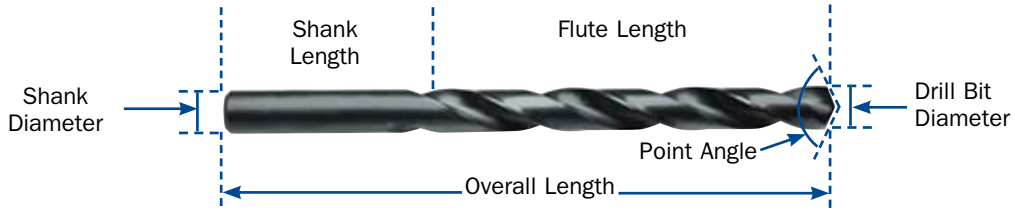
Engineered For Controlled Precision And Speed



Overall Length: The length from the point to the end of the drill

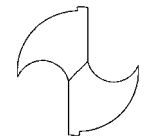
Point Angle: The angle of the cutting edges

Drill Diameter: The cutting diameter of the drill

Shank Length: The end of the drill bit that is secured by the drill

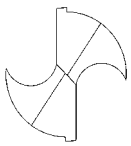
Flute Length: The length from the point to the end of the flutes

Tip Geometry



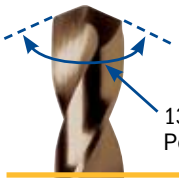
118° Conventional Point

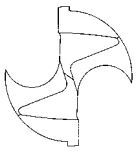
- General Use
- Not self-centering
- For Stationary Drills
- Performs better in softer materials than hard metal



135° Split Point

- Self-centering (won't "walk")
- For Portable Drills
- Requires less force than 118°





TURBOMAX® Tip

- Self-centering (won't "walk")
- Precision ground to stay sharp longer and drill faster
- For Portable Drills
- Requires less force than 118°

Drill Bit Section

Material	Point Angle	Black & Gold (135°)	TURBOMAX® (TURBOMAX®)	Heavy-Duty (135°)	Titanium Nitride (TiN) Coated (135°)	Cobalt (135°)	General Purpose (118°)
Wood/Drywall		●	●	●	●	●	●
Sheet Metal		●	●	●	●	●	●
Mild Steel		●	●	●	●	●	●
High Alloy Steels		●	●	●	●	●	●
Stainless Steels		●	●	●	●	●	●
Cast Iron		●	●	●	●	●	●
Aluminum, Brass & Copper		●	●	●	●	●	●
Plastic		●	●	●	●	●	●

Key: ● Recommended ● Acceptable ● Not Recommended

Cutting Speeds - by Working Material

Speeds for High Speed Steel Drills	SFM*
Aluminum and its Alloys	200 - 300
Brass and Bronze (Ordinary)	150 - 300
Bronze (High Tensile)	70 - 150
Die Castings (Zinc Base)	300 - 400
Iron-Cast (Soft)	100 - 150
Cast (Medium hard)	70 - 100
Hard Chilled	30 - 40
Malleable	80 - 90
Magnesium and its Alloys	250 - 400
Monel Metal or High-Nickel Steel	30 - 50
Plastics or Similar Materials (Bakelite)	100 - 300
Steel - Mild (.2 carbon to .3 carbon)	80 - 110
Steel (.4 carbon to .5 carbon)	70 - 80
Tool (1.2 carbon)	50 - 60
Forgings	40 - 50
Alloy - 300 to 400 Brinell	20 - 30
High Tensile (Heat Treated)	
35 to 40 Rockwell C	30 - 40
40 to 45 Rockwell C	25 - 35
45 to 50 Rockwell C	15 - 25
50 to 55 Rockwell C	7 - 15
Stainless Steel	
Free Machining Grades	30 - 80
Work Hardening Grades	15 - 50
Wood	300 - 400

*Surface Feet per Minute (SFM)

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

Speeds and Feeds for Deep Hole Drilling

Holes that qualify as “deep-hole drilling" are three or more drill bit diameters deep. When drilling this deep, the speed and feed rate must be adjusted to reduce friction. Friction creates heat, and heat build-up in the drill bit can cause failure and breakage. Lubricants help dissipate heat from the tip of the drill bit, prolonging drill life, and should always be used when deep-hole drilling.

Another technique that should be used when deep-hole drilling is called “pecking". Pecking is the process whereby the user drills a short distance then backs the drill out of the hole before progressing. Pecking lessens the possibility of chips getting lodged in the flute and allows for the reintroduction of lubricant into the hole.

Speed and Feed Reduction (Based upon the hole depth)

Hole Depth to Dia. (times drill dia.)	Speed Reduction	Feed Reduction
3	10%	10%
4	20%	10%
5	30%	20%
6	35 - 40%	20%

Feed Per Drill Revolution

Drill Dia. Range	Light	Medium	Heavy
1/16" to 1/8"	.0005 - .0010	.0010 - .0020	.0020 - .0040
1/8" to 1/4"	.0010 - .0030	.0030 - .0050	.0040 - .0050
1/4" to 3/8"	.0030 - .0050	.0050 - .0070	.0060 - .0100
3/8" to 1/2"	.0040 - .0060	.0050 - .0080	.0080 - .0120
1/2" to 3/4"	.0050 - .0070	.0070 - .0100	.0090 - .0140
3/4" to 1"	.0070 - .0100	.0090 - .0140	.0140 - .0200

