



HSS TOOL DATA

Suggested Drill Bits To Be Used For Various Types Of Materials:

MATERIAL	DRILL STYLE	ANGLE POINT	PRESSURE TO APPLY	COOLANT OR LUBRICANT
CARBON STEEL DUCTILE STEEL BRASS BRONZE	GENERAL PURPOSE DRILLS	118° POINT	MEDIUM TO HEAVY	OIL or WATER SOLUTION
CARBON STEEL ALUMINUM AUSTENITIC STAINLESS STEEL	HEAVY DUTY AND TITANIUM	135° SPLIT POINT	MEDIUM TO HEAVY	OIL or ACTIVATED SOLUTION
STAINLESS STEEL SERIES C CAST IRON	COBALT DRILLS	135° SPLIT POINT	MEDIUM TO HEAVY	OIL or ACTIVATED SOLUTION
HARD STEEL HEAT TREATED ALLOYS	HARD BODY CARBIDE TIPPED AND COBALT	130° & 135° SPLIT POINT	HEAVY	OIL or ACTIVATED SOLUTION

Chemical Analysis Of The Three Primary High Speed Steels Used To Manufacture HSS Drill Bits:

TYPE	CHEMICAL COMPOSITION						ROCKWELL C HARDNESS	TERM
	CARBON	TUNGSTEN	MOLYBDENUM	CHROMIUM	VANADIUM	COBALT		
M2	0.85	6.00	5.00	4.00	1.90	-	63-65	HSS
M35	1.10	1.50	9.50	1.15	1.15	5.00	65-67	COBALT
M42	1.10	1.50	9.50	1.15	1.15	8.00	65-67	SUPER COBALT

M2 "HSS" is the standard material used for all **ITM** drill bits. M2 has good red-hardness and retains its cutting edge longer than other general purpose high speed steels because of its increased quantity of tungsten (dull red heat up to 1000° F without loss of hardness or rapid dulling of cutting edge). M2 is generally favored for high production machine work.

M35 M35 is the standard cobalt material used for most **ITM** cobalt drill bits. M35 has excellent resistance to abrasion and very good red-hardness for working difficult materials.

M42 M42 "Super Cobalt" is American made premium cobalt material used for higher performance **ITM** cobalt drill bits. M42 has the best resistance to abrasion and red-hardness.

COBALT DRILLS

Made of the finest Cobalt steel obtainable and furnished with a 135° split point, these drills are designed for use in machining hard, tough materials beyond the normal cutting capabilities of regular high speed steel tools. These include work-hardening grades of stainless steels, titanium, high temperature alloys, and many other heat treated materials. In addition, due to their resistant properties, they can also be used at higher speeds to drill abrasive plastics, cast iron, and other types of difficult to machine work materials.

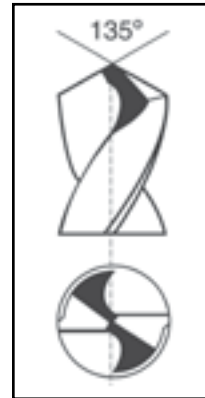
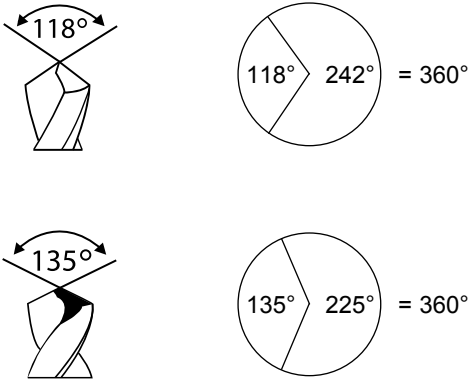


Always Use Protection When Drilling.

Always Use High RPM For Smaller Diameters and Lower RPM For Larger Diameters.

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Understanding High Speed Steel Drill Bits:



Split Point

An extra cutting angle on the 2 cutting edges of a drill bit.

Split Point is designated here in black.

Split Pointing is almost always reserved for 135° HSS drill bits.

118° drill bits have a sharp point and are common on standard / general purpose drill bits where light duty work is needed. Because of this sharp point, 118° drill bits will tend to “walk” or spin like a top on flat surfaces. This is why a centering drill or center punch is normally used to start off holes. If the operator has very steady hands, then the 118° drill bit can be used without center punching.

135° drill bits have a flatter point which gives the drill bit more cutting surface area. When more surface area cuts the steel, drilling is faster.



Understanding Nomenclature Vis-a-vis Size:

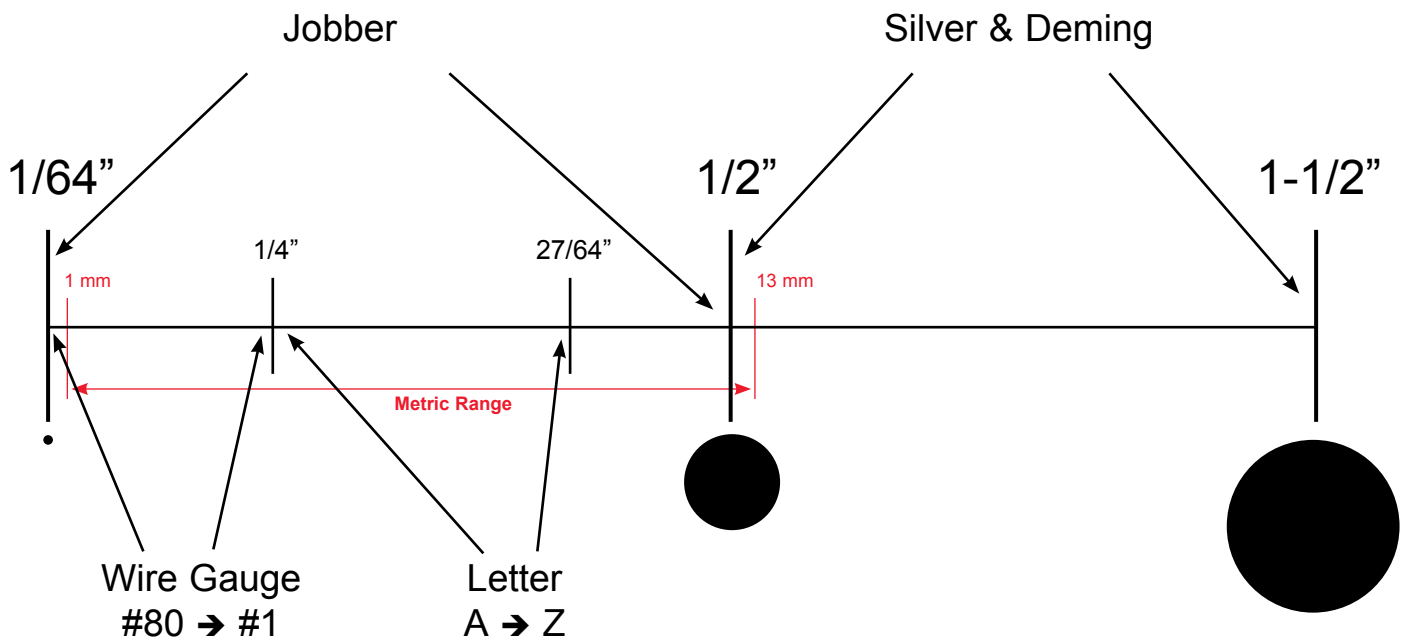


Chart Not To Scale.