
MS PLUS

SOLID CARBIDE END MILL SERIES



DIAEDGE

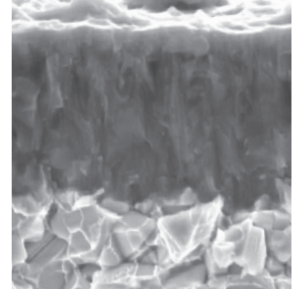
 **MITSUBISHI MATERIALS**

MS PLUS

SOLID CARBIDE END MILL SERIES FOR GENERAL MACHINING

(AL,TI,CR)N MULTILAYER COATING (MS PLUS)

An original coating technology enables a multilayer of (Al,Ti)N and (Al,Cr)N. Providing the ability to machine of a wide range of workpiece materials.



PROPERTIES OF (AL,TI,CR)N MULTILAYER COATING (MS PLUS)

	(Al,Ti,Cr)N multilayer	(Al,Ti)N	(Al,Cr)N
Hardness (HV)	3200	2800	3100
Oxidation Temperature (r)	1100	800	1100
Adhesion (N)	100	80	80

APPLICATION RANGE

MS PLUS PROVIDES LONG TOOL LIFE ON MATERIALS UP TO 55 HRC.

For steels harder than 55 HRC, IMPACT
MIRACLE end mills are recommended.













Workpiece hardness	50 HRC	55 HRC	60 HRC	65 HRC
--------------------	--------	--------	--------	--------

MS PLUS

IMPACT MIRACLE

MS PLUS

APPLICATION RANGE

Product Code	Shape		Size Range	Sizes	P	H	M	S	N
RADIUS END MILLS									
MPMHVRB	Corner radius, Medium cut length, 4 flute, Irregular helix flutes		DC 1 - 20	68	⊙	○	⊙	○	
MPXLRB	Corner radius, Short cut length, Long Neck, 2-4 flute		DC 0.2 - 6	101	⊙	⊙	○	○	○
SQUARE END MILLS									
EXPANSION MPMHV	End mill, Medium cut length, 4 flute, Irregular helix flutes		DC 1 - 22	24	⊙	○	⊙	○	
MPJHV	End mill, Semi long cut length, 4 flute, Irregular helix flutes		DC 1 - 20	23	⊙	○	⊙	○	
BALL NOSE END MILLS									
MP2SSB	Ball nose, Short cut length, 2 flute, Short shank		RE 0.1 - 6	16	⊙	⊙	○	○	○
MP2SB	Ball nose, Short cut length, 2 flute		RE 0.1 - 6	29	⊙	⊙	○	○	○
MP2MB	Ball nose, Medium cut length, 2 flute		RE 0.25 - 6	21	⊙	⊙	○	○	○
MP2SDB	Ball nose, Short cut length, 2 flute, High strength		RE 0.5 - 6	16	⊙	⊙			
MP2XLB	Ball nose, Short cut length, 2 flute, Long neck		RE 0.05 - 3	232	⊙	⊙	○	○	○
TAPER NECK BALL END MILLS									
MP3XB	Ball nose, 3 flute, Taper neck		RE 0.05 - 6	125	⊙	⊙	○	○	○

MPMHVRB

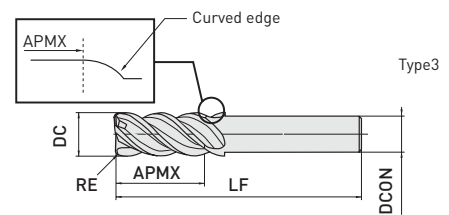
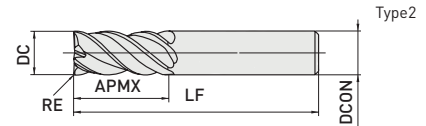
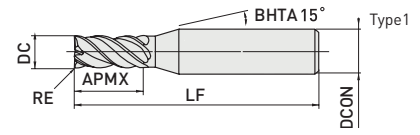


CORNER RADIUS, MEDIUM CUT LENGTH, 4 FLUTE, IRREGULAR HELIX FLUTES

P M S H



R	0.1 ≤ RE ≤ 5				
	±0.015				
DC	DC ≤ 12	DC > 12			
	0	0			
	- 0.02	- 0.03			
h5	DCON=4	DCON=6	DCON=8		
	0	0	0		
	- 0.005	- 0.005	- 0.006		
h6	DCON=8[DC=10]	DCON=10[DC=12]	DCON=10	12 ≤ DCON ≤ 16	DCON=20
	0	0	0	0	0
	- 0.009	- 0.009	- 0.009	- 0.011	- 0.013



4 flute irregular helix end mill for reduced vibration when machining stainless and carbon steels.

Order Number	DC	RE	APMX	LF	DCON	Flutes	Stock	Type
MPMHVRBD0100R010	1	0.1	2.5	45	4	4	★	1
MPMHVRBD0100R020	1	0.2	2.5	45	4	4	★	1
MPMHVRBD0200R010	2	0.1	5	45	4	4	★	1
MPMHVRBD0200R020	2	0.2	5	45	4	4	●	1
MPMHVRBD0200R030	2	0.3	5	45	4	4	●	1
MPMHVRBD0200R050	2	0.5	5	45	4	4	★	1
MPMHVRBD0300R010	3	0.1	7.5	45	6	4	★	1
MPMHVRBD0300R020	3	0.2	7.5	45	6	4	●	1
MPMHVRBD0300R030	3	0.3	7.5	45	6	4	●	1
MPMHVRBD0300R050	3	0.5	7.5	45	6	4	●	1
MPMHVRBD0400R010	4	0.1	10	45	6	4	★	1
MPMHVRBD0400R020	4	0.2	10	45	6	4	●	1
MPMHVRBD0400R030	4	0.3	10	45	6	4	●	1
MPMHVRBD0400R050	4	0.5	10	45	6	4	●	1
MPMHVRBD0400R100	4	1	10	45	6	4	★	1
MPMHVRBD0500R010	5	0.1	12.5	50	6	4	★	1
MPMHVRBD0500R020	5	0.2	12.5	50	6	4	●	1
MPMHVRBD0500R030	5	0.3	12.5	50	6	4	●	1
MPMHVRBD0500R050	5	0.5	12.5	50	6	4	●	1
MPMHVRBD0500R100	5	1	12.5	50	6	4	●	1
MPMHVRBD0600R010	6	0.1	15	60	6	4	★	2
MPMHVRBD0600R020	6	0.2	15	60	6	4	★	2
MPMHVRBD0600R030	6	0.3	15	60	6	4	●	2
MPMHVRBD0600R050	6	0.5	15	60	6	4	●	2

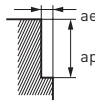
Order Number	DC	RE	APMX	LF	DCON	Flutes	Stock	Type
MPMHVRBD0600R100	6	1	15	60	6	4	●	2
MPMHVRBD0800R020	8	0.2	20	70	8	4	★	2
MPMHVRBD0800R030	8	0.3	20	70	8	4	●	2
MPMHVRBD0800R050	8	0.5	20	70	8	4	●	2
MPMHVRBD0800R100	8	1	20	70	8	4	●	2
MPMHVRBD0800R150	8	1.5	20	70	8	4	●	2
MPMHVRBD0800R200	8	2	20	70	8	4	★	2
MPMHVRBD0800R250	8	2.5	20	70	8	4	★	2
MPMHVRBD0800R300	8	3	20	70	8	4	★	2
MPMHVRBD1000R030S08	10	0.3	25	100	8	4	★	3
MPMHVRBD1000R050S08	10	0.5	25	100	8	4	★	3
MPMHVRBD1000R100S08	10	1	25	100	8	4	★	3
MPMHVRBD1000R200S08	10	2	25	100	8	4	★	3
MPMHVRBD1000R020	10	0.2	25	80	10	4	★	2
MPMHVRBD1000R030	10	0.3	25	80	10	4	●	2
MPMHVRBD1000R050	10	0.5	25	80	10	4	●	2
MPMHVRBD1000R100	10	1	25	80	10	4	●	2
MPMHVRBD1000R150	10	1.5	25	80	10	4	●	2
MPMHVRBD1000R200	10	2	25	80	10	4	●	2
MPMHVRBD1000R250	10	2.5	25	80	10	4	★	2
MPMHVRBD1000R300	10	3	25	80	10	4	★	2
MPMHVRBD1200R030S10	12	0.3	30	110	10	4	★	3
MPMHVRBD1200R050S10	12	0.5	30	110	10	4	★	3
MPMHVRBD1200R100S10	12	1	30	110	10	4	★	3
MPMHVRBD1200R200S10	12	2	30	110	10	4	★	3
MPMHVRBD1200R300S10	12	3	30	110	10	4	★	3
MPMHVRBD1200R030	12	0.3	30	100	12	4	★	2
MPMHVRBD1200R050	12	0.5	30	100	12	4	●	2
MPMHVRBD1200R100	12	1	30	100	12	4	●	2
MPMHVRBD1200R150	12	1.5	30	100	12	4	●	2
MPMHVRBD1200R200	12	2	30	100	12	4	●	2
MPMHVRBD1200R300	12	3	30	100	12	4	●	2
MPMHVRBD1600R030	16	0.3	40	110	16	4	★	2
MPMHVRBD1600R050	16	0.5	40	110	16	4	★	2
MPMHVRBD1600R100	16	1	40	110	16	4	●	2
MPMHVRBD1600R200	16	2	40	110	16	4	●	2
MPMHVRBD1600R300	16	3	40	110	16	4	●	2
MPMHVRBD1600R500	16	5	40	110	16	4	●	2
MPMHVRBD2000R030	20	0.3	50	125	20	4	★	2
MPMHVRBD2000R050	20	0.5	50	125	20	4	★	2
MPMHVRBD2000R100	20	1	50	125	20	4	●	2
MPMHVRBD2000R200	20	2	50	125	20	4	●	2
MPMHVRBD2000R300	20	3	50	125	20	4	●	2
MPMHVRBD2000R500	20	5	50	125	20	4	●	2

MPMHVRB

RECOMMENDED CUTTING CONDITIONS

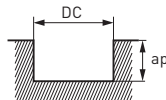
SIDE MILLING

Material	P								M				S				H			
	Carbon steel, Alloy steel, Ductile Cast Iron				Carbon steel, Alloy steel, Pre-hardened steel, Alloy tool steel				Austenitic stainless steels, Titanium alloys				Hardened Steel (45 – 55 HRC)							
DC (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)				
1	38.000	910	1.7	0.2	31.000	500	1.7	0.2	25.000	500	1.7	0.2	18.000	290	1.7	0.05				
1.5	27.000	970	2.5	0.3	22.000	530	2.5	0.3	18.000	500	2.5	0.3	13.000	310	2.5	0.08				
2	21.000	1.500	3.5	0.4	17.000	820	3.5	0.4	14.000	640	3.5	0.4	10.000	320	3.5	0.1				
2.5	18.000	1.700	4.2	0.5	15.000	900	4.2	0.5	12.000	820	4.2	0.5	8.500	360	4.2	0.13				
3	16.000	1.800	5	0.6	13.000	940	5	0.6	11.000	880	5	0.6	7.400	380	5	0.15				
4	12.000	1.700	7	0.8	9.500	950	7	0.8	8.000	900	7	0.8	5.600	400	7	0.2				
5	9.500	1.800	8.5	1	7.600	1.100	8.5	1	6.400	900	8.5	1	4.500	430	8.5	0.25				
6	8.000	2.100	10	1.2	6.400	1.300	10	1.2	5.300	1.100	10	1.2	3.700	440	10	0.3				
7	6.800	2.000	12	1.4	5.500	1.400	12	1.4	4.500	1.200	12	1.4	3.200	450	12	0.35				
8	6.000	2.000	13.5	1.6	4.800	1.400	13.5	1.6	4.000	1.200	13.5	1.6	2.800	450	13.5	0.4				
10	4.800	2.100	17	2	3.800	1.500	17	2	3.200	1.100	17	2	2.200	440	17	0.5				
11	2.600	1.200	18.5	1.1	2.100	880	18.5	1.1	1.700	520	18.5	1.1	1.200	190	18.5	0.55				
12	4.000	1.900	20.5	2.4	3.200	1.400	20.5	2.4	2.700	1.100	20.5	2.4	1.900	380	20.5	0.6				
13	2.200	1.100	22	1.3	1.800	830	22	1.3	1.500	490	22	1.3	1.000	160	22	0.65				
16	3.000	1.400	27.2	3.2	2.400	1.100	27.2	3.2	2.000	840	27.2	3.2	1.400	340	27.2	0.8				
20	2.400	1.200	34	4	1.900	840	34	4	1.600	670	34	4	1.100	260	34	1				



SLOTING

Material	P						M			S			H		
	Carbon steel, Alloy steel, Ductile Cast Iron			Carbon steel, Alloy steel, Pre-hardened steel, Alloy tool steel			Austenitic stainless steels, Titanium alloys			Hardened Steel (45 – 55 HRC)					
DC (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)			
1	31.000	620	0.5	24.000	380	0.5	20.000	400	0.5	9.500	110	0.2			
1.5	22.000	630	0.8	17.000	410	0.8	14.000	390	0.8	6.400	130	0.3			
2	17.000	650	2	14.000	450	2	11.000	500	2	4.800	130	0.4			
2.5	15.000	830	2.5	12.000	580	2.5	9.700	660	2.5	3.800	130	0.5			
3	13.000	940	3	10.000	660	3	8.500	680	3	3.200	140	0.6			
4	9.500	820	4	7.600	600	4	6.400	720	4	2.400	150	0.8			
5	7.600	910	5	6.100	670	5	5.100	710	5	1.900	170	1			
6	6.400	860	6	5.100	630	6	4.200	870	6	1.600	190	1.2			
7	5.500	960	7	4.400	710	7	3.600	940	7	1.400	190	1.4			
8	4.800	1.000	8	3.800	750	8	3.200	960	8	1.200	190	1.6			
10	3.800	910	10	3.100	680	10	2.500	880	10	950	150	2			
12	3.200	920	12	2.500	660	12	2.100	860	12	800	160	2.4			
16	2.400	690	16	1.900	500	16	1.600	380	16	600	120	3.2			
20	1.900	550	20	1.500	400	20	1.300	310	20	480	96	4			



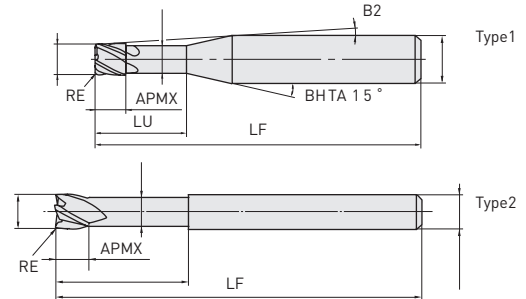
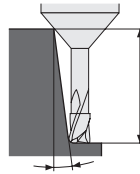
MEMO

A series of horizontal dashed lines for writing.

MPXLRB



CORNER RADIUS, SHORT CUT LENGTH, LONG NECK, 2-4 FLUTE



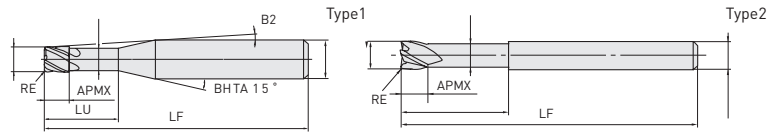
R	0.1 ≤ RE ≤ 5				
	±0.005				
DC	DC ≤ 12	DC > 12			
	0	0			
	- 0.02	- 0.03			
h5	DCON=4	DCON=6	DCON=8		
	0	0	0		
	- 0.005	- 0.005	- 0.006		
h6	DCON=8(DC=10)	DCON=10(DC=12)	DCON=10	12 ≤ DCON ≤ 16	DCON=20
	0	0	0	0	0
	- 0.009	- 0.009	- 0.009	- 0.011	- 0.013

2-4 flute irregular helix end mill with corner radius for reduced vibration when machining stainless and carbon steels.

Order Number	DC	RE	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MPXLRBD0020R005N005	0.2	0.05	0.2	0.5	0.18	11.4°	50	4	2	★	1	0.5	0.5	0.6	0.7
MPXLRBD0020R005N010	0.2	0.05	0.2	1	0.18	10.8°	50	4	2	●	1	1.0	1.1	1.2	1.3
MPXLRBD0030R005N010	0.3	0.05	0.3	1	0.28	10.8°	50	4	2	★	1	1.0	1.1	1.2	1.3
MPXLRBD0030R005N020	0.3	0.05	0.3	2	0.28	9.8°	50	4	2	★	1	2.1	2.2	2.4	2.7
MPXLRBD0040R005N020	0.4	0.05	0.4	2	0.37	9.8°	50	4	4	●	1	2.1	2.2	2.4	2.6
MPXLRBD0040R005N030	0.4	0.05	0.4	3	0.37	8.9°	50	4	4	★	1	3.1	3.3	3.6	4.0
MPXLRBD0040R005N040	0.4	0.05	0.4	4	0.37	8.2°	50	4	4	★	1	4.2	4.3	4.8	5.3
MPXLRBD0050R005N020	0.5	0.05	0.5	2	0.47	9.7°	50	4	4	★	1	2.1	2.2	2.4	2.6
MPXLRBD0050R005N030	0.5	0.05	0.5	3	0.47	8.9°	50	4	4	★	1	3.1	3.3	3.6	4.0
MPXLRBD0050R005N040	0.5	0.05	0.5	4	0.47	8.1°	50	4	4	★	1	4.2	4.3	4.8	5.3
MPXLRBD0050R005N050	0.5	0.05	0.5	5	0.47	7.5°	50	4	4	●	1	5.2	5.4	6.0	6.6
MPXLRBD0060R005N020	0.6	0.05	0.6	2	0.57	9.7°	50	4	4	★	1	2.1	2.2	2.4	2.6
MPXLRBD0060R005N040	0.6	0.05	0.6	4	0.57	8.1°	50	4	4	★	1	4.2	4.3	4.8	5.3
MPXLRBD0060R005N060	0.6	0.05	0.6	6	0.57	6.9°	50	4	4	★	1	6.2	6.5	7.2	7.9
MPXLRBD0080R005N040	0.8	0.05	0.8	4	0.77	7.9°	50	4	4	★	1	4.2	4.3	4.8	5.3
MPXLRBD0080R005N060	0.8	0.05	0.8	6	0.77	6.8°	50	4	4	★	1	6.2	6.5	7.2	7.9
MPXLRBD0100R005N030	1	0.05	1	3	0.96	8.3°	50	4	4	●	1	3.2	3.4	3.8	4.2
MPXLRBD0100R005N040	1	0.05	1	4	0.96	7.6°	50	4	4	★	1	4.3	4.5	5.0	5.6
MPXLRBD0100R005N050	1	0.05	1	5	0.96	7.0°	50	4	4	●	1	5.4	5.6	6.2	6.9
MPXLRBD0100R005N060	1	0.05	1	6	0.96	6.5°	50	4	4	★	1	6.4	6.7	7.4	8.2
MPXLRBD0100R005N080	1	0.05	1	8	0.96	5.6°	50	4	4	●	1	8.5	8.9	9.8	10.9
MPXLRBD0100R005N100	1	0.05	1	10	0.96	5.0°	50	4	4	★	1	10.6	11.1	12.2	13.5
MPXLRBD0100R005N120	1	0.05	1	12	0.96	4.5°	50	4	4	●	1	12.7	13.3	14.6	16.2
MPXLRBD0100R010N030	1	0.1	1	3	0.96	8.4°	50	4	4	●	1	3.2	3.4	3.8	4.2

