GUNDRILL SPEEDS, FEEDS & COOLANT PRESSURES

STARTING PARAMETERS (Single Flute)

GUNDRILL DIAMETER	COOLANT PRESSURE	8620 SFM=400			416 STAINLESS 4140, 5120 1010, 1118, 1145 SFM=325			TOOL STEEL SFM=175			15-5, 17-4,13-8, H-13, 455 CUSTOM 303,304,310,316 341, 347, 420, 501 SFM=200			2024AL*, 5061AL* 7075AL* SFM=550			CAST ALUMINUM* SFM=600			GRAY CAST IRON* SFM=200		
	PSI	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH
0.0550	1800	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0
0.0781	1500	10000	1.0	4.6	10000	1.0	4.6	8560	0.9	4.6	9782	1.0	4.6	10000	1.0	4.6	10000	1.0	4.6	9782	1.0	4.6
0.0937	1500	10000	1.5	5.0	10000	1.5	5.0	7134	1.1	6.0	8154	1.2	5.0	10000	1.5	5.0	10000	1.5	5.0	8154	1.2	5.0
0.1250	1500	10000	2.0	6.0	9932	2.0	6.0	5348	1.1	8.0	6112	1.2	7.7	10000	2.0	6.0	10000	2.0	6.0	6112	1.2	7.7
0.1562	1300	9782	2.9	6.7	7948	2.4	7.7	4280	1.3	10.3	4891	1.5	9.7	10000	3.0	6.6	10000	3.0	6.6	4891	1.5	9.7
0.1875	1150	8149	2.9	7.5	6621	2.3	9.2	3565	1.2	12.4	4075	1.4	11.7	10000	3.5	7.5	10000	3.5	7.5	4075	1.4	11.7
0.2187	1050	6987	2.8	8.2	5677	2.3	10.6	3057	1.2	14.2	3493	1.4	13.4	9607	3.8	8.2	10000	4.0	7.8	3493	1.4	13.4
0.2500	935	6112	3.1	9.6	4966	2.5	12.4	2674	1.3	16.5	3056	1.5	15.7	8404	4.2	9.6	9168	4.6	9.1	3056	1.5	15.7
0.2812	850	5434	3.0	10.8	4415	2.3	14.0	2377	1.2	18.7	2717	1.4	17.7	7472	3.9	10.8	8151	4.2	10.3	2717	1.4	17.7
0.3125	775	4890	2.9	12.0	3973	2.4	15.6	2139	1.3	20.9	2445	1.5	19.7	6723	4.0	12.0	7334	4.4	11.5	2445	1.5	19.7
0.3437	725	4446	2.8	13.3	3612	2.3	17.2	1945	1.2	23.0	2223	1.4	21.7	6113	3.9	13.3	6669	4.2	12.6	2223	1.4	21.7
0.3750	675	4075	2.6	14.5	3311	2.2	18.8	1783	1.2	26.0	2037	1.3	23.2	5603	3.6	14.5	6112	4.0	13.8	2037	1.3	23.2
0.4062	625	3762	2.6	15.0	3056	2.1	19.6	1646	1.1	27.3	1881	1.3	25.7	5172	3.5	15.0	5643	3.8	14.2	1881	1.3	25.7
0.4375	600	3493	2.4	17.0	2838	1.9	21.9	1528	1.0	29.4	1746	1.2	27.8	4802	3.3	17.0	5239	3.6	16.1	1746	1.2	27.8
0.4687	550	3260	2.3	18.2	2649	1.9	23.5	1426	1.0	31.5	1630	1.1	29.8	4483	3.1	18.2	4890	3.4	17.3	1630	1.1	29.8
0.5000	525	3056	2.1	19.3	2483	1.7	25.1	1337	0.9	33.7	1528	1.1	31.8	4202	2.9	19.3	4584	3.2	18.5	1528	1.1	31.8
0.5312	500	2877	2.1	20.6	2337	1.7	26.7	1258	0.9	35.8	1438	1.0	33.8	3955	2.9	20.6	4315	3.1	19.6	1438	1.0	33.8
0.5625	500	2716	2.0	21.9	2207	1.6	28.3	1188	0.9	37.9	1358	1.0	35.8	3735	2.7	21.9	4075	3.0	20.8	1358	1.0	35.8
0.5937	475	2574	1.9	23.2	2091	1.6	30.0	1126	0.8	40.2	1287	1.0	38.0	3539	2.7	23.2	3861	2.9	22.1	1287	1.0	38.0
0.6250	450	2445	1.8	24.6	1986	1.5	31.8	1070	0.8	42.6	1222	0.9	40.2	3362	2.5	24.6	3667	2.8	23.4	1222	0.9	40.2
0.6562	425	2329	1.8	25.8	1892	1.5	37.8	1019	0.8	44.5	1164	0.9	42.2	3202	2.5	25.8	3493	2.7	24.5	1164	0.9	42.2
0.6875	425	2223	1.7	27.0	1806	1.4	39.0	972	0.8	46.5	1111	0.9	44.2	3056	2.4	27.0	3334	2.6	25.7	1111	0.9	44.2
0.7187	400	2126	1.7	28.2	1727	1.4	41.5	930	0.7	48.7	1063	0.9	46.2	2923	2.3	28.2	3189	2.6	26.8	1063	0.9	46.2
0.7500	400	2037	1.6	29.5	1655	1.3	42.7	891	0.7	51.0	1019	0.8	48.2	2801	2.2	29.5	3056	2.4	28.0	1019	0.8	48.2
0.8750	350	1746	1.6	34.4	1419	1.3	44.5	764	0.7	59.5	873	0.8	56.2	2401	2.2	34.4	2619	2.4	32.7	873	0.8	56.2
1.0000	350	1528	1.5	39.0	1242	1.2	50.9	669	0.7	68.0	764	0.8	64.0	2101	2.1	39.3	2292	2.3	37.0	764	0.8	64.0
1.2500	300	1222	1.2	49.0	993	1.0	63.0	535	0.5	84.0	611	0.6	80.0	1681	1.7	50.0	1834	1.8	46.0	611	0.6	80.0
1.5000	300	1019	1.0	59.0	828	0.8	77.0	446	0.4	102	509	0.5	91.0	1401	1.4	59.0	1528	1.5	56.0	509	0.5	97.0

