

GARR TOOL Reaming Guide

Fractional

Type	Rc Hardness	Recommended SFM	Chipload Per Flute (Fz)			
			Series 4100	.0590" - .1250" (1.499 - 3.175mm)	.1251" - .2500" (3.178 - 6.350mm)	.2501" - .3750" (6.353 - 9.525mm)
COBALT BASE ALLOYS						
Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605	< 35 > 35	80-120 60-80	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
NICKEL BASE ALLOYS						
Invar, Kovar, Inconel-625/718, Waspalloy, Rene, Hastalloy, A286	< 35 > 35	100-125 80-110	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
IRON BASE ALLOYS						
Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 35 > 35	150-175 120-150	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
MONEL						
Monel - 65% Nickel		75-110	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
TITANIUM ALLOYS						
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		120-150	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
STAINLESS STEELS						
(Precipitation) 13/8, 15/5, 17-4, pH Types	< 35 > 35	100-125 80-110	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
(Austenitic) Inox, 200 Series, 300 Series	< 35 > 35	100-125 80-110	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
(Austenitic) 304L, 316L, Nitronic 50, Inox	< 35 > 35	80-100 60-80	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
(Martensitic) 400 Series	< 35 > 35	100-125 80-110	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 35 > 35	100-125 80-110	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
MEDIUM ALLOY TOOL STEELS						
200, 250, 300, 8620	< 35 > 35	100-125 80-110	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
CARBON STEELS						
Platinum, A36, 12L14, 1000's, 1100's, 1300's	< 35 > 35	100-125 80-110	.0004"-.0009"	.0006"-.0012"	.0009"-.0013"	.0010"-.0017"
CAST MATERIAL						
Steel		125-150	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"
Ductile Iron		150-225	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
Gray Iron		125-200	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
Aluminum		150-225	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
ALUMINUM						
Aircraft Grade (6061, 7075)		225	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
MAGNESIUM						
		225	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
COPPER						
Copper Alloys		225	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
BRASS, BRONZE						
Brass, Aluminum/Bronze, Low Silicon Bronze		125-200	.0005"-.0010"	.0007"-.0012"	.0010"-.0015"	.0010"-.0018"
COMPOSITE MATERIAL						
Glass Epoxy, Fiberglass, Plastics, Graphite, G10		150	.0003"-.0008"	.0005"-.0010"	.0008"-.0012"	.0010"-.0015"

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

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Metric

Type	Rc Hardness	Recommended SMM	Chipload Per Flute (Fz)			
		Series 4100	1.50 - 3.00mm	3.01 - 6.00mm	6.01 - 9.00mm	9.01 - 13.00mm
COBALT BASE ALLOYS						
Powdered Metal, Stellite, Hs - 21, Haynes 25/188, X - 40, L - 605	< 35 > 35	25 - 40 15 - 25	.008 - .020	.013 - .025	.020 - .030	.025 - .040
NICKEL BASE ALLOYS						
Invar, Kovar, Inconel - 625/718, Waspalloy, Rene, Hastalloy, A286	< 35 > 35	30 - 40 25 - 35	.008 - .020	.013 - .025	.020 - .030	.025 - .040
IRON BASE ALLOYS						
Incoloy 800 - 802, Multimet N - 155, Timkin 16 - 25 - 6, Carpenter 22 - b3	< 35 > 35	45 - 50 35 - 45	.010 - .023	.015 - .030	.023 - .035	.025 - .045
MONEL						
Monel - 65% Nickel		20 - 35	.008 - .020	.013 - .025	.020 - .030	.025 - .040
TITANIUM ALLOYS						
Commercially Pure, 6Al - 4V, Astm 1/2/3, 6Al - 25N - 4Zr - 2Mo - Si		40 - 45	.010 - .023	.015 - .030	.023 - .035	.025 - .045
STAINLESS STEELS						
(Precipitation) 13/8, 15/5, 17 - 4, pH Types	< 35 > 35	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
(Austenitic) Inox, 200 Series, 300 Series	< 35 > 35	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
(Austenitic) 304L, 316L, Nitronic 50, Inox	< 35 > 35	25 - 30 15 - 25	.008 - .020	.013 - .025	.020 - .030	.025 - .040
(Martensitic) 400 Series	< 35 > 35	30 - 35 25 - 30	.010 - .023	.015 - .030	.023 - .035	.025 - .045
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 35 > 35	30 - 40 25 - 35	.008 - .020	.013 - .025	.020 - .030	.025 - .040
MEDIUM ALLOY TOOL STEELS						
200, 250, 300, 8620	< 35 > 35	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
CARBON STEELS						
Platinum, A36, 12L14, 1000's, 1100's, 1300's	< 35 > 35	30 - 40 25 - 35	.010 - .023	.015 - .030	.023 - .035	.025 - .045
CAST MATERIAL						
Steel		40 - 45	.008 - .020	.013 - .025	.020 - .030	.025 - .040
Ductile Iron		45 - 70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
Gray Iron		35 - 70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
Aluminum		40 - 70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
ALUMINUM						
Aircraft Grade (6061, 7075)		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
MAGNESIUM						
		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
COPPER						
Copper Alloys		70	.013 - .025	.018 - .025	.025 - .040	.025 - .050
BRASS, BRONZE						
Brass, Aluminum/Bronze, Low Silicon Bronze		40 - 60	.013 - .025	.018 - .025	.025 - .040	.025 - .050
COMPOSITE MATERIAL						
Glass Epoxy, Fiberglass, Plastics, Graphite, G10		40 - 45	.008 - .020	.010 - .025	.020 - .030	.025 - .040

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