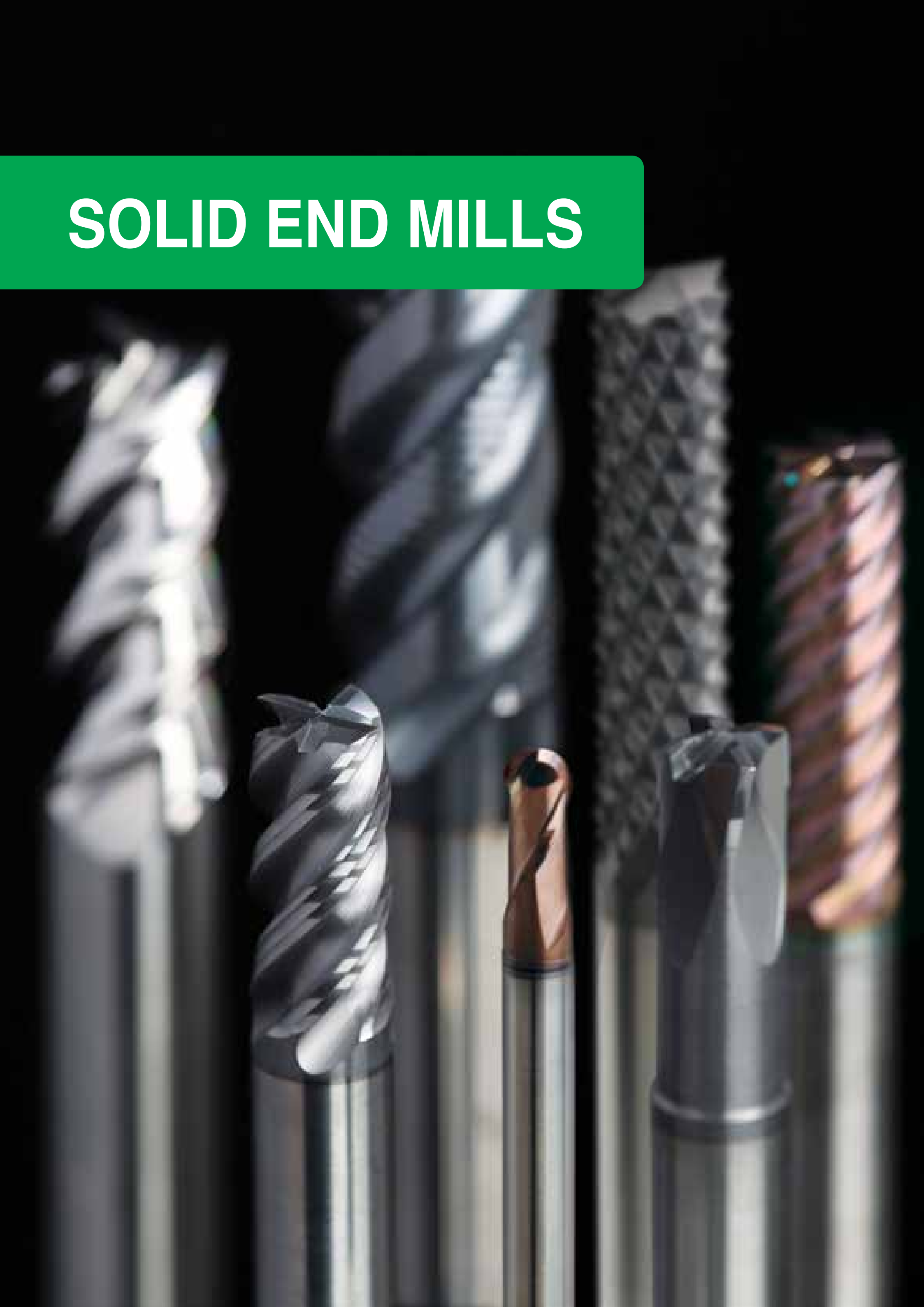
SOLID END MILLS



SOLID END MILLS

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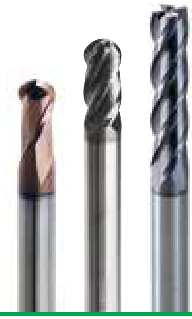
TaeguTec Member IMC Group

Guide to Icons

- Flutes
- Helix Angle
- Cutting Condition Page
- Ball Nose
- Corner Radius
- Wave Cutting Edge



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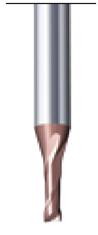
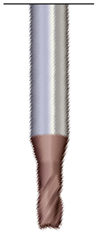
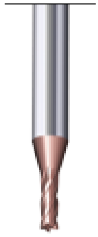
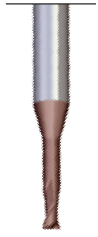
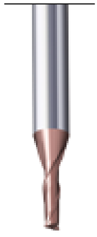
Tool Selection Guide

Solid end mill

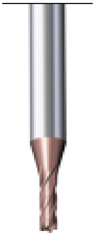
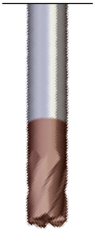
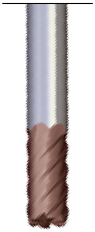
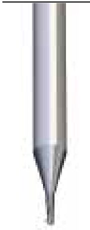
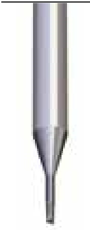
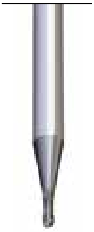
	HARDMILL					
Series	**HSB 2** 	**HSB 2...S6** 	**HSB 2...S/M** 	**HSB 4...M** 	**HSF 2** 	**HSF 2...M** 
Type	Ball	Ball	Ball	Ball	Flat	Flat
Flute	2	2	2	4	2	2
Length	Long neck	Long neck	Short	Medium	Long neck	Medium
Grades	TT5505	TT5505	TT5505	TT5505	TT5505	TT5505
Application	* H.S.M	H.S.M	H.S.M	H.S.M	H.S.M	H.S.M
Material	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	Ø0.3 - Ø12.0	Ø0.6 - Ø2.0	Ø1.0 - Ø12.0	Ø4.0 - Ø12.0	Ø0.3 - Ø12.0	Ø0.3 - Ø12.0
Pages	F16 - F19	F20	F21 - F22	F23	F24 - F27	F28 - F29

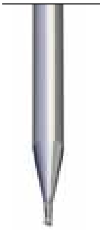
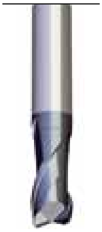
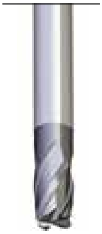
	HARDMILL					
Series	**HSF 4** 	**HSF 4...M** 	**HSF 6...M** 	**HSF 6...XLT** 	**HSR 2** 	**HSR 2...M** 
Type	Flat	Flat	Flat	Flat	Radius	Radius
Flute	4	4	6	6	2	2
Length	Long neck	Medium	Medium	Extra long	Long neck	Medium
Grades	TT5505	TT5505	TT5505	TT5505	TT5505	TT5505
Application	H.S.M	H.S.M	Finishing	Finishing	H.S.M	H.S.M
Material	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	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	F30 - F31	F32	F33	F34	F35- F41	F42- F44

• *H.S.M : High Speed Machining

Tool Selection Guide

Solid end mill

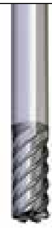
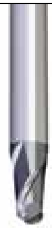
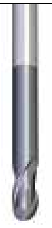
HARDMILL				APEXMILL		
HSR 4	HSR 4...M	HSR 6	HSR 6...M	RIB 2	RIF 2	SMB 2
						
Radius	Radius	Radius	Radius	Ball	Flat	Ball
4	4	6	6	2	2	2
Long neck	Medium	Long neck	Medium	Long neck	Long neck	Short
TT5505	TT5505	TT5505	TT5505	TT5515	TT5515	TT5515
H.S.M	H.S.M	Finishing	Finishing	General	General	Miniature
P ○	P ○	P ○	P ○	P ●	P ●	P ●
M	M	M	M	M ○	M ○	M ○
K ○	K ○	K ○	K ○	K ●	K ●	K ●
N	N	N	N	N	N	N
S	S	S	S	S ○	S ○	S ○
H ●	H ●	H ●	H ●	H ○	H ○	H
Ø1.0 - Ø12.0	Ø1.0 - Ø12.0	Ø6.0 - Ø12.0	Ø6.0 - Ø12.0	Ø0.4 - Ø3.0	Ø0.4 - Ø4.0	Ø0.6 - Ø1.5
F45 - F48	F49 - F50	F51	F52	F53	F54- F55	F56

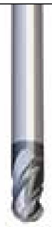
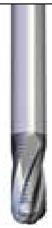
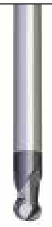
APEXMILL						
HMF 2	AMB 2...T	AMF 2...T	AMF 4...T	AMR 2...T-R	AMR 4...T-R	AMR 6...T-R
						
Flat	Ball	Flat	Flat	Radius	Radius	Radius
2	2	2	4	2	4	6
Short	Long neck	Long neck	Long neck	Long neck	Long neck	Long neck
TT5515	TT5515	TT5515	TT5515	TT5515	TT5515	TT5515
Miniature	General	General	General	General	General	Finishing
P ●	P ●	P ●	P ●	P ●	P ●	P ●
M ○	M ○	M ○	M ○	M ○	M ○	M
K ●	K ●	K ●	K ●	K ●	K ●	K ○
N	N	N	N	N	N	N
S ○	S ○	S ○	S ○	S ○	S ○	S
H	H ○	H ○	H ○	H ○	H ○	H ○
Ø0.4 - Ø1.5	Ø1.0 - Ø16.0	Ø1.0 - Ø16.0	Ø3.0 - Ø16.0	Ø3.0 - Ø12.0	Ø3.0 - Ø12.0	Ø6.0 - Ø12.0
F57	F58	F59	F60	F61	F62	F63

● Recommended, ○ Suitable

Tool Selection Guide

Solid end mill

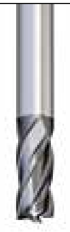
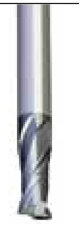
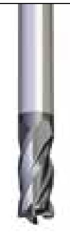
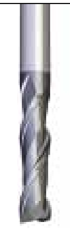
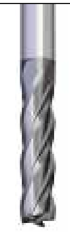
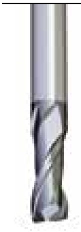
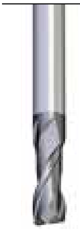
	APEXMILL					
Series	SEH 6...T 	SEH 6...XLT 	SEH 6...T-R 	SBE 2...S 	SBE 2...T 	SBE 2...LT 
Type	Flat	Flat	Radius	Ball	Ball	Ball
Flute	6	6	6	2	2	2
Length	Medium	Extra long	Medium	Short	Medium	Long
Grades	TT5515	TT5515	TT5515	TT5515	TT5515, UF10N	TT5515, UF10N
Application	Finishing	Finishing	Finishing	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	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø2.0 - Ø20.0	Ø1.0 - Ø20.0	Ø2.0 - Ø16.0
Pages	F64	F65	F66	F67	F68	F69

	APEXMILL					
Series	SBE 4...T 	REB ...L 	SBO 2...T 	BES 2...T 	BES 4...T 	TSE 2...M 
Type	Ball	Ball	Ball (Through coolant)	Ball (Spherical)	Ball (Spherical)	Flat
Flute	4	3-4	2	2	4	2
Length	Medium	Long	Medium	Medium	Medium	Medium
Grades	TT5515, UF10N	TT5515	TT5525	TT5515	TT5515	TT5515,TT5525,UF10
Application	General	Roughing	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	Ø1.0 -Ø 20.0	Ø6.0 - Ø20.0	Ø6.0 - Ø14.0	Ø3.0 - Ø16.0	Ø3.0 - Ø16.0	Ø1.0 - Ø20.0
Pages	F70	F71	F71	F72	F72	F73

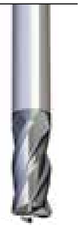
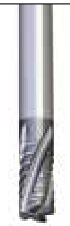
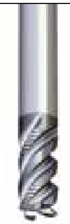
Tool Selection Guide

Solid end mill

APEXMILL

	TSE 4...M	HES 2...LT	HES 4...LT	HES 2...XLT	HES 4...XLT	HES 2...T-R	HES 2...LT-R
							
	Flat	Flat	Flat	Flat	Flat	Radius	Radius
	4	2	4	2	4	2	2
	Medium	Long	Long	Extra long	Extra long	Medium	Long
	TT5515,TT5525,UF10	TT5525	TT5525	TT5515, TT5525	TT5515, TT5525	TT5515, TT5525	TT5515, TT5525
	General	General	General	General	General	General	General
P	●	●	●	●	●	●	●
M	○	○	○	○	○	○	○
K	●	●	●	●	●	●	●
N							
S	○	○	○	○	○	○	○
H							
	Ø2.0 - Ø25.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø12.0
	F74	F75	F76	F77	F78	F79	F80

APEXMILL

	HES 4...T-R	HES 4...LT-R	HFM 2	HFM 4	CFM 4...M	REL ...L	FSM 4...M
			 SOLIDFEED	 SOLIDFEED	 VFIMILL		 MULTIMILL
	Radius	Radius	Flat	Flat	Chamfer	Chamfer	Chamfer
	4	4	2	4	4	3-4	4
	Medium	Long	Medium	Medium	Medium	Long	Medium
	TT5515, TT5525	TT5515, TT5525	TT5515	TT5515	TT5525	TT5515	TT5525
	General	General	* H.F.M	H.F.M	General	Roughing	Roughing+Finishing
P	●	●	●	●	●	●	●
M	○	○			●	○	
K	●	●	●	●	○	○	○
N							
S	○	○			●	○	
H			○	○		●	
	Ø3.0 - Ø20.0	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0	Ø6.0 - Ø12.0	Ø6.0 - Ø25.0	Ø6.0 - Ø20.0	Ø6.0 - Ø25.0
	F81	F82	F83	F83	F84	F84	F85

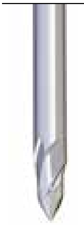
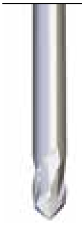
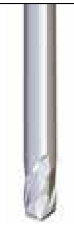
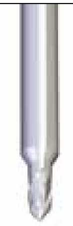
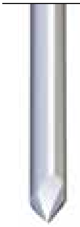
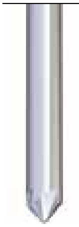
- * H.F.M : High Feed Machining

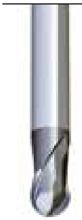
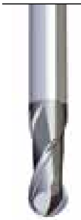
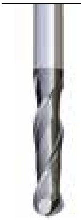
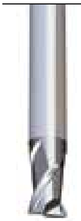
● Recommended, ○ Suitable

TaeguTec Member IMC Group

Tool Selection Guide

Solid end mill

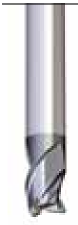
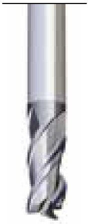
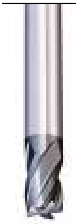
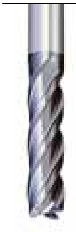
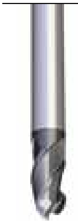
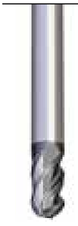
Series	APEXMILL					
	CEM 2...-C60 	CEM 2 	CEM 2...-C120 	CEM 	ECEM 2 	ECEM 4 
Type	Chamfer 60°	Chamfer 90°	Chamfer 120°	Chamfer 90°	Chamfer 90°	Chamfer 90°
Flute	2	2	2	2	2	4
Length	Long	Long	Long	Long	Medium	Medium
Grades	UF10	UF10	UF10	UF10	UF10	UF10
Application	General	General	General	General	General	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	Ø4.0 - Ø20.0	Ø4.0 - Ø20.0	Ø4.0 - Ø20.0	Ø10.0 - Ø20.0	Ø2.0 - Ø16.0	Ø6.0 - Ø12.0
Pages	F86	F86	F87	F87	F88	F88

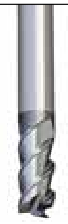
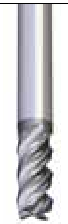
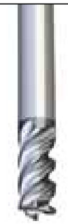
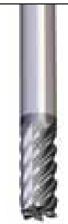
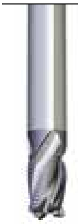
Series	APEXMILL					
	EBE 2...S 	EBE 2...M 	EBE 2...L 	EFE 2...S 	EFE 2...M 	EFE 2...L 
Type	Ball	Ball	Ball	Flat	Flat	Flat
Flute	2	2	2	2	2	2
Length	Short	Medium	Long	Short	Medium	Long
Grades	TT5515	TT5515	TT5515	TT5525	TT5525	TT5525
Application	General (Eco)	General (Eco)	General (Eco)	General (Eco)	General (Eco)	General (Eco)
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 - Ø20.0
Pages	F89	F90	F91	F92	F93	F94

Eco : Economical type

Tool Selection Guide

Solid end mill

APEXMILL					STARMILL	
EFE 3...S	EFE 3...M	EFE 4...S	EFE 4...M	EFE 4...L	SBT 3...U	SBT 4...U
						
Flat	Flat	Flat	Flat	Flat	Ball	Ball
3	3	4	4	4	3	4
Short	Medium	Short	Medium	Long	Medium	Medium
TT5525	TT5525	TT5525	TT5525	TT5525	TT5515	TT5515
General (Eco)	General (Eco)	General (Eco)	General (Eco)	General (Eco)	Difficult-to-cut	Difficult-to-cut
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
Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø3.0 - Ø20.0	Ø4.0 - Ø12.0	Ø4.0 - Ø12.0
F95	F96	F97	F98	F99	F100	F100

STARMILL						
SED 3...T	SED 4...U	SED 4...U-R/C	HES 6...T	REH ...S	REH ...M	REH ...L
						
Flat	Flat	Radius/Chamfer	Flat	Chamfer	Chamfer	Chamfer
3	4	4	6	4-6	3-6	4-6
Medium	Medium	Medium	Medium	Short	Medium	Long
TT9020	TT5515	TT5515	TT5525	TT5525	TT5525	TT5525
Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Finishing	Roughing	Roughing	Roughing
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
Ø2.0 - Ø20.0	Ø3.0 - Ø20.0	Ø4.0 - Ø12.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø4.0 - Ø25.0	Ø6.0 - Ø20.0
F101	F102	F102- F103	F103	F104	F105	F106

● Recommended, ○ Suitable

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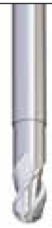
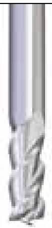
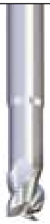
Tool Selection Guide

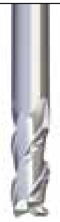
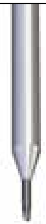
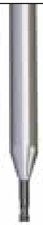
Solid end mill

Series	ALUMILL					
	AEB 2...S	AEB 3...M	AES 2	AES 2...XL	AES 3	AES 3...ML
						
Type	Ball	Ball	Ball	Flat	Flat	Flat
Flute	2	3	2	2	3	3
Length	Short	Medium	Medium	Extra long	Medium	Long
Grades	TT9020	TT9020	UF10	UF10	UF10	UF10
Application	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
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
	N: ●	N: ●	N: ●	N: ●	N: ●	N: ●
Range	Ø6.0 - Ø20.0	Ø2.0 - Ø16.0	Ø1.0 - Ø20.0	Ø2.0 - Ø20.0	Ø2.0 - Ø25.0	Ø3.0 - Ø20.0
Pages	F107	F107	F108	F109	F110	F111

Series	ALUMILL					
	AES 3...XL	AES 2...-R	AES 3...-R	REMA 3/3...C	REA 3...L	AWE 3
						
Type	Flat	Radius	Radius	Radius	Chamfer	Wave
Flute	3	2	3	3	3	3
Length	Extra long	Medium	Medium	Long neck	Long	Medium
Grades	UF10	UF10	UF10	UF10	UF10	UF10
Application	Aluminium	Aluminium	Aluminium	Roughing	Roughing	Aluminium
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
	N: ●	N: ●	N: ●	N: ●	N: ●	N: ●
Range	Ø6.0 - Ø20.0	Ø6.0 - Ø16.0	Ø6.0 - Ø12.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0	Ø6.0 - Ø20.0
Pages	F112	F113	F114	F115	F115	F116

Tool Selection Guide

Solid end mill

ALUMILL	DIAMILL					
AWE 3...ML	DMB 2	DEB 2...S	DEB 2...L	DMR 2	DER 3...S	DER 3...L
						
Wave	Ball	Ball	Ball	Radius	Radius	Radius
3	2	2	2	2	3	3
Long	Miniature	Short	Long	Miniature	Short	Long
UF10	TT6050	TT6050	TT6050	TT6050	TT6050	TT6050
Aluminium	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
P M K N S H ●	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Ø6.0 - Ø20.0	Ø0.6 - Ø2.0	Ø3.0 - Ø12.0	Ø3.0 - Ø12.0	Ø0.6 - Ø2.0	Ø3.0 - Ø12.0	Ø4.0 - Ø12.0
F116	F117	F117	F118	F118	F119	F119

DIAMILL						
RRFE	RCFE	RCOM	RDCF 4			
						
Flat	Flat	Flat	Flat			
6-12		4-6	4			
TTD610	TTD610	TTD610	TTD610			
Roughing	Roughing	Finishing	Finishing			
Composite material	Composite material	Composite material	Composite material			
Ø4.0 - Ø12.0	Ø4.0 - Ø12.0	Ø6.0 - Ø12.0	Ø4.0 - Ø12.0			
F120	F120	F121	F121			

● Recommended, ○ Suitable

Grades

Solid end mill

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 • Ultra fine substrate
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-hardeded steel, stainless steel, high-temp alloy (45 < HRC < 55) • Medium to high speed machining • Ultra fine substrate
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 • Submicron substrate
TT6050 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) • Highest thermal conductivity, impact resistance and processing stability • Machining of composite material
UF10N **UF10** Uncoated	P25 – P35 M25 – M35 N25 – N35	• General machining of steel, aluminum alloys, non-ferrous materials • Submicron substrate