Order Number	DC	RE	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MPXLRBD0100R010N040	1	0.1	1	4	0.96	7.6°	50	4	4	★	1	4.3	4.5	5.0	5.5
MPXLRBD0100R010N050	1	0.1	1	5	0.96	7.0°	50	4	4	●	1	5.3	5.6	6.2	6.9
MPXLRBD0100R010N060	1	0.1	1	6	0.96	6.5°	50	4	4	★	1	6.4	6.7	7.4	8.2
MPXLRBD0100R010N080	1	0.1	1	8	0.96	5.6°	50	4	4	★	1	8.5	8.9	9.8	10.8
MPXLRBD0100R010N100	1	0.1	1	10	0.96	5.0°	50	4	4	★	1	10.6	11.1	12.2	13.5
MPXLRBD0100R010N120	1	0.1	1	12	0.96	4.5°	50	4	4	★	1	12.7	13.3	14.6	16.2
MPXLRBD0120R010N100	1.2	0.1	1.2	10	1.16	4.8°	50	4	4	★	1	10.6	11.1	12.2	13.5
MPXLRBD0120R020N100	1.2	0.2	1.2	10	1.16	4.8°	50	4	4	★	1	10.6	11.1	12.2	13.5
MPXLRBD0150R010N060	1.5	0.1	1.5	6	1.44	6.0°	50	4	4	★	1	6.4	6.7	7.3	8.1
MPXLRBD0150R010N120	1.5	0.1	1.5	12	1.44	4.0°	50	4	4	★	1	12.6	13.2	14.5	16.1
MPXLRBD0150R010N180	1.5	0.1	1.5	18	1.44	3.0°	60	4	4	★	1	18.9	19.7	21.7	24.0
MPXLRBD0150R020N060	1.5	0.2	1.5	6	1.44	6.0°	50	4	4	★	1	6.4	6.7	7.3	8.1
MPXLRBD0150R020N120	1.5	0.2	1.5	12	1.44	4.0°	50	4	4	★	1	12.6	13.2	14.5	16.0
MPXLRBD0150R020N180	1.5	0.2	1.5	18	1.44	3.0°	60	4	4	★	1	18.9	19.7	21.7	*
MPXLRBD0150R030N060	1.5	0.3	1.5	6	1.44	6.1°	50	4	4	●	1	6.3	6.6	7.3	8.0
MPXLRBD0150R030N120	1.5	0.3	1.5	12	1.44	4.0°	50	4	4	★	1	12.6	13.2	14.5	16.0
MPXLRBD0150R030N180	1.5	0.3	1.5	18	1.44	3.0°	60	4	4	●	1	18.9	19.7	21.6	*
MPXLRBD0200R010N080	2	0.1	2	8	1.94	4.5°	50	4	4	★	1	8.5	8.8	9.7	10.8
MPXLRBD0200R010N120	2	0.1	2	12	1.94	3.4°	50	4	4	●	1	12.6	13.2	14.5	16.1
MPXLRBD0200R010N160	2	0.1	2	16	1.94	2.8°	60	4	4	★	1	16.8	17.6	19.3	*
MPXLRBD0200R010N200	2	0.1	2	20	1.94	2.3°	60	4	4	★	1	21.0	21.9	24.1	*
MPXLRBD0200R010N240	2	0.1	2	24	1.94	2.0°	70	4	4	●	1	25.2	26.3	*	*
MPXLRBD0200R020N080	2	0.2	2	8	1.94	4.5°	50	4	4	★	1	8.5	8.8	9.7	10.7
MPXLRBD0200R020N120	2	0.2	2	12	1.94	3.4°	50	4	4	★	1	12.6	13.2	14.5	*
MPXLRBD0200R020N160	2	0.2	2	16	1.94	2.8°	60	4	4	★	1	16.8	17.6	19.3	*
MPXLRBD0200R020N200	2	0.2	2	20	1.94	2.3°	60	4	4	★	1	21.0	21.9	24.0	*
MPXLRBD0200R020N240	2	0.2	2	24	1.94	2.0°	70	4	4	★	1	25.1	26.3	*	*
MPXLRBD0200R030N080	2	0.3	2	8	1.94	4.5°	50	4	4	★	1	8.5	8.8	9.7	10.7
MPXLRBD0200R030N120	2	0.3	2	12	1.94	3.5°	50	4	4	●	1	12.6	13.2	14.5	16.0
MPXLRBD0200R030N160	2	0.3	2	16	1.94	2.8°	60	4	4	★	1	16.8	17.5	19.2	*
MPXLRBD0200R030N200	2	0.3	2	20	1.94	2.3°	60	4	4	★	1	21.0	21.9	24.0	*
MPXLRBD0200R030N240	2	0.3	2	24	1.94	2.0°	70	4	4	●	1	25.1	26.3	*	*
MPXLRBD0300R010N080	3	0.1	3	8	2.9	5.7°	60	6	4	★	1	8.4	8.8	9.6	10.7
MPXLRBD0300R010N120	3	0.1	3	12	2.9	4.5°	60	6	4	★	1	12.6	13.1	14.4	16.0
MPXLRBD0300R010N180	3	0.1	3	18	2.9	3.4°	70	6	4	●	1	18.8	19.7	21.6	23.9
MPXLRBD0300R010N240	3	0.1	3	24	2.9	2.8°	70	6	4	★	1	25.1	26.2	28.8	*
MPXLRBD0300R010N300	3	0.1	3	30	2.9	2.3°	70	6	4	★	1	31.3	32.7	35.9	*
MPXLRBD0300R010N360	3	0.1	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.3	*	*
MPXLRBD0300R020N120	3	0.2	3	12	2.9	4.5°	60	6	4	★	1	12.6	13.1	14.4	15.9
MPXLRBD0300R020N180	3	0.2	3	18	2.9	3.4°	60	6	4	★	1	18.8	19.6	21.6	23.9
MPXLRBD0300R020N240	3	0.2	3	24	2.9	2.8°	70	6	4	★	1	25.1	26.2	28.7	*
MPXLRBD0300R020N300	3	0.2	3	30	2.9	2.3°	70	6	4	★	1	31.3	32.7	35.9	*
MPXLRBD0300R020N360	3	0.2	3	36	2.9	2.0°	90	6	4	★	1	37.6	39.3	43.1	*
MPXLRBD0300R030N120	3	0.3	3	12	2.9	4.5°	60	6	4	★	1	12.5	13.1	14.4	15.9
MPXLRBD0300R030N180	3	0.3	3	18	2.9	3.5°	60	6	4	●	1	18.8	19.6	21.5	23.9
MPXLRBD0300R030N240	3	0.3	3	24	2.9	2.8°	70	6	4	★	1	25.1	26.2	28.7	*
MPXLRBD0300R030N300	3	0.3	3	30	2.9	2.3°	70	6	4	★	1	31.3	32.7	35.9	*
MPXLRBD0300R030N360	3	0.3	3	36	2.9	2.0°	90	6	4	●	1	37.6	39.2	*	*
MPXLRBD0300R050N120	3	0.5	3	12	2.9	4.6°	60	6	4	★	1	12.5	13.1	14.3	15.8
MPXLRBD0300R050N180	3	0.5	3	18	2.9	3.5°	60	6	4	★	1	18.8	19.6	21.5	23.8
MPXLRBD0300R050N240	3	0.5	3	24	2.9	2.8°	70	6	4	★	1	25.1	26.2	28.7	*
MPXLRBD0300R050N300	3	0.5	3	30	2.9	2.3°	70	6	4	★	1	31.3	32.7	35.9	*
MPXLRBD0300R050N360	3	0.5	3	36	2.9	2.0°	90	6	4	★	1	37.6	39.2	*	*

MPXLRB

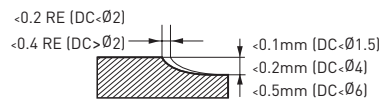


Order Number	DC	RE	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30'	1°	2°	3°
MPXLRBD0400R010N160	4	0.1	4	16	3.9	2.8°	70	6	4	★	1	16.7	17.5	19.2	*
MPXLRBD0400R010N240	4	0.1	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*
MPXLRBD0400R010N320	4	0.1	4	32	3.9	1.6°	70	6	4	★	1	33.4	34.9	*	*
MPXLRBD0400R010N480	4	0.1	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*
MPXLRBD0400R020N160	4	0.2	4	16	3.9	2.8°	70	6	4	★	1	16.7	17.5	19.2	*
MPXLRBD0400R020N240	4	0.2	4	24	3.9	2.0°	70	6	4	★	1	25.1	26.2	*	*
MPXLRBD0400R020N320	4	0.2	4	32	3.9	1.6°	70	6	4	★	1	33.4	34.9	*	*
MPXLRBD0400R020N480	4	0.2	4	48	3.9	1.1°	90	6	4	★	1	50.1	52.3	*	*
MPXLRBD0400R030N160	4	0.3	4	16	3.9	2.8°	70	6	4	★	1	16.7	17.5	19.1	*
MPXLRBD0400R030N240	4	0.3	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*
MPXLRBD0400R030N320	4	0.3	4	32	3.9	1.6°	70	6	4	★	1	33.4	34.9	*	*
MPXLRBD0400R030N480	4	0.3	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*
MPXLRBD0400R050N160	4	0.5	4	16	3.9	2.8°	70	6	4	★	1	16.7	17.4	19.1	*
MPXLRBD0400R050N240	4	0.5	4	24	3.9	2.0°	70	6	4	●	1	25.1	26.2	*	*
MPXLRBD0400R050N320	4	0.5	4	32	3.9	1.6°	70	6	4	★	1	33.4	34.9	*	*
MPXLRBD0400R050N480	4	0.5	4	48	3.9	1.1°	90	6	4	●	1	50.1	52.3	*	*
MPXLRBD0600R010N240	6	0.1	6	24	5.85	-	70	6	4	★	2	*	*	*	*
MPXLRBD0600R010N480	6	0.1	6	48	5.85	-	100	6	4	★	2	*	*	*	*
MPXLRBD0600R020N240	6	0.2	6	24	5.85	-	70	6	4	★	2	*	*	*	*
MPXLRBD0600R020N480	6	0.2	6	48	5.85	-	100	6	4	★	2	*	*	*	*
MPXLRBD0600R030N240	6	0.3	6	24	5.85	-	70	6	4	★	2	*	*	*	*
MPXLRBD0600R030N480	6	0.3	6	48	5.85	-	100	6	4	★	2	*	*	*	*
MPXLRBD0600R050N240	6	0.5	6	24	5.85	-	70	6	4	★	2	*	*	*	*
MPXLRBD0600R050N480	6	0.5	6	48	5.85	-	100	6	4	●	2	*	*	*	*

* No interference

RECOMMENDED CUTTING CONDITIONS

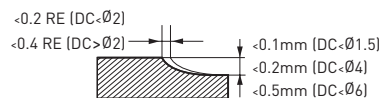
Material		P				H			
		Carbon steel, Alloy steel, Pre-hardened steel, Precipitation hardening stainless steel (< 450 HB)				Hardened steel (45 – 52 HRC)			
DC (mm)	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
0.2	0.5	30.000	180	0.003	0.04	30.000	150	0.003	0.04
	1	30.000	120	0.003	0.04	30.000	100	0.003	0.04
0.3	1	30.000	210	0.003	0.08	30.000	180	0.003	0.08
	2	30.000	120	0.003	0.08	30.000	100	0.003	0.08
0.4	2	31.000	970	0.005	0.10	31.000	810	0.005	0.10
	3	31.000	790	0.004	0.10	31.000	660	0.004	0.10
	4	31.000	540	0.003	0.10	31.000	450	0.003	0.10
0.5	2	31.000	1.500	0.006	0.12	31.000	1.300	0.006	0.12
	3	31.000	1.300	0.005	0.12	31.000	1.100	0.005	0.12
	4	31.000	970	0.004	0.12	31.000	810	0.004	0.12
0.6	5	25.000	790	0.004	0.12	25.000	660	0.004	0.12
	2	31.000	2.100	0.020	0.13	31.000	1.800	0.020	0.13
	4	25.000	1.300	0.015	0.13	25.000	1.100	0.015	0.13
0.8	6	20.000	790	0.008	0.13	20.000	660	0.008	0.13
	4	25.000	3.200	0.025	0.20	25.000	2.700	0.025	0.20
	6	20.000	2.100	0.020	0.20	20.000	1.800	0.020	0.20
1	3	24.000	2.400	0.045	0.30	20.000	2.000	0.045	0.30
	4	24.000	1.900	0.040	0.30	20.000	1.600	0.040	0.30
	5	24.000	1.800	0.035	0.25	20.000	1.500	0.035	0.25
1.2	6	20.000	1.400	0.030	0.25	17.000	1.200	0.030	0.25
	8	20.000	1.000	0.020	0.20	17.000	880	0.020	0.20
	10	15.000	800	0.015	0.10	13.000	670	0.015	0.10
	12	15.000	370	0.010	0.01	13.000	310	0.010	0.01
1.5	10	18.000	1.500	0.030	0.25	15.000	1.300	0.030	0.25
	6	20.000	2.400	0.050	0.40	17.000	2.000	0.050	0.40
2	12	15.000	1.400	0.040	0.30	13.000	1.200	0.040	0.30
	18	12.000	670	0.010	0.15	10.000	560	0.010	0.15
3	8	15.000	2.600	0.050	0.50	13.000	2.200	0.050	0.50
	12	15.000	2.100	0.045	0.50	13.000	1.800	0.045	0.50
	16	14.000	1.900	0.040	0.35	12.000	1.600	0.040	0.35
	20	14.000	1.100	0.015	0.25	12.000	960	0.015	0.25
4	24	9.300	930	0.010	0.20	7.800	780	0.010	0.20
	8	12.000	3.300	0.100	0.80	10.000	2.800	0.100	0.80
	12	12.000	3.100	0.080	0.80	10.000	2.600	0.080	0.80
	18	11.000	3.100	0.070	0.70	9.600	2.600	0.070	0.70
	24	11.000	2.600	0.060	0.50	9.300	2.200	0.060	0.50
6	30	9.000	1.300	0.030	0.40	7.500	1.100	0.030	0.40
	36	6.200	910	0.010	0.30	5.200	760	0.010	0.30
	16	9.000	3.200	0.100	1.00	7.500	2.700	0.100	1.00
	24	7.900	2.500	0.085	0.80	6.600	2.100	0.085	0.80
8	32	6.900	1.600	0.040	0.70	5.800	1.400	0.040	0.70
	48	4.800	740	0.010	0.35	4.000	620	0.010	0.35
	24	5.500	2.700	0.120	1.50	4.600	2.263	0.120	1.50
12	48	3.800	1.200	0.050	1.20	3.200	1.000	0.050	1.20



MPXLRB

RECOMMENDED CUTTING CONDITIONS

Material		M				S		N			
		Austenitic stainless steels, Titanium alloys				Copper, Copper alloys		Copper, Copper alloys			
DC (mm)	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)		
0.2	0.5	33.000	170	0.003	0.04	30.000	150	0.003	0.08		
	1	30.000	110	0.003	0.04	30.000	100	0.003	0.08		
0.3	1	30.000	200	0.003	0.08	30.000	180	0.003	0.16		
	2	30.000	110	0.003	0.08	30.000	100	0.003	0.16		
0.4	2	31.000	930	0.005	0.10	31.000	810	0.005	0.20		
	3	31.000	750	0.004	0.10	31.000	660	0.004	0.20		
	4	31.000	510	0.003	0.10	31.000	450	0.003	0.20		
0.5	2	31.000	1.400	0.006	0.12	31.000	1.300	0.006	0.24		
	3	31.000	1.200	0.005	0.12	31.000	1.100	0.005	0.24		
	4	31.000	930	0.004	0.12	31.000	810	0.004	0.24		
	5	25.000	750	0.004	0.12	25.000	660	0.004	0.24		
0.6	2	31.000	2.000	0.020	0.13	31.000	1.800	0.020	0.26		
	4	25.000	1.200	0.015	0.13	25.000	1.100	0.015	0.26		
	6	20.000	750	0.008	0.13	20.000	660	0.008	0.26		
0.8	4	25.000	3.100	0.025	0.20	25.000	2.700	0.025	0.40		
	6	20.000	2.000	0.020	0.20	20.000	1.800	0.020	0.40		
	3	23.000	2.300	0.045	0.30	20.000	2.000	0.045	0.60		
1	4	23.000	1.800	0.040	0.30	20.000	1.600	0.040	0.60		
	5	23.000	1.700	0.035	0.25	20.000	1.500	0.035	0.50		
	6	19.000	1.300	0.030	0.25	17.000	1.200	0.030	0.50		
	8	19.000	1.000	0.020	0.20	17.000	880	0.020	0.40		
	10	14.000	770	0.015	0.10	13.000	670	0.015	0.20		
1.2	12	14.000	350	0.010	0.01	13.000	310	0.010	0.02		
	10	17.000	1.400	0.030	0.25	15.000	1.300	0.030	0.50		
	6	19.000	2.300	0.050	0.40	14.700	1.700	0.050	0.80		
1.5	12	14.000	1.300	0.040	0.30	11.000	1.000	0.040	0.60		
	18	11.000	640	0.010	0.15	8.600	480	0.010	0.30		
2	8	14.000	2.500	0.050	0.50	11.000	1.900	0.050	1.00		
	12	14.000	2.000	0.045	0.50	11.000	1.500	0.045	1.00		
	16	13.000	1.800	0.040	0.35	10.000	1.300	0.040	0.70		
	20	13.000	1.100	0.015	0.25	10.000	830	0.015	0.50		
	24	8.900	890	0.010	0.20	6.700	670	0.010	0.40		
	8	11.000	3.200	0.100	0.80	8.600	2.400	0.100	1.60		
3	12	11.000	2.900	0.080	0.80	8.600	2.200	0.080	1.60		
	18	11.000	2.900	0.070	0.70	8.300	2.200	0.070	1.40		
	24	10.000	2.500	0.060	0.50	8.000	1.900	0.060	1.00		
	30	8.600	1.200	0.030	0.40	6.500	950	0.030	0.80		
	36	5.900	870	0.010	0.30	4.500	660	0.010	0.60		
4	16	8.600	3.100	0.100	1.00	6.500	2.300	0.100	2.00		
	24	7.500	2.400	0.085	0.80	5.700	1.800	0.085	1.60		
	32	6.600	1.600	0.040	0.70	5.000	1.200	0.040	1.40		
	48	4.600	710	0.010	0.35	3.400	530	0.010	0.70		
6	24	5.200	2.600	0.120	1.50	4.000	1.900	0.120	3.00		
	48	3.600	1.100	0.05	1.20	2.700	870	0.050	2.40		



MEMO

A series of horizontal dashed lines for writing.

MPMHV

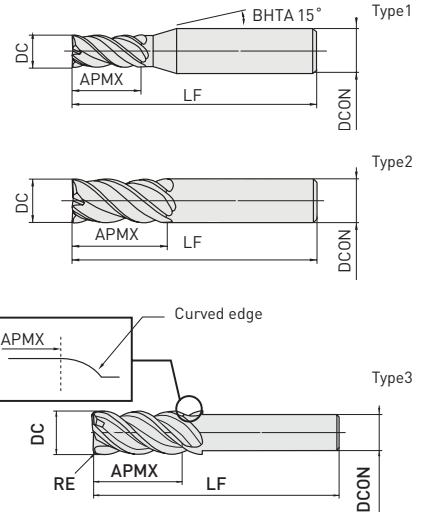


END MILL, MEDIUM CUT LENGTH, 4 FLUTE, IRREGULAR HELIX FLUTES

P **M** **S** **H**



	DC ≤ 12	DC > 12			
	0 -0.02	0 -0.03			
	DCON = 4	DCON = 6	DCON = 8		
	0 -0.005	0 -0.005	0 -0.006		
	DCON = 6[DC = 8]	DCON = 8[DC = 10]	DCON = 10	12 < DCON ≤ 16	DCON = 20
	0 -0.008	0 -0.009	0 -0.009	0 -0.011	0 -0.013



4 flute irregular helix end mill for reduced vibration when machining stainless and carbon steels.

