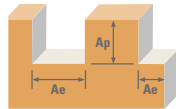


Series M032 Fractional	Hardness	Ae x DC	Ap x DC	Vc (sfm)		DC • in				
						1/32	5/64	7/64		
P CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	≤ 0.25	≤ 1	790 (632-948)	Profile	RPM	96570	38628	27591	
						Fz	0.00009	0.00022	0.00031	
						Feed (ipm)	26.0	26.0	26.0	
			1	≤ .5	630 (504-756)	Slot	RPM	77011	30804	22003
						Fz	0.00009	0.00022	0.00031	
						Feed (ipm)	20.5	20.5	20.5	
			≤ .02	1	1565 (1252-1878)	Finish	RPM	191306	76522	54659
						Fz	0.00017	0.00041	0.00058	
						Feed (ipm)	95.0	95.0	95.0	
P ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	≤ 0.25	≤ 1	450 (360-540)	Profile	RPM	55008	22003	15717	
						Fz	0.00007	0.00017	0.00023	
						Feed (ipm)	11.0	11.0	11.0	
			1	≤ .5	360 (288-432)	Slot	RPM	44006	17603	12573
						Fz	0.00007	0.00017	0.00024	
						Feed (ipm)	8.9	8.9	8.9	
			≤ .02	1	895 (716-1074)	Finish	RPM	109405	43762	31259
						Fz	0.00012	0.00030	0.00043	
						Feed (ipm)	40.0	40.0	40.0	
P ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 560 Bhn or ≤ 55 HRc	≤ 0.25	≤ 1	93 (74-112)	Profile	RPM	11368	4547	3248	
						Fz	0.00003	0.00007	0.00010	
						Feed (ipm)	0.9	0.9	0.9	
			1	≤ .5	65 (52-78)	Slot	RPM	7946	3178	2270
						Fz	0.00003	0.00006	0.00009	
						Feed (ipm)	0.6	0.6	0.6	
			≤ .02	1	167 (134-200)	Finish	RPM	20414	8166	5833
						Fz	0.00004	0.00011	0.00016	
						Feed (ipm)	2.8	2.8	2.8	
H TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	≤ 0.25	≤ 1	69 (55-83)	Profile	RPM	8435	3374	2410	
						Fz	0.00003	0.00007	0.00010	
						Feed (ipm)	0.8	0.8	0.8	
			1	≤ .5	50 (40-60)	Slot	RPM	6112	2445	1746
						Fz	0.00002	0.00006	0.00009	
						Feed (ipm)	0.5	0.5	0.5	
			≤ .02	1	124 (99-149)	Finish	RPM	15158	6063	4331
						Fz	0.00005	0.00012	0.00017	
						Feed (ipm)	2.2	2.2	2.2	
K CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	≤ 0.25	≤ 1	620 (496-744)	Profile	RPM	75789	30316	21654	
						Fz	0.00011	0.00028	0.00039	
						Feed (ipm)	25.5	25.5	25.5	
			1	≤ .5	450 (360-540)	Slot	RPM	55008	22003	15717
						Fz	0.00010	0.00024	0.00034	
						Feed (ipm)	16.0	16.0	16.0	
			≤ .02	1	1115 (892-1338)	Finish	RPM	136298	54519	38942
						Fz	0.00018	0.00045	0.00062	
						Feed (ipm)	73.0	73.0	73.0	

