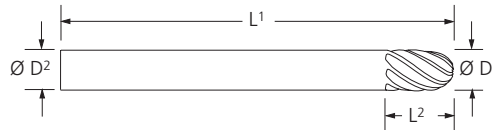
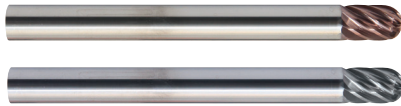


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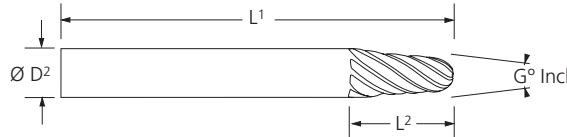


# TuffCut® XT Series MFB



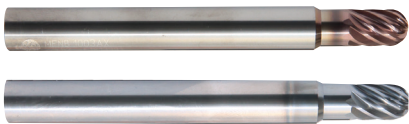
## MFPB Series - Multi Flute Parallel Ballnose

Tool No.		Ball Radius	Ø D1	Ø D2	L1	L2	L3	G°	No. of Flutes
ALtima® Xtreme Coating	ALtima® Nano Coating								
MFPB 0601AX	MFPB 0601AN	R3	6.0	6.0	100.0	9.0	-	-	6
MFPB 0801AX	MFPB 0801AN	R4	8.0	8.0	100.0	12.0	-	-	8
MFPB 1001AX	MFPB 1001AN	R5	10.0	10.0	108.0	15.0	-	-	8
MFPB 1201AX	MFPB 1201AN	R6	12.0	12.0	108.0	18.0	-	-	8
MFPB 1601AX	MFPB 1601AN	R8	16.0	16.0	108.0	24.0	-	-	8
MFPB 2001AX	MFPB 2001AN	R10	20.0	20.0	150.0	30.0	-	-	10



## MFTB Series - Multi Flute Tapered Ballnose

Tool No.		Ball Radius	Ø D1	Ø D2	L1	L2	L3	G°	No. of Flutes
ALtima® Xtreme Coating	ALtima® Nano Coating								
MFTB 0402AX	MFTB 0402AN	R2	-	6.0	100.0	24.0	-	5°	6
MFTB 0502AX	MFTB 0502AN	R2.5	-	6.0	100.0	13.0	-	5°	6
MFTB 0602AX	MFTB 0602AN	R3	-	8.0	100.0	25.0	-	5°	6
MFTB 0802AX	MFTB 0802AN	R4	-	10.0	100.0	26.0	-	5°	8
MFTB 1002AX	MFTB 1002AN	R5	-	12.0	108.0	27.0	-	5°	8
MFTB 1202AX	MFTB 1202AN	R6	-	16.0	108.0	51.0	-	5°	8
MFTB 1602AX	MFTB 1602AN	R8	-	20.0	108.0	53.0	-	5°	8



## MFNB Series - Multi Flute Necked Ballnose

Tool No.		Ball Radius	Ø D1	Ø D2	L1	L2	L3	G°	No. of Flutes
ALtima® Xtreme Coating	ALtima® Nano Coating								
MFNB 0403AX	MFNB 0403AN	R2	4.0	6.0	100.0	6.0	8.0	-	6
MFNB 0503AX	MFNB 0503AN	R2.5	5.0	6.0	100.0	7.5	10.0	-	6
MFNB 0603AX	MFNB 0603AN	R3	6.0	8.0	100.0	9.0	12.0	-	6
MFNB 0803AX	MFNB 0803AN	R4	8.0	10.0	100.0	12.0	16.0	-	8
MFNB 1003AX	MFNB 1003AN	R5	10.0	12.0	108.0	15.0	23.0	-	8
MFNB 1203AX	MFNB 1203AN	R6	12.0	16.0	108.0	18.0	24.0	-	8
MFNB 1603AX	MFNB 1603AN	R8	16.0	20.0	108.0	24.0	32.0	-	8



# TuffCut® XT Series MFB

Recommended cutting data - Speeds

Recommended Speeds by Material Group						Finishing	Semi-Finishing
Workpiece Material Group	Material Type		Ap			0.01-0.03 x D	0.05-0.1 x D
			Ae			0.02-0.03 x D	0.05-0.1 x D
			Coolant			Vc-M/Min	
			Max	Air	MMS		
Steels	P	Low Carbon	●	●	●	450	350
		Medium Carbon	●	●	●	345	275
		Alloy Steels	●	●	●	315	255
		Die/Tool Steels	●	●	●	275	220
Stainless Steels	M	Free Machining	●	X	○	205	165
		Austenitic	●	X	○	160	130
		Difficult Stainless	●	X	○	125	100
		PH Stainless	●	X	○	160	130
		Cobalt Chrome Alloys	●	X	○	125	100
		Duplex (22%)	●	X	○	75	60
		Super Duplex (25%)	●	X	○	75	60
Special Alloys	S	High Temp Alloys	●	X	X	55	45
		Titanium Alloys	●	X	X	115	105
Cast Irons	K	Gray Cast Iron	●	○	○	495	395
		Ductile Cast Iron	●	○	○	320	280
		Malleable Iron	●	○	○	205	165
Hardened Steels	H	Hardened Steels 45 - 50 Rc	●	○	○	150	125
		Hardened Steels 50 - 55 Rc	●	○	○	100	95