Order Number	DC	APMX	LF	DCON	Flutes	Stock	Type
MPMHVD0100	1	2.5	45	4	4	●	1
MPMHVD0150	1.5	3.8	45	4	4	●	1
MPMHVD0200	2	5	45	4	4	●	1
MPMHVD0250	2.5	6.3	45	4	4	●	1
MPMHVD0300	3	7.5	45	6	4	●	1
MPMHVD0400	4	10	45	6	4	●	1
MPMHVD0500	5	12.5	50	6	4	●	1
MPMHVD0600	6	15	60	6	4	●	2
NEW MPMHVD0700S06	7	17.5	80	6	4	●	3
MPMHVD0700	7	17.5	70	8	4	●	2
MPMHVD0800	8	20	70	8	4	●	2
MPMHVD0800S06	8	20	90	6	4	★	3
NEW MPMHVD0900S08	9	22.5	90	8	4	●	3
MPMHVD1000	10	25	80	10	4	●	2
MPMHVD1000S08	10	25	100	8	4	★	3
MPMHVD1100S10	11	28	100	10	4	★	3
MPMHVD1200	12	30	100	12	4	●	2
MPMHVD1200S10	12	30	110	10	4	★	3
MPMHVD1300S12	13	32	110	12	4	★	3
NEW MPMHVD1400S12	14	35	130	12	4	●	3
MPMHVD1600	16	40	110	16	4	●	2
NEW MPMHVD1800S16	18	45	150	16	4	●	3
MPMHVD2000	20	50	125	20	4	●	2
NEW MPMHVD2200S20	22	55	160	20	4	★	3

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	P								M				S				H			
	Carbon steel, Alloy steel, Ductile Cast Iron				Carbon steel, Alloy steel, Pre-hardened steel, Alloy tool steel				Austenitic stainless steels, Titanium alloys				Hardened Steel (45 – 55 HRC)							
	DC (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)			
1	38.000	910	1.7	0.2	31.000	500	1.7	0.2	25.000	500	1.7	0.2	18.000	290	1.7	0.05				
1.5	27.000	970	2.5	0.3	22.000	530	2.5	0.3	18.000	500	2.5	0.3	13.000	310	2.5	0.08				
2	21.000	1.500	3.5	0.4	17.000	820	3.5	0.4	14.000	640	3.5	0.4	10.000	320	3.5	0.1				
2.5	18.000	1.700	4.2	0.5	15.000	900	4.2	0.5	12.000	820	4.2	0.5	8.500	360	4.2	0.13				
3	16.000	1.800	5	0.6	13.000	940	5	0.6	11.000	880	5	0.6	7.400	380	5	0.15				
4	12.000	1.700	7	0.8	9.500	950	7	0.8	8.000	900	7	0.8	5.600	400	7	0.2				
5	9.500	1.800	8.5	1	7.600	1.100	8.5	1	6.400	900	8.5	1	4.500	430	8.5	0.25				
6	8.000	2.100	10	1.2	6.400	1.300	10	1.2	5.300	1.100	10	1.2	3.700	440	10	0.3				
7	6.800	2.000	12	1.4	5.500	1.400	12	1.4	4.500	1.200	12	1.4	3.200	450	12	0.35				
7*	4.100	1.200	12	0.7	3.300	860	12	0.7	2.700	700	12	0.7	1.900	270	12	0.35				
8	6.000	2.000	13.5	1.6	4.800	1.400	13.5	1.6	4.000	1.200	13.5	1.6	2.800	450	13.5	0.4				
8*	3.600	1.200	13.5	0.8	2.900	870	13.5	0.8	2.400	720	13.5	0.8	1.700	270	13.5	0.4				
9*	3.200	1.200	15	0.9	2.500	900	15	0.9	2.100	660	15	0.9	1.500	270	15	0.45				
10	4.800	2.100	17	2	3.800	1.500	17	2	3.200	1.100	17	2	2.200	440	17	0.5				
11*	2.600	1.200	18.5	1.1	2.100	880	18.5	1.1	1.700	520	18.5	1.1	1.200	190	18.5	0.55				
12	4.000	1.900	20.5	2.4	3.200	1.400	20.5	2.4	2.700	1.100	20.5	2.4	1.900	380	20.5	0.6				
12*	2.400	1.200	20.5	1.2	1.900	840	20.5	1.2	1.600	650	20.5	1.2	1.000	220	20.5	0.6				
13*	2.200	1.100	22	1.3	1.800	830	22	1.3	1.500	490	22	1.3	1.000	160	22	0.65				
14*	2.000	960	24	1.4	1.600	700	24	1.4	1.400	460	24	1.4	950	150	24	0.7				
16	3.000	1.400	27.2	3.2	2.400	1.100	27.2	3.2	2.000	840	27.2	3.2	1.400	340	27.2	0.8				
18*	1.600	770	31	1.8	1.300	570	31	1.8	1.100	360	31	1.8	740	120	31	0.9				
20	2.400	1.200	34	4	1.900	840	34	4	1.600	670	34	4	1.100	260	34	1				
22*	1.300	620	37.5	2.2	1.000	440	37.5	2.2	870	280	37.5	2.2	610	98	37.5	1.2				



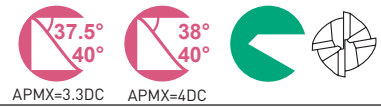
* = Type3

SLOTING

Material	P			M			S			H		
	Carbon steel, Alloy steel, Ductile Cast Iron			Carbon steel, Alloy steel, Pre-hardened steel, Alloy tool steel			Austenitic stainless steels, Titanium alloys			Hardened Steel (45 – 55 HRC)		
	DC (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)
1	31.000	620	0.5	24.000	380	0.5	20.000	400	0.5	9.500	110	0.2
1.5	22.000	630	0.8	17.000	410	0.8	14.000	390	0.8	6.400	130	0.3
2	17.000	650	2	14.000	450	2	11.000	500	2	4.800	130	0.4
2.5	15.000	830	2.5	12.000	580	2.5	9.700	660	2.5	3.800	130	0.5
3	13.000	940	3	10.000	660	3	8.500	680	3	3.200	140	0.6
4	9.500	820	4	7.600	600	4	6.400	720	4	2.400	150	0.8
5	7.600	910	5	6.100	670	5	5.100	710	5	1.900	170	1
6	6.400	860	6	5.100	630	6	4.200	870	6	1.600	190	1.2
7	5.500	960	7	4.400	710	7	3.600	940	7	1.400	190	1.4
8	4.800	1.000	8	3.800	750	8	3.200	960	8	1.200	190	1.6
10	3.800	910	10	3.100	680	10	2.500	880	10	950	150	2
12	3.200	920	12	2.500	660	12	2.100	860	12	800	160	2.4
16	2.400	690	16	1.900	500	16	1.600	380	16	600	120	3.2
20	1.900	550	20	1.500	400	20	1.300	310	20	480	96	4

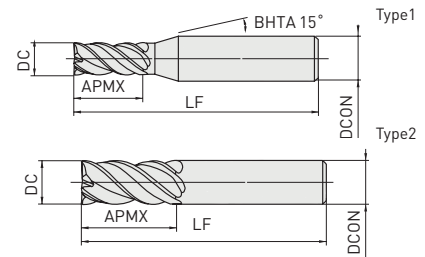


MPJHV



END MILL, MEDIUM CUT LENGTH, 4 FLUTE, IRREGULAR HELIX FLUTES

P **M** **S** **H**



	DC ≤ 12	DC > 12		
	0	0		
	- 0.02	- 0.03		
	DCON=4	DCON=6	DCON=8	
	0	0	0	
	- 0.005	- 0.005	- 0.006	
	DCON=10	DCON=12	DCON=16	DCON=20
	0	0	0	0
	- 0.009	- 0.011	- 0.011	- 0.013

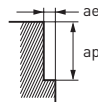
4 flute irregular helix end mill for reduced vibration when machining stainless and carbon steels.
Semi long flute length suitable for vertical wall finishing.

Order Number	DC	APMX	LF	DCON	Flutes	Stock	Type
MPJHVD0100AP04	1	4	45	4	4	●	1
MPJHVD0150AP06	1.5	6	45	4	4	●	1
MPJHVD0200AP06	2	6.5	60	6	4	●	1
MPJHVD0200AP08	2	8	60	6	4	●	1
MPJHVD0250AP10	2.5	10	60	6	4	●	1
MPJHVD0300AP10	3	10	60	6	4	●	1
MPJHVD0300AP12	3	12	60	6	4	●	1
MPJHVD0400AP13	4	13	60	6	4	●	1
MPJHVD0400AP16	4	16	60	6	4	●	1
MPJHVD0500AP17	5	17	60	6	4	●	1
MPJHVD0500AP20	5	20	60	6	4	●	1
MPJHVD0600AP20	6	20	60	6	4	●	2
MPJHVD0600AP24	6	24	60	6	4	●	2
MPJHVD0800AP26	8	26	80	8	4	●	2
MPJHVD0800AP32	8	32	80	8	4	●	2
MPJHVD1000AP33	10	33	100	10	4	●	2
MPJHVD1000AP40	10	40	100	10	4	●	2
MPJHVD1200AP40	12	40	110	12	4	●	2
MPJHVD1200AP48	12	48	110	12	4	●	2
MPJHVD1600AP53	16	53	125	16	4	●	2
MPJHVD1600AP64	16	64	125	16	4	●	2
MPJHVD2000AP66	20	66	140	20	4	●	2
MPJHVD2000AP80	20	80	140	20	4	●	2

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material		P								M				S				H			
		Carbon steel, Alloy steel, Ductile Cast Iron				Carbon steel, Alloy steel, Pre-hardened steel, Alloy tool steel				Austenitic stainless steels, Titanium alloys				Hardened Steel (45 – 55 HRC)							
DC (mm)	APMX (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)				
1	4	19.000	300	3	0.03	15.000	240	3	0.03	13.000	210	3	0.03	13.000	160	3	0.02				
1.5	6	16.000	320	4.5	0.05	13.000	260	4.5	0.05	11.000	220	4.5	0.05	8.500	170	4.5	0.03				
2	6.5	15.000	500	5	0.1	12.000	380	5	0.1	10.000	320	5	0.1	7.700	220	5	0.06				
2	8	14.000	470	6	0.06	11.000	350	6	0.06	9.500	300	6	0.06	7.300	200	6	0.04				
2.5	10	13.000	660	7.5	0.08	11.000	520	7.5	0.08	8.900	390	7.5	0.08	6.300	250	7.5	0.05				
3	10	13.000	890	7.4	0.15	10.000	620	7.4	0.15	8.400	470	7.4	0.15	5.900	300	7.4	0.09				
3	12	12.000	820	9	0.09	9.500	590	9	0.09	8.000	450	9	0.09	5.600	280	9	0.06				
4	13	9.400	940	9.9	0.2	7.500	650	9.9	0.2	6.300	530	9.9	0.2	4.700	320	9.9	0.12				
4	16	9.000	900	12	0.12	7.200	620	12	0.12	6.000	500	12	0.12	4.500	310	12	0.08				
5	17	7.500	990	12.4	0.25	6.000	680	12.4	0.25	5.000	560	12.4	0.25	3.800	350	12.4	0.15				
5	20	7.200	950	15	0.15	5.700	650	15	0.15	4.800	540	15	0.15	3.600	330	15	0.1				
6	20	6.300	1.100	14.9	0.3	5.000	760	14.9	0.3	4.200	640	14.9	0.3	3.200	350	14.9	0.18				
6	24	6.000	1.000	18	0.18	4.800	730	18	0.18	4.000	610	18	0.18	3.000	330	18	0.12				
8	26	4.700	1.100	19.8	0.4	3.800	800	19.8	0.4	3.100	620	19.8	0.4	2.400	360	19.8	0.24				
8	32	4.500	1.000	24	0.24	3.600	760	24	0.24	3.000	600	24	0.24	2.300	350	24	0.16				
10	33	3.800	1.000	24.8	0.5	3.000	760	24.8	0.5	2.500	590	24.8	0.5	1.900	330	24.8	0.3				
10	40	3.600	970	30	0.3	2.900	730	30	0.3	2.400	570	30	0.3	1.800	310	30	0.2				
12	40	3.100	1.000	29.7	0.6	2.500	720	29.7	0.6	2.100	550	29.7	0.6	1.600	300	29.7	0.36				
12	48	3.000	970	36	0.36	2.400	690	36	0.36	2.000	520	36	0.36	1.500	280	36	0.24				
16	53	2.400	780	27.2	0.48	1.900	550	39.6	0.8	1.600	420	39.6	0.8	1.200	240	39.6	0.48				
16	64	2.200	710	48	0.48	1.800	520	48	0.48	1.500	390	48	0.48	1.100	220	48	0.32				
20	66	1.900	620	34	0.6	1.500	430	49.5	1	1.300	340	49.5	1	950	190	49.5	0.6				
20	80	1.800	580	60	0.6	1.400	400	60	0.6	1.200	310	60	0.6	900	180	60	0.4				



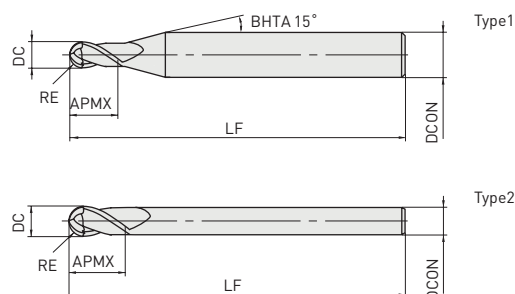
MP2SSB



BALL NOSE, SHORT CUT LENGTH, 2 FLUTE, SHORT SHANK



R	0.1 < RE < 6		
	±0.005		
h5	4 < DCON < 6	8 < DCON < 10	DCON = 12
	0	0	0
	- 0.005	- 0.006	- 0.008



2 flute ball nose end mills with short cutting edge length for general purpose machining.
Excellent performance for a wide range of workpiece materials such as carbon, alloy and hardened steels.

Order Number	RE	DC	APMX	LF	DCON	Flutes	Stock	Type
MP2SSBR0010	0.1	0.2	0.2	40	4	2	★	1
MP2SSBR0020	0.2	0.4	0.4	40	4	2	★	1
MP2SSBR0030	0.3	0.6	0.6	40	4	2	●	1
MP2SSBR0040	0.4	0.8	0.8	40	4	2	●	1
MP2SSBR0050	0.5	1	1	40	4	2	●	1
MP2SSBR0050S06	0.5	1	1	40	6	2	●	1
MP2SSBR0075	0.75	1.5	1.5	40	4	2	★	1
MP2SSBR0075S06	0.75	1.5	1.5	40	6	2	●	1
MP2SSBR0100	1	2	2	45	6	2	●	1
MP2SSBR0150	1.5	3	3	45	6	2	●	1
MP2SSBR0200	2	4	4	45	6	2	●	1
MP2SSBR0250	2.5	5	5	50	6	2	●	1
MP2SSBR0300	3	6	6	50	6	2	●	2
MP2SSBR0400	4	8	8	60	8	2	●	2
MP2SSBR0500	5	10	10	70	10	2	●	2
MP2SSBR0600	6	12	12	75	12	2	●	2

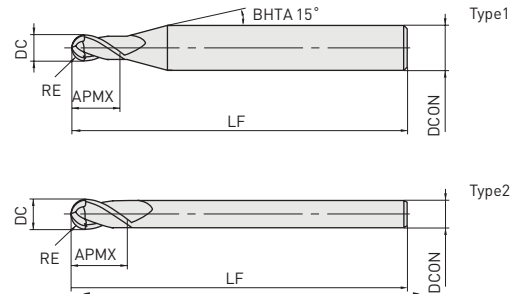
MP2SB



BALL NOSE, SHORT CUT LENGTH, 2 FLUTE



R	0.1 < RE < 6		
	±0.005		
h5	4 < DCON < 6	8 < DCON < 10	DCON = 12
	0	0	0
	- 0.005	- 0.006	- 0.008



2 flute ball nose end mills with short cutting edge length for general purpose machining.
Excellent performance for a wide range of workpiece materials such as carbon, alloy and hardened steels.

Order Number	RE	DC	APMX	LF	DCON	Flutes	Stock	Type
MP2SBR0010	0.1	0.2	0.3	45	4	2	★	1
MP2SBR0015	0.15	0.3	0.5	45	4	2	●	1
MP2SBR0020	0.2	0.4	0.6	45	4	2	●	1
MP2SBR0020S06	0.2	0.4	0.6	50	6	2	★	1
MP2SBR0025	0.25	0.5	0.8	45	4	2	●	1
MP2SBR0030	0.3	0.6	0.9	45	4	2	★	1
MP2SBR0030S06	0.3	0.6	0.9	50	6	2	★	1
MP2SBR0035	0.35	0.7	1.1	45	4	2	★	1
MP2SBR0040	0.4	0.8	1.2	45	4	2	★	1
MP2SBR0040S06	0.4	0.8	1.2	50	6	2	★	1
MP2SBR0045	0.45	0.9	1.4	45	4	2	★	1
MP2SBR0050	0.5	1	1.5	45	4	2	●	1
MP2SBR0050S06	0.5	1	1.5	50	6	2	●	1
MP2SBR0060	0.6	1.2	1.8	45	4	2	★	1
MP2SBR0070	0.7	1.4	2.1	45	4	2	★	1
MP2SBR0075	0.75	1.5	2.3	45	4	2	★	1
MP2SBR0075S06	0.75	1.5	2.3	50	6	2	★	1
MP2SBR0080	0.8	1.6	2.4	45	4	2	●	1
MP2SBR0090	0.9	1.8	2.7	45	4	2	★	1
MP2SBR0100	1	2	3	50	4	2	●	1
MP2SBR0100S06	1	2	3	50	6	2	★	1
MP2SBR0125	1.25	2.5	3.8	50	4	2	★	1
MP2SBR0150	1.5	3	4.5	70	6	2	●	1
MP2SBR0200	2	4	6	70	6	2	●	1
MP2SBR0250	2.5	5	7.5	80	6	2	●	1
MP2SBR0300	3	6	9	80	6	2	●	2
MP2SBR0400	4	8	12	90	8	2	●	2
MP2SBR0500	5	10	15	100	10	2	●	2
MP2SBR0600	6	12	18	110	12	2	●	2

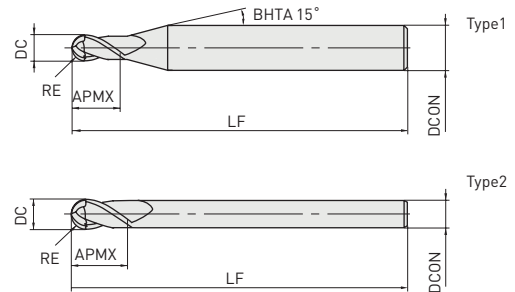
MP2MB



BALL NOSE, MEDIUM CUT LENGTH, 2 FLUTE



R	0.25 < RE < 6		
	±0.005		
h5	4 < DCON < 6	8 < DCON < 10	DCON = 12
	0	0	0
	-0.005	-0.006	-0.008



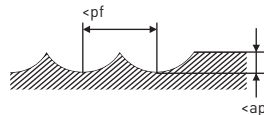
2 flute ball nose end mills with medium cutting edge length for general purpose machining.
Excellent performance for a wide range of workpiece materials such as carbon, alloy and hardened steels.

