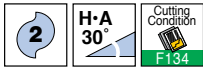
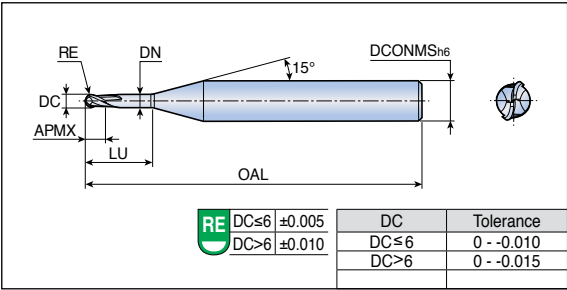
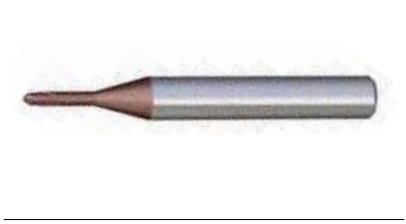
2 flute long neck ball



Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSB 2010 010 030	1.0	0.5	50	1.0	3	0.97	4.0	●
2010 010 040	1.0	0.5	50	1.0	4	0.97	4.0	●
2010 010 050	1.0	0.5	50	1.0	5	0.97	4.0	●
2010 010 060	1.0	0.5	50	1.0	6	0.97	4.0	●
2010 010 070	1.0	0.5	50	1.0	7	0.97	4.0	●
2010 010 080	1.0	0.5	50	1.0	8	0.95	4.0	●
2010 010 090	1.0	0.5	50	1.0	9	0.95	4.0	●
2010 010 100	1.0	0.5	50	1.0	10	0.95	4.0	●
2010 010 120	1.0	0.5	50	1.0	12	0.93	4.0	●
2010 010 140	1.0	0.5	50	1.0	14	0.93	4.0	●
2010 010 160	1.0	0.5	50	1.0	16	0.93	4.0	●
2010 010 180	1.0	0.5	55	1.0	18	0.93	4.0	●
2010 010 200	1.0	0.5	55	1.0	20	0.93	4.0	●
2012 012 040	1.2	0.6	50	1.2	4	1.15	4.0	●
2012 012 060	1.2	0.6	50	1.2	6	1.15	4.0	●
2012 012 080	1.2	0.6	50	1.2	8	1.15	4.0	●
2012 012 100	1.2	0.6	50	1.2	10	1.15	4.0	●
2012 012 120	1.2	0.6	50	1.2	12	1.13	4.0	●
2015 015 040	1.5	0.75	50	1.5	4	1.45	4.0	●
2015 015 060	1.5	0.75	50	1.5	6	1.45	4.0	●
2015 015 080	1.5	0.75	50	1.5	8	1.45	4.0	●
2015 015 100	1.5	0.75	50	1.5	10	1.45	4.0	●
2015 015 120	1.5	0.75	50	1.5	12	1.43	4.0	●
2015 015 140	1.5	0.75	50	1.5	14	1.43	4.0	●
2015 015 160	1.5	0.75	50	1.5	16	1.41	4.0	●
2015 015 180	1.5	0.75	55	1.5	18	1.41	4.0	●
2015 015 200	1.5	0.75	55	1.5	20	1.39	4.0	●
2020 030 060	2.0	1.0	50	3.0	6	1.95	4.0	●
2020 030 080	2.0	1.0	50	3.0	8	1.95	4.0	●
2020 030 100	2.0	1.0	50	3.0	10	1.95	4.0	●
2020 030 120	2.0	1.0	50	3.0	12	1.93	4.0	●
2020 030 140	2.0	1.0	50	3.0	14	1.93	4.0	●
2020 030 160	2.0	1.0	50	3.0	16	1.93	4.0	●
2020 030 180	2.0	1.0	55	3.0	18	1.93	4.0	●
2020 030 200	2.0	1.0	55	3.0	20	1.93	4.0	●

●: Standard items

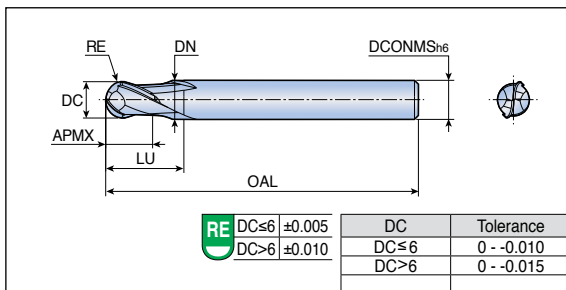
2 flute long neck ball



Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSB 2020 030 250	2.0	1.0	60	3.0	25	1.93	4.0	●
2020 030 300	2.0	1.0	70	3.0	30	1.93	4.0	●
2025 035 080	2.5	1.25	55	3.5	8	2.45	4.0	●
2025 035 100	2.5	1.25	55	3.5	10	2.45	4.0	●
2025 035 120	2.5	1.25	55	3.5	12	2.43	4.0	●
2025 035 160	2.5	1.25	55	3.5	16	2.41	4.0	●
2025 035 200	2.5	1.25	55	3.5	20	2.41	4.0	●
2030 040 080	3.0	1.5	55	4.0	8	2.85	6.0	●
2030 040 100	3.0	1.5	55	4.0	10	2.85	6.0	●
2030 040 120	3.0	1.5	55	4.0	12	2.85	6.0	●
2030 040 140	3.0	1.5	55	4.0	14	2.85	6.0	●
2030 040 160	3.0	1.5	55	4.0	16	2.85	6.0	●
2030 040 180	3.0	1.5	60	4.0	18	2.85	6.0	●
2030 040 200	3.0	1.5	60	4.0	20	2.85	6.0	●
2030 040 250	3.0	1.5	60	4.0	25	2.85	6.0	●
2030 040 300	3.0	1.5	75	4.0	30	2.85	6.0	●
2030 040 350	3.0	1.5	75	4.0	35	2.85	6.0	●
2030 040 400	3.0	1.5	80	4.0	40	2.85	6.0	●
2040 050 100	4.0	2.0	55	5.0	10	3.9	6.0	●
2040 050 120	4.0	2.0	55	5.0	12	3.9	6.0	●
2040 050 160	4.0	2.0	55	5.0	16	3.9	6.0	●
2040 050 200	4.0	2.0	60	5.0	20	3.9	6.0	●
2040 050 250	4.0	2.0	60	5.0	25	3.9	6.0	●
2040 050 300	4.0	2.0	75	5.0	30	3.9	6.0	●
2040 050 350	4.0	2.0	75	5.0	35	3.9	6.0	●
2040 050 400	4.0	2.0	80	5.0	40	3.9	6.0	●
2050 060 120	5.0	2.5	70	6.0	12	4.9	6.0	●
2050 060 300	5.0	2.5	70	6.0	30	4.9	6.0	●

●: Standard items

RHINOSOLID HARDMILL

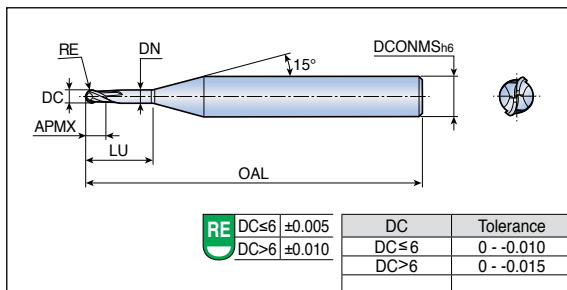
[illegible]

●: Standard items

HSB 2...S6

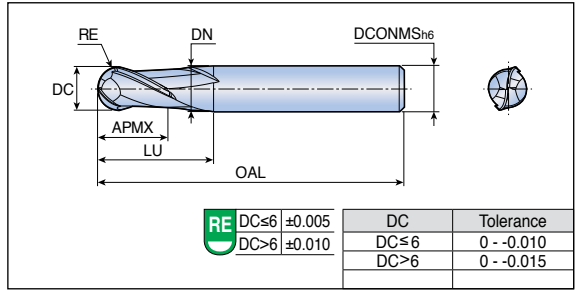
2 flute long neck ball (Shank 6mm)

RHINOSOLID HARDMILL

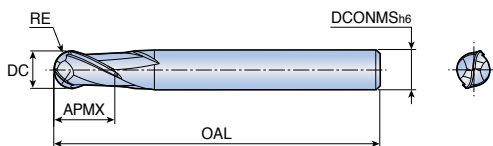
[illegible]

●: Standard items

RHINOSOLID HARDMILL

[illegible]

2 flute medium ball



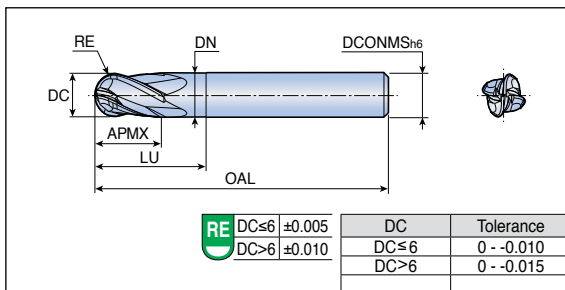
DC≤6	±0.005
DC>6	±0.010

DC	Tolerance
DC≤6	0 - -0.010
DC>6	0 - -0.015

[illegible]

●: Standard items

RHINOSOLID HARDMILL



H·A
30°

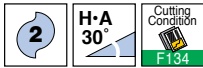
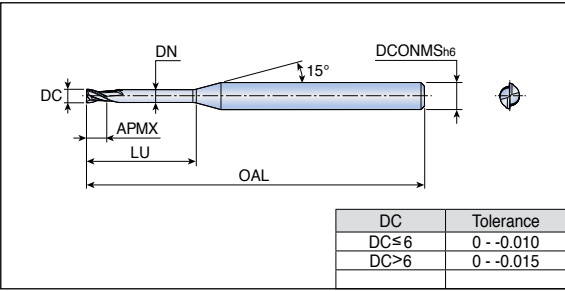


●: Standard items

HSF 2

2 flute long neck flat

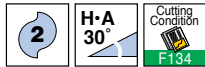
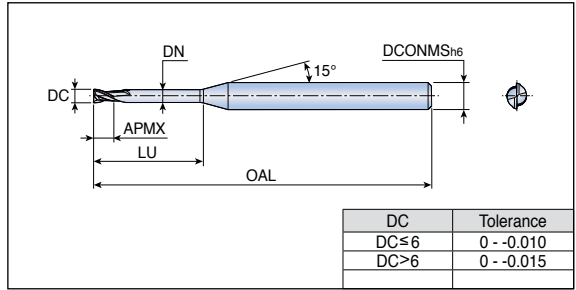
RHINOSOLID **HARD**MILL



Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2003 004 010	0.006-0.010	0.3	45	0.4	1.0	0.27	4.0	●
2003 004 015	0.006-0.010	0.3	45	0.4	1.5	0.27	4.0	●
2003 004 020	0.006-0.010	0.3	45	0.4	2.0	0.27	4.0	●
2003 004 025	0.006-0.010	0.3	45	0.4	2.5	0.27	4.0	●
2003 004 030	0.006-0.010	0.3	45	0.4	3.0	0.27	4.0	●
2003 004 040	0.005-0.008	0.3	45	0.4	4.0	0.27	4.0	●
2003 004 050	0.005-0.008	0.3	45	0.4	5.0	0.27	4.0	●
2004 006 010	0.006-0.010	0.4	45	0.6	1.0	0.37	4.0	●
2004 006 015	0.006-0.010	0.4	45	0.6	1.5	0.37	4.0	●
2004 006 020	0.006-0.010	0.4	45	0.6	2.0	0.37	4.0	●
2004 006 025	0.006-0.010	0.4	45	0.6	2.5	0.37	4.0	●
2004 006 030	0.006-0.010	0.4	45	0.6	3.0	0.37	4.0	●
2004 006 040	0.006-0.010	0.4	45	0.6	4.0	0.37	4.0	●
2004 006 050	0.005-0.008	0.4	45	0.6	5.0	0.37	4.0	●
2004 006 060	0.005-0.008	0.4	45	0.6	6.0	0.37	4.0	●
2005 007 010	0.006-0.010	0.5	45	0.7	1.0	0.45	4.0	●
2005 007 015	0.006-0.010	0.5	45	0.7	1.5	0.45	4.0	●
2005 007 020	0.006-0.010	0.5	45	0.7	2.0	0.45	4.0	●
2005 007 025	0.006-0.009	0.5	45	0.7	2.5	0.45	4.0	●
2005 007 030	0.006-0.009	0.5	45	0.7	3.0	0.45	4.0	●
2005 007 040	0.006-0.008	0.5	45	0.7	4.0	0.45	4.0	●
2005 007 050	0.006-0.008	0.5	45	0.7	5.0	0.45	4.0	●
2005 007 060	0.005-0.007	0.5	45	0.7	6.0	0.45	4.0	●
2005 007 080	0.005-0.007	0.5	45	0.7	8.0	0.45	4.0	●
2006 009 020	0.008-0.013	0.6	45	0.9	2.0	0.55	4.0	●
2006 009 030	0.008-0.013	0.6	45	0.9	3.0	0.55	4.0	●
2006 009 040	0.008-0.013	0.6	45	0.9	4.0	0.55	4.0	●
2006 009 050	0.008-0.013	0.6	45	0.9	5.0	0.55	4.0	●
2006 009 060	0.008-0.013	0.6	45	0.9	6.0	0.55	4.0	●
2006 009 080	0.006-0.010	0.6	45	0.9	8.0	0.55	4.0	●
2006 009 100	0.006-0.010	0.6	45	0.9	10.0	0.55	4.0	●
2007 012 020	0.008-0.013	0.7	45	1.2	2.0	0.65	4.0	●
2007 012 040	0.008-0.013	0.7	45	1.2	4.0	0.65	4.0	●
2007 012 060	0.008-0.013	0.7	45	1.2	6.0	0.65	4.0	●
2007 012 080	0.008-0.013	0.7	45	1.2	8.0	0.65	4.0	●
2007 012 100	0.006-0.010	0.7	45	1.2	10.0	0.65	4.0	●

●: Standard items

2 flute long neck flat



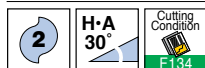
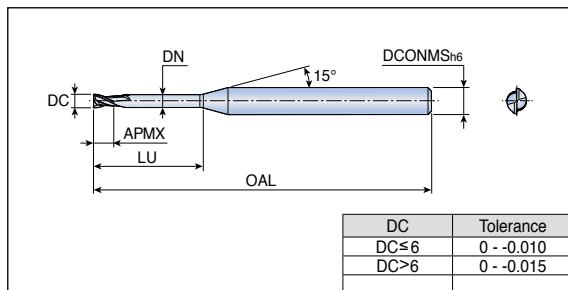
Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2007 012 120	0.006-0.010	0.7	45	1.2	12.0	0.65	4.0	●
2008 012 020	0.007-0.015	0.8	45	1.2	2.0	0.75	4.0	●
2008 012 030	0.007-0.015	0.8	45	1.2	3.0	0.75	4.0	●
2008 012 040	0.007-0.015	0.8	45	1.2	4.0	0.75	4.0	●
2008 012 050	0.007-0.015	0.8	45	1.2	5.0	0.75	4.0	●
2008 012 060	0.007-0.015	0.8	45	1.2	6.0	0.75	4.0	●
2008 012 080	0.007-0.013	0.8	45	1.2	8.0	0.73	4.0	●
2008 012 100	0.007-0.012	0.8	45	1.2	10.0	0.73	4.0	●
2008 012 120	0.007-0.012	0.8	45	1.2	12.0	0.73	4.0	●
2010 015 030	0.009-0.020	1.0	50	1.5	3.0	0.97	4.0	●
2010 015 040	0.009-0.020	1.0	50	1.5	4.0	0.97	4.0	●
2010 015 050	0.009-0.018	1.0	50	1.5	5.0	0.97	4.0	●
2010 015 060	0.009-0.018	1.0	50	1.5	6.0	0.97	4.0	●
2010 015 070	0.009-0.018	1.0	50	1.5	7.0	0.97	4.0	●
2010 015 080	0.009-0.018	1.0	50	1.5	8.0	0.95	4.0	●
2010 015 100	0.009-0.016	1.0	50	1.5	10.0	0.95	4.0	●
2010 015 120	0.008-0.014	1.0	50	1.5	12.0	0.93	4.0	●
2010 015 140	0.008-0.014	1.0	50	1.5	14.0	0.93	4.0	●
2010 015 160	0.008-0.014	1.0	50	1.5	16.0	0.91	4.0	●
2010 015 180	0.008-0.012	1.0	55	1.5	18.0	0.91	4.0	●
2010 015 200	0.008-0.012	1.0	55	1.5	20.0	0.85	4.0	●
2012 018 040	0.010-0.020	1.2	50	1.8	4.0	1.17	4.0	●
2012 018 060	0.010-0.020	1.2	50	1.8	6.0	1.17	4.0	●
2012 018 080	0.010-0.020	1.2	50	1.8	8.0	1.15	4.0	●
2012 018 100	0.010-0.019	1.2	50	1.8	10.0	1.15	4.0	●
2012 018 120	0.010-0.018	1.2	50	1.8	12.0	1.15	4.0	●
2012 018 160	0.010-0.018	1.2	50	1.8	16.0	1.13	4.0	●
2015 023 040	0.015-0.025	1.5	50	2.3	4.0	1.47	4.0	●
2015 023 060	0.015-0.025	1.5	50	2.3	6.0	1.47	4.0	●
2015 023 080	0.015-0.025	1.5	50	2.3	8.0	1.45	4.0	●
2015 023 100	0.015-0.025	1.5	50	2.3	10.0	1.45	4.0	●
2015 023 120	0.013-0.025	1.5	50	2.3	12.0	1.43	4.0	●
2015 023 140	0.013-0.025	1.5	50	2.3	14.0	1.43	4.0	●
2015 023 160	0.011-0.015	1.5	50	2.3	16.0	1.41	4.0	●
2015 023 180	0.011-0.015	1.5	55	2.3	18.0	1.41	4.0	●
2015 023 200	0.011-0.015	1.5	55	2.3	20.0	1.41	4.0	●

●: Standard items

HSF 2

2 flute long neck flat

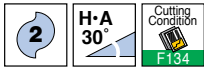
RHINOSOLID **HARD**MILL



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2020 030 040	0.018-0.040	2.0	50	3.0	4	1.95	4.0	●
2020 030 060	0.018-0.040	2.0	50	3.0	6	1.95	4.0	●
2020 030 080	0.018-0.040	2.0	50	3.0	8	1.95	4.0	●
2020 030 100	0.018-0.040	2.0	50	3.0	10	1.95	4.0	●
2020 030 120	0.016-0.025	2.0	50	3.0	12	1.93	4.0	●
2020 030 140	0.016-0.025	2.0	50	3.0	14	1.93	4.0	●
2020 030 160	0.015-0.022	2.0	50	3.0	16	1.91	4.0	●
2020 030 180	0.015-0.022	2.0	55	3.0	18	1.91	4.0	●
2020 030 200	0.013-0.019	2.0	55	3.0	20	1.91	4.0	●
2020 030 250	0.013-0.019	2.0	60	3.0	25	1.91	4.0	●
2020 030 300	0.010-0.015	2.0	70	3.0	30	1.91	4.0	●
2025 040 080	0.019-0.045	2.5	50	4.0	8	2.4	4.0	●
2025 040 100	0.019-0.045	2.5	50	4.0	10	2.4	4.0	●
2025 040 120	0.017-0.040	2.5	50	4.0	12	2.4	4.0	●
2025 040 160	0.015-0.030	2.5	50	4.0	16	2.4	4.0	●
2025 040 200	0.013-0.020	2.5	55	4.0	20	2.4	4.0	●
2030 045 080	0.021-0.060	3.0	55	4.5	8	2.85	6.0	●
2030 045 100	0.021-0.060	3.0	55	4.5	10	2.85	6.0	●
2030 045 120	0.018-0.050	3.0	55	4.5	12	2.85	6.0	●
2030 045 140	0.018-0.045	3.0	55	4.5	14	2.85	6.0	●
2030 045 160	0.018-0.045	3.0	55	4.5	16	2.85	6.0	●
2030 045 180	0.015-0.040	3.0	60	4.5	18	2.85	6.0	●
2030 045 200	0.015-0.040	3.0	60	4.5	20	2.85	6.0	●
2030 045 250	0.015-0.040	3.0	60	4.5	25	2.85	6.0	●
2030 045 300	0.015-0.038	3.0	70	4.5	30	2.85	6.0	●
2030 045 350	0.015-0.038	3.0	75	4.5	35	2.85	6.0	●
2030 045 400	0.015-0.030	3.0	80	4.5	40	2.85	6.0	●
2040 060 100	0.030-0.075	4.0	55	6.0	10	3.9	6.0	●
2040 060 120	0.030-0.075	4.0	55	6.0	12	3.9	6.0	●
2040 060 160	0.030-0.075	4.0	55	6.0	16	3.9	6.0	●
2040 060 200	0.030-0.070	4.0	60	6.0	20	3.9	6.0	●
2040 060 250	0.030-0.070	4.0	60	6.0	25	3.9	6.0	●
2040 060 300	0.030-0.070	4.0	70	6.0	30	3.9	6.0	●
2040 060 350	0.030-0.068	4.0	75	6.0	35	3.9	6.0	●
2040 060 400	0.030-0.068	4.0	80	6.0	40	3.9	6.0	●

