

DRILL BIT RPM CHART

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Maximum RPM – High Speed Steel					
Drill Size	Decimal (inches)	Aluminum	Free Cutting Steel	Cast Iron	Stainless
1/16	0.0625	18,336	8,556	6,112	4,278
5/64	0.0781	14,669	-	4,890	3,423
3/32	0.0938	12,224	5,704	4,075	2,852
7/64	0.1094	10,478	-	3,493	2,445
1/8	0.1250	9,168	4,278	3,056	2,139
9/64	0.1406	8,149	-	2,716	1,902
5/32	0.1563	7,334	3,422	2,445	1,711
11/64	0.1719	6,668	-	2,223	1,556
3/16	0.1875	6,112	2,852	2,037	1,426
13/64	0.2031	5,642	-	1,881	1,316
7/32	0.2188	5,239	-	1,746	1,222
15/64	0.2344	4,890	-	1,630	1,141
1/4	0.2500	4,584	2,292	1,528	1,070
17/64	0.2656	4,314	-	1,438	1,007
9/32	0.2813	4,075	1,901	1,358	951
19/64	0.2969	3,860	-	1,287	901
5/16	0.3125	3,667	1,711	1,222	856
21/64	0.3281	3,493	-	1,164	815
11/32	0.3438	3,334	1,568	1,111	778
23/64	0.3594	3,189	-	1,063	744
3/8	0.3750	3,056	1,426	1,019	713
25/64	0.3906	2,934	-	978	685
13/32	0.4063	2,821	-	940	658
27/64	0.4219	2,716	-	905	634
7/16	0.4375	2,619	1,222	873	611
29/64	0.4531	2,529	-	843	590
15/32	0.4688	2,445	-	815	570
31/64	0.4844	2,366	-	789	552
1/2	0.5000	2,292	1,070	764	535
9/16	0.5625	1,358	951	543	272
5/8	0.6250	1,222	856	489	244
23/32	0.7188	1,111	778	444	222
3/4	0.7500	1,019	713	407	204
25/32	0.7813	946	662	378	189
7/8	0.8750	873	611	349	175
1	1.0000	764	535	306	153
1 1/8	1.1250	679	475	272	136
1 1/4	1.2500	611	428	244	122
1 3/8	1.3750	556	389	222	111
1 1/2	1.5000	509	357	204	102

DRILL TOOL RPM CHART

Typical Tool RPM	
Tool	RPM
1/2" Corded Drill	600-1,200
18V Cordless Drill	1,500-2,500
Pneumatic Drill	2,000-3,000

STAY SHARP KNOW YOUR DRILL BITS

135° Bits are intended for hardened materials and cut less aggressively than 118° Drill Bits. 118° bits are used for soft materials such as wood. 118° bits are capable of penetrating steel but the steeper cutting angle will dull quicker.