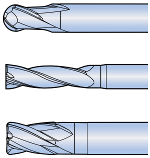
Designation System

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	

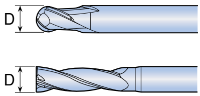


2 No. of flute

2	2 Flutes
4	4 Flutes
6	6 Flutes

3 Cutting diameter

010	1.0 mm
100	10.0 mm



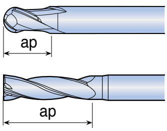
4 Cutting length type

-(none)	Long neck
S	Short
M	Medium
L	Long
XLT	Extra long

5 Length of cut

HSB / HSF type

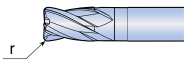
010	1.0 mm
120	12.0 mm



5* Corner radius

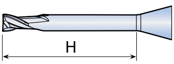
HSR type

005	R0.05 mm
020	R0.2 mm



6 Length of neck

030	3.0 mm
200	20.0mm
-(none)	No undercut



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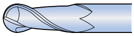
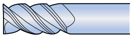
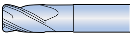
Designation System

APEXMILL | STARMILL | ALUMILL | DIAMILL

SBE	2	010	S -	* * *
1	2	3	4	5

1 End mill type

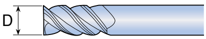
SBE/SBT/AEB/DEB	Ball nose	
TSE/SED/AES	Flat	
AMR/DER	Corner radius	

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

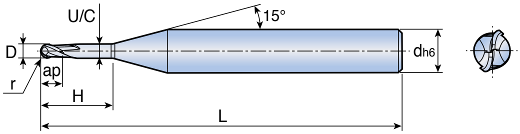
S	Short length	
M	Medium length	
L	Long length	
XL	Extra long length	

5 Others

-□	Shank diameter
-R□□	Corner radius

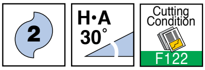
HSB 2

2 flute long neck ball



r		
	D≤6	±0.005
	D>6	±0.010

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

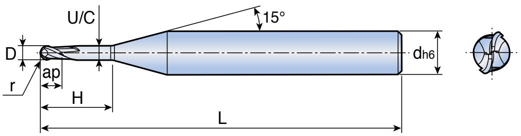


Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2003 003 010	0.3	0.15	45	0.3	1.0	0.27	4.0	●
2003 003 020	0.3	0.15	45	0.3	2.0	0.27	4.0	●
2003 003 030	0.3	0.15	45	0.3	3.0	0.27	4.0	●
2004 004 010	0.4	0.2	45	0.4	1.0	0.36	4.0	●
2004 004 015	0.4	0.2	45	0.4	1.5	0.36	4.0	●
2004 004 020	0.4	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 item

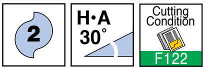
HSB 2

2 flute long neck ball



r	
D≤6	±0.005
D>6	±0.010

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



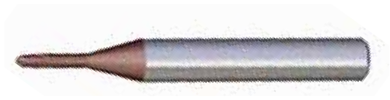
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2010 010 030	1.0	0.5	50	1.0	3	0.97	4.0	●
2010 010 040	1.0	0.5	50	1.0	4	0.97	4.0	●
2010 010 050	1.0	0.5	50	1.0	5	0.97	4.0	●
2010 010 060	1.0	0.5	50	1.0	6	0.97	4.0	●
2010 010 070	1.0	0.5	50	1.0	7	0.97	4.0	●
2010 010 080	1.0	0.5	50	1.0	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	●

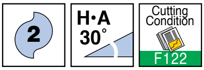
●: Standard item

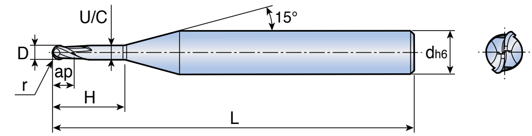
HSB 2

HARDMILL

2 flute long neck ball







r	
D≤6	±0.005
D>6	±0.010

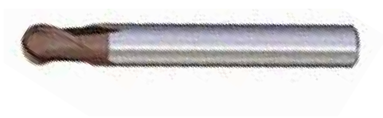
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

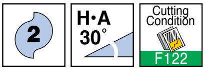
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2020 030 250	2.0	1.0	60	3.0	25	1.93	4.0	●
2020 030 300	2.0	1.0	70	3.0	30	1.93	4.0	●
2025 035 080	2.5	1.25	55	3.5	8	2.45	4.0	●
2025 035 100	2.5	1.25	55	3.5	10	2.45	4.0	●
2025 035 120	2.5	1.25	55	3.5	12	2.43	4.0	●
2025 035 160	2.5	1.25	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	●

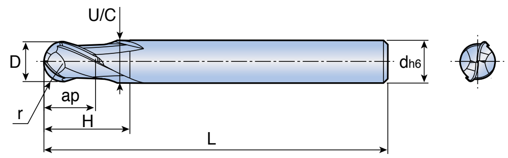
●: Standard item

HSB 2

2 flute long neck ball







r	D	Tolerance
D≤6	±0.005	
D>6	±0.010	

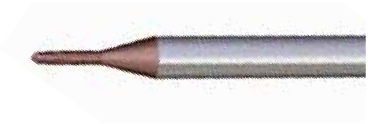
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

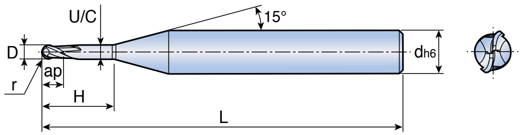
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2060 080 150	6.0	3	60	8	15	5.9	6.0	●
2060 080 200	6.0	3	60	8	20	5.9	6.0	●
2060 080 300	6.0	3	80	8	30	5.9	6.0	●
2060 080 350	6.0	3	80	8	35	5.9	6.0	●
2080 100 150	8.0	4	80	10	15	7.9	8.0	●
2080 100 200	8.0	4	80	10	20	7.9	8.0	●
2080 100 300	8.0	4	100	10	30	7.9	8.0	●
2100 120 200	10.0	5	80	12	20	9.9	10.0	●
2100 120 250	10.0	5	80	12	25	9.9	10.0	●
2100 120 350	10.0	5	100	12	35	9.9	10.0	●
2120 140 250	12.0	6	80	14	25	11.9	12.0	●
2120 140 400	12.0	6	110	14	40	11.9	12.0	●

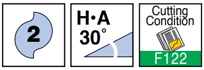
●: Standard item

HSB 2...S6

2 flute long neck ball (Shank 6mm)







r	
D≤6	±0.005
D>6	±0.010

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

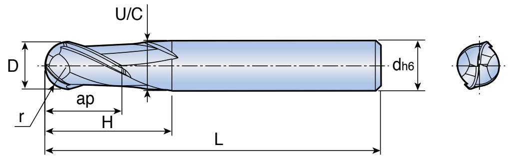
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2006 006 020 S6	0.6	0.3	45	0.6	2	0.55	6.0	●
2006 006 040 S6	0.6	0.3	45	0.6	4	0.55	6.0	●
2006 006 060 S6	0.6	0.3	45	0.6	6	0.55	6.0	●
2008 008 020 S6	0.8	0.4	45	0.8	2	0.75	6.0	●
2008 008 040 S6	0.8	0.4	45	0.8	4	0.75	6.0	●
2008 008 060 S6	0.8	0.4	45	0.8	6	0.75	6.0	●
2008 008 080 S6	0.8	0.4	45	0.8	8	0.75	6.0	●
2010 010 030 S6	1.0	0.5	50	1.0	3	0.95	6.0	●
2010 010 040 S6	1.0	0.5	50	1.0	4	0.95	6.0	●
2010 010 060 S6	1.0	0.5	50	1.0	6	0.95	6.0	●
2010 010 080 S6	1.0	0.5	50	1.0	8	0.95	6.0	●
2010 010 100 S6	1.0	0.5	50	1.0	10	0.95	6.0	●
2015 015 040 S6	1.5	0.75	50	1.5	4	1.45	6.0	●
2015 015 060 S6	1.5	0.75	50	1.5	6	1.45	6.0	●
2015 015 080 S6	1.5	0.75	50	1.5	8	1.45	6.0	●
2015 015 100 S6	1.5	0.75	50	1.5	10	1.45	6.0	●
2015 015 120 S6	1.5	0.75	50	1.5	12	1.45	6.0	●
2020 030 060 S6	2.0	1.0	50	3.0	6	1.95	6.0	●
2020 030 080 S6	2.0	1.0	50	3.0	8	1.95	6.0	●
2020 030 100 S6	2.0	1.0	50	3.0	10	1.95	6.0	●
2020 030 120 S6	2.0	1.0	50	3.0	12	1.95	6.0	●
2020 030 160 S6	2.0	1.0	50	3.0	16	1.95	6.0	●

●: Standard item

HSB 2...S

2 flute short ball

2 | H·A 30° | Cutting Condition F122



r	
D≤6	±0.005
D>6	±0.010

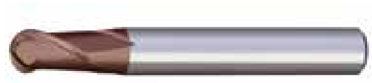
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

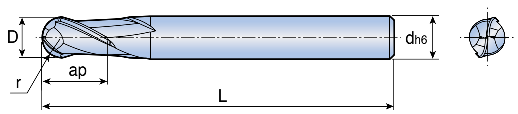
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 2010S 015 025	1.0	0.5	38	1.5	2.5	0.95	6.0	●
2015S 025 045	1.5	0.75	38	2.5	4.5	1.45	6.0	●
2020S 030 065	2.0	1.0	38	3.0	6.5	1.95	6.0	●
2030S 045 080	3.0	1.5	38	4.5	8.0	2.9	6.0	●
2040S 060 100	4.0	2.0	54	6.0	10.0	3.9	6.0	●
2050S 075 150	5.0	2.5	54	7.5	15.0	4.9	6.0	●
2060S 090 170	6.0	3.0	54	9.0	17.0	5.9	6.0	●
2080S 120 200	8.0	4.0	58	12.0	20.0	7.9	8.0	●
2100S 150 250	10.0	5.0	66	15.0	25.0	9.9	10.0	●
2120S 180 300	12.0	6.0	73	18.0	30.0	11.9	12.0	●

●: Standard item

HSB 2...M

2 flute medium ball





r	
D≤6	±0.005
D>6	±0.010

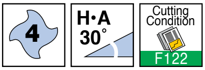
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

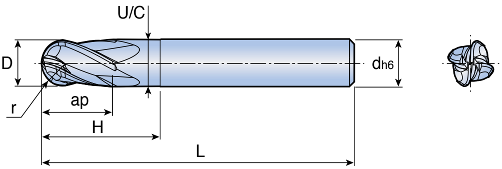
2 | H·A 30° | Cutting Condition F122

Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5505
HSB 2003M 006	0.3	0.15	45	0.6	4.0	●
2004M 008	0.4	0.2	45	0.8	4.0	●
2005M 010	0.5	0.25	45	1.0	4.0	●
2006M 012	0.6	0.3	45	1.2	4.0	●
2007M 014	0.7	0.35	45	1.4	4.0	●
2008M 016	0.8	0.4	45	1.6	4.0	●
2009M 018	0.9	0.45	45	1.8	4.0	●
2010M 025	1.0	0.5	50	2.5	6.0	●
2015M 040	1.5	0.75	50	4.0	6.0	●
2020M 050	2.0	1.0	50	5.0	6.0	●
2025M 070	2.5	1.25	60	7.0	6.0	●
2030M 080	3.0	1.5	60	8.0	6.0	●
2035M 080	3.5	1.75	70	8.0	6.0	●
2040M 080	4.0	2.0	70	8.0	6.0	●
2045M 100	4.5	2.25	80	10.0	6.0	●
2050M 100	5.0	2.5	80	10.0	6.0	●
2060M 120	6.0	3.0	80	12.0	6.0	●
2080M 140	8.0	4.0	90	14.0	8.0	●
2100M 180	10.0	5.0	100	18.0	10.0	●
2120M 220	12.0	6.0	110	22.0	12.0	●

●: Standard item

4 flute medium ball





r	
D≤6	±0.005
D>6	±0.010

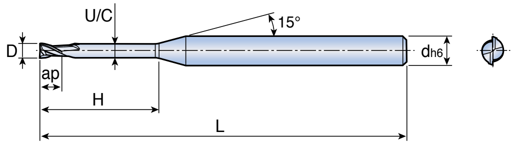
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5505
HSB 4040M 060 100	4.0	2.0	70	6.0	10	3.9	6.0	●
4050M 075 150	5.0	2.5	80	7.5	15	4.9	6.0	●
4060M 090 170	6.0	3.0	80	9.0	17	5.9	6.0	●
4080M 120 200	8.0	4.0	90	12.0	20	7.9	8.0	●
4100M 150 250	10.0	5.0	100	15.0	25	9.9	10.0	●
4120M 180 300	12.0	6.0	110	18.0	30	11.9	12.0	●

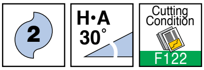
●: Standard item

HSF 2

2 flute long neck flat



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



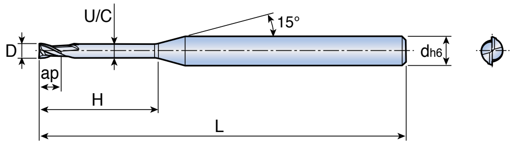
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 2003 004 010	0.006-0.010	0.3	45	0.4	1.0	0.27	4.0	●
2003 004 020	0.006-0.010	0.3	45	0.4	2.0	0.27	4.0	●
2003 004 030	0.006-0.010	0.3	45	0.4	3.0	0.27	4.0	●
2004 006 010	0.006-0.010	0.4	45	0.6	1.0	0.37	4.0	●
2004 006 015	0.006-0.010	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 item

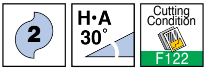
HSF 2

HARDMILL

2 flute long neck flat



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



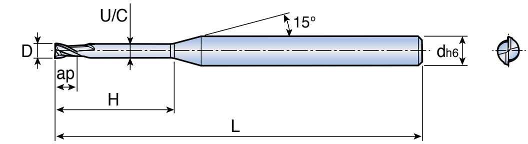
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 2008 012 020	0.007-0.015	0.8	45	1.2	2	0.75	4.0	●
2008 012 040	0.007-0.015	0.8	45	1.2	4	0.75	4.0	●
2008 012 060	0.007-0.015	0.8	45	1.2	6	0.75	4.0	●
2008 012 080	0.007-0.013	0.8	45	1.2	8	0.73	4.0	●
2008 012 100	0.007-0.012	0.8	45	1.2	10	0.73	4.0	●
2008 012 120	0.007-0.012	0.8	45	1.2	12	0.73	4.0	●
2010 015 030	0.009-0.020	1.0	50	1.5	3	0.97	4.0	●
2010 015 040	0.009-0.020	1.0	50	1.5	4	0.97	4.0	●
2010 015 060	0.009-0.018	1.0	50	1.5	6	0.97	4.0	●
2010 015 080	0.009-0.018	1.0	50	1.5	8	0.95	4.0	●
2010 015 100	0.009-0.016	1.0	50	1.5	10	0.95	4.0	●
2010 015 120	0.008-0.014	1.0	50	1.5	12	0.93	4.0	●
2010 015 140	0.008-0.014	1.0	50	1.5	14	0.93	4.0	●
2010 015 160	0.008-0.014	1.0	50	1.5	16	0.91	4.0	●
2010 015 180	0.008-0.012	1.0	55	1.5	18	0.91	4.0	●
2010 015 200	0.008-0.012	1.0	55	1.5	20	0.85	4.0	●
2012 018 040	0.010-0.020	1.2	50	1.8	4	1.17	4.0	●
2012 018 060	0.010-0.020	1.2	50	1.8	6	1.17	4.0	●
2012 018 080	0.010-0.020	1.2	50	1.8	8	1.15	4.0	●
2012 018 100	0.010-0.019	1.2	50	1.8	10	1.15	4.0	●
2012 018 120	0.010-0.018	1.2	50	1.8	12	1.15	4.0	●
2012 018 160	0.010-0.018	1.2	50	1.8	16	1.13	4.0	●
2015 023 040	0.015-0.025	1.5	50	2.3	4	1.47	4.0	●
2015 023 060	0.015-0.025	1.5	50	2.3	6	1.47	4.0	●
2015 023 080	0.015-0.025	1.5	50	2.3	8	1.45	4.0	●
2015 023 100	0.015-0.025	1.5	50	2.3	10	1.45	4.0	●
2015 023 120	0.013-0.025	1.5	50	2.3	12	1.43	4.0	●
2015 023 140	0.013-0.025	1.5	50	2.3	14	1.43	4.0	●
2015 023 160	0.011-0.015	1.5	50	2.3	16	1.41	4.0	●
2015 023 180	0.011-0.015	1.5	55	2.3	18	1.41	4.0	●
2015 023 200	0.011-0.015	1.5	55	2.3	20	1.41	4.0	●

●: Standard item

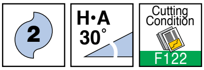
TaeguTec
Member IMC Group

HSF 2

2 flute long neck flat



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

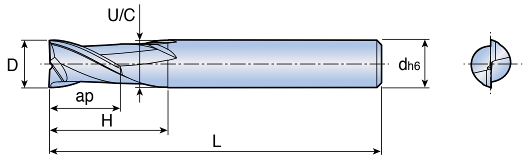


Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 2020 030 040	0.018-0.040	2.0	50	3.0	4	1.95	4.0	●
2020 030 060	0.018-0.040	2.0	50	3.0	6	1.95	4.0	●
2020 030 080	0.018-0.040	2.0	50	3.0	8	1.95	4.0	●
2020 030 100	0.018-0.040	2.0	50	3.0	10	1.95	4.0	●
2020 030 120	0.016-0.025	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	●

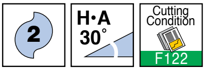
●: Standard item

HSF 2

2 flute long neck flat



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

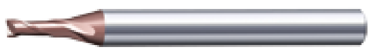


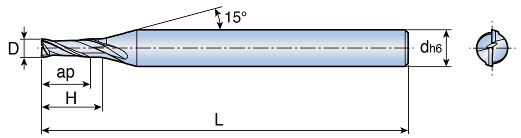
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 2050 080 150	0.056-0.090	5.0	60	8	15	4.8	6.0	●
2050 080 300	0.056-0.090	5.0	90	8	30	4.8	6.0	●
2060 090 150	0.067-0.100	6.0	60	9	15	5.9	6.0	●
2060 090 200	0.067-0.100	6.0	80	9	20	5.9	6.0	●
2060 090 300	0.067-0.100	6.0	90	9	30	5.9	6.0	●
2080 120 200	0.090-0.120	8.0	65	12	20	7.9	8.0	●
2080 120 300	0.090-0.120	8.0	80	12	30	7.9	8.0	●
2080 120 400	0.090-0.120	8.0	100	12	40	7.9	8.0	●
2100 150 250	0.117-0.130	10.0	70	15	25	9.9	10.0	●
2100 150 350	0.117-0.130	10.0	85	15	35	9.9	10.0	●
2100 150 450	0.117-0.130	10.0	100	15	45	9.9	10.0	●
2120 180 300	0.126-0.168	12.0	80	18	30	11.9	12.0	●
2120 180 400	0.126-0.168	12.0	100	18	40	11.9	12.0	●
2120 180 500	0.126-0.168	12.0	120	18	50	11.9	12.0	●

●: Standard item

HSF 2…M

2 flute medium flat





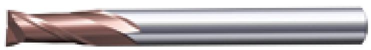
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

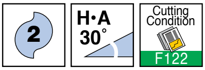
2 | H·A 30° | Cutting Condition F122

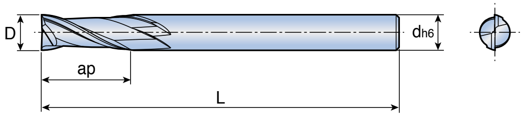
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	TT5505
HSF 2003M 003	0.006-0.010	0.3	45	0.3	0.6	4.0	●
2003M 006	0.006-0.010	0.3	45	0.6	0.9	4.0	●
2004M 004	0.006-0.010	0.4	45	0.4	0.7	4.0	●
2004M 008	0.006-0.010	0.4	45	0.8	1.1	4.0	●
2005M 005	0.006-0.010	0.5	45	0.5	0.8	4.0	●
2005M 010	0.006-0.010	0.5	45	1.0	1.3	4.0	●
2006M 006	0.008-0.013	0.6	45	0.6	0.9	4.0	●
2006M 012	0.008-0.013	0.6	45	1.2	1.5	4.0	●
2008M 008	0.007-0.015	0.8	45	0.8	1.2	4.0	●
2008M 016	0.007-0.015	0.8	45	1.6	2	4.0	●
2010M 025	0.009-0.020	1.0	50	2.5	4	6.0	●
2012M 030	0.010-0.020	1.2	50	3.0	5	6.0	●
2015M 040	0.015-0.025	1.5	50	4.0	6	6.0	●
2020M 060	0.018-0.040	2.0	50	6.0	8	6.0	●
2025M 070	0.019-0.045	2.5	50	7.0	9	6.0	●
2030M 080	0.021-0.060	3.0	60	8.0	10	6.0	●
2040M 100	0.030-0.075	4.0	60	10.0	13	6.0	●
2050M 130	0.056-0.090	5.0	60	13.0	16	6.0	●

●: Standard item

2 flute medium flat





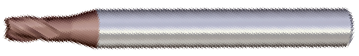


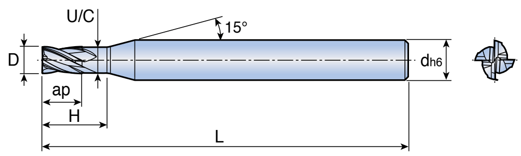
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5505
HSF 2060M 150	0.067-0.100	6.0	60	15.0	6.0	●
2080M 200	0.090-0.120	8.0	65	20.0	8.0	●
2100M 250	0.117-0.130	10.0	70	25.0	10.0	●
2120M 300	0.126-0.168	12.0	80	30.0	12.0	●

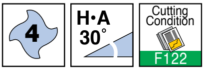
●: Standard item

4 flute long neck flat





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

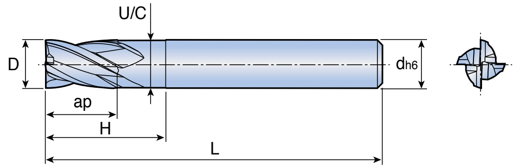


Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 4010 015 030	0.009-0.020	1.0	50	1.5	3	0.97	4.0	●
4010 015 040	0.009-0.020	1.0	50	1.5	4	0.97	4.0	●
4010 015 060	0.009-0.018	1.0	50	1.5	6	0.97	4.0	●
4010 015 080	0.009-0.018	1.0	50	1.5	8	0.97	4.0	●
4010 015 100	0.009-0.016	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	●