*Indicates a two flute drill may be used at two times the recommended feed rate

$$RPM = \frac{3.82 \times SFM}{Diameter}$$

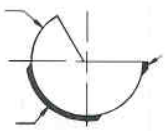
$$SFM = \frac{RPM \times Diameter}{3.82}$$

FPR = IPM/RPM

IPM = FPR x RPM

Dia	FPR	Dia	FPR
0.055-	0.00005	0.500-	0.00070
0.078-	0.00010	0.750-	0.00080
0.156-	0.00030	1.000-	0.00100
0.200-	0.00040	1.250-	0.00100
0.250-	0.00050	1.500-	0.00100

R-1 CONTOUR

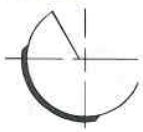


General purpose stock drill contour for steel, stainless steel, inconel and aluminum. Offers minimum bearing contact with the workpiece (non-micable).

R-2 CONTOUR

Recommended for all non-ferrous and cast iron up to gundrill diameter of .200" (non-micable).

R-3 CONTOUR



For good size control (including at exit) special purpose contour, where micable diameter is required or extra burnishing action is required; not for all materials (micable).

R-4 CONTOUR

For use in aluminum and brass for best hole finish and for intersecting holes and interrupted cuts, or extra O.D. support and burnishing. (micable).