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DECIMAL EQUIVALENT CHART

Size	Fraction	MM	Decimal	Size	Fraction	MM	Decimal	Size	Fraction	MM	Decimal	Size	Fraction	MM	Decimal	Size	Fraction	MM	Decimal
	0.10	.0039		53		1.51	.0595			4.00	.1575	J		7.04	.2770			14.00	.5512
	0.20	.0079			1/16	1.59	.0625	21		4.04	.1590	K		7.14	.2810		9/16	14.29	.5625
	0.25	.0098		52		1.61	.0635	20		4.09	.1610		9/32	7.14	.2812		37/64	14.68	.5781
	0.30	.0118		51		1.70	.0670	19		4.22	.1660	L		7.37	.2900			15.00	.5906
80	0.34	.0135		50		1.78	.0700	18		4.31	.1695	M		7.49	.2950		19/32	15.08	.5938
79	0.37	.0145		49		1.85	.0730		11/64	4.37	.1719		19/64	7.54	.2969		39/64	15.48	.6094
	1/64	0.40	.0156	48		1.93	.0760	17		4.39	.1730	N		7.67	.3020		5/8	15.88	.6250
78	0.41	.0160			5/64	1.98	.0781	16		4.50	.1770		5/16	7.94	.3125			16.00	.6299
77	0.46	.0180		47		1.99	.0785	15		4.57	.1800			8.00	.3150		41/64	16.27	.6406
	0.50	.0197				2.00	.0787	14		4.62	.1820	O		8.03	.3160		21/32	16.67	.6562
76	0.51	.0200		46		2.06	.0810	13		4.70	.1850	P		8.20	.3230			17.00	.6693
75	0.53	.0210		45		2.08	.0820		3/16	4.76	.1875		21/64	8.33	.3281		43/64	17.07	.6719
74	0.57	.0225		44		2.18	.0860	12		4.80	.1890	Q		8.43	.3320		11/16	17.46	.6875
	0.60	.0236		43		2.26	.0890	11		4.85	.1910	R		8.61	.3390		45/64	17.86	.7031
73	0.61	.0240		42		2.37	.0935	10		4.91	.1935		11/32	8.73	.3438			18.00	.7087
72	0.64	.0250			3/32	2.38	.0938	9		4.98	.1960	S		8.84	.3480		23/32	18.26	.7188
71	0.66	.0260		41		2.44	.0960			5.00	.1968			9.00	.3543		47/64	18.65	.7344
	0.70	.0276		40		2.50	.0980	8		5.05	.1990	T		9.09	.3580			19.00	.7480
70	0.71	.0280		39		2.53	.0995	7		5.11	.2010		23/64	9.13	.3594		3/4	19.05	.7500
69	0.74	.0292		38		2.58	.1015		13/64	5.16	.2031	U		9.35	.3680		49/64	19.45	.7656
	0.75	.0295		37		2.64	.1040	6		5.18	.2040		3/8	9.53	.3750		25/32	19.84	.7812
68	0.79	.0310		36		2.71	.1065	5		5.22	.2055	V		9.56	.3770			20.00	.7874
	1/32	0.79	.0313		7/64	2.78	.1094	4		5.31	.2090	W		9.80	.3860		51/64	20.24	.7969
	0.80	.0315		35		2.79	.1100	3		5.41	.2130		25/64	9.92	.3906		13/16	20.64	.8125
67	0.81	.0320		34		2.82	.1110		7/32	5.56	.2188			10.00	.3937			21.00	.8268
66	0.84	.0330		33		2.87	.1130	2		5.61	.2210	X		10.08	.3970		53/64	21.03	.8281
65	0.89	.0350		32		2.95	.1160	1		5.79	.2280	Y		10.26	.4040		27/32	21.43	.8438
	0.90	.0354				3.00	.1181	A		5.94	.2340		13/32	10.32	.4062		55/64	21.84	.8594
64	0.91	.0360		31		3.05	.1200		15/64	5.95	.2344	Z		10.49	.4130			22.00	.8661
63	0.94	.0370			1/8	3.18	.1250			6.00	.2362		27/64	10.72	.4219		7/8	22.23	.8750
62	0.97	.0380		30		3.26	.1285	B		6.05	.2380			11.00	.4331		57/64	22.62	.8906
61	0.99	.0390		29		3.45	.1360	C		6.15	.2420		7/16	11.11	.4375			23.00	.9055
	1.00	.0394		28		3.57	.1405	D		6.25	.2460		29/64	11.51	.4531		29/32	23.02	.9062
60	1.02	.0400			9/64	3.57	.1406		1/4	6.35	.2500		15/32	11.91	.4688		59/64	23.42	.9219
59	1.04	.0410		27		3.66	.1440	E		6.35	.2500			12.00	.4724		15/16	23.81	.9375
58	1.07	.0420		26		3.73	.1470	F		6.53	.2570		31/64	12.30	.4844			24.00	.9449
57	1.09	.0430		25		3.80	.1495	G		6.63	.2610		1/2	12.70	.5000		61/64	24.21	.9531
56	1.18	.0465		24		3.86	.1520		17/64	6.75	.2656			13.00	.5118		31/32	24.61	.9688
	3/64	1.19	.0469	23		3.91	.1540	H		6.76	.2660		33/64	13.10	.5156			25.00	.9842
55	1.32	.0520			5/32	3.97	.1562	I		6.91	.2720		17/32	13.49	.5312		63/64	25.00	.9844
54	1.40	.0550		22		3.99	.1570			7.00	.2756		35/64	13.89	.5469		1"	25.40	1.0000

SPEED AND FEED RECOMMENDATION FOR HOLE DRILLING

When drilling deep holes, multiple layers and multiple materials, drill speed and feed rates need to be considered and adjusted accordingly.

Deep hole drilling is considered when the depth of hole being drilled is three times or more the diameter of the drill bit being used. A rule-of-thumb and easy calculation is to reduce the speed and feed by 50% when drilling deeper than three times the drill diameter. A typical example of what application drill bits are used within the shop is as follows:

- When drilling hardwood floor boards for trailers, it is recommended that the RPM's and speed of feed is reduced. Reasoning for this is hardness of material and depth of hole being cut.
- If using a 5/16" drill bit that will drill through 1-3/8" hardwood board, the recommended rate of speed is 1,500 RPM. However, when drilling deeper holes, it is recommended to reduce the RPM and feed rate when more than three times the hole depth to diameter.
- A hole 1-3/8" (1.375) deep divided by 5/16" (.3125) is 4.4 times the diameter of the bit (1.375/.3125=4.4). The rate of speed (RPM) should be reduced by 50% (from 1,500 to 750 RPM) and the feed rate also reduced.