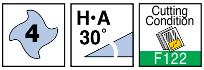
●: Standard item

HSF 4

4 flute long neck flat



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



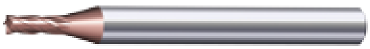
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5505
HSF 4060 090 150	0.067-0.100	6.0	60	9	15	5.9	6.0	●
4060 090 200	0.067-0.100	6.0	80	9	20	5.9	6.0	●
4060 090 300	0.067-0.100	6.0	100	9	30	5.9	6.0	●
4080 120 200	0.090-0.120	8.0	65	12	20	7.9	8.0	●
4080 120 300	0.090-0.120	8.0	80	12	30	7.9	8.0	●
4080 120 400	0.090-0.120	8.0	100	12	40	7.9	8.0	●
4100 150 250	0.117-0.130	10.0	70	15	25	9.9	10.0	●
4100 150 350	0.117-0.130	10.0	80	15	35	9.9	10.0	●
4100 150 450	0.117-0.130	10.0	100	15	45	9.9	10.0	●
4120 180 300	0.126-0.168	12.0	80	18	30	11.9	12.0	●
4120 180 400	0.126-0.168	12.0	100	18	40	11.9	12.0	●
4120 180 500	0.126-0.168	12.0	120	18	50	11.9	12.0	●

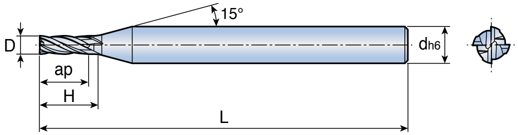
●: Standard item

HSF 4…M

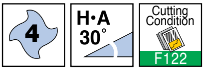
HARDMILL

4 flute medium flat





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

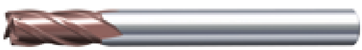


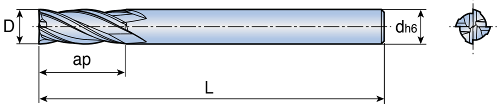
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	TT5505
HSF 4010M 025	0.009-0.020	1.0	50	2.5	3	6.0	●
4015M 040	0.015-0.025	1.5	50	4.0	5	6.0	●
4020M 060	0.018-0.040	2.0	50	6.0	7	6.0	●
4030M 080	0.021-0.060	3.0	60	8.0	9.5	6.0	●
4040M 100	0.030-0.075	4.0	60	10.0	12	6.0	●
4050M 130	0.056-0.090	5.0	60	13.0	15.5	6.0	●

HSF 4…M

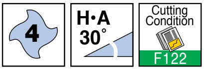
HARDMILL

4 flute medium flat





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

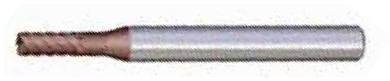


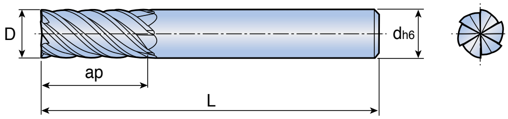
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5505
HSF 4060M 150	0.067-0.100	6.0	60	15.0	6.0	●
4080M 200	0.090-0.120	8.0	65	20.0	8.0	●
4100M 250	0.117-0.130	10.0	70	25.0	10.0	●
4120M 300	0.126-0.168	12.0	80	30.0	12.0	●

●: Standard item

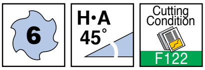
HSF 6...M

6 flute medium flat





• Finishing



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

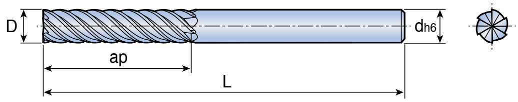
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5505
HSF 6030M 080	0.010-0.030	3.0	50	8	6.0	●
6040M 100	0.010-0.050	4.0	60	10	6.0	●
6050M 150	0.020-0.050	5.0	60	15	6.0	●
6060M 150	0.038-0.050	6.0	60	15	6.0	●
6080M 200	0.045-0.060	8.0	65	20	8.0	●
6100M 220	0.045-0.060	10.0	70	22	10.0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

●: Standard item

HSF 6...XLT

HARDMILL

6 flute extra long flat



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

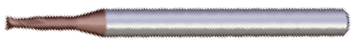
• Finishing

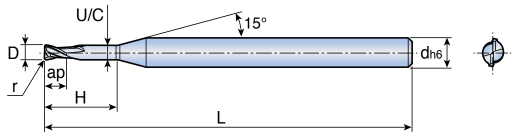
6 H•A 45° Cutting Condition F122

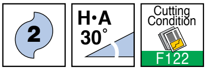
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5505
HSF 6050XLT 250	0.03-0.05	5.0	80	25	6.0	●
6060XLT 250	0.03-0.05	6.0	80	25	6.0	●
6080XLT 350	0.04-0.06	8.0	90	35	8.0	●
6100XLT 450	0.04-0.06	10.0	100	45	10.0	●
6120XLT 550	0.05-0.07	12.0	110	55	12.0	●

●: Standard item

2 flute long neck corner radius







r	±0.005

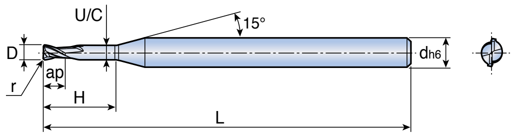
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

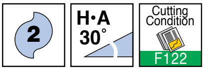
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 2003 005 010	0.006-0.010	0.3	0.05	45	0.4	1.0	0.27	4.0	●
2003 005 020	0.006-0.010	0.3	0.05	45	0.4	2.0	0.27	4.0	●
2003 005 030	0.006-0.010	0.3	0.05	45	0.4	3.0	0.27	4.0	●
2004 005 010	0.006-0.010	0.4	0.05	45	0.6	1.0	0.37	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 item

HSR 2

2 flute long neck corner radius





r	±0.005

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

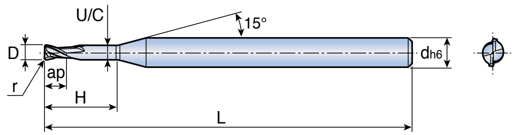
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 2010 005 030	0.009-0.020	1.0	0.05	50	2.0	3	0.97	4.0	●
2010 005 040	0.009-0.020	1.0	0.05	50	2.0	4	0.97	4.0	●
2010 005 060	0.009-0.018	1.0	0.05	50	2.0	6	0.97	4.0	●
2010 005 080	0.009-0.018	1.0	0.05	50	2.0	8	0.95	4.0	●
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	●

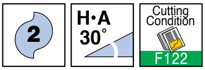
●: Standard item

HSR 2

HARDMILL

2 flute long neck corner radius





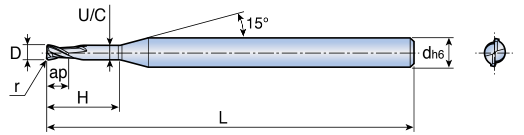
r	±0.005

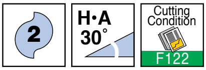
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 2015 005 040	0.015-0.025	1.5	0.05	50	2.5	4	1.47	4.0	●
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 item

2 flute long neck corner radius





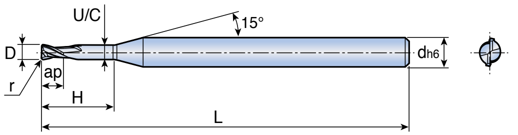
r	±0.005

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

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
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 item

2 flute long neck corner radius



2 | H·A 30° | Cutting Condition F122

r ±0.005

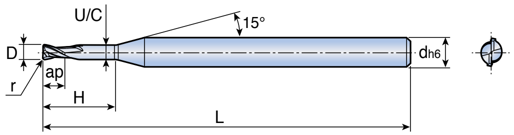
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
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 item

HSR 2

2 flute long neck corner radius



2 | H·A 30° | Cutting Condition F122

r	
	±0.005

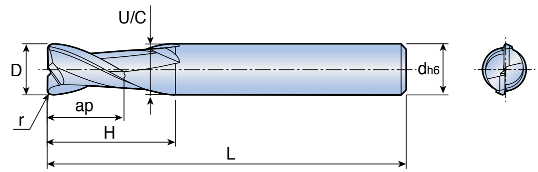
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

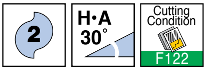
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 2040 010 100	0.030-0.075	4.0	0.1	55	6.0	10	3.9	6.0	●
2040 010 120	0.030-0.075	4.0	0.1	55	6.0	12	3.9	6.0	●
2040 010 160	0.030-0.075	4.0	0.1	55	6.0	16	3.9	6.0	●
2040 010 200	0.030-0.070	4.0	0.1	60	6.0	20	3.9	6.0	●
2040 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 item

HSR 2

2 flute long neck corner radius





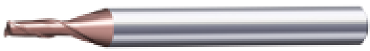
r	±0.005

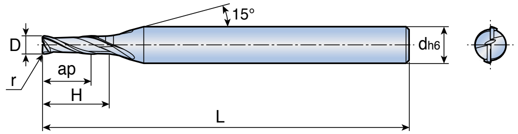
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 2060 020 150	0.067-0.100	6.0	0.2	60	9	15	5.9	6.0	●
2060 030 150	0.067-0.100	6.0	0.3	60	9	15	5.9	6.0	●
2060 030 200	0.067-0.100	6.0	0.3	60	9	20	5.9	6.0	●
2060 050 150	0.067-0.100	6.0	0.5	60	9	15	5.9	6.0	●
2060 050 200	0.067-0.100	6.0	0.5	60	9	20	5.9	6.0	●
2060 100 150	0.067-0.100	6.0	1.0	60	9	15	5.9	6.0	●
2060 100 200	0.067-0.100	6.0	1.0	60	9	20	5.9	6.0	●
2060 150 150	0.067-0.100	6.0	1.5	60	9	15	5.9	6.0	●
2060 200 150	0.067-0.100	6.0	2.0	60	9	15	5.9	6.0	●
2080 020 200	0.090-0.120	8.0	0.2	65	12	20	7.9	8.0	●
2080 030 200	0.090-0.120	8.0	0.3	65	12	20	7.9	8.0	●
2080 050 200	0.090-0.120	8.0	0.5	65	12	20	7.9	8.0	●
2080 100 200	0.090-0.120	8.0	1.0	65	12	20	7.9	8.0	●
2080 150 200	0.090-0.120	8.0	1.5	65	12	20	7.9	8.0	●
2100 020 250	0.117-0.130	10.0	0.2	75	15	25	9.9	10.0	●
2100 030 250	0.117-0.130	10.0	0.3	75	15	25	9.9	10.0	●
2100 050 250	0.117-0.130	10.0	0.5	75	15	25	9.9	10.0	●
2100 100 250	0.117-0.130	10.0	1.0	75	15	25	9.9	10.0	●
2100 150 250	0.117-0.130	10.0	1.5	75	15	25	9.9	10.0	●
2100 200 250	0.117-0.130	10.0	2.0	75	15	25	9.9	10.0	●
2120 030 280	0.126-0.168	12.0	0.3	85	18	28	11.9	12.0	●
2120 050 280	0.126-0.168	12.0	0.5	85	18	28	11.9	12.0	●
2120 100 280	0.126-0.168	12.0	1.0	85	18	28	11.9	12.0	●
2120 150 280	0.126-0.168	12.0	1.5	85	18	28	11.9	12.0	●
2120 200 280	0.126-0.168	12.0	2.0	85	18	28	11.9	12.0	●

●: Standard item

2 flute medium corner radius





2 | H·A 30° | Cutting Condition F122

r	±0.005

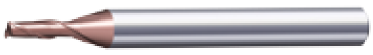
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

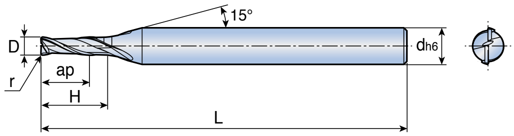
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	r	L	ap	H	d	TT5505
HSR 2003M 002	0.006-0.010	0.3	0.02	45	0.6	0.9	4.0	●
2003M 005	0.006-0.010	0.3	0.05	45	0.6	0.9	4.0	●
2004M 005	0.006-0.010	0.4	0.05	45	0.8	1.1	4.0	●
2004M 010	0.006-0.010	0.4	0.10	45	0.8	1.1	4.0	●
2005M 005	0.006-0.010	0.5	0.05	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	●
2015M 050	0.015-0.025	1.5	0.50	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 040	0.018-0.040	2.0	0.40	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	●

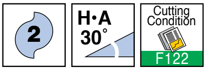
●: Standard item

HSR 2…M

2 flute medium corner radius







r	
r	±0.005

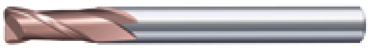
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

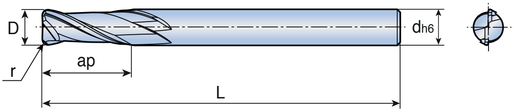
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	r	L	ap	H	d	TT5505
HSR 2030M 010	0.021-0.06	3.0	0.1	60	8.0	10	6.0	●
2030M 020	0.021-0.06	3.0	0.2	60	8.0	10	6.0	●
2030M 030	0.021-0.06	3.0	0.3	60	8.0	10	6.0	●
2030M 050	0.021-0.06	3.0	0.5	60	8.0	10	6.0	●
2040M 010	0.03-0.075	4.0	0.1	70	10.0	13	6.0	●
2040M 020	0.03-0.075	4.0	0.2	70	10.0	13	6.0	●
2040M 030	0.03-0.075	4.0	0.3	70	10.0	13	6.0	●
2040M 050	0.03-0.075	4.0	0.5	70	10.0	13	6.0	●
2040M 100	0.03-0.075	4.0	1.0	70	10.0	13	6.0	●

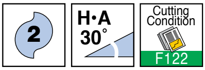
●: Standard item

HSR 2…M

2 flute medium corner radius







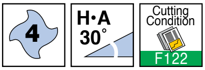
r	±0.005

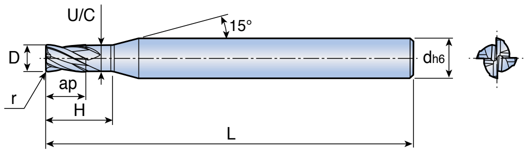
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT5505
HSR 2060M 010	0.067-0.100	6.0	0.1	90	15.0	6.0	●
2060M 020	0.067-0.100	6.0	0.2	90	15.0	6.0	●
2060M 030	0.067-0.100	6.0	0.3	90	15.0	6.0	●
2060M 050	0.067-0.100	6.0	0.5	90	15.0	6.0	●
2060M 100	0.067-0.100	6.0	1.0	90	15.0	6.0	●
2080M 010	0.090-0.120	8.0	0.1	100	20.0	8.0	●
2080M 020	0.090-0.120	8.0	0.2	100	20.0	8.0	●
2080M 030	0.090-0.120	8.0	0.3	100	20.0	8.0	●
2080M 050	0.090-0.120	8.0	0.5	100	20.0	8.0	●
2080M 100	0.090-0.120	8.0	1.0	100	20.0	8.0	●
2080M 200	0.090-0.120	8.0	2.0	100	20.0	8.0	●
2100M 020	0.117-0.130	10.0	0.2	100	25.0	10.0	●
2100M 030	0.117-0.130	10.0	0.3	100	25.0	10.0	●
2100M 050	0.117-0.130	10.0	0.5	100	25.0	10.0	●
2100M 100	0.117-0.130	10.0	1.0	100	25.0	10.0	●
2100M 200	0.117-0.130	10.0	2.0	100	25.0	10.0	●
2120M 020	0.126-0.168	12.0	0.2	110	30.0	12.0	●
2120M 030	0.126-0.168	12.0	0.3	110	30.0	12.0	●
2120M 050	0.126-0.168	12.0	0.5	110	30.0	12.0	●
2120M 100	0.126-0.168	12.0	1.0	110	30.0	12.0	●
2120M 200	0.126-0.168	12.0	2.0	110	30.0	12.0	●

●: Standard item

4 flute long neck corner radius





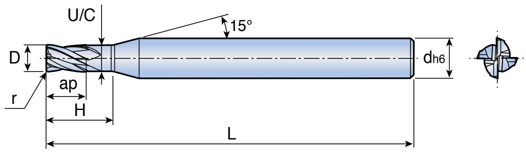
r ±0.005

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

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	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 item

4 flute long neck corner radius



4 | H·A 30° | Cutting Condition F122

r	±0.005

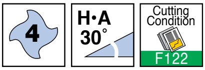
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

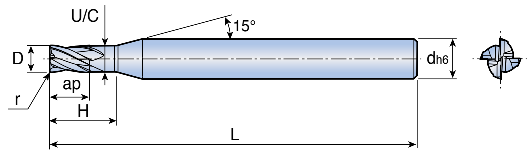
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 4030 010 080	0.021-0.060	3.0	0.1	55	4	8	2.85	6.0	●
4030 010 100	0.021-0.060	3.0	0.1	55	4	10	2.85	6.0	●
4030 010 120	0.018-0.050	3.0	0.1	55	4	12	2.85	6.0	●
4030 010 160	0.018-0.045	3.0	0.1	55	4	16	2.85	6.0	●
4030 010 200	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 item

HARDMILL

4 flute long neck corner radius





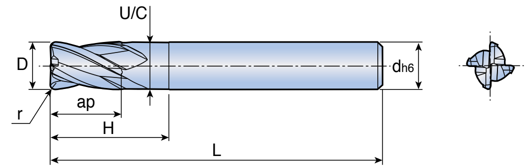
r	±0.005

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

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	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	●

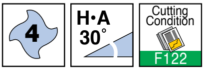
●: Standard item

4 flute long neck corner radius



r	±0.005

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

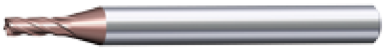


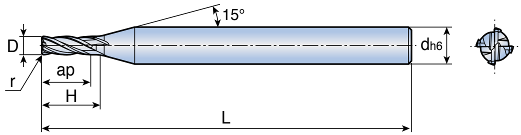
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 4060 020 150	0.067-0.100	6.0	0.2	60	9	15	5.9	6.0	●
4060 030 150	0.067-0.100	6.0	0.3	60	9	15	5.9	6.0	●
4060 050 150	0.067-0.100	6.0	0.5	60	9	15	5.9	6.0	●
4060 100 150	0.067-0.100	6.0	1.0	60	9	15	5.9	6.0	●
4060 150 150	0.067-0.100	6.0	1.5	60	9	15	5.9	6.0	●
4060 200 150	0.067-0.100	6.0	2.0	60	9	15	5.9	6.0	●
4080 020 200	0.090-0.120	8.0	0.2	70	12	20	7.9	8.0	●
4080 030 200	0.090-0.120	8.0	0.3	70	12	20	7.9	8.0	●
4080 050 200	0.090-0.120	8.0	0.5	70	12	20	7.9	8.0	●
4080 100 200	0.090-0.120	8.0	1.0	70	12	20	7.9	8.0	●
4080 150 200	0.090-0.120	8.0	1.5	70	12	20	7.9	8.0	●
4080 200 200	0.090-0.120	8.0	2.0	70	12	20	7.9	8.0	●
4100 020 250	0.117-0.130	10.0	0.2	75	15	25	9.9	10.0	●
4100 030 250	0.117-0.130	10.0	0.3	75	15	25	9.9	10.0	●
4100 050 250	0.117-0.130	10.0	0.5	75	15	25	9.9	10.0	●
4100 100 250	0.117-0.130	10.0	1.0	75	15	25	9.9	10.0	●
4100 150 250	0.117-0.130	10.0	1.5	75	15	25	9.9	10.0	●
4100 200 250	0.117-0.130	10.0	2.0	75	15	25	9.9	10.0	●
4120 030 300	0.126-0.168	12.0	0.3	85	18	30	11.9	12.0	●
4120 050 300	0.126-0.168	12.0	0.5	85	18	30	11.9	12.0	●
4120 100 300	0.126-0.168	12.0	1.0	85	18	30	11.9	12.0	●
4120 150 300	0.126-0.168	12.0	1.5	85	18	30	11.9	12.0	●
4120 200 300	0.126-0.168	12.0	2.0	85	18	30	11.9	12.0	●

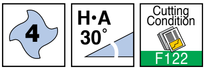
●: Standard item

HSR 4…M

4 flute medium corner radius







r	±0.005

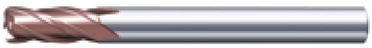
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

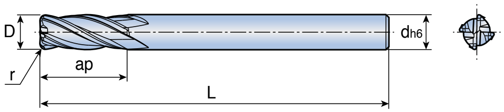
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	r	L	ap	H	d	TT5505
HSR 4010M 005	0.009-0.020	1.0	0.05	50	2.0	2.5	6.0	●
4010M 010	0.009-0.020	1.0	0.1	50	2.0	2.5	6.0	●
4010M 020	0.009-0.020	1.0	0.2	50	2.0	2.5	6.0	●
4010M 030	0.009-0.020	1.0	0.3	50	2.0	2.5	6.0	●
4012M 005	0.010-0.020	1.2	0.05	50	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	●
4015M 050	0.015-0.025	1.5	0.5	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	●
4030M 100	0.021-0.060	3.0	1.0	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 item

HSR 4…M

4 flute medium corner radius





r	
	±0.005

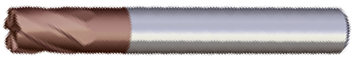
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

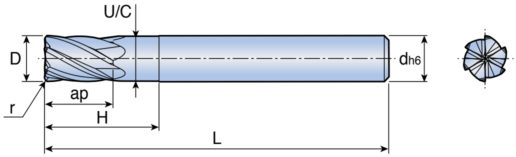
4 | H·A 30° | Cutting Condition F122

Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT5505
HSR 4060M 020	0.067-0.100	6.0	0.2	90	15	6.0	●
4060M 030	0.067-0.100	6.0	0.3	90	15	6.0	●
4060M 050	0.067-0.100	6.0	0.5	90	15	6.0	●
4060M 100	0.067-0.100	6.0	1.0	90	15	6.0	●
4060M 150	0.067-0.100	6.0	1.5	90	15	6.0	●
4060M 200	0.067-0.100	6.0	2.0	90	15	6.0	●
4080M 020	0.090-0.120	8.0	0.2	100	20	8.0	●
4080M 030	0.090-0.120	8.0	0.3	100	20	8.0	●
4080M 050	0.090-0.120	8.0	0.5	100	20	8.0	●
4080M 100	0.090-0.120	8.0	1.0	100	20	8.0	●
4080M 150	0.090-0.120	8.0	1.5	100	20	8.0	●
4080M 200	0.090-0.120	8.0	2.0	100	20	8.0	●
4100M 020	0.117-0.130	10.0	0.2	100	25	10.0	●
4100M 030	0.117-0.130	10.0	0.3	100	25	10.0	●
4100M 050	0.117-0.130	10.0	0.5	100	25	10.0	●
4100M 100	0.117-0.130	10.0	1.0	100	25	10.0	●
4100M 150	0.117-0.130	10.0	1.5	100	25	10.0	●
4100M 200	0.117-0.130	10.0	2.0	100	25	10.0	●
4120M 030	0.126-0.168	12.0	0.3	110	30	12.0	●
4120M 050	0.126-0.168	12.0	0.5	110	30	12.0	●
4120M 100	0.126-0.168	12.0	1.0	110	30	12.0	●
4120M 150	0.126-0.168	12.0	1.5	110	30	12.0	●
4120M 200	0.126-0.168	12.0	2.0	110	30	12.0	●