●: Standard items

RHINOSOLID HARDMILL

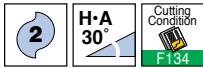
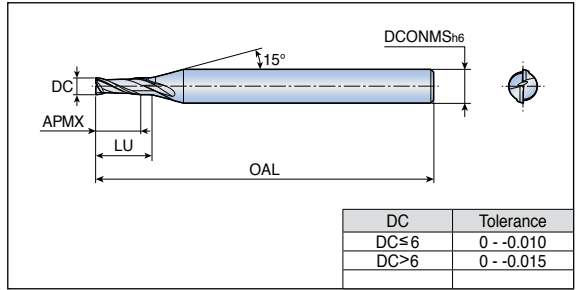


●: Standard items

HSF 2...M

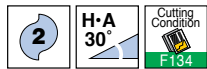
2 flute medium flat

RHINOSOLID HARDMILL

[illegible]

●: Standard items

RHINOSOLID HARDMILL

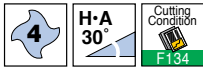
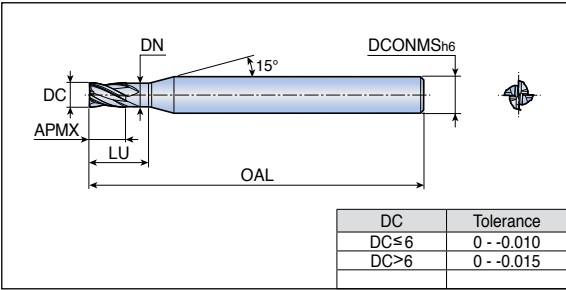


●: Standard items

HSF 4

4 flute long neck flat

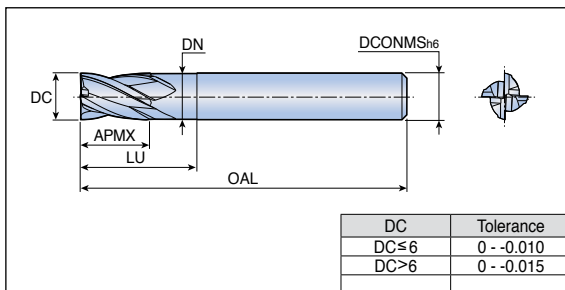
RHINOSOLID **HARD**MILL



Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 4010 015 030	0.009-0.020	1.0	50	1.5	3	0.97	4.0	●
4010 015 040	0.009-0.020	1.0	50	1.5	4	0.97	4.0	●
4010 015 060	0.009-0.018	1.0	50	1.5	6	0.97	4.0	●
4010 015 080	0.009-0.018	1.0	50	1.5	8	0.97	4.0	●
4010 015 100	0.009-0.016	1.0	50	1.5	10	0.97	4.0	●
4015 025 040	0.015-0.025	1.5	50	2.5	4	1.45	4.0	●
4015 025 060	0.015-0.025	1.5	50	2.5	6	1.45	4.0	●
4015 025 080	0.015-0.025	1.5	50	2.5	8	1.45	4.0	●
4015 025 100	0.015-0.025	1.5	50	2.5	10	1.45	4.0	●
4015 025 120	0.013-0.025	1.5	50	2.5	12	1.45	4.0	●
4015 025 160	0.011-0.015	1.5	50	2.5	16	1.45	4.0	●
4020 030 060	0.018-0.040	2.0	50	3.0	6	1.95	4.0	●
4020 030 080	0.018-0.040	2.0	50	3.0	8	1.95	4.0	●
4020 030 100	0.018-0.040	2.0	50	3.0	10	1.95	4.0	●
4020 030 120	0.016-0.025	2.0	50	3.0	12	1.95	4.0	●
4020 030 160	0.015-0.022	2.0	50	3.0	16	1.95	4.0	●
4020 030 200	0.013-0.019	2.0	50	3.0	20	1.95	4.0	●
4030 045 080	0.021-0.060	3.0	55	4.5	8	2.85	6.0	●
4030 045 100	0.021-0.060	3.0	55	4.5	10	2.85	6.0	●
4030 045 120	0.018-0.050	3.0	55	4.5	12	2.85	6.0	●
4030 045 160	0.018-0.045	3.0	55	4.5	16	2.85	6.0	●
4030 045 200	0.015-0.040	3.0	60	4.5	20	2.85	6.0	●
4040 060 100	0.030-0.075	4.0	55	6.0	10	3.90	6.0	●
4040 060 120	0.030-0.075	4.0	55	6.0	12	3.90	6.0	●
4040 060 160	0.030-0.075	4.0	55	6.0	16	3.90	6.0	●
4040 060 200	0.030-0.070	4.0	60	6.0	20	3.90	6.0	●
4040 060 250	0.030-0.070	4.0	60	6.0	25	3.90	6.0	●
4050 080 150	0.056-0.090	5.0	60	8.0	15	4.80	6.0	●
4050 080 300	0.056-0.090	5.0	90	8.0	30	4.80	6.0	●

●: Standard items

RHINOSOLID HARDMILL



H·A
30°

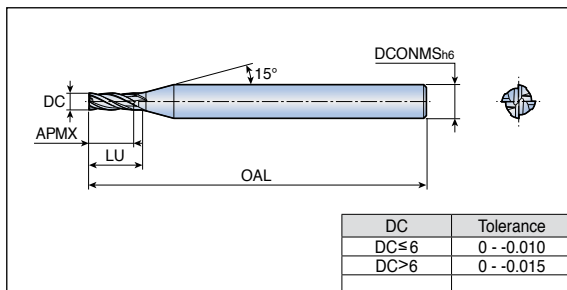


●: Standard items

HSF 4...M

4 flute medium flat

RHINOSOLID **HARD**MILL



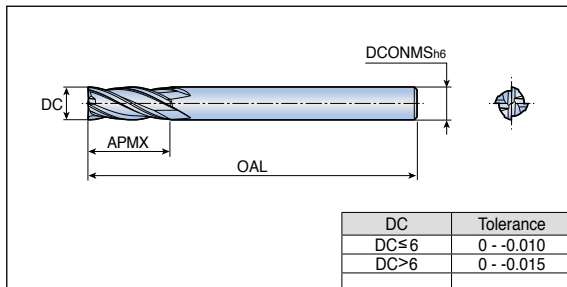
Designation	Feed (mm/tooth)	Dimension (mm)					Grade TT5505
		DC	OAL	APMX	LU	DCONMS	
HSF 4010M 025	0.009-0.020	1.0	50	2.5	3	6.0	●
4012M 030	0.010-0.020	1.2	50	3.0	4	6.0	●
4015M 040	0.015-0.025	1.5	50	4.0	5	6.0	●
4020M 060	0.018-0.040	2.0	50	6.0	7	6.0	●
4025M 070	0.019-0.045	2.5	50	7.0	8.5	6.0	●
4030M 080	0.021-0.060	3.0	60	8.0	9.5	6.0	●
4035M 090	0.026-0.068	3.5	60	9.0	11	6.0	●
4040M 100	0.030-0.075	4.0	60	10.0	12	6.0	●
4050M 130	0.056-0.090	5.0	60	13.0	15.5	6.0	●
4070M 180	0.079-0.110	7.0	65	18.0	22	8.0	●
4090M 220	0.104-0.125	9.0	70	22.0	25	10.0	●
4110M 280	0.122-0.149	11.0	80	28.0	33	12.0	●

●: Standard items

HSF 4...M

4 flute medium flat

RHINOSOLID **HARD**MILL



Designation	Feed (mm/tooth)	Dimension (mm)				Grade TT5505
		DC	OAL	APMX	DCONMS	
HSF 4060M 150	0.067-0.100	6.0	60	15.0	6.0	●
4080M 200	0.090-0.120	8.0	65	20.0	8.0	●
4100M 250	0.117-0.130	10.0	70	25.0	10.0	●
4120M 300	0.126-0.168	12.0	80	30.0	12.0	●

●: Standard items

HSF 6...M



6 flute medium flat

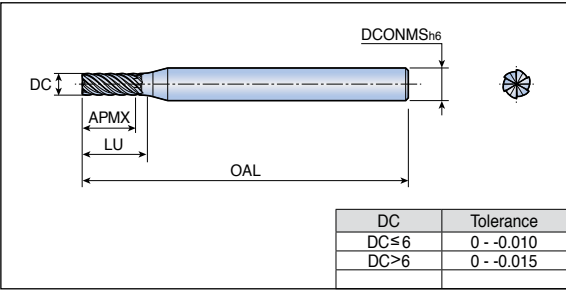


• Finishing

H-A

45°

Cutting Condition



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	OAL	APMX	LU	DCONMS	TT5505
HSF 6030M 080	0.010-0.030	3.0	50	8	10	6.0	●
6040M 100	0.010-0.050	4.0	60	10	12	6.0	●
6050M 150	0.020-0.050	5.0	60	15	17	6.0	●
6060M 150	0.038-0.050	6.0	60	15	-	6.0	●
6080M 200	0.045-0.060	8.0	65	20	-	8.0	●
6100M 220	0.045-0.060	10.0	70	22	-	10.0	●
6120M 260	0.053-0.070	12.0	80	26	-	12.0	●

●: Standard items

HSF 6...XLT



6 flute extra long flat

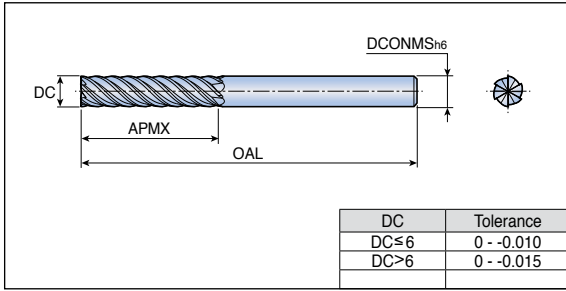


• Finishing

H-A

45°

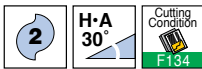
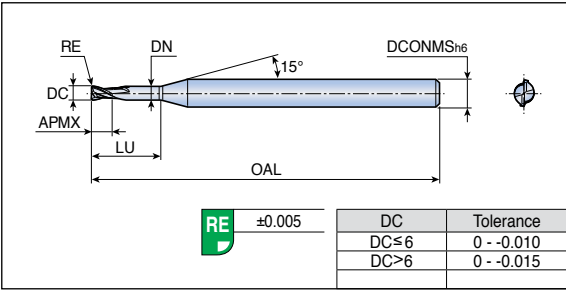
Cutting Condition



Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TT5505
HSF 6050XLT 250	0.03-0.05	5.0	80	25	6.0	●
6060XLT 250	0.03-0.05	6.0	80	25	6.0	●
6080XLT 350	0.04-0.06	8.0	90	35	8.0	●
6100XLT 450	0.04-0.06	10.0	100	45	10.0	●
6120XLT 550	0.05-0.07	12.0	110	55	12.0	●

●: Standard items

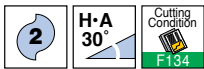
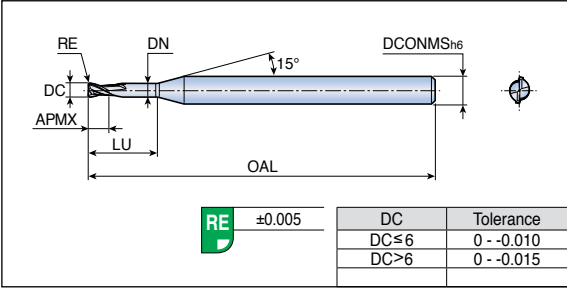
2 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5505
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2003 005 010	0.006-0.010	0.3	0.05	45	0.4	1.0	0.27	4.0	●
2003 005 020	0.006-0.010	0.3	0.05	45	0.4	2.0	0.27	4.0	●
2003 005 030	0.006-0.010	0.3	0.05	45	0.4	3.0	0.27	4.0	●
2004 005 010	0.006-0.010	0.4	0.05	45	0.6	1.0	0.37	4.0	●
2004 005 015	0.006-0.010	0.4	0.05	45	0.6	1.5	0.37	4.0	●
2004 005 025	0.006-0.010	0.4	0.05	45	0.6	2.5	0.37	4.0	●
2004 005 030	0.006-0.010	0.4	0.05	45	0.6	3.0	0.37	4.0	●
2004 005 040	0.006-0.010	0.4	0.05	45	0.6	4.0	0.37	4.0	●
2005 005 010	0.006-0.010	0.5	0.05	45	0.7	1.0	0.45	4.0	●
2005 005 015	0.006-0.010	0.5	0.05	45	0.7	1.5	0.45	4.0	●
2005 005 025	0.006-0.009	0.5	0.05	45	0.7	2.5	0.45	4.0	●
2005 005 030	0.006-0.009	0.5	0.05	45	0.7	3.0	0.45	4.0	●
2005 005 040	0.006-0.008	0.5	0.05	45	0.7	4.0	0.45	4.0	●
2006 005 020	0.008-0.013	0.6	0.05	45	0.9	2.0	0.55	4.0	●
2006 005 040	0.008-0.013	0.6	0.05	45	0.9	4.0	0.55	4.0	●
2006 005 060	0.008-0.013	0.6	0.05	45	0.9	6.0	0.55	4.0	●
2006 010 020	0.008-0.013	0.6	0.10	45	0.9	2.0	0.55	4.0	●
2006 010 040	0.008-0.013	0.6	0.10	45	0.9	4.0	0.55	4.0	●
2006 010 060	0.008-0.013	0.6	0.10	45	0.9	6.0	0.55	4.0	●
2006 020 020	0.008-0.013	0.6	0.20	45	0.9	2.0	0.55	4.0	●
2006 020 040	0.008-0.013	0.6	0.20	45	0.9	4.0	0.55	4.0	●
2006 020 060	0.008-0.013	0.6	0.20	45	0.9	6.0	0.55	4.0	●
2008 005 020	0.007-0.015	0.8	0.05	45	1.2	2.0	0.75	4.0	●
2008 005 040	0.007-0.015	0.8	0.05	45	1.2	4.0	0.75	4.0	●
2008 005 060	0.007-0.015	0.8	0.05	45	1.2	6.0	0.75	4.0	●
2008 005 080	0.007-0.013	0.8	0.05	45	1.2	8.0	0.73	4.0	●
2008 010 020	0.007-0.015	0.8	0.10	45	1.2	2.0	0.75	4.0	●
2008 010 040	0.007-0.015	0.8	0.10	45	1.2	4.0	0.75	4.0	●
2008 010 060	0.007-0.015	0.8	0.10	45	1.2	6.0	0.75	4.0	●
2008 010 080	0.007-0.013	0.8	0.10	45	1.2	8.0	0.73	4.0	●
2008 020 020	0.007-0.015	0.8	0.20	45	1.2	2.0	0.75	4.0	●
2008 020 040	0.007-0.015	0.8	0.20	45	1.2	4.0	0.75	4.0	●
2008 020 060	0.007-0.015	0.8	0.20	45	1.2	6.0	0.75	4.0	●
2008 020 080	0.007-0.013	0.8	0.20	45	1.2	8.0	0.73	4.0	●

●: Standard items

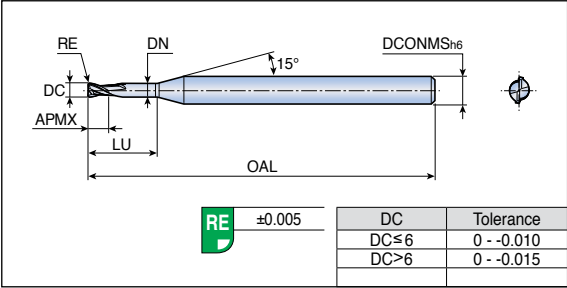
2 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSR 2010 005 030	0.009-0.020	1.0	0.05	50	2.0	3	0.97	4.0	●
2010 005 040	0.009-0.020	1.0	0.05	50	2.0	4	0.97	4.0	●
2010 005 060	0.009-0.018	1.0	0.05	50	2.0	6	0.97	4.0	●
2010 005 080	0.009-0.018	1.0	0.05	50	2.0	8	0.95	4.0	●
2010 005 100	0.009-0.016	1.0	0.05	50	2.0	10	0.95	4.0	●
2010 010 030	0.009-0.020	1.0	0.10	50	2.0	3	0.97	4.0	●
2010 010 040	0.009-0.020	1.0	0.10	50	2.0	4	0.97	4.0	●
2010 010 060	0.009-0.018	1.0	0.10	50	2.0	6	0.97	4.0	●
2010 010 080	0.009-0.018	1.0	0.10	50	2.0	8	0.95	4.0	●
2010 010 100	0.009-0.016	1.0	0.10	50	2.0	10	0.95	4.0	●
2010 020 030	0.009-0.020	1.0	0.20	50	2.0	3	0.97	4.0	●
2010 020 040	0.009-0.020	1.0	0.20	50	2.0	4	0.97	4.0	●
2010 020 060	0.009-0.018	1.0	0.20	50	2.0	6	0.97	4.0	●
2010 020 080	0.009-0.018	1.0	0.20	50	2.0	8	0.95	4.0	●
2010 020 100	0.009-0.016	1.0	0.20	50	2.0	10	0.95	4.0	●
2010 030 030	0.009-0.020	1.0	0.30	50	2.0	3	0.97	4.0	●
2010 030 040	0.009-0.020	1.0	0.30	50	2.0	4	0.97	4.0	●
2010 030 060	0.009-0.018	1.0	0.30	50	2.0	6	0.97	4.0	●
2010 030 080	0.009-0.018	1.0	0.30	50	2.0	8	0.95	4.0	●
2010 030 100	0.009-0.016	1.0	0.30	50	2.0	10	0.95	4.0	●
2012 010 040	0.010-0.020	1.2	0.10	50	2.2	4	1.17	4.0	●
2012 010 060	0.010-0.020	1.2	0.10	50	2.2	6	1.17	4.0	●
2012 010 080	0.010-0.020	1.2	0.10	50	2.2	8	1.15	4.0	●
2012 010 100	0.010-0.019	1.2	0.10	50	2.2	10	1.15	4.0	●
2012 020 040	0.010-0.020	1.2	0.20	50	2.2	4	1.17	4.0	●
2012 020 060	0.010-0.020	1.2	0.20	50	2.2	6	1.17	4.0	●
2012 020 080	0.010-0.020	1.2	0.20	50	2.2	8	1.15	4.0	●
2012 020 100	0.010-0.019	1.2	0.20	50	2.2	10	1.15	4.0	●
2012 030 040	0.010-0.020	1.2	0.30	50	2.2	4	1.17	4.0	●
2012 030 060	0.010-0.020	1.2	0.30	50	2.2	6	1.17	4.0	●
2012 030 080	0.010-0.020	1.2	0.30	50	2.2	8	1.15	4.0	●
2012 030 100	0.010-0.019	1.2	0.30	50	2.2	10	1.15	4.0	●

●: Standard items

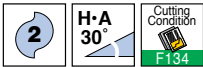
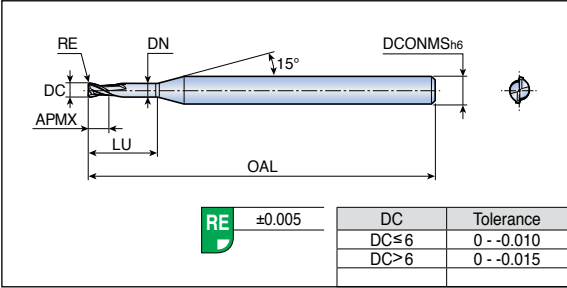
2 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSR 2015 005 060	0.015-0.025	1.5	0.05	50	2.5	6	1.47	4.0	●
2015 005 080	0.015-0.025	1.5	0.05	50	2.5	8	1.45	4.0	●
2015 005 100	0.015-0.025	1.5	0.05	50	2.5	10	1.45	4.0	●
2015 005 120	0.013-0.025	1.5	0.05	50	2.5	12	1.43	4.0	●
2015 010 040	0.015-0.025	1.5	0.10	50	2.5	4	1.47	4.0	●
2015 010 060	0.015-0.025	1.5	0.10	50	2.5	6	1.47	4.0	●
2015 010 080	0.015-0.025	1.5	0.10	50	2.5	8	1.45	4.0	●
2015 010 100	0.015-0.025	1.5	0.10	50	2.5	10	1.45	4.0	●
2015 010 120	0.013-0.025	1.5	0.10	50	2.5	12	1.43	4.0	●
2015 020 040	0.015-0.025	1.5	0.20	50	2.5	4	1.47	4.0	●
2015 020 060	0.015-0.025	1.5	0.20	50	2.5	6	1.47	4.0	●
2015 020 080	0.015-0.025	1.5	0.20	50	2.5	8	1.45	4.0	●
2015 020 100	0.015-0.025	1.5	0.20	50	2.5	10	1.45	4.0	●
2015 020 120	0.013-0.025	1.5	0.20	50	2.5	12	1.43	4.0	●
2015 030 040	0.015-0.025	1.5	0.30	50	2.5	4	1.47	4.0	●
2015 030 060	0.015-0.025	1.5	0.30	50	2.5	6	1.47	4.0	●
2015 030 080	0.015-0.025	1.5	0.30	50	2.5	8	1.45	4.0	●
2015 030 100	0.015-0.025	1.5	0.30	50	2.5	10	1.45	4.0	●
2015 030 120	0.013-0.025	1.5	0.30	50	2.5	12	1.43	4.0	●
2015 050 040	0.015-0.025	1.5	0.50	50	2.5	4	1.47	4.0	●
2015 050 060	0.015-0.025	1.5	0.50	50	2.5	6	1.47	4.0	●
2015 050 080	0.015-0.025	1.5	0.50	50	2.5	8	1.45	4.0	●
2015 050 100	0.015-0.025	1.5	0.50	50	2.5	10	1.45	4.0	●
2015 050 120	0.013-0.025	1.5	0.50	50	2.5	12	1.43	4.0	●
2020 010 060	0.018-0.040	2.0	0.10	50	3.0	6	1.95	4.0	●
2020 010 080	0.018-0.040	2.0	0.10	50	3.0	8	1.95	4.0	●
2020 010 100	0.018-0.040	2.0	0.10	50	3.0	10	1.95	4.0	●
2020 010 120	0.016-0.025	2.0	0.10	50	3.0	12	1.93	4.0	●
2020 010 160	0.015-0.022	2.0	0.10	50	3.0	16	1.91	4.0	●
2020 010 200	0.013-0.019	2.0	0.10	50	3.0	20	1.91	4.0	●

