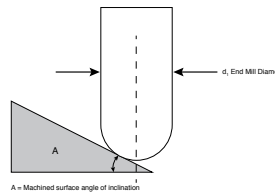
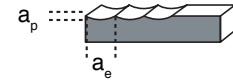


GF500 B & GF300 B Ball nose



a_e = Width of cut
 a_p = Depth of cut

INCH



Tool length/reach up to 3xD Vc and fz 100%
Tool length/reach 3-5xD Vc and fz 80%
Tool length/reach > 5-10xD Vc and fz 60%

		d End Mill Ø							
Application	Width/depth	1/16	1/8	3/16	1/4	5/16	3/8	1/2	5/8
Roughing	WOC (ae)	.003	.006	.009	.017	.023	.028	.042	.047
	DOC (ap)	.005	.006	.014	.021	.029	.038	.063	.059
Finishing	WOC (ae)	.002	.003	.005	.006	.006	.007	.008	.012
	DOC (ap)	.002	.002	.003	.004	.006	.008	.010	.012

Material	Hardness	Type of End Mill	ae Max	Cutting Speed SFM	Feed Rate Inch per Tooth - IPT							
					d1 End Mill Diameter							
					1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
					Multiply IPT x this factor based on WOC							
Structural + free-cutting steels, unalloyed heat-treatable + case hardened steels A283, 1151, 1215, L10, 10Lxx, 11Lxx, 12Lxx, 41Lxx, 51Lxx, 86Lxx, 86Lxx, 10xx	up to 28 HRc	GF 500 B	0.1 x D	790	.0019	.0038	.0047	.0056	.0075	.0094	.0113	.0150
		GF 500 B	0.03 x D	1120	.0013	.0027	.0033	.0039	.0053	.0069	.0081	.0106
		GF 500 B	0.01 x d	1280	.0011	.0023	.0028	.0034	.0045	.0056	.0069	.0088
Free-cutting steels, unalloyed case hardened steels, nitriding steels 1151, 1215, L10, 10Lxx, 11Lxx, 12Lxx, 41Lxx, 51Lxx, 86Lxx, 86Lxx, 10xx, 11xx	28 to 38 HRc	GF 500 B	0.1 x D	720	.0019	.0038	.0047	.0056	.0075	.0094	.0113	.0150
		GF 500 B	0.03 x D	1020	.0013	.0027	.0033	.0039	.0053	.0069	.0081	.0106
		GF 500 B	0.01 x d	1150	.0013	.0025	.0030	.0037	.0049	.0063	.0075	.0100
Alloyed heat-treatable, tool and high speed steels 13xx, 2340, 31xx, 32xx, 33xx, 34xx, 40xx, 41xx, 43xx, 4640, 50xx, 51xx, 61xx, 71xx, 86xx, 87xx, 92xx, 98xx, 98xx, Ax, O, Dx, Hxx, Lx, Wx, Mx, Tx	28 to 44 HRc	GF 500 B	0.1 x D	660	.0015	.0030	.0038	.0045	.0060	.0075	.0088	.0119
		GF 500 B	0.03 x D	1020	.0011	.0022	.0027	.0031	.0042	.0050	.0063	.0081
		GF 500 B	0.01 x d	1050	.0010	.0020	.0024	.0029	.0039	.0050	.0056	.0075
Hardened Steels Carbon and Alloy Steels, Tool & Die Steels	Up to 54 HRc	GF 500 B	0.1 x D	430	0.0015	0.0030	0.0038	0.0045	0.0060	0.0075	0.0088	0.0119
		GF 500 B	0.02 x D	660	0.0011	0.0022	0.0027	0.0031	0.0042	0.0050	0.0063	0.0081
		GF 500 B	0.01 x d	720	0.0009	0.0018	0.0023	0.0027	0.0036	0.0044	0.0056	0.0075
	Up to 54 HRc	GF 300 B	0.02 x D	500	0.0009	0.0018	0.0022	0.0026	0.0035	0.0044	0.0050	0.0069
GF 300 B		0.01 x d	530	0.0008	0.0015	0.0019	0.0023	0.0030	0.0038	0.0044	0.0063	
Stainless steel 303, 410, 420F, 430, 430F, 416	Up to 28 HRc	GF 500 B	0.1 x D	530	0.0016	0.0033	0.0041	0.0049	0.0065	0.0081	0.0100	0.0131
		GF 500 B	0.03 x D	762	0.0011	0.0023	0.0028	0.0034	0.0046	0.0056	0.0069	0.0094
		GF 500 B	0.01 x d	850	0.0010	0.0020	0.0024	0.0029	0.0039	0.0050	0.0056	0.0075
Stainless steel 304, 304L, 420, 17-4PH, 17-7PH, 15-5PH, 13-8PH	up to 28 HRc	GF 500 B	0.1 x D	390	0.0015	0.0030	0.0038	0.0045	0.0060	0.0075	0.0088	0.0119
		GF 500 B	0.03 x D	556	0.0011	0.0022	0.0027	0.0031	0.0042	0.0050	0.0063	0.0081
		GF 500 B	0.01 x d	620	0.0009	0.0018	0.0023	0.0027	0.0036	0.0044	0.0056	0.0075