●: Standard item

6 flute long neck corner radius





r	±0.005

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

• Finishing

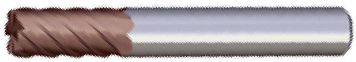
6 | H·A 45° | Cutting Condition F122

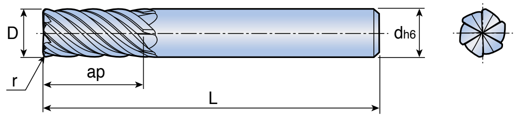
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5505
HSR 6060 050 150	0.038-0.050	6.0	0.5	60	9	15	5.8	6.0	●
6060 100 150	0.038-0.050	6.0	1.0	60	9	15	5.8	6.0	●
6080 050 200	0.045-0.060	8.0	0.5	70	12	20	7.8	8.0	●
6080 100 200	0.045-0.060	8.0	1.0	70	12	20	7.8	8.0	●
6100 050 250	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 item

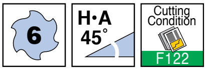
HSR 6...M

6 flute medium corner radius





• Finishing



r	±0.005

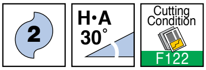
D	Tolerance
D≤6	0 - -0.010
D>6	0 - -0.015

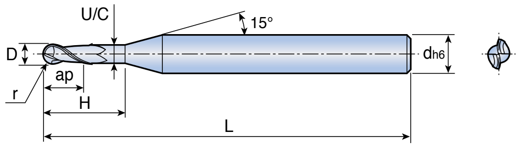
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT5505
HSR 6060M 050	0.038-0.050	6.0	0.5	60	15	6.0	●
6060M 100	0.038-0.050	6.0	1.0	60	15	6.0	●
6080M 050	0.045-0.060	8.0	0.5	65	20	8.0	●
6080M 100	0.045-0.060	8.0	1.0	65	20	8.0	●
6100M 050	0.045-0.060	10.0	0.5	70	22	10.0	●
6100M 100	0.045-0.060	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 item

RIB 2

2 flute long neck ball





r	±0.005

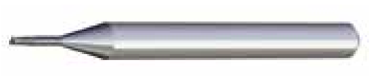
D	Tolerance
All	0 - -0.012

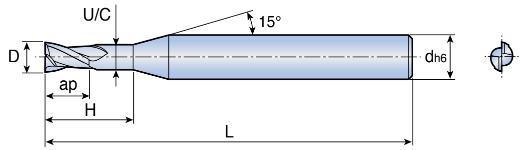
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5515
RIB 2004-0.6x3	0.4	0.2	45	0.6	3	0.36	4	●
2005-0.7x4	0.5	0.25	45	0.7	4	0.45	4	●
2005-0.7x6	0.5	0.25	45	0.7	6	0.45	4	●
2005-0.7x8	0.5	0.25	45	0.7	8	0.45	4	●
2006-0.9x2	0.6	0.3	45	0.9	2	0.55	4	●
2006-0.9x4	0.6	0.3	45	0.9	4	0.55	4	●
2006-0.9x6	0.6	0.3	45	0.9	6	0.55	4	●
2006-0.9x8	0.6	0.3	45	0.9	8	0.55	4	●
2008-1.2x4	0.8	0.4	45	1.2	4	0.75	4	●
2008-1.2x6	0.8	0.4	45	1.2	6	0.75	4	●
2008-1.2x8	0.8	0.4	45	1.2	8	0.75	4	●
2008-1.2x10	0.8	0.4	45	1.2	10	0.75	4	●
2010-1.5x4	1.0	0.5	45	1.5	4	0.97	4	●
2010-1.5x6	1.0	0.5	45	1.5	6	0.97	4	●
2010-1.5x8	1.0	0.5	45	1.5	8	0.95	4	●
2010-1.5x10	1.0	0.5	45	1.5	10	0.95	4	●
2010-1.5x12	1.0	0.5	45	1.5	12	0.93	4	●
2012-1.8x4	1.2	0.6	45	1.8	4	1.15	4	●
2012-1.8x8	1.2	0.6	45	1.8	8	1.17	4	●
2012-1.8x12	1.2	0.6	45	1.8	12	1.13	4	●
2015-2.3x8	1.5	0.75	45	2.3	8	1.45	4	●
2015-2.3x10	1.5	0.75	45	2.3	10	1.45	4	●
2015-2.3x12	1.5	0.75	45	2.3	12	1.43	4	●
2015-2.3x16	1.5	0.75	50	2.3	16	1.41	4	●
2015-2.3x20	1.5	0.75	55	2.3	20	1.39	4	●
2020-3.0x6	2.0	1.0	45	3.0	6	1.95	4	●
2020-3.0x8	2.0	1.0	45	3.0	8	1.95	4	●
2020-3.0x10	2.0	1.0	45	3.0	10	1.93	4	●
2020-3.0x12	2.0	1.0	50	3.0	12	1.93	4	●
2020-3.0x16	2.0	1.0	50	3.0	16	1.91	4	●
2020-3.0x20	2.0	1.0	55	3.0	20	1.89	4	●
2030-4.5x10	3.0	1.5	50	4.5	10	2.85	6	●
2030-4.5x12	3.0	1.5	50	4.5	12	2.85	6	●
2030-4.5x16	3.0	1.5	55	4.5	16	2.85	6	●
2030-4.5x20	3.0	1.5	60	4.5	20	2.85	6	●

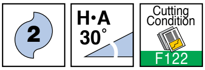
●: Standard item

RIF 2

2 flute long neck flat







D	Tolerance
All	0 - -0.015

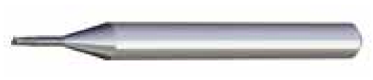
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5515
RIF 2004-0.6x3	0.002-0.015	0.4	45	0.6	3	0.37	4	●
2004-0.6x4	0.002-0.015	0.4	45	0.6	4	0.37	4	●
2004-0.6x5	0.002-0.015	0.4	45	0.6	5	0.37	4	●
2005-0.7x2	0.002-0.015	0.5	45	0.7	2	0.45	4	●
2005-0.7x4	0.002-0.015	0.5	45	0.7	4	0.45	4	●
2005-0.7x6	0.002-0.015	0.5	45	0.7	6	0.45	4	●
2005-0.7x8	0.002-0.015	0.5	45	0.7	8	0.45	4	●
2006-0.9x6	0.003-0.020	0.6	45	0.9	6	0.55	4	●
2006-0.9x8	0.003-0.020	0.6	45	0.9	8	0.55	4	●
2008-1.2x4	0.003-0.020	0.8	45	1.2	4	0.75	4	●
2008-1.2x6	0.003-0.020	0.8	45	1.2	6	0.75	4	●
2008-1.2x8	0.003-0.020	0.8	45	1.2	8	0.75	4	●
2008-1.2x10	0.003-0.020	0.8	45	1.2	10	0.75	4	●
2010-1.5x4	0.003-0.020	1.0	45	1.5	4	0.97	4	●
2010-1.5x6	0.003-0.020	1.0	45	1.5	6	0.97	4	●
2010-1.5x8	0.003-0.020	1.0	45	1.5	8	0.95	4	●
2010-1.5x10	0.003-0.020	1.0	45	1.5	10	0.95	4	●
2010-1.5x12	0.003-0.020	1.0	45	1.5	12	0.93	4	●
2010-1.5x16	0.003-0.020	1.0	50	1.5	16	0.93	4	●
2012-1.8x6	0.005-0.025	1.2	45	1.8	6	1.17	4	●
2012-1.8x8	0.005-0.025	1.2	45	1.8	8	1.15	4	●
2012-1.8x10	0.005-0.025	1.2	45	1.8	10	1.15	4	●
2012-1.8x16	0.005-0.025	1.2	50	1.8	16	1.13	4	●
2015-2.3x6	0.005-0.025	1.5	45	2.3	6	1.47	4	●
2015-2.3x8	0.005-0.025	1.5	45	2.3	8	1.45	4	●
2015-2.3x10	0.005-0.025	1.5	45	2.3	10	1.45	4	●
2015-2.3x12	0.005-0.025	1.5	45	2.3	12	1.43	4	●
2015-2.3x16	0.005-0.025	1.5	50	2.3	16	1.41	4	●
2015-2.3x20	0.005-0.025	1.5	55	2.3	20	1.41	4	●
2016-2.4x10	0.010-0.030	1.6	45	2.4	10	1.55	4	●
2016-2.4x16	0.010-0.030	1.6	50	2.4	16	1.53	4	●
2018-2.7x10	0.010-0.030	1.8	45	2.7	10	1.73	4	●
2018-2.7x12	0.010-0.030	1.8	45	2.7	12	1.73	4	●
2018-2.7x16	0.010-0.030	1.8	50	2.7	16	1.71	4	●

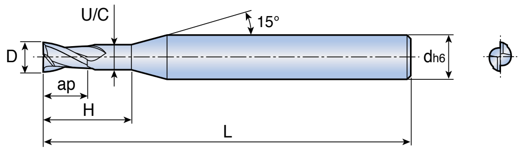
●: Standard item

RIF 2

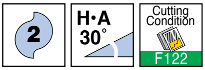
APEXMILL

2 flute long neck flat





D	Tolerance
All	0 - -0.015

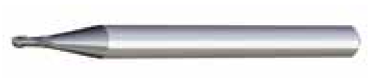


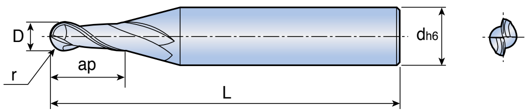
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5515
RIF 2020-3.0x6	0.010-0.085	2.0	45	3.0	6	1.95	4	●
2020-3.0x8	0.010-0.085	2.0	45	3.0	8	1.95	4	●
2020-3.0x10	0.010-0.085	2.0	45	3.0	10	1.95	4	●
2020-3.0x12	0.010-0.085	2.0	45	3.0	12	1.93	4	●
2020-3.0x16	0.010-0.085	2.0	50	3.0	16	1.91	4	●
2025-3.7x12	0.020-0.040	2.5	45	3.7	12	2.40	4	●
2025-3.7x16	0.020-0.040	2.5	55	3.7	16	2.40	4	●
2030-4.5x14	0.025-0.070	3.0	50	4.5	14	2.85	6	●
2030-4.5x18	0.025-0.070	3.0	55	4.5	18	2.85	6	●
2030-4.5x20	0.025-0.070	3.0	60	4.5	20	2.85	6	●
2030-4.5x25	0.025-0.070	3.0	65	4.5	25	2.85	6	●
2040-5.0x12	0.030-0.090	4.0	55	5.0	12	3.4	6	●
2040-5.0x20	0.030-0.090	4.0	60	5.0	20	3.4	6	●
2040-5.0x30	0.030-0.090	4.0	70	5.0	30	3.4	6	●

●: Standard item

SMB 2

2 flute miniature ball (Shank 3mm)





2 | H·A 30˚ | Cutting Condition F122

r	
	±0.005

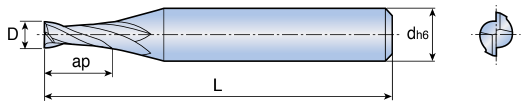
D	Tolerance
All	0 - -0.012

Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5515
SMB 2006-3	0.6	0.3	40	1.1	3	●
2007-3	0.7	0.35	40	1.5	3	●
2008-3	0.8	0.4	40	2.0	3	●
2009-3	0.9	0.45	40	2.2	3	●
2010-3	1.0	0.5	40	2.5	3	●
2012-3	1.2	0.6	40	3.0	3	●
2015-3	1.5	0.75	40	4.0	3	●

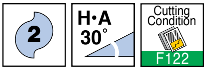
●: Standard item

HMF 2

2 flute miniature flat



D	Tolerance
All	0 - -0.012

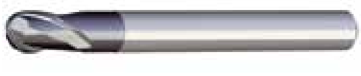


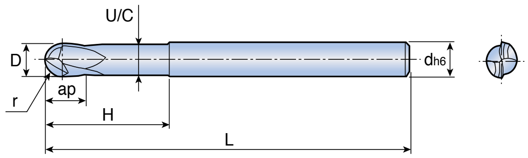
Designation		Feed (mm/tooth)	Dimension (mm)				Grade
			D	L	ap	d	TT5515
HMF	**2004-3**	0.01-0.02	0.4	40	0.8	3	●
	2005-3	0.01-0.02	0.5	40	1.0	3	●
	2006-3	0.01-0.02	0.6	40	1.2	3	●
	2007-3	0.01-0.03	0.7	40	1.4	3	●
	2008-3	0.01-0.03	0.8	40	1.6	3	●
	2009-3	0.01-0.03	0.9	40	2.0	3	●
	2010-4	0.01-0.03	1.0	40	2.5	4	●
	2012-4	0.01-0.03	1.2	40	4.0	4	●
	2015-4	0.01-0.03	1.5	40	4.0	4	●

●: Standard item

AMB 2...T

2 flute long neck ball





r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
D≤6	0 - -0.012
D>6	0 - -0.015

2

H·A 30°

Cutting Condition F122

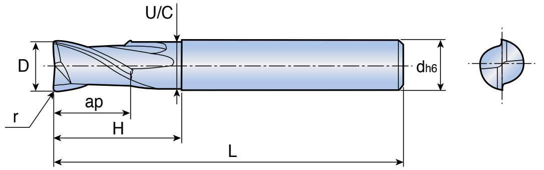
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT5515
AMB 2010T-6D	1	0.5	52	1.2	2.5	0.9	6	●
2010T-3D	1	0.5	40	1.2	2.5	0.9	3	●
2020T-6D	2	1.0	52	2.5	5	1.9	6	●
2020T-3D	2	1.0	40	2.5	5	1.9	3	●
2030T	3	1.5	70	4.0	9	2.85	6	●
2030T-3D	3	1.5	40	4.0	9	2.85	3	●
2040T	4	2.0	70	5.0	12	3.85	6	●
2040T-4D	4	2.0	50	5.0	12	3.85	4	●
2050T	5	2.5	80	6.0	15	4.8	6	●
2060T	6	3.0	80	7.0	18	5.8	6	●
2080T	8	4.0	90	10.0	24	7.8	8	●
2100T	10	5.0	100	12.0	30	9.8	10	●
2120T	12	6.0	110	14.0	36	11.8	12	●
2140T	14	7.0	120	17.0	40	13.6	12	●
2160T	16	8.0	125	19.0	48	15.6	16	●

●: Standard item

AMF 2...T

2 flute long neck flat

2 | H·A 30° | Cutting Condition F122



r	±0.02

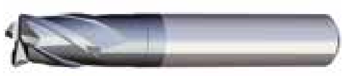
D	Tolerance
All	0 - -0.020

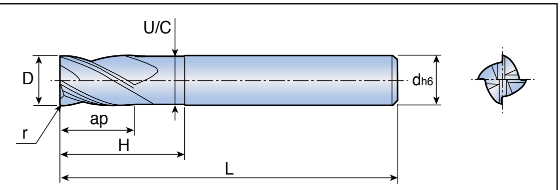
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5515
AMF 2010T	0.010-0.020	1	0.15	52	1.2	2.5	0.9	6	●
2010T-3D	0.010-0.020	1	0.15	40	1.2	2.5	0.9	3	●
2020T	0.010-0.030	2	0.15	52	2.5	5	1.9	6	●
2020T-3D	0.010-0.030	2	0.15	40	2.5	5	1.9	3	●
2030T	0.010-0.049	3	0.2	52	5.0	8	2.85	6	●
2030T-3D	0.010-0.049	3	0.2	40	5.0	8	2.85	3	●
2040T	0.020-0.063	4	0.2	52	6.0	10	3.85	6	●
2040T-4D	0.020-0.050	4	0.2	40	6.0	10	3.85	4	●
2050T	0.025-0.065	5	0.2	52	8.0	15	4.8	6	●
2060T	0.030-0.088	6	0.3	52	8.0	15	5.8	6	●
2080T	0.030-0.100	8	0.3	60	12.0	20	7.8	8	●
2100T	0.030-0.100	10	0.4	68	15.0	25	9.8	10	●
2120T	0.040-0.120	12	0.4	76	18.0	28	11.6	12	●
2140T	0.040-0.120	14	0.4	85	20.0	30	13.6	16	●
2160T	0.050-0.130	16	0.5	90	25.0	35	15.6	16	●

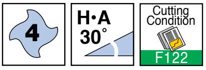
●: Standard item

AMF 4...T

4 flute long neck flat







r	±0.02

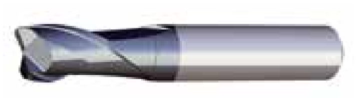
D	Tolerance
All	0 - -0.020

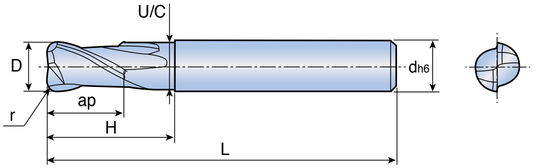
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5515
AMF 4030T	0.010-0.046	3.0	0.2	52	5	8	2.85	6	●
4030T-3D	0.010-0.046	3.0	0.2	40	5	8	2.85	3	●
4035T	0.010-0.046	3.5	0.2	52	5	8	3.35	6	●
4040T	0.020-0.063	4.0	0.2	52	6	10	3.85	6	●
4040T-4D	0.020-0.063	4.0	0.2	40	6	10	3.85	4	●
4050T	0.020-0.063	5.0	0.2	52	8	15	4.8	6	●
4060T	0.025-0.070	6.0	0.3	52	8	15	5.8	6	●
4080T	0.030-0.090	8.0	0.3	60	12	20	7.8	8	●
4100T	0.030-0.100	10.0	0.4	68	15	25	9.8	10	●
4120T	0.040-0.110	12.0	0.4	76	18	28	11.6	12	●
4140T	0.040-0.120	14.0	0.4	85	20	30	13.6	16	●
4160T	0.050-0.130	16.0	0.5	90	25	35	15.6	16	●

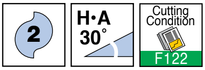
●: Standard item

AMR 2...T-R

2 flute long neck corner radius







r ±0.02

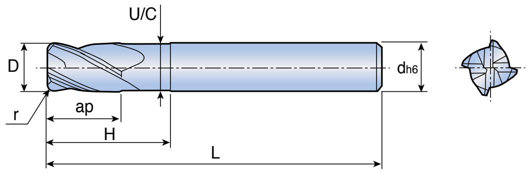
D	Tolerance
All	0 - -0.020

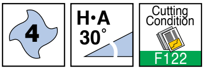
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT5515
AMR 2030T-R0.5	0.010-0.049	3	0.5	52	5	8	2.85	6	●
2030T-R1.0	0.010-0.049	3	1.0	52	5	8	2.85	6	●
2040T-R0.5	0.020-0.063	4	0.5	52	6	10	3.85	6	●
2040T-R1.0	0.020-0.063	4	1.0	52	6	10	3.85	6	●
2060T-R1.0	0.030-0.088	6	1.0	52	8	15	5.8	6	●
2060T-R1.5	0.030-0.088	6	1.5	52	8	15	5.8	6	●
2080T-R1.0	0.030-0.100	8	1.0	60	12	20	7.8	8	●
2080T-R2.0	0.030-0.100	8	2.0	60	12	20	7.8	8	●
2100T-R1.0	0.030-0.100	10	1.0	68	15	25	9.8	10	●
2100T-R2.0	0.030-0.100	10	2.0	68	15	25	9.8	10	●
2120T-R1.0	0.040-0.120	12	1.0	76	18	28	11.6	12	●
2120T-R2.0	0.040-0.120	12	2.0	76	18	28	11.6	12	●
2120T-R3.0	0.040-0.120	12	3.0	76	18	28	11.6	12	●

●: Standard item

AMR 4...T-R

4 flute long neck corner radius





r	±0.02

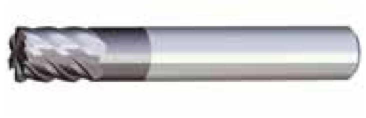
D	Tolerance
All	0 - -0.020

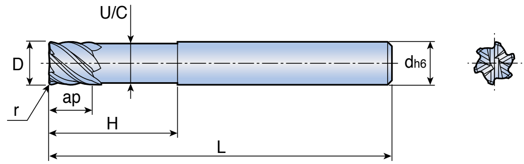
Designation		Feed (mm/tooth)	Dimension (mm)							Grade
			D	r	L	ap	H	U/C	d	TT5515
AMR	4030T-R0.5	0.010-0.046	3	0.5	52	5	8	2.85	6	●
	4030T-R1.0	0.010-0.046	3	1.0	52	5	8	2.85	6	●
	4040T-R0.5	0.020-0.063	4	0.5	52	6	10	3.85	6	●
	4040T-R1.0	0.020-0.063	4	1.0	52	6	10	3.85	6	●
	4060T-R1.0	0.025-0.070	6	1.0	52	8	15	5.8	6	●
	4060T-R1.5	0.025-0.070	6	1.5	52	8	15	5.8	6	●
	4080T-R1.0	0.030-0.090	8	1.0	60	12	20	7.8	8	●
	4080T-R2.0	0.030-0.090	8	2.0	60	12	20	7.8	8	●
	4100T-R1.0	0.030-0.100	10	1.0	68	15	25	9.8	10	●
	4100T-R1.5	0.030-0.100	10	1.5	68	15	25	9.8	10	●
	4100T-R2.0	0.030-0.100	10	2.0	68	15	25	9.8	10	●
	4120T-R1.0	0.040-0.110	12	1.0	76	18	28	11.6	12	●
	4120T-R2.0	0.040-0.110	12	2.0	76	18	28	11.6	12	●
	4120T-R3.0	0.040-0.110	12	3.0	76	18	28	11.6	12	●

