Operating Guidelines - 16xD

ISO	Mtl Group No.	Type	Condition	Tensile Strength (N/mm2)	HB Hardness	Vc Cutting Speed SFM	IPR Cutting Diameter (in/rev) 3.0-5.9 mm (.118-.235")	6.0-8.9 mm (.236-.353")	9.0-11.9 mm (.354-.471")	12.0-15.9 mm (.472-.629")	16.0+ mm (.630+")
P	1	Non alloy steel and cast steel free cutting steel	< 0.25 %C Annealed	420	125	375	.0058 - .0094	.0094 - .0120	.0120 - .0130	.0130 - .0140	.0140
	2		>= 0.25 %C Annealed	650	190						
	3		< 0.55 %C Quenched and Tempered	850	250						
	4		>= 0.55 %C Annealed	750	220						
	5		> 0.55 %C Quenched and Tempered	1000	300						
	6	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	600	200	260	.0058 - .0094	.0094 - .0120	0.012 - .0130	.0130 - .0140	.0140
	7		Quenched and Tempered	930	275						
	8			1000	300						
	9			1200	350						
	10	High alloyed steel, cast steel, and tool steel	Annealed	680	200	230	.0043 - .0069	.0069 - .0088	.0088 - .0095	.0095 - .0102	.0102
	11		Quenched and Tempered	1100	325						
M	12	Stainless steel (410, 416, 420, 440)	Ferritic/ Martensitic	680	200	230	.0043 - .0069	.0069 - .0088	.0088 - .0095	.0095 - .0102	.0102
	13	Stainless steel (15-5, 17-4)	Martensitic	820	240						
	14	Stainless steel (302, 303, 304)	Austenitic	600	180	220	.0023 - .0047	.0047 - .0070	.0070 - .0094	.0094 - .0122	.0122
		Stainless steel (310, 316, 321)	Austenitic	600	180	180	.0018 - .0035	.0035 - .0053	.0053 - .0070	.0070 - .0093	.0093
	14	Stainless steel (323, 329, F55, 2205)	Austenitic/ Ferritic	820	240	125	0.001 - .0024	.0024 - .0029	.0029 - .0033	.0033 - .0036	.0036
S	36	Titanium Ti alloys TI1100, TI6AL4V		Rm 400		125	.0014 - .0025	.0025 - .0030	.0030 - .0035	.0035 - .0040	.0040
	37		Alpha + Beta alloys cured	Rm1050							

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.