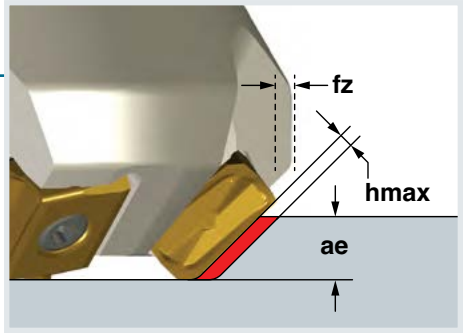
13 mm (45°) • Operating Guidelines

CHIP THINNING

Ingersoll Cutting Tools' **Chip Thinning Calculator** is recommended to ensure hmax is greater than .003".



Materials				Vc Cutting Speed SFM	Hex Max. Chip Thickness (inch)	fz* Feed/Tooth (inch)	Harder «-------» Tougher					Coolant	Geometry
ISO	Mat'l Group #VDI 3323	Type	Examples				IN2510	IN2540	IN2515	IN2505	IN2530		M
P	1-5	Non-alloy steel	1018, A36, 1045, A572, 1070	400-850	.005-.014	.007-.020	-	3	-	1	2	No	1
	6-9	Low-alloy steel	4140, 4340, P20, 8620, 300M	350-700	.005-.012	.007-.017	-	3	-	1	2	No	1
	10, 11	High-alloy steel	H13, A2, D2, M2, T1	300-600	.005-.012	.007-.017	-	3	-	1	2	No	1
M	12, 13	Stainless steel (ferritic and martensitic)	410, 416, 440	350-700	.005-.012	.007-.017	-	-	-	2	1	Yes	1
	14	Stainless steel (austenitic)	303, 304, 316, 15-5, 17-4	300-600	.005-.012	.007-.017	-	-	-	2	1	May not be required at high speeds	1
K	15, 16	Gray cast iron	CLS. 20, 30, 45	400-750	.005-.015	.007-.021	1	-	2	-	-	No	1
	17-18	Nodular cast iron	60-40-18, 100-70-03	300-650	.005-.015	.007-.021	-	2	1	-	-	No	1
N	21-30	Aluminum	7075, 6061	1000+	.004-.015	.0055-.021	1	-	2	-	-	Yes	1
S	31-35	High-temp alloys	Inconel, Hastelloy, Monel	75-150	.004-.008	.0055-.011	-	-	-	2	1	Yes	1
	36, 37	Titanium alloys	6Al-4V, 5Al-5Mo-5V-3Cr	75-200	.004-.008	.0055-.011	-	-	-	2	1	Yes	1
H	38, 39	Hardened steel >48	A2, O1, D2	150-400	.002-.004	.003-.0055	-	-	-	1	2	No	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.