●: Standard item

AMR 6...T-R

6 flute long neck corner radius

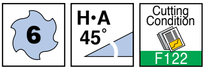




r	±0.02

D	Tolerance
All	0 - -0.020

• Finishing

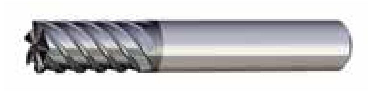


Designation		Feed (mm/tooth)	Dimension (mm)							Grade
			D	r	L	ap	H	U/C	d	TT5515
AMR	6060T-R0.5	0.030-0.056	6	0.5	52	8	15	5.8	6	●
	6080T-R0.5	0.030-0.079	8	0.5	60	12	20	7.8	8	●
	6100T-R1.0	0.030-0.100	10	1.0	68	15	25	9.8	10	●
	6120T-R1.0	0.030-0.120	12	1.0	76	18	28	11.6	12	●

●: Standard item

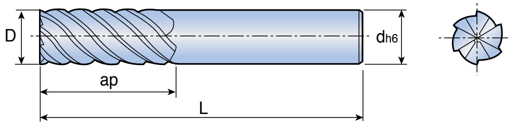
SEH 6...T

6 flute medium flat



• Finishing

6 | H·A 45° | Cutting Condition F122



D	Tolerance
All	0 - -0.020

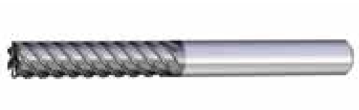
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5515
SEH 6030T	0.01-0.03	3	47	10	6	●
6040T	0.01-0.05	4	47	12	6	●
6050T	0.02-0.07	5	52	15	6	●
6060T	0.02-0.07	6	52	15	6	●
6070T	0.03-0.09	7	60	18	8	●
6080T	0.03-0.09	8	60	18	8	●
6090T	0.03-0.10	9	68	22	10	●
6100T	0.03-0.10	10	68	22	10	●
6120T	0.04-0.11	12	76	26	12	●
6140T	0.05-0.13	14	85	32	14	●
6160T	0.05-0.13	16	90	32	16	●
6180T	0.05-0.13	18	110	38	18	●
6200T	0.05-0.13	20	110	38	20	●

• Weldon shank is available on request (Ordering example: SEHW 6...T)

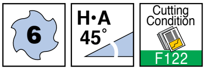
●: Standard item

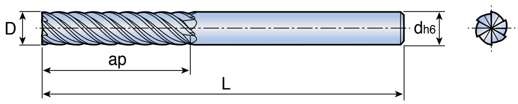
SEH 6...XLT

6 flute extra long flat



• Finishing





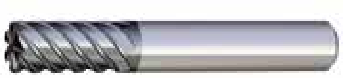
D	Tolerance
All	0 - -0.030

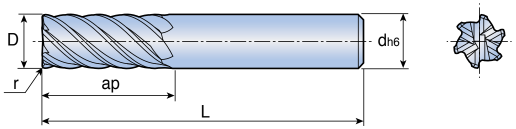
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5515
SEH 6060XLT	0.03-0.07	6	80	25	6	●
6080XLT	0.03-0.09	8	90	35	8	●
6100XLT	0.03-0.10	10	100	45	10	●
6120XLT	0.04-0.11	12	110	55	12	●
6160XLT	0.05-0.13	16	125	70	16	●
6200XLT	0.05-0.13	20	150	75	20	●

●: Standard item

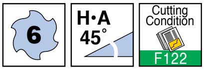
SEH 6...T-R

6 flute medium corner radius





• Finishing



r	±0.02

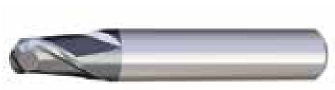
D	Tolerance
All	0 - -0.020

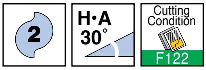
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT5515
SEH 6060T-R0.5	0.02-0.07	6	0.5	52	15	6	●
6080T-R0.5	0.03-0.09	8	0.5	60	18	8	●
6100T-R0.5	0.03-0.10	10	0.5	68	22	10	●
6100T-R1.0	0.03-0.10	10	1.0	68	22	10	●
6120T-R0.5	0.04-0.11	12	0.5	76	26	12	●
6120T-R1.0	0.04-0.11	12	1.0	76	26	12	●
6160T-R1.0	0.05-0.13	16	1.0	90	32	16	●
6160T-R1.5	0.05-0.13	16	1.5	90	32	16	●
6200T-R1.0	0.05-0.13	20	1.0	110	38	20	●
6200T-R1.5	0.05-0.13	20	1.5	110	38	20	●
6200T-R2.0	0.05-0.13	20	2.0	110	38	20	●

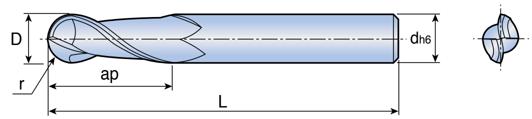
●: Standard item

SBE 2...S

2 flute short ball







r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
D≤6	0 - -0.012
D>6	0 - -0.015

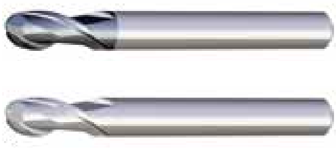
Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5515
SBE 2020S	2	1.0	50	3	6	●
2030S	3	1.5	50	4	6	●
2040S	4	2.0	54	5	6	●
2050S	5	2.5	54	6	6	●
2060S	6	3.0	54	7	6	●
2080S	8	4.0	58	9	8	●
2100S	10	5.0	66	11	10	●
2120S	12	6.0	73	12	12	●
2160S	16	8.0	82	16	16	●
2180S-18	18	9.0	84	18	18	●
2200S	20	10.0	92	20	20	●

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

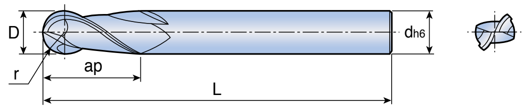
●: Standard item

SBE 2...T

2 flute medium ball



2 | H·A 30° | Cutting Condition F122



r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
D≤6	0 - -0.012
D>6	0 - -0.015

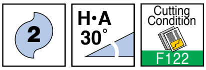
Designation	Dimension (mm)					Grades	
	D	r	L	ap	d	TT5515	UF10
SBE 2010T	1.0	0.5	50	1.5	4	●	●
2010T-6	1.0	0.5	50	1.5	6	●	
2012T	1.2	0.6	50	1.8	4	●	
2015T	1.5	0.75	50	2.3	4	●	●
2015T-6	1.5	0.75	50	2.3	6	●	
2015T-5x70	1.5	0.75	70	5.0	6	●	
2020T	2.0	1.0	50	3.0	4	●	●
2020T-6	2.0	1.0	50	3.0	6	●	●
2020T-7x70	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	●	
2040T	4.0	2.0	70	8.0	6	●	●
2040T-12x70	4.0	2.0	70	12.0	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	●	
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	●	
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	●	●
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	●	●

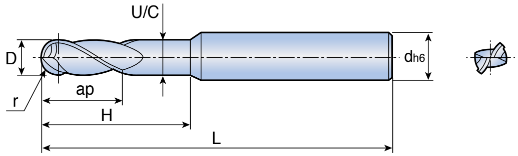
• Weldon shank is available on request (Ordering example: SBEW 2...T)

●: Standard item

SBE 2...LT

2 flute long ball





r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
D≤6	0 - -0.012
D>6	0 - -0.015

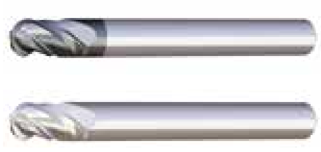
Designation	Dimension (mm)							Grades	
	D	r	L	ap	H	U/C	d	TT5515	UF10N
SBE 2020LT	2	1.0	100	4	20	1.85	6	●	
2030LT	3	1.5	100	4	35	2.85	6	●	●
2040LT	4	2.0	100	6	35	3.85	6	●	●
2050LT	5	2.5	115	7	40	4.8	8	●	●
2060LT	6	3.0	115	8	45	5.8	8	●	●
2060LT-6D	6	3.0	115	8	45	5.8	6	●	●
2060LT-6D WU	6	3.0	115	8	-	-	6	●	
2070LT	7	3.5	125	10	45	6.8	10	●	●
2080LT	8	4.0	125	12	55	7.8	10	●	●
2080LT-8D	8	4.0	125	12	55	7.8	8	●	●
2080LT-8D WU	8	4.0	125	12	-	-	8	●	
2090LT	9	4.5	140	15	65	8.8	10	●	●
2100LT	10	5.0	140	15	65	9.8	10	●	●
2100LT-WU	10	5.0	140	15	-	-	10	●	
2120LT	12	6.0	150	18	75	11.8	12	●	●
2120LT-WU	12	6.0	150	18	-	-	12	●	
2140LT	14	7.0	155	23	75	13.6	16	●	●
2160LT	16	8.0	155	30	75	15.6	16	●	●
2160LT-WU	16	8.0	155	30	-	-	16	●	

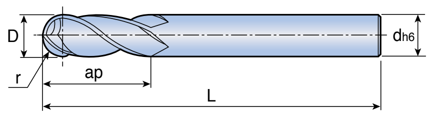
• **WU**: Without under cut

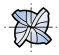
●: Standard item

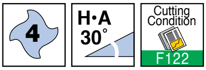
SBE 4...T

4 flute medium ball









r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
All	0 - -0.020

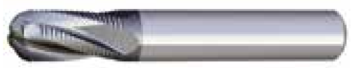
Designation	Dimension (mm)					Grades	
	D	r	L	ap	d	TT5515	UF10N
SBE 4010T	1.0	0.5	50	2.5	4	●	
4010T-6	1.0	0.5	50	2.5	6	●	
4015T	1.5	0.75	50	4.0	4	●	
4015T-6	1.5	0.75	50	4.0	6	●	
4020T	2.0	1.0	50	5.0	6	●	
4030T	3.0	1.5	57	8.0	6	●	
4035T	3.5	1.75	70	8.0	6	●	
4040T	4.0	2.0	70	8.0	6	●	●
4050T	5.0	2.5	80	12.0	6	●	●
4060T	6.0	3.0	80	12.0	6	●	●
4070T	7.0	3.5	90	15.0	8	●	●
4080T	8.0	4.0	90	15.0	8	●	●
4090T	9.0	4.5	100	20.0	10	●	●
4100T	10.0	5.0	100	20.0	10	●	●
4120T	12.0	6.0	110	25.0	12	●	●
4160T	16.0	8.0	125	35.0	16	●	●
4180T	18.0	9.0	150	40.0	20	●	●
4200T	20.0	10.0	150	40.0	20	●	●

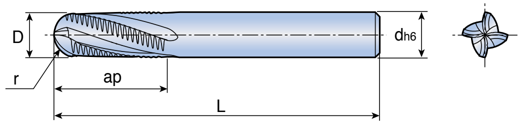
• Weldon shank is available on request (Ordering example: SBEW 4...T)

●: Standard item

REB ...L

3-4 flute rough long ball





3-4 | H·A 20° | Cutting Condition F122

r	±0.02

D	Tolerance	D	Tolerance
D≤3	0 - -0.040	10<D≤18	0 - -0.070
3<D≤6	0 - -0.048	18<D≤30	0 - -0.084
6<D≤10	0 - -0.058		

Designation	Dimension (mm)						Grade
	Z (flutes)	D	r	L	ap	d	TT5515
REB 3060L	3	6	3	57	16	6	●
3080L	3	8	4	63	16	8	●
4100L	4	10	5	72	22	10	●
4120L	4	12	6	83	26	12	●
4140L-14	4	14	7	83	26	14	●
4160L	4	16	8	92	32	16	●
4180L-18	4	18	9	92	32	18	●
4200L	4	20	10	104	38	20	●

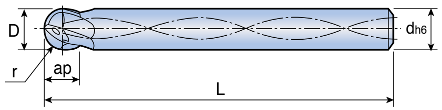
• Weldon shank is available on request (Ordering example: REBW ....L)

●: Standard item

SBO 2...T

APEXMILL

2 flute through coolant ball



2 | H·A 30° | Cutting Condition F122

r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
D≤6	0 - -0.012
D>6	0 - -0.015

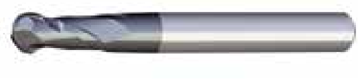
Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5525
SBO 2060T	6	3	91	6	8	●
2080T	8	4	91	8	8	●
2100T	10	5	103	10	10	●
2120T	12	6	118	12	12	●
2140T	14	7	124	14	12	●

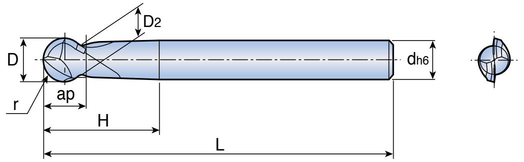
●: Standard item

BES 2...T

APEXMILL

2 flute spherical ball





r	±0.01

D	Tolerance
All	0 - -0.030

2 H·A 30° Cutting Condition F122

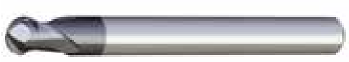
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	D2	d	TT5515
BES 2030T	3	1.5	80	3.3	28.5	2.52	6	●
2040T	4	2.0	80	4.1	28.5	3.35	6	●
2050T	5	2.5	80	5.4	38.0	4.19	6	●
2060T	6	3.0	100	6.1	28.0	5.03	6	●
2080T	8	4.0	100	8.2	33.0	6.71	8	●
2100T	10	5.0	100	9.7	40.0	8.39	10	●
2120T	12	6.0	110	12.3	49.0	10.06	12	●
2160T	16	8.0	155	15.4	58.0	13.42	16	●

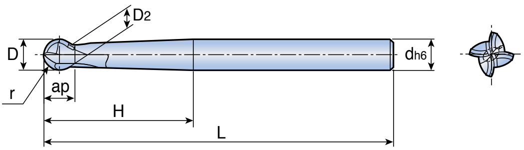
●: Standard item

BES 4...T

APEXMILL

4 flute spherical ball





r	±0.01

D	Tolerance
All	0 - -0.030

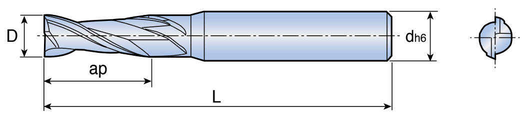
4 H·A 30° Cutting Condition F122

Designation	Dimension (mm)							Grade
	D	r	L	ap	H	D2	d	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	●
4160T	16	8.0	155	15.4	58.0	13.42	16	●

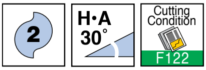
●: Standard item

TSE 2...M

2 flute medium flat



D	Tolerance
All	0 - -0.020



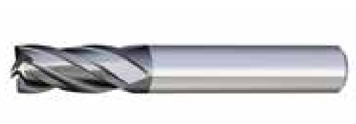
Designation	Feed (mm/tooth)	Dimension (mm)				Grades		
		D	L	ap	d	TT5515	TT5525	UF10
TSE 2010M-4	0.008-0.030	1.0	40	3	4	●	●	●
2010M	0.008-0.030	1.0	42	3	6	●	●	●
2015M-4	0.008-0.030	1.5	40	4	4	●	●	●
2015M	0.008-0.030	1.5	42	4	6	●	●	●
2020M-4	0.010-0.030	2.0	40	6	4	●	●	●
2020M	0.010-0.030	2.0	42	6	6	●	●	●
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	●		●
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	●	●	●
2100M	0.030-0.120	10.0	72	22	10	●	●	●
2110M	0.030-0.120	11.0	76	30	12	●	●	●
2120M	0.030-0.120	12.0	83	25	12	●	●	●
2130M	0.030-0.132	13.0	85	35	14	●	●	●
2140M-14	0.030-0.132	14.0	83	25	14	●	●	●
2150M	0.040-0.140	15.0	92	32	16	●	●	●
2160M	0.040-0.140	16.0	92	32	16	●	●	●
2180M-18	0.040-0.140	18.0	92	32	18	●	●	●
2200M	0.040-0.140	20.0	104	38	20	●	●	●

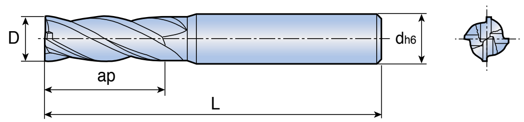
• Weldon shank is available on request (Ordering example: TSEW 2...M)

●: Standard item

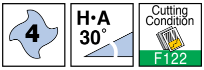
TSE 4...M

4 flute medium flat





D	Tolerance
All	0 - -0.020



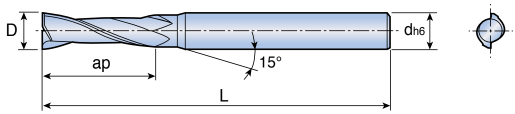
Designation	Feed (mm/tooth)	Dimension (mm)				Grades		
		D	L	ap	d	TT5515	TT5525	UF10
TSE 4020M	0.008-0.017	2.0	42	6	6	●	●	●
4025M-4	0.008-0.017	2.5	40	8	4	●	●	●
4025M	0.008-0.017	2.5	42	8	6	●		●
4030M	0.009-0.020	3.0	57	10	6	●	●	●
4035M-4	0.010-0.028	3.5	50	12	4	●		●
4035M	0.010-0.028	3.5	47	10	6	●	●	●
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	●	●	●
4060M	0.020-0.075	6.0	57	16	6	●	●	●
4070M	0.020-0.075	7.0	60	20	8	●	●	●
4080M	0.030-0.100	8.0	63	20	8	●	●	●
4090M	0.030-0.100	9.0	68	25	10	●	●	●
4100M	0.030-0.120	10.0	72	22	10	●	●	●
4110M	0.030-0.120	11.0	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	●	●	●
4150M	0.040-0.140	15.0	92	32	16	●	●	●
4160M	0.040-0.146	16.0	92	32	16	●	●	●
4180M-18	0.050-0.146	18.0	92	32	18	●	●	●
4200M	0.050-0.146	20.0	104	38	20	●	●	●
4250M	0.050-0.146	25.0	140	65	25	●	●	●

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

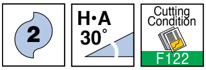
●: Standard item

HES 2...LT

2 flute long flat



D	Tolerance
All	0 - -0.020

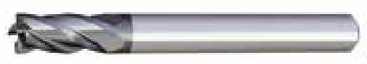


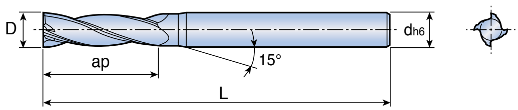
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
HES 2030LT	0.010-0.040	3	70	10	6	●
2040LT	0.020-0.050	4	70	12	6	●
2050LT	0.020-0.060	5	80	15	6	●
2060LT	0.030-0.076	6	80	15	6	●
2080LT	0.030-0.097	8	90	20	8	●
2100LT	0.030-0.107	10	100	25	10	●
2120LT	0.040-0.108	12	110	30	12	●
2140LT	0.040-0.120	14	125	35	16	●
2160LT	0.040-0.130	16	125	40	16	●
2180LT	0.050-0.130	18	150	45	20	●
2200LT	0.050-0.130	20	150	45	20	●

●: Standard item

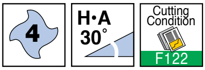
HES 4...LT

4 flute long flat





D	Tolerance
All	0 - -0.020

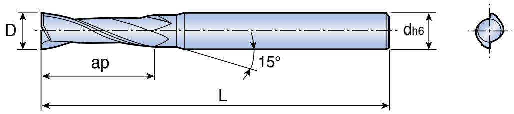


Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
HES 4030LT	0.01-0.04	3	70	10	6	●
4040LT	0.02-0.05	4	70	12	6	●
4050LT	0.02-0.06	5	80	15	6	●
4060LT	0.03-0.07	6	80	15	6	●
4080LT	0.03-0.09	8	90	20	8	●
4100LT	0.03-0.10	10	100	25	10	●
4120LT	0.04-0.11	12	110	30	12	●
4140LT	0.04-0.12	14	125	35	16	●
4160LT	0.05-0.13	16	125	40	16	●
4180LT	0.05-0.13	18	150	45	20	●
4200LT	0.05-0.13	20	150	45	20	●

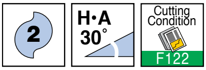
●: Standard item

HES 2...XLT

2 flute extra long flat



D	Tolerance
All	0 - -0.030

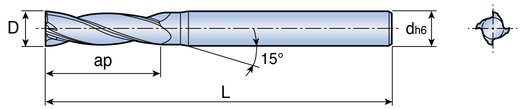


Designation	Feed (mm/tooth)	Dimension (mm)				Grades	
		D	L	ap	d	TT5515	TT5525
HES 2030XLT	0.010-0.040	3	70	20	6	●	●
2040XLT	0.020-0.050	4	70	20	6	●	●
2050XLT	0.020-0.060	5	80	25	6	●	●
2060XLT	0.030-0.076	6	80	25	6	●	●
2080XLT	0.030-0.097	8	90	35	8	●	●
2100XLT	0.030-0.107	10	100	45	10	●	●
2120XLT	0.040-0.108	12	110	55	12	●	●
2140XLT	0.040-0.120	14	125	60	16	●	●
2160XLT	0.040-0.130	16	125	70	16	●	●
2180XLT	0.050-0.130	18	150	75	20	●	●
2200XLT	0.050-0.130	20	150	75	20	●	●

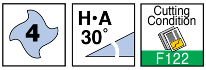
●: Standard item

HES 4...XLT

4 flute extra long flat



D	Tolerance
All	0 - -0.030



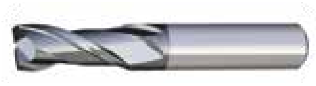
Designation	Feed (mm/tooth)	Dimension (mm)				Grades	
		D	L	ap	d	TT5515	TT5525
HES 4030XLT	0.01-0.04	3	70	20	6	●	●
4040XLT	0.02-0.05	4	70	20	6	●	●
4050XLT	0.02-0.06	5	80	25	6	●	●
4060XLT	0.03-0.07	6	80	25	6	●	●
4080XLT	0.03-0.09	8	90	35	8	●	●
4100XLT	0.03-0.10	10	100	45	10	●	●
4120XLT	0.04-0.11	12	110	55	12	●	●
4140XLT	0.04-0.12	14	125	60	16	●	●
4160XLT	0.05-0.13	16	125	70	16	●	●
4180XLT	0.05-0.13	18	150	75	20	●	●
4200XLT	0.05-0.13	20	150	75	20	●	●