GUNDRILL SPEEDS, FEEDS & COOLANT PRESSURES

STARTING PARAMETERS (Single Flute)

GUNDRILL DIAMETER	COOLANT PRESSURE	K-MONEL HASTELLOY TUNGSTEN INCOLOY 800-825 REFRACTALOY SFM=80			WASPALOY, A286, RENE, HAYNES INCONEL 600,625 NIMONIC SFM=100			TITANIUM 718 INCONEL MOLLY NITRONIC 40-80 SFM=135			NITRALLOY, GREEK ASCOLOY 400 MONEL 4340 SFM=200			ETD-150, COPPER SFM=275			DUCTILE* SFM=150			BRASS BRONZE SFM=550		
	PSI	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH	RPM	IPM	MAX. UNSUP-PORTED LENGTH
0.0550	1800	5556	0.3	4.0	6945	0.3	4.0	9376	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0	10000	0.5	4.0
0.0781	1500	3913	0.4	7.2	4891	0.5	6.6	6603	0.7	5.8	9782	1.0	4.6	10000	1.0	4.6	8560	0.9	5.0	10000	1.0	5.0
0.0937	1500	3261	0.5	9.0	4077	0.6	8.0	5504	0.8	6.5	8154	1.2	3.6	10000	1.5	4.6	7134	1.1	6.1	10000	1.5	5.1
0.1250	1500	2445	0.4	12.0	3056	0.7	11.0	4126	0.9	9.0	6112	1.4	7.7	8404	1.9	6.5	5348	1.2	8.0	10000	2.3	6.0
0.1562	1300	1956	0.6	15.3	2446	0.7	13.7	3302	1.0	11.4	4891	1.5	9.7	6725	2.0	8.2	4280	1.3	10.0	10000	3.0	7.1
0.1875	1150	1630	0.6	18.5	2037	0.7	16.6	2750	1.0	14.0	4075	1.4	11.7	5603	2.0	9.9	3565	1.3	12.2	10000	3.5	7.4
0.2187	1050	1397	0.6	21.2	1747	0.7	19.0	2358	0.9	15.5	3493	1.4	13.4	4803	1.9	11.4	3057	1.2	14.0	9607	3.8	8.2
0.2500	925	1222	0.6	24.9	1528	0.8	22.3	2063	1.0	18.5	3056	1.5	15.7	4202	2.1	13.3	2674	1.3	16.4	8404	4.2	9.6
0.2812	850	1087	0.6	28.0	1358	0.8	24.0	1834	1.1	21.0	2717	1.6	17.7	3736	2.2	15.0	2377	1.4	19.0	7472	4.3	10.8
0.3125	775	978	0.6	31.2	1222	0.7	28.0	1650	1.0	24.0	2445	1.5	19.7	3362	2.0	16.8	2139	1.3	20.5	6723	4.0	12.0
0.3437	725	889	0.6	34.4	1111	0.7	30.0	1500	0.9	26.0	2223	1.4	21.7	3056	1.9	18.2	1945	1.2	23.0	6113	3.9	13.3
0.3750	675	815	0.5	37.0	1019	0.7	33.7	1375	0.9	29.5	2037	1.3	23.0	2801	1.8	20.0	1783	1.2	25.0	5603	3.6	14.5
0.4062	625	752	0.5	40.8	940	0.6	36.5	1270	0.9	32.0	1881	1.3	25.7	2586	1.8	21.9	1646	1.1	27.3	5172	3.5	15.0
0.4375	600	699	0.5	44.0	873	0.6	39.5	1179	0.8	35.0	1746	1.2	27.8	2401	1.6	23.6	1528	1.0	29.5	4802	3.3	17.0
0.4687	550	652	0.5	47.0	815	0.6	42.0	1100	0.8	35.0	1630	1.1	29.8	2241	1.6	25.3	1426	1.0	31.5	4483	3.1	18.2
0.5000	525	611	0.5	54.0	764	0.5	45.0	1031	0.7	38.0	1528	1.1	31.8	2101	1.5	27.0	1337	0.9	33.6	4202	2.9	19.0
0.5312	500	575	0.5	55.0	719	0.5	47.9	971	0.7	40.0	1438	1.0	33.8	1978	1.4	28.7	1258	0.9	36.3	3955	2.9	20.5
0.5625	500	543	0.5	56.0	679	0.5	50.8	917	0.7	42.3	1358	1.0	35.8	1868	1.4	30.4	1188	0.9	39.0	3735	2.7	22.0
0.5937	475	515	0.4	59.0	643	0.5	53.9	869	0.7	45.0	1287	1.0	38.0	1769	1.3	32.3	1126	0.8	40.7	3539	2.7	23.3
0.6250	475	489	0.4	63.6	611	0.5	57.0	825	0.6	48.0	1222	0.9	40.2	1681	1.3	34.2	1070	0.8	42.5	3362	2.5	24.6
0.6562	425	466	0.4	66.8	582	0.5	59.0	786	0.6	50.5	1164	0.9	42.0	1601	1.2	36.0	1019	0.8	45.0	3202	2.5	26.0
0.6875	425	445	0.4	70.0	556	0.4	62.7	750	0.6	53.0	1111	0.9	44.0	1528	1.2	38.0	972	0.8	50.0	3056	2.4	27.0
0.7187	400	425	0.4	73.0	532	0.4	65.0	718	0.6	55.0	1063	0.9	46.0	1462	1.2	39.5	930	0.7	51.0	2923	2.3	28.0
0.7500	400	407	0.4	76.3	509	0.4	68.0	688	0.6	57.0	1019	0.8	48.0	1401	1.1	41.0	891	0.7	52.0	2801	2.2	29.0
0.8750	350	349	0.4	89.0	437	0.4	79.0	589	0.5	73.0	873	0.8	56.0	1201	1.1	47.0	764	0.7	59.0	2401	2.2	34.0
1.0000	310	306	0.4	100	382	0.4	91.0	516	0.5	80.0	764	0.8	64.0	1051	1.1	54.0	669	0.7	68.0	2101	2.1	39.0
1.2500	270	244	0.4	126	306	0.4	113	413	0.5	95.0	611	0.6	80.0	840	0.8	68.0	535	0.5	86.0	1681	1.7	49.0
1.5000	230	204	0.4	154	255	0.4	138	344	0.5	120	509	0.5	91.0	700	0.7	82.0	446	0.5	105	1401	1.4	60.0