● Preferred    ○ Possible    X Not Possible



# TuffCut® XT Series MFB

## Recommended cutting data - Feeds

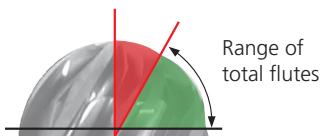
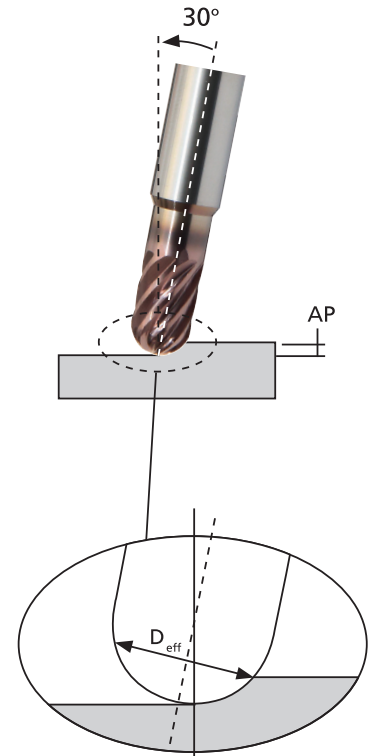
Recommended Feeds by Material Group			Tool Diameter & Radius															
Workpiece Material Group	Material Type	4		5		6		8		10		12		16		20		
		2		2.5		3		4		5		6		8		10		
		Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	
			Fz - mm/tooth															
Steels	P	Low Carbon	0.12	0.06	0.15	0.075	0.18	0.09	0.24	0.12	0.3	0.15	0.36	0.18	0.48	0.24	0.6	0.3
		Medium Carbon	0.12	0.06	0.15	0.075	0.18	0.09	0.24	0.12	0.3	0.15	0.36	0.18	0.48	0.24	0.6	0.3
		Alloy Steels	0.12	0.06	0.15	0.075	0.18	0.09	0.24	0.12	0.3	0.15	0.36	0.18	0.48	0.24	0.6	0.3
		Die/Tool Steels	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
Stainless Steels	M	Free Machining	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
		Austenitic	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
		Difficult Stainless	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
		PH Stainless	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
		Cobalt Chrome Alloys	0.072	0.048	0.09	0.06	0.108	0.072	0.144	0.096	0.18	0.12	0.216	0.144	0.288	0.192	0.36	0.24
		Duplex (22%)	0.072	0.048	0.09	0.06	0.108	0.072	0.144	0.096	0.18	0.12	0.216	0.144	0.288	0.192	0.36	0.24
Special Alloys	S	Super Duplex (25%)	0.068	0.044	0.085	0.055	0.102	0.066	0.136	0.088	0.17	0.11	0.204	0.132	0.272	0.176	0.34	0.22
		High Temp Alloys	0.06	0.04	0.075	0.05	0.09	0.06	0.12	0.08	0.15	0.1	0.18	0.12	0.24	0.16	0.3	0.2
Cast Irons	K	Titanium Alloys	0.06	0.04	0.075	0.05	0.09	0.06	0.12	0.08	0.15	0.1	0.18	0.12	0.24	0.16	0.3	0.2
		Gray Cast Iron	0.12	0.08	0.15	0.1	0.18	0.12	0.24	0.16	0.3	0.2	0.36	0.24	0.48	0.32	0.6	0.4
		Ductile Cast Iron	0.1	0.08	0.125	0.1	0.15	0.12	0.2	0.16	0.25	0.2	0.3	0.24	0.4	0.32	0.5	0.4
Hardened Steels	H	Malleable Iron	0.08	0.06	0.1	0.075	0.12	0.09	0.16	0.12	0.2	0.15	0.24	0.18	0.32	0.24	0.4	0.3
		Hardened Steels HRC45-50	0.06	0.056	0.075	0.07	0.09	0.084	0.12	0.112	0.15	0.14	0.18	0.168	0.24	0.224	0.3	0.28
		Hardened Steels HRC50-55	0.05	0.056	0.063	0.07	0.075	0.084	0.1	0.112	0.125	0.14	0.15	0.168	0.2	0.224	0.25	0.28



# TuffCut® XT Series MFB

## Recommended cutting data

Tool Ø	Effective Diameter at 30°						
	Axial Depth of Cut (mm) AP						
	0.2	0.4	0.6	0.8	1	1.5	2
4	3.31	3.68	3.87	3.97	-	-	-
5	4.00	4.45	4.71	4.87	4.96	-	-
6	4.66	5.16	5.52	5.73	5.87	-	-
8	5.96	6.62	7.05	7.36	7.60	7.91	-
10	7.22	8.00	8.51	8.90	9.20	9.68	9.93
12	8.46	9.33	9.94	10.38	10.74	11.37	11.75
16	10.88	11.92	12.66	13.24	13.71	14.58	15.16
20	13.25	14.44	15.30	15.98	16.55	17.62	18.40



R	Tilt Angle	No. of Flutes
2	+31°	6
2.5	+33°	6
3	+33°	6
4	+25°	8
5	+22°	8
6	+24°	8
8	+25°	8
10	+25°	10

Tool Ø	Effective Teeth		
	Tilt Angle		
	20°	25°	33°
4	2	4	6
5	2	4	6
6	2	4	6
8	2	8	8
10	2	8	8
12	6	8	8
16	6	8	8
20	6	10	10

**Red Area:**  
Does not have complete effective number of flutes to centre of tool.

**Green Area:**  
Programming at the listed tilt angle will utilise the full effective number of flutes.

ALtima® Xtreme Coating Properties	
Microhardness (HV)	3800
Max. Service Temp.	1100° C / 2012° F
Friction Coefficient	0.3 - 0.5
Designation	AX
Colour	Copper

ALtima® Nano Coating Properties	
Microhardness (HV)	3875
Max. Service Temp.	1100° C / 2012° F
Friction Coefficient	0.3
Designation	AN
Colour	Grey