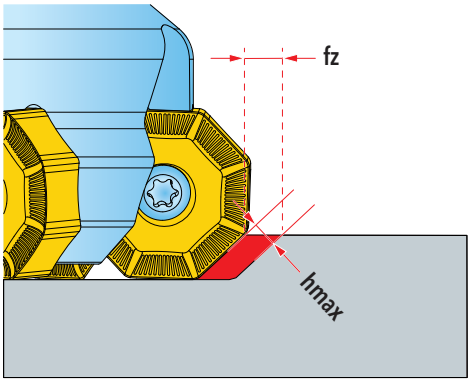
OPERATING GUIDELINES 5MM

Chip Thinning



* Chip Thinning Calculator is recommended to ensure hmax is greater than .003"

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder <----------> Tougher									Coolant
						Ceramic	Carbide								
ISO	Mat'l Group #VDI 3323	Type	Examples			IN70N	IN2504	IN6515	IN10K	IN2010 IN4010	IN2005 IN2505	IN4030	IN6537	IN2036	
P	1-5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.006 - .012						2	1	3		No
	6-9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	300-700											
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-500											
M	12-13	Stainless Steel (Ferritic & Martensitic)	400, 416, 440	300-700	.005-.009						3	2		1	May not be required at high speeds
	14	Stainless Steel (Martensitic)	303, 304, 316, 15-5, 17-4	400-700											
			13-8 PH	200-400											Yes
K	15-16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.008-.016		3	2		1			4		No
				1800+	.005-.008	1									
	17-18	Nodular Cast Iron	60-40-18, 100-70-03	400-800	.007-.014		3	1		2			4		
				1500+	.004-.007	1									
N	21-30	Aluminum	7075, 6061	1500-10000	.006-.012				1						Yes
S	31-35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	75-120	.003-.006						2	3		1	Yes
	36-37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	100-150	.004-.007						3	2		1	

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.