Order Number	RE	DC	APMX	LF	DCON	Flutes	Stock	Type
MP2MBR0025	0.25	0.5	1	45	4	2	★	1
MP2MBR0030	0.3	0.6	1.2	45	4	2	●	1
MP2MBR0040	0.4	0.8	1.6	45	4	2	★	1
MP2MBR0050	0.5	1	2.5	45	4	2	●	1
MP2MBR0060	0.6	1.2	2.5	45	4	2	★	1
MP2MBR0070	0.7	1.4	3	45	4	2	★	1
MP2MBR0075	0.75	1.5	4	45	4	2	●	1
MP2MBR0080	0.8	1.6	4	45	4	2	★	1
MP2MBR0090	0.9	1.8	5	45	4	2	★	1
MP2MBR0100	1	2	6	50	4	2	●	1
MP2MBR0125	1.25	2.5	6	50	4	2	★	1
MP2MBR0150S03	1.5	3	8	70	3	2	●	2
MP2MBR0150	1.5	3	8	70	6	2	●	1
MP2MBR0175	1.75	3.5	8	70	6	2	★	1
MP2MBR0200S04	2	4	8	70	4	2	●	2
MP2MBR0200	2	4	8	70	6	2	●	1
MP2MBR0250	2.5	5	12	80	6	2	●	1
MP2MBR0300	3	6	12	80	6	2	●	2
MP2MBR0400	4	8	14	90	8	2	●	2
MP2MBR0500	5	10	18	100	10	2	●	2
MP2MBR0600	6	12	22	110	12	2	●	2

MP2SSB / MP2SB / MP2MB

RECOMMENDED CUTTING CONDITIONS

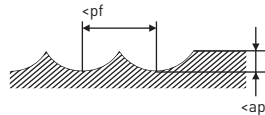
Material	P						H					
	Mild Steel, Carbon steel, Alloy steel, Pre-hardened steel, Hardened steel (- 45 HRC)						Hardened steel (45 - 55 HRC)					
	RE (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)	pf (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)
n (min ⁻¹)		Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)	n (min ⁻¹)			Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)		
R 0.1	40.000	300	40.000	250	0.003	0.02	40.000	300	40.000	250	0.003	0.02
R 0.15	40.000	500	40.000	350	0.007	0.03	40.000	500	40.000	350	0.007	0.03
R 0.2	40.000	1.600	40.000	1.200	0.02	0.04	40.000	1.300	40.000	950	0.015	0.04
R 0.25	40.000	2.400	40.000	1.400	0.025	0.05	40.000	1.900	40.000	1.100	0.02	0.05
R 0.3	40.000	3.200	40.000	1.600	0.03	0.06	40.000	2.500	40.000	1.300	0.025	0.06
R 0.4	40.000	4.800	40.000	2.400	0.05	0.08	40.000	4.000	40.000	1.900	0.04	0.08
R 0.5	40.000	5.600	40.000	3.200	0.06	0.1	40.000	5.600	40.000	3.000	0.05	0.1
R 0.75	40.000	6.500	40.000	4.000	0.09	0.15	40.000	6.500	32.000	3.200	0.08	0.15
R 1	40.000	6.500	39.000	4.700	0.11	0.2	40.000	6.500	31.000	3.500	0.11	0.2
R 1.25	40.000	7.000	33.000	4.500	0.12	0.25	36.000	6.500	26.000	3.500	0.12	0.25
R 1.5	40.000	7.500	27.000	4.300	0.13	0.3	32.000	6.000	22.000	3.400	0.13	0.3
R 2	32.000	7.500	20.000	3.600	0.15	0.4	25.000	6.000	16.000	2.700	0.15	0.4
R 2.5	25.000	6.000	16.000	2.900	0.2	0.5	20.000	5.400	13.000	2.300	0.2	0.5
R 3	21.000	5.800	13.000	2.600	0.25	0.6	17.000	4.700	10.000	2.000	0.25	0.6
R 4	16.000	4.500	10.000	2.000	0.3	0.8	13.000	3.600	8.000	1.500	0.3	0.8
R 5	13.000	3.600	8.000	1.700	0.5	1.0	10.000	2.900	6.400	1.200	0.5	1.0
R 6	9.000	2.500	6.000	1.300	0.5	1.2	7.200	2.000	4.800	1.000	0.5	1.2



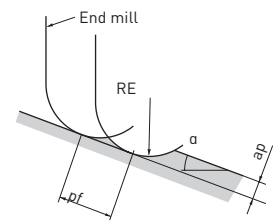
MP2SSB / MP2SB / MP2MB

RECOMMENDED CUTTING CONDITIONS

Material	M				S		N					
	Austenitic stainless steels, Titanium alloys										Copper, Copper alloys	
	RE (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)	pf (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)
n (min ⁻¹)		Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)	n (min ⁻¹)			Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)		
R 0.1	40.000	300	40.000	250	0.003	0.02	40.000	300	40.000	250	0.003	0.02
R 0.15	40.000	500	40.000	350	0.007	0.03	40.000	500	40.000	350	0.007	0.03
R 0.2	40.000	1.500	40.000	1.000	0.02	0.04	40.000	1.300	40.000	950	0.015	0.04
R 0.25	40.000	2.100	40.000	1.200	0.025	0.05	40.000	1.900	40.000	1.100	0.02	0.05
R 0.3	40.000	2.800	40.000	1.400	0.03	0.06	40.000	2.500	40.000	1.300	0.025	0.06
R 0.4	40.000	4.600	40.000	2.100	0.05	0.08	40.000	4.000	40.000	1.900	0.04	0.08
R 0.5	40.000	5.600	40.000	3.400	0.06	0.1	40.000	5.600	40.000	3.000	0.05	0.1
R 0.75	40.000	6.500	36.000	3.600	0.09	0.15	40.000	6.500	32.000	3.200	0.08	0.15
R 1	40.000	6.500	35.000	4.000	0.11	0.2	40.000	6.500	31.000	3.500	0.11	0.2
R 1.25	40.000	7.400	29.000	4.000	0.12	0.25	36.000	6.500	26.000	3.500	0.12	0.25
R 1.5	36.000	6.900	24.000	3.900	0.13	0.3	32.000	6.000	22.000	3.400	0.13	0.3
R 2	28.000	6.900	18.000	3.100	0.15	0.4	25.000	6.000	16.000	2.700	0.15	0.6
R 2.5	22.000	6.200	14.000	2.600	0.2	0.5	20.000	5.400	13.000	2.300	0.2	0.75
R 3	18.000	5.400	11.000	2.300	0.25	0.6	17.000	4.700	10.000	2.000	0.25	0.9
R 4	14.000	4.100	9.000	1.700	0.3	0.8	13.000	3.600	8.000	1.500	0.3	1.6
R 5	11.000	3.300	7.200	1.300	0.5	1.0	10.000	2.900	6.400	1.200	0.5	2.0
R 6	8.100	2.300	5.400	1.100	0.5	1.2	8.500	2.300	5.300	1.100	0.5	2.4



1. α is the inclination angle of the machined surface.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.
4. Standard cutting conditions of austenitic stainless steel and titanium alloy, please reduce the speed by 40% and the feed rate by 55%.



MEMO

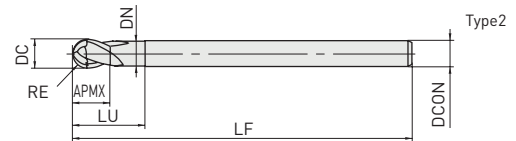
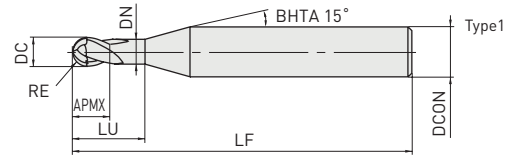
A series of horizontal dashed lines for writing.

MP2SDB



BALL NOSE, SHORT CUT LENGTH, 2 FLUTE, HIGH STRENGTH

P **H**



R	0.1 < RE < 6	
	±0.01	
h5	4 < DCON < 6	DCON = 8
	0	0
	-0.005	-0.006
h6	DCON = 10	DCON = 12
	0	0
	-0.009	-0.011

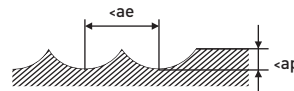
Excellent chipping resistance with a strong S curve cutting edge.
Ideal for semi finish machining of forging dies.

Order Number	RE	DC	APMX	LU	DN	LF	DCON	Flutes	Stock	Type
MP2SDBR0050	0.5	1	1	2	0.96	50	4	2	★	1
MP2SDBR0075S06	0.75	1.5	1.5	3	1.46	50	6	2	★	1
MP2SDBR0100	1	2	2	4	1.90	50	4	2	★	1
MP2SDBR0100S06	1	2	2	4	1.90	60	6	2	★	1
MP2SDBR0150	1.5	3	3	6	2.90	70	4	2	★	1
MP2SDBR0200	2	4	4	8	3.90	60	4	2	★	2
MP2SDBR0200S06	2	4	4	8	3.90	70	6	2	★	1
MP2SDBR0250	2.5	5	5	10	4.90	80	6	2	★	1
MP2SDBR0300	3	6	12	18	5.85	80	6	2	★	2
MP2SDBR0300A120	3	6	12	18	5.85	120	6	2	★	2
MP2SDBR0400	4	8	14	24	7.85	90	8	2	★	2
MP2SDBR0400A130	4	8	14	24	7.85	130	8	2	★	2
MP2SDBR0500	5	10	18	30	9.70	100	10	2	★	2
MP2SDBR0500A140	5	10	18	30	9.70	140	10	2	★	2
MP2SDBR0600	6	12	22	36	11.70	110	12	2	★	2
MP2SDBR0600A140	6	12	22	36	11.70	140	12	2	★	2

RECOMMENDED CUTTING CONDITIONS

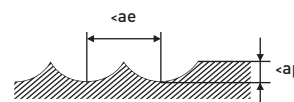
OVERHANG BELOW 5xDC (DC:DIA.)

Material	P						H					
	Carbon steel, Alloy steel, Alloy tool steel, Tool steel, Pre-hardened steel						Hardened steel (45 – 55 HRC)					
	RE (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)	ae (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)
n (min ⁻¹)		Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)	n (min ⁻¹)			Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)		
R 0.5	40.000	3.900	36.000	2.100	0.1	0.25	40.000	4.300	36.000	2.200	0.1	0.25
R 0.75	40.000	4.200	36.000	2.600	0.15	0.35	40.000	4.700	36.000	2.700	0.15	0.35
R 1	40.000	4.500	36.000	3.100	0.2	0.5	40.000	5.000	36.000	3.300	0.2	0.5
R 1.5	37.000	5.300	24.000	2.700	0.3	0.75	37.000	5.800	24.000	2.800	0.3	0.75
R 2x4	24.000	3.200	15.000	2.000	0.25	0.7	19.000	2.800	13.000	1.600	0.25	0.7
R 2	30.000	4.900	19.000	2.500	0.4	1	28.000	5.000	19.000	2.400	0.4	1
R 2.5	25.000	4.500	16.000	2.300	0.5	1.3	22.000	4.200	16.000	2.200	0.5	1.25
R 3	22.000	4.300	14.000	2.200	0.6	1.8	18.000	3.800	12.000	1.800	0.6	1.5
R 4	19.000	3.900	12.000	2.000	0.8	2.4	15.000	3.200	9.500	1.600	0.8	2
R 5	15.000	3.300	9.500	1.800	1	3	11.000	2.500	7.000	1.400	1	2.5
R 6	12.000	2.550	8.000	1.600	1.2	3.6	9.000	2.000	6.000	1.300	1.2	3

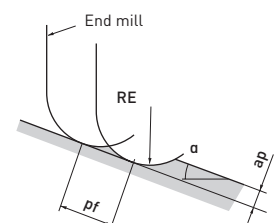


OVERHANG BELOW 7xDC (DC:DIA.)

Material	P						H					
	Carbon steel, Alloy steel, Alloy tool steel, Tool steel, Pre-hardened steel						Hardened steel (45 – 55 HRC)					
	RE (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)	ae (mm)	$\alpha < 15^\circ$		$\alpha > 15^\circ$		ap (mm)
n (min ⁻¹)		Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)	n (min ⁻¹)			Vf (mm/min)	n (min ⁻¹)	Vf (mm/min)		
R 3	10.000	1.500	6.900	1.000	0.2	1	8.000	1.400	5.300	770	0.2	0.8
R 4	8.000	1.400	5.600	900	0.3	1.5	6.400	1.300	4.000	650	0.3	1.2
R 5	6.000	1.200	4.100	740	0.4	2	4.800	1.100	3.200	580	0.4	1.6
R 6	5.000	1.000	3.400	600	0.45	2.4	4.000	900	2.700	490	0.45	2



1. α is the inclination of the machined surface.
2. If the depth of cut is smaller than this table, feed rate can be increased.
3. If the rigidity of the machine or the workpiece installation is very low, or chattering is generated, please reduce the revolution and the feed rate proportionately.



MP2XLB



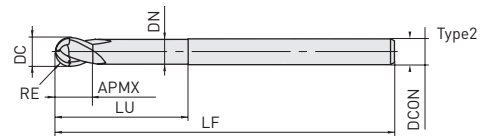
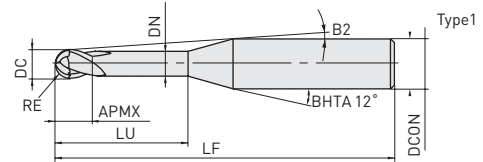
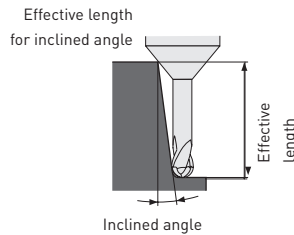
BALL NOSE, SHORT CUT LENGTH, 2 FLUTE, LONG NECK

P **H** **N**



R $0.05 < RE < 3$
 ± 0.005

h5 $4 < DCON < 6$
0
 -0.005



2 flute long neck ball nose end mills. Excellent performance for a wide range of workpiece materials such as carbon, alloy and hardened steels.

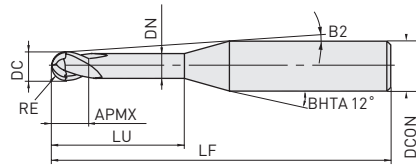
Order Number	RE	DC	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MP2XLB R0005N003	0.05	0.1	0.08	0.3	0.085	11.6°	50	4	2	★	1	0.3	0.3	0.4	0.4
MP2XLB R0005N005	0.05	0.1	0.08	0.5	0.085	11.4°	50	4	2	★	1	0.5	0.5	0.6	0.7
MP2XLB R0010N005	0.1	0.2	0.15	0.5	0.18	11.5°	50	4	2	★	1	0.5	0.5	0.6	0.7
MP2XLB R0010N008	0.1	0.2	0.15	0.75	0.18	11.2°	50	4	2	★	1	0.8	0.8	0.9	1.0
MP2XLB R0010N010	0.1	0.2	0.15	1	0.18	10.9°	50	4	2	★	1	1.0	1.1	1.2	1.3
MP2XLB R0010N013	0.1	0.2	0.15	1.25	0.18	10.6°	50	4	2	★	1	1.3	1.4	1.5	1.7
MP2XLB R0010N015	0.1	0.2	0.15	1.5	0.18	10.4°	50	4	2	★	1	1.6	1.6	1.8	2.0
MP2XLB R0010N018	0.1	0.2	0.15	1.75	0.18	10.2°	50	4	2	★	1	1.8	1.9	2.1	2.3
MP2XLB R0010N020	0.1	0.2	0.15	2	0.18	9.9°	50	4	2	★	1	2.1	2.2	2.4	2.6
MP2XLB R0010N025	0.1	0.2	0.15	2.5	0.18	9.5°	50	4	2	★	1	2.6	2.7	3.0	3.3
MP2XLB R0015N005	0.15	0.3	0.24	0.5	0.28	11.5°	50	4	2	★	1	0.5	0.5	0.6	0.6
MP2XLB R0015N008	0.15	0.3	0.24	0.75	0.28	11.2°	50	4	2	★	1	0.8	0.8	0.9	1.0
MP2XLB R0015N010	0.15	0.3	0.24	1	0.28	10.9°	50	4	2	●	1	1.0	1.1	1.2	1.3
MP2XLB R0015N010S06	0.15	0.3	0.24	1	0.28	11.3°	50	6	2	★	1	1.0	1.1	1.2	1.3
MP2XLB R0015N013	0.15	0.3	0.24	1.25	0.28	10.7°	50	4	2	★	1	1.3	1.4	1.5	1.6
MP2XLB R0015N013S06	0.15	0.3	0.24	1.25	0.28	11.1°	50	6	2	★	1	1.3	1.4	1.5	1.6
MP2XLB R0015N015	0.15	0.3	0.24	1.5	0.28	10.4°	50	4	2	★	1	1.6	1.6	1.8	2.0
MP2XLB R0015N015S06	0.15	0.3	0.24	1.5	0.28	10.9°	50	6	2	★	1	1.6	1.6	1.8	2.0
MP2XLB R0015N018	0.15	0.3	0.24	1.75	0.28	10.2°	50	4	2	★	1	1.8	1.9	2.1	2.3
MP2XLB R0015N020	0.15	0.3	0.24	2	0.28	9.9°	50	4	2	★	1	2.1	2.2	2.4	2.6
MP2XLB R0015N025	0.15	0.3	0.24	2.5	0.28	9.5°	50	4	2	★	1	2.6	2.7	3.0	3.3
MP2XLB R0015N030	0.15	0.3	0.24	3	0.28	9.1°	50	4	2	★	1	3.1	3.3	3.6	4.0
MP2XLB R0015N035	0.15	0.3	0.24	3.5	0.28	8.7°	50	4	2	★	1	3.7	3.8	4.2	4.6
MP2XLB R0015N040	0.15	0.3	0.24	4	0.28	8.4°	50	4	2	★	1	4.2	4.4	4.8	5.3
MP2XLB R0020N005	0.2	0.4	0.3	0.5	0.37	11.6°	50	4	2	★	1	0.5	0.5	0.5	0.6
MP2XLB R0020N008	0.2	0.4	0.3	0.75	0.37	11.3°	50	4	2	★	1	0.7	0.8	0.9	0.9