Indicates a two flute drill may be used at two times the recommended feed rate

$$RPM = \frac{3.82 \times SFM}{Diameter}$$

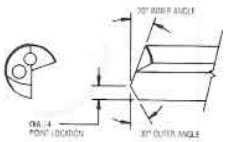
$$SFM = \frac{RPM \times Diameter}{3.82}$$

FPR = IPM/RPM

IPM = FPR x RPM

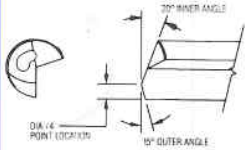
Dia	FPR	Dia	FPR
0.055-	0.00005	0.500-	0.00070
0.078-	0.00010	0.750-	0.00080
0.156-	0.00030	1.000-	0.00100
0.200-	0.00040	1.250-	0.00100
0.250-	0.00050	1.500-	0.00100

N-8 NOSEGRIND



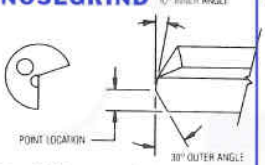
General purpose stock drill grind for steel, inconel and stainless steel, most often used with stock 'R1' O.D. diameter.

N-4 NOSEGRIND



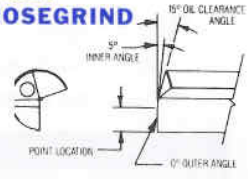
In aluminum and brass, use this grind with 'R4' O.D. contour for best hole finish.

N-73 NOSEGRIND



For drilling , stacked parts and angular entries. Due to the point's placement near the center of the drill, this is the strongest gundrill.

N-126 NOSEGRIND



For applications requiring nearly flat bottoms. It can also grind for a completely flat bottom. On difficult materials, use to qualify bottoms only.