



Series 7M, 7MB Metric	Hardness	Finish	Ae x DC	Ap x DC	Vc (m/min)	DC • mm									
						3	6	8	10	12	16	20	25		
<b>P</b>	<b>CARBON STEELS</b> 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	Finish	≤ 0.02	≤ 2	146	RPM	15511	7755	5816	4653	3878	2908	2327	1861
						(117-176)	Fz	0.0166	0.043	0.075	0.093	0.110	0.125	0.147	0.160
						Feed (mm/min)	1030	1334	1745	1731	1706	1454	1368	1191	
	<b>ALLOY STEELS</b> 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	Finish	≤ 0.02	≤ 2	84	RPM	8886	4443	3332	2666	2222	1666	1333	1066
						(67-101)	Fz	0.0122	0.034	0.051	0.069	0.082	0.091	0.109	0.120
						Feed (mm/min)	434	604	680	736	729	606	581	512	
<b>TOOL STEELS</b> A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	Finish	≤ 0.02	≤ 2	70	RPM	7432	3716	2787	2230	1858	1394	1115	892	
					(56-84)	Fz	0.0070	0.019	0.040	0.043	0.048	0.057	0.064	0.070	
					Feed (mm/min)	208	282	446	384	357	318	285	250		
<b>M</b>	<b>STAINLESS STEELS (FREE MACHINING)</b> 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	Finish	≤ 0.02	≤ 2	128	RPM	13572	6786	5089	4072	3393	2545	2036	1629
						(102-154)	Fz	0.0086	0.024	0.040	0.048	0.058	0.065	0.077	0.087
						Feed (mm/min)	467	651	814	782	787	662	627	567	
	<b>STAINLESS STEELS (DIFFICULT)</b> 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Finish	≤ 0.02	≤ 2	88	RPM	9371	4686	3514	2811	2343	1757	1406	1125
						(71-106)	Fz	0.0082	0.022	0.037	0.045	0.048	0.060	0.072	0.078
						Feed (mm/min)	307	412	520	506	450	422	405	351	
<b>STAINLESS STEELS (PH)</b> 13-8 PH, 15-5 PH, 17-4 PH, Custom 450	≤ 325 Bhn or ≤ 35 HRc	Finish	≤ 0.02	≤ 2	81	RPM	8563	4282	3211	2569	2141	1606	1284	1028	
					(65-97)	Fz	0.0070	0.019	0.029	0.040	0.048	0.055	0.064	0.070	
					Feed (mm/min)	240	325	372	411	411	353	329	288		
<b>K</b>	<b>CAST IRONS (LOW &amp; MEDIUM ALLOY)</b> Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	Finish	≤ 0.02	≤ 2	184	RPM	19550	9775	7331	5865	4887	3666	2932	2346
						(148-221)	Fz	0.0132	0.036	0.052	0.075	0.089	0.099	0.117	0.130
						Feed (mm/min)	1032	1408	1525	1759	1740	1452	1372	1220	
<b>CAST IRONS (HIGH ALLOY)</b> Gray, Malleable, Ductile	≤ 260 Bhn or ≤ 26 HRc	Finish	≤ 0.02	≤ 2	142	RPM	15026	7513	5635	4508	3756	2817	2254	1803	
					(113-170)	Fz	0.0132	0.036	0.052	0.075	0.089	0.099	0.117	0.130	
					Feed (mm/min)	793	1082	1172	1352	1337	1116	1055	938		
<b>S</b>	<b>HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE)</b> Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	Finish	≤ 0.02	≤ 2	24	RPM	2585	1293	969	776	646	485	388	310
						(20-29)	Fz	0.0072	0.019	0.029	0.037	0.046	0.053	0.061	0.085
						Feed (mm/min)	74	98	112	90	119	103	95	105	
	<b>HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE)</b> Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	Finish	≤ 0.02	≤ 2	20	RPM	2100	1050	788	630	525	394	315	252
						(16-24)	Fz	0.0075	0.016	0.021	0.030	0.038	0.044	0.051	0.070
						Feed (mm/min)	63	67	66	76	80	69	64	71	
<b>TITANIUM ALLOYS</b> Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	Finish	≤ 0.02	≤ 2	91	RPM	9694	4847	3635	2908	2424	1818	1454	1163	
					(73-110)	Fz	0.0091	0.024	0.040	0.050	0.060	0.070	0.080	0.088	
					Feed (mm/min)	353	465	51	59	582	509	465	409		
<b>TITANIUM ALLOYS (DIFFICULT)</b> Ti10V2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 420 Bhn or ≤ 45 HRc	Finish	≤ 0.02	≤ 2	32	RPM	3393	1696	1272	1018	848	636	509	407	
					(26-38)	Fz	0.0082	0.019	0.029	0.037	0.046	0.053	0.061	0.085	
					Feed (mm/min)	111	129	148	151	156	135	124	138		

Bhn (Brinell)      HRc (Rockwell C)

rpm = (Vc x 1000) / (DC x 3.14)

mm/min = Fz x 4 x rpm

reduce speed and feed for materials harder than listed

feed rates listed have chip thinning adjustments included where applicable

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