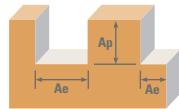


2 Flute: Square & Ball End

4 Flute: Square & Ball End



Diamond 1, 1B, 3, 3B Fractional			Vc (sfm)	DC • in						
	Ae x DC	Ap x DC			1/8	1/4	5/16	3/8	1/2	
GRAPHITE Ultrafine, Superfine	 Profile	≤ 0.25	≤ 1.5	720	RPM	22003	11002	8801	7334	5501
				(576-864)	Fz	0.0009	0.0023	0.0036	0.0043	0.0058
					Feed 2 flutes (ipm)	38.3	50.6	63.4	63.1	63.8
					Feed 4 flutes (ipm)	76.6	101.2	126.7	126.2	127.6
	 Slot	≤ 1	≤ 1	580	RPM	17725	8862	7090	5908	4431
				(464-696)	Fz	0.0075	0.0020	0.0031	0.0038	0.0050
					Feed 2 flutes (ipm)	265.9	35.4	44.0	44.9	44.3
					Feed 4 flutes (ipm)	531.7	70.9	87.9	89.8	88.6
COMPOSITES FRP, CFRP, GRP	 Profile	≤ 0.25	≤ 1.5	385	RPM	11766	5883	4706	3922	2941
				(308-462)	Fz	0.0005	0.0014	0.0022	0.0026	0.0035
					Feed 2 flutes (ipm)	12.2	16.5	20.7	20.4	20.6
					Feed 4 flutes (ipm)	24.5	32.9	41.4	40.8	41.2
	 Slot	≤ 1	≤ 1	350	RPM	10696	5348	4278	3565	2674
				(280-420)	Fz	0.0005	0.0012	0.0019	0.0023	0.0030
					Feed 2 flutes (ipm)	9.6	12.8	16.3	16.4	16.0
					Feed 3 flutes (ipm)	19.3	25.7	32.5	32.8	32.1
PLASTICS Polycarbonate, PVC, Polypropylene	 Profile	≤ 0.25	≤ 1.5	1200	RPM	36672	18336	14669	12224	9168
				(960-1440)	Fz	0.0009	0.0023	0.0036	0.0043	0.0058
					Feed 2 flutes (ipm)	63.8	84.3	105.6	105.1	106.3
					Feed 4 flutes (ipm)	127.6	168.7	211.2	210.3	212.7
	 Slot	≤ 1	≤ 1	960	RPM	29338	14669	11735	9779	7334
				(768-1152)	Fz	0.0008	0.0020	0.0031	0.0038	0.0050
					Feed 2 flutes (ipm)	44.0	58.7	72.8	74.3	73.3
					Feed 3 flutes (ipm)	88.0	117.4	145.5	148.6	146.7

rpm = (Vc x 3.82) / DC

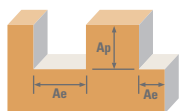
ipm = Fz x number of flutes x rpm

finish cuts typically require reduced feed and cut depths (.02 x D maximum)

refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)

FRACTIONAL

2 Flute: Square, Double, Stub, Long, Ball, Corner Radius
3 Flute: Square, Ball, Tapered
4 Flute: Square, Double, Stub, Ball, Corner Radius
Tapered: Square, Radius