Order Number	RE	DC	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
												MP2XLBR0020N010	0.2	0.4	0.3
MP2XLBR0020N010S06	0.2	0.4	0.3	1	0.37	11.3°	50	6	2	●	1	1.0	1.1	1.2	1.3
MP2XLBR0020N015	0.2	0.4	0.3	1.5	0.37	10.4°	50	4	2	★	1	1.5	1.6	1.7	1.9
MP2XLBR0020N020	0.2	0.4	0.3	2	0.37	9.9°	50	4	2	●	1	2.1	2.2	2.3	2.6
MP2XLBR0020N020S06	0.2	0.4	0.3	2	0.37	10.6°	50	6	2	★	1	2.1	2.2	2.3	2.6
MP2XLBR0020N025	0.2	0.4	0.3	2.5	0.37	9.5°	50	4	2	★	1	2.6	2.7	2.9	3.3
MP2XLBR0020N030	0.2	0.4	0.3	3	0.37	9.1°	50	4	2	★	1	3.1	3.2	3.5	3.9
MP2XLBR0020N035	0.2	0.4	0.3	3.5	0.37	8.7°	50	4	2	★	1	3.6	3.8	4.1	4.6
MP2XLBR0020N040	0.2	0.4	0.3	4	0.37	8.4°	50	4	2	★	1	4.2	4.3	4.7	5.2
MP2XLBR0020N045	0.2	0.4	0.3	4.5	0.37	8°	50	4	2	★	1	4.7	4.9	5.3	5.9
MP2XLBR0020N050	0.2	0.4	0.3	5	0.37	7.7°	50	4	2	★	1	5.2	5.4	5.9	6.6
MP2XLBR0020N055	0.2	0.4	0.3	5.5	0.37	7.5°	50	4	2	★	1	5.7	6.0	6.5	7.2
MP2XLBR0020N060	0.2	0.4	0.3	6	0.37	7.2°	50	4	2	●	1	6.2	6.5	7.1	7.9
MP2XLBR0025N010	0.25	0.5	0.37	1	0.47	11°	50	4	2	★	1	1.0	1.0	1.1	1.2
MP2XLBR0025N015	0.25	0.5	0.37	1.5	0.47	10.4°	50	4	2	●	1	1.5	1.6	1.7	1.9
MP2XLBR0025N015S06	0.25	0.5	0.37	1.5	0.47	11°	50	6	2	●	1	1.5	1.6	1.7	1.9
MP2XLBR0025N020	0.25	0.5	0.37	2	0.47	9.9°	50	4	2	●	1	2.1	2.1	2.3	2.6
MP2XLBR0025N020S06	0.25	0.5	0.37	2	0.47	10.6°	50	6	2	★	1	2.1	2.1	2.3	2.6
MP2XLBR0025N025	0.25	0.5	0.37	2.5	0.47	9.5°	50	4	2	●	1	2.6	2.7	2.9	3.2
MP2XLBR0025N025S06	0.25	0.5	0.37	2.5	0.47	10.3°	50	6	2	★	1	2.6	2.7	2.9	3.2
MP2XLBR0025N030	0.25	0.5	0.37	3	0.47	9.1°	50	4	2	★	1	3.1	3.2	3.5	3.9
MP2XLBR0025N030S06	0.25	0.5	0.37	3	0.47	10°	50	6	2	★	1	3.1	3.2	3.5	3.9
MP2XLBR0025N035	0.25	0.5	0.37	3.5	0.47	8.7°	50	4	2	★	1	3.6	3.8	4.1	4.6
MP2XLBR0025N040	0.25	0.5	0.37	4	0.47	8.3°	50	4	2	●	1	4.1	4.3	4.7	5.2
MP2XLBR0025N045	0.25	0.5	0.37	4.5	0.47	8°	50	4	2	★	1	4.7	4.9	5.3	5.9
MP2XLBR0025N050	0.25	0.5	0.37	5	0.47	7.7°	50	4	2	★	1	5.2	5.4	5.9	6.6
MP2XLBR0025N055	0.25	0.5	0.37	5.5	0.47	7.4°	50	4	2	★	1	5.7	6.0	6.5	7.2
MP2XLBR0025N060	0.25	0.5	0.37	6	0.47	7.2°	50	4	2	★	1	6.2	6.5	7.1	7.9
MP2XLBR0025N070	0.25	0.5	0.37	7	0.47	6.7°	50	4	2	★	1	7.3	7.6	8.3	9.2
MP2XLBR0025N080	0.25	0.5	0.37	8	0.47	6.3°	50	4	2	★	1	8.3	8.7	9.5	10.5
MP2XLBR0025N090	0.25	0.5	0.37	9	0.47	5.9°	50	4	2	★	1	9.4	9.8	10.7	11.9
MP2XLBR0025N100	0.25	0.5	0.37	10	0.47	5.6°	50	4	2	★	1	10.4	10.9	11.9	13.2
MP2XLBR0030N015	0.3	0.6	0.45	1.5	0.57	10.4°	50	4	2	●	1	1.5	1.6	1.8	2.0
MP2XLBR0030N015S06	0.3	0.6	0.45	1.5	0.57	11°	50	6	2	●	1	1.5	1.6	1.8	2.0
MP2XLBR0030N020	0.3	0.6	0.45	2	0.57	9.9°	50	4	2	●	1	2.1	2.2	2.4	2.6
MP2XLBR0030N020S06	0.3	0.6	0.45	2	0.57	10.6°	50	6	2	★	1	2.1	2.2	2.4	2.6
MP2XLBR0030N025	0.3	0.6	0.45	2.5	0.57	9.4°	50	4	2	★	1	2.6	2.7	3.0	3.3
MP2XLBR0030N030	0.3	0.6	0.45	3	0.57	9°	50	4	2	●	1	3.1	3.3	3.6	4.0
MP2XLBR0030N030S06	0.3	0.6	0.45	3	0.57	9.9°	50	6	2	★	1	3.1	3.3	3.6	4.0
MP2XLBR0030N035	0.3	0.6	0.45	3.5	0.57	8.6°	50	4	2	★	1	3.7	3.8	4.2	4.6
MP2XLBR0030N040	0.3	0.6	0.45	4	0.57	8.2°	50	4	2	●	1	4.2	4.4	4.8	5.3
MP2XLBR0030N040S06	0.3	0.6	0.45	4	0.57	9.3°	50	6	2	★	1	4.2	4.4	4.8	5.3
MP2XLBR0030N045	0.3	0.6	0.45	4.5	0.57	7.9°	50	4	2	★	1	4.7	4.9	5.4	5.9
MP2XLBR0030N050	0.3	0.6	0.45	5	0.57	7.6°	50	4	2	★	1	5.2	5.5	6.0	6.6
MP2XLBR0030N050S06	0.3	0.6	0.45	5	0.57	8.8°	50	6	2	★	1	5.2	5.5	6.0	6.6
MP2XLBR0030N055	0.3	0.6	0.45	5.5	0.57	7.3°	50	4	2	★	1	5.8	6.0	6.6	7.3
MP2XLBR0030N060	0.3	0.6	0.45	6	0.57	7.1°	50	4	2	★	1	6.3	6.6	7.2	7.9
MP2XLBR0030N060S06	0.3	0.6	0.45	6	0.57	8.3°	50	6	2	★	1	6.3	6.6	7.2	7.9
MP2XLBR0030N065	0.3	0.6	0.45	6.5	0.57	6.8°	50	4	2	★	1	6.8	7.1	7.8	8.6
MP2XLBR0030N070	0.3	0.6	0.45	7	0.57	6.6°	50	4	2	★	1	7.3	7.6	8.4	9.3
MP2XLBR0030N080	0.3	0.6	0.45	8	0.57	6.2°	50	4	2	★	1	8.4	8.7	9.6	10.6
MP2XLBR0030N080S06	0.3	0.6	0.45	8	0.57	7.6°	50	6	2	★	1	8.4	8.7	9.6	10.6
MP2XLBR0030N085	0.3	0.6	0.45	8.5	0.57	6°	50	4	2	★	1	8.9	9.3	10.2	11.3

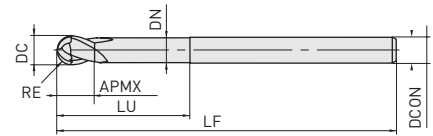
MP2XLB



Type1



Type2



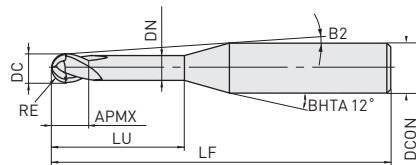
Order Number	RE	DC	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MP2XLB0030N090	0.3	0.6	0.45	9	0.57	5.8°	50	4	2	★	1	9.4	9.8	10.8	11.9
MP2XLB0030N095	0.3	0.6	0.45	9.5	0.57	5.7°	50	4	2	★	1	9.9	10.4	11.4	12.6
MP2XLB0030N100	0.3	0.6	0.45	10	0.57	5.5°	50	4	2	★	1	10.5	10.9	12.0	13.2
MP2XLB0030N110	0.3	0.6	0.45	11	0.57	5.2°	50	4	2	★	1	11.5	12.0	13.2	14.6
MP2XLB0030N120	0.3	0.6	0.45	12	0.57	5°	50	4	2	★	1	12.5	13.1	14.4	15.9
MP2XLB0040N020	0.4	0.8	0.6	2	0.77	9.9°	50	4	2	★	1	2.1	2.2	2.4	2.6
MP2XLB0040N020S06	0.4	0.8	0.6	2	0.77	10.6°	50	6	2	★	1	2.1	2.2	2.4	2.6
MP2XLB0040N024S06	0.4	0.8	0.6	2.4	0.77	10.3°	50	6	2	★	1	2.5	2.6	2.8	3.1
MP2XLB0040N030	0.4	0.8	0.6	3	0.77	8.9°	50	4	2	★	1	3.1	3.3	3.6	3.9
MP2XLB0040N030S06	0.4	0.8	0.6	3	0.77	9.9°	50	6	2	★	1	3.1	3.3	3.6	3.9
MP2XLB0040N040	0.4	0.8	0.6	4	0.77	8.2°	50	4	2	★	1	4.2	4.4	4.8	5.2
MP2XLB0040N040S06	0.4	0.8	0.6	4	0.77	9.3°	50	6	2	●	1	4.2	4.4	4.8	5.2
MP2XLB0040N050	0.4	0.8	0.6	5	0.77	7.5°	50	4	2	●	1	5.2	5.5	6.0	6.6
MP2XLB0040N060	0.4	0.8	0.6	6	0.77	6.9°	50	4	2	★	1	6.3	6.5	7.2	7.9
MP2XLB0040N070	0.4	0.8	0.6	7	0.77	6.5°	50	4	2	●	1	7.3	7.6	8.4	9.2
MP2XLB0040N080	0.4	0.8	0.6	8	0.77	6°	50	4	2	★	1	8.4	8.7	9.5	10.6
MP2XLB0040N090	0.4	0.8	0.6	9	0.77	5.7°	50	4	2	★	1	9.4	9.8	10.7	11.9
MP2XLB0040N100	0.4	0.8	0.6	10	0.77	5.4°	50	4	2	★	1	10.5	10.9	11.9	13.2
MP2XLB0040N120	0.4	0.8	0.6	12	0.77	4.8°	50	4	2	★	1	12.5	13.1	14.3	15.9
MP2XLB0050N030	0.5	1	0.75	3	0.96	8.7°	50	4	2	●	1	3.2	3.4	3.7	4.1
MP2XLB0050N030S06	0.5	1	0.75	3	0.96	9.8°	50	6	2	★	1	3.2	3.4	3.7	4.1
MP2XLB0050N040	0.5	1	0.75	4	0.96	7.9°	50	4	2	●	1	4.3	4.5	4.9	5.4
MP2XLB0050N040S06	0.5	1	0.75	4	0.96	9.2°	50	6	2	●	1	4.3	4.5	4.9	5.4
MP2XLB0050N050	0.5	1	0.75	5	0.96	7.3°	50	4	2	●	1	5.3	5.6	6.1	6.7
MP2XLB0050N050S06	0.5	1	0.75	5	0.96	8.6°	50	6	2	●	1	5.3	5.6	6.1	6.7
MP2XLB0050N060	0.5	1	0.75	6	0.96	6.7°	50	4	2	●	1	6.4	6.7	7.3	8.1
MP2XLB0050N060S06	0.5	1	0.75	6	0.96	8.2°	50	6	2	●	1	6.4	6.7	7.3	8.1
MP2XLB0050N070	0.5	1	0.75	7	0.96	6.2°	50	4	2	●	1	7.4	7.8	8.5	9.4
MP2XLB0050N080	0.5	1	0.75	8	0.96	5.8°	50	4	2	●	1	8.5	8.9	9.7	10.7
MP2XLB0050N080S06	0.5	1	0.75	8	0.96	7.3°	50	6	2	●	1	8.5	8.9	9.7	10.7
MP2XLB0050N090	0.5	1	0.75	9	0.96	5.5°	50	4	2	●	1	9.5	10.0	10.9	12.0
MP2XLB0050N100	0.5	1	0.75	10	0.96	5.1°	50	4	2	●	1	10.6	11.1	12.1	13.4
MP2XLB0050N100S06	0.5	1	0.75	10	0.96	6.7°	60	6	2	★	1	10.6	11.1	12.1	13.4
MP2XLB0050N120	0.5	1	0.75	12	0.96	4.6°	50	4	2	●	1	12.7	13.2	14.5	16.0
MP2XLB0050N120S06	0.5	1	0.75	12	0.96	6.1°	60	6	2	★	1	12.7	13.2	14.5	16.0
MP2XLB0050N140	0.5	1	0.75	14	0.96	4.2°	55	4	2	★	1	14.8	15.4	16.9	18.7
MP2XLB0050N160	0.5	1	0.75	16	0.96	3.8°	55	4	2	★	1	16.9	17.6	19.3	21.3
MP2XLB0050N160S06	0.5	1	0.75	16	0.96	5.2°	65	6	2	★	1	16.9	17.6	19.3	21.3
MP2XLB0050N180	0.5	1	0.75	18	0.96	3.5°	55	4	2	★	1	18.9	19.8	21.7	24.0
MP2XLB0050N200	0.5	1	0.75	20	0.96	3.3°	55	4	2	★	1	21.0	22.0	24.1	26.6
MP2XLB0050N200S06	0.5	1	0.75	20	0.96	4.6°	65	6	2	★	1	21.0	22.0	24.1	26.6
MP2XLB0060N060	0.6	1.2	0.9	6	1.16	6.6°	50	4	2	★	1	6.4	6.7	7.3	8.0

Order Number	RE	DC	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MP2XLBR0060N060S06	0.6	1.2	0.9	6	1.16	8.1°	55	6	2	★	1	6.4	6.7	7.3	8.0
MP2XLBR0060N080	0.6	1.2	0.9	8	1.16	5.7°	50	4	2	★	1	8.5	8.9	9.7	10.7
MP2XLBR0060N080S06	0.6	1.2	0.9	8	1.16	7.3°	55	6	2	★	1	8.5	8.9	9.7	10.7
MP2XLBR0060N100	0.6	1.2	0.9	10	1.16	5°	50	4	2	★	1	10.6	11.0	12.1	13.3
MP2XLBR0060N100S06	0.6	1.2	0.9	10	1.16	6.6°	55	6	2	★	1	10.6	11.0	12.1	13.3
MP2XLBR0060N120	0.6	1.2	0.9	12	1.16	4.4°	50	4	2	★	1	12.7	13.2	14.5	16.0
MP2XLBR0060N120S06	0.6	1.2	0.9	12	1.16	6°	65	6	2	★	1	12.7	13.2	14.5	16.0
MP2XLBR0060N140	0.6	1.2	0.9	14	1.16	4°	55	4	2	★	1	14.8	15.4	16.9	18.7
MP2XLBR0060N160	0.6	1.2	0.9	16	1.16	3.7°	55	4	2	★	1	16.9	17.6	19.3	21.3
MP2XLBR0060N160S06	0.6	1.2	0.9	16	1.16	5.1°	65	6	2	★	1	16.9	17.6	19.3	21.3
MP2XLBR0060N180	0.6	1.2	0.9	18	1.16	3.4°	60	4	2	★	1	18.9	19.8	21.7	24.0
MP2XLBR0060N200	0.6	1.2	0.9	20	1.16	3.1°	60	4	2	★	1	21.0	21.9	24.0	26.6
MP2XLBR0060N240	0.6	1.2	0.9	24	1.16	2.7°	60	4	2	★	1	25.2	26.3	28.8	*
MP2XLBR0070N080	0.7	1.4	1.05	8	1.34	5.5°	50	4	2	★	1	8.4	8.8	9.6	10.6
MP2XLBR0070N120	0.7	1.4	1.05	12	1.34	4.3°	50	4	2	★	1	12.6	13.1	14.4	15.9
MP2XLBR0070N160	0.7	1.4	1.05	16	1.34	3.5°	50	4	2	★	1	16.8	17.5	19.2	21.2
MP2XLBR0075N030	0.75	1.5	1.1	3	1.44	8.6°	50	4	2	★	1	3.1	3.3	3.6	3.9
MP2XLBR0075N040	0.75	1.5	1.1	4	1.44	7.7°	50	4	2	★	1	4.2	4.4	4.8	5.2
MP2XLBR0075N060	0.75	1.5	1.1	6	1.44	6.3°	50	4	2	●	1	6.3	6.6	7.2	7.9
MP2XLBR0075N060S06	0.75	1.5	1.1	6	1.44	8°	50	6	2	●	1	6.3	6.6	7.2	7.9
MP2XLBR0075N080	0.75	1.5	1.1	8	1.44	5.4°	50	4	2	●	1	8.4	8.8	9.6	10.6
MP2XLBR0075N080S06	0.75	1.5	1.1	8	1.44	7.2°	60	6	2	●	1	8.4	8.8	9.6	10.6
MP2XLBR0075N100	0.75	1.5	1.1	10	1.44	4.7°	50	4	2	●	1	10.5	11.0	12.0	13.2
MP2XLBR0075N100S06	0.75	1.5	1.1	10	1.44	6.5°	60	6	2	★	1	10.5	11.0	12.0	13.2
MP2XLBR0075N120	0.75	1.5	1.1	12	1.44	4.2°	50	4	2	●	1	12.6	13.1	14.4	15.9
MP2XLBR0075N120S06	0.75	1.5	1.1	12	1.44	5.9°	60	6	2	●	1	12.6	13.1	14.4	15.9
MP2XLBR0075N140	0.75	1.5	1.1	14	1.44	3.8°	55	4	2	●	1	14.7	15.3	16.8	18.5
MP2XLBR0075N160	0.75	1.5	1.1	16	1.44	3.4°	55	4	2	●	1	16.8	17.5	19.2	21.2
MP2XLBR0075N160S06	0.75	1.5	1.1	16	1.44	5°	60	6	2	★	1	16.8	17.5	19.2	21.2
MP2XLBR0075N180	0.75	1.5	1.1	18	1.44	3.1°	60	4	2	★	1	18.9	19.7	21.6	23.8
MP2XLBR0075N200	0.75	1.5	1.1	20	1.44	2.9°	60	4	2	★	1	21.0	21.9	23.9	*
MP2XLBR0075N220	0.75	1.5	1.1	22	1.44	2.7°	60	4	2	★	1	23.0	24.0	26.3	*
MP2XLBR0080N080	0.8	1.6	1.2	8	1.54	5.3°	55	4	2	★	1	8.4	8.8	9.6	10.5
MP2XLBR0080N120	0.8	1.6	1.2	12	1.54	4.1°	55	4	2	★	1	12.6	13.1	14.4	15.9
MP2XLBR0080N160	0.8	1.6	1.2	16	1.54	3.3°	55	4	2	★	1	16.8	17.5	19.1	21.2
MP2XLBR0080N200	0.8	1.6	1.2	20	1.54	2.8°	55	4	2	★	1	21.0	21.9	23.9	*
MP2XLBR0090N080	0.9	1.8	1.4	8	1.74	5.1°	55	4	2	★	1	8.4	8.8	9.6	10.5
MP2XLBR0090N120	0.9	1.8	1.4	12	1.74	3.9°	55	4	2	★	1	12.6	13.1	14.3	15.8
MP2XLBR0090N160	0.9	1.8	1.4	16	1.74	3.1°	55	4	2	●	1	16.8	17.5	19.1	21.1
MP2XLBR0090N200	0.9	1.8	1.4	20	1.74	2.6°	55	4	2	★	1	20.9	21.8	23.9	*
MP2XLBR0100N040	1	2	1.5	4	1.94	7.2°	50	4	2	★	1	4.2	4.4	4.7	5.2
MP2XLBR0100N040S06	1	2	1.5	4	1.94	9°	50	6	2	●	1	4.2	4.4	4.7	5.2
MP2XLBR0100N060	1	2	1.5	6	1.94	5.8°	50	4	2	●	1	6.3	6.6	7.1	7.8
MP2XLBR0100N060S06	1	2	1.5	6	1.94	7.8°	50	6	2	●	1	6.3	6.6	7.1	7.8
MP2XLBR0100N080	1	2	1.5	8	1.94	4.8°	50	4	2	●	1	8.4	8.8	9.5	10.5
MP2XLBR0100N080S06	1	2	1.5	8	1.94	6.9°	50	6	2	●	1	8.4	8.8	9.5	10.5
MP2XLBR0100N100	1	2	1.5	10	1.94	4.2°	50	4	2	●	1	10.5	10.9	11.9	13.1
MP2XLBR0100N100S06	1	2	1.5	10	1.94	6.2°	50	6	2	●	1	10.5	10.9	11.9	13.1
MP2XLBR0100N120	1	2	1.5	12	1.94	3.6°	50	4	2	●	1	12.6	13.1	14.3	15.8
MP2XLBR0100N120S06	1	2	1.5	12	1.94	5.6°	60	6	2	●	1	12.6	13.1	14.3	15.8
MP2XLBR0100N140	1	2	1.5	14	1.94	3.2°	55	4	2	●	1	14.7	15.3	16.7	18.4
MP2XLBR0100N140S06	1	2	1.5	14	1.94	5.1°	60	6	2	●	1	14.7	15.3	16.7	18.4
MP2XLBR0100N160	1	2	1.5	16	1.94	2.9°	55	4	2	●	1	16.8	17.5	19.1	*

