

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
COBALT BASE ALLOYS												
Haynes 25/188, Stellite 21, Cobalt Chrome	< 40	24 - 35	.010 - .020	.010 - .020	.010 - .020	.013 - .025	.020 - .038	.025 - .046	.038 - .076	.051 - .076	.064 - .089	.064 - .089
	> 40	20 - 31	.008 - .015	.008 - .015	.008 - .015	.008 - .020	.013 - .025	.020 - .038	.025 - .038	.038 - .064	.038 - .051	.038 - .051
NICKEL BASE ALLOYS												
Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40	22 - 35	.010 - .020	.010 - .020	.010 - .020	.013 - .025	.020 - .038	.025 - .046	.038 - .076	.051 - .076	.064 - .089	.064 - .089
	> 40	18 - 31	.008 - .015	.008 - .015	.008 - .015	.008 - .020	.013 - .025	.020 - .038	.025 - .038	.038 - .064	.038 - .051	.038 - .051
IRON BASE ALLOYS												
A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascology	< 40	22 - 35	.010 - .020	.010 - .020	.010 - .020	.013 - .025	.020 - .038	.025 - .046	.038 - .076	.051 - .076	.064 - .089	.064 - .089
	> 40	20 - 31	.008 - .015	.008 - .015	.008 - .015	.008 - .020	.013 - .025	.020 - .038	.025 - .038	.038 - .064	.038 - .051	.038 - .051
TITANIUM ALLOYS												
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si	< 40	39 - 59	.008 - .020	.008 - .020	.013 - .030	.013 - .030	.020 - .038	.025 - .038	.033 - .051	.046 - .064	.051 - .076	.064 - .089
	> 40	35 - 47	.008 - .020	.008 - .020	.010 - .025	.010 - .025	.013 - .030	.020 - .036	.025 - .041	.025 - .051	.038 - .064	.038 - .064
STAINLESS STEELS												
13/8, 15/5, 17-4, pH Types	< 40	39 - 59	.005 - .013	.008 - .015	.008 - .018	.015 - .023	.020 - .030	.033 - .046	.025 - .051	.030 - .064	.030 - .051	.051 - .071
	> 40	31 - 39	.005 - .010	.005 - .010	.005 - .015	.008 - .018	.010 - .020	.018 - .030	.020 - .038	.025 - .041	.033 - .043	.038 - .051
300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic	< 40	39 - 59	.008 - .015	.008 - .018	.013 - .025	.020 - .038	.023 - .033	.025 - .046	.038 - .051	.046 - .056	.046 - .089	.058 - .091
	> 40	31 - 39	.005 - .010	.005 - .013	.010 - .018	.013 - .025	.013 - .025	.018 - .025	.023 - .038	.030 - .046	.038 - .064	.051 - .076
400 Series - 403, 405, 420, 455	< 40	59 - 79	.013 - .020	.018 - .025	.023 - .038	.023 - .036	.028 - .038	.033 - .046	.038 - .064	.051 - .089	.056 - .102	.076 - .117
	> 40	39 - 59	.008 - .018	.010 - .020	.015 - .025	.018 - .028	.020 - .030	.023 - .038	.030 - .051	.046 - .076	.051 - .089	.061 - .107
HIGH STRENGTH TOOL STEELS												
A2, D2, P20, H13, S7, O1	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071	.056 - .076
	> 40	39 - 59	.008 - .013	.008 - .013	.008 - .020	.013 - .025	.013 - .025	.013 - .025	.025 - .038	.030 - .046	.036 - .051	.038 - .056
MEDIUM ALLOY TOOL STEELS												
4140, 4340, 52100, 6150, 8620	< 40	59 - 79	.008 - .020	.008 - .020	.013 - .025	.025 - .038	.030 - .051	.030 - .051	.036 - .061	.046 - .066	.051 - .071	.056 - .076
	> 40	39 - 59	.008 - .013	.008 - .013	.008 - .020	.013 - .025	.013 - .025	.013 - .025	.025 - .038	.030 - .046	.036 - .051	.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
	> 40	39 - 59	.008 - .013	.008 - .013	.008 - .020	.013 - .025	.013 - .025	.013 - .025	.025 - .038	.030 - .046	.036 - .051	.038 - .056
CAST MATERIAL												
Ductile Iron	< 40	69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
	> 40	69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
Gray Iron	< 40	69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
	> 40	69 - 89	.013 - .020	.020 - .031	.025 - .038	.038 - .064	.038 - .064	.051 - .076	.064 - .089	.089 - .114	.089 - .114	.114 - .140
NON-FERROUS												
Aluminum	< 40	118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	> 40	118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
Magnesium	< 40	118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	> 40	118 - 197	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
Copper	< 40	98 - 177	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	> 40	98 - 177	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
Brass, Bronze	< 40	79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	> 40	79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
COMPOSITE (non-ISO)												
Fiberglass, Plastics, G10	< 40	79 - 157	.008 - .013	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
	> 40	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.