●: Standard item

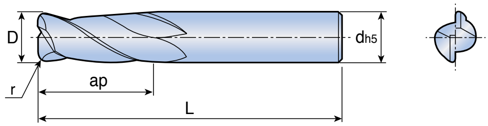
HES 2...T-R

APEXMILL

2 flute medium corner radius



2 | H·A 30° | Cutting Condition F122



r	±0.02

D	Tolerance
All	0 - -0.020

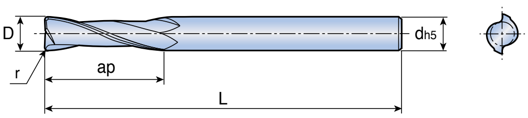
Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		D	r	L	ap	d	TT5515	TT5525
HES 2030T-R0.5	0.010-0.030	3	0.5	47	10	6	●	●
2040T-R0.5	0.010-0.050	4	0.5	47	12	6	●	●
2050T-R0.5	0.020-0.060	5	0.5	52	15	6	●	●
2060T-R0.5	0.020-0.060	6	0.5	52	15	6	●	●
2060T-R1.0	0.020-0.060	6	1.0	52	15	6	●	●
2080T-R0.5	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	●	●

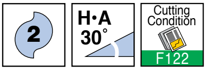
●: Standard item

HES 2...LT-R

APEXMILL

2 flute long corner radius





r	
	±0.02

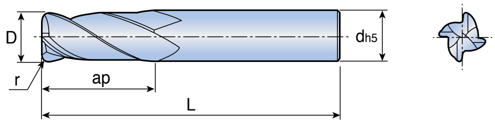
D	Tolerance
All	0 - -0.020

Designation		Feed (mm/tooth)	Dimension (mm)					Grades	
			D	r	L	ap	d	TT5515	TT5525
HES	2030LT-R0.5	0.010-0.040	3	0.5	70	10	6	●	●
	2040LT-R0.5	0.020-0.050	4	0.5	70	12	6	●	●
	2050LT-R0.5	0.020-0.060	5	0.5	80	15	6	●	●
	2060LT-R0.5	0.030-0.076	6	0.5	80	15	6	●	●
	2060LT-R1.0	0.030-0.076	6	1.0	80	15	6	●	●
	2080LT-R0.5	0.030-0.097	8	0.5	90	20	8	●	●
	2080LT-R1.0	0.030-0.097	8	1.0	90	20	8	●	●
	2100LT-R0.5	0.030-0.107	10	0.5	100	25	10	●	●
	2100LT-R1.0	0.030-0.107	10	1.0	100	25	10	●	●
	2120LT-R0.5	0.040-0.108	12	0.5	110	30	12	●	●
	2120LT-R1.0	0.040-0.108	12	1.0	110	30	12	●	●

●: Standard item

HES 4...T-R

4 flute medium corner radius



4
H·A 30˚
Cutting Condition F122

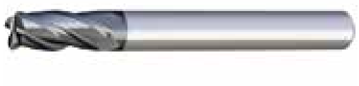
r ±0.02

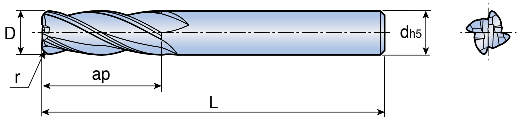
D	Tolerance
All	0 - -0.020

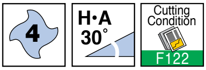
Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		D	r	L	ap	d	TT5515	TT5525
HES 4030T-R0.3	0.01-0.04	3	0.3	47	10	6	●	●
4040T-R0.3	0.02-0.05	4	0.3	47	12	6	●	●
4050T-R0.3	0.02-0.06	5	0.3	52	15	6	●	●
4060T-R0.5	0.03-0.07	6	0.5	52	15	6	●	●
4060T-R1.0	0.03-0.07	6	1.0	52	15	6	●	●
4080T-R0.5	0.03-0.09	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 item

4 flute long corner radius







r	
	±0.02

D	Tolerance
All	0 - -0.020

Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		D	r	L	ap	d	TT5515	TT5525
HES 4040LT-R0.5	0.02-0.05	4	0.5	70	12	6	●	●
4040LT-R1.0	0.02-0.05	4	1.0	70	12	6	●	●
4060LT-R0.5	0.03-0.07	6	0.5	80	15	6	●	●
4060LT-R1.0	0.03-0.07	6	1.0	80	15	6	●	●
4080LT-R0.5	0.03-0.09	8	0.5	90	20	8	●	●
4080LT-R1.0	0.03-0.09	8	1.0	90	20	8	●	●
4100LT-R0.5	0.03-0.10	10	0.5	100	25	10	●	●
4100LT-R1.0	0.03-0.10	10	1.0	100	25	10	●	●
4120LT-R0.5	0.04-0.11	12	0.5	110	30	12	●	●
4120LT-R1.0	0.04-0.11	12	1.0	110	30	12	●	●

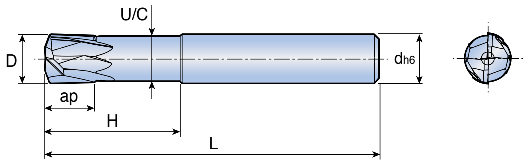
●: Standard item

HFM 2

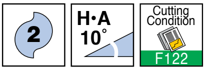
APEXMILL

2 flute high feed flat

SOLIDFEED



• High Feed Machining (H.F.M)



D	Tolerance
All	0 - -0.030

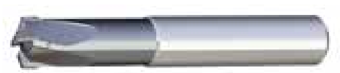
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5515
HFM 2040	0.2-0.4	4	47	4	10	3.9	6	●
2060	0.3-0.6	6	52	6	16	5.5	6	●
2080	0.4-0.7	8	60	8	22	7.3	8	●
2100	0.5-0.9	10	68	10	28	9.2	10	●
2120	0.5-1.0	12	76	12	33	11.0	12	●

●: Standard item

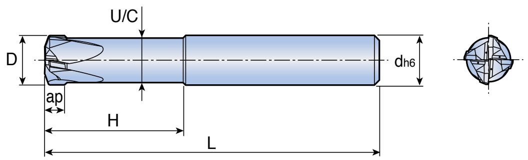
HFM 4

APEXMILL

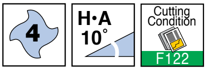
4 flute high feed flat



SOLIDFEED



• High Feed Machining (H.F.M)



D	Tolerance
All	0 - -0.030

Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	U/C	d	TT5515
HFM 4060	0.3-0.5	6	52	2.5	16	5.4	6	●
4080	0.3-0.6	8	60	3.5	24	7.2	8	●
4100	0.4-0.8	10	68	4.0	28	9.2	10	●
4120	0.4-1.0	12	76	5.0	33	11.0	12	●

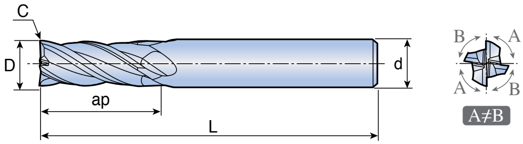
●: Standard item

CFM 4...M

APEXMILL

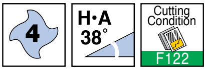
4 flute corner chamfer

VFIMILL



D	Tolerance	D	Tolerance
3< D≤6	-0.020 - -0.038	10< D≤18	-0.032 - -0.059
6< D≤10	-0.025 - -0.047	18< D≤30	-0.040 - -0.073

• Vibration free mill



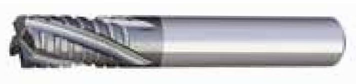
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	C	L	ap	d	TT5525
CFM 4060M	0.03-0.07	6	0.25	57	14	6	●
4080M	0.03-0.08	8	0.3	63	18	8	●
4100M	0.03-0.10	10	0.4	72	22	10	●
4120M	0.04-0.11	12	0.5	83	26	12	●
4160M	0.05-0.13	16	0.6	100	34	16	●
4200M	0.05-0.17	20	0.6	110	42	20	●
4250M	0.06-0.20	25	0.6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

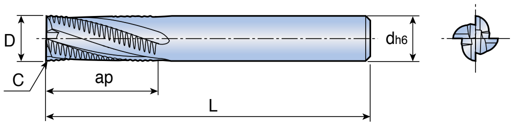
●: Standard item

REL ...L

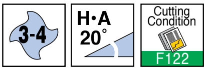
APEXMILL

3-4 flute rough long flat





D	Tolerance	D	Tolerance
D≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		



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

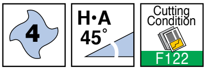
• Weldon shank is available on request (Ordering example: RELW ....L)

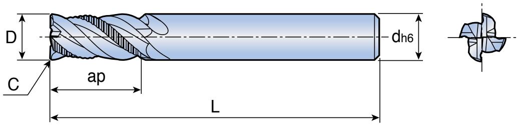
●: Standard item

FSM 4...M

4 flute medium corner chamfer

• MULTIMILL (Rough + Finish)





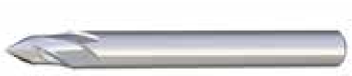
D	Tolerance	D	Tolerance
3< D≤6	-0.020 - -0.038	10< D≤18	-0.032 - -0.059
6< D≤10	-0.025 - -0.047	18< D≤30	-0.040 - -0.073

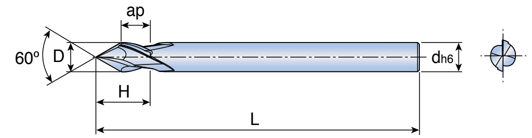
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	C	L	ap	d	TT5525
FSM 4060M	0.03-0.06	6	0.25	57	14	6	●
4080M	0.03-0.08	8	0.3	63	18	8	●
4100M	0.03-0.09	10	0.3	72	22	10	●
4120M	0.04-0.11	12	0.4	83	26	12	●
4140M	0.04-0.11	14	0.4	83	30	14	●
4160M	0.05-0.11	16	0.6	92	34	16	●
4200M	0.05-0.11	20	0.6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

●: Standard item

CEM 2...-C60

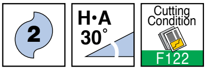
2 flute, 60° chamfer





D	Tolerance
All	0 - -0.030

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

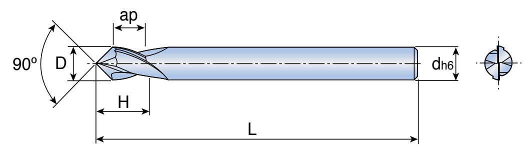


Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
CEM 2040-C60	0.02-0.04	4	70	4	7.4	6	●
2060-C60	0.02-0.04	6	80	6	11.2	6	●
2080-C60	0.03-0.06	8	90	8	14.9	8	●
2100-C60	0.03-0.08	10	100	10	18.6	10	●
2120-C60	0.04-0.09	12	110	12	22.3	12	●
2160-C60	0.05-0.10	16	125	16	29.8	16	●
2200-C60	0.05-0.10	20	150	20	37.3	20	●

●: Standard item

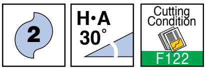
CEM 2

2 flute, 90° chamfer



D	Tolerance
All	0 - -0.030

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



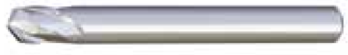
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
CEM 2040	0.02-0.05	4	70	4	6	6	●
2060	0.02-0.05	6	80	6	9	6	●
2080	0.03-0.07	8	90	8	12	8	●
2100	0.03-0.10	10	100	10	15	10	●
2120	0.04-0.10	12	110	12	18	12	●
2160	0.05-0.10	16	125	16	24	16	●
2200	0.05-0.10	20	150	20	30	20	●

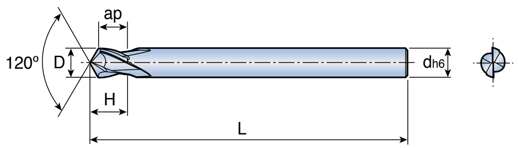
• *Centering of 90˚ is only applicable on cast iron & non-ferrous material

●: Standard item

CEM 2...-C120

2 flute, 120° chamfer





D	Tolerance
All	0 - -0.030

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

2 | H·A 30° | Cutting Condition F122

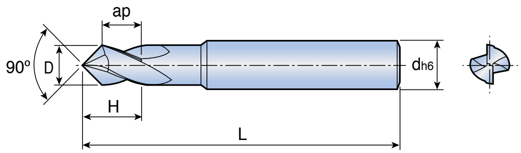
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
CEM 2040-C120	0.02-0.05	4	70	4	5.1	6	●
2060-C120	0.02-0.05	6	80	6	7.7	6	●
2080-C120	0.03-0.07	8	90	8	10.3	8	●
2100-C120	0.03-0.10	10	100	10	12.8	10	●
2120-C120	0.04-0.10	12	110	12	15.4	12	●
2160-C120	0.05-0.10	16	125	16	20.6	16	●
2200-C120	0.05-0.10	20	150	20	25.7	20	●

●: Standard item

CEM

APEXMILL

Top-solid - Economical type



D	Tolerance
All	+0.1 - 0

- Multi-function
  - Centering, chamfering, V-shape grooving and side-milling

2 | H·A 30° | Cutting Condition F122

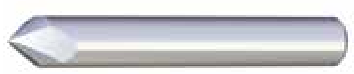
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
CEM 1016	0.03-0.10	10	115	10	15	16	●
1216	0.04-0.10	12	145	14	20	16	●
1620	0.05-0.10	16	150	15	23	20	●
2025	0.05-0.10	20	155	15	25	25	●

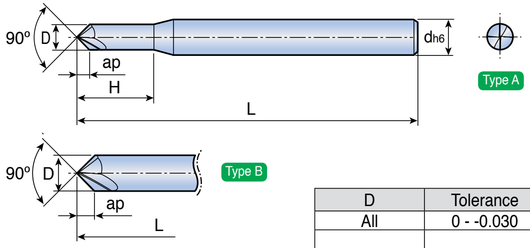
●: Standard item

ECEM 2

APEXMILL

2 flute, 90° chamfer - Economical type





D	Tolerance
All	0 - -0.030

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

2

Cutting Condition F122

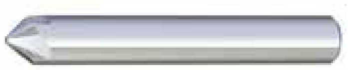
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	L	ap	H	d	Type	UF10
ECEM 2020	0.01-0.03	2	57	1.0	6	6	A	●
2030	0.01-0.04	3	57	1.5	9	6	A	●
2040	0.02-0.05	4	57	2.0	12	6	A	●
2060	0.02-0.05	6	57	2.9	-	6	B	●
2080	0.03-0.07	8	63	3.8	-	8	B	●
2100	0.03-0.10	10	72	4.9	-	10	B	●
2120	0.04-0.10	12	83	5.9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

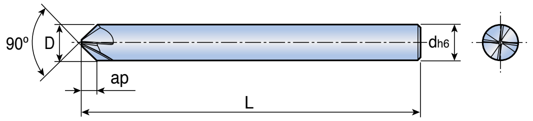
●: Standard item

ECEM 4

APEXMILL

4 flute, 90° chamfer - Economical type





D	Tolerance
All	0 - -0.030

- Chamfer milling

4

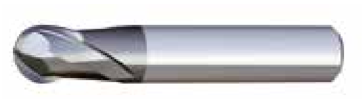
Cutting Condition F122

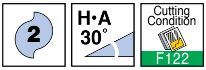
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	UF10
ECEM 4060	0.02-0.04	6	57	2.5	6	●
4080	0.02-0.05	8	63	3.4	8	●
4100	0.03-0.08	10	72	4.4	10	●
4120	0.03-0.08	12	83	5.1	12	●

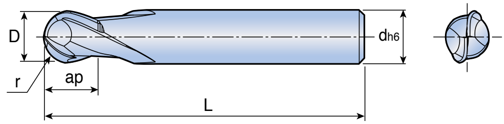
●: Standard item

EBE 2...S

2 flute short ball - Economical type







r	±0.01

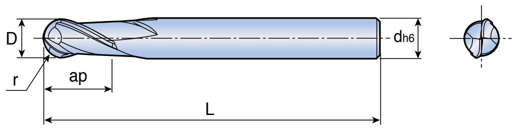
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

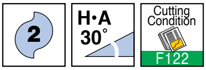
Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5515
EBE 2030S	3	1.5	38	4	3	●
2040S	4	2.0	40	6	4	●
2060S	6	3.0	54	7	6	●
2080S	8	4.0	58	9	8	●
2100S	10	5.0	66	10	10	●
2120S	12	6.0	70	14	12	●
2140S	14	7.0	75	14	14	●
2160S	16	8.0	75	16	16	●
2180S	18	9.0	84	18	18	●
2200S	20	10.0	92	20	20	●

●: Standard item

EBE 2...M

2 flute medium ball - Economical type





r	±0.01

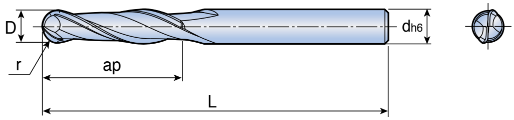
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

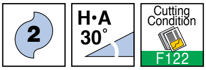
Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5515
EBE 2030M	3	1.5	50	7	3	●
2040M	4	2.0	50	8	4	●
2060M	6	3.0	54	10	6	●
2080M	8	4.0	63	16	8	●
2100M	10	5.0	72	19	10	●
2120M	12	6.0	83	22	12	●
2140M	14	7.0	83	22	14	●
2160M	16	8.0	92	26	16	●
2180M	18	9.0	92	26	18	●
2200M	20	10.0	100	32	20	●

●: Standard item

EBE 2...L

2 flute long ball - Economical type





r	±0.01

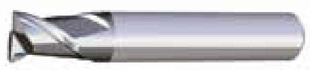
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10<D≤18	0 - -0.070
3<D≤6	0 - -0.048	18<D≤30	0 - -0.084
6<D≤10	0 - -0.058		

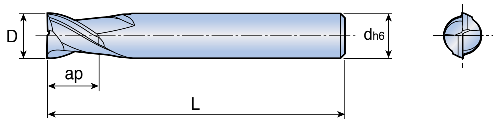
Designation	Dimension (mm)					Grade
	D	r	L	ap	d	TT5515
EBE 2030L	3	1.5	75	20	3	●
2040L	4	2.0	75	20	4	●
2050L	5	2.5	75	25	5	●
2060L	6	3.0	80	25	6	●
2080L	8	4.0	90	30	8	●
2100L	10	5.0	100	40	10	●
2120L	12	6.0	105	45	12	●
2140L	14	7.0	120	45	14	●
2160L	16	8.0	120	55	16	●
2180L	18	9.0	130	60	18	●
2200L	20	10.0	130	60	20	●

●: Standard item

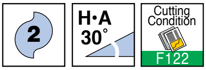
EFE 2...S

2 flute short flat - Economical type





D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

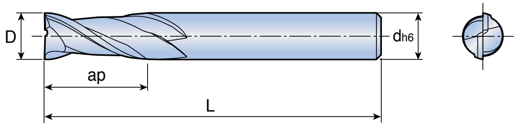


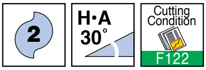
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 2030S	0.01-0.03	3	38	4	3	●
2040S	0.01-0.05	4	40	5	4	●
2050S	0.02-0.06	5	54	6	5	●
2060S	0.02-0.06	6	54	7	6	●
2080S	0.03-0.10	8	58	9	8	●
2100S	0.03-0.12	10	66	11	10	●
2120S	0.03-0.12	12	70	12	12	●
2140S	0.03-0.13	14	75	14	14	●
2160S	0.04-0.14	16	75	16	16	●
2180S	0.04-0.14	18	84	18	18	●
2200S	0.04-0.14	20	92	20	20	●

●: Standard item

EFE 2...M

2 flute medium flat - Economical type





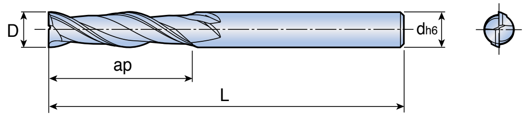
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D ≤18	0 - -0.070
3< D ≤6	0 - -0.048	18< D ≤30	0 - -0.084
6< D ≤10	0 - -0.058		

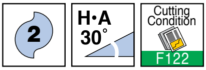
Designation		Feed (mm/tooth)	Dimension (mm)				Grade
			D	L	ap	d	TT5525
EFE	**2030M**	0.01-0.03	3	50	12	3	●
	2040M	0.01-0.05	4	50	12	4	●
	2050M	0.02-0.06	5	54	14	5	●
	2060M	0.02-0.06	6	54	16	6	●
	2070M	0.03-0.08	7	60	20	7	●
	2080M	0.03-0.10	8	63	20	8	●
	2090M	0.03-0.10	9	66	20	9	●
	2100M	0.03-0.12	10	72	22	10	●
	2120M	0.03-0.12	12	75	22	12	●
	2140M	0.03-0.13	14	75	22	14	●
	2160M	0.04-0.14	16	82	25	16	●
	2180M	0.04-0.14	18	92	26	18	●
	2200M	0.04-0.14	20	100	32	20	●

●: Standard item

EFE 2...L

2 flute long flat - Economical type





D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

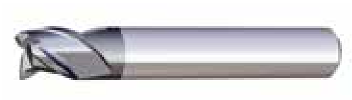
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 2030L	0.01-0.03	3	75	20	3	●
2040L	0.01-0.04	4	75	20	4	●
2050L	0.02-0.05	5	75	25	5	●
2060L	0.02-0.05	6	80	25	6	●
2080L	0.03-0.07	8	90	30	8	●
2100L	0.03-0.10	10	100	40	10	●
2120L	0.03-0.10	12	105	45	12	●
2140L	0.03-0.11	14	120	45	14	●
2160L	0.04-0.12	16	120	55	16	●
2180L	0.04-0.12	18	130	60	18	●
2200L	0.04-0.12	20	130	60	20	●

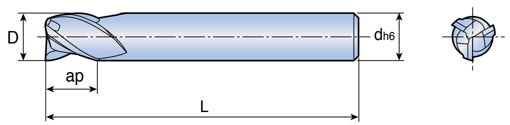
●: Standard item

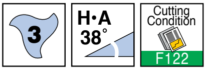
EFE 3...S

APEXMILL

3 flute short flat - Economical type







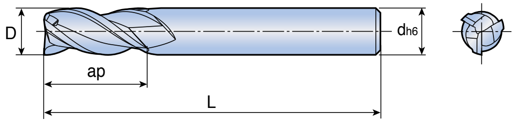
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D ≤ 18	0 - -0.070
3< D ≤ 6	0 - -0.048	18< D ≤ 30	0 - -0.084
6< D ≤ 10	0 - -0.058		