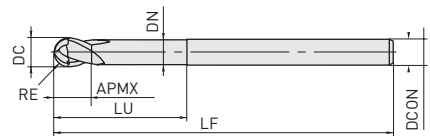
MP2XLB

P H N

Type1



Type2



Order Number	RE	DC	APMX	LU	DN	B2	LF	DC ON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MP2XLB0100N160S06	1	2	1.5	16	1.94	4.7°	65	6	2	●	1	16.8	17.5	19.1	21.1
MP2XLB0100N180	1	2	1.5	18	1.94	2.7°	55	4	2	★	1	18.9	19.7	21.5	*
MP2XLB0100N180S06	1	2	1.5	18	1.94	4.3°	65	6	2	★	1	18.9	19.7	21.5	23.8
MP2XLB0100N200	1	2	1.5	20	1.94	2.4°	65	4	2	●	1	20.9	21.8	23.9	*
MP2XLB0100N200S06	1	2	1.5	20	1.94	4°	65	6	2	●	1	20.9	21.8	23.9	26.4
MP2XLB0100N220	1	2	1.5	22	1.94	2.3°	65	4	2	★	1	23.0	24.0	26.3	*
MP2XLB0100N250	1	2	1.5	25	1.94	2°	65	4	2	★	1	26.2	27.3	*	*
MP2XLB0100N250S06	1	2	1.5	25	1.94	3.5°	90	6	2	●	1	26.2	27.3	29.9	33
MP2XLB0100N300	1	2	1.5	30	1.94	1.7°	80	4	2	★	1	31.4	32.7	*	*
MP2XLB0100N300S06	1	2	1.5	30	1.94	3°	90	6	2	★	1	31.4	32.7	35.9	*
MP2XLB0100N350	1	2	1.5	35	1.94	1.5°	80	4	2	★	1	36.6	38.2	*	*
MP2XLB0100N350S06	1	2	1.5	35	1.94	2.7°	90	6	2	★	1	36.6	38.2	41.8	*
MP2XLB0100N400	1	2	1.5	40	1.94	1.4°	80	4	2	★	1	41.8	43.6	*	*
MP2XLB0100N400S06	1	2	1.5	40	1.94	2.4°	90	6	2	★	1	41.8	43.6	47.8	*
MP2XLB0125N100	1.25	2.5	1.9	10	2.4	3.5°	55	4	2	★	1	10.4	10.8	11.8	12.9
MP2XLB0125N150	1.25	2.5	1.9	15	2.4	2.5°	55	4	2	★	1	15.6	16.3	17.8	*
MP2XLB0125N200	1.25	2.5	1.9	20	2.4	2°	55	4	2	★	1	20.8	21.7	*	*
MP2XLB0125N250	1.25	2.5	1.9	25	2.4	1.6°	70	4	2	★	1	26.1	27.2	*	*
MP2XLB0125N300	1.25	2.5	1.9	30	2.4	1.4°	70	4	2	★	1	31.3	32.6	*	*
MP2XLB0125N350	1.25	2.5	1.9	35	2.4	1.2°	70	4	2	★	1	36.5	38.1	*	*
MP2XLB0150N060S03	1.5	3	2.3	6	2.9	-	60	3	2	★	1	*	*	*	*
MP2XLB0150N080	1.5	3	2.3	8	2.9	6.3°	60	6	2	●	1	8.3	8.6	9.3	10.2
MP2XLB0150N100	1.5	3	2.3	10	2.9	5.5°	60	6	2	●	1	10.4	10.8	11.7	12.9
MP2XLB0150N120	1.5	3	2.3	12	2.9	4.9°	60	6	2	●	1	12.5	13.0	14.1	15.5
MP2XLB0150N140	1.5	3	2.3	14	2.9	4.4°	60	6	2	●	1	14.6	15.2	16.5	18.2
MP2XLB0150N160	1.5	3	2.3	16	2.9	4°	70	6	2	●	1	16.7	17.3	18.9	20.8
MP2XLB0150N200	1.5	3	2.3	20	2.9	3.4°	70	6	2	●	1	20.8	21.7	23.7	26.1
MP2XLB0150N250	1.5	3	2.3	25	2.9	2.8°	70	6	2	●	1	26.1	27.2	29.7	*
MP2XLB0150N300	1.5	3	2.3	30	2.9	2.5°	70	6	2	★	1	31.3	32.6	35.7	*
MP2XLB0150N350	1.5	3	2.3	35	2.9	2.2°	90	6	2	★	1	36.5	38.0	41.7	*
MP2XLB0150N400	1.5	3	2.3	40	2.9	1.9°	90	6	2	★	1	41.7	43.5	*	*
MP2XLB0175N150	1.75	3.5	2.6	15	3.4	3.8°	65	6	2	★	1	15.6	16.2	17.7	19.4
MP2XLB0175N250	1.75	3.5	2.6	25	3.4	2.5°	65	6	2	★	1	26.0	27.1	29.6	*
MP2XLB0175N350	1.75	3.5	2.6	35	3.4	1.9°	90	6	2	★	1	36.5	38.0	*	*
MP2XLB0175N450	1.75	3.5	2.6	45	3.4	1.5°	90	6	2	★	1	46.9	48.9	*	*
MP2XLB0200N080S04	2	4	3	8	3.9	-	65	4	2	★	1	*	*	*	*
MP2XLB0200N100	2	4	3	10	3.9	4.5°	65	6	2	●	1	10.4	10.8	11.6	12.7
MP2XLB0200N120	2	4	3	12	3.9	3.9°	65	6	2	●	1	12.5	12.9	14.0	15.4
MP2XLB0200N140	2	4	3	14	3.9	3.4°	65	6	2	●	1	14.6	15.1	16.4	18.0
MP2XLB0200N160	2	4	3	16	3.9	3.1°	70	6	2	●	1	16.6	17.3	18.8	20.7
MP2XLB0200N200	2	4	3	20	3.9	2.6°	70	6	2	●	1	20.8	21.7	23.6	*
MP2XLB0200N250	2	4	3	25	3.9	2.1°	70	6	2	●	1	26.0	27.1	29.6	*

Order Number	RE	DC	APMX	LU	DN	B2	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
												30°	1°	2°	3°
MP2XLBR0200N300	2	4	3	30	3.9	1.8°	80	6	2	●	1	31.2	32.6	*	*
MP2XLBR0200N350	2	4	3	35	3.9	1.6°	80	6	2	●	1	36.5	38.0	*	*
MP2XLBR0200N400	2	4	3	40	3.9	1.4°	90	6	2	★	1	41.7	43.5	*	*
MP2XLBR0200N450	2	4	3	45	3.9	1.2°	90	6	2	★	1	46.9	48.9	*	*
MP2XLBR0200N500	2	4	3	50	3.9	1.1°	100	6	2	★	1	52.1	54.3	*	*
MP2XLBR0250N150	2.5	5	3.8	15	4.9	2°	70	6	2	★	1	15.6	16.2	*	*
MP2XLBR0250N200	2.5	5	3.8	20	4.9	1.5°	70	6	2	●	1	20.8	21.6	*	*
MP2XLBR0250N250	2.5	5	3.8	25	4.9	1.2°	70	6	2	●	1	26.0	27.1	*	*
MP2XLBR0250N300	2.5	5	3.8	30	4.9	1°	80	6	2	★	1	31.2	*	*	*
MP2XLBR0250N350	2.5	5	3.8	35	4.9	0.9°	80	6	2	★	1	36.4	*	*	*
MP2XLBR0250N400	2.5	5	3.8	40	4.9	0.8°	90	6	2	★	1	41.7	*	*	*
MP2XLBR0300N200	3	6	6	20	5.85	-	70	6	2	●	2	*	*	*	*
MP2XLBR0300N250	3	6	6	25	5.85	-	70	6	2	★	2	*	*	*	*
MP2XLBR0300N300	3	6	6	30	5.85	-	80	6	2	●	2	*	*	*	*
MP2XLBR0300N400	3	6	6	40	5.85	-	90	6	2	★	2	*	*	*	*
MP2XLBR0300N500	3	6	6	50	5.85	-	100	6	2	★	2	*	*	*	*

* No interference

MP2XLB

RECOMMENDED CUTTING CONDITIONS

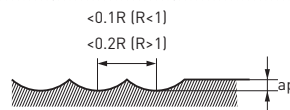
Material		P			H			N		
		Carbon steel, Alloy steel, Alloy tool steel, Prehardened steel, Precipitation hardening stainless steel			Hardened steel (45 – 55 HRC)			Copper, Copper alloys		
RE (mm)	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)
0.05	0.3	50.000	200	0.002	50.000	200	0.002	50.000	200	0.004
	0.5	50.000	200	0.001	50.000	200	0.002	50.000	200	0.002
0.1	0.5	50.000	400	0.003	50.000	320	0.003	50.000	320	0.006
	1	50.000	400	0.002	50.000	320	0.002	50.000	320	0.004
	1.5	40.000	300	0.001	40.000	240	0.001	40.000	240	0.002
	2	40.000	200	0.001	40.000	160	0.001	40.000	160	0.002
	2.5	40.000	100	0.001	40.000	80	0.001	40.000	80	0.002
0.15	1	50.000	600	0.007	50.000	480	0.007	50.000	480	0.014
	1.5	50.000	600	0.005	50.000	480	0.005	50.000	480	0.01
	2	50.000	600	0.003	50.000	480	0.003	50.000	480	0.006
	2.5	40.000	400	0.003	40.000	320	0.003	40.000	320	0.006
	3	40.000	300	0.002	40.000	240	0.002	40.000	240	0.004
0.2	3.5	30.000	250	0.002	30.000	200	0.002	30.000	200	0.004
	4	30.000	200	0.002	30.000	160	0.002	30.000	160	0.004
	1	50.000	1.800	0.015	50.000	1.400	0.015	50.000	1.400	0.03
	2	50.000	1.300	0.01	50.000	1.000	0.01	50.000	1.000	0.02
	3	50.000	900	0.005	50.000	700	0.005	50.000	700	0.01
0.25	4	40.000	600	0.004	40.000	480	0.004	40.000	480	0.008
	5	40.000	400	0.003	40.000	320	0.003	40.000	320	0.006
	6	30.000	200	0.002	30.000	160	0.002	30.000	160	0.004
	2	50.000	2.500	0.02	50.000	2.000	0.02	50.000	2.000	0.04
	3	50.000	1.500	0.015	50.000	1.200	0.015	50.000	1.200	0.03
0.3	4	45.000	1.200	0.01	45.000	950	0.01	45.000	950	0.02
	5	45.000	900	0.007	45.000	700	0.007	45.000	700	0.014
	6	36.000	600	0.006	36.000	480	0.006	36.000	480	0.012
	7	32.000	400	0.005	32.000	320	0.005	32.000	320	0.01
	8	32.000	300	0.003	32.000	240	0.003	32.000	240	0.006
0.4	10	26.000	200	0.002	26.000	160	0.002	26.000	160	0.004
	2	50.000	3.500	0.03	50.000	2.800	0.03	50.000	2.800	0.06
	3	50.000	3.500	0.03	50.000	2.800	0.03	50.000	2.800	0.06
	4	44.000	2.500	0.02	44.000	2.000	0.02	44.000	2.000	0.04
	5	37.000	1.200	0.01	37.000	950	0.01	37.000	950	0.02
0.4	6	37.000	1.000	0.008	37.000	800	0.008	37.000	800	0.016
	7	35.000	750	0.008	35.000	600	0.008	35.000	600	0.016
	8	35.000	600	0.006	35.000	480	0.006	35.000	480	0.012
	9	30.000	500	0.004	30.000	400	0.004	30.000	400	0.008
	10	30.000	500	0.003	30.000	400	0.003	30.000	400	0.006
0.4	11	22.000	300	0.002	22.000	240	0.002	22.000	240	0.004
	12	22.000	200	0.002	22.000	160	0.002	22.000	160	0.004
	2	50.000	4.400	0.04	50.000	3.500	0.04	50.000	3.500	0.08
	3	50.000	4.000	0.04	50.000	3.200	0.04	50.000	3.200	0.08
	4	50.000	4.000	0.02	50.000	3.200	0.02	50.000	3.200	0.04
0.4	5	35.000	2.400	0.02	35.000	1.900	0.02	35.000	1.900	0.04
	6	35.000	2.400	0.02	35.000	1.900	0.02	35.000	1.900	0.04
	7	30.000	1.500	0.015	30.000	1.200	0.015	30.000	1.200	0.03
	8	30.000	1.500	0.01	30.000	1.200	0.01	30.000	1.200	0.02
	10	30.000	700	0.008	30.000	560	0.008	30.000	560	0.016
12	22.000	500	0.006	22.000	400	0.006	22.000	400	0.012	

Material		P			H			N		
		Carbon steel, Alloy steel, Alloy tool steel, Pre-hardened steel, Precipitation hardening stainless steel			Hardened steel (45 – 55 HRC)			Copper, Copper alloys		
RE (mm)	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)
0.5	3	40.000	4.000	0.05	40.000	3.200	0.05	40.000	3.200	0.1
	4	40.000	4.000	0.05	40.000	3.200	0.05	40.000	3.200	0.1
	6	35.000	3.000	0.03	35.000	2.400	0.03	35.000	2.400	0.06
	8	30.000	2.000	0.02	30.000	1.600	0.02	30.000	1.600	0.04
	10	20.000	1.000	0.01	20.000	800	0.01	20.000	800	0.02
	12	20.000	1.000	0.01	20.000	800	0.01	20.000	800	0.02
	14	18.000	600	0.008	18.000	480	0.008	18.000	480	0.016
	16	18.000	500	0.008	18.000	400	0.008	18.000	400	0.016
	18	13.000	300	0.005	13.000	240	0.005	13.000	240	0.01
	20	13.000	250	0.005	13.000	200	0.005	13.000	200	0.01
0.6	6	40.000	4.400	0.04	40.000	3.500	0.04	40.000	3.500	0.08
	8	40.000	4.000	0.04	40.000	3.200	0.04	40.000	3.200	0.08
	10	27.000	1.900	0.02	27.000	1.500	0.02	27.000	1.500	0.04
	12	16.000	1.400	0.02	16.000	1.100	0.02	16.000	1.100	0.04
	18	15.000	700	0.008	15.000	560	0.008	15.000	560	0.016
	24	11.000	300	0.006	11.000	240	0.006	11.000	240	0.012
0.7	8	40.000	4.000	0.05	40.000	3.200	0.05	40.000	2.560	0.1
	12	26.000	2.000	0.04	26.000	1.600	0.04	26.000	1.280	0.08
	16	17.000	1.400	0.03	17.000	1.120	0.03	17.000	896	0.06
0.75	6	40.000	6.000	0.07	36.000	4.300	0.07	36.000	4.300	0.14
	8	40.000	6.000	0.07	36.000	4.300	0.07	36.000	4.300	0.14
	10	40.000	5.000	0.06	36.000	3.600	0.06	36.000	3.600	0.12
	12	32.000	3.400	0.04	29.000	2.400	0.04	29.000	2.400	0.08
	16	15.000	1.400	0.03	15.000	1.100	0.03	15.000	1.100	0.06
	20	12.000	900	0.02	12.000	720	0.02	12.000	720	0.04
0.8	30	9.000	400	0.01	9.000	320	0.01	9.000	320	0.02
	8	40.000	6.000	0.08	32.000	3.800	0.08	32.000	3.800	0.16
	12	36.000	4.500	0.06	29.000	2.800	0.06	29.000	2.800	0.12
	16	14.000	1.400	0.04	14.000	1.100	0.04	14.000	1.100	0.08
	20	12.000	1.000	0.03	12.000	800	0.03	12.000	800	0.06
0.9	8	40.000	6.600	0.09	32.000	4.200	0.09	32.000	4.200	0.18
	12	40.000	5.000	0.07	32.000	3.200	0.07	32.000	3.200	0.14
	16	28.000	2.800	0.04	22.000	1.800	0.04	22.000	1.800	0.08
	20	10.000	800	0.03	10.000	640	0.03	10.000	640	0.06
1	4	40.000	8.000	0.1	32.000	5.000	0.1	32.000	5.000	0.2
	6	40.000	8.000	0.1	32.000	5.000	0.1	32.000	5.000	0.2
	8	40.000	6.000	0.1	32.000	3.800	0.1	32.000	3.800	0.2
	10	40.000	5.000	0.08	32.000	3.200	0.08	32.000	3.200	0.16
	12	40.000	5.000	0.08	32.000	3.200	0.08	32.000	3.200	0.16
	16	32.000	3.500	0.05	26.000	2.200	0.05	26.000	2.200	0.1
	20	10.000	1.000	0.04	10.000	800	0.04	10.000	800	0.08
	25	10.000	1.000	0.04	10.000	800	0.04	10.000	800	0.08
	30	10.000	800	0.02	10.000	640	0.02	10.000	640	0.04
	35	10.000	600	0.02	10.000	480	0.02	10.000	480	0.04
40	8.000	400	0.01	8.000	320	0.01	8.000	320	0.02	

MP2XLB

RECOMMENDED CUTTING CONDITIONS

Material		P			H			N		
		Carbon steel, Alloy steel, Alloy tool steel, Prehardened steel, Precipitation hardening stainless steel			Hardened steel (45-55HRC)			Copper, Copper alloys		
RE (mm)	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)
1.25	10	36.000	6.000	0.12	29.000	3.800	0.12	29.000	3.800	0.24
	15	32.000	4.500	0.1	26.000	2.900	0.1	26.000	2.900	0.2
	20	26.000	3.200	0.07	21.000	2.000	0.07	21.000	2.000	0.14
	25	12.000	1.400	0.06	8.000	720	0.06	8.000	720	0.12
	30	8.000	900	0.04	8.000	700	0.04	8.000	700	0.08
	35	8.000	800	0.02	8.000	640	0.02	8.000	510	0.04
1.5	6	32.000	7.000	0.15	26.000	4.500	0.15	22.000	3.800	0.3
	10	32.000	7.000	0.15	26.000	4.500	0.15	22.000	3.800	0.3
	16	32.000	5.000	0.1	26.000	3.200	0.1	22.000	2.700	0.2
	20	27.000	3.800	0.1	22.000	2.400	0.1	22.000	2.400	0.2
	25	21.000	2.700	0.08	17.000	1.700	0.08	17.000	1.700	0.16
	30	10.000	700	0.08	6.000	560	0.08	6.000	560	0.16
1.75	35	6.000	700	0.06	6.000	560	0.06	6.000	560	0.12
	40	6.000	600	0.04	6.000	480	0.04	6.000	480	0.08
	15	27.500	4.400	0.13	22.000	2.800	0.13	18.000	2.300	0.26
	25	23.000	3.600	0.1	18.000	2.200	0.1	18.000	2.200	0.2
	35	10.000	1.400	0.08	10.000	1.100	0.08	10.000	1.100	0.16
2	45	7.500	900	0.04	7.500	720	0.04	7.500	720	0.08
	10	24.000	6.000	0.2	19.000	3.800	0.2	16.000	3.200	0.4
	20	24.000	3.800	0.15	19.000	2.400	0.15	16.000	2.000	0.3
	30	20.000	3.000	0.1	16.000	1.900	0.1	16.000	1.900	0.2
	40	12.000	1.700	0.1	12.000	1.400	0.1	12.000	1.400	0.2
2.5	50	8.000	1.000	0.05	8.000	800	0.05	8.000	800	0.1
	20	22.000	6.000	0.2	18.000	3.800	0.2	13.000	2.800	0.4
	25	22.000	4.400	0.2	18.000	2.800	0.2	13.000	2.000	0.4
	30	22.000	3.800	0.15	18.000	2.400	0.15	13.000	1.700	0.3
	40	22.000	3.600	0.1	18.000	2.300	0.1	13.000	1.600	0.2
3	20	20.000	6.000	0.2	16.000	3.800	0.2	11.000	2.600	0.4
	30	20.000	6.000	0.2	16.000	3.800	0.2	11.000	2.600	0.4
	40	20.000	4.500	0.15	16.000	2.800	0.15	11.000	2.000	0.3
	50	20.000	3.000	0.15	16.000	1.900	0.15	11.000	1.300	0.3

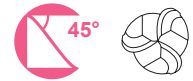


- When the inclination angle of machined surface is high, or when machining at high loads; such as in corners, reduce the revolution and feed rate.
- The use of oil mist is recommended when machining with small diameter.
- The revolution and feed rate can be increased at small depths of cut (ap).
- Cutting conditions may differ considerably due to the overhang, depth of cut and machine tool condition. Please use the table above as a reference starting point.
- For hardened steel over 55HRC, use VF2XLB.
- For cutting conditions for austenitic stainless steel and titanium alloy, use the high hardness steel (45-55HRC) table but reduce the spindle speed by 40% and the feed rate by 55%.

