SLOTTING

	Material	Hardness	Cutting depth* (a_p)	Cutting width (a_e)	SFM	Feed Rate Inch per Tooth - IPT d1 End Mill Diameter						
						1/8	1/4	5/16	3/8	1/2	5/8	3/4
P	Struct./free-cutting steels, unall. heat-treat./case hard. steels	up to 28 HRc	1 x D	1xd	575	.0005	.0010	.0013	.0019	.0025	.0031	.0038
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	1 x D	1xd	525	.0005	.0010	.0013	.0019	.0025	.0031	.0038
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x D	1xd	425	.0004	.0009	.0011	.0017	.0023	.0028	.0034
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	1 x D	1xd	390	.0004	.0009	.0011	.0017	.0023	.0028	.0034
	Stainless steel - moderately difficult to machine	20 - 30 HRc	1 x D	1xd	260	.0004	.0008	.0010	.0015	.0020	.0025	.0030
S	Titanium, Titanium alloys	up to 44 HRc	1 x D	1xd	200	.0004	.0008	.0010	.0015	.0020	.0025	.0030
K	Cast iron, grey cast iron, spher. graphite/malleable cast iron	over 240 HB 30	1 x D	1xd	490	.0005	.0010	.0013	.0019	.0025	.0031	.0038
N	Aluminum, Al-wrought alloys, Al-alloys	up to 7% Si	1 x D	1xd	1640	.0007	.0014	.0017	.0024	.0033	.0041	.0049
	Aluminum-cast alloys	over 7% Si	1 x D	1xd	1120	.0006	.0011	.0014	.0021	.0028	.0034	.0041

HIGH-VOLUME ROUGHING

	Material	Hardness	Cutting depth* (a_p)	Cutting width (a_e)	SFM	Feed Rate Inch per Tooth - IPT d1 End Mill Diameter						
						1/8	1/4	5/16	3/8	1/2	5/8	3/4
P	Struct./free-cutting steels, unall. heat-treat./case hard. steels	up to 28 HRc	1.5 x D	0.40 x D	1150	.0007	.0013	.0016	.0024	.0031	.0039	.0047
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	1.5 x D	0.40 x D	950	.0007	.0013	.0016	.0024	.0031	.0039	.0047
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1.5 x D	0.33 x D	850	.0006	.0011	.0014	.0022	.0029	.0037	.0044
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	1.5 x D	0.33 x D	525	.0006	.0011	.0014	.0022	.0029	.0037	.0044
	Stainless steel - moderately difficult to machine	20 - 30 HRc	1.5 x D	0.25 x D	390	.0006	.0012	.0015	.0023	.0030	.0038	.0045
S	Titanium, Titanium alloys	up to 44 HRc	1.5 x D	0.33 x D	360	.0005	.0010	.0013	.0020	.0026	.0032	.0039
K	Cast iron, grey cast iron, spher. graphite/malleable cast iron	over 240 HB 30	1.5 x D	0.40 x D	620	.0007	.0013	.0016	.0024	.0031	.0039	.0047
N	Aluminum, Al-wrought alloys, Al-alloys	up to 7% Si	1.5 x D	0.40 x D	1976	.0009	.0017	.0021	.0030	.0041	.0051	.0061
	Aluminum-cast alloys	over 7% Si	1.5 x D	0.40 x D	1440	.0007	.0014	.0018	.0026	.0035	.0043	.0052