See pages 127-128 for Tap & Drill Selection Chart

Titanium Nitride (TiN) Coated HSS Fractional Straight Shank Jobber Length Drill Bits 135˚ Split Point (Series 639/637)

63724

- Titanium Nitride coated bits last up to six times longer than standard high speed steel drill bits
- Cutting edge stays sharper longer
- Titanium Nitride coating reduces friction
- Repetitive metal driling with Portable Drills, Stationary Drill Press

Sets:
Metal Index: 63737, 3018003

**Note: 2 bits per Card*

Size	Decimal Equiv.	Flute Length	Overall Length	Carded Stock #	Bulk Stock #
1/16"	.0625	7/8"	1-7/8"	63904*	63704
5/64"	.0781	1"	2"	63905*	63705
3/32"	.0938	1-1/8"	2-1/4"	63906*	63706
7/64"	.1094	1-1/2"	2-5/8"	63907*	63707
1/8"	.1250	1-5/8"	2-3/4"	63908*	63708
9/64"	.1406	1-3/4"	2-7/8"	63909	63709
5/32"	.1563	2"	3-1/8"	63910	63710
11/64"	.1719	2-1/8"	3-1/4"	63911	63711
3/16"	.1875	2-5/16"	3-1/2"	63912	63712
13/64"	.1563	2-7/16"	3-5/8"	63913	63713
7/32"	.2188	2-1/2"	3-3/4"	63914	63714
15/64"	.2344	2-5/8"	3-7/8"	63915	63715
1/4"	.2500	2-3/4"	4"	63916	63716
17/64"	.2656	2-7/8"	4-1/8"	–	63717
9/32"	.2812	2-15/16"	4-1/4"	63918	63718
19/64"	.2969	3-1/16"	4-3/8"	–	63719
5/16"	.3125	3-3/16"	4-1/2"	63920	63720
21/64"	.3281	3-5/16"	4-5/8"	–	63721
11/32"	.3438	3-7/16"	4-3/4"	63922	63722
23/64"	.3594	3-1/2"	4-7/8"	–	63723
3/8"	.3750	3-5/8"	5"	63924	63724
25/64"	.3906	3-3/4"	5-1/8"	–	63725
13/32"	.4063	3-7/8"	5-1/4"	63926	63726
27/64"	.4219	3-15/16"	5-3/8"	–	63727
7/16"	.4375	4-1/16"	5-1/2"	63928	63728
29/64"	.4531	4-3/16"	5-5/8"	–	63729
15/32"	.4689	4-5/16"	5-3/4"	63930	63730
31/64"	.4844	4-3/8"	5-7/8"	–	63731
1/2"	.5000	4-1/2"	6"	63932	63732

Silver and Deming (S&D) HSS Fractional 1/2" Reduced Shank Drill Bits 118˚ Point (Series 911/901)

91148

- 6" overall length
- For use in 1/2" drill chucks
- 3-flatted shank for secure grip

Applications:

Heavy-duty metal drilling, automotive, body shop, metal fabrication

Sets:

8 Piece Set: 90108

91164

Size	Decimal Equiv.	Flute Length	Overall Length	Tubed Stock #
33/64"	.5156	3"	6"	91133
17/32"	.5313	3"	6"	91134
35/64"	.5469	3"	6"	91135
9/16"	.5625	3"	6"	91136
37/64"	.5781	3"	6"	91137
19/32"	.5938	3"	6"	91138
39/64"	.6094	3"	6"	91139
5/8"	.6250	3"	6"	91140
41/64"	.6406	3"	6"	91141
21/32"	.6563	3"	6"	91142
43/64"	.6719	3"	6"	91143
11/16"	.6875	3"	6"	91144
45/64"	.7031	3"	6"	91145
23/32"	.7188	3"	6"	91146
47/64"	.7344	3"	6"	91147
3/4"	.7500	3"	6"	91148
49/64"	.7656	3"	6"	91149
25/32"	.7812	3"	6"	91150
51/64"	.7969	3"	6"	91151
13/16"	.8125	3"	6"	91152
53/64"	.8281	3"	6"	91153
27/32"	.8438	3"	6"	91154
55/64"	.8594	3"	6"	91155
7/8"	.8750	3"	6"	91156
57/64"	.8906	3"	6"	91157
29/32"	.9062	3"	6"	91158
59/64"	.9219	3"	6"	91159
15/16"	.9375	3"	6"	91160
61/64"	.9531	3"	6"	91161
31/32"	.9688	3"	6"	91162
63/64"	.9844	3"	6"	91163
1"	1.000	3"	6"	91164
1-1/64"	1.0156	3"	6"	90165
1-1/32"	1.0313	3"	6"	90166
1-1/16"	1.0625	3"	6"	90168
1-3/32"	1.0938	3"	6"	90170
1-1/8"	1.1250	3"	6"	90172
1-5/32"	1.1563	3"	6"	90174
1-3/16"	1.1875	3"	6"	90176
1-1/4"	1.2500	3"	6"	90180
1-5/16"	1.3125	3"	6"	90184
1-3/8"	1.3750	3"	6"	90188
1-7/16"	1.4375	3"	6"	90192
1-1/2"	1.5000	3"	6"	90196