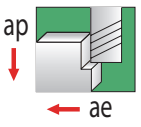
GARR TOOL Milling Guide for X9/G9

ISO Material		HRC	SFM (Vc)	CHIPLOAD PER TOOTH (Fz) 1/2"	5/8"	3/4"	1"
S	**COBALT BASE ALLOYS**						
	Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605	< 40 > 40	120 - 240 100 - 195	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	NICKEL BASE ALLOYS						
	Invar, Kovar, Inconel-625/718, Waspaloy, Rene, Hastelloy, A286	< 40 > 40	120 - 240 100 - 195	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	IRON BASE ALLOYS						
	Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 40 > 40	120 - 240 100 - 195	.0019" - .0036" .0014" - .0031"	.0021" - .0043" .0017" - .0038"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .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"
M	**STAINLESS STEELS**						
	13/8, 15/5, 17-4, pH Types	< 40 > 40	290 - 490 225 - 360	.0019" - .0036" .0014" - .0031"	.0022" - .0043" .0017" - .0039"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	200 Series, 300 Series	< 40 > 40	355 - 555 290 - 455	.0019" - .0041" .0014" - .0031"	.0022" - .0048" .0017" - .0039"	.0026" - .0058" .0020" - .0048"	.0038" - .0082" .0028" - .0062"
	304L, 316L, Nitronic 50	< 40 > 40	325 - 520 225 - 360	.0019" - .0036" .0014" - .0031"	.0022" - .0043" .0017" - .0039"	.0026" - .0052" .0020" - .0048"	.0038" - .0072" .0028" - .0062"
	400 Series	< 40 > 40	290 - 555 225 - 425	.0019" - .0038" .0014" - .0034"	.0022" - .0046" .0017" - .0041"	.0026" - .0056" .0020" - .0050"	.0038" - .0076" .0028" - .0068"
P	**HIGH STRENGTH TOOL STEELS**						
	A2, D2, P20, H13, S7, O1	< 40 > 40	290 - 520 195 - 425	.0024" - .0038" .0022" - .0031"	.0026" - .0046" .0024" - .0038"	.0032" - .0056" .0028" - .0048"	.0048" - .0076" .0044" - .0062"
	MEDIUM ALLOY TOOL STEELS						
	4140, 4340, 52100, 6150, 8620	< 40 > 40	455 - 650 325 - 490	.0024" - .0040" .0022" - .0033"	.0026" - .0048" .0024" - .0040"	.0032" - .0058" .0028" - .0048"	.0048" - .0080" .0044" - .0066"
	CARBON STEELS						
	1000's - 1018, 1020, 12L14	< 40	490 - 780	.0024" - .0043"	.0026" - .0050"	.0032" - .0060"	.0048" - .0086"
K	**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.