

Straight Flute Reamer

Series 201M Metric	Hardness	Vc (m/min)	DC • mm							
			1	2	3	4	6	8	10	
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	46 or ≤ 7 HRc (37-55)	RPM	14541	7271	4847	3635	2424	1818	1454
			Fr	0.028	0.056	0.085	0.113	0.169	0.226	0.282
			Feed (mm/min)	410	410	410	410	410	410	410
		23 or ≤ 32 HRc (18-27)	RPM	7271	3635	2424	1818	1212	909	727
			Fr	0.025	0.050	0.074	0.099	0.149	0.198	0.248
			Feed (mm/min)	180	180	180	180	180	180	180
		17 or ≤ 45 HRc (13-20)	RPM	5332	2666	1777	1333	889	666	533
			Fr	0.015	0.030	0.044	0.059	0.089	0.119	0.148
			Feed (mm/min)	79	79	79	79	79	79	79
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	35 or ≤ 28 HRc (28-42)	RPM	11148	5574	3716	2787	1858	1394	1115
			Fr	0.024	0.048	0.072	0.096	0.144	0.192	0.240
			Feed (mm/min)	268	268	268	268	268	268	268
		21 or ≤ 40 HRc (17-26)	RPM	6786	3393	2262	1696	1131	848	679
			Fr	0.024	0.048	0.072	0.096	0.144	0.192	0.240
			Feed (mm/min)	163	163	163	163	163	163	163
		14 or ≤ 45 HRc (11-16)	RPM	4362	2181	1454	1091	727	545	436
			Fr	0.015	0.030	0.045	0.060	0.089	0.119	0.149
			Feed (mm/min)	65	65	65	65	65	65	65
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	12 or ≤ 24 HRc (10-15)	RPM	3878	1939	1293	969	646	485	388
			Fr	0.015	0.031	0.046	0.062	0.093	0.124	0.155
			Feed (mm/min)	60	60	60	60	60	60	60
		8 or ≤ 40 HRc (6-9)	RPM	2424	1212	808	606	404	303	242
			Fr	0.010	0.020	0.030	0.040	0.059	0.079	0.099
			Feed (mm/min)	24	24	24	24	24	24	24
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F 440F	23 or ≤ 24 HRc (18-27)	RPM	7271	3635	2424	1818	1212	909	727
			Fr	0.015	0.030	0.045	0.059	0.089	0.119	0.149
			Feed (mm/min)	108	108	108	108	108	108	108
		17 or ≤ 36 HRc (13-20)	RPM	5332	2666	1777	1333	889	666	533
			Fr	0.012	0.024	0.036	0.048	0.072	0.096	0.120
			Feed (mm/min)	64	64	64	64	64	64	64
	STAINLESS STEELS (DIFFICULT) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	11 or ≤ 28 HRc (9-13)	RPM	3393	1696	1131	848	565	424	339
			Fr	0.015	0.029	0.044	0.059	0.088	0.118	0.147
			Feed (mm/min)	50	50	50	50	50	50	50
		8 or ≤ 40 HRc (6-9)	RPM	2424	1212	808	606	404	303	242
			Fr	0.010	0.020	0.030	0.040	0.059	0.079	0.099
			Feed (mm/min)	24	24	24	24	24	24	24

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Series 201M Metric	Hardness	Vc (m/min)	DC • mm								
			1	2	3	4	6	8	10		
K	CAST IRONS Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	38	RPM	12118	6059	4039	3029	2020	1515	1212
		(30-46)	Fr	0.032	0.064	0.097	0.129	0.193	0.257	0.322	
			Feed (mm/min)	390	390	390	390	390	390	390	
		≤ 330 Bhn or ≤ 36 HRc	29	RPM	9209	4605	3070	2302	1535	1151	921
		(23-35)	Fr	0.032	0.064	0.096	0.128	0.192	0.256	0.320	
			Feed (mm/min)	295	295	295	295	295	295	295	
N	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 80 Bhn or ≤ 47 HRb	82	RPM	26174	13087	8725	6544	4362	3272	2617
		(66-99)	Fr	0.040	0.080	0.120	0.160	0.240	0.320	0.400	
			Feed (mm/min)	1047	1047	1047	1047	1047	1047	1047	
		≤ 150 Bhn or ≤ 88 HRb	70	RPM	22297	11148	7432	5574	3716	2787	2230
		(56-84)	Fr	0.040	0.080	0.120	0.160	0.240	0.320	0.400	
			Feed (mm/min)	892	892	892	892	892	892	892	
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	35	RPM	11148	5574	3716	2787	1858	1394	1115
		(28-42)	Fr	0.020	0.041	0.061	0.081	0.122	0.163	0.204	
			Feed (mm/min)	227	227	227	227	227	227	227	
		≤ 200 Bhn or ≤ 23 HRc	29	RPM	9209	4605	3070	2302	1535	1151	921
		(23-35)	Fr	0.020	0.041	0.061	0.082	0.122	0.163	0.204	
			Feed (mm/min)	188	188	188	188	188	188	188	

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Series 201M Metric	Hardness	Vc (m/min)		DC • mm						
				1	2	3	4	6	8	10
S	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	6 (5-7)	RPM	1939	969	646	485	323	242	194
			Fr	0.012	0.024	0.036	0.047	0.071	0.095	0.119
			Feed (mm/min)	23	23	23	23	23	23	23
		5 (4-5)	RPM	1454	727	485	364	242	182	145
			Fr	0.010	0.021	0.031	0.041	0.062	0.083	0.103
			Feed (mm/min)	15	15	15	15	15	15	15
		3 (2-4)	RPM	969	485	323	242	162	121	97
			Fr	0.006	0.012	0.019	0.025	0.037	0.050	0.062
			Feed (mm/min)	6	6	6	6	6	6	6
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V	14 (11-16)	RPM	4362	2181	1454	1091	727	545	436
			Fr	0.024	0.048	0.072	0.096	0.144	0.193	0.241
			Feed (mm/min)	105	105	105	105	105	105	105
		11 (9-13)	RPM	3393	1696	1131	848	565	424	339
			Fr	0.015	0.029	0.044	0.059	0.088	0.118	0.147
			Feed (mm/min)	50	50	50	50	50	50	50
		8 (6-9)	RPM	2424	1212	808	606	404	303	242
			Fr	0.010	0.020	0.030	0.040	0.059	0.079	0.099
			Feed (mm/min)	24	24	24	24	24	24	24
H	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	6 (5-7)	RPM	1939	969	646	485	323	242	194
			Fr	0.006	0.012	0.019	0.025	0.037	0.050	0.062
			Feed (mm/min)	12	12	12	12	12	12	12
		4 (3-5)	RPM	1272	636	424	318	212	159	127
			Fr	0.006	0.013	0.019	0.025	0.038	0.050	0.063
			Feed (mm/min)	8	8	8	8	8	8	8

Bhn (Brinell) HRC (Rockwell C) HRB (Rockwell B)

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

mm/min = Fr x rpm

increase speed and feed 30 percent when using coated reamers

reduce speed and feed for materials harder than listed

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