

GARR TOOL High Performance Milling Guide for 846MA, 853MA, 855MA, 863MA

ISO Material	HRC	M/Min. (Vc)	CHIPLOAD PER TOOTH (Fz)								
			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	28 - 43	.020 - .051	.010 - .025	.018 - .030	.025 - .046	.025 - .051	.046 - .071	.058 - .079	.069 - .086	.074 - .091
	> 40	20 - 35	.013 - .038	.010 - .018	.013 - .028	.020 - .036	.025 - .043	.038 - .064	.053 - .071	.061 - .076	.064 - .079
NICKEL BASE ALLOYS											
Inconel-625/718, Waspaloy, Invar, Rene, Hastelloy, Monel	< 40	26 - 43	.013 - .023	.013 - .023	.018 - .033	.025 - .041	.025 - .051	.051 - .071	.064 - .081	.074 - .091	.076 - .097
	> 40	22 - 35	.008 - .020	.010 - .018	.018 - .030	.023 - .038	.025 - .046	.038 - .064	.056 - .076	.066 - .084	.074 - .089
IRON BASE ALLOYS											
A286, Discaloy, Haynes 556, Carpenter 22, Greek Ascocoloy	< 40	26 - 43	.013 - .025	.020 - .025	.015 - .030	.018 - .038	.028 - .041	.046 - .066	.064 - .076	.066 - .086	.081 - .097
	> 40	22 - 35	.008 - .020	.010 - .020	.013 - .025	.015 - .033	.020 - .036	.033 - .058	.056 - .071	.064 - .079	.076 - .089
TITANIUM ALLOYS											
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si 5553 / Beta Titanium		49 - 69	.013 - .025	.013 - .030	.020 - .038	.025 - .056	.046 - .069	.058 - .081	.064 - .084	.069 - .089	.071 - .094
		39 - 59	.010 - .025	.010 - .025	.015 - .036	.020 - .041	.038 - .064	.056 - .071	.061 - .076	.066 - .081	.071 - .089
STAINLESS STEELS											
13/8, 15/5, 17-4, PH Types 300 Series, 304L, Nitronic 50, Duplex, Super-Austenitic 400 Series - 403, 405, 420, 455	< 40	69 - 89	.013 - .018	.010 - .020	.018 - .025	.020 - .030	.033 - .046	.025 - .051	.030 - .064	.030 - .051	.051 - .071
	> 40	53 - 69	.005 - .010	.005 - .015	.007 - .018	.010 - .020	.018 - .030	.020 - .038	.025 - .041	.033 - .043	.038 - .051
	< 40	79 - 89	.008 - .018	.013 - .025	.020 - .038	.023 - .033	.025 - .046	.038 - .051	.046 - .056	.046 - .089	.058 - .091
	> 40	61 - 79	.005 - .013	.010 - .018	.013 - .025	.013 - .025	.018 - .025	.023 - .038	.030 - .046	.038 - .064	.051 - .076
< 40	79 - 89	.018 - .025	.023 - .038	.023 - .036	.028 - .038	.033 - .046	.038 - .064	.051 - .089	.056 - .102	.076 - .117	
> 40	59 - 79	.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, S2, O1	< 40	89 - 128	.013 - .020	.020 - .038	.038 - .051	.038 - .058	.038 - .064	.051 - .076	.051 - .076	.064 - .089	.076 - .102
	> 40	59 - 89	.008 - .013	.013 - .025	.020 - .030	.025 - .038	.025 - .046	.038 - .051	.038 - .051	.046 - .064	.051 - .076
MEDIUM ALLOY TOOL STEELS											
4140, 4340, 52100, 6150, 8620	< 40	89 - 128	.013 - .020	.020 - .038	.038 - .051	.038 - .058	.038 - .064	.051 - .076	.051 - .076	.064 - .089	.076 - .102
	> 40	59 - 89	.008 - .013	.013 - .025	.020 - .030	.025 - .038	.025 - .046	.038 - .051	.038 - .051	.046 - .064	.051 - .076
CARBON STEELS											
1000's - 1018, 1020, 12L14	< 40	89 - 128	.013 - .020	.020 - .038	.038 - .051	.038 - .058	.038 - .064	.051 - .076	.051 - .076	.064 - .089	.076 - .102
CAST MATERIAL											
Ductile Iron Gray Iron		89 - 128	.025 - .038	.038 - .051	.051 - .076	.064 - .089	.064 - .089	.076 - .114	.102 - .127	.102 - .127	.127 - .152
		118 - 157	.038 - .064	.051 - .076	.064 - .089	.076 - .102	.076 - .102	.102 - .127	.127 - .152	.152 - .178	.152 - .178
NON-FERROUS											
Aluminum Magnesium Copper Brass, Bronze		118 - 197	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
		118 - 197	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
		98 - 177	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
		79 - 157	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
COMPOSITE (non-ISO)											
Fiberglass, Plastics, G10 Graphite		79 - 157	.015 - .025	.020 - .036	.030 - .051	.036 - .071	.051 - .076	.089 - .122	.127 - .152	.147 - .178	.173 - .229
			(See Graphite Chart - page 311)								

Beryllium added to any material adds hardness and some nickel content. If tool displays chatter, increase feed (IPM) up to 30% and reduce speed (RPM) by 10%.
More detailed information is available on succeeding pages regarding the following materials: Aluminum, High Rockwell Steels, Graphite, and VRX end mills

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