13-Flute, Extra High Performance, Finisher Endmills, Corner Radius & Chip Control, 30 Degree Helix

- More Flutes in the cut means greater production. With an extra solid core get extra rigidity and extended tool life.
- Use with High Efficiency Machining Technology for best results. See pages 208-212.
- These Extra High Performance tools can be found on pages 98-101.

13-Flute Finishers Speeds & Feeds

Material	Grades	Cut	Axial	Radial	# of Flutes	SFM	Feed by Endmill Diameter (IPT) 1/2 (.5000)	5/8 (.6250)	3/4 (.7500)	1 (1.000)	1 1/4 (1.250)
P - Steels											
Low Carbon Steels <= 38 Rc	1018, 1020, 12L14, 5120, 8620	Peripheral - HEM	<2 x D	.07 x D	13	450	.0044	.0055	.0066	.0088	.0066
			2.5xD	.07 x D	13	430	.0039	.0049	.0059	.0078	.0059
			3xD	.07 x D	13	420	.0036	.0045	.0054	.0072	.0054
			3.5xD	.07 x D	13	410	.0034	.0043	.0051	.0068	.0051
		Finish	3 x D	.01 x D	13	395	.0017	.0021	.0026	.0034	.0026
Medium Carbon Steels <= 48 HRC	1045, 4140, 4340, 5140	Peripheral - HEM	<2 x D	.06 x D	13	405	.0044	.0055	.0066	.0088	.0066
			2.5xD	.06 x D	13	405	.0041	.0051	.0062	.0082	.0062
			3xD	.05 x D	13	405	.0039	.0049	.0059	.0078	.0059
			3.5xD	.05 x D	13	405	.0036	.0045	.0054	.0072	.0054
		Finish	3 x D	.01 x D	13	370	.0017	.0021	.0026	.0034	.0026
Tool and Die Steels <= 48 Rc	A2, D2, 01, S7, P20, H13	Peripheral - HEM	<2 x D	.06 x D	13	420	.0045	.0056	.0068	.0090	.0068
			2.5xD	.06 x D	13	420	.0040	.0050	.0060	.0080	.0060
			3xD	.05 x D	13	415	.0037	.0046	.0056	.0074	.0056
			3.5xD	.05 x D	13	415	.0035	.0044	.0053	.0070	.0053
		Finish	3 x D	.01 x D	13	385	.0015	.0019	.0023	.0030	.0023
M - Stainless Steels											
Austenitic Stainless Steels, FeNi Alloys	303, 304, 316, Invar, Kovar	Peripheral - HEM	<2 x D	.06 x D	13	450	.0041	.0051	.0062	.0082	.0062
			2.5xD	.06 x D	13	450	.0040	.0050	.0060	.0080	.0060
			3xD	.05 x D	13	450	.0037	.0046	.0056	.0074	.0056
			3.5xD	.05 x D	13	445	.0035	.0044	.0053	.0070	.0053
		Finish	3 x D	.01 x D	13	415	.0015	.0019	.0023	.0030	.0023
Martensitic & Ferritic Stainless Steels	410, 416, 440	Peripheral - HEM	<2 x D	.06 x D	13	460	.0050	.0063	.0075	.0100	.0075
			2.5xD	.06 x D	13	460	.0048	.0060	.0072	.0096	.0072
			3xD	.06 x D	13	450	.0040	.0050	.0060	.0080	.0060
			3.5xD	.06 x D	13	445	.0035	.0044	.0053	.0070	.0053
		Finish	3 x D	.01 x D	13	390	.0018	.0023	.0027	.0036	.0027
Precipitation Hardening Stainless Steels	17-4, 15-5, 13-8	Peripheral - HEM	<2 x D	.06 x D	13	440	.0045	.0056	.0068	.0090	.0068
			2.5xD	.06 x D	13	440	.0041	.0051	.0062	.0082	.0062
			3xD	.05 x D	13	435	.0038	.0048	.0057	.0076	.0057
			3.5xD	.05 x D	13	435	.0034	.0043	.0051	.0068	.0051
		Finish	3 x D	.01 x D	13	400	.0017	.0021	.0026	.0034	.0026
K - Cast Irons											
Gray	ASTM-A48 Class 20, 25, 30, 35 & 40	Peripheral - HEM	<2 x D	.07 x D	13	370	.0045	.0056	.0068	.0090	.0068
			2.5xD	.07 x D	13	370	.0040	.0050	.0060	.0080	.0060
			3xD	.07 x D	13	360	.0034	.0043	.0051	.0068	.0051
			3.5xD	.06 x D	13	360	.0030	.0038	.0045	.0060	.0045
		Finish	3 x D	.01 x D	13	365	.0020	.0025	.0030	.0040	.0030
Cast Iron	Malleable	Peripheral - HEM	<2 x D	.07 x D	13	380	.0048	.0060	.0072	.0096	.0072
			2.5xD	.07 x D	13	380	.0042	.0053	.0063	.0084	.0063
			3xD	.07 x D	13	365	.0039	.0049	.0059	.0078	.0059
			3.5xD	.07 x D	13	365	.0036	.0045	.0054	.0072	.0054
		Finish	3 x D	.01 x D	13	340	.0017	.0021	.0026	.0034	.0026
S - High Temp Alloys											
Titanium Alloys	6Al-4V, 6-2-4	Peripheral - HEM	<2 x D	.08 x D	13	395	.0050	.0063	.0075	.0100	.0075
			2.5xD	.07 x D	13	390	.0045	.0056	.0068	.0090	.0068
			3xD	.06 x D	13	380	.0041	.0051	.0062	.0082	.0062
			3.5xD	.06 x D	13	380	.0034	.0043	.0051	.0068	.0051
		Finish	3 x D	.015 x D	13	355	.0022	.0028	.0033	.0044	.0033
Difficult to machine titanium alloys	10-2-3	Peripheral - HEM	<2 x D	0.06	13	350	.0050	.0063	.0075	.0100	.0075
			2.5xD	0.06	13	330	.0036	.0045	.0054	.0072	.0054
			3xD	0.055	13	315	.0035	.0044	.0053	.0070	.0053
			3.5xD	0.05	13	310	.0032	.0040	.0048	.0064	.0048
		Finish	3 x D	.01 x D	13	300	.0017	.0021	.0026	.0034	.0026
Hastalloy, Waspalloy		Peripheral - HEM	<2 x D	.07 X D	13	105	.0071	.0089	.0107	.0142	.0107
			2.5xD	.065 x D	13	100	.0064	.0080	.0096	.0128	.0096
			3xD	.055 x D	13	90	.0062	.0078	.0093	.0124	.0093
			3.5xD	.05 x D	13	90	.0057	.0071	.0086	.0114	.0086
		Finish	3 x D	.01 x D	13	90	.0044	.0055	.0066	.0088	.0066
Inconel 718, Rene 88		Peripheral - HEM	<2 x D	.06 x D	13	100	.0052	.0065	.0078	.0104	.0078
			2.5xD	.05 x D	13	95	.0052	.0065	.0078	.0104	.0078
			3xD	.05 x D	13	95	.0048	.0060	.0072	.0096	.0072
			3.5xD	.04 x D	13	95	.0048	.0060	.0072	.0096	.0072
		Finish	3 x D	.01 x D	13	90	.0023	.0029	.0035	.0046	.0035

D = tool diameter.