Series 1, 3, 5, 14, 15, 16, 17, 23, 24, 59 Fractional								DC • in												
Hardness		Flutes		Ae x DC	Ap x DC	Vc (sfm)														
							1/64	1/32	1/16	1/8	1/4	3/8	1/2	3/4	1					
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc		Profile		(368-552)	460	RPM	112461	56230	28115	14058	7029	4686	3514	2343	1757			
							Fz	0.00003	0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028				
							Feed (ipm)	6.7	6.7	7.3	8.4	11.2	14.1	14.1	11.2	9.8				
								10.1	10.1	11.0	12.7	16.9	21.1	21.1	16.9	14.8				
						13.5	13.5	14.6	16.9	22.5	28.1	28.1	22.5	19.7						
						Slot		(268-402)	335	RPM	81901	40950	20475	10238	5119	3413	2559	1706	1280	
						Fz	0.00003		0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028				
				Feed (ipm)		4.9	4.9		5.3	6.1	8.2	10.2	10.2	8.2	7.2					
						7.4	7.4		8.0	9.2	12.3	15.4	15.4	12.3	10.7					
		ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc		Profile		(268-402)	335	RPM	81901	40950	20475	10238	5119	3413	2559	1706	1280		
								Fz	0.00002	0.00005	0.00009	0.0002	0.0006	0.0011	0.0015	0.0018	0.0021			
								Feed (ipm)	3.3	4.1	3.7	4.1	6.1	7.5	7.7	6.1	5.4			
									4.9	6.1	5.5	6.1	9.2	11.3	11.5	9.2	8.1			
					6.6	8.2	7.4	8.2	12.3	15.0	15.4	12.3	10.7							
					Slot		(196-294)	245	RPM	59898	29949	14974	7487	3744	2496	1872	1248	936		
					Fz	0.00002		0.00005	0.00009	0.0002	0.0006	0.0011	0.0015	0.0018	0.0021					
					Feed (ipm)	2.4		3.0	2.7	3.0	4.5	5.5	5.6	4.5	3.9					
					3.6	4.5		4.0	4.5	6.7	8.2	8.4	6.7	5.9						
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2		≤ 250 Bhn or ≤ 24 HRc		Profile		(252-378)	315	RPM	77011	38506	19253	9626	4813	3209	2407	1604	1203		
								Fz	0.00002	0.00005	0.00009	0.0002	0.0006	0.0011	0.0015	0.0018	0.0021			
								Feed (ipm)	3.1	3.9	3.5	3.9	5.8	7.1	7.2	5.8	5.1			
									4.6	5.8	5.2	5.8	8.7	10.6	10.8	8.7	7.6			
							6.2	7.7	6.9	7.7	11.6	14.1	14.4	11.6	10.1					
							Slot		(184-276)	230	RPM	56230	28115	14058	7029	3514	2343	1757	1171	879
				Fz	0.00002		0.00005	0.00009		0.0002	0.0006	0.0011	0.0015	0.0018	0.0021					
				Feed (ipm)	2.2		2.8	2.5		2.8	4.2	5.2	5.3	4.2	3.7					
					3.4		4.2	3.8		4.2	6.3	7.7	7.9	6.3	5.5					
M		STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F 440F	≤ 275 Bhn or ≤ 28 HRc		Profile		(296-444)	370	RPM	90458	45229	22614	11307	5654	3769	2827	1885	1413		
								Fz	0.00002	0.00005	0.00009	0.0002	0.0006	0.0011	0.0015	0.0018	0.0021			
								Feed (ipm)	3.6	4.5	4.1	4.5	6.8	8.3	8.5	6.8	5.9			
									5.4	6.8	6.1	6.8	10.2	12.4	12.7	10.2	8.9			
							7.2	9.0	8.1	9.0	13.6	16.6	17.0	13.6	11.9					
							Slot		(216-324)	270	RPM	66010	33005	16502	8251	4126	2750	2063	1375	1031
				Fz	0.00002		0.00005	0.00009		0.0002	0.0006	0.0011	0.0015	0.0018	0.0021					
				Feed (ipm)	2.6		3.3	3.0		3.3	5.0	6.1	6.2	5.0	4.3					
				4.0	5.0		4.5	5.0		7.4	9.1	9.3	7.4	6.5						
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L, 17-4 PH, 15-5, 13-4, Custom 450		≤ 275 Bhn or ≤ 28 HRc		Profile		(204-306)	255	RPM	62342	31171	15586	7793	3896	2598	1948	1299	974		
								Fz	0.00002	0.00004	0.00008	0.0002	0.0005	0.0009	0.0012	0.0014	0.0017			
								Feed (ipm)	2.5	2.5	2.5	2.6	3.9	4.7	4.7	3.6	3.3			
									3.7	3.7	3.7	4.0	5.8	7.0	7.0	5.5	5.0			
							5.0	5.0	5.0	5.3	7.8	9.4	9.4	7.3	6.6					
							Slot		(148-222)	185	RPM	45229	22614	11307	5654	2827	1885	1413	942	707
				Fz	0.00002		0.00004	0.00008		0.0002	0.0005	0.0009	0.0012	0.0014	0.0017					
				Feed (ipm)	1.8		1.8	1.8		1.9	2.8	3.4	3.4	2.6	2.4					
				2.7	2.7		2.7	2.9		4.2	5.1	5.1	4.0	3.6						
	K	CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc		Profile		(268-402)	335	RPM	81901	40950	20475	10238	5119	3413	2559	1706	1280		
								Fz	0.00003	0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028			
								Feed (ipm)	4.9	4.9	5.3	6.1	8.2	10.2	10.2	8.2	7.2			
									7.4	7.4	8.0	9.2	12.3	15.4	15.4	12.3	10.7			
							9.8	9.8	10.6	12.3	16.4	20.5	20.5	16.4	14.3					
							Slot		(196-294)	245	RPM	59898	29949	14974	7487	3744	2496	1872	1248	936
							Fz	0.00003		0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028			
							Feed (ipm)	3.6		3.6	3.9	4.5	6.0	7.5	7.5	6.0	5.2			
					5.4		5.4	5.8		6.7	9.0	11.2	11.2	9.0	7.9					
		ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 88 HRb		Profile		(704-1056)	880	RPM	215142	107571	53786	26893	13446	8964	6723	4482	3362		
								Fz	0.00006	0.00013	0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056			
					Feed (ipm)	25.8		28.0	26.9	32.3	43.0	53.8	53.8	43.0	37.6					
						38.7		42.0	40.3	48.4	64.5	80.7	80.7	64.5	56.5					
					Slot		(512-768)	640	RPM	156467	78234	39117	19558	9779	6519	4890	3260	2445		
					Fz	0.00006		0.00013	0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056					
					Feed (ipm)	18.8		20.3	19.6	23.5	31.3	39.1	39.1	31.3	27.4					
						28.2		30.5	29.3	35.2	46.9	58.7	58.7	46.9	41.1					

