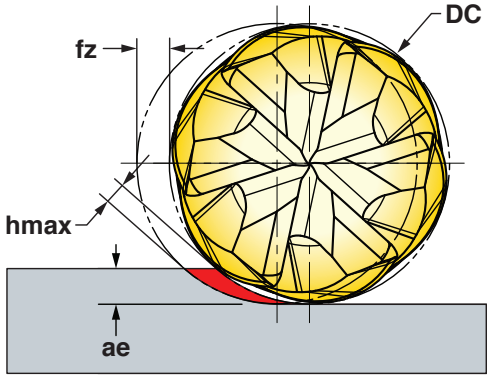
CHIPSURFER™ OPERATING GUIDELINES BARREL FORM

Chip Thinning



* Chip Thinning Calculator is recommended to ensure hmax is in range.

Materials				Cutting Speed SFM	DC Cutting Dia. (inch/mm)	fz Feed per Tooth (inch)	ae Radial Depth of Cut	ap Axial Depth of Cut	hmax* Chip Thickness (inch)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples							
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	450-650	.500 / 12	.0020-.0040	.008-.016	.03-.06	.0008-.0030	No
					.625 / 16	.0020-.0050	.008-.020	.04-.08	.0008-.0040	
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	450-650	.500 / 12	.0020-.0040	.008-.016	.03-.06	.0008-.0030	
					.625 / 16	.0020-.0050	.008-.020	.04-.08	.0008-.0040	
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	400-600	.500 / 12	.0015-.0030	.008-.016	.03-.06	.0008-.0025	
					.625 / 16	.0020-.0040	.008-.020	.04-.08	.0008-.0035	
M	12 thru 14	Stainless Steel	410, 416, 440, 303, 304, 316, 15-5, 17-4	200-350	.500 / 12	.0015-.0030	.008-.016	.03-.06	.0008-.0025	May be required at high speeds
					.625 / 16	.0020-.0040	.008-.020	.04-.08	.0008-.0035	
K	15 thru 20	Iron	CLS. 20, 30, 45, 60-40-18, 100-70-03	500-700	.500 / 12	.0020-.0040	.008-.016	.03-.06	.0008-.0030	No
					.625 / 16	.0020-.0050	.008-.020	.04-.08	.0008-.0040	
S	31 thru 37	High-Temp, Ti	Inconel, Hastelloy, 6Al-4V, 5Al-5Mo-5V-3Cr	80-250	.500 / 12	.0010-.0025	.008-.016	.03-.06	.0008-.0025	Yes
					.625 / 16	.0020-.0030	.008-.020	.04-.08	.0008-.0035	

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.