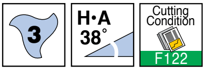
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 3030S	0.01-0.03	3	38	4	3	●
3040S	0.01-0.04	4	40	5	4	●
3050S	0.02-0.05	5	54	6	5	●
3060S	0.02-0.05	6	54	7	6	●
3080S	0.03-0.07	8	58	9	8	●
3100S	0.03-0.10	10	66	11	10	●
3120S	0.03-0.10	12	70	12	12	●
3140S	0.03-0.11	14	75	14	14	●
3160S	0.04-0.12	16	75	16	16	●
3180S	0.04-0.12	18	84	18	18	●
3200S	0.04-0.12	20	92	20	20	●

●: Standard item

EFE 3...M

3 flute medium flat - Economical type





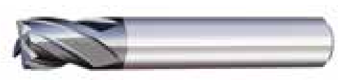
D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

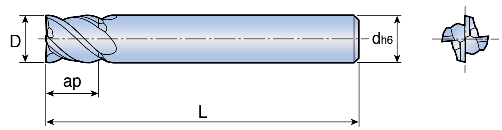
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 3030M	0.01-0.03	3	50	8	3	●
3040M	0.01-0.04	4	50	11	4	●
3050M	0.02-0.05	5	54	13	5	●
3060M	0.02-0.05	6	54	13	6	●
3080M	0.03-0.07	8	63	19	8	●
3100M	0.03-0.10	10	72	22	10	●
3120M	0.03-0.10	12	75	22	12	●
3140M	0.03-0.11	14	75	22	14	●
3160M	0.04-0.12	16	82	26	16	●
3200M	0.04-0.12	20	100	32	20	●

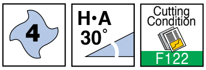
●: Standard item

EFE 4...S

4 flute short flat - Economical type







D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D ≤18	0 - -0.070
3< D ≤6	0 - -0.048	18< D ≤30	0 - -0.084
6< D ≤10	0 - -0.058		

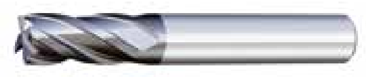
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 4030S	0.01-0.02	3	38	5	3	●
4040S	0.01-0.04	4	40	8	4	●
4050S	0.02-0.05	5	54	9	5	●
4060S	0.02-0.05	6	54	10	6	●
4080S	0.03-0.07	8	58	12	8	●
4100S	0.03-0.09	10	66	14	10	●
4120S	0.03-0.09	12	70	16	12	●
4140S	0.03-0.10	14	75	18	14	●
4160S	0.04-0.12	16	75	22	16	●
4180S	0.04-0.12	18	84	24	18	●
4200S	0.04-0.12	20	92	26	20	●

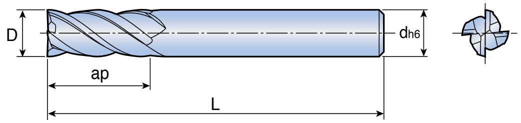
●: Standard item

EFE 4...M

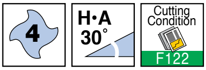
APEXMILL

4 flute medium flat - Economical type





D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		



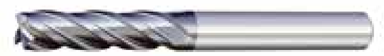
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 4030M	0.01-0.02	3	50	12	3	●
4040M	0.01-0.04	4	50	12	4	●
4050M	0.02-0.05	5	54	14	5	●
4060M	0.02-0.05	6	54	16	6	●
4070M	0.03-0.06	7	60	20	7	●
4080M	0.03-0.07	8	63	20	8	●
4090M	0.03-0.08	9	66	20	9	●
4100M	0.03-0.09	10	72	22	10	●
4120M	0.03-0.09	12	75	22	12	●
4140M	0.03-0.10	14	75	22	14	●
4160M	0.04-0.12	16	82	25	16	●
4180M	0.04-0.12	18	92	26	18	●
4200M	0.04-0.12	20	100	32	20	●

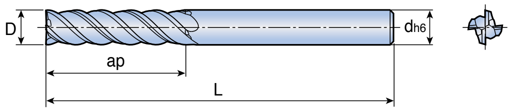
●: Standard item

EFE 4...L

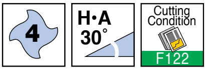
APEXMILL

4 flute long flat - Economical type





D	Tolerance	D	Tolerance
≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		



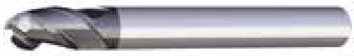
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
EFE 4030L	0.008-0.017	3	75	20	3	●
4040L	0.010-0.030	4	75	20	4	●
4050L	0.020-0.040	5	75	25	5	●
4060L	0.020-0.040	6	80	25	6	●
4080L	0.030-0.060	8	90	30	8	●
4100L	0.030-0.080	10	100	40	10	●
4120L	0.030-0.090	12	105	45	12	●
4140L	0.030-0.100	14	120	45	14	●
4160L	0.040-0.120	16	120	55	16	●
4180L	0.040-0.120	18	130	60	18	●
4200L	0.040-0.120	20	130	60	20	●

●: Standard item

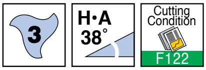
SBT 3...U

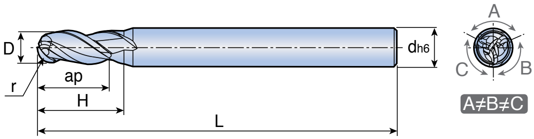
STARMILL

3 flute medium ball



• Excellent chatter damping due to unequal spacing of cutting edges





r	
D≤6	±0.005
D>6	±0.010

D	Tolerance
All	0 - -0.020

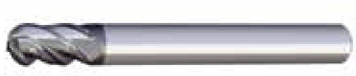
Designation	Dimension (mm)						Grade
	D	r	L	ap	H	d	TT5515
SBT 3040U	4	2	70	8	10	6	●
3060U	6	3	80	12	-	6	●
3080U	8	4	90	16	-	8	●
3100U	10	5	100	20	-	10	●
3120U	12	6	110	25	-	12	●

●: Standard item

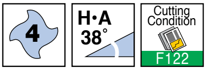
SBT 4...U

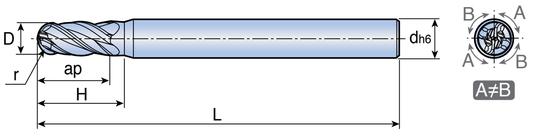
STARMILL

4 flute medium ball



• Excellent chatter damping due to unequal spacing of cutting edges





r	
D≤6	±0.005
D>6	±0.010

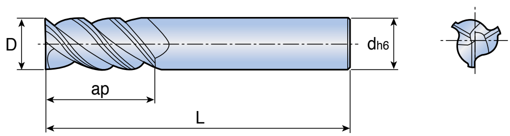
D	Tolerance
All	0 - -0.020

Designation	Dimension (mm)						Grade
	D	r	L	ap	H	d	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	●

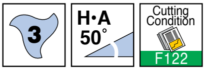
●: Standard item

SED 3...T

3 flute medium flat



D	Tolerance
All	0 - -0.020



Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT9020
SED 3020T	0.010-0.030	2.0	40	6	4	●
3025T	0.010-0.030	2.5	40	8	4	●
3030T	0.010-0.040	3.0	47	10	6	●
3040T	0.012-0.070	4.0	47	12	6	●
3050T	0.020-0.091	5.0	52	15	6	●
3060T	0.020-0.091	6.0	52	15	6	●
3070T	0.030-0.123	7.0	60	18	8	●
3080T	0.030-0.123	8.0	60	18	8	●
3090T	0.030-0.148	9.0	68	22	10	●
3100T	0.030-0.148	10.0	68	22	10	●
3120T	0.040-0.157	12.0	76	26	12	●
3140T	0.040-0.159	14.0	85	32	14	●
3160T	0.050-0.160	16.0	90	32	16	●
3180T	0.050-0.180	18.0	110	38	18	●
3200T	0.050-0.180	20.0	110	38	20	●

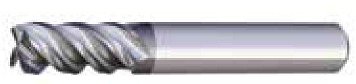
• Weldon shank is available on request (Ordering example: SEDW 3...T)

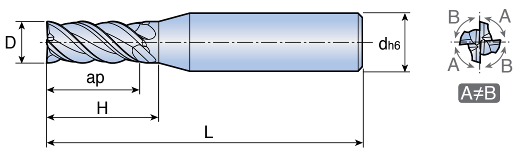
●: Standard item

SED 4...U

STARMILL

4 flute medium flat





D	Tolerance
All	0 - -0.020

- Excellent chatter damping credit to unequal spacing of cutting edges

4 | H·A 45° | Cutting Condition F122

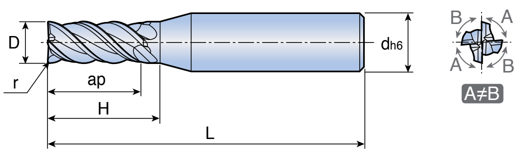
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	TT5515
SED 4030U	0.015-0.030	3	57	10	12	6	●
4040U	0.020-0.040	4	57	12	14	6	●
4050U	0.020-0.040	5	57	15	16	6	●
4060U	0.025-0.070	6	57	15	-	6	●
4080U	0.030-0.090	8	70	25	-	8	●
4100U	0.030-0.100	10	72	25	-	10	●
4120U	0.035-0.110	12	83	30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

●: Standard item

SED 4...U-R

STARMILL

4 flute medium corner radius



r	±0.02

D	Tolerance
All	0 - -0.020

- Excellent chatter damping credit to unequal spacing of cutting edges

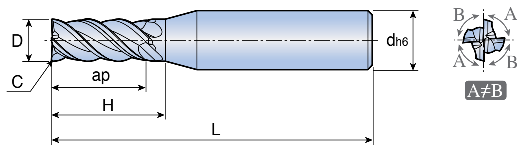
4 | H·A 45° | Cutting Condition F122

Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	r	L	ap	H	d	TT5515
SED 4040U-R0.1	0.020-0.040	4	0.1	57	12	14	6	●
4050U-R0.15	0.020-0.040	5	0.15	57	15	16	6	●
4060U-R0.2	0.025-0.070	6	0.2	57	15	-	6	●
4080U-R0.2	0.030-0.090	8	0.2	70	25	-	8	●
4100U-R0.2	0.030-0.100	10	0.2	72	25	-	10	●
4120U-R0.3	0.035-0.110	12	0.3	83	30	-	12	●

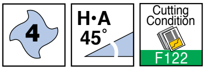
●: Standard item

SED 4...U-C

4 flute medium corner chamfer



- Excellent chatter damping credit to unequal spacing of cutting edges



D	Tolerance
All	0 - -0.020

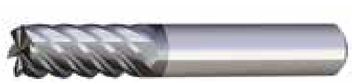
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		D	C	L	ap	H	d	TT5515
SED 4040U-C0.1	0.020-0.040	4	0.1	57	12	14	6	●
4060U-C0.2	0.030-0.060	6	0.2	57	15	-	6	●
4080U-C0.3	0.030-0.090	8	0.3	70	25	-	8	●
4100U-C0.3	0.030-0.100	10	0.3	72	25	-	10	●
4120U-C0.4	0.035-0.110	12	0.4	83	30	-	12	●

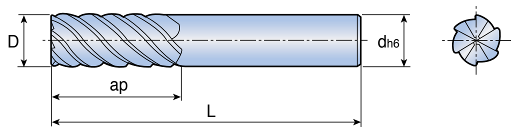
●: Standard item

HES 6...T

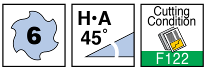
STARMILL

6 flute medium flat





- Finishing

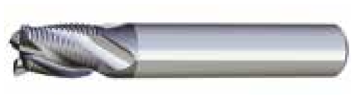


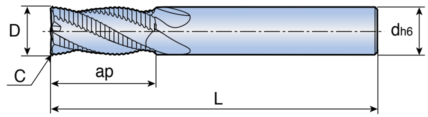
D	Tolerance
All	0 - -0.020

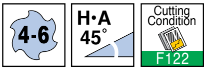
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	TT5525
HES 6060T	0.050-0.081	6	52	15	6	●
6070T	0.050-0.081	7	60	20	8	●
6080T	0.060-0.090	8	60	20	8	●
6100T	0.060-0.100	10	68	25	10	●
6120T	0.060-0.110	12	76	30	12	●
6140T	0.070-0.120	14	85	35	14	●
6160T	0.070-0.141	16	90	40	16	●
6180T	0.070-0.144	18	110	45	18	●
6200T	0.070-0.144	20	110	45	20	●

●: Standard item

4-6 flute rough short corner chamfer







D	Tolerance	D	Tolerance
D≤3	0 - -0.040	10<D≤18	0 - -0.070
3<D≤6	0 - -0.048	18<D≤30	0 - -0.084
6<D≤10	0 - -0.058		

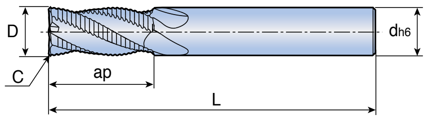
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		Flutes	D	C	L	ap	d	TT5525
REH 4060S	0.04-0.12	4	6	0.25	54	7	6	●
4080S	0.05-0.16	4	8	0.30	58	9	8	●
4100S	0.06-0.18	4	10	0.36	66	14	10	●
4120S	0.06-0.20	4	12	0.36	73	16	12	●
5160S	0.08-0.22	5	16	0.36	82	22	16	●
6200S	0.08-0.22	6	20	0.36	92	26	20	●

• Weldon shank is available on request (Ordering example: REHW ....S)

●: Standard item

REH ...M

3-6 flute rough medium corner chamfer



3-6 | H·A 45° | Cutting Condition F122

D	Tolerance	D	Tolerance
D≤3	0 - -0.040	10< D≤18	0 - -0.070
3< D≤6	0 - -0.048	18< D≤30	0 - -0.084
6< D≤10	0 - -0.058		

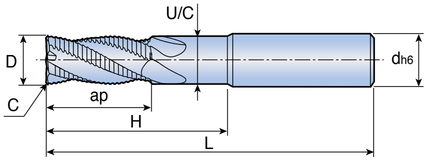
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		Flutes	D	C	L	ap	d	TT5525
REH 3040M	0.02-0.05	3	4	0.15	57	11	6	●
4050M	0.02-0.05	4	5	0.20	57	13	6	●
4060M	0.04-0.12	4	6	0.25	57	16	6	●
4070M	0.05-0.16	4	7	0.28	63	16	8	●
4080M	0.05-0.16	4	8	0.30	63	16	8	●
4090M	0.06-0.18	4	9	0.33	72	19	10	●
4100M	0.06-0.18	4	10	0.36	72	22	10	●
4120M	0.06-0.20	4	12	0.36	83	26	12	●
5140M-14	0.08-0.22	5	14	0.36	83	26	14	●
5160M	0.08-0.22	5	16	0.36	92	32	16	●
6200M	0.08-0.22	6	20	0.36	104	38	20	●
6250M	0.08-0.22	6	25	0.36	121	45	25	●

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

●: Standard item

REH ...L

4-6 flute rough long neck corner chamfer



D	Tolerance	D	Tolerance
D≤3	0 - -0.040	10<D≤18	0 - -0.070
3<D≤6	0 - -0.048	18<D≤30	0 - -0.084
6<D≤10	0 - -0.058		

4-6 | H·A 45° | Cutting Condition F122

Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		Flutes	D	C	L	ap	H	U/C	d	TT5525
REH 4060L	0.04-0.12	4	6	0.25	57	16	20	5.5	6	●
4080L	0.05-0.16	4	8	0.30	63	16	26	7.5	8	●
4100L	0.06-0.18	4	10	0.36	72	22	31	9.5	10	●
4120L	0.06-0.20	4	12	0.36	83	26	37	11.5	12	●
5160L	0.08-0.22	5	16	0.36	100	32	51	15.5	16	●
6200L	0.08-0.22	6	20	0.36	110	38	59	19.2	20	●

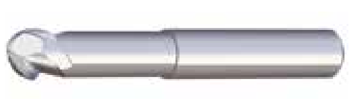
• Weldon shank is available on request (Ordering example: REHW ....L)

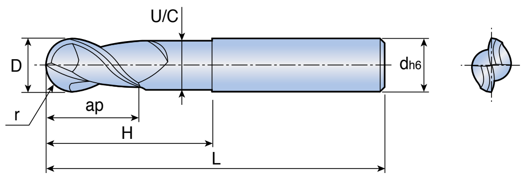
●: Standard item

AEB 2...S

ALUMILL

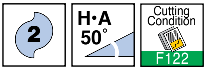
2 flute short ball





r	±0.02

D	Tolerance
All	0 - -0.012



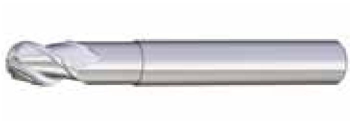
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT9020
AEB 2060S	6	3	55	5.5	25	5.4	6	●
2080S	8	4	65	7.0	30	7.2	8	●
2100S	10	5	75	8.5	35	9.0	10	●
2120S	12	6	75	10.5	40	11.0	12	●
2160S	16	8	90	14.0	50	14.5	16	●
2200S	20	10	100	17.0	50	18.0	20	●

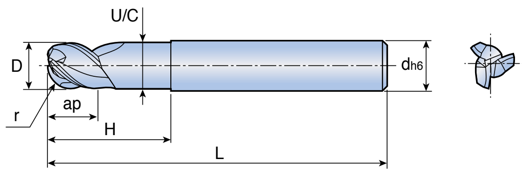
●: Standard item

AEB 3...M

ALUMILL

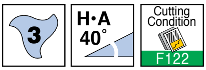
3 flute medium ball





r	±0.02

D	Tolerance
All	0 - -0.020



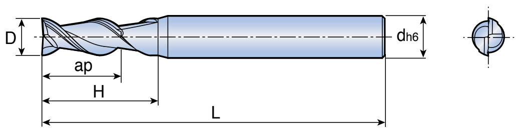
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT9020
AEB 3020M	2	1.0	60	3.0	5.0	1.9	6	●
3030M	3	1.5	60	4.5	6.5	2.8	6	●
3040M	4	2.0	65	6.0	8.0	3.7	6	●
3050M	5	2.5	65	7.5	10.0	4.6	6	●
3060M	6	3.0	75	9.0	12.0	5.6	6	●
3080M	8	4.0	75	12.0	25.0	7.4	8	●
3100M	10	5.0	80	15.0	30.0	9.4	10	●
3120M	12	6.0	90	18.0	36.0	11.4	12	●
3160M	16	8.0	100	24.0	40.0	15.4	16	●

●: Standard item

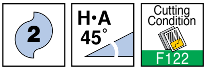
AES 2

ALUMILL

2 flute medium flat



D	Tolerance
All	0 - -0.012



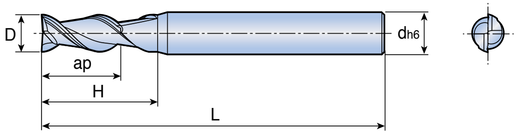
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
AES 2010	0.02-0.04	1.0	40	3	5	4	●
2010-6	0.02-0.04	1.0	47	3	5	6	●
2015-6	0.02-0.04	1.5	47	3	5	6	●
2020	0.02-0.04	2.0	40	6	8	4	●
2020-6	0.02-0.04	2.0	47	6	8	6	●
2025	0.02-0.05	2.5	40	8	10	4	●
2025-6	0.02-0.05	2.5	47	8	10	6	●
2030	0.02-0.05	3.0	47	10	13	6	●
2035	0.02-0.05	3.5	47	10	13	6	●
2040	0.02-0.05	4.0	47	12	15	6	●
2050	0.02-0.06	5.0	52	15	20	6	●
2060	0.03-0.07	6.0	52	15	-	6	●
2070	0.03-0.09	7.0	60	20	26	8	●
2080	0.03-0.09	8.0	60	20	-	8	●
2090	0.03-0.10	9.0	68	25	31	10	●
2100	0.03-0.10	10.0	68	25	31	10	●
2110	0.03-0.12	11.0	76	30	37	12	●
2120	0.03-0.12	12.0	76	30	-	12	●
2130	0.03-0.12	13.0	85	35	40	14	●
2140	0.05-0.14	14.0	85	35	40	14	●
2150	0.05-0.14	15.0	90	40	50	16	●
2160	0.05-0.14	16.0	90	40	-	16	●
2170	0.05-0.15	17.0	110	45	55	18	●
2180	0.05-0.15	18.0	110	45	55	18	●
2190	0.05-0.15	19.0	110	45	55	20	●
2200	0.05-0.15	20.0	110	45	-	20	●

●: Standard item

AES 2...XL

2 flute extra long flat

2 | H·A 45° | Cutting Condition F122



D	Tolerance
All	0 - -0.012

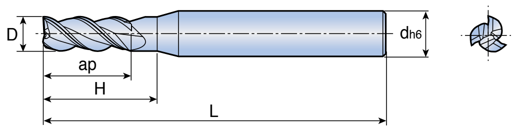
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
AES 2020XL	0.02-0.04	2	60	12	15	4	●
2030XL	0.02-0.04	3	70	20	23	6	●
2040XL	0.02-0.04	4	70	25	28	6	●
2050XL	0.02-0.06	5	80	30	35	6	●
2060XL	0.03-0.07	6	80	30	-	6	●
2080XL	0.03-0.09	8	90	40	-	8	●
2100XL	0.03-0.10	10	100	50	-	10	●
2120XL	0.03-0.12	12	110	55	-	12	●
2160XL	0.05-0.14	16	125	70	-	16	●
2200XL	0.05-0.15	20	150	75	-	20	●