HIGH-SPEED FINISHING

	Material	Hardness	Cutting depth* (a_p)	Cutting width (a_e)	SFM	Feed Rate Inch per Tooth - IPT d1 End Mill Diameter						
						1/8	1/4	5/16	3/8	1/2	5/8	3/4
P	Struct./free-cutting steels, unall. heat-treat./case hard. steels	up to 28 HRc	2 x D	0.02 x D	1776	.0006	.0012	.0014	.0021	.0028	.0034	.0041
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	2 x D	0.02 x D	1500	.0006	.0012	.0014	.0021	.0028	.0034	.0041
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	2 x D	0.02 x D	1150	.0005	.0010	.0012	.0019	.0025	.0031	.0037
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	2 x D	0.02 x D	720	.0005	.0010	.0012	.0019	.0025	.0031	.0037
	Stainless steel - moderately difficult to machine	20 - 30 HRc	2 x D	0.02 x D	525	.0005	.0009	.0011	.0017	.0022	.0027	.0033
S	Titanium, Titanium alloys	up to 44 HRc	2 x D	0.02 x D	430	.0005	.0009	.0011	.0017	.0022	.0027	.0033
K	Cast iron, grey cast iron, spher. graphite/malleable cast iron	over 240 HB 30	2 x D	0.02 x D	980	.0006	.0012	.0014	.0021	.0028	.0034	.0041
N	Aluminum, Al-wrought alloys, Al-alloys	up to 7% Si	2 x D	0.02 x D	3280	.0008	.0015	.0019	.0027	.0036	.0045	.0054
	Aluminum-cast alloys	over 7% Si	2 x D	0.02 x D	2230	.0006	.0013	.0016	.0023	.0030	.0038	.0045

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RAMPING - HELICAL INTERPOLATION

	Material	Hardness	Ramping depth* (DOC max.)	Ramping* max. angle in °	SFM	Feed Rate Inch per Tooth - IPT d1 End Mill Diameter						
						1/8	1/4	5/16	3/8	1/2	5/8	3/4
P	Struct./free-cutting steels, unall. heat-treat./case hard. steels	up to 28 HRc	1 x D	45°	890	.0005	.0010	.0012	.0017	.0023	.0028	.0034
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	1 x D	45°	762	.0004	.0008	.0010	.0015	.0020	.0025	.0030
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x D	30°	590	.0003	.0007	.0009	.0011	.0015	.0019	.0023
M	Stainless steel - easy to machine / sulphured	up to 20 HRc	1 x D	10°	390	.0003	.0006	.0007	.0011	.0015	.0019	.0023
	Stainless steel - moderately difficult to machine	20 - 30 HRc	0.5 x D	5°	260	.0002	.0005	.0005	.0009	.0013	.0016	.0019
S	Titanium, Titanium alloys	up to 44 HRc	0.5 x D	10°	200	.0002	.0005	.0005	.0009	.0013	.0016	.0019
K	Cast iron, grey cast iron, spher. graphite/malleable cast iron	over 240 HB 30	1 x D	45°	490	.0005	.0010	.0012	.0017	.0023	.0028	.0034
N	Aluminum, Al-wrought alloys, Al-alloys	up to 7% Si	1 x D	30°	1640	.0004	.0008	.0010	.0015	.0020	.0025	.0030
	Aluminum-cast alloys	over 7% Si	1 x D	45°	1120	.0005	.0010	.0012	.0017	.0023	.0028	.0034

DRILLING

	Material	Hardness	Drilling depth** (a_p max.)	SFM	Feed Rate Inch per Tooth - IPT d1 End Mill Diameter						
					1/8	1/4	5/16	3/8	1/2	5/8	3/4
P	Struct./free-cutting steels, unall. heat-treat./case hard. steels	up to 28 HRc	2 x D	890	.0005	.0009	.0011	.0015	.0020	.0025	.0030
	Free-cutting steels, unalloyed case hard. steels, nitr. steels	28 - 38 HRc	2 x D	790	.0004	.0008	.0009	.0013	.0018	.0022	.0026
	Alloyed heat-treatable, tool and high speed steels	28 - 44 HRc	1 x D	660	.0003	.0005	.0006	.0009	.0013	.0016	.0019
K	Cast iron, grey cast iron, spher. graphite/malleable cast iron	over 240 HB 30	2 x D	490	.0005	.0009	.0011	.0015	.0020	.0025	.0030
N	Aluminum, Al-wrought alloys, Al-alloys	up to 7% Si	1 x D	590	.0004	.0008	.0009	.0013	.0018	.0022	.0026
	Aluminum-cast alloys	over 7% Si	1 x D	460	.0005	.0009	.0011	.0015	.0020	.0025	.0030