GARR TOOL High Performance Drilling Guide

ISO Material		HRC	SFM (Vc)		CHIPLOAD PER TOOTH (Fz)				
			NON-COOLANT	COOLANT FED	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"	5/8" - 3/4"
S	**COBALT BASE ALLOYS**								
	Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605	< 40 > 40	185 125	225 180	.0010" - .0020" .0005" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0020" - .0030"	.0030" - .0040" .0025" - .0035"	.0035" - .0055" .0030" - .0045"
	NICKEL BASE ALLOYS								
	Invar, Kovar, Inconel-625/718, Waspaloy, Rene, Hastelloy, A286	< 40 > 40	125 90	200 160	.0010" - .0020" .0005" - .0015"	.0020" - .0030" .0015" - .0025"	.0025" - .0035" .0020" - .0030"	.0030" - .0040" .0025" - .0035"	.0035" - .0055" .0030" - .0045"
	IRON BASE ALLOYS								
	Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 40 > 40	175 125	250 200	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0025" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0035" - .0055" .0030" - .0045"
	MONEL								
	Monel - 65% Nickel		150	225	.0010" - .0020"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0055"
	TITANIUM ALLOYS								
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si		225	300	.0010" - .0020"	.0020" - .0030"	.0025" - .0035"	.0030" - .0040"	.0035" - .0055"
M	**STAINLESS STEELS**								
	(Precipitation) 13/8, 15/5, 17-4, pH Types	< 40 > 40	225 175	300 240	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0030" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0040" - .0055" .0035" - .0045"
	(Austentic) 200 Series, 300 Series	< 40 > 40	225 175	300 225	.0015" - .0025" .0010" - .0015"	.0025" - .0030" .0015" - .0020"	.0030" - .0035" .0020" - .0025"	.0035" - .0045" .0025" - .0035"	.0040" - .0055" .0035" - .0045"
	(Austentic) 304L, 316L, Nitronic 50	< 40 > 40	125 80	175 100	.0010" - .0015" .0003" - .0010"	.0015" - .0025" .0010" - .0015"	.0020" - .0030" .0015" - .0025"	.0030" - .0040" .0025" - .0035"	.0025" - .0040" .0020" - .0040"
	(Martensitic) 400 Series	< 40 > 40	225 175	300 240	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0030" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0040" - .0055" .0035" - .0045"
P	**HIGH STRENGTH TOOL STEELS**								
	4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 40 > 40	200 175	300 240	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0030" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0040" - .0055" .0035" - .0045"
	MEDIUM ALLOY TOOL STEELS								
	200, 250, 300, 8620	< 40 > 40	200 175	300 240	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0030" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0040" - .0065" .0035" - .0045"
	LOW CARBON STEELS								
	Platinum, A36, 12L14, 1000's, 1100's, 1300's	< 40 > 40	200 175	300 240	.0015" - .0025" .0005" - .0015"	.0025" - .0030" .0015" - .0025"	.0030" - .0035" .0025" - .0030"	.0035" - .0045" .0030" - .0035"	.0040" - .0065" .0035" - .0045"
	CAST STEELS								
	Steel		200	300	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
K	**CAST MATERIAL**								
	Ductile Iron		250	350	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
	Gray Iron		250	400	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
N	**NON-FERROUS**								
	Aluminum 2014, 2024, 6061-(T1-T6), 7075		300 - 400	300 - 500	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"	.0085" - .0095"	.0085" - .0095"
	Aluminum Die Cast		250 - 300	300 - 400	.0025" - .0035"	.0035" - .0045"	.0055" - .0065"	.0075" - .0085"	.0075" - .0085"
	Magnesium		300	400	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"	.0085" - .0095"	.0085" - .0095"
	Copper		300	400	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
	Brass		200 - 300	300 - 400	.0025" - .0045"	.0035" - .0055"	.0055" - .0075"	.0075" - .0095"	.0075" - .0095"
	Bronze		150 - 200	250 - 300	.0015" - .0035"	.0025" - .0045"	.0025" - .0045"	.0045" - .0065"	.0065" - .0085"

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