GARR TOOL General Purpose Milling Guide

	ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz) 1.5mm	3.0mm	5.0mm	6.0mm	8.0mm	10.0mm	12.0mm	16.0mm	20.0mm	25.0mm
S	**COBALT BASE ALLOYS**												
	Haynes 25/188, Stellite 21, Cobalt Chrome	< 40 > 40	24 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	NICKEL BASE ALLOYS												
	Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40 > 40	22 - 35 18 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	IRON BASE ALLOYS												
	A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascolloy	< 40 > 40	22 - 35 20 - 31	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.010 - .020 .008 - .015	.013 - .025 .008 - .020	.020 - .038 .013 - .025	.025 - .046 .020 - .038	.038 - .076 .025 - .038	.051 - .076 .038 - .064	.064 - .089 .038 - .051	.064 - .089 .038 - .051
	TITANIUM ALLOYS												
	Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		39 - 59	.008 - .020	.008 - .020	.013 - .030	.013 - .030	.020 - .038	.025 - .038	.033 - .051	.046 - .064	.051 - .076	.064 - .089
	5553 / Beta Titanium		35 - 47	.008 - .020	.008 - .020	.010 -.025	.010 - .025	.013 - .030	.020 - .036	.025 - .041	.025 - .051	.038 - .064	.038 - .064
M	**STAINLESS STEELS**												
	13/8, 15/5, 17-4, pH Types	< 40 > 40	39 - 59 31 - 39	.005 - .013 .005 - .010	.008 - .015 .005 - .010	.008 - .018 .005 - .015	.015 - .023 .008 - .018	.020 - .030 .010 - .020	.033 - .046 .018 - .030	.025 - .051 .020 - .038	.030 - .064 .025 - .041	.030 - .051 .033 - .043	.051 - .071 .038 - .051
	300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40 > 40	39 - 59 31 - 39	.008 - .015 .005 - .010	.008 - .018 .005 - .013	.013 - .025 .010 - .018	.020 - .038 .013 - .025	.023 - .033 .013 - .025	.025 - .046 .018 - .025	.038 - .051 .023 - .038	.046 - .056 .030 - .046	.046 - .089 .038 - .064	.058 - .091 .051 - .076
	400 Series - 403, 405, 420, 455	< 40 > 40	59 - 79 39 - 59	.013 - .020 .008 - .018	.018 - .025 .010 - .020	.023 - .038 .015 - .025	.023 - .036 .018 - .028	.028 - .038 .020 - .030	.033 - .046 .023 - .038	.038 - .064 .030 - .051	.051 - .089 .046 - .076	.056 - .102 .051 - .089	.076 - .117 .061 - .107
P	**HIGH STRENGTH TOOL STEELS**												
	A2, D2, P20, H13, S7, O1	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051	.056 - .076 .038 - .056
	MEDIUM ALLOY TOOL STEELS												
	4140, 4340, 52100, 6150, 8620	< 40 > 40	59 - 79 39 - 59	.008 - .020 .008 - .013	.008 - .020 .008 - .013	.013 - .025 .008 - .020	.025 - .038 .013 - .025	.030 - .051 .013 - .025	.030 - .051 .013 - .025	.036 - .061 .025 - .038	.046 - .066 .030 - .046	.051 - .071 .036 - .051	.056 - .076 .038 - .056
	CARBON STEELS												
	1000's - 1018, 1020, 12L14	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071	.056 - .076
K	**CAST MATERIAL**												
	Ductile Iron		69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
	Gray Iron		69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
N	**NON-FERROUS**												
	Aluminum		118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Magnesium		118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Copper		98 - 177	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Brass, Bronze		79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
O	**COMPOSITE (non-ISO)**												
	Fiberglass, Plastics, G10		79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	Graphite	(See Graphite Chart - page 313)											

When plunging into a solid, drop feed by approximately 50%. 20% of diameter for basic engagement parameters.

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