●: Standard items

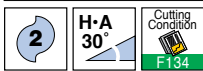
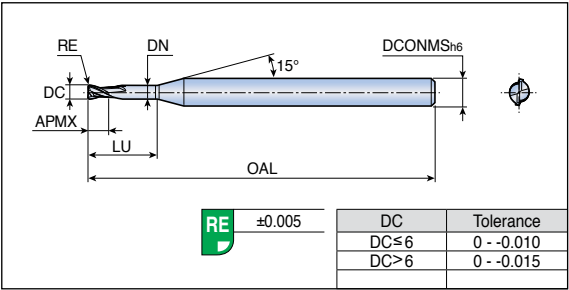
2 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5505
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2020 020 060	0.018-0.040	2.0	0.2	50	3.0	6	1.95	4.0	●
2020 020 080	0.018-0.040	2.0	0.2	50	3.0	8	1.95	4.0	●
2020 020 100	0.018-0.040	2.0	0.2	50	3.0	10	1.95	4.0	●
2020 020 120	0.016-0.025	2.0	0.2	50	3.0	12	1.93	4.0	●
2020 020 160	0.015-0.022	2.0	0.2	50	3.0	16	1.91	4.0	●
2020 020 200	0.013-0.019	2.0	0.2	50	3.0	20	1.91	4.0	●
2020 030 060	0.018-0.040	2.0	0.3	50	3.0	6	1.95	4.0	●
2020 030 080	0.018-0.040	2.0	0.3	50	3.0	8	1.95	4.0	●
2020 030 100	0.018-0.040	2.0	0.3	50	3.0	10	1.95	4.0	●
2020 030 120	0.016-0.025	2.0	0.3	50	3.0	12	1.93	4.0	●
2020 030 160	0.015-0.022	2.0	0.3	50	3.0	16	1.91	4.0	●
2020 030 200	0.013-0.019	2.0	0.3	50	3.0	20	1.91	4.0	●
2020 050 060	0.018-0.040	2.0	0.5	50	3.0	6	1.95	4.0	●
2020 050 080	0.018-0.040	2.0	0.5	50	3.0	8	1.95	4.0	●
2020 050 100	0.018-0.040	2.0	0.5	50	3.0	10	1.95	4.0	●
2020 050 120	0.016-0.025	2.0	0.5	50	3.0	12	1.93	4.0	●
2020 050 160	0.015-0.022	2.0	0.5	50	3.0	16	1.91	4.0	●
2020 050 200	0.013-0.019	2.0	0.5	50	3.0	20	1.91	4.0	●
2025 020 080	0.019-0.045	2.5	0.2	55	3.5	8	2.4	4.0	●
2025 020 100	0.019-0.045	2.5	0.2	55	3.5	10	2.4	4.0	●
2025 020 120	0.017-0.040	2.5	0.2	55	3.5	12	2.4	4.0	●
2025 020 160	0.015-0.030	2.5	0.2	55	3.5	16	2.4	4.0	●
2025 030 080	0.019-0.045	2.5	0.3	55	3.5	8	2.4	4.0	●
2025 030 100	0.019-0.045	2.5	0.3	55	3.5	10	2.4	4.0	●
2025 030 120	0.017-0.040	2.5	0.3	55	3.5	12	2.4	4.0	●
2025 030 160	0.015-0.030	2.5	0.3	55	3.5	16	2.4	4.0	●
2025 050 080	0.019-0.045	2.5	0.5	55	3.5	8	2.4	4.0	●
2025 050 100	0.019-0.045	2.5	0.5	55	3.5	10	2.4	4.0	●
2025 050 120	0.017-0.040	2.5	0.5	55	3.5	12	2.4	4.0	●
2025 050 160	0.015-0.030	2.5	0.5	55	3.5	16	2.4	4.0	●

●: Standard items

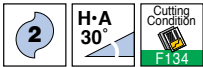
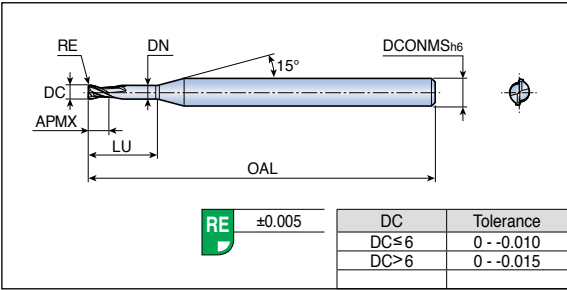
2 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2030 010 080	0.021-0.060	3.0	0.1	55	4.5	8	2.85	6.0	●
2030 010 100	0.021-0.060	3.0	0.1	55	4.5	10	2.85	6.0	●
2030 010 120	0.018-0.050	3.0	0.1	55	4.5	12	2.85	6.0	●
2030 010 160	0.018-0.045	3.0	0.1	55	4.5	16	2.85	6.0	●
2030 010 200	0.015-0.040	3.0	0.1	60	4.5	20	2.85	6.0	●
2030 010 250	0.015-0.040	3.0	0.1	60	4.5	25	2.85	6.0	●
2030 020 080	0.021-0.060	3.0	0.2	55	4.5	8	2.85	6.0	●
2030 020 100	0.021-0.060	3.0	0.2	55	4.5	10	2.85	6.0	●
2030 020 120	0.018-0.050	3.0	0.2	55	4.5	12	2.85	6.0	●
2030 020 160	0.018-0.045	3.0	0.2	55	4.5	16	2.85	6.0	●
2030 020 200	0.015-0.040	3.0	0.2	60	4.5	20	2.85	6.0	●
2030 020 250	0.015-0.040	3.0	0.2	60	4.5	25	2.85	6.0	●
2030 030 080	0.021-0.060	3.0	0.3	55	4.5	8	2.85	6.0	●
2030 030 100	0.021-0.060	3.0	0.3	55	4.5	10	2.85	6.0	●
2030 030 120	0.018-0.050	3.0	0.3	55	4.5	12	2.85	6.0	●
2030 030 160	0.018-0.045	3.0	0.3	55	4.5	16	2.85	6.0	●
2030 030 200	0.015-0.040	3.0	0.3	60	4.5	20	2.85	6.0	●
2030 030 250	0.015-0.040	3.0	0.3	60	4.5	25	2.85	6.0	●
2030 050 080	0.021-0.060	3.0	0.5	55	4.5	8	2.85	6.0	●
2030 050 100	0.021-0.060	3.0	0.5	55	4.5	10	2.85	6.0	●
2030 050 120	0.018-0.050	3.0	0.5	55	4.5	12	2.85	6.0	●
2030 050 160	0.018-0.045	3.0	0.5	55	4.5	16	2.85	6.0	●
2030 050 200	0.015-0.040	3.0	0.5	60	4.5	20	2.85	6.0	●
2030 050 250	0.015-0.040	3.0	0.5	60	4.5	25	2.85	6.0	●
2030 100 080	0.021-0.060	3.0	1.0	55	4.5	8	2.85	6.0	●
2030 100 100	0.021-0.060	3.0	1.0	55	4.5	10	2.85	6.0	●
2030 100 120	0.018-0.050	3.0	1.0	55	4.5	12	2.85	6.0	●
2030 100 160	0.018-0.045	3.0	1.0	55	4.5	16	2.85	6.0	●
2030 100 200	0.015-0.040	3.0	1.0	60	4.5	20	2.85	6.0	●

●: Standard items

2 flute long neck corner radius

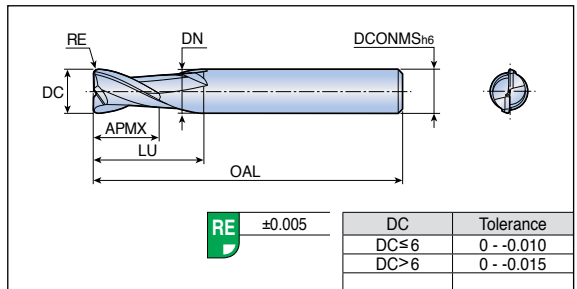


Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5505
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2040 010 100	0.030-0.075	4.0	0.1	55	6.0	10	3.9	6.0	●
2040 010 120	0.030-0.075	4.0	0.1	55	6.0	12	3.9	6.0	●
2040 010 160	0.030-0.075	4.0	0.1	55	6.0	16	3.9	6.0	●
2040 010 200	0.030-0.070	4.0	0.1	60	6.0	20	3.9	6.0	●
2040 010 250	0.030-0.070	4.0	0.1	60	6.0	25	3.9	6.0	●
2040 010 300	0.030-0.070	4.0	0.1	70	6.0	30	3.9	6.0	●
2040 020 100	0.030-0.075	4.0	0.2	55	6.0	10	3.9	6.0	●
2040 020 120	0.030-0.075	4.0	0.2	55	6.0	12	3.9	6.0	●
2040 020 160	0.030-0.075	4.0	0.2	55	6.0	16	3.9	6.0	●
2040 020 200	0.030-0.070	4.0	0.2	60	6.0	20	3.9	6.0	●
2040 020 250	0.030-0.070	4.0	0.2	60	6.0	25	3.9	6.0	●
2040 020 300	0.030-0.070	4.0	0.2	70	6.0	30	3.9	6.0	●
2040 030 100	0.030-0.075	4.0	0.3	55	6.0	10	3.9	6.0	●
2040 030 120	0.030-0.075	4.0	0.3	55	6.0	12	3.9	6.0	●
2040 030 160	0.030-0.075	4.0	0.3	55	6.0	16	3.9	6.0	●
2040 030 200	0.030-0.070	4.0	0.3	60	6.0	20	3.9	6.0	●
2040 030 250	0.030-0.070	4.0	0.3	60	6.0	25	3.9	6.0	●
2040 030 300	0.030-0.070	4.0	0.3	70	6.0	30	3.9	6.0	●
2040 050 100	0.030-0.075	4.0	0.5	55	6.0	10	3.9	6.0	●
2040 050 120	0.030-0.075	4.0	0.5	55	6.0	12	3.9	6.0	●
2040 050 160	0.030-0.075	4.0	0.5	55	6.0	16	3.9	6.0	●
2040 050 200	0.030-0.070	4.0	0.5	60	6.0	20	3.9	6.0	●
2040 050 250	0.030-0.070	4.0	0.5	60	6.0	25	3.9	6.0	●
2040 050 300	0.030-0.070	4.0	0.5	70	6.0	30	3.9	6.0	●
2040 100 100	0.030-0.075	4.0	1.0	55	6.0	10	3.9	6.0	●
2040 100 120	0.030-0.075	4.0	1.0	55	6.0	12	3.9	6.0	●
2040 100 160	0.030-0.075	4.0	1.0	55	6.0	16	3.9	6.0	●
2040 100 200	0.030-0.070	4.0	1.0	60	6.0	20	3.9	6.0	●
2040 100 250	0.030-0.070	4.0	1.0	60	6.0	25	3.9	6.0	●

●: Standard items

HSR 2

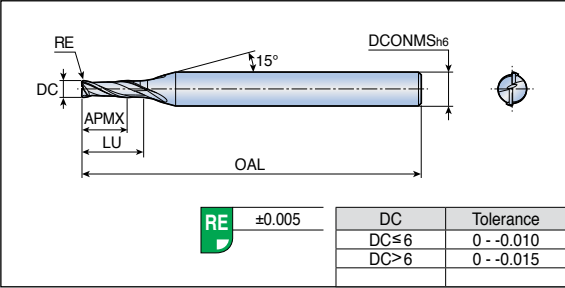
2 flute long neck corner radius

[illegible]

●: Standard items

2 flute medium corner radius





RE	±0.005
DC	Tolerance
DC ≤ 6	0 - -0.010
DC > 6	0 - -0.015





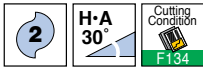
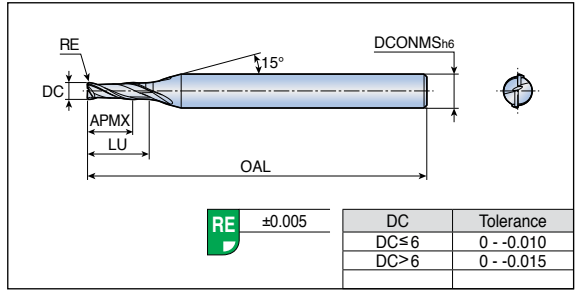


Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	RE	OAL	APMX	LU	DCONMS	
HSR 2003M 002	0.006-0.010	0.3	0.02	45	0.6	0.9	4.0	●
2003M 005	0.006-0.010	0.3	0.05	45	0.6	0.9	4.0	●
2004M 005	0.006-0.010	0.4	0.05	45	0.8	1.1	4.0	●
2004M 010	0.006-0.010	0.4	0.10	45	0.8	1.1	4.0	●
2005M 005	0.006-0.010	0.5	0.05	45	1.0	1.3	4.0	●
2005M 010	0.006-0.010	0.5	0.10	45	1.0	1.3	4.0	●
2006M 005	0.008-0.013	0.6	0.05	45	1.2	1.5	4.0	●
2006M 010	0.008-0.013	0.6	0.10	45	1.2	1.5	4.0	●
2006M 020	0.008-0.013	0.6	0.20	45	1.2	1.5	4.0	●
2008M 005	0.007-0.015	0.8	0.05	45	1.6	2	4.0	●
2008M 010	0.007-0.015	0.8	0.10	45	1.6	2	4.0	●
2008M 020	0.007-0.015	0.8	0.20	45	1.6	2	4.0	●
2010M 005	0.009-0.020	1.0	0.05	50	2.0	3.5	6.0	●
2010M 010	0.009-0.020	1.0	0.10	50	2.0	3.5	6.0	●
2010M 020	0.009-0.020	1.0	0.20	50	2.0	3.5	6.0	●
2010M 030	0.009-0.020	1.0	0.30	50	2.0	3.5	6.0	●
2012M 005	0.010-0.020	1.2	0.05	50	2.5	4	6.0	●
2012M 010	0.010-0.020	1.2	0.10	50	2.5	4	6.0	●
2012M 020	0.010-0.020	1.2	0.20	50	2.5	4	6.0	●
2012M 030	0.010-0.020	1.2	0.30	50	2.5	4	6.0	●
2015M 005	0.015-0.025	1.5	0.05	50	3.0	5	6.0	●
2015M 010	0.015-0.025	1.5	0.10	50	3.0	5	6.0	●
2015M 020	0.015-0.025	1.5	0.20	50	3.0	5	6.0	●
2015M 030	0.015-0.025	1.5	0.30	50	3.0	5	6.0	●
2020M 010	0.018-0.040	2.0	0.10	50	5.0	7	6.0	●
2020M 020	0.018-0.040	2.0	0.20	50	5.0	7	6.0	●
2020M 030	0.018-0.040	2.0	0.30	50	5.0	7	6.0	●
2020M 050	0.018-0.040	2.0	0.50	50	5.0	7	6.0	●
2025M 010	0.019-0.045	2.5	0.10	60	7.0	9	6.0	●
2025M 020	0.019-0.045	2.5	0.20	60	7.0	9	6.0	●
2025M 030	0.019-0.045	2.5	0.30	60	7.0	9	6.0	●
2025M 050	0.019-0.045	2.5	0.50	60	7.0	9	6.0	●

●: Standard items

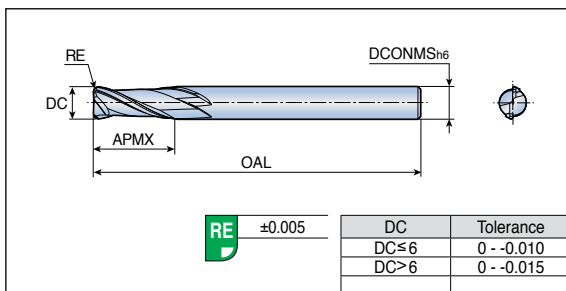
HSR 2...M

2 flute medium corner radius

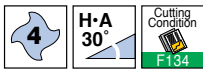
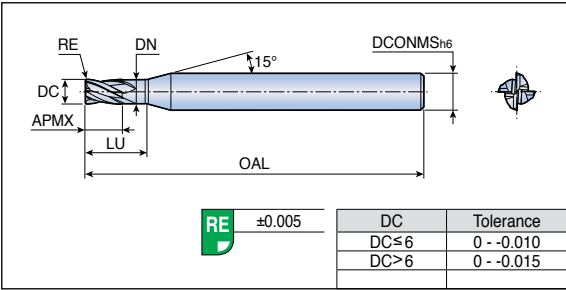
[illegible]

●: Standard items

RHINOSOLID HARDMILL

[illegible]

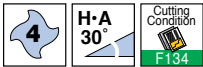
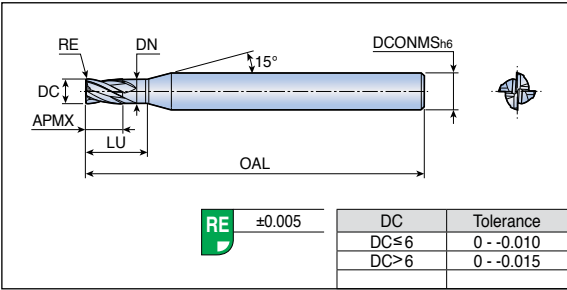
4 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSR 4010 010 030	0.009-0.020	1.0	0.1	50	2.0	3	0.97	4.0	●
4010 010 040	0.009-0.020	1.0	0.1	50	2.0	4	0.97	4.0	●
4010 010 060	0.009-0.018	1.0	0.1	50	2.0	6	0.97	4.0	●
4010 020 030	0.009-0.020	1.0	0.2	50	2.0	3	0.97	4.0	●
4010 020 040	0.009-0.020	1.0	0.2	50	2.0	4	0.97	4.0	●
4010 020 060	0.009-0.018	1.0	0.2	50	2.0	6	0.97	4.0	●
4010 030 030	0.009-0.020	1.0	0.3	50	2.0	3	0.97	4.0	●
4010 030 040	0.009-0.020	1.0	0.3	50	2.0	4	0.97	4.0	●
4010 030 060	0.009-0.018	1.0	0.3	50	2.0	6	0.97	4.0	●
4015 010 040	0.015-0.025	1.5	0.1	50	2.5	4	1.45	4.0	●
4015 010 060	0.015-0.025	1.5	0.1	50	2.5	6	1.45	4.0	●
4015 020 040	0.015-0.025	1.5	0.2	50	2.5	4	1.45	4.0	●
4015 020 060	0.015-0.025	1.5	0.2	50	2.5	6	1.45	4.0	●
4015 030 040	0.015-0.025	1.5	0.3	50	2.5	4	1.45	4.0	●
4015 030 060	0.015-0.025	1.5	0.3	50	2.5	6	1.45	4.0	●
4020 010 060	0.018-0.040	2.0	0.1	50	3.0	6	1.95	4.0	●
4020 010 080	0.018-0.040	2.0	0.1	50	3.0	8	1.95	4.0	●
4020 010 100	0.018-0.040	2.0	0.1	50	3.0	10	1.95	4.0	●
4020 010 120	0.016-0.025	2.0	0.1	50	3.0	12	1.95	4.0	●
4020 010 160	0.015-0.022	2.0	0.1	50	3.0	16	1.95	4.0	●
4020 020 060	0.018-0.040	2.0	0.2	50	3.0	6	1.95	4.0	●
4020 020 080	0.018-0.040	2.0	0.2	50	3.0	8	1.95	4.0	●
4020 020 100	0.018-0.040	2.0	0.2	50	3.0	10	1.95	4.0	●
4020 020 120	0.016-0.025	2.0	0.2	50	3.0	12	1.95	4.0	●
4020 020 160	0.015-0.022	2.0	0.2	50	3.0	16	1.95	4.0	●
4020 030 060	0.018-0.040	2.0	0.3	50	3.0	6	1.95	4.0	●
4020 030 080	0.018-0.040	2.0	0.3	50	3.0	8	1.95	4.0	●
4020 030 100	0.018-0.040	2.0	0.3	50	3.0	10	1.95	4.0	●
4020 030 120	0.016-0.025	2.0	0.3	50	3.0	12	1.95	4.0	●
4020 030 160	0.015-0.022	2.0	0.3	50	3.0	16	1.95	4.0	●
4020 050 060	0.018-0.040	2.0	0.5	50	3.0	6	1.95	4.0	●
4020 050 080	0.018-0.040	2.0	0.5	50	3.0	8	1.95	4.0	●
4020 050 100	0.018-0.040	2.0	0.5	50	3.0	10	1.95	4.0	●
4020 050 120	0.016-0.025	2.0	0.5	50	3.0	12	1.95	4.0	●
4020 050 160	0.015-0.022	2.0	0.5	50	3.0	16	1.95	4.0	●

