GARR TOOL Drilling Guide
Metric

Type	Rc Hardness	CHIPLOAD PER FLUTE (Fz)				
		2.0 - 3.0	3.0 - 6.0	6.0 - 10.0	10.0 - 13.0	13.0 - 16.0
COBALT BASE ALLOYS						
Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-4. L-605	< 35 > 35	.010 - .025 .010 - .025	.020 - .050 .013 - .025	.040 - .065 .025 - .040	.050 - .100 .025 - .050	.065 - .125 .040 - .075
NICKEL BASE ALLOYS						
Invar, Kovar, Inconel-625/718, Waspalloy, Rene, Hastalloy, A286	< 35 > 35	.013 - .040 .010 - .025	.025 - .040 .020 - .040	.040 - .065 .025 - .040	.050 - .100 .040 - .075	.065 - .125 .050 - .100
IRON BASE ALLOYS						
Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 35 > 35	.025 - .040 .020 - .040	.025 - .050 .025 - .050	.040 - .090 .040 - .065	.050 - .100 .040 - .075	.075 - .150 .065 - .125
MONEL						
Monel - 65% Nickel		.010 - .025	.020 - .040	.025 - .040	.040 - .075	.050 - .100
TITANIUM ALLOYS						
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		.020 - .040	.025 - .050	.040 - .075	.050 - .100	.065 - .125
STAINLESS STEELS						
(Precipitation) 13/8, 15/5, 17-4, pH Types	< 35 > 35	.013 - .040 .010 - .025	.025 - .050 .020 - .040	.040 - .090 .025 - .040	.050 - .100 .040 - .075	.065 - .125 .050 - .100
(Austentic) Inox, 200 Series, 300 Series	< 35 > 35	.013 - .040 .010 - .025	.025 - .050 .020 - .040	.040 - .090 .025 - .040	.050 - .100 .040 - .075	.065 - .125 .050 - .100
(Austentic) 304L, 316L, Nitronic 50, Inox	< 35 > 35	.010 - .025 .008 - .020	.020 - .040 .013 - .025	.025 - .040 .025 - .040	.040 - .075 .025 - .050	.050 - .100 .040 - .075
(Martensitic) 400 Series	< 35 > 35	.013 - .040 .010 - .025	.025 - .050 .020 - .040	.040 - .090 .025 - .040	.050 - .100 .040 - .075	.065 - .125 .050 - .100
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 35 > 35	.013 - .040 .010 - .025	.025 - .050 .025 - .050	.040 - .065 .025 - .050	.050 - .100 .040 - .075	.075 - .125 .050 - .100
MEDIUM ALLOY TOOL STEELS						
200, 250, 300, 8620	< 35 > 35	.025 - .040 .013 - .040	.040 - .065 .025 - .050	.050 - .075 .025 - .065	.050 - .100 .040 - .075	.065 - .125 .050 - .100
CARBON STEELS						
Platinum, A36, 12L14, 1000's, 1100's, 1300's	< 35 > 35	.025 - .040 .013 - .040	.040 - .065 .025 - .050	.050 - .075 .025 - .065	.050 - .100 .040 - .090	.065 - .125 .050 - .100
CAST MATERIAL						
Steel		.020 - .040	.025 - .050	.040 - .075	.050 - .100	.065 - .125
Ductile Iron		.025 - .050	.025 - .075	.040 - .090	.065 - .100	.075 - .125
Gray Iron		.025 - .050	.025 - .075	.040 - .090	.065 - .100	.075 - .125
Aluminum		.025 - .050	.025 - .100	.050 - .125	.075 - .150	.090 - .180
ALUMINUM						
Aircraft Grade (6061, 7075)		.025 - .050	.025 - .100	.050 - .125	.075 - .150	.090 - .180
MAGNESIUM						
		.025 - .050	.025 - .075	.040 - .090	.065 - .100	.075 - .125
COPPER						
Copper Alloys		.025 - .050	.025 - .075	.040 - .090	.065 - .100	.075 - .125
BRASS, BRONZE						
Brass, Aluminum/Bronze, Low Silicon Bronze		.025 - .050 .020 - .040	.025 - .075 .025 - .050	.040 - .090 .040 - .075	.065 - .100 .050 - .100	.075 - .125 .065 - .125
COMPOSITE MATERIAL						
Glass Epoxy, Fiberglass, Plastics, Graphite, G10		.025 - .050	.025 - .075	.040 - .090	.065 - .100	.075 - .125

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