●: Standard item

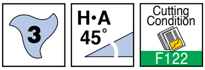
ALUMILL

AES 3

3 flute medium flat



D	Tolerance
All	0 - -0.012



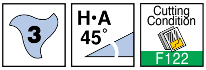
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
AES 3020-6	0.02-0.04	2	47	6	8	6	●
3030	0.02-0.05	3	47	10	13	6	●
3040	0.02-0.05	4	47	12	15	6	●
3050	0.02-0.06	5	52	15	20	6	●
3060	0.03-0.07	6	52	15	-	6	●
3070	0.03-0.09	7	60	20	26	8	●
3080	0.03-0.09	8	60	20	-	8	●
3090	0.03-0.10	9	68	25	31	10	●
3100	0.03-0.10	10	68	25	-	10	●
3110	0.03-0.12	11	76	30	37	12	●
3120	0.03-0.12	12	76	30	-	12	●
3130	0.03-0.12	13	85	35	40	14	●
3140	0.05-0.14	14	85	35	40	14	●
3150	0.05-0.14	15	90	40	50	16	●
3160	0.05-0.14	16	90	40	-	16	●
3180	0.05-0.15	18	110	45	55	18	●
3200	0.05-0.15	20	110	45	-	20	●
3250	0.05-0.15	25	140	65	-	25	●

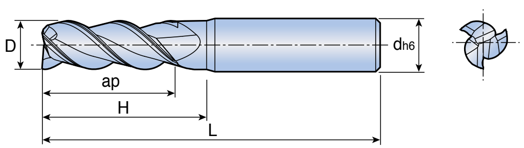
●: Standard item

AES 3...ML

ALUMILL

3 flute long flat





D	Tolerance
All	0 - -0.012

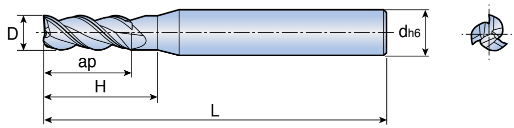
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
AES 3030ML	0.02-0.05	3	60	15	18	6	●
3040ML	0.02-0.05	4	60	20	25	6	●
3050ML	0.02-0.06	5	65	25	30	6	●
3060ML	0.03-0.07	6	65	25	-	6	●
3070ML	0.03-0.09	7	75	30	35	8	●
3080ML	0.03-0.09	8	75	30	-	8	●
3090ML	0.03-0.10	9	80	35	40	10	●
3100ML	0.03-0.10	10	80	35	-	10	●
3120ML	0.03-0.12	12	95	40	-	12	●
3140ML	0.05-0.14	14	110	55	62	16	●
3160ML	0.05-0.14	16	110	55	-	16	●
3180ML	0.05-0.15	18	125	60	70	20	●
3200ML	0.05-0.15	20	125	60	-	20	●

●: Standard item

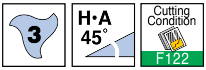
AES 3...XL

ALUMILL

3 flute extra long flat



D	Tolerance
All	0 - -0.012

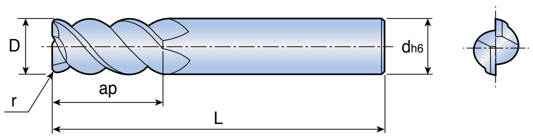


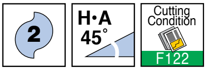
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	L	ap	H	d	UF10
AES 3060XL	0.03-0.07	6	80	30	-	6	●
3080XL	0.03-0.09	8	90	40	-	8	●
3100XL	0.03-0.10	10	100	50	-	10	●
3120XL	0.03-0.12	12	110	55	-	12	●
3160XL	0.05-0.14	16	125	70	-	16	●
3180XL	0.05-0.15	18	150	75	85	20	●
3180XL(80x150)	0.05-0.15	18	150	80	90	20	●
3200XL	0.05-0.15	20	150	75	-	20	●
3200XL(80x150)	0.05-0.15	20	150	80	-	20	●

●: Standard item

AES 2...R

2 flute medium corner radius





r	
r	±0.02

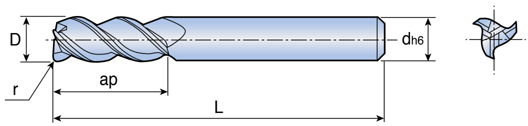
D	Tolerance
All	0 - -0.012

Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	UF10
AES 2060-R0.5	0.03-0.07	6	0.5	52	15	6	●
2060-R1.0	0.03-0.07	6	1.0	52	15	6	●
2060-R2.0	0.03-0.07	6	2.0	52	15	6	●
2080-R0.5	0.03-0.09	8	0.5	60	20	8	●
2080-R1.0	0.03-0.09	8	1.0	60	20	8	●
2080-R2.0	0.03-0.09	8	2.0	60	20	8	●
2080-R3.0	0.03-0.09	8	3.0	60	20	8	●
2100-R1.0	0.03-0.10	10	1.0	68	25	10	●
2100-R1.5	0.03-0.10	10	1.5	68	25	10	●
2100-R2.0	0.03-0.10	10	2.0	68	25	10	●
2100-R3.0	0.03-0.10	10	3.0	68	25	10	●
2100-R4.0	0.03-0.10	10	4.0	68	25	10	●
2120-R1.0	0.03-0.12	12	1.0	76	30	12	●
2120-R2.0	0.03-0.12	12	2.0	76	30	12	●
2120-R3.0	0.03-0.12	12	3.0	76	30	12	●
2120-R4.0	0.03-0.12	12	4.0	76	30	12	●
2140-R1.0	0.05-0.14	14	1.0	85	35	14	●
2140-R2.0	0.05-0.14	14	2.0	85	35	14	●
2140-R3.0	0.05-0.14	14	3.0	85	35	14	●
2140-R4.0	0.05-0.14	14	4.0	85	35	14	●
2140-R5.0	0.05-0.14	14	5.0	85	35	14	●
2160-R1.0	0.05-0.14	16	1.0	90	40	16	●
2160-R2.0	0.05-0.14	16	2.0	90	40	16	●
2160-R3.0	0.05-0.14	16	3.0	90	40	16	●
2160-R4.0	0.05-0.14	16	4.0	90	40	16	●
2160-R5.0	0.05-0.14	16	5.0	90	40	16	●

●: Standard item

AES 3...R

3 flute medium corner radius



3 | H·A 45° | Cutting Condition F122

r	±0.02

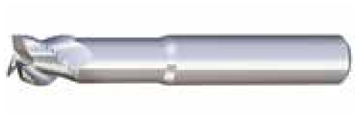
D	Tolerance
All	0 - -0.012

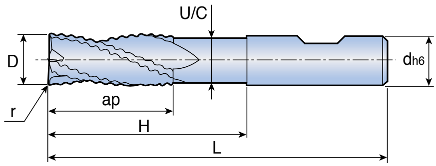
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	UF10
AES 3060-R0.5	0.03-0.07	6	0.5	52	15	6	●
3060-R1.0	0.03-0.07	6	1.0	52	15	6	●
3060-R2.0	0.03-0.07	6	2.0	52	15	6	●
3080-R0.5	0.03-0.09	8	0.5	60	20	8	●
3080-R1.0	0.03-0.09	8	1.0	60	20	8	●
3080-R2.0	0.03-0.09	8	2.0	60	20	8	●
3100-R1.0	0.03-0.10	10	1.0	68	25	10	●
3100-R1.5	0.03-0.10	10	1.5	68	25	10	●
3100-R2.0	0.03-0.10	10	2.0	68	25	10	●
3100-R3.0	0.03-0.10	10	3.0	68	25	10	●
3100-R4.0	0.03-0.10	10	4.0	68	25	10	●
3120-R1.0	0.03-0.12	12	1.0	76	30	12	●
3120-R2.0	0.03-0.12	12	2.0	76	30	12	●
3120-R3.0	0.03-0.12	12	3.0	76	30	12	●
3120-R4.0	0.03-0.12	12	4.0	76	30	12	●

●: Standard item

REMA 3/ 3...C

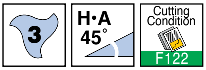
3 flute rough corner radius





r	±0.04

D	Tolerance	D	Tolerance
D≤6	0 - -0.008	10<D≤16	0 - -0.011
6<D≤10	0 - -0.009	16<D	0 - -0.013

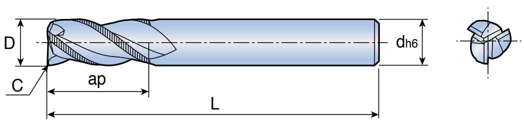


Designation		Feed (mm/tooth)	Dimension (mm)							Grade
Cylindrical shank	Welden shank		D	r	L	ap	H	U/C	d	UF10
REMA 3060C	**REMA 3060**	0.03-0.07	6	0.2	57	9	21	5.5	6	●
3080C	**3080**	0.03-0.11	8	0.2	63	12	27	7.2	8	●
3100C	**3100**	0.05-0.14	10	0.2	72	12	31	9.0	10	●
3120C	**3120**	0.07-0.16	12	0.2	83	12	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	●

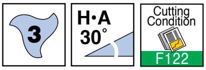
●: Standard item

REA 3...L

3 flute rough corner chamfer



D	Tolerance	D	Tolerance
3<D≤6	0 - -0.040	10<D≤18	0 - -0.058
6<D≤10	0 - -0.048	18<D≤30	0 - -0.084

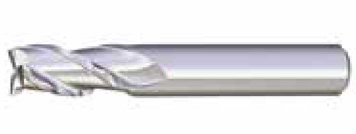


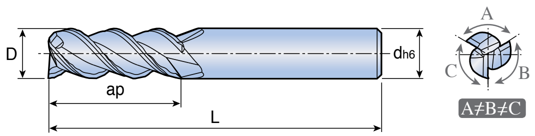
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	C	L	ap	d	UF10
REA 3060L	0.03-0.07	6	0.61	57	16	6	●
3080L	0.03-0.15	8	0.61	63	16	8	●
3100L	0.05-0.20	10	0.61	72	22	10	●
3120L	0.07-0.22	12	0.66	83	26	12	●
3140L-14	0.07-0.22	14	0.99	83	26	14	●
3160L	0.07-0.25	16	0.99	92	32	16	●
3200L	0.07-0.25	20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

●: Standard item

AWE 3

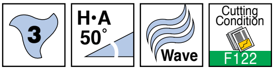
3 flute wave flat





D	Tolerance
All	0 - -0.012

• Wave cutting edge



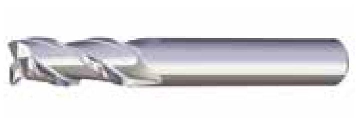
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	UF10
AWE 3060	0.03-0.07	6	52	14	6	●
3080	0.03-0.09	8	60	14	8	●
3100	0.03-0.10	10	68	19	10	●
3120	0.03-0.12	12	76	22	12	●
3140	0.05-0.14	14	85	24	14	●
3160	0.05-0.14	16	90	30	16	●
3180	0.05-0.15	18	110	34	18	●
3200	0.05-0.15	20	110	38	20	●

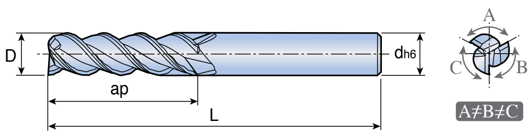
●: Standard item

AWE 3...ML

ALUMILL

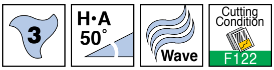
3 flute wave long flat





D	Tolerance
All	0 - -0.012

• Wave cutting edge



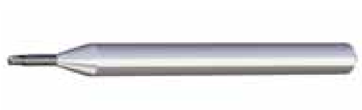
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		D	L	ap	d	UF10
AWE 3060ML	0.03-0.07	6	65	20	6	●
3080ML	0.03-0.09	8	75	20	8	●
3100ML	0.03-0.10	10	80	25	10	●
3120ML	0.03-0.12	12	95	30	12	●
3140ML	0.03-0.12	14	110	35	14	●
3160ML	0.05-0.14	16	110	40	16	●
3180ML	0.05-0.15	18	125	45	18	●
3200ML	0.05-0.15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

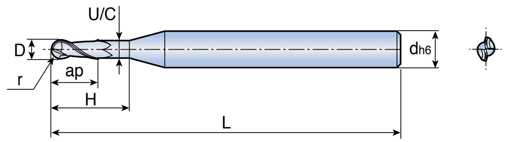
●: Standard item

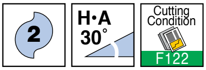
DMB 2

DIAMILL

2 flute miniature ball







r	±0.01

D	Tolerance
All	0 - -0.020

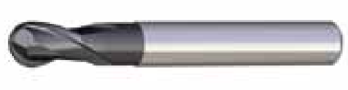
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT6050
DMB 2006-0.6x3.0	0.6	0.3	40	0.6	3.0	0.55	3	●
2008-0.8x4.0	0.8	0.4	40	0.8	4.0	0.75	3	●
2010-1.0x5.0	1.0	0.5	40	1.0	5.0	0.95	3	●
2010-1.0x8.5	1.0	0.5	40	1.0	8.5	0.95	3	●
2012-1.2x6.0	1.2	0.6	50	1.2	6.0	1.15	3	●
2015-1.5x7.5	1.5	0.75	50	1.5	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	●

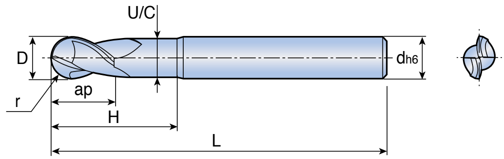
●: Standard item

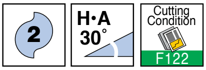
DEB 2...S

DIAMILL

2 flute short ball







r	±0.01

D	Tolerance
D≤6	0 - -0.020
D>6	0 - -0.030

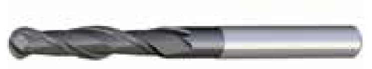
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT6050
DEB 2030S	3	1.5	60	4.5	6.5	2.8	6	●
2040S	4	2.0	65	6.0	8.0	3.7	6	●
2050S	5	2.5	65	7.5	10.0	4.6	6	●
2060S	6	3.0	75	9.0	12.0	5.6	6	●
2080S	8	4.0	75	12.0	25.0	7.4	8	●
2100S	10	5.0	80	15.0	30.0	9.4	10	●
2120S	12	6.0	90	18.0	36.0	11.4	12	●

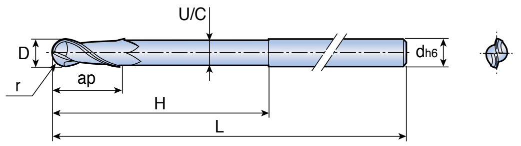
●: Standard item

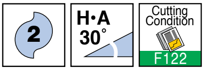
DEB 2...L

DIAMILL

2 flute long neck ball







r ±0.01

D	Tolerance
D≤6	0 - -0.020
D>6	0 - -0.030

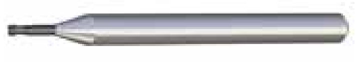
Designation	Dimension (mm)							Grade
	D	r	L	ap	H	U/C	d	TT6050
DEB 2030L-4	3	1.5	80	15	25	2.9	4	●
2040L-4	4	2.0	80	20	30	3.9	4	●
2050L	5	2.5	100	30	50	4.9	6	●
2060L	6	3.0	100	30	50	5.5	6	●
2080L	8	4.0	110	40	60	7.5	8	●
2100L	10	5.0	120	50	70	9.5	10	●
2120L	12	6.0	130	55	75	11.5	12	●

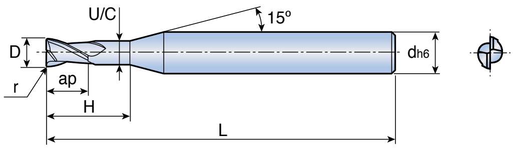
●: Standard item

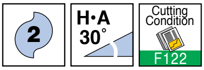
DMR 2

DIAMILL

2 flute miniature corner radius







r ±0.02

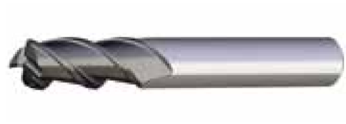
D	Tolerance
All	0 - -0.020

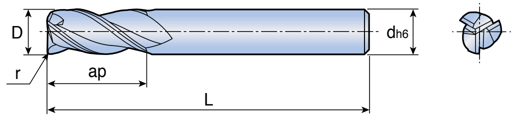
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		D	r	L	ap	H	U/C	d	TT6050
DMR 2006-0.9x3.0	0.006-0.010	0.6	0.05	40	0.9	3.0	0.55	3	●
2008-1.2x4.0	0.008-0.015	0.8	0.05	40	1.2	4.0	0.75	3	●
2010-1.5x5.0	0.010-0.020	1.0	0.1	40	1.5	5.0	0.95	3	●
2010-1.5x8.5	0.010-0.020	1.0	0.1	40	1.5	8.5	0.95	3	●
2012-1.8x6.0	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	●

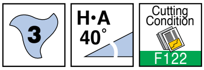
●: Standard item

DER 3...S

3 flute short corner radius







r ±0.02

D	Tolerance
D≤6	0 - -0.020
D>6	0 - -0.030

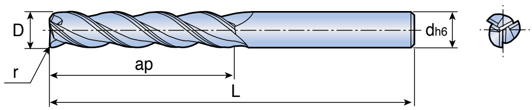
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT6050
DER 3030S-3	0.025-0.050	3	0.15	40	12	3	●
3040S-4	0.040-0.060	4	0.2	50	14	4	●
3050S-5	0.050-0.080	5	0.3	50	16	5	●
3060S	0.060-0.090	6	0.3	65	20	6	●
3080S	0.070-0.100	8	0.5	65	20	8	●
3100S	0.080-0.130	10	0.5	75	25	10	●
3120S	0.100-0.150	12	0.5	75	25	12	●

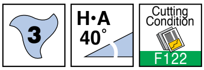
●: Standard item

DIAMILL

DER 3...L

3 flute long corner radius





r ±0.02

D	Tolerance
D≤6	0 - -0.020
D>6	0 - -0.030

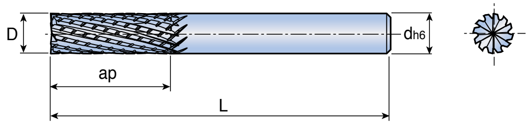
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		D	r	L	ap	d	TT6050
DER 3040L-4	0.03-0.05	4	0.2	60	30	4	●
3050L-5	0.04-0.07	5	0.3	70	35	5	●
3060L	0.05-0.08	6	0.3	100	40	6	●
3080L	0.06-0.09	8	0.5	100	40	8	●
3100L	0.07-0.12	10	0.5	100	40	10	●
3120L	0.09-0.14	12	0.5	100	45	12	●

●: Standard item

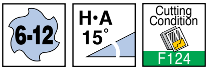
RRFE

DIAMILL

Roughing for composite material



D	Tolerance
All	-0.02 - -0.08



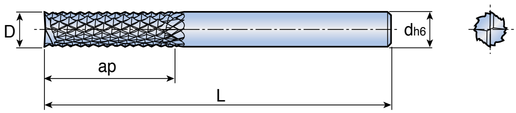
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
			D	L	ap	d	TTD610
RRFE 040	0.01-0.02	6	4	50	12	4	●
060	0.01-0.02	8	6	65	18	6	●
080	0.01-0.03	10	8	75	24	8	●
100	0.02-0.04	12	10	85	30	10	●
120	0.02-0.05	12	12	100	36	12	●

●: Standard item

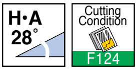
RCFE

DIAMILL

Roughing for composite material



D	Tolerance
All	-0.02 - -0.08



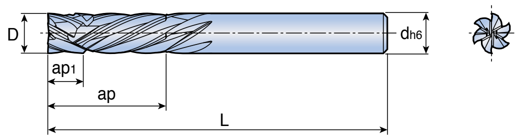
Designation	Feed (mm/rev)	Dimension (mm)				Grade
		D	L	ap	d	TTD610
RCFE 040	0.03-0.06	4	50	12	4	●
060	0.07-0.15	6	65	18	6	●
080	0.10-0.20	8	75	24	8	●
100	0.15-0.30	10	85	30	10	●
120	0.20-0.40	12	100	36	12	●

●: Standard item

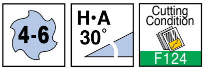
RCOM

DIAMILL

4-6 flute finishing for composite material



D	Tolerance
All	-0.02 - -0.04



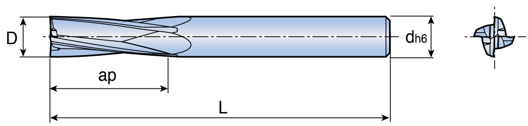
Designation		Feed (mm/tooth)	Dimension (mm)						Grade
			Flutes	D	L	ap	ap1	d	TTD610
RCOM	**4060**	0.02-0.04	4	6	65	18	3	6	●
	4080	0.02-0.05	4	8	75	24	4	8	●
	6100	0.03-0.06	6	10	85	30	5	10	●
	6120	0.04-0.08	6	12	100	36	6	12	●

●: Standard item

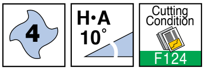
RDCF 4

DIAMILL

4 flute finishing for composite material



D	Tolerance
All	-0.02 - -0.04



Designation		Feed (mm/tooth)	Dimension (mm)				Grade
			D	L	ap	d	TTD610
RDCF	**4040**	0.01-0.03	4	50	12	4	●
	4060	0.02-0.04	6	65	18	6	●
	4080	0.03-0.05	8	75	24	8	●
	4100	0.04-0.06	10	85	30	10	●
	4120	0.04-0.08	12	100	36	12	●

●: Standard item

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)				
Coated				Uncoated
TT5505	TT5515	TT5525	TT6050	UF10N/UF10
260-300	260-280	210-220		180-200
200-250	200-230	160-180		140-160
160-230	160-220	130-180		110-150
160-230	160-220	130-180		110-150
140-200	140-180	110-140		100-130
160-230	160-220	130-180		110-150
120-200	120-180	100-140		80-130
140-200	130-180	100-140		90-130
140-200	140-180	110-140		100-130
140-200	130-180	100-140		90-130
80-150	70-120	60-100		50-80
	80-160	60-130		60-110
	60-150	50-120		40-100
	60-120	50-100		40-80
100-300	80-260	60-210		60-180
130-280	130-140	100-190		90-170
150-280	150-270	120-220		100-200
90-280	90-270	70-220		60-200
150-280	150-270	120-220		100-200
140-250	140-240	110-190		100-170
				800-900
				700-800
				800-900
				750-850
			400-550	400-450
				500-550
				500-550
				350-380
			300-500	
20-40	20-40	20-30		10-20
20-30	20-40	20-20		10-20
20-30	20-50	20-20		20-50
20-30	20-70	20-20		20-50
30-80	30-70	20-60		20-50
	30-70	20-60		20-30
	30-70	20-60		20-30
30-60				40-60
30-40				20-30
70-90	60-80			65-75
30-60	30-50			40-45

Recommended Cutting Conditions

Machining data for composite material

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