●: Standard items

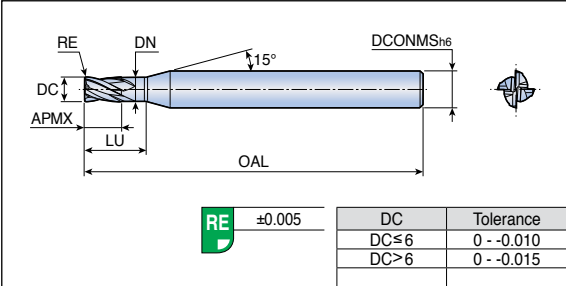
4 flute long neck corner radius



Designation	Feed (mm/tooth)	Dimension (mm)							Grade TT5505
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 4030 010 080	0.021-0.060	3.0	0.1	55	4	8	2.85	6.0	●
4030 010 100	0.021-0.060	3.0	0.1	55	4	10	2.85	6.0	●
4030 010 120	0.018-0.050	3.0	0.1	55	4	12	2.85	6.0	●
4030 010 160	0.018-0.045	3.0	0.1	55	4	16	2.85	6.0	●
4030 010 200	0.015-0.040	3.0	0.1	60	4	20	2.85	6.0	●
4030 010 250	0.015-0.040	3.0	0.1	60	4	25	2.85	6.0	●
4030 020 080	0.021-0.060	3.0	0.2	55	4	8	2.85	6.0	●
4030 020 100	0.021-0.060	3.0	0.2	55	4	10	2.85	6.0	●
4030 020 120	0.018-0.050	3.0	0.2	55	4	12	2.85	6.0	●
4030 020 160	0.018-0.045	3.0	0.2	55	4	16	2.85	6.0	●
4030 020 200	0.015-0.040	3.0	0.2	60	4	20	2.85	6.0	●
4030 020 250	0.015-0.040	3.0	0.2	60	4	25	2.85	6.0	●
4030 030 080	0.021-0.060	3.0	0.3	55	4	8	2.85	6.0	●
4030 030 100	0.021-0.060	3.0	0.3	55	4	10	2.85	6.0	●
4030 030 120	0.018-0.050	3.0	0.3	55	4	12	2.85	6.0	●
4030 030 160	0.018-0.045	3.0	0.3	55	4	16	2.85	6.0	●
4030 030 200	0.015-0.040	3.0	0.3	60	4	20	2.85	6.0	●
4030 030 250	0.015-0.040	3.0	0.3	60	4	25	2.85	6.0	●
4030 050 080	0.021-0.060	3.0	0.5	55	4	8	2.85	6.0	●
4030 050 100	0.021-0.060	3.0	0.5	55	4	10	2.85	6.0	●
4030 050 120	0.018-0.050	3.0	0.5	55	4	12	2.85	6.0	●
4030 050 160	0.018-0.045	3.0	0.5	55	4	16	2.85	6.0	●
4030 050 200	0.015-0.040	3.0	0.5	60	4	20	2.85	6.0	●
4030 050 250	0.015-0.040	3.0	0.5	60	4	25	2.85	6.0	●
4030 100 080	0.021-0.060	3.0	1.0	55	4	8	2.85	6.0	●
4030 100 100	0.021-0.060	3.0	1.0	55	4	10	2.85	6.0	●
4030 100 120	0.018-0.050	3.0	1.0	55	4	12	2.85	6.0	●
4030 100 160	0.018-0.045	3.0	1.0	55	4	16	2.85	6.0	●
4030 100 200	0.015-0.040	3.0	1.0	60	4	20	2.85	6.0	●

●: Standard items

4 flute long neck corner radius

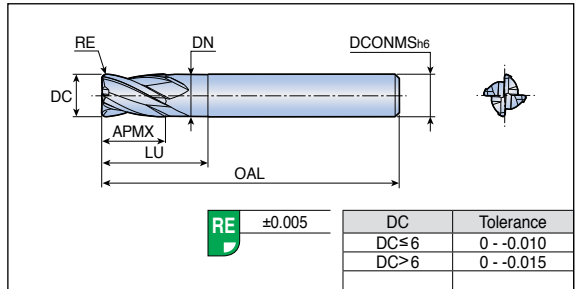


H-A
30°

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505
HSR 4040 010 100	0.030-0.075	4.0	0.1	55	6	10	3.9	6.0	●
4040 010 120	0.030-0.075	4.0	0.1	55	6	12	3.9	6.0	●
4040 010 160	0.030-0.075	4.0	0.1	55	6	16	3.9	6.0	●
4040 010 200	0.030-0.070	4.0	0.1	60	6	20	3.9	6.0	●
4040 010 250	0.030-0.070	4.0	0.1	60	6	25	3.9	6.0	●
4040 010 300	0.030-0.070	4.0	0.1	70	6	30	3.9	6.0	●
4040 020 100	0.030-0.075	4.0	0.2	55	6	10	3.9	6.0	●
4040 020 120	0.030-0.075	4.0	0.2	55	6	12	3.9	6.0	●
4040 020 160	0.030-0.075	4.0	0.2	55	6	16	3.9	6.0	●
4040 020 200	0.030-0.070	4.0	0.2	60	6	20	3.9	6.0	●
4040 020 250	0.030-0.070	4.0	0.2	60	6	25	3.9	6.0	●
4040 020 300	0.030-0.070	4.0	0.2	70	6	30	3.9	6.0	●
4040 030 100	0.030-0.075	4.0	0.3	55	6	10	3.9	6.0	●
4040 030 120	0.030-0.075	4.0	0.3	55	6	12	3.9	6.0	●
4040 030 160	0.030-0.075	4.0	0.3	55	6	16	3.9	6.0	●
4040 030 200	0.030-0.070	4.0	0.3	60	6	20	3.9	6.0	●
4040 030 250	0.030-0.070	4.0	0.3	60	6	25	3.9	6.0	●
4040 030 300	0.030-0.070	4.0	0.3	70	6	30	3.9	6.0	●
4040 050 100	0.030-0.075	4.0	0.5	55	6	10	3.9	6.0	●
4040 050 120	0.030-0.075	4.0	0.5	55	6	12	3.9	6.0	●
4040 050 160	0.030-0.075	4.0	0.5	55	6	16	3.9	6.0	●
4040 050 200	0.030-0.070	4.0	0.5	60	6	20	3.9	6.0	●
4040 050 250	0.030-0.070	4.0	0.5	60	6	25	3.9	6.0	●
4040 050 300	0.030-0.070	4.0	0.5	70	6	30	3.9	6.0	●
4040 100 100	0.030-0.075	4.0	1.0	55	6	10	3.9	6.0	●
4040 100 120	0.030-0.075	4.0	1.0	55	6	12	3.9	6.0	●
4040 100 160	0.030-0.075	4.0	1.0	55	6	16	3.9	6.0	●
4040 100 200	0.030-0.070	4.0	1.0	60	6	20	3.9	6.0	●
4040 100 250	0.030-0.070	4.0	1.0	60	6	25	3.9	6.0	●

●: Standard items

RHINOSOLID HARDMILL



H·A
30°



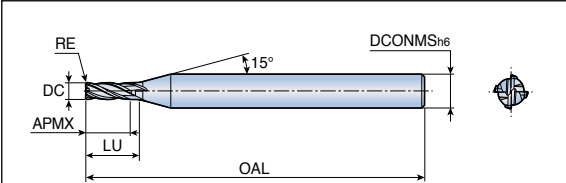
●: Standard items

HSR 4...M



4 flute medium corner radius







H·A
30°



F134

RE

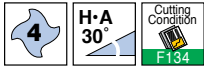
±0.005

DC	Tolerance
DC≤6	0 - -0.010
DC>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	RE	OAL	APMX	LU	DCONMS	
HSR 4010M 005	0.009-0.020	1.0	0.05	50	2.0	2.5	6.0	●
4010M 010	0.009-0.020	1.0	0.1	50	2.0	2.5	6.0	●
4010M 020	0.009-0.020	1.0	0.2	50	2.0	2.5	6.0	●
4010M 030	0.009-0.020	1.0	0.3	50	2.0	2.5	6.0	●
4012M 005	0.010-0.020	1.2	0.05	50	2.5	3	6.0	●
4012M 010	0.010-0.020	1.2	0.1	50	2.5	3	6.0	●
4012M 020	0.010-0.020	1.2	0.2	50	2.5	3	6.0	●
4012M 030	0.010-0.020	1.2	0.3	50	2.5	3	6.0	●
4015M 005	0.015-0.025	1.5	0.05	50	3.0	3.5	6.0	●
4015M 010	0.015-0.025	1.5	0.1	50	3.0	3.5	6.0	●
4015M 020	0.015-0.025	1.5	0.2	50	3.0	3.5	6.0	●
4015M 030	0.015-0.025	1.5	0.3	50	3.0	3.5	6.0	●
4020M 010	0.018-0.040	2.0	0.1	50	5.0	6	6.0	●
4020M 020	0.018-0.040	2.0	0.2	50	5.0	6	6.0	●
4020M 030	0.018-0.040	2.0	0.3	50	5.0	6	6.0	●
4020M 050	0.018-0.040	2.0	0.5	50	5.0	6	6.0	●
4025M 010	0.019-0.045	2.5	0.1	60	7.0	8	6.0	●
4025M 020	0.019-0.045	2.5	0.2	60	7.0	8	6.0	●
4025M 030	0.019-0.045	2.5	0.3	60	7.0	8	6.0	●
4025M 050	0.019-0.045	2.5	0.5	60	7.0	8	6.0	●
4030M 010	0.021-0.060	3.0	0.1	60	8.0	9.5	6.0	●
4030M 020	0.021-0.060	3.0	0.2	60	8.0	9.5	6.0	●
4030M 030	0.021-0.060	3.0	0.3	60	8.0	9.5	6.0	●
4030M 050	0.021-0.060	3.0	0.5	60	8.0	9.5	6.0	●
4040M 010	0.030-0.075	4.0	0.1	70	10.0	12	6.0	●
4040M 020	0.030-0.075	4.0	0.2	70	10.0	12	6.0	●
4040M 030	0.030-0.075	4.0	0.3	70	10.0	12	6.0	●
4040M 050	0.030-0.075	4.0	0.5	70	10.0	12	6.0	●
4040M 100	0.030-0.075	4.0	1.0	70	10.0	12	6.0	●

●: Standard items

RHINOSOLID HARDMILL



●: Standard items

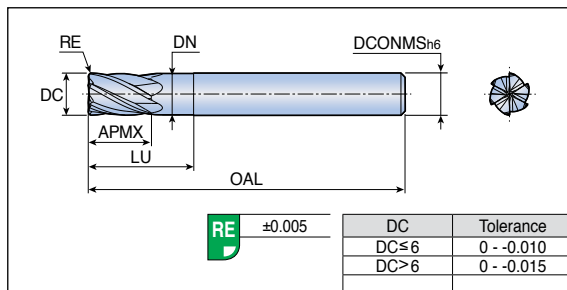
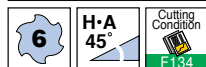
HSR 6

RHINOSOLID HARDMILL

6 flute long neck corner radius



• Finishing



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 6060 050 150	0.038-0.050	6.0	0.5	60	9	15	5.8	6.0	●
6060 100 150	0.038-0.050	6.0	1.0	60	9	15	5.8	6.0	●
6080 050 200	0.045-0.060	8.0	0.5	70	12	20	7.8	8.0	●
6080 100 200	0.045-0.060	8.0	1.0	70	12	20	7.8	8.0	●
6100 050 250	0.045-0.060	10.0	0.5	75	15	25	9.8	10.0	●
6100 100 250	0.045-0.060	10.0	1.0	75	15	25	9.8	10.0	●
6120 050 300	0.053-0.070	12.0	0.5	85	18	30	11.6	12.0	●
6120 100 300	0.053-0.070	12.0	1.0	85	18	30	11.6	12.0	●

●: Standard items

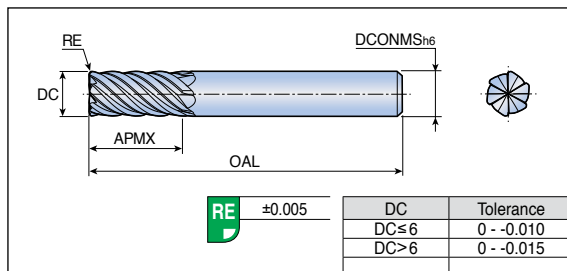
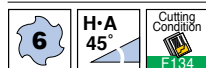
HSR 6...M

RHINOSOLID HARDMILL

6 flute medium corner radius



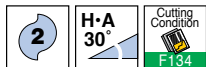
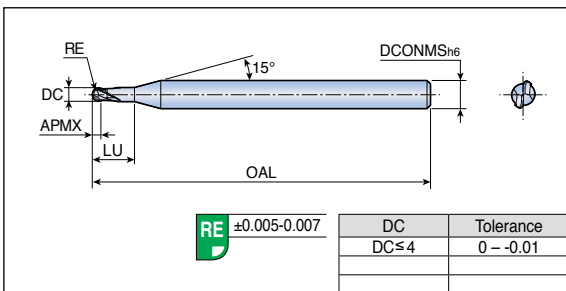
• Finishing



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
HSR 6060M 050	0.038-0.050	6.0	0.5	60	15	6.0	●
6060M 100	0.038-0.050	6.0	1.0	60	15	6.0	●
6080M 050	0.045-0.060	8.0	0.5	65	20	8.0	●
6080M 100	0.045-0.060	8.0	1.0	65	20	8.0	●
6100M 050	0.045-0.060	10.0	0.5	70	22	10.0	●
6100M 100	0.045-0.060	10.0	1.0	70	22	10.0	●
6100M 150	0.045-0.060	10.0	1.5	70	22	10.0	●
6120M 050	0.053-0.070	12.0	0.5	80	26	12.0	●
6120M 100	0.053-0.070	12.0	1.0	80	26	12.0	●
6120M 150	0.053-0.070	12.0	1.5	80	26	12.0	●

●: Standard items

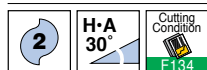
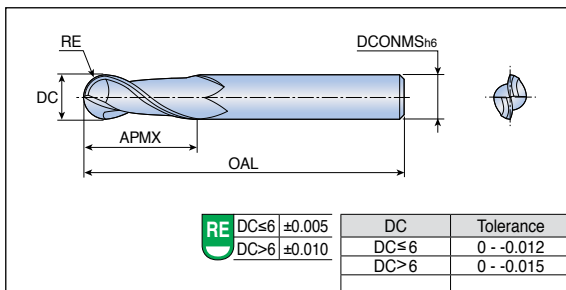
2 flute CBN ball

[illegible]

●: Standard items

SBE 2...S

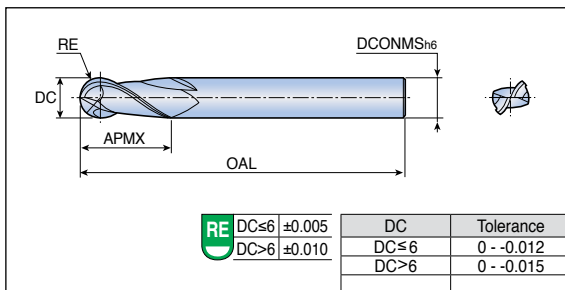
2 flute short ball

[illegible]

- Weldon shank is available on request (Ordering example: SBEW 2...S)

●: Standard items

2 flute medium ball

[illegible]

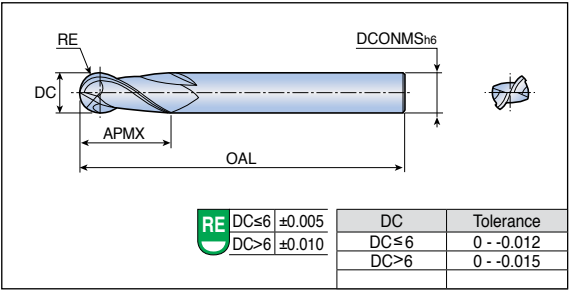
- Weldon shank is available on request (Ordering example: SBEW 2...)

●: Standard items

SBE 2...T



2 flute medium ball



2

H-A
30°

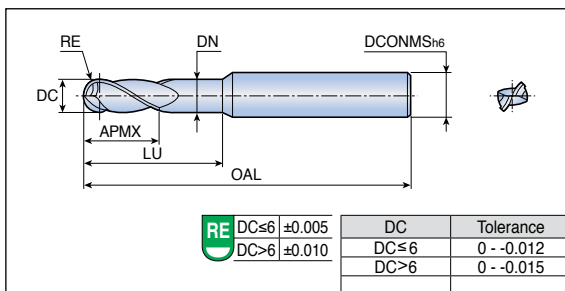
Cutting
Condition
F134

Designation	Dimension (mm)					Grade
	DC	RE	OAL	APMX	DCONMS	TT5515
SBE 2010T	1.0	0.5	50	1.5	4	●
2010T-6	1.0	0.5	50	1.5	6	●
2012T	1.2	0.6	50	1.8	4	●
2015T	1.5	0.75	50	2.3	4	●
2015T-5X70	1.5	0.75	70	5.0	6	●
2015T-6	1.5	0.75	50	2.3	6	●
2016T	1.6	0.8	50	2.4	4	●
2020T	2.0	1.0	50	3.0	4	●
2020T-6	2.0	1.0	50	3.0	6	●
2020T-7X70	2.0	1.0	70	7.0	6	●
2025T	2.5	1.25	50	3.8	4	●
2025T-6	2.5	1.25	50	3.8	6	●
2030T	3.0	1.5	70	8.0	6	●
2030T-10X70	3.0	1.5	70	10.0	6	●
2035T	3.5	1.75	70	8.0	6	●
2040T	4.0	2.0	70	8.0	6	●
2040T-12X70	4.0	2.0	70	12.0	6	●
2045T	4.5	2.25	80	8.0	6	●
2050T	5.0	2.5	80	12.0	6	●
2050T-15X80	5.0	2.5	80	15.0	6	●
2060T	6.0	3.0	80	12.0	6	●
2060T-15X80	6.0	3.0	80	15.0	6	●
2065T	6.5	3.25	90	12.0	8	●
2070T	7.0	3.5	90	15.0	8	●
2080T	8.0	4.0	90	15.0	8	●
2080T-20X90	8.0	4.0	90	20.0	8	●
2090T	9.0	4.5	100	20.0	10	●
2100T	10.0	5.0	100	20.0	10	●
2100T-25X100	10.0	5.0	100	25.0	10	●
2110T	11.0	5.5	110	25.0	12	●
2120T	12.0	6.0	110	25.0	12	●
2120T-30X100	12.0	6.0	100	30.0	12	●
2140T	14.0	7.0	120	30.0	12	●
2150T	15.0	7.5	125	35.0	16	●
2160T	16.0	8.0	125	35.0	16	●
2180T	18.0	9.0	150	40.0	20	●
2200T	20.0	10.0	150	40.0	20	●

● Weldon shank is available on request (Ordering example: SBEW 2...T)

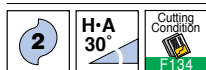
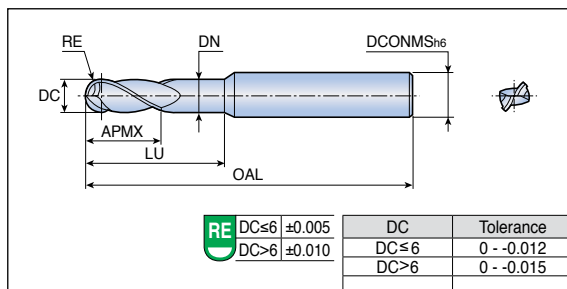
● Standard items

2 flute long ball

[illegible]