MEMO

A series of horizontal dashed lines for writing.

MP3XB

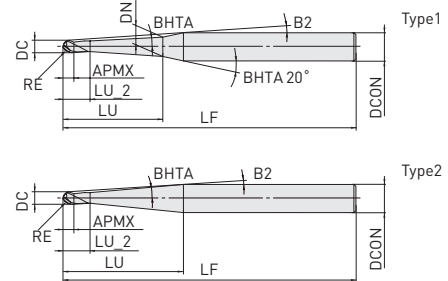
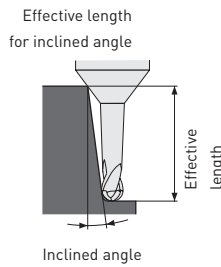


BALL NOSE, 3 FLUTE, TAPER NECK

P H N



R	RE<3	4<RE
	±0.005	±0.010
h5	DCON = 6	DCON = 8
	0 -0.005	0 -0.006
h6	DCON = 10	12<DCON
	0 -0.009	0 -0.011

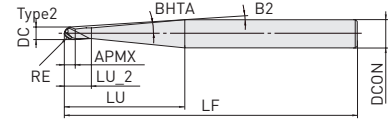
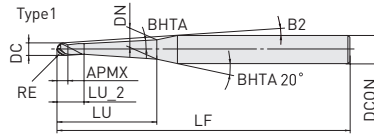


Ideal for rough milling of long overhang applications and semi-finishing of forging dies (40-50 HRC). Rigid, high helix, 3 flute design enables large depths of cut and high feed rates for increased machining efficiency.

Order Number	RE	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
														30°	1°	2°	3°
MP3XBR0050N008T05	0.5	1	0.5°	0.8	8	2.3	9.3°	1.04	60	6	3	★	1	8.5	8.8	9.3	9.8
MP3XBR0050N012T05	0.5	1	0.5°	0.8	12	2.3	7.5°	1.1	60	6	3	★	1	12.6	13	13.6	14.4
MP3XBR0050N016T05	0.5	1	0.5°	0.8	16	2.3	6.3°	1.18	60	6	3	★	1	16.6	17.1	18	18.9
MP3XBR0050N020T05	0.5	1	0.5°	0.8	20	2.3	5.4°	1.24	60	6	3	★	1	20.6	21.2	22.3	23.5
MP3XBR0050N025T05	0.5	1	0.5°	0.8	25	2.3	4.6°	1.34	70	6	3	★	1	25.7	26.3	27.7	29.3
MP3XBR0050N030T05	0.5	1	0.5°	0.8	30	2.3	4°	1.42	70	6	3	★	1	30.7	31.5	33.1	35
MP3XBR0050N050T05	0.5	1	0.5°	0.8	50	2.3	2.6°	1.78	90	6	3	★	1	50.8	52.1	54.8	*
MP3XBR0050N010T10	0.5	1	1°	0.8	10	2.3	8.4°	1.2	60	6	3	★	1	-	10.6	11.2	11.8
MP3XBR0050N016T10	0.5	1	1°	0.8	16	2.3	6.4°	1.42	60	6	3	★	1	-	16.7	17.6	18.5
MP3XBR0050N020T10	0.5	1	1°	0.8	20	2.3	5.5°	1.56	60	6	3	★	1	-	20.7	21.8	23
MP3XBR0050N025T10	0.5	1	1°	0.8	25	2.3	4.7°	1.74	70	6	3	★	1	-	25.7	27.1	28.6
MP3XBR0050N030T10	0.5	1	1°	0.8	30	2.3	4.1°	1.9	70	6	3	★	1	-	30.8	32.4	34.2
MP3XBR0050N035T10	0.5	1	1°	0.8	35	2.3	3.6°	2.08	90	6	3	★	1	-	35.8	37.7	39.8
MP3XBR0050N050T10	0.5	1	1°	0.8	50	2.3	2.7°	2.6	90	6	3	★	1	-	50.9	53.6	*
MP3XBR0050N010T15	0.5	1	1.5°	0.8	10	2.3	8.5°	1.34	60	6	3	★	1	-	-	11	11.6
MP3XBR0050N016T15	0.5	1	1.5°	0.8	16	2.3	6.5°	1.66	60	6	3	★	1	-	-	17.2	18.1
MP3XBR0050N020T15	0.5	1	1.5°	0.8	20	2.3	5.6°	1.86	60	6	3	★	1	-	-	21.3	22.5
MP3XBR0050N023T15	0.5	1	1.5°	0.8	23	2.3	5°	2.02	70	6	3	★	1	-	-	24.4	25.7
MP3XBR0050N025T15	0.5	1	1.5°	0.8	25	2.3	4.7°	2.12	70	6	3	★	1	-	-	26.5	27.9
MP3XBR0050N010T30	0.5	1	3°	0.8	10	2.3	8.8°	1.74	60	6	3	★	1	-	-	-	10.8
MP3XBR0050N020T30	0.5	1	3°	0.8	20	2.3	5.9°	2.8	60	6	3	★	1	-	-	-	20.9
MP3XBR0050N030T30	0.5	1	3°	0.8	30	2.3	4.4°	3.84	70	6	3	★	1	-	-	-	31
MP3XBR0050N042T30	0.5	1	3°	0.8	42	2.3	3.4°	5.1	90	6	3	★	1	-	-	-	43
MP3XBR0050N025T50	0.5	1	5°	0.8	25	2.3	5.4°	4.92	60	6	3	★	1	-	-	-	-
MP3XBR0075N010T05	0.75	1.5	0.5°	1.2	10	2.7	7.8°	1.56	60	6	3	★	1	10.6	10.9	11.4	12
MP3XBR0075N016T05	0.75	1.5	0.5°	1.2	16	2.7	5.8°	1.68	60	6	3	★	1	16.6	17.1	17.9	18.9

Order Number	RE	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
														30°	1°	2°	3°
MP3XBR0075N020T05	0.75	1.5	0.5°	1.2	20	2.7	5°	1.74	60	6	3	★	1	20.6	21.2	22.3	23.5
MP3XBR0075N030T05	0.75	1.5	0.5°	1.2	30	2.7	3.7°	1.92	80	6	3	★	1	30.7	31.5	33.1	35
MP3XBR0075N010T10	0.75	1.5	1°	1.2	10	2.7	7.9°	1.7	60	6	3	★	1	-	10.6	11.2	11.8
MP3XBR0075N016T10	0.75	1.5	1°	1.2	16	2.7	5.9°	1.9	60	6	3	★	1	-	16.7	17.6	18.5
MP3XBR0075N020T10	0.75	1.5	1°	1.2	20	2.7	5.1°	2.04	60	6	3	★	1	-	20.7	21.8	23
MP3XBR0075N030T10	0.75	1.5	1°	1.2	30	2.7	3.7°	2.4	80	6	3	★	1	-	30.8	32.4	34.2
MP3XBR0075N010T15	0.75	1.5	1.5°	1.2	10	2.7	8°	1.82	60	6	3	★	1	-	-	11	11.6
MP3XBR0075N016T15	0.75	1.5	1.5°	1.2	16	2.7	6°	2.14	60	6	3	★	1	-	-	17.2	18.1
MP3XBR0075N020T15	0.75	1.5	1.5°	1.2	20	2.7	5.1°	2.34	60	6	3	★	1	-	-	21.3	22.5
MP3XBR0075N025T15	0.75	1.5	1.5°	1.2	25	2.7	4.4°	2.6	80	6	3	★	1	-	-	26.5	27.9
MP3XBR0075N030T15	0.75	1.5	1.5°	1.2	30	2.7	3.8°	2.86	80	6	3	★	1	-	-	31.6	33.4
MP3XBR0075N046T30	0.75	1.5	3°	1.2	46	2.7	2.9°	-	80	6	3	★	2	-	-	-	*
MP3XBR0100N016T05	1	2	0.5°	1.6	16	3.6	5.2°	2.12	60	6	3	★	1	17	17.6	18.6	19.5
MP3XBR0100N020T05	1	2	0.5°	1.6	20	3.6	4.5°	2.18	60	6	3	★	1	21.1	21.8	22.9	24.1
MP3XBR0100N030T05	1	2	0.5°	1.6	30	3.6	3.3°	2.36	70	6	3	★	1	31.1	32.1	33.7	35.6
MP3XBR0100N035T05	1	2	0.5°	1.6	35	3.6	2.9°	2.44	80	6	3	★	1	36.2	37.2	39.2	*
MP3XBR0100N040T05	1	2	0.5°	1.6	40	3.6	2.6°	2.54	80	6	3	★	1	41.2	42.4	44.6	*
MP3XBR0100N016T10	1	2	1°	1.6	16	3.6	5.3°	2.34	60	6	3	★	1	-	17.1	18.2	19.1
MP3XBR0100N020T10	1	2	1°	1.6	20	3.6	4.5°	2.48	60	6	3	★	1	-	21.2	22.4	23.6
MP3XBR0100N025T10	1	2	1°	1.6	25	3.6	3.8°	2.64	70	6	3	★	1	-	26.2	27.7	29.2
MP3XBR0100N030T10	1	2	1°	1.6	30	3.6	3.3°	2.82	70	6	3	★	1	-	31.3	33	34.8
MP3XBR0100N035T10	1	2	1°	1.6	35	3.6	3°	3	80	6	3	★	1	-	36.3	38.3	40.4
MP3XBR0100N040T10	1	2	1°	1.6	40	3.6	2.7°	3.18	80	6	3	★	1	-	41.3	43.6	*
MP3XBR0100N050T10	1	2	1°	1.6	50	3.6	2.2°	3.52	110	6	3	★	1	-	51.4	54.2	*
MP3XBR0100N070T10	1	2	1°	1.6	70	3.6	1.7°	4.22	110	6	3	★	1	-	71.5	*	*
MP3XBR0100N016T15	1	2	1.5°	1.6	16	3.6	5.4°	2.54	60	6	3	★	1	-	-	22.8	18.7
MP3XBR0100N020T15	1	2	1.5°	1.6	20	3.6	4.6°	2.76	60	6	3	★	1	-	-	21.9	23.1
MP3XBR0100N025T15	1	2	1.5°	1.6	25	3.6	3.9°	3.02	70	6	3	★	1	-	-	27.1	28.5
MP3XBR0100N030T15	1	2	1.5°	1.6	30	3.6	3.4°	3.28	70	6	3	★	1	-	-	32.2	34
MP3XBR0100N035T15	1	2	1.5°	1.6	35	3.6	3°	3.54	80	6	3	★	1	-	-	37.4	39.4
MP3XBR0100N040T15	1	2	1.5°	1.6	40	3.6	2.7°	3.8	80	6	3	★	1	-	-	42.6	*
MP3XBR0100N020T30	1	2	3°	1.6	20	3.6	4.8°	3.62	60	6	3	★	1	-	-	-	20.5
MP3XBR0100N030T30	1	2	3°	1.6	30	3.6	3.6°	4.66	70	6	3	★	1	-	-	-	30.6
MP3XBR0100N042T30	1	2	3°	1.6	42	3.6	2.8°	-	80	6	3	★	2	-	-	-	*
MP3XBR0100N027T50	1	2	5°	1.6	27	3.6	4.3°	-	60	6	3	★	2	-	-	-	-
MP3XBR0150N010T05	1.5	3	0.5°	2.4	10	5.4	5.7°	2.98	60	6	3	★	1	11	11.4	12	12.6
MP3XBR0150N020T05	1.5	3	0.5°	2.4	20	5.4	3.5°	3.16	60	6	3	★	1	21.1	21.8	22.9	24.1
MP3XBR0150N030T05	1.5	3	0.5°	2.4	30	5.4	2.6°	3.32	70	6	3	★	1	31.2	32.1	33.7	*
MP3XBR0150N040T05	1.5	3	0.5°	2.4	40	5.4	2°	3.5	80	6	3	★	1	41.3	42.4	44.6	*
MP3XBR0150N050T05	1.5	3	0.5°	2.4	50	5.4	1.7°	3.68	90	6	3	★	1	51.3	52.7	*	*
MP3XBR0150N020T10	1.5	3	1°	2.4	20	5.4	3.6°	3.4	60	6	3	★	1	-	21.3	22.4	23.6
MP3XBR0150N030T10	1.5	3	1°	2.4	30	5.4	2.6°	3.76	70	6	3	★	1	-	31.3	33	*
MP3XBR0150N035T10	1.5	3	1°	2.4	35	5.4	2.3°	3.94	80	6	3	★	1	-	36.4	38.3	*
MP3XBR0150N040T10	1.5	3	1°	2.4	40	5.4	2.1°	4.1	80	6	3	★	1	-	41.4	43.6	*
MP3XBR0150N050T10	1.5	3	1°	2.4	50	5.4	1.7°	4.46	90	6	3	★	1	-	51.5	*	*
MP3XBR0150N060T10	1.5	3	1°	2.4	60	5.4	1.5°	4.8	110	6	3	★	1	-	61.5	*	*
MP3XBR0150N070T10	1.5	3	1°	2.4	70	5.4	1.3°	5.16	110	6	3	★	1	-	71.6	*	*
MP3XBR0150N020T15	1.5	3	1.5°	2.4	20	5.4	3.7°	3.66	60	6	3	★	1	-	-	22	23.2
MP3XBR0150N030T15	1.5	3	1.5°	2.4	30	5.4	2.7°	4.18	70	6	3	★	1	-	-	32.3	*
MP3XBR0150N035T15	1.5	3	1.5°	2.4	35	5.4	2.4°	4.46	70	6	3	★	1	-	-	37.5	*
MP3XBR0150N040T15	1.5	3	1.5°	2.4	40	5.4	2.1°	4.72	80	6	3	★	1	-	-	42.6	*
MP3XBR0150N045T15	1.5	3	1.5°	2.4	45	5.4	1.9°	4.98	80	6	3	★	1	-	-	*	*
MP3XBR0150N052T15	1.5	3	1.5°	2.4	52	5.4	1.7°	5.34	90	6	3	★	1	-	-	*	*
MP3XBR0150N064T15	1.5	3	1.5°	2.4	64	5.4	1.4°	-	110	6	3	★	2	-	-	*	*

MP3XB



Order Number	RE	DC	BHTA	APMX	LU	LU_2	B2	DN	LF	DCON	Flutes	Stock	Type	Effective length for inclined angle			
														30°	1°	2°	3°
MP3XBR0150N025T30	1.5	3	3°	2.4	25	5.4	3.3°	4.96	60	6	3	★	1	-	-	-	26.8
MP3XBR0150N034T30	1.5	3	3°	2.4	34	5.4	2.6°	-	70	6	3	★	2	-	-	-	*
MP3XBR0150N040T30	1.5	3	3°	2.4	40	5.4	3.4°	6.52	90	8	3	★	1	-	-	-	41.9
MP3XBR0150N054T30	1.5	3	3°	2.4	54	5.4	2.7°	-	90	8	3	★	2	-	-	-	*
MP3XBR0200N030T05	2	4	0.5°	3.2	30	6.2	1.8°	4.32	70	6	3	★	1	31.2	32.1	*	*
MP3XBR0200N040T05	2	4	0.5°	3.2	40	6.2	1.4°	4.48	80	6	3	★	1	41.3	42.4	*	*
MP3XBR0200N060T05	2	4	0.5°	3.2	60	6.2	1°	4.84	100	6	3	★	1	61.4	63	*	*
MP3XBR0200N020T10	2	4	1°	3.2	20	6.2	2.6°	4.38	70	6	3	★	1	-	21.3	22.4	*
MP3XBR0200N030T10	2	4	1°	3.2	30	6.2	1.8°	4.74	70	6	3	★	1	-	31.4	*	*
MP3XBR0200N035T10	2	4	1°	3.2	35	6.2	1.6°	4.9	70	6	3	★	1	-	36.4	*	*
MP3XBR0200N040T10	2	4	1°	3.2	40	6.2	1.5°	5.08	80	6	3	★	1	-	41.4	*	*
MP3XBR0200N045T10	2	4	1°	3.2	45	6.2	1.3°	5.26	80	6	3	★	1	-	46.5	*	*
MP3XBR0200N066T10	2	4	1°	3.2	66	6.2	1°	-	100	6	3	★	2	-	*	*	*
MP3XBR0200N050T15	2	4	1.5°	3.2	50	6.2	2.2°	6.2	90	8	3	★	1	-	-	53	*
MP3XBR0200N084T15	2	4	1.5°	3.2	84	6.2	1.5°	-	120	8	3	★	2	-	-	*	*
MP3XBR0200N030T30	2	4	3°	3.2	30	6.2	3.6°	6.4	90	8	3	★	1	-	-	-	31.9
MP3XBR0200N045T30	2	4	3°	3.2	45	6.2	2.6°	-	90	8	3	★	2	-	-	-	*
MP3XBR0250N038T10	2.5	5	1°	4	38	7	0.8°	-	80	6	3	★	2	-	*	*	*
MP3XBR0250N050T10	2.5	5	1°	4	50	7	1.7°	6.4	90	8	3	★	1	-	51.5	*	*
MP3XBR0250N065T10	2.5	5	1°	4	65	7	1.4°	6.92	110	8	3	★	1	-	66.6	*	*
MP3XBR0250N066T15	2.5	5	1.5°	4	66	7	1.4°	-	110	8	3	★	2	-	-	*	*
MP3XBR0250N036T30	2.5	5	3°	4	36	7	2.4°	-	90	8	3	★	2	-	-	-	*
MP3XBR0300N040T10	3	6	1°	9	40	12	1.4°	6.82	80	8	3	★	1	-	41.8	*	*
MP3XBR0300N050T10	3	6	1°	9	50	12	1.2°	7.18	90	8	3	★	1	-	51.8	*	*
MP3XBR0300N073T10	3	6	1°	9	73	12	0.9°	-	110	8	3	★	2	-	*	*	*
MP3XBR0300N090T10	3	6	1°	9	90	12	1.3°	8.58	140	10	3	★	1	-	92	*	*
MP3XBR0300N053T15	3	6	1.5°	9	53	12	1.2°	-	90	8	3	★	2	-	-	*	*
MP3XBR0300N032T30	3	6	3°	9	32	12	1.9°	-	80	8	3	★	2	-	-	-	*
MP3XBR0400N050T10	4	8	1°	12	50	15	1.2°	9.08	110	10	3	★	1	-	51.9	*	*
MP3XBR0400N065T10	4	8	1°	12	65	15	1°	9.6	130	10	3	★	1	-	67	*	*
MP3XBR0400N076T10	4	8	1°	12	76	15	0.8°	-	130	10	3	★	2	-	*	*	*
MP3XBR0400N090T10	4	8	1°	12	90	15	1.3°	10.46	150	12	3	★	1	-	92.1	*	*
MP3XBR0400N040T15	4	8	1.5°	12	40	15	1.5°	9.16	90	10	3	★	1	-	-	*	*
MP3XBR0400N056T15	4	8	1.5°	12	56	15	1.1°	-	110	10	3	★	2	-	-	*	*
MP3XBR0400N035T30	4	8	3°	12	35	15	1.7°	-	90	10	3	★	2	-	-	-	*
MP3XBR0500N060T10	5	10	1°	15	60	25	1°	10.92	120	12	3	★	1	-	62.6	*	*
MP3XBR0500N070T10	5	10	1°	15	70	25	0.9°	11.28	120	12	3	★	1	-	*	*	*
MP3XBR0500N100T10	5	10	1°	15	100	25	1.7°	12.32	160	16	3	★	1	-	102.8	*	*
MP3XBR0500N050T15	5	10	1.5°	15	50	25	1.2°	11	100	12	3	★	1	-	-	*	*
MP3XBR0500N068T15	5	10	1.5°	15	68	25	0.9°	-	120	12	3	★	2	-	-	*	*
MP3XBR0500N046T30	5	10	3°	15	46	25	1.3°	-	100	12	3	★	2	-	-	-	*
MP3XBR0600N070T10	6	12	1°	18	70	28	1.6°	13.16	130	16	3	★	1	-	72.7	*	*
MP3XBR0600N100T10	6	12	1°	18	100	28	1.2°	14.22	160	16	3	★	1	-	102.9	*	*
MP3XBR0600N080T15	6	12	1.5°	18	80	28	1.5°	14.42	130	16	3	★	1	-	-	*	*
MP3XBR0600N069T30	6	12	3°	18	69	28	1.8°	-	130	16	3	★	2	-	-	-	*