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FRACTIONAL Series M032



Series M032 Fractional	Hardness	Ae x DC	Ap x DC	Vc (sfm)	DC • in				
					1/32	5/64	7/64		
M STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.25	≤ 1	335	RPM	40950	16380	11700
					(268-402)	Fz	0.00008	0.00020	0.00028
						Feed (ipm)	9.9	9.9	9.9
		Slot 	1	≤ .5	245	RPM	29949	11980	8557
					(196-294)	Fz	0.00007	0.00017	0.00023
						Feed (ipm)	6.0	6.0	6.0
		Finish 	≤ .02	1	605	RPM	73955	29582	21130
					(484-726)	Fz	0.00012	0.00031	0.00043
						Feed (ipm)	27.5	27.5	27.5
M STAINLESS STEELS (PH) 13-8 PH, 15-5 PH, 17-4 PH, Custom 450	≤ 325 Bhn or ≤ 35 HRc	Profile 	≤ 0.25	≤ 1	310	RPM	37894	15158	10827
					(248-372)	Fz	0.00008	0.00020	0.00028
						Feed (ipm)	9.0	9.0	9.0
		Slot 	1	≤ .5	225	RPM	27504	11002	7858
					(180-270)	Fz	0.00007	0.00017	0.00023
						Feed (ipm)	5.5	5.5	5.5
		Finish 	≤ .02	1	555	RPM	67843	27137	19384
					(444-666)	Fz	0.00013	0.00031	0.00044
						Feed (ipm)	25.5	25.5	25.5
S SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	Profile 	≤ 0.5	≤ 1.5	200	RPM	24448	9779	6985
					(160-240)	Fz	0.00007	0.00017	0.00024
						Feed (ipm)	5.1	5.1	5.1
		Slot 	1	≤ 1	145	RPM	17725	7090	5064
					(116-174)	Fz	0.00006	0.00015	0.00021
						Feed (ipm)	3.2	3.2	3.2
		Finish 	≤ .02	1	360	RPM	44006	17603	12573
					(288-432)	Fz	0.00011	0.00027	0.00038
						Feed (ipm)	14.5	14.5	14.5
S TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	Profile 	≤ 0.5	≤ 1.5	245	RPM	29949	11980	8557
					(196-294)	Fz	0.00007	0.00018	0.00025
						Feed (ipm)	6.3	6.3	6.3
		Slot 	1	≤ 1	180	RPM	22003	8801	6287
					(144-216)	Fz	0.00006	0.00015	0.00021
						Feed (ipm)	3.9	3.9	3.9
		Finish 	≤ .02	1	440	RPM	53786	21514	15367
					(352-528)	Fz	0.00011	0.00028	0.00039
						Feed (ipm)	18.0	18.0	18.0

Bhn (Brinell) HRc (Rockwell C)

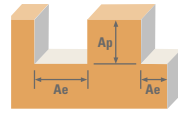
rpm = Vc x 3.82 / DC

ipm = Fz x 3 x rpm (Fz x 3 x max available rpm when recommendation exceeds machine limit)

ramp up to 5 degrees using slotting speed and feed rates. Do not plunge.

reduce speed and feed for materials harder than listed

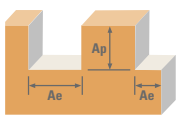
refer to the KYOCERA SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)



Series M032 Metric	Hardness	Ae x DC	Ap x DC	Vc (m/min)	DC • mm				
					1	2	3		
P CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.25	≤ 1	241	RPM	76584	38292	25528
					(193-289)	Fz	0.0029	0.0057	0.0086
						Feed (mm/min)	660	660	660
		Slot 	1	≤ .5	192	RPM	61073	30537	20358
					(154-230)	Fz	0.0028	0.0057	0.0085
						Feed (ipm)	521	521	521
		Finish 	≤ .02	1	477	RPM	151714	75857	50571
					(382-572)	Fz	0.0053	0.0106	0.0159
						Feed (ipm)	2413	2413	2413
P ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	Profile 	≤ 0.25	≤ 1	137	RPM	43624	21812	14541
					(110-165)	Fz	0.0021	0.0043	0.0064
						Feed (ipm)	279	279	279
		Slot 	1	≤ .5	110	RPM	34899	17449	11633
					(88-132)	Fz	0.0022	0.0043	0.0065
						Feed (ipm)	226	226	226
		Finish 	≤ .02	1	273	RPM	86763	43381	28921
					(218-327)	Fz	0.0039	0.0078	0.0117
						Feed (ipm)	1016	1016	1016
P ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 560 Bhn or ≤ 55 HRc	Profile 	≤ 0.25	≤ 1	28	RPM	9016	4508	3005
					(23-34)	Fz	0.0009	0.0018	0.0026
						Feed (ipm)	24	24	24
		Slot 	1	≤ .5	20	RPM	6301	3151	2100
					(16-24)	Fz	0.0008	0.0016	0.0025
						Feed (ipm)	15	15	15
		Finish 	≤ .02	1	51	RPM	16189	8095	5396
					(41-61)	Fz	0.0014	0.0029	0.0043
						Feed (ipm)	70	70	70
H TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	Profile 	≤ 0.25	≤ 1	21	RPM	6689	3344	2230
					(17-25)	Fz	0.0009	0.0019	0.0028
						Feed (ipm)	19	19	19
		Slot 	1	≤ .5	15	RPM	4847	2424	1616
					(12-18)	Fz	0.0008	0.0016	0.0024
						Feed (ipm)	11	11	11
		Finish 	≤ .02	1	38	RPM	12021	6010	4007
					(30-45)	Fz	0.0015	0.0031	0.0046
						Feed (ipm)	56	56	56
K CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	Profile 	≤ 0.25	≤ 1	189	RPM	60104	30052	20035
					(151-227)	Fz	0.0036	0.0072	0.0108
						Feed (ipm)	648	648	648
		Slot 	1	≤ .5	137	RPM	43624	21812	14541
					(110-165)	Fz	0.0031	0.0062	0.0093
						Feed (ipm)	406	406	406
		Finish 	≤ .02	1	340	RPM	108090	54045	36030
					(272-408)	Fz	0.0057	0.0114	0.0172
						Feed (ipm)	1854	1854	1854