●: Standard items

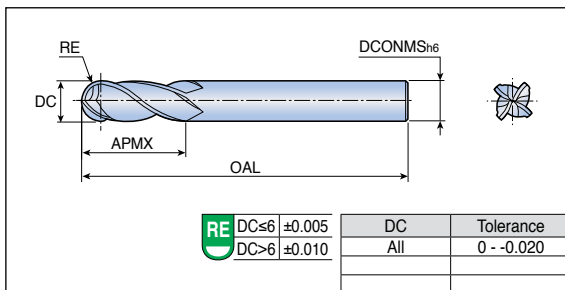
2 flute long ball



- **WU:** Without under cut

●: Standard items

RHINOSOLID APEX MILL

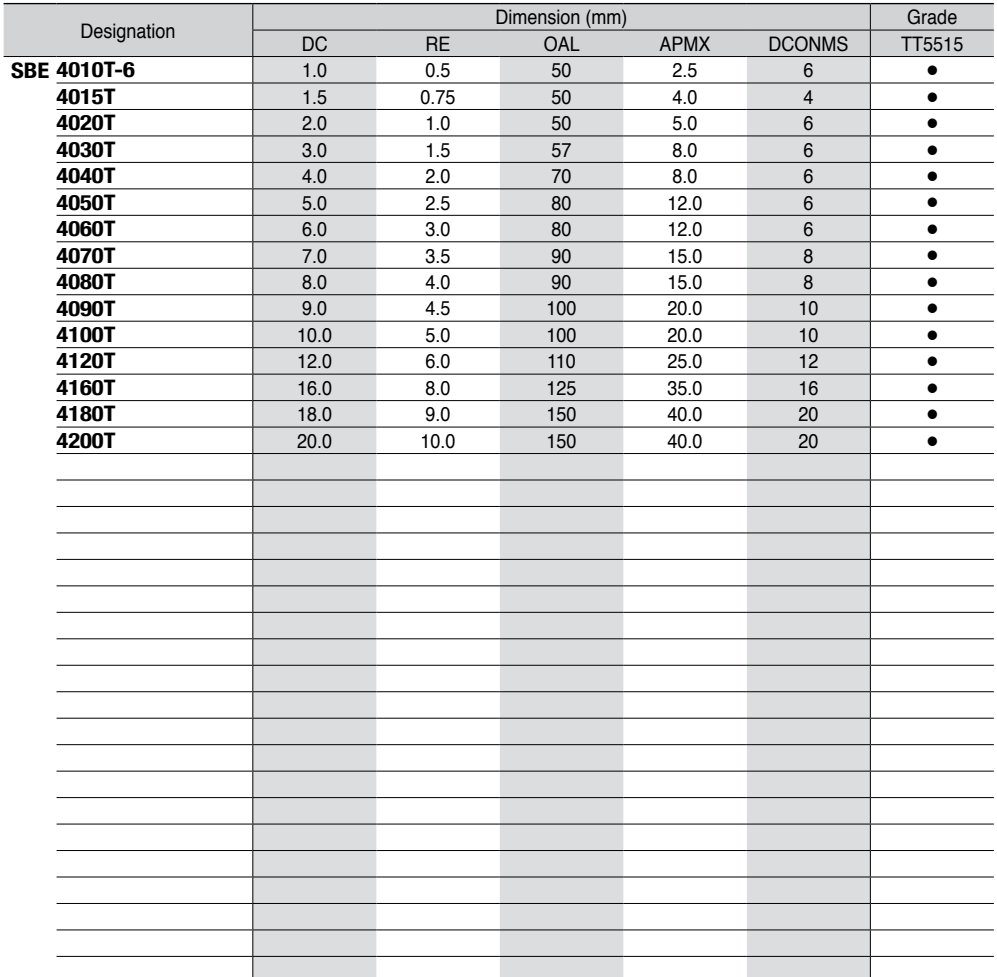
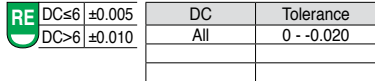


H·A
30°



●: Standard items

4 flute medium ball



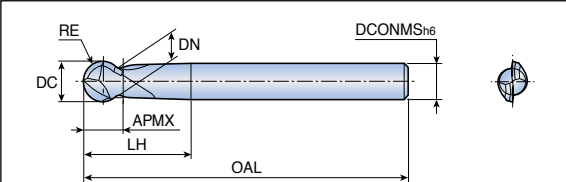
●: Standard items

BES 2...T



2 flute spherical ball







H·A
30°


 ±0.01

DC	Tolerance
All	0 - -0.030

Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LH	DN	DCONMS	TT5515
BES 2030T	3	1.5	80	3.3	28.5	2.52	6	●
2040T	4	2.0	80	4.1	28.5	3.35	6	●
2050T	5	2.5	80	5.4	38.0	4.19	6	●
2060T	6	3.0	100	6.1	28.0	5.03	6	●
2080T	8	4.0	100	8.2	33.0	6.71	8	●
2100T	10	5.0	100	9.7	40.0	8.39	10	●
2120T	12	6.0	110	12.3	49.0	10.06	12	●
2160T	16	8.0	155	15.4	58.0	13.42	16	●

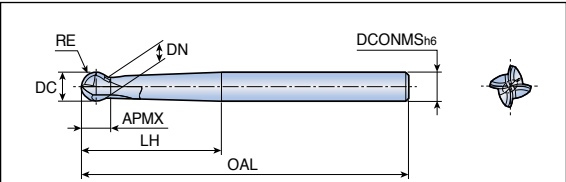
●: Standard items

BES 4...T



4 flute spherical ball







H·A
30°


 ±0.01

DC	Tolerance
All	0 - -0.030

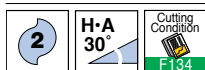
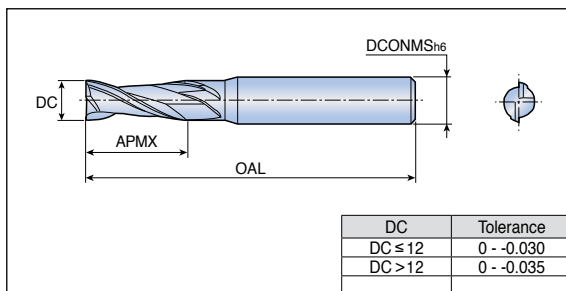
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LH	DN	DCONMS	TT5515
BES 4030T	3	1.5	80	3.3	28.5	2.52	6	●
4040T	4	2.0	80	4.1	28.5	3.35	6	●
4050T	5	2.5	80	5.4	38.0	4.19	6	●
4060T	6	3.0	100	6.1	28.0	5.03	6	●
4080T	8	4.0	100	8.2	33.0	6.71	8	●
4100T	10	5.0	100	9.7	40.0	8.39	10	●
4120T	12	6.0	110	12.3	49.0	10.06	12	●

●: Standard items

TSE 2...M

RHINOSOLID APEX MILL

2 flute medium flat

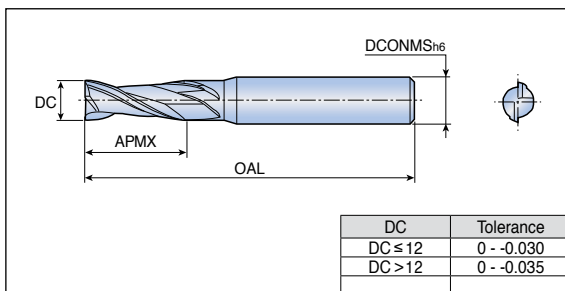


Designation	Feed (mm/tooth)	Dimension (mm)				Grades	
		DC	OAL	APMX	DCONMS	TT5515	TT5525
TSE 2010M-4	0.008-0.030	1.0	40	3	4	●	●
2010M	0.008-0.030	1.0	42	3	6	●	●
2012M	0.008-0.030	1.2	42	3	6	●	
2015M-4	0.008-0.030	1.5	40	4	4	●	●
2015M	0.008-0.030	1.5	42	4	6	●	●
2020M-4	0.010-0.030	2.0	40	6	4	●	●
2020M	0.010-0.030	2.0	42	6	6	●	●
2025M-4	0.010-0.030	2.5	40	8	4	●	●
2025M	0.010-0.030	2.5	42	8	6	●	●
2030M	0.010-0.030	3.0	57	10	6	●	●
2035M-4	0.010-0.030	3.5	50	12	4	●	
2035M	0.010-0.030	3.5	47	10	6	●	●
2040M-4	0.010-0.050	4.0	50	12	4	●	●
2040M	0.010-0.050	4.0	57	12	6	●	●
2045M	0.010-0.050	4.5	57	14	6	●	●
2050M-5	0.015-0.060	5.0	50	14	5	●	●
2050M	0.015-0.060	5.0	57	14	6	●	●
2055M	0.015-0.060	5.5	57	16	6	●	●
2060M	0.020-0.060	6.0	57	16	6	●	●
2065M-7	0.020-0.060	6.5	60	20	7		●
2065M	0.020-0.060	6.5	60	20	8	●	●
2070M	0.030-0.070	7.0	60	20	8	●	●
2075M	0.030-0.070	7.5	63	20	8	●	●
2080M	0.030-0.100	8.0	63	20	8	●	●
2085M	0.030-0.100	8.5	72	22	10	●	
2090M	0.030-0.100	9.0	68	25	10	●	●
2095M	0.030-0.100	9.5	72	24	10	●	●
2100M(25X68)	0.030-0.120	10.0	68	25	10	●	●
2100M	0.030-0.120	10.0	72	22	10	●	●
2105M	0.030-0.120	10.5	76	26	12	●	●
2110M	0.030-0.120	11.0	76	30	12	●	●
2115M	0.030-0.120	11.5	83	30	12	●	
2120M(30X76)	0.030-0.120	12.0	76	30	12	●	
2120M	0.030-0.120	12.0	83	25	12	●	●
2130M	0.030-0.132	13.0	85	35	14	●	●

• Weldon shank is available on request (Ordering example: TSEW 2...M)

●: Standard items

RHINOSOLID APEX MILL



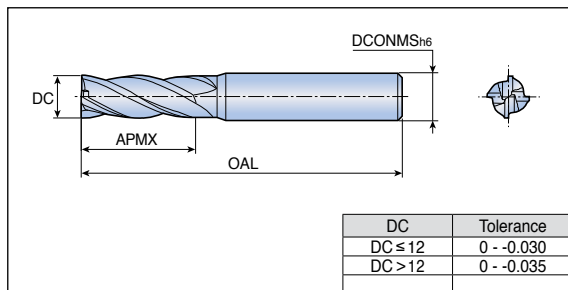
- Weldon shank is available on request (Ordering example: TSEW 2...M)

●: Standard items

TSE 4...M

4 flute medium flat

RHINOSOLID APEX MILL

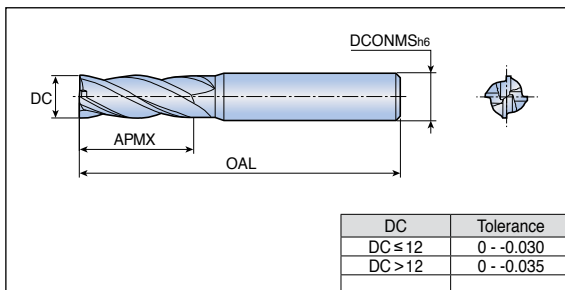


Designation	Feed (mm/tooth)	Dimension (mm)				Grades	
		DC	OAL	APMX	DCONMS	TT5515	TT5525
TSE 4010M	0.005-0.010	1.0	42	2.5	6	●	●
4015M	0.005-0.012	1.5	42	4	6	●	●
4020M	0.008-0.017	2.0	42	6	6	●	●
4025M-4	0.008-0.017	2.5	40	8	4	●	●
4025M	0.008-0.017	2.5	42	8	6	●	●
4030M	0.009-0.020	3.0	57	10	6	●	●
4035M-4	0.010-0.028	3.5	50	12	4	●	
4035M	0.010-0.028	3.5	47	10	6	●	●
4040M-4	0.010-0.042	4.0	50	12	4	●	●
4040M	0.010-0.042	4.0	57	12	6	●	●
4045M	0.010-0.042	4.5	57	12	6	●	
4050M	0.020-0.059	5.0	57	14	6	●	●
4055M	0.020-0.059	5.5	57	14	6	●	●
4060M	0.020-0.075	6.0	57	16	6	●	●
4065M	0.020-0.075	6.5	60	20	8	●	●
4070M	0.020-0.075	7.0	60	20	8	●	●
4075M	0.020-0.075	7.5	60	20	8	●	●
4080M	0.030-0.100	8.0	63	20	8	●	●
4085M	0.030-0.100	8.5	68	25	10	●	●
4090M	0.030-0.100	9.0	68	25	10	●	●
4095M	0.030-0.100	9.5	68	25	10	●	●
4100M(25X68)	0.030-0.120	10.0	68	25	10	●	●
4100M	0.030-0.120	10.0	72	22	10	●	●
4105M	0.030-0.120	10.5	76	30	12	●	●
4110M	0.030-0.120	11.0	76	30	12	●	●
4115M	0.030-0.120	11.5	76	30	12	●	●
4120M(30X76)	0.030-0.136	12.0	76	30	12	●	●
4120M	0.030-0.136	12.0	83	25	12	●	●
4130M	0.030-0.136	13.0	85	35	14	●	●
4140M-14	0.030-0.136	14.0	83	25	14	●	●
4140M	0.030-0.136	14.0	85	35	16		●
4140M(35X85)	0.030-0.136	14.0	85	35	16	●	
4150M	0.040-0.140	15.0	92	32	16	●	●
4160M(40X90)	0.040-0.146	16.0	90	40	16	●	●
4160M	0.040-0.146	16.0	92	32	16	●	●

• Weldon shank is available on request (Ordering example: TSEW 4...M)

●: Standard items

RHINOSOLID APEX MILL



H·A
30°

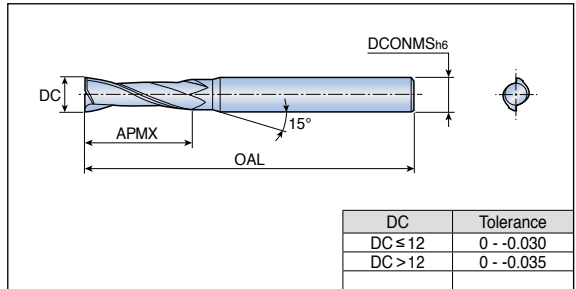


- Weldon shank is available on request (Ordering example: TSEW 4...M)

●: Standard items

2 flute long flat

2 flute long flat

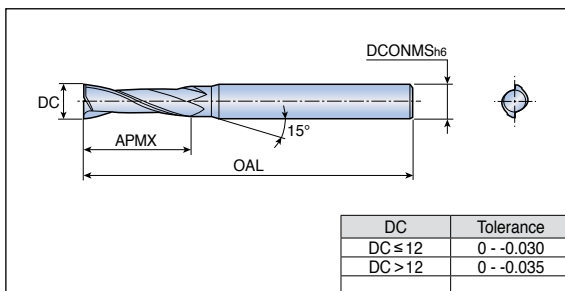


DC	Tolerance
DC ≤ 12	0 - -0.030
DC > 12	0 - -0.035

[illegible]

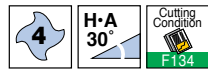
●: Standard items

RHINOSOLID APEX MILL



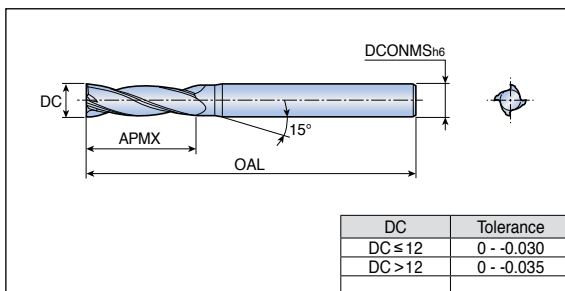
●: Standard items

4 flute long flat



●: Standard items

RHINOSOLID APEX MILL



H·A
30°

[illegible]

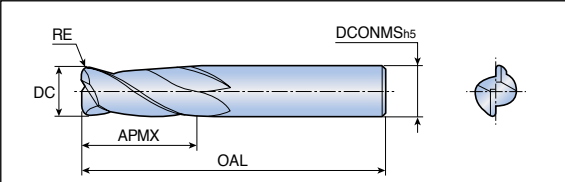
●: Standard items

HES 2...T-R



2 flute medium corner radius







H-A
30°


RE

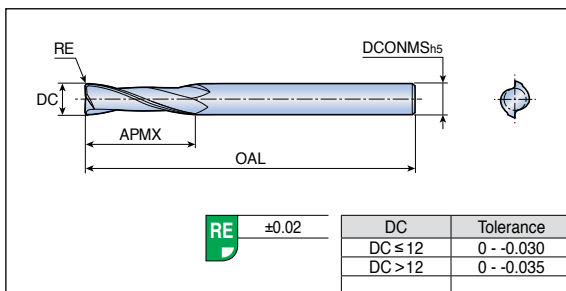
±0.02

DC	Tolerance
DC ≤ 12	0 - -0.030
DC > 12	0 - -0.035

Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		DC	RE	OAL	APMX	DCONMS	TT5515	TT5525
HES 2030T-R0.5	0.010-0.030	3	0.5	47	10	6	●	●
2040T-R0.5	0.010-0.050	4	0.5	47	12	6	●	●
2050T-R0.5	0.020-0.060	5	0.5	52	15	6	●	●
2060T-R0.5	0.020-0.060	6	0.5	52	15	6	●	●
2060T-R1.0	0.020-0.060	6	1.0	52	15	6	●	●
2080T-R0.5	0.030-0.100	8	0.5	60	20	8	●	●
2080T-R1.0	0.030-0.100	8	1.0	60	20	8	●	●
2080T-R1.5	0.030-0.100	8	1.5	60	20	8	●	●
2080T-R2.0	0.030-0.100	8	2.0	60	20	8	●	
2100T-R0.5	0.030-0.120	10	0.5	68	25	10	●	●
2100T-R1.0	0.030-0.120	10	1.0	68	25	10	●	
2100T-R1.5	0.030-0.120	10	1.5	68	25	10	●	
2100T-R2.0	0.030-0.120	10	2.0	68	25	10	●	
2100T-R2.5	0.030-0.120	10	2.5	68	25	10	●	●
2100T-R3.0	0.030-0.120	10	3.0	68	25	10	●	
2120T-R0.5	0.030-0.120	12	0.5	76	30	12	●	
2120T-R1.0	0.030-0.120	12	1.0	76	30	12	●	
2120T-R1.5	0.030-0.120	12	1.5	76	30	12	●	●
2120T-R2.0	0.030-0.120	12	2.0	76	30	12	●	
2120T-R2.5	0.030-0.120	12	2.5	76	30	12	●	
2120T-R3.0	0.030-0.120	12	3.0	76	30	12	●	●
2160T-R0.5	0.040-0.142	16	0.5	90	40	16	●	
2160T-R1.0	0.040-0.142	16	1.0	90	40	16	●	●
2160T-R1.5	0.040-0.142	16	1.5	90	40	16	●	●
2160T-R2.0	0.040-0.142	16	2.0	90	40	16	●	
2160T-R3.0	0.040-0.142	16	3.0	90	40	16	●	●
2200T-R0.5	0.040-0.142	20	0.5	110	45	20	●	
2200T-R1.0	0.040-0.142	20	1.0	110	45	20	●	
2200T-R1.5	0.040-0.142	20	1.5	110	45	20	●	
2200T-R2.0	0.040-0.142	20	2.0	110	45	20	●	●
2200T-R3.0	0.040-0.142	20	3.0	110	45	20	●	●

●: Standard items

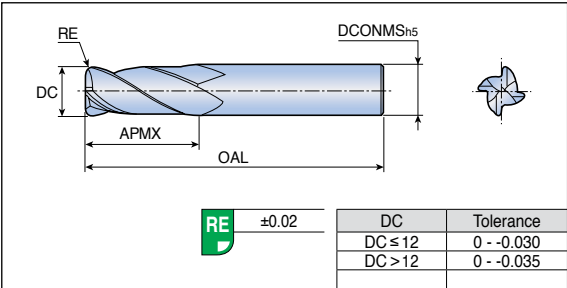
RHINOSOLID APEX MILL

[illegible]

HES 4...T-R



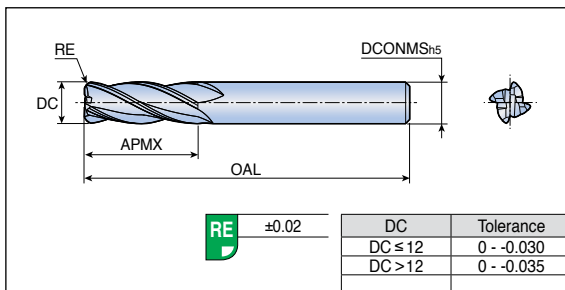
4 flute medium corner radius



Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		DC	RE	OAL	APMX	DCONMS	TT5515	TT5525
HES 4030T-R0.3	0.01-0.04	3	0.3	47	10	6	●	●
4040T-R0.3	0.02-0.05	4	0.3	47	12	6	●	●
4050T-R0.3	0.02-0.06	5	0.3	52	15	6	●	●
4060T-R0.5	0.03-0.07	6	0.5	52	15	6	●	●
4060T-R1.0	0.03-0.07	6	1.0	52	15	6	●	●
4080T-R0.5	0.03-0.09	8	0.5	60	20	8	●	●
4080T-R1.0	0.03-0.09	8	1.0	60	20	8	●	●
4080T-R1.5	0.03-0.09	8	1.5	60	20	8	●	●
4080T-R2.0	0.03-0.09	8	2.0	60	20	8	●	
4100T-R0.5	0.03-0.10	10	0.5	68	25	10	●	●
4100T-R1.0	0.03-0.10	10	1.0	68	25	10	●	●
4100T-R1.5	0.03-0.10	10	1.5	68	25	10	●	●
4100T-R2.0	0.03-0.10	10	2.0	68	25	10	●	●
4100T-R2.5	0.03-0.10	10	2.5	68	25	10	●	
4100T-R3.0	0.03-0.10	10	3.0	68	25	10	●	●
4120T-R0.5	0.04-0.11	12	0.5	76	30	12	●	●
4120T-R1.0	0.04-0.11	12	1.0	76	30	12	●	●
4120T-R1.5	0.04-0.11	12	1.5	76	30	12	●	
4120T-R2.0	0.04-0.11	12	2.0	76	30	12	●	●
4120T-R2.5	0.04-0.11	12	2.5	76	30	12	●	
4120T-R3.0	0.04-0.11	12	3.0	76	30	12	●	●
4160T-R0.5	0.05-0.13	16	0.5	90	40	16	●	●
4160T-R1.0	0.05-0.13	16	1.0	90	40	16	●	●
4160T-R1.5	0.05-0.13	16	1.5	90	40	16	●	●
4160T-R2.0	0.05-0.13	16	2.0	90	40	16	●	●
4160T-R3.0	0.05-0.13	16	3.0	90	40	16	●	●
4200T-R0.5	0.05-0.13	20	0.5	110	45	20	●	●
4200T-R1.0	0.05-0.13	20	1.0	110	45	20	●	●
4200T-R1.5	0.05-0.13	20	1.5	110	45	20	●	
4200T-R2.0	0.05-0.13	20	2.0	110	45	20	●	
4200T-R3.0	0.05-0.13	20	3.0	110	45	20	●	●