* No interference

RECOMMENDED CUTTING CONDITIONS

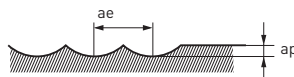
			P				H				N			
Material			Carbon steel, Cast iron (180 – 280 HB), Tool steel (<350 HB), Pre-hardened steel (35 – 45 HRC)				Hardened steel (45 – 55 HRC)				Copper, Copper alloys			
RE (mm)	BHTA	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	f (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	f (mm/min)	ap (mm)	ae (mm)
R 0.5	0.5°	8	40.000	1.200	0.07	0.22	39.000	1.200	0.06	0.19	39.000	1.200	0.12	0.38
		12	40.000	1.200	0.06	0.19	39.000	1.200	0.05	0.16	39.000	1.200	0.1	0.32
		16	35.000	1.100	0.06	0.18	33.000	900	0.04	0.14	33.000	900	0.09	0.29
		20	32.000	960	0.05	0.14	29.000	800	0.04	0.11	29.000	800	0.07	0.22
		25	28.000	830	0.03	0.11	24.000	600	0.02	0.07	24.000	600	0.05	0.15
		30	24.000	720	0.03	0.1	21.000	450	0.02	0.06	21.000	450	0.04	0.13
	50	10.000	300	0.003	0.015	11.000	150	0.003	0.015	11.000	150	0.006	0.019	
	1°	10	40.000	1.200	0.07	0.22	39.000	1.300	0.06	0.19	39.000	1.300	0.12	0.38
		16	35.000	1.100	0.06	0.18	33.000	1.000	0.05	0.14	33.000	1.000	0.09	0.29
		20	32.000	960	0.05	0.14	29.000	900	0.04	0.11	29.000	900	0.07	0.22
		25	28.000	830	0.04	0.11	24.000	700	0.03	0.08	24.000	700	0.05	0.16
		30	24.000	720	0.03	0.1	21.000	550	0.02	0.06	21.000	550	0.04	0.13
		35	17.000	500	0.03	0.08	13.000	350	0.02	0.05	13.000	350	0.03	0.1
	50	10.000	300	0.003	0.015	11.000	250	0.003	0.015	11.000	250	0.006	0.019	
	1.5°	10	40.000	1.200	0.07	0.22	39.000	1.400	0.06	0.19	39.000	1.400	0.12	0.38
		16	35.000	1.100	0.06	0.18	33.000	1.100	0.05	0.14	33.000	1.100	0.09	0.29
		20	32.000	960	0.05	0.14	29.000	1000	0.04	0.11	29.000	1.000	0.07	0.22
		23	27.000	830	0.04	0.11	24.000	800	0.03	0.08	24.000	800	0.05	0.16
		25	27.000	830	0.04	0.12	24.000	800	0.03	0.09	24.000	800	0.05	0.17
		10	40.000	1.200	0.07	0.22	39.000	1.500	0.06	0.19	39.000	1.500	0.12	0.38
	3°	20	32.000	960	0.05	0.14	29.000	1.100	0.04	0.11	29.000	1.100	0.07	0.22
		30	22.000	660	0.03	0.1	19.000	700	0.02	0.06	19.000	700	0.04	0.13
		42	13.000	390	0.005	0.02	11.000	390	0.005	0.02	11.000	390	0.01	0.03
	5°	25	32.000	960	0.04	0.11	29.000	1.000	0.03	0.08	29.000	1.000	0.05	0.16
R 0.75	0.5°	10	30.000	1.800	0.11	0.34	28.000	1.500	0.1	0.3	28.000	1.500	0.19	0.61
		16	27.000	1.600	0.09	0.27	24.000	1.100	0.08	0.24	24.000	1.100	0.15	0.48
		20	26.000	1.500	0.08	0.24	24.000	1.100	0.07	0.21	24.000	1.100	0.13	0.42
	30	25.000	1.400	0.07	0.21	22.000	1.000	0.06	0.18	22.000	1.000	0.11	0.35	
	1°	10	30.000	1.900	0.11	0.34	28.000	1.600	0.1	0.3	28.000	1.600	0.19	0.61
		16	26.000	1.600	0.09	0.27	24.000	1.200	0.08	0.24	24.000	1.200	0.15	0.48
		20	27.000	1.700	0.08	0.24	24.000	1.200	0.07	0.21	24.000	1.200	0.13	0.42
	30	25.000	1.500	0.07	0.21	22.000	1.100	0.06	0.18	22.000	1.100	0.11	0.35	
	1.5°	10	30.000	1.900	0.11	0.34	28.000	1.700	0.1	0.3	28.000	1.700	0.19	0.61
		16	27.500	1.700	0.09	0.27	24.000	1.300	0.08	0.24	24.000	1.300	0.15	0.48
		20	26.500	1.700	0.08	0.24	24.000	1.300	0.07	0.21	24.000	1.300	0.13	0.42
		25	26.000	1.600	0.07	0.22	23.000	1.200	0.06	0.19	23.000	1.200	0.12	0.38
30		25.000	1.500	0.07	0.21	22.000	1.100	0.06	0.18	22.000	1.100	0.11	0.35	
3°		46	15.000	450	0.05	0.16	14.000	800	0.04	0.13	14.000	800	0.08	0.26

MP3XB

RECOMMENDED CUTTING CONDITIONS

Material			P				H				N				
			Carbon steel, Cast iron (180 – 280HB), Tool steel (<350HB), Pre-hardened steel (35 – 45HRC)				Hardened steel (45 – 55 HRC)				Copper, Copper alloys				
RE (mm)	BHTA	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	f (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	f (mm/min)	ap (mm)	ae (mm)	
R 1.0	0.5°	16	25.000	1.500	0.14	0.45	22.000	1.600	0.13	0.42	22.000	1.600	0.26	0.83	
		20	23.000	1.400	0.1	0.3	20.000	1.400	0.09	0.27	20.000	1.400	0.17	0.54	
		30	20.000	1.200	0.05	0.17	18.000	1.100	0.06	0.18	18.000	1.100	0.13	0.42	
		35	19.000	1.100	0.05	0.15	17.000	1.000	0.05	0.16	17.000	1.000	0.12	0.38	
		40	19.000	1.100	0.04	0.14	16.000	900	0.05	0.14	16.000	900	0.11	0.35	
		16	25.000	2.300	0.14	0.45	22.000	1.700	0.13	0.42	22.000	1.700	0.26	0.83	
	1°	20	23.000	2.100	0.1	0.3	20.000	1.500	0.09	0.27	20.000	1.500	0.17	0.54	
		25	23.000	1.400	0.06	0.19	20.000	1.300	0.07	0.21	20.000	1.300	0.16	0.5	
		30	20.000	1.200	0.05	0.17	18.000	1.200	0.06	0.18	18.000	1.200	0.13	0.42	
		35	19.000	1.100	0.05	0.15	17.000	1.100	0.05	0.15	17.000	1.100	0.12	0.37	
		40	19.000	1.100	0.04	0.14	16.000	1.000	0.05	0.14	16.000	1.000	0.11	0.35	
		50	17.000	900	0.03	0.09	15.000	900	0.03	0.08	15.000	900	0.06	0.19	
	1.5°	70	13.000	700	0.02	0.06	11.000	650	0.02	0.05	11.000	650	0.04	0.12	
		16	25.000	2.300	0.14	0.45	22.000	1.800	0.13	0.42	22.000	1.800	0.26	0.83	
		20	23.000	2.100	0.1	0.3	20.000	1.600	0.09	0.27	20.000	1.600	0.17	0.54	
		25	23.000	1.600	0.06	0.19	20.000	1.400	0.07	0.21	20.000	1.400	0.16	0.5	
		30	20.000	1.200	0.05	0.17	18.000	1.300	0.06	0.18	18.000	1.300	0.13	0.42	
		35	19.000	1.100	0.05	0.15	16.000	1.100	0.05	0.16	17.000	1.100	0.12	0.38	
	3°	40	19.000	1.100	0.04	0.14	16.000	1.000	0.05	0.14	16.000	1.000	0.11	0.35	
		20	23.000	2.100	0.1	0.3	20.000	1.700	0.09	0.27	20.000	1.700	0.17	0.54	
		30	18.000	1.600	0.08	0.26	16.000	1.300	0.07	0.22	16.500	1.300	0.14	0.45	
		42	16.000	1.400	0.07	0.21	13.000	1.000	0.06	0.18	13.000	1.000	0.11	0.35	
		5°	27	18.000	2.200	0.09	0.29	17.000	1.900	0.08	0.26	17.000	1.900	0.16	0.51
		10	20.000	2.400	0.22	0.7	17.000	1.900	0.21	0.67	17.000	1.900	0.42	1.34	
0.5°	20	17.000	2.000	0.2	0.64	15.000	1.600	0.19	0.61	15.000	1.600	0.38	1.22		
	30	16.000	1.700	0.14	0.45	13.000	1.400	0.13	0.42	13.000	1.400	0.26	0.83		
	40	16.000	1.400	0.08	0.24	12.000	1.200	0.09	0.27	12.000	1.200	0.2	0.65		
	50	13.000	1.100	0.06	0.2	11.000	1.100	0.07	0.22	11.000	1.100	0.17	0.54		
	20	17.000	2.000	0.2	0.64	15.000	1.800	0.19	0.61	15.000	1.800	0.38	1.22		
	30	17.000	1.900	0.14	0.45	13.000	1.500	0.13	0.42	13.000	1.500	0.26	0.83		
1°	35	16.000	1.700	0.08	0.26	13.000	1.500	0.09	0.29	13.000	1.500	0.22	0.69		
	40	16.000	1.500	0.08	0.24	13.000	1.300	0.09	0.27	13.000	1.300	0.2	0.65		
	50	13.000	1.200	0.06	0.2	11.000	1.100	0.07	0.22	11.000	1.100	0.17	0.54		
	60	13.000	1.100	0.06	0.19	11.000	1.000	0.07	0.21	11.000	1.000	0.16	0.5		
	70	10.000	800	0.05	0.17	9.000	700	0.06	0.18	9.000	700	0.13	0.42		
	20	17.000	2.000	0.2	0.64	15.000	1.900	0.19	0.61	15.000	1.900	0.38	1.22		
1.5°	30	16.000	1.800	0.14	0.45	13.000	1.600	0.13	0.42	13.000	1.600	0.26	0.83		
	35	15.000	1.700	0.08	0.26	12.000	1.400	0.09	0.29	12.000	1.400	0.22	0.69		
	40	15.000	1.600	0.08	0.24	12.000	1.300	0.09	0.27	12.000	1.300	0.2	0.65		
	45	13.000	1.400	0.07	0.22	11.000	1.300	0.08	0.24	11.000	1.300	0.18	0.58		
	52	13.000	1.300	0.06	0.2	11.000	1.100	0.07	0.22	11.000	1.100	0.17	0.54		
	64	10.000	900	0.06	0.18	9.000	900	0.06	0.19	9.000	900	0.14	0.46		
3°	25	16.000	2.400	0.16	0.51	13.000	1.900	0.15	0.48	13.000	1.900	0.3	0.96		
	34	14.000	2.100	0.13	0.4	11.000	1.600	0.12	0.37	11.000	1.600	0.23	0.74		
	40	14.000	1.700	0.12	0.37	11.000	1.400	0.11	0.34	11.000	1.400	0.21	0.67		
	54	12.000	1.400	0.1	0.3	10.000	1.200	0.09	0.27	10.000	1.200	0.17	0.54		

			P				H				N			
Material			Carbon steel, Cast iron (180 – 280 HB), Tool steel (<350 HB), Pre-hardened steel (35 – 45 HRC)				Hardened steel (45 – 55 HRC)				Copper, Copper alloys			
RE (mm)	BHTA	LU (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)	n (min ⁻¹)	Vf (mm/min)	ap (mm)	ae (mm)
R 2.0	0.5°	30	14.000	2.100	0.23	0.74	11.000	1.800	0.22	0.7	11.000	1.800	0.44	1.41
		40	12.000	1.800	0.19	0.61	10.000	1.600	0.18	0.58	10.000	1.600	0.36	1.15
		60	9.000	1.300	0.06	0.19	8.500	1.400	0.07	0.21	8.500	1.400	0.16	0.5
	1°	20	15.000	2.700	0.31	0.99	12.000	2.200	0.3	0.96	12.000	2.200	0.72	2.3
		30	14.000	2.100	0.23	0.74	11.000	1.800	0.22	0.7	11.000	1.800	0.53	1.69
		35	12.000	1.800	0.21	0.67	10.000	1.700	0.2	0.64	10.000	1.700	0.48	1.54
		40	12.000	1.700	0.19	0.61	10.000	1.600	0.18	0.58	10.000	1.600	0.43	1.38
		45	12.000	1.500	0.13	0.42	10.000	1.600	0.12	0.38	10.000	1.600	0.29	0.92
		66	9.000	1.100	0.08	0.24	8.500	1.300	0.07	0.21	8.500	1.300	0.16	0.5
	1.5°	50	12.000	2.200	0.11	0.35	10.000	1.700	0.1	0.32	10.000	1.700	0.24	0.77
		84	8.000	1.400	0.04	0.13	6.500	900	0.03	0.1	6.500	900	0.07	0.23
	3°	30	14.000	2.500	0.23	0.74	11.000	2.000	0.22	0.7	11.000	2.000	0.53	1.69
45		11.000	1.900	0.16	0.51	9.000	1.600	0.15	0.48	9.000	1.600	0.36	1.15	
R 2.5	1°	38	10.000	2.200	0.28	0.9	8.500	2.000	0.27	0.86	8.500	2.000	0.65	2.07
		50	9.000	1.900	0.24	0.77	8.000	1.800	0.23	0.74	8.000	1.800	0.55	1.77
	65	8.000	1.600	0.16	0.51	6.500	1.400	0.15	0.48	6.500	1.400	0.36	1.15	
	1.5°	66	8.000	1.600	0.16	0.51	6.500	1.500	0.15	0.48	6.500	1.500	0.36	1.15
	3°	36	10.000	2.700	0.31	0.99	8.500	2.300	0.3	0.96	8.500	2.300	0.72	2.3
R 3.0	1°	40	8.000	2.200	0.28	0.9	7.500	2.100	0.27	0.86	7.500	2.100	0.65	2.07
		50	8.000	2.000	0.23	0.74	6.500	1.800	0.22	0.7	6.500	1.800	0.53	1.69
		73	7.000	1.700	0.15	0.48	6.500	1.700	0.14	0.45	6.500	1.700	0.34	1.07
	1.5°	90	6.500	1.500	0.09	0.29	6.000	1.300	0.08	0.26	6.000	1.300	0.19	0.61
		53	7.000	2.100	0.22	0.7	6.500	1.900	0.21	0.67	6.500	1.900	0.5	1.61
	3°	32	9.000	2.400	0.35	1.12	8.000	2.200	0.34	1.09	8.000	2.200	0.82	2.61
R 4.0	1°	50	6.000	2.200	0.41	1.31	5.500	2.000	0.4	1.28	5.500	2.000	0.96	3.07
		65	6.000	2.000	0.36	1.15	5.200	1.700	0.35	1.12	5.200	1.700	0.84	2.69
		76	6.000	1.800	0.29	0.93	5.000	1.500	0.28	0.9	5.000	1.500	0.67	2.15
	1.5°	90	5.000	1.400	0.19	0.61	4.700	1.200	0.18	0.58	4.700	1.200	0.43	1.38
		40	6.000	2.300	0.46	1.47	5.800	2.200	0.45	1.44	5.800	2.200	1.08	3.46
	3°	56	6.000	2.200	0.38	1.22	5.500	2.000	0.37	1.18	5.500	2.000	0.9	2.84
R 5.0	3°	35	7.000	2.700	0.49	1.57	6.000	2.400	0.48	1.54	6.000	2.400	1.15	3.69
		60	5.500	2.600	0.51	1.63	4.500	2.300	0.5	1.6	4.500	2.300	1.2	3.84
	1°	70	5.500	2.600	0.46	1.47	4.500	2.200	0.45	1.44	4.500	2.200	1.08	3.46
		100	5.000	2.400	0.36	1.15	4.000	1.900	0.35	1.12	4.000	1.900	0.84	2.69
	1.5°	50	5.000	2.400	0.56	1.79	4.600	2.400	0.55	1.76	4.600	2.400	1.32	4.22
R 6.0	3°	68	5.000	2.400	0.49	1.57	4.600	2.300	0.48	1.54	4.600	2.300	1.15	3.69
		46	5.000	2.400	0.69	2.21	4.800	2.500	0.68	2.18	4.800	2.500	1.63	5.22
	1°	70	4.500	2.600	0.81	2.59	4.000	2.100	0.8	2.56	4.000	2.100	1.92	6.14
		100	4.000	2.200	0.61	1.95	3.500	1.800	0.6	1.92	3.500	1.800	1.44	4.61
	1.5°	80	5.000	2.300	0.71	2.27	4.000	2.000	0.7	2.24	4.000	2.000	1.68	5.38
3°	69	5.000	2.700	0.81	2.59	4.000	2.200	0.8	2.56	4.000	2.200	1.92	6.14	



1. If the depth of cut is shallow, the revolution and feed rate can be increased.
2. If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

MEMO

A series of horizontal dashed lines for writing.

MEMO

A series of horizontal dashed lines for writing.

GERMANY

MMC HARTMETALL GMBH
Comeniusstr. 2 . 40670 Meerbusch
Phone +49 2159 91890 . Fax +49 2159 918966
Email admin@mmchg.de

U.K.

MMC HARDMETAL U.K. LTD.
Mitsubishi House . Galena Close . Tamworth . Staffs. B77 4AS
Phone +44 1827 312312 . Fax +44 1827 312314
Email sales@mitsubishicarbide.co.uk

SPAIN

MITSUBISHI MATERIALS ESPAÑA, S.A.
Calle Emperador 2 . 46136 Museros/Valencia
Phone +34 96 1441711 . Fax +34 96 1443786
Email mme@mmevalencia.com

FRANCE

MMC METAL FRANCE S.A.R.L.
6, Rue Jacques Monod . 91400 Orsay
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50
Email mmfsales@mmc-metal-france.fr

POLAND

MMC HARDMETAL POLAND SP. Z O.O
Al. Armii Krajowej 61 . 50-541 Wrocław
Phone +48 71335 1620 . Fax +48 71335 1621
Email sales@mitsubishicarbide.com.pl

RUSSIA

MMC HARDMETAL RUSSIA OOO LTD.
Electrozavodskaya Str. 24 . build. 3 107023 Moscow
Phone +7 495 7255885 . Fax +7 495 9813979
Email info@mmc-carbide.ru

ITALY

MMC ITALIA S.R.L.
Via Montefeltro 6/A . 20156 Milano
Phone +39 0293 77031 . Fax +39 0293 589093
Email info@mmc-italia.it

TURKEY

MMC HARTMETALL GMBH ALMANYA - İZMİR MERKEZ ŞUBESİ
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35580 Bayraklı/İzmir
Phone +90 232 5015000 . Fax +90 232 5015007
Email info@mmchg.com.tr

DISTRIBUTED BY:

┌

┐

└

┘