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Series M032



Series M032 Metric	Hardness	Ae x DC	Ap x DC	Vc (m/min)	DC • mm				
					1	2	3		
M STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.25	≤ 1	102	RPM	32475	16238	10825
					(82-123)	Fz	0.0026	0.0052	0.0077
						Feed (ipm)	251	251	251
		Slot 	1	≤ .5	75	RPM	23751	11875	7917
					(60-90)	Fz	0.0021	0.0043	0.0064
						Feed (ipm)	152	152	152
		Finish 	≤ .02	1	184	RPM	58650	29325	19550
					(148-221)	Fz	0.0040	0.0079	0.0119
						Feed (ipm)	699	699	699
M STAINLESS STEELS (PH) 13-8 PH, 15-5 PH, 17-4 PH, Custom 450	≤ 325 Bhn or ≤ 35 HRc	Profile 	≤ 0.25	≤ 1	94	RPM	30052	15026	10017
					(76-113)	Fz	0.0025	0.0051	0.0076
						Feed (ipm)	229	229	229
		Slot 	1	≤ .5	69	RPM	21812	10906	7271
					(55-82)	Fz	0.0021	0.0043	0.0064
						Feed (ipm)	140	140	140
		Finish 	≤ .02	1	169	RPM	53803	26901	17934
					(135-203)	Fz	0.0040	0.0080	0.0120
						Feed (ipm)	648	648	648
S SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	Profile 	≤ 0.5	≤ 1.5	61	RPM	19388	9694	6463
					(49-73)	Fz	0.0022	0.0045	0.0067
						Feed (ipm)	130	130	130
		Slot 	1	≤ 1	44	RPM	14057	7028	4686
					(35-53)	Fz	0.0019	0.0039	0.0058
						Feed (ipm)	81	81	81
		Finish 	≤ .02	1	110	RPM	34899	17449	11633
					(88-132)	Fz	0.0035	0.0070	0.0106
						Feed (ipm)	368	368	368
S TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	Profile 	≤ 0.5	≤ 1.5	75	RPM	23751	11875	7917
					(60-90)	Fz	0.0022	0.0045	0.0067
						Feed (ipm)	160	160	160
		Slot 	1	≤ 1	55	RPM	17449	8725	5816
					(44-66)	Fz	0.0019	0.0038	0.0057
						Feed (ipm)	99	99	99
		Finish 	≤ .02	1	134	RPM	42654	21327	14218
					(107-161)	Fz	0.0036	0.0071	0.0107
						Feed (ipm)	457	457	457

Bhn (Brinell) HRc (Rockwell C)
 rpm = (Vc x 1000) / (DC x 3.14)
 mm/min = Fz x 3 x rpm (Fz x 3 x max available rpm when recommendation exceeds machine limit)
 reduce speed and feed for materials harder than listed
 refer to the KYOCERA SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)