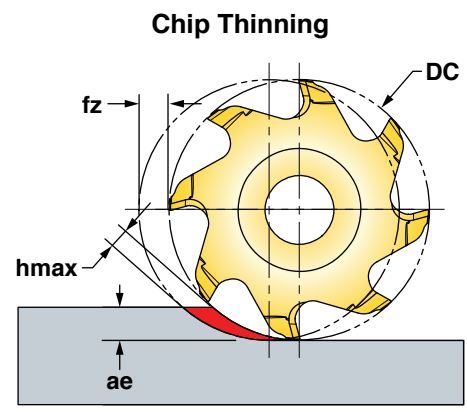


**MULTISURFER™ OPERATING GUIDELINES**

For Series 18T, 19T, 19R, 18F, 19F, 18Y, 19Y, 19V



\* When ae is less than 25% DC, recommend use of Chip Thinning Calculator to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			
<b>P</b>	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	450-650	.002-.007	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	450-650		
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	400-600		
<b>M</b>	12 thru 13	Stainless Steel (Fer- ritic & Martensitic)	410, 416, 440	200-450	.002-.005	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4			May not be required at high speeds
<b>K</b>	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-800	.002-.008	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03			
<b>S</b>	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-150	.002-.005	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr			

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.