●: Standard items

RHINOSOLID APEX MILL



H·A
30°



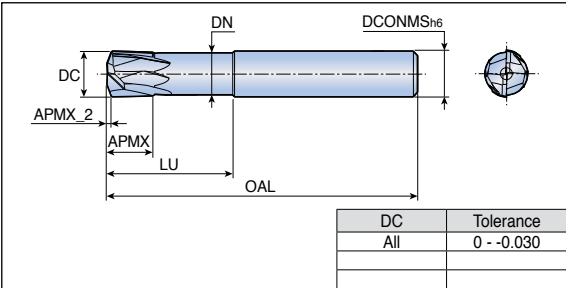
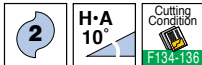
●: Standard items

HFM 2

2 flute high feed flat



- High Feed Machining (H.F.M)



DC	Tolerance
All	0 - -0.030

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	OAL	APMX	APMX_2*	LU	DN	DCONMS	TT5515
HFM 2040	0.2-0.4	4	47	4	0.3	10	3.9	6	●
2060	0.3-0.6	6	52	6	0.5	16	5.5	6	●
2080	0.4-0.7	8	60	8	0.75	22	7.3	8	●
2100	0.5-0.9	10	68	10	1.0	28	9.2	10	●
2120	0.5-1.0	12	76	12	1.1	33	11.0	12	●

• *: Maximum D.O.C for high feed milling

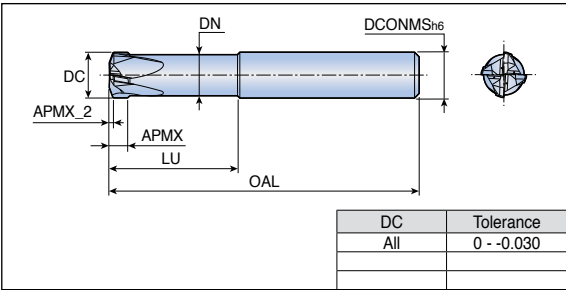
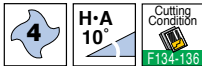
●: Standard items

HFM 4

4 flute high feed flat



- High Feed Machining (H.F.M)



DC	Tolerance
All	0 - -0.030

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	OAL	APMX	APMX_2*	LU	DN	DCONMS	TT5515
HFM 4060	0.3-0.5	6	52	2.5	0.5	16	5.4	6	●
4080	0.3-0.6	8	60	3.5	0.7	24	7.2	8	●
4100	0.4-0.8	10	68	4.0	0.75	28	9.2	10	●
4120	0.4-1.0	12	76	5.0	1.05	33	11.0	12	●

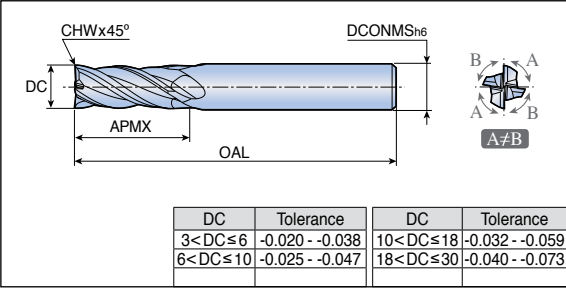
• *: Maximum D.O.C for high feed milling

●: Standard items

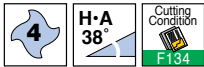
CFM 4...M



4 flute corner chamfer



- Vibration free mill



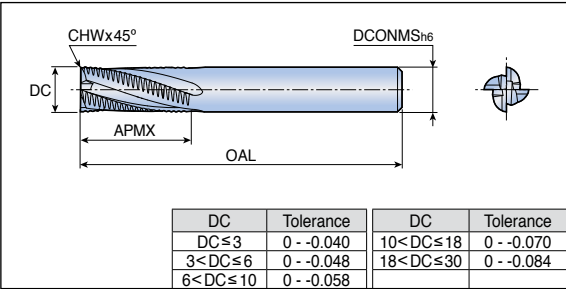
Designation	Feed (mm/tooth)	Dimension (mm)					Grade TT5525
		DC	CHW	OAL	APMX	DCONMS	
CFM 4060M	0.03-0.07	6	0.25	57	14	6	●
4080M	0.03-0.08	8	0.3	63	18	8	●
4100M	0.03-0.10	10	0.4	72	22	10	●
4120M	0.04-0.11	12	0.5	83	26	12	●
4160M	0.05-0.13	16	0.6	100	34	16	●
4200M	0.05-0.17	20	0.6	110	42	20	●
4250M	0.06-0.20	25	0.6	121	52	25	●

- : Standard items

REL ...L



3-4 flute rough long corner chamfer



Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5515
		DC	NOF	CHW	OAL	APMX	DCONMS	
REL 3060L	0.03-0.06	6	3	0.38	57	16	6	●
3080L	0.03-0.08	8	3	0.38	63	16	8	●
4100L	0.03-0.09	10	4	0.61	72	22	10	●
4120L	0.04-0.10	12	4	0.61	83	26	12	●
4140L-14	0.05-0.11	14	4	0.61	83	26	14	●
4160L	0.05-0.11	16	4	0.61	92	32	16	●
4200L	0.05-0.11	20	4	0.61	104	38	20	●

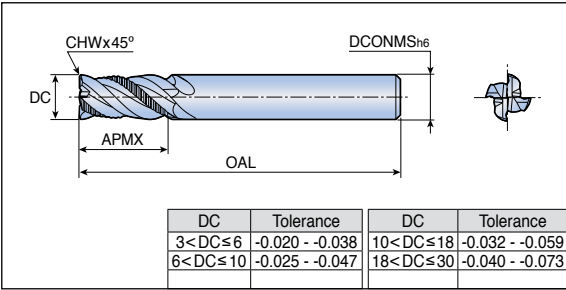
- Weldon shank is available on request (Ordering example: RELW L)
- NOF: Number of flutes

- : Standard items

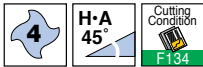
FSM 4...M

MULTIMILL APEX MILL

4 flute medium corner chamfer



• MULTIMILL (Rough + Finish)



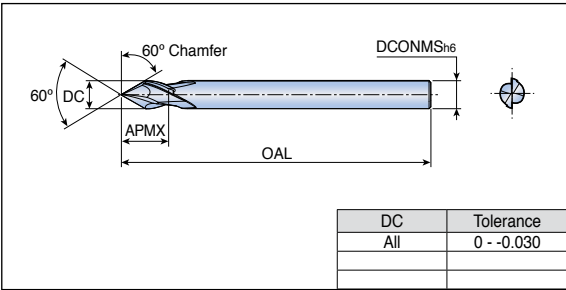
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	CHW	OAL	APMX	DCONMS	TT5525
FSM 4060M	0.03-0.06	6	0.25	57	14	6	●
4080M	0.03-0.08	8	0.3	63	18	8	●
4100M	0.03-0.09	10	0.3	72	22	10	●
4120M	0.04-0.11	12	0.4	83	26	12	●
4140M	0.04-0.11	14	0.4	83	30	14	●
4160M	0.05-0.11	16	0.6	92	34	16	●
4200M	0.05-0.11	20	0.6	104	42	20	●
4250M	0.06-0.11	25	0.6	121	52	25	●

●: Standard items

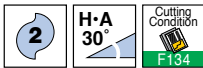
CEM 2...-C60

RHINOSOLID APEX MILL

2 flute, 60° chamfering



• Multi-function
- Chamfer boring, chamfer milling, side milling



Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	UF10
CEM 2040-C60	0.02-0.04	4	70	7.5	6	●
2060-C60	0.02-0.04	6	80	11.2	6	●
2080-C60	0.03-0.06	8	90	14.9	8	●
2100-C60	0.03-0.08	10	100	18.7	10	●
2120-C60	0.04-0.09	12	110	22.4	12	●
2160-C60	0.05-0.10	16	125	29.9	16	●
2200-C60	0.05-0.10	20	150	37.3	20	●

●: Standard items

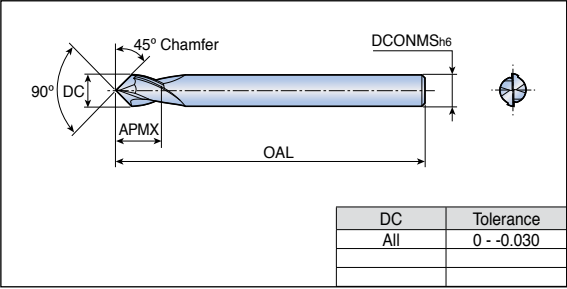
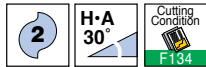
CEM 2

RHINOSOLID APEX MILL

2 flute, 45° chamfering



- Multi-function
 - Chamfer boring, chamfer milling, side milling,
 - *centering, V-slot milling



Designation	Feed (mm/tooth)	Dimension (mm)				Grade	
		DC	OAL	APMX	DCONMS	UF10	TT5525
CEM 2040	0.02-0.05	4	70	6	6	●	●
2060	0.02-0.05	6	80	9	6	●	●
2080	0.03-0.07	8	90	12	8	●	●
2100	0.03-0.10	10	100	15	10	●	●
2120	0.04-0.10	12	110	18	12	●	●
2160	0.05-0.10	16	125	24	16	●	●
2200	0.05-0.10	20	150	30	20	●	●

- *Centering of 45° is only applicable on cast iron & non-ferrous material

●: Standard items

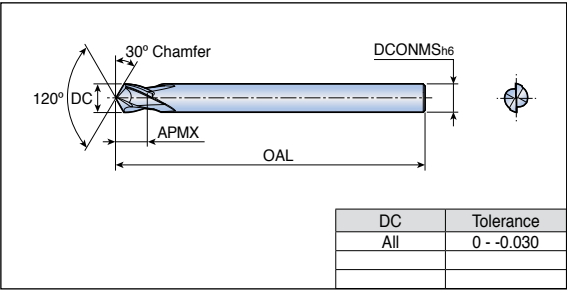
CEM 2...-C120

RHINOSOLID APEX MILL

2 flute, 30° chamfering



- Multi-function
 - Chamfer boring, chamfer milling, side milling, centering, V-slot milling, drilling



Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	UF10
CEM 2040-C1204	0.02-0.05	4	70	5.2	6	●
2060-C120	0.02-0.05	6	80	7.7	6	●
2080-C120	0.03-0.07	8	90	10.3	8	●
2100-C120	0.03-0.10	10	100	12.9	10	●
2120-C120	0.04-0.10	12	110	15.5	12	●
2160-C120	0.05-0.10	16	125	20.6	16	●
2200-C120	0.05-0.10	20	150	25.8	20	●

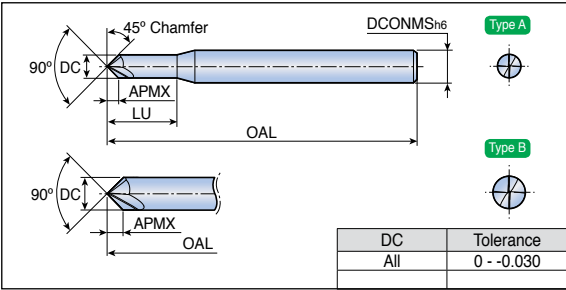
●: Standard items

ECЕМ 2

2 flute, 45° chamfering - Economical type



- Multi-function
-Chamfer boring, chamfer milling, centering,
V-slot milling



Designation	Feed (mm/tooth)	Dimension (mm)						Grade UF10
		DC	OAL	APMX	LU	DCONMS	Type	
ECЕМ 2020	0.01-0.03	2	57	1.0	6	6	A	●
2030	0.01-0.04	3	57	1.5	9	6	A	●
2040	0.02-0.05	4	57	2.0	12	6	A	●
2060	0.02-0.05	6	57	2.9	-	6	B	●
2080	0.03-0.07	8	63	3.8	-	8	B	●
2100	0.03-0.10	10	72	4.9	-	10	B	●
2120	0.04-0.10	12	83	5.9	-	12	B	●
2160	0.05-0.10	16	92	7.9	-	16	B	●

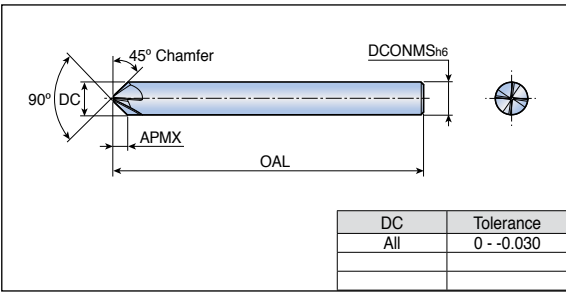
●: Standard items

ECЕМ 4

4 flute, 45° chamfering - Economical type



- Chamfer milling

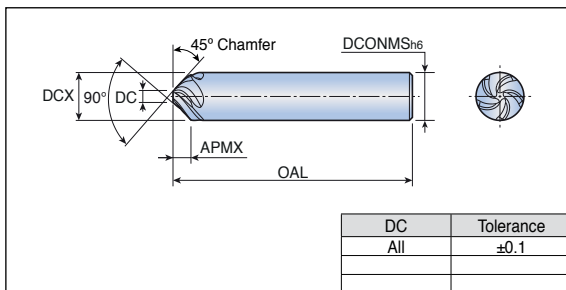


Designation	Feed (mm/tooth)	Dimension (mm)				Grade UF10
		DC	OAL	APMX	DCONMS	
ECЕМ 4060	0.02-0.04	6	57	2.5	6	●
4080	0.02-0.05	8	63	3.4	8	●
4100	0.03-0.08	10	72	4.4	10	●
4120	0.03-0.08	12	83	5.1	12	●

●: Standard items

HCEM 5

5 flute, 45° chamfering



DC	Tolerance
All	± 0.1



●: Standard items

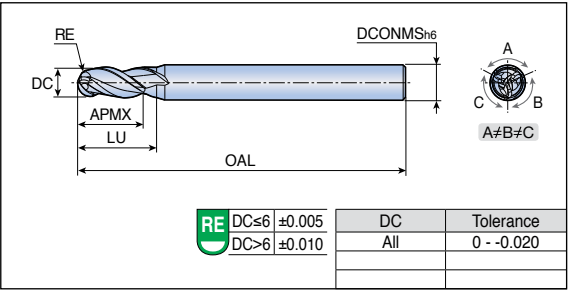
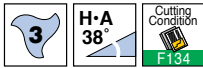
SBT 3...U



3 flute medium ball



- Excellent chatter damping due to unequal spacing of cutting edges



Designation	Dimension (mm)						Grade
	DC	RE	OAL	APMX	LU	DCONMS	TT5515
SBT 3040U	4	2	70	8	10	6	●
3060U	6	3	80	12	-	6	●
3080U	8	4	90	16	-	8	●
3100U	10	5	100	20	-	10	●
3120U	12	6	110	25	-	12	●

●: Standard items

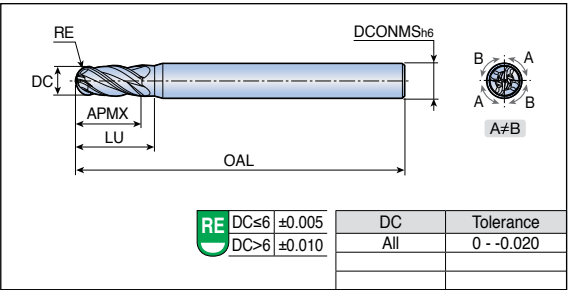
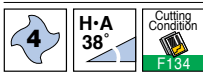
SBT 4...U



4 flute medium ball



- Excellent chatter damping due to unequal spacing of cutting edges



Designation	Dimension (mm)						Grade
	DC	RE	OAL	APMX	LU	DCONMS	TT5515
SBT 4040U	4	2	70	8	10	6	●
4060U	6	3	80	12	-	6	●
4080U	8	4	90	16	-	8	●
4100U	10	5	100	20	-	10	●
4120U	12	6	110	25	-	12	●

●: Standard items

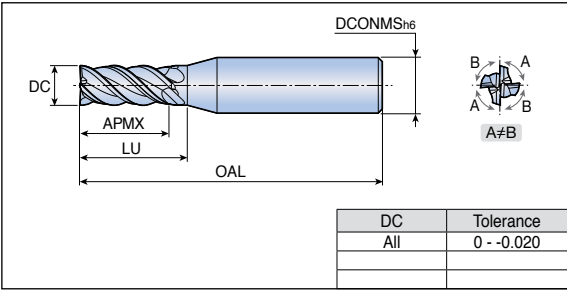
SED 4...U



4 flute medium flat



- Excellent chatter damping credit to unequal spacing of cutting edges



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	OAL	APMX	LU	DCONMS	TT5515
SED 4030U	0.015-0.030	3	57	10	12	6	●
4040U	0.020-0.040	4	57	12	14	6	●
4050U	0.020-0.040	5	57	15	16	6	●
4060U	0.025-0.070	6	57	15	-	6	●
4080U	0.030-0.090	8	70	25	-	8	●
4100U	0.030-0.100	10	72	25	-	10	●
4120U	0.035-0.110	12	83	30	-	12	●
4160U	0.050-0.130	16	100	42	-	16	●
4200U	0.050-0.170	20	104	48	-	20	●

●: Standard items

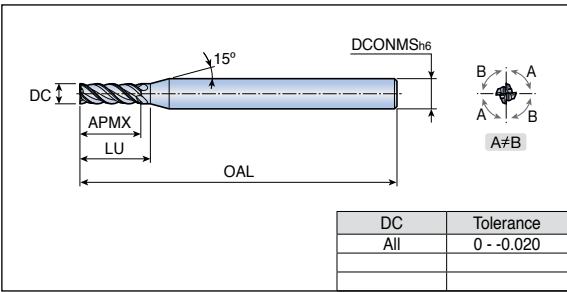
SED 4...UL



4 flute long flat



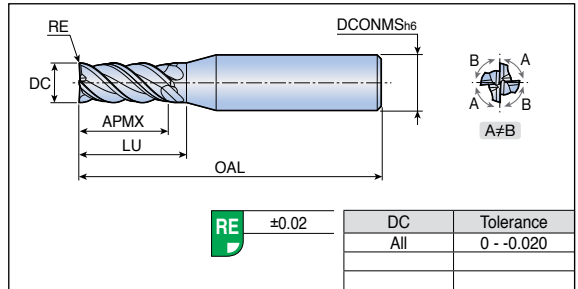
- Excellent chatter damping credit to unequal spacing of cutting edges



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	OAL	APMX	LU	DCONMS	TT5515
SED 4030UL	0.015-0.030	3	63	10	12	6	●
4040UL	0.020-0.040	4	63	12	14	6	●
4060UL	0.025-0.070	6	65	20	-	6	●
4080UL	0.030-0.090	8	83	30	-	8	●
4100UL	0.030-0.100	10	83	35	-	10	●
4120UL	0.035-0.110	12	92	40	-	12	●

●: Standard items

-

[illegible]

●: Standard items

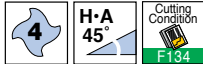
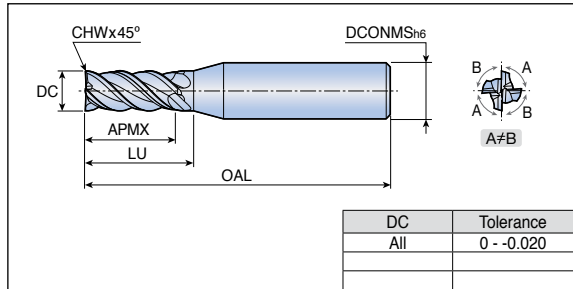
SED 4...-C



4 flute medium corner chamfer



- Excellent chatter damping credit to unequal spacing of cutting edges



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	CHW	OAL	APMX	LU	DCONMS	
SED 4040U-C0.1	0.020-0.040	4	0.1	57	12	14	6	●
4060U-C0.2	0.030-0.060	6	0.2	57	15	-	6	●
4080U-C0.3	0.030-0.090	8	0.3	70	25	-	8	●
4100U-C0.3	0.030-0.100	10	0.3	72	25	-	10	●
4120U-C0.4	0.035-0.110	12	0.4	83	30	-	12	●

●: Standard items

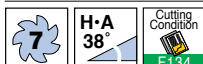
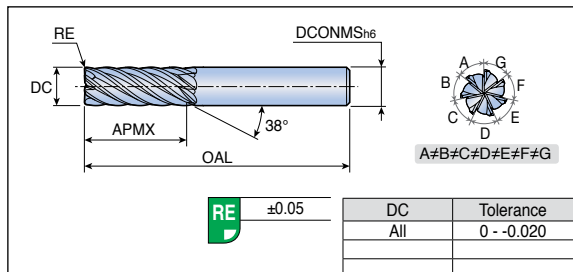
SED 7



7 flute medium corner radius



- Excellent chatter damping credit to unequal spacing of cutting edges
- For trochoidal operation



