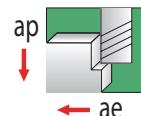


GARR TOOL X9, G9 High Performance Milling Guide

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz)			
				1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS							
Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605		< 40	120 - 240	.0019" - .0036"	.0021" - .0043"	.0026" - .0052"	.0038" - .0072"
		> 40	100 - 195	.0014" - .0031"	.0017" - .0038"	.0020" - .0048"	.0028" - .0062"
NICKEL BASE ALLOYS							
Invar, Kovar, Inconel-625/718, Waspaloy, Rene, Hastelloy, A286		< 40	120 - 240	.0019" - .0036"	.0021" - .0043"	.0026" - .0052"	.0038" - .0072"
		> 40	100 - 195	.0014" - .0031"	.0017" - .0038"	.0020" - .0048"	.0028" - .0062"
IRON BASE ALLOYS							
Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3		< 40	120 - 240	.0019" - .0036"	.0021" - .0043"	.0026" - .0052"	.0038" - .0072"
		> 40	100 - 195	.0014" - .0031"	.0017" - .0038"	.0020" - .0048"	.0028" - .0062"
MONEL							
Monel - 65% Nickel			160 - 290	.0019" - .0036"	.0021" - .0043"	.0026" - .0052"	.0038" - .0072"
TITANIUM ALLOYS							
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si			260 - 490	.0021" - .0040"	.0026" - .0048"	.0028" - .0056"	.0042" - .0080"
5553 / Beta Titanium			195 - 365	.0021" - .0036"	.0026" - .0043"	.0028" - .0052"	.0042" - .0072"
STAINLESS STEELS							
13/8, 15/5, 17-4, pH Types		< 40	290 - 490	.0019" - .0036"	.0022" - .0043"	.0026" - .0052"	.0038" - .0072"
		> 40	225 - 360	.0014" - .0031"	.0017" - .0039"	.0020" - .0048"	.0028" - .0062"
200 Series, 300 Series		< 40	355 - 555	.0019" - .0041"	.0022" - .0048"	.0026" - .0058"	.0038" - .0082"
		> 40	290 - 455	.0014" - .0031"	.0017" - .0039"	.0020" - .0048"	.0028" - .0062"
304L, 316L, Nitronic 50		< 40	325 - 520	.0019" - .0036"	.0022" - .0043"	.0026" - .0052"	.0038" - .0072"
		> 40	225 - 360	.0014" - .0031"	.0017" - .0039"	.0020" - .0048"	.0028" - .0062"
400 Series		< 40	290 - 555	.0019" - .0038"	.0022" - .0046"	.0026" - .0056"	.0038" - .0076"
		> 40	225 - 425	.0014" - .0034"	.0017" - .0041"	.0020" - .0050"	.0028" - .0068"
HIGH STRENGTH TOOL STEELS							
A2, D2, P20, H13, S7, O1		< 40	290 - 520	.0024" - .0038"	.0026" - .0046"	.0032" - .0056"	.0048" - .0076"
		> 40	195 - 425	.0022" - .0031"	.0024" - .0038"	.0028" - .0048"	.0044" - .0062"
MEDIUM ALLOY TOOL STEELS							
4140, 4340, 52100, 6150, 8620		< 40	455 - 650	.0024" - .0040"	.0026" - .0048"	.0032" - .0058"	.0048" - .0080"
		> 40	325 - 490	.0022" - .0033"	.0024" - .0040"	.0028" - .0048"	.0044" - .0066"
CARBON STEELS							
1000's - 1018, 1020, 12L14		< 40	490 - 780	.0024" - .0043"	.0026" - .0050"	.0032" - .0060"	.0048" - .0086"
CAST MATERIAL							
Steel (Malleable)			455 - 685	.0029" - .0046"	.0031" - .0053"	.0036" - .0062"	.0058" - .0092"
Ductile Iron			455 - 685	.0029" - .0046"	.0031" - .0053"	.0036" - .0062"	.0058" - .0092"
Gray Iron			585 - 770	.0031" - .0048"	.0034" - .0055"	.0038" - .0064"	.0062" - .0096"

Profile/Trochoidal Milling	
Axial (ap)	MAX
Radial (ae)	Up to 10%



NOTE - DATA DOES NOT REFLECT CHIP THINNING.

SPINDLE INTERFACE MUST BE SCRUTINIZED WHEN USING 5/8" DIAMETER AND LARGER END MILLS

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