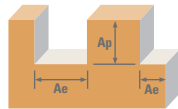
FRACTIONAL

2 Flute: Square, Double, Stub, Long, Ball, Corner Radius

3 Flute: Square, Ball, Tapered

4 Flute: Square, Double, Stub, Ball, Corner Radius

Tapered: Square, Radius



Series
1, 3, 5, 14, 15, 16,
17, 23, 24, 59
Fractional

Hardness

Flutes

Ae x DC

Ap x DC

Vc
(sfm)

DC • in

N	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	Profile		2	≤ 0.50	≤ 1.5	(388-582)	485	RPM	118573	59286	29643	14822	7411	4941	3705	2470	1853				
											Fz	0.00003	0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028			
											Feed (ipm)	7.1	7.1	7.7	8.9	11.9	14.8	14.8	11.9	10.4			
			Slot		2	1	≤ 1	(280-420)	350	RPM	85568	42784	21392	10696	5348	3565	2674	1783	1337				
											Fz	0.00003	0.00006	0.00013	0.0003	0.0008	0.0015	0.0020	0.0024	0.0028			
											Feed (ipm)	5.1	5.1	5.6	6.4	8.6	10.7	10.7	8.6	7.5			
			S	PLASTICS Polycarbonate, PVC, Polypropylene	≤ 300 Bhn or ≤ 32 HRc	Profile		2	≤ 0.50	≤ 1.5	(704-1056)	880	RPM	215142	107571	53786	26893	13446	8964	6723	4482	3362	
														Fz	0.00006	0.00013	0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056
														Feed (ipm)	25.8	28.0	26.9	32.3	43.0	53.8	53.8	43.0	37.6
						Slot		2	1	≤ 1	(512-768)	640	RPM	156467	78234	39117	19558	9779	6519	4890	3260	2445	
Fz	0.00006	0.00013												0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056			
Feed (ipm)	18.8	20.3												19.6	23.5	31.3	39.1	39.1	31.3	27.4			
S	GRAPHITE	≤ 300 Bhn or ≤ 32 HRc				Profile		2	≤ 0.50	≤ 1.5	(528-792)	660	RPM	161357	80678	40339	20170	10085	6723	5042	3362	2521	
														Fz	0.00006	0.00013	0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056
														Feed (ipm)	19.4	21.0	20.2	24.2	32.3	40.3	40.3	32.3	28.2
						Slot		2	1	≤ 1	(384-576)	480	RPM	117350	58675	29338	14669	7334	4890	3667	2445	1834	
			Fz	0.00006	0.00013									0.00025	0.0006	0.0016	0.0030	0.0040	0.0048	0.0056			
			Feed (ipm)	14.1	15.3									14.7	17.6	23.5	29.3	29.3	23.5	20.5			
			S	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, 718, Incoloy 800, Monel 400, Rene, Waspalloy	≤ 300 Bhn or ≤ 32 HRc	Profile		2	≤ 0.50	≤ 1.5	(52-78)	65	RPM	15891	7946	3973	1986	993	662	497	331	248	
														Fz	0.00002	0.00003	0.00006	0.0002	0.0004	0.0008	0.0010	0.0012	0.0014
														Feed (ipm)	0.6	0.5	0.5	0.7	0.7	1.1	1.0	0.8	0.7
						Slot		2	1	≤ 1	(36-54)	45	RPM	11002	5501	2750	1375	688	458	344	229	172	
Fz	0.00002	0.00003												0.00006	0.0002	0.0004	0.0008	0.0010	0.0012	0.0014			
Feed (ipm)	0.4	0.3												0.3	0.5	0.5	0.7	0.7	0.6	0.5			
S	TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti10V2Fe3Al, Ti5Al53Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti152 Cr3Sn3Al	≤ 350 Bhn or ≤ 38 HRc				Profile		2	≤ 0.50	≤ 1.5	(144-216)	180	RPM	44006	22003	11002	5501	2750	1834	1375	917	688	
														Fz	0.00002	0.00004	0.00008	0.0002	0.0005	0.0009	0.0012	0.0014	0.0017
														Feed (ipm)	1.8	1.8	1.8	2.2	2.8	3.3	3.3	2.6	2.3
						Slot		2	1	≤ 1	(104-156)	130	RPM	31782	15891	7946	3973	1986	1324	993	662	497	
			Fz	0.00002	0.00004									0.00008	0.0002	0.0005	0.0009	0.0012	0.0014	0.0017			
			Feed (ipm)	1.3	1.3									1.3	1.6	2.0	2.4	2.4	1.9	1.7			