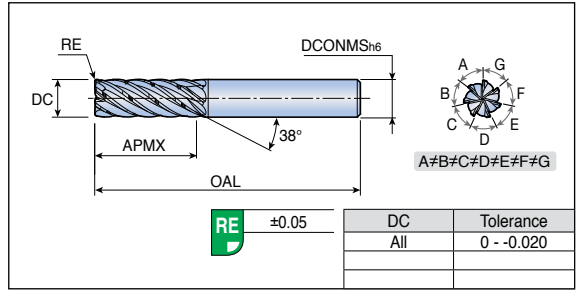
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
SED 7060	0.02-0.04	6	0.5	57	15	6	●
7060-4D	0.02-0.04	6	0.5	70	24	6	●
7080	0.02-0.05	8	0.5	70	25	8	●
7080-4D	0.02-0.05	8	0.5	90	32	8	●
7100	0.03-0.07	10	0.5	72	25	10	●
7100-4D	0.03-0.07	10	0.5	100	40	10	●
7120	0.03-0.09	12	0.5	83	30	12	●
7120-4D	0.03-0.09	12	0.5	110	48	12	●
7140	0.04-0.10	14	0.5	90	35	14	●
7160	0.04-0.11	16	0.5	100	42	16	●
7160-4D	0.04-0.11	16	0.5	125	64	16	●
7200	0.05-0.12	20	0.5	104	48	20	●
7200-4D	0.05-0.12	20	0.5	150	80	20	●

• 4D: 4xD depth of cut

●: Standard items

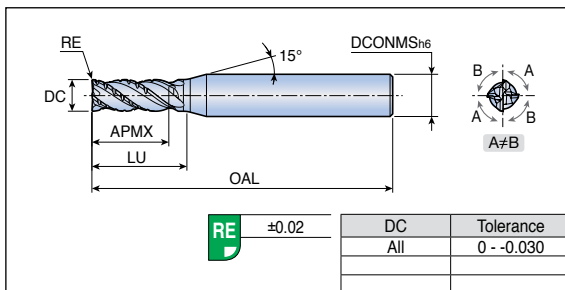
- 

H·A
38°



- N: chip splitter type

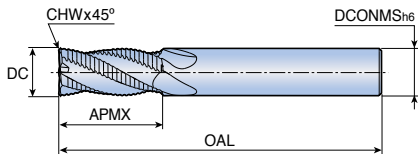
●: Standard items

[illegible]

REH ...S

RHINOSOLID STARMILL

4-6 flute rough short corner chamfer



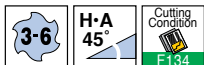
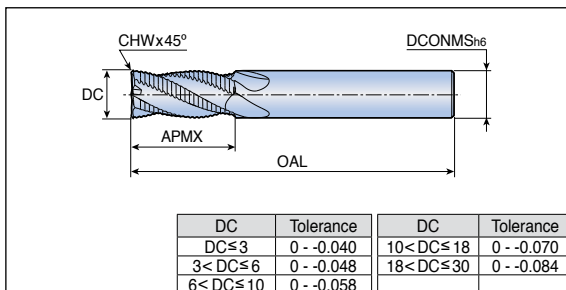
DC	Tolerance	DC	Tolerance
$DC \leq 3$	0 - -0.040	$10 < DC \leq 18$	0 - -0.070
$3 < DC \leq 6$	0 - -0.048	$18 < DC \leq 30$	0 - -0.084
$6 < DC \leq 10$	0 - -0.058		

[illegible]

- Weldon shank is available on request (Ordering example: REHW S)
- NOF: Number of flutes

- : Standard items

3-6 flute rough medium corner chamfer



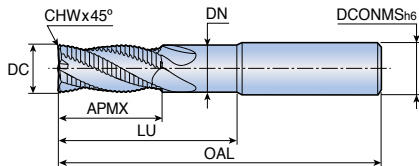
- Weldon shank is available on request (Ordering example: REHW M)
- NOF: Number of flutes

●: Standard items

REH ...L

RHINOSOLID STARMILL

4-6 flute rough long neck corner chamfer



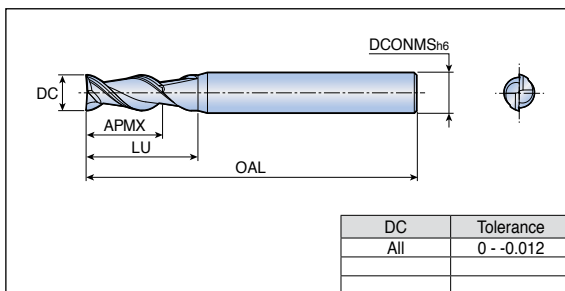
DC	Tolerance	DC	Tolerance
$DC \leq 3$	0 - -0.040	$10 < DC \leq 18$	0 - -0.070
$3 < DC \leq 6$	0 - -0.048	$18 < DC \leq 30$	0 - -0.084
$6 < DC \leq 10$	0 - -0.058		

[illegible]

- Weldon shank is available on request (Ordering example: REHW L)
- NOF: Number of flutes

- : Standard items

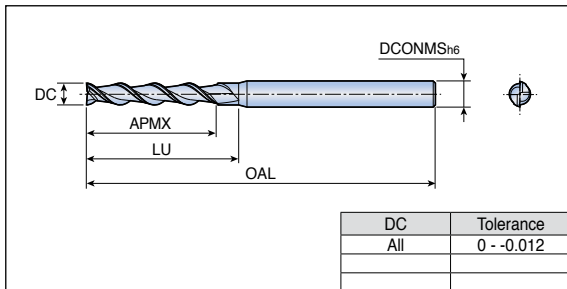
RHINOSOLID ALUMILL



●: Standard items

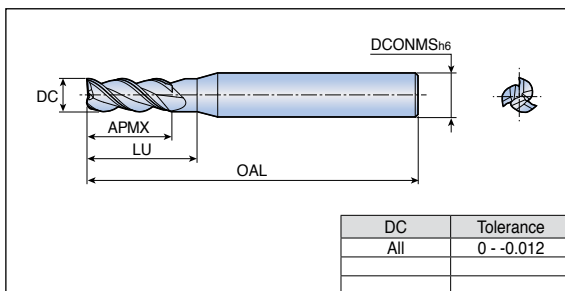
AES 2...XL

2 flute extra long flat

[illegible]

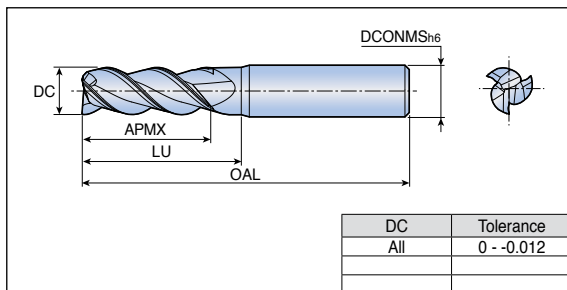
●: Standard items

RHINOSOLID ALUMILL



●: Standard items

3 flute long flat



●: Standard items

RHINOSOLID ALUMILL

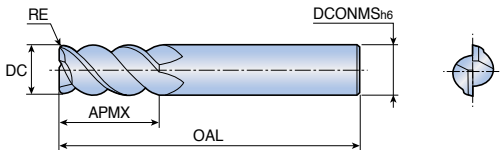


●: Standard items

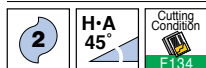
AES 2...R

RHINOSOLID ALUMILL

2 flute medium corner radius

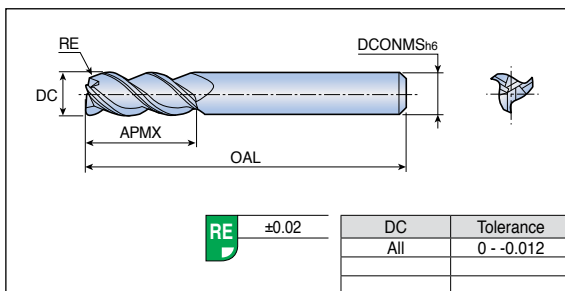


DC	Tolerance
All	0 - -0.012

[illegible]

●: Standard items

RHINOSOLID ALUMILL

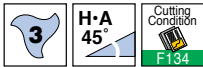
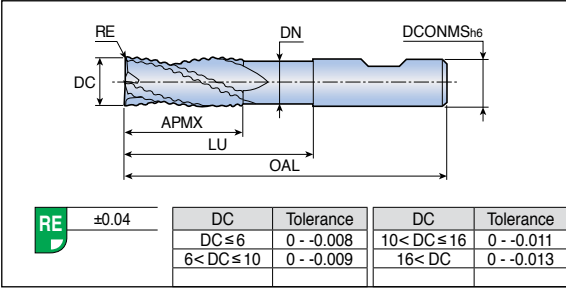


●: Standard items

REMA 3/ 3...C

3 flute rough corner radius

RHINOSOLID ALUMILL



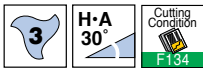
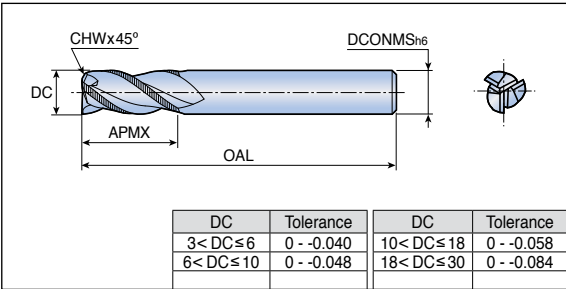
Designation		Feed (mm/tooth)	Dimension (mm)							Grade UF10
Cylindrical shank	Welded shank		DC	RE	OAL	APMX	LU	DN	DCONMS	
REMA 3060C	REMA 3060	0.03-0.07	6	0.2	57	9	21	5.5	6	●
3080C	3080	0.03-0.11	8	0.2	63	12	27	7.2	8	●
3100C	3100	0.05-0.14	10	0.2	72	12	31	9.0	10	●
3120C	3120	0.07-0.16	12	0.2	83	12	37	11.0	12	●
3160C	3160	0.07-0.18	16	0.2	92	14	43	15.0	16	●
3200C	3200	0.07-0.20	20	0.2	104	17	53	18.8	20	●

●: Standard items

REA 3...L

3 flute rough corner chamfer

RHINOSOLID ALUMILL



Designation	Feed (mm/tooth)	Dimension (mm)					Grade UF10
		DC	CHW	OAL	APMX	DCONMS	
REA 3060L	0.03-0.07	6	0.61	57	16	6	●
3080L	0.03-0.15	8	0.61	63	16	8	●
3100L	0.05-0.20	10	0.61	72	22	10	●
3120L	0.07-0.22	12	0.66	83	26	12	●
3140L-14	0.07-0.22	14	0.99	83	26	14	●
3160L	0.07-0.25	16	0.99	92	32	16	●
3200L	0.07-0.25	20	0.99	104	38	20	●

●: Standard items

AWE 3

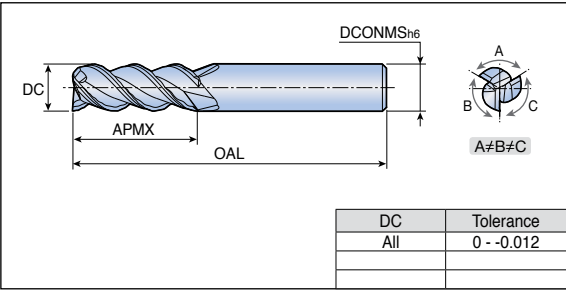


3 flute wave flat



• Wave cutting edge





DC	Tolerance
All	0 - -0.012

Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	UF10
AWE 3060	0.03-0.07	6	52	14	6	●
3080	0.03-0.09	8	60	14	8	●
3100	0.03-0.10	10	68	19	10	●
3120	0.03-0.12	12	76	22	12	●
3140	0.05-0.14	14	85	24	14	●
3160	0.05-0.14	16	90	30	16	●
3180	0.05-0.15	18	110	34	18	●
3200	0.05-0.15	20	110	38	20	●

●: Standard items

AWE 3...ML

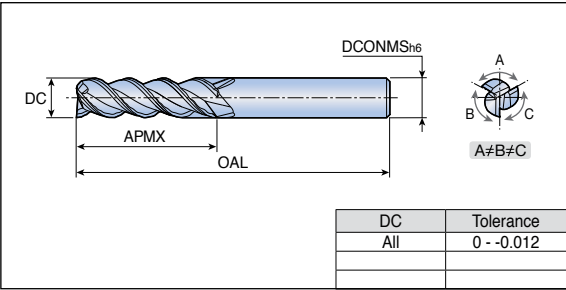


3 flute wave long flat



• Wave cutting edge





DC	Tolerance
All	0 - -0.012

Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	UF10
AWE 3060ML	0.03-0.07	6	65	20	6	●
3080ML	0.03-0.09	8	75	20	8	●
3100ML	0.03-0.10	10	80	25	10	●
3120ML	0.03-0.12	12	95	30	12	●
3140ML	0.03-0.12	14	110	35	14	●
3160ML	0.05-0.14	16	110	40	16	●
3180ML	0.05-0.15	18	125	45	18	●
3200ML	0.05-0.15	20	125	45	20	●

●: Standard items

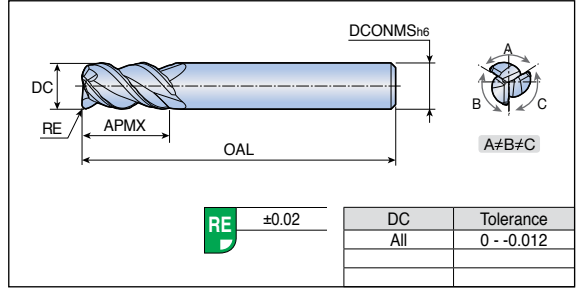
AWE 3...ML-R



3 flute wave long corner radius



- Wave cutting edge



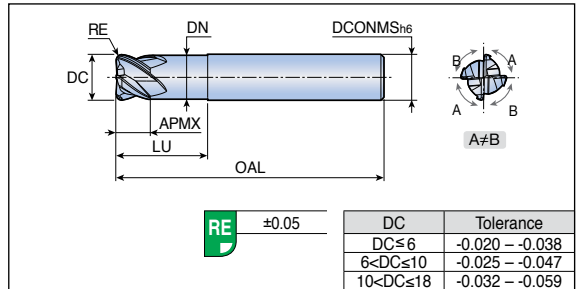
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
AWE 3060ML-R0.5	0.03-0.07	6	65	20	6	●
3080ML-R0.5	0.03-0.09	8	75	20	8	●
3100ML-R1.0	0.03-0.10	10	80	25	10	●
3120ML-R1.0	0.03-0.12	12	95	30	12	●

●: Standard items

CRF 4



4 flute, Ceramic end mills

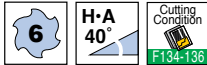
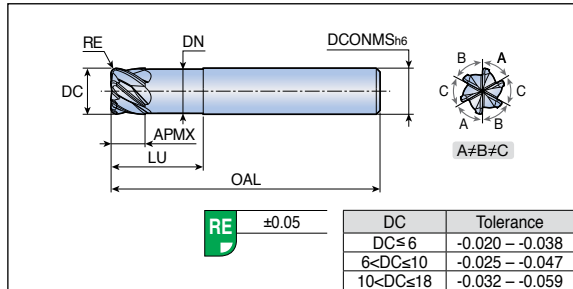


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TC3030
CRF 4060 050 120	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
4080 100 160	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
4100 100 200	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
4120 150 240	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
4160 200 320	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

●: Standard items

CRF 6

6 flute, Ceramic end mills

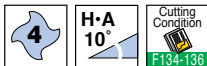
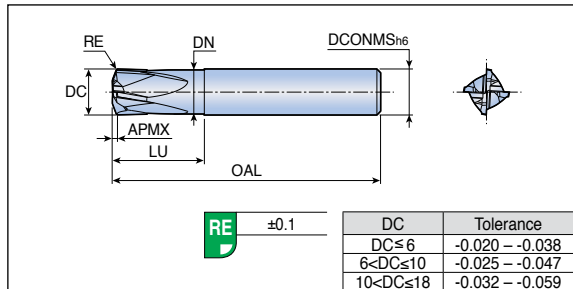


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
CRF 6060 050 120	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
6080 100 160	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
6100 100 200	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
6120 150 240	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
6160 200 320	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

●: Standard items

CRH 4

4 flute, Ceramic end mills for high feed milling



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
CRH 4060	0.1-0.15	6	0.7	50	0.55	12	5.8	6	●
4080	0.1-0.2	8	0.9	57	0.75	16	7.7	8	●
4100	0.1-0.2	10	1.0	63	0.85	20	9.6	10	●
4120	0.1-0.3	12	1.4	70	1.15	24	11.5	12	●
4160	0.1-0.3	16	1.8	83	1.55	32	15.5	16	●

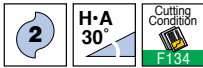
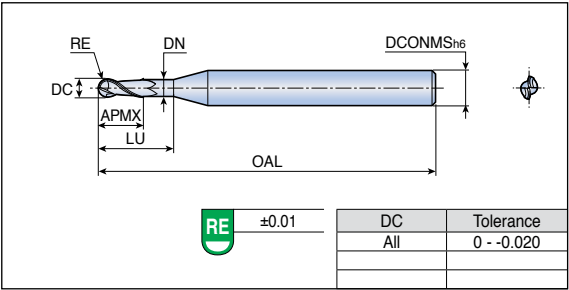
● RE: Program corner R

●: Standard items

DMB 2



2 flute miniature ball



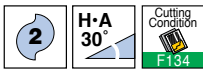
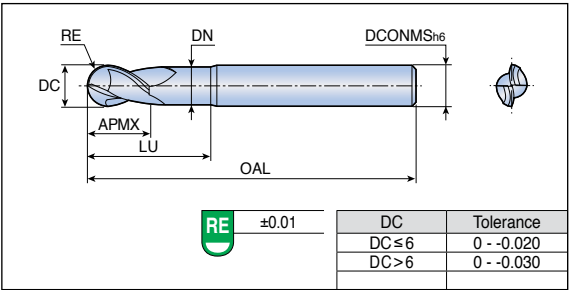
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	TTD620
DMB 2006-0.6x3.0	0.6	0.3	40	0.6	3.0	0.55	3	●
2010-1.0x5.0	1.0	0.5	40	1.0	5.0	0.95	3	●
2010-1.0x8.5	1.0	0.5	40	1.0	8.5	0.95	3	●
2015-1.5x7.5	1.5	0.75	50	1.5	7.5	1.4	3	●
2015-1.5x12.0	1.5	0.75	50	1.5	12.0	1.4	3	●
2020-2.2x10.0	2.0	1.0	60	2.2	10.0	1.9	3	●
2020-2.2x16.0	2.0	1.0	60	2.2	16.0	1.9	3	●

●: Standard items

DEB 2...S



2 flute short ball



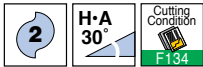
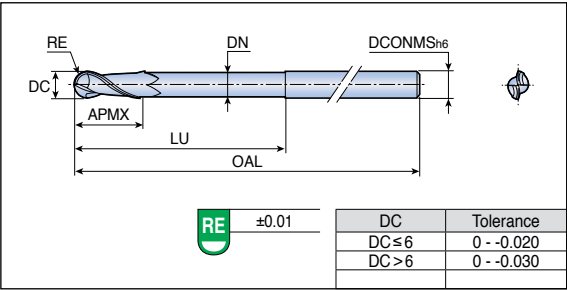
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	TTD620
DEB 2030S	3	1.5	60	4.5	6.5	2.8	6	●
2040S	4	2.0	65	6.0	8.0	3.7	6	●
2060S	6	3.0	75	9.0	12.0	5.6	6	●
2120S	12	6.0	90	18.0	36.0	11.4	12	●

●: Standard items

DEB 2...L



2 flute long neck ball



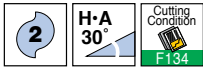
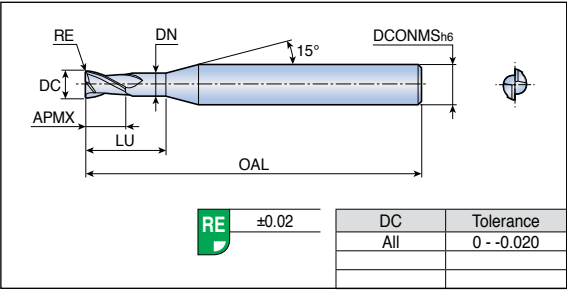
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
DEB 2030L-4	3	1.5	80	15	25	2.9	4	●
2040L-4	4	2.0	80	20	30	3.9	4	●
2050L	5	2.5	100	30	50	4.9	6	●
2060L	6	3.0	100	30	50	5.5	6	●
2080L	8	4.0	110	40	60	7.5	8	●
2120L	12	6.0	130	55	75	11.5	12	●

●: Standard items

DMR 2



2 flute miniature corner radius



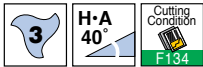
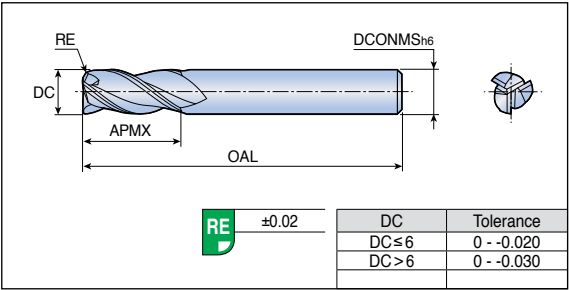
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
DMR 2006-0.9x3.0	0.006-0.010	0.6	0.05	40	0.9	3.0	0.55	3	●
2008-1.2x4.0	0.008-0.015	0.8	0.05	40	1.2	4.0	0.75	3	●
2010-1.5x5.0	0.010-0.020	1.0	0.1	40	1.5	5.0	0.95	3	●
2010-1.5x8.5	0.010-0.020	1.0	0.1	40	1.5	8.5	0.95	3	●
2012-1.8x6.0	0.010-0.025	1.2	0.1	50	1.8	6.0	1.15	3	●
2015-2.2x7.5	0.015-0.035	1.5	0.15	50	2.2	7.5	1.4	3	●
2015-2.2x12.0	0.015-0.030	1.5	0.15	50	2.2	12.0	1.4	3	●
2020-2.2x10.0	0.015-0.040	2.0	0.15	60	2.2	10.0	1.9	3	●
2020-2.2x16.0	0.015-0.035	2.0	0.15	60	2.2	16.0	1.9	3	●