Stainless steel 310, 316, 316B, 316L, 317, Duplex	over 28 HRc	GF 500 B	0.1 x D	260	0.0013	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100
		GF 500 B	0.02 x D	390	0.0009	0.0018	0.0022	0.0026	0.0035	0.0044	0.0050	0.0069
		GF 500 B	0.01 x d	460	0.0008	0.0015	0.0019	0.0023	0.0030	0.0038	0.0044	0.0063
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2Sn-4Zr-6Mo, 3Al-8V-6Cr-4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	up to 42 HRc	GF 500 B	0.1 x D	150	0.0013	0.0025	0.0031	0.0038	0.0050	0.0063	0.0075	0.0100
		GF 500 B	0.02 x D	200	0.0009	0.0018	0.0022	0.0026	0.0035	0.0044	0.0050	0.0069
		GF 500 B	0.01 x d	260	0.0008	0.0015	0.0019	0.0023	0.0030	0.0038	0.0044	0.0063
High-Temperature Alloys Inconel, Nimonic, Monel, Hastelloy, Waspalloy, A286, Rene 41, Udimet, Stellite	up to 42 HRc	GF 500 B	0.1 x D	330	0.0015	0.0030	0.0038	0.0045	0.0060	0.0075	0.0088	0.0119
		GF 500 B	0.02 x D	490	0.0011	0.0022	0.0027	0.0031	0.0042	0.0050	0.0063	0.0081
		GF 500 B	0.01 x d	560	0.0009	0.0018	0.0023	0.0027	0.0036	0.0044	0.0056	0.0075
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6010 EN-GL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	up to 240 HB 30	GF 500 B	0.1 x D	720	0.0019	0.0038	0.0047	0.0056	0.0075	0.0094	0.0113	0.0150
		GF 500 B	0.03 x D	1020	0.0013	0.0027	0.0033	0.0039	0.0053	0.0069	0.0081	0.0106
		GF 500 B	0.01 x d	1180	0.0011	0.0023	0.0028	0.0034	0.0045	0.0056	0.0069	0.0088
Cast iron, grey cast iron, spheroidal graphite and malleable cast iron 0.6025 EN-GL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	over 240 HB 30	GF 500 B	0.1 x D	590	0.0016	0.0033	0.0041	0.0049	0.0065	0.0081	0.0100	0.0131
		GF 500 B	0.02 x D	890	0.0011	0.0023	0.0028	0.0034	0.0046	0.0056	0.0069	0.0094
		GF 500 B	0.01 x d	980	0.0010	0.0020	0.0024	0.0029	0.0039	0.0050	0.0056	0.0075
Aluminum, Al-wrought alloys, Al-alloys 2024, 6061, 7075, 1050, 6351, 5005, 2017, 7075	up to 3% Si	GF 500 B	0.1 x D	1976	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100	0.0119	0.0163
		GF 500 B	0.03 x D	2630	0.0014	0.0028	0.0035	0.0042	0.0056	0.0069	0.0081	0.0113
		GF 500 B	0.01 x d	2950	0.0012	0.0024	0.0030	0.0036	0.0048	0.0063	0.0075	0.0094
Aluminium-cast alloys 3.2131 G-AISI5Cu1, 3.2153 G-AISI7Cu3, 3.2573 G-AISI9, 3.2581 G-AISI12, 3.2583 G-AISI12Cu, - G-AISI12CuNiMg	over 3% Si	GF 500 B	0.1 x D	980	0.0019	0.0038	0.0047	0.0056	0.0075	0.0094	0.0113	0.0150
		GF 500 B	0.03 x D	1310	0.0013	0.0027	0.0033	0.0039	0.0053	0.0069	0.0081	0.0106
		GF 500 B	0.01 x d	1640	0.0011	0.0023	0.0028	0.0034	0.0045	0.0056	0.0069	0.0088
Magnesium-alloys MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	GF 500 B	0.1 x D	590	0.0016	0.0033	0.0041	0.0049	0.0065	0.0081	0.0100	0.0131
		GF 500 B	0.03 x D	850	0.0011	0.0023	0.0028	0.0034	0.0046	0.0056	0.0069	0.0094
		GF 500 B	0.01 x d	950	0.0010	0.0020	0.0024	0.0029	0.0039	0.0050	0.0056	0.0075
Non-ferrous metals (copper, short- or long-chipping brass or bronze)	up to 28 HRc	GF 500 B	0.1 x D	820	0.0019	0.0038	0.0047	0.0056	0.0075	0.0094	0.0113	0.0150
		GF 500 B	0.03 x D	1150	0.0013	0.0027	0.0033	0.0039	0.0053	0.0069	0.0081	0.0106
		GF 500 B	0.01 x d	1310	0.0011	0.0023	0.0028	0.0034	0.0045	0.0056	0.0069	0.0088