

# GARR TOOL High Performance Drilling Guide

## Fractional

TECHNICAL

Type	Rc Hardness	Recommended SFM		CHIPLOAD PER FLUTE (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"
		1580H 1280H 1580HD	1580KH 1280KH 1880KH 1580KD 1280KD					
<b>COBALT BASE ALLOYS</b>								
Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605	< 35	185	225	.0010" - .0020"	.0020" - .0030"	.0025" - .0035"	.0030" - .0040"	.0035" - .0055"
	> 35	125	180	.0005" - .0015"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0030" - .0045"
<b>NICKEL BASE ALLOYS</b>								
Invar, Kovar, Inconel-625/718, Waspaloy, Rene, Hastelloy, A286	< 35	125	200	.0010" - .0020"	.0020" - .0030"	.0025" - .0035"	.0030" - .0040"	.0035" - .0055"
	> 35	90	160	.0005" - .0015"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0030" - .0045"
<b>IRON BASE ALLOYS</b>								
Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 35	175	250	.0015" - .0025"	.0025" - .0030"	.0025" - .0035"	.0035" - .0045"	.0035" - .0055"
	> 35	125	200	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0030" - .0045"
<b>MONEL</b>								
Monel - 65% Nickel		150	225	.0010" - .0020"	.0015" - .0025"	.0020" - .0030"	.0025" - .0035"	.0035" - .0055"
<b>TITANIUM ALLOYS</b>								
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"
<b>STAINLESS STEELS</b>								
(Precipitation) 13/8, 15/5, 17-4, pH Types	< 35	225	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0040" - .0055"
	> 35	175	240	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"
(Austenitic) Inox, 200 Series, 300 Series	< 35	225	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0040" - .0055"
	> 35	175	225	.0010" - .0015"	.0015" - .0020"	.0020" - .0025"	.0025" - .0035"	.0035" - .0045"
(Austenitic) 304L, 316L, Nitronic 50, Inox	< 35	125	175	.0010" - .0015"	.0015" - .0020"	.0020" - .0030"	.0030" - .0040"	.0025" - .0040"
	> 35	80	100	.0003" - .0010"	.0010" - .0015"	.0015" - .0025"	.0025" - .0035"	.0020" - .0040"
(Martensitic) 400 Series	< 35	225	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0040" - .0055"
	> 35	175	240	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"
<b>HIGH STRENGTH TOOL STEELS</b>								
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 35	200	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0045" - .0055"
	> 35	175	240	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"
<b>MEDIUM ALLOY TOOL STEELS</b>								
200, 250, 300, 8620	< 35	200	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0045" - .0065"
	> 35	175	240	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"
<b>CARBON STEELS</b>								
Platinum, A36, 12L14, 1000's, 1100's, 1300's	< 35	200	300	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"	.0045" - .0065"
	> 35	175	240	.0005" - .0015"	.0015" - .0025"	.0025" - .0030"	.0030" - .0035"	.0035" - .0045"
<b>CAST MATERIAL</b>								
Steel		200	300	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
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"
<b>ALUMINUM</b>								
2014, 2024, 6061-(T1-T6), 7075		300 - 400	300 - 500	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"	.0085" - .0095"	.0085" - .0095"
Die Cast, Extruded		250 - 300	300 - 400	.0025" - .0035"	.0035" - .0045"	.0055" - .0065"	.0075" - .0085"	.0075" - .0085"
<b>MAGNESIUM</b>								
		300	400	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"	.0085" - .0095"	.0085" - .0095"
<b>COPPER</b>								
Copper Alloys		300	400	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"
<b>BRASS</b>								
Short Chips		300	400	.0035" - .0045"	.0045" - .0055"	.0065" - .0075"	.0085" - .0095"	.0085" - .0095"
Long Chips		200	300	.0025" - .0035"	.0035" - .0045"	.0055" - .0065"	.0075" - .0085"	.0075" - .0085"
<b>BRONZE</b>								
Short Chips		200	300	.0025" - .0035"	.0035" - .0045"	.0035" - .0045"	.0055" - .0065"	.0075" - .0085"
Long Chips		150	250	.0015" - .0025"	.0025" - .0035"	.0025" - .0035"	.0045" - .0055"	.0065" - .0075"

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