●: Standard items

DER 3...S



3 flute short corner radius



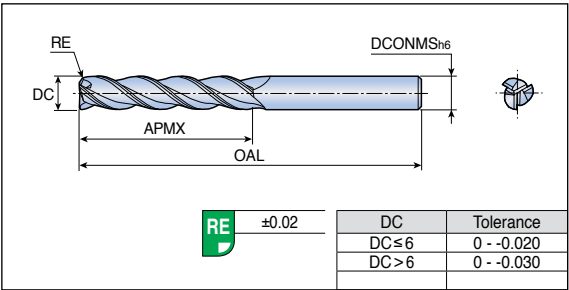
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
DER 3030S-3	0.025-0.050	3	0.15	40	12	3	●
3040S-4	0.040-0.060	4	0.2	50	14	4	●
3050S-5	0.050-0.080	5	0.3	50	16	5	●
3060S	0.060-0.090	6	0.3	65	20	6	●
3080S	0.070-0.100	8	0.5	65	20	8	●
3100S	0.080-0.130	10	0.5	75	25	10	●
3120S	0.100-0.150	12	0.5	75	25	12	●

●: Standard items

DER 3...L



3 flute long corner radius

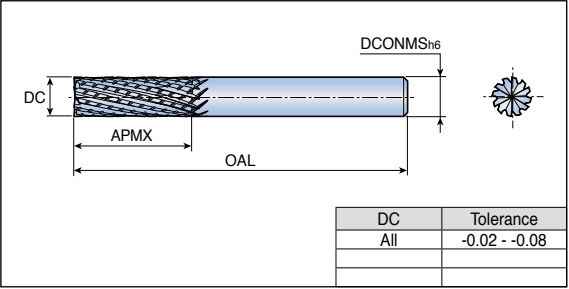


Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
DER 3040L-4	0.03-0.05	4	0.2	60	30	4	●
3050L-5	0.04-0.07	5	0.3	70	35	5	●
3060L	0.05-0.08	6	0.3	100	40	6	●
3080L	0.06-0.09	8	0.5	100	40	8	●
3100L	0.07-0.12	10	0.5	100	40	10	●
3120L	0.09-0.14	12	0.5	100	45	12	●

●: Standard items

Roughing for composite material (Chip splitter)





		
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DC	Tolerance
All	-0.02 - -0.08

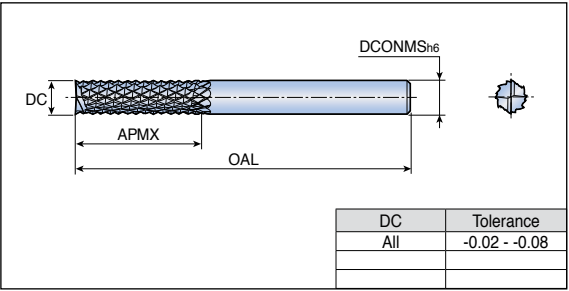
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	NOF	OAL	APMX	DCONMS	TTD610
RRFE 040	0.01-0.02	4	6	50	12	4	●
060	0.01-0.02	6	8	65	18	6	●
080	0.01-0.03	8	10	75	24	8	●
100	0.02-0.04	10	12	85	30	10	●
120	0.02-0.05	12	12	100	36	12	●

● NOF: Number of flutes

●: Standard items

Roughing for composite material (Multi-flute)





	
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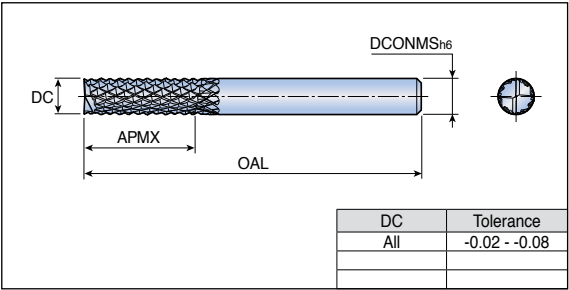
DC	Tolerance
All	-0.02 - -0.08

Designation	Feed (mm/rev)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TTD610
RCFE 040	0.03-0.06	4	50	12	4	●
060	0.07-0.15	6	65	18	6	●
080	0.10-0.20	8	75	24	8	●
100	0.15-0.30	10	85	30	10	●
120	0.20-0.40	12	100	36	12	●

●: Standard items

Medium to finishing for composite materials (Multi-flute)





H•A
28°

Cutting
Condition
F137

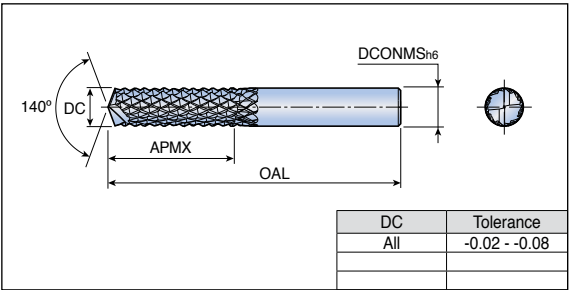
DC	Tolerance
All	-0.02 - -0.08

Designation	Feed (mm/rev)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TTD610
RCME 040	0.03-0.06	4	50	12	4	●
060	0.07-0.15	6	65	18	6	●
080	0.10-0.20	8	75	24	8	●
100	0.15-0.30	10	85	30	10	●
120	0.20-0.40	12	100	36	12	●

●: Standard items

Medium to finishing for composite materials (Cutting edge for drilling + multi-flute)





H•A
28°

Cutting
Condition
F137

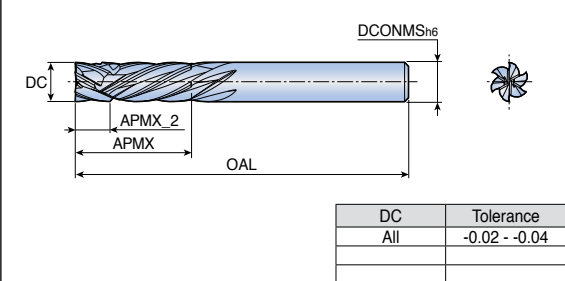
DC	Tolerance
All	-0.02 - -0.08

Designation	Feed (mm/rev)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TTD610
RCDE 040	0.03-0.06	4	50	12	4	●
060	0.07-0.15	6	65	18	6	●
080	0.10-0.20	8	75	24	8	●
100	0.15-0.30	10	85	30	10	●
120	0.20-0.40	12	100	36	12	●

●: Standard items

4 and 6 flute for finishing of composite materials (Left and right hand helix type)





DC	Tolerance
All	-0.02 - -0.04







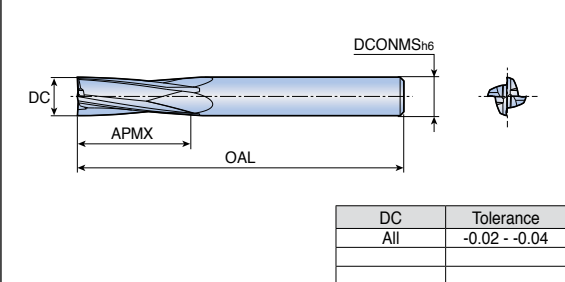
Designation	Feed (mm/tooth)	Dimension (mm)						Grade TTD610
		DC	NOF	OAL	APMX	APMX_2	DCONMS	
RCOM 4060	0.02-0.04	6	4	65	18	6.7	6	●
4080	0.02-0.05	8	4	75	24	9.2	8	●
6100	0.03-0.06	10	6	85	30	7.9	10	●
6120	0.04-0.08	12	6	100	36	9.2	12	●

- NOF: Number of flutes
- Notice: For best machining performance, the end mill's intersection point(APMX_2) should be positioned at the center of the workpiece thickness.
- : Standard items

RDCF

4-8 flute for finishing of composite materials (Low helix angle)





DC	Tolerance
All	-0.02 - -0.04







Designation	Feed (mm/tooth)	Dimension (mm)					Grade TTD610
		DC	NOF	OAL	APMX	DCONMS	
RDCF 4040	0.01-0.03	4	4	50	12	4	●
6040	0.01-0.03	4	6	50	12	4	●
4060	0.02-0.04	6	4	65	18	6	●
6060	0.02-0.04	6	6	65	18	6	●
4080	0.03-0.05	8	4	75	24	8	●
6080	0.03-0.05	8	6	75	24	8	●
4100	0.04-0.06	10	4	85	30	10	●
8100	0.04-0.06	10	8	85	30	10	●
4120	0.04-0.08	12	4	100	36	12	●
8120	0.04-0.08	12	8	100	36	12	●

- NOF: Number of flutes
- : Standard items

Recommended Cutting Conditions

Machining data for solid end mill

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C Annealed	420	125	1
		>=0.25%C Annealed	650	190	2
		<0.55%C Quenched and tempered	850	250	3
		>=0.55%C Annealed	750	220	4
		Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	600	200	6
		Quenched and tempered	930	275	7
			1000	300	8
			1200	350	9
	High alloy steel, cast steel and tool steel	Annealed	680	200	10
		Quenched and tempered	1100	325	11
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12
		Martensitic	820	240	13
		Austenitic	600	180	14
K	Gray cast iron (GG)	Ferritic		160	15
		Pearlitic		250	16
	Cast iron nodular (GGG)	Ferritic		180	17
		Pearlitic		260	18
	Malleable cast iron	Ferritic		130	19
		Pearlitic		230	20
N	Aluminum - Wrought alloy	Not cureable		60	21
		Cured		100	22
	Aluminum-cast, alloyed	<=12% Si Not cureable		75	23
		Cured		90	24
		>12% Si High temp.		130	25
	Copper alloys	>1% Pb Free cutting		110	26
		Brass		90	27
		Electrolitic copper		100	28
	Non-metallic	Duroplastics, graphite			29
		Hard rubber			30
S	High temp. alloys	Fe based	Annealed	200	31
			Cured	280	32
		Ni or Co based	Annealed	250	33
			Cured	350	34
			Cast	320	35
	Titanium, Ti alloys		Rm 400		36
		Alpha+beta alloys cured	Rm 1050		37
H	Hardened steel	Hardened		55HRC	38
		Hardened		60HRC	39
	Chilled cast iron	Cast		400	40
	Cast iron nodular	Hardened		55HRC	41

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions

Machining data for solid end mill

Cutting speed Vc(m/min)						
CBN	Coated				Uncoated	Ceramic
TB7015	TT5505	TT5515	TT5525/TT5523	TT5543	UF10N/UF10	TC3030
	260-300	260-280	210-220	170-200	140-200	
	200-250	200-230	160-180	140-170	120-160	
	160-230	160-220	130-180	120-150	100-150	
	160-230	160-220	130-180	100-140	100-140	
	140-200	140-180	110-140	90-130	90-130	
	160-230	160-220	130-180	100-150	110-150	
	120-200	120-180	100-140	90-130	80-130	
	140-200	130-180	100-140	90-130	90-130	
	140-200	140-180	110-140	90-130	100-130	
	140-200	130-180	100-140	90-130	90-130	
	80-150	70-120	60-100	50-90	50-80	
		80-160	60-130	50-110	60-110	
		60-150	50-120	40-100	40-100	
		60-120	50-100	40-80	40-80	
	100-300	80-260	60-210	50-180	60-180	
	130-280	130-240	100-190	100-170	90-170	
	150-280	150-270	120-220	110-200	100-200	
	90-280	90-270	70-220	110-200	60-200	
	150-280	150-270	120-220	110-200	100-200	
	140-250	140-240	110-190	100-180	100-170	
					800-900	
					700-800	
					800-900	
					750-850	
					400-450	
					500-550	
					500-550	
					350-380	
	20-40	20-40	20-30	20-30	10-20	
	20-30	20-30	20-30	20-30	10-20	
	20-30	20-30	20-30	20-30	20-50	300-1000
	20-30	20-30	20-30	20-30	20-50	300-1000
	30-80	30-70	20-60	20-60	20-50	300-1000
		30-70	20-60	20-60	20-30	
		30-70	20-60	20-60	20-30	
100-210	30-60				40-60	
90-200	30-40				20-30	
120-200	70-90	60-80			65-75	
120-200	30-60	30-50			40-45	

Recommended Cutting Conditions

Machining data for ceramic end mill

CRF 4 teeth & 6 teeth

(Unit: mm)

Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering, profiling		Slotting
			ap	ae	ae
Ø6	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø8	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø10	300-1000	0.02-0.04	-0.6xD	-0.1xD	-0.05xD
Ø12	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD
Ø16	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD

• ae must not exceed a maximum 1 mm

ap: axial direction DOC

ae: radial direction DOC

• Apply a 30% reduction in feed during slotting, ramping (less 2.5°)

CRH 4 teeth

(Unit: mm)

Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering, profiling	
			ap	ae
Ø6	300-1000	0.1-0.15	-0.05xD	-0.6xD
Ø8	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø10	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø12	300-1000	0.1-0.3	-0.05xD	-0.6xD
Ø16	300-1000	0.1-0.3	-0.05xD	-0.6xD

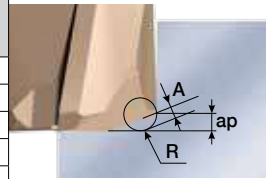
• Apply a 30% reduction in feed during ramping (less 2.5°)

ap: axial direction DOC

ae: radial direction DOC

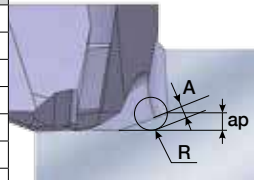
Programming tip - CRH

Diameter (CRH 4 teeth)	R (Program)	A Un-machined material thickness
Ø6	0.7	0.35
Ø8	0.9	0.47
Ø10	1.0	0.50
Ø12	1.4	0.70
Ø16	1.8	0.95



Programming tip - HFM 2 / HFM 4

Designation	Diameter	R (Program)	A (Un-machined)	ap (Max)
HFM 2040	Ø4	0.38	0.25	0.3
HFM 2060	Ø6	0.65	0.43	0.5
HFM 2080	Ø8	0.87	0.57	0.75
HFM 2010	Ø10	1.09	0.71	1
HFM 2012	Ø12	1.3	0.86	1.1
HFM 4060	Ø6	0.59	0.38	0.5
HFM 4080	Ø8	0.78	0.51	0.7
HFM 4010	Ø10	0.85	0.55	0.75
HFM 4012	Ø12	1.17	0.77	1.05



Recommended Cutting Conditions



Machining data for composite material

Grade: TTD610

Material		Cutting Speed Vc(m/min)					
		RRFE		RCFE		RCDE	
		Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting
CFRP	CFRP	100-300	50-120	100-300	50-120	80-250	50-120
	Honeycomb	150-250	100-200	150-250	100-200	120-200	100-200
GFRP	GFRP	50-150	30-70	50-150	30-70	50-130	30-70
	Honeycomb	150-250	100-200	150-250	100-200	120-200	100-200

Material		Cutting Speed Vc(m/min)					
		RCME		RCOM		RDCF	
		Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting
CFRP	CFRP	80-250	50-120	50-200	50-120	100-300	50-120
	Honeycomb	120-200	100-200	-	-	-	-
GFRP	GFRP	50-130	30-70	50-100	30-70	50-150	30-70
	Honeycomb	120-200	100-200	-	-	-	-

Material	RCDE & H-Drill				
	Drilling				
	Cutting speed Vc (m/min)	Drill diameter (mm) vs. Feed (mm/rev)			
		Ø3.0-Ø6.0	Ø6.1-Ø8.0	Ø8.1-Ø10.0	Ø10.1-Ø12.7
CFRP	50-150	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10
GFRP	40-120	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10

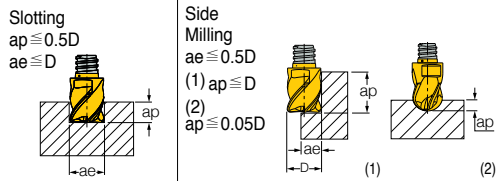
Recommended Cutting Conditions



Machining data for MAXI-RUSH

fz for Square & Round heads

(mm/tooth)



D (mm)	fz (mm/tooth)	D (mm)	fz (mm/tooth)
6	0.027-0.05	6	0.027-0.06
8	0.032-0.07	8	0.032-0.08
10	0.034-0.08	10	0.034-0.09
12	0.036-0.10	12	0.036-0.11
16	0.050-0.12	16	0.05 - 0.13
20	0.052-0.14	20	0.052-0.15
25	0.062-0.15	25	0.062-0.17

fz for Slotting heads

(mm/tooth)

ISO		
P	0.025-0.12	0.035-0.15
M	0.025-0.10	0.025-0.12
K	0.025-0.15	0.035-0.17
Thread Size	Key	Clamping Torque (N.m)
S05	MX KEY-S05	7
S06	MX KEY-S06	10
S08	MX KEY-S08	15
S10	MX KEY-S10	28
S12	MX KEY-S12	28
S15	MX KEY-S15	40

Recommended Cutting Speed

ISO	Material No.	Hardness HB	Vc m/min
P	1	125	220-240
	2	190	170-200
	3-6	200	140-160
	7-8	300	110-130
	9-11	200	100-130
M	12-13	240	90-150
	14	180	70-100
K	15	180	70-240
	16	260	110-220
	17	170	130-250
	19	130	130-230
	20	230	100-200
N	21-24	90	600-700
S	33-35	350	10-20
	36-37	-	30-50
H	38	HRC55	30-40
	39	HRC60	25-30

High feed milling - MXFX Only

ISO	Material No.	Depth of cut (ap)	Width of cut (ae)	fz (mm/tooth) vs. Tool Diameter D(mm)					
				Ø8	Ø10	Ø12	Ø16	Ø20	Ø25
P	1	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05
	2	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05
	3	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05
	4	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05
	5	0.045xD	0.7xD	0.45	0.55	0.60	0.70	0.80	0.90
	6	0.045xD	0.7xD	0.35	0.45	0.50	0.60	0.70	0.80
	7	0.045xD	0.7xD	0.35	0.45	0.50	0.60	0.70	0.80
	8	0.045xD	0.7xD	0.35	0.40	0.45	0.55	0.65	0.75
	9	0.045xD	0.7xD	0.35	0.40	0.45	0.55	0.65	0.75
	10	0.04xD	0.6xD	0.30	0.35	0.40	0.50	0.6	0.70
	11	0.04xD	0.6xD	0.30	0.35	0.40	0.45	0.55	0.65
M	12-14	0.04xD	0.6xD	0.35	0.40	0.45	0.55	0.65	0.75
K	15-16	Apmax	0.7xD	0.50	0.55	0.65	0.75	0.85	0.95
	17-20	Apmax	0.7xD	0.40	0.50	0.55	0.65	0.75	0.85
H	38.1	0.035xD	0.45xD	0.25	0.30	0.35	0.45	0.50	0.60
	38.2	0.03xD	0.3xD	0.20	0.25	0.35	0.40	0.50	0.55
	39	0.02xD	0.25xD	0.15	0.20	0.20	0.25	0.25	0.30

Wrench

Appearance	Designation	Connection thread size	Torque (N.m)	Head
	MX KEY-S05	S05	7	Square Ball Round Drilling Chamfering Counter boring
	MX KEY-S06	S06	10	
	MX KEY-S08	S08	15	
	MX KEY-S10	S10	28	
	MX KEY-S12	S12	28	
	MX KEY-S15	S15	40	
	MX SKEY-S06	S06	10	TST-3S06
	MX SKEY-S08	S08	15	TST-4S08
	MX SKEY-T40L	S08	15	TST-6S10 TTB
		S10	28	
	MX SKEY-T20	S05	7	
		S06	10	
	MX SKEY-T25	S06	10	
	MX SKEY-T30L	S08	15	
	MX SKEY-T50L	S08	15	
		S10	28	

• Wrench should be ordered separately

Torque wrench

Appearance	Designation	Connection	Head designation	Torque (N.m)
Handle	 TORQUE WRENCH 5-50Nm 9X12	-	-	-
Open wrench for cylindrical head		MX WRENCH 6-05	MXED, MXEE MXRD, MXBE MXDP, MXCA	7
		MX WRENCH 8-06		10
		MX WRENCH 10-08		15
		MX WRENCH 13-10		28
		MX WRENCH 16-12		28
		MX WRENCH 20-15		40
Open wrench for 2 flutes head		MX WRENCH 4E-05	MXRB,MXFX MXBB MXCP, MXGC MXCW, MXCR	7
		MX WRENCH 5E-06		10
		MX WRENCH 7E-08		15
		MX WRENCH 8E-10		28
		MX WRENCH 9E-12		28
90° adapter for torx bit		INSERT TOOL 9X12mm	-	-
Torx bit socket		BIT SOCKET T20 DRIVE	TTB TST277	7, 10
		BIT SOCKET T25 DRIVE		10
		BIT SOCKET T30 DRIVE		15
		BIT SOCKET T40 DRIVE		15, 28
		BIT SOCKET T50 DRIVE		15, 28

• Wrench should be ordered separately

