

STEP DRILLS & INTRODUCTION TO REAMERS

IRWIN[®] Unibit[®] Hole-Enlarging Step Drill Bits

Irwin UNIBIT Step Drills have an exclusive single radial concave flute. This design allows drilling of perfectly round holes in thin materials, quickly and with less effort. Each bit is constructed of industrial grade high speed molybdenum steel, and is heat treated to a hardness of between 61 and 63 on the Rockwell "C" scale. This assures maximum strength and long life.



ORDERING INFORMATION						
Hole Size Range (In.)		No. of Holes Sizes	Shank Dia. (In.)	Thick. (In.)	Model	Low Price
Min.	Max.					
5/16	1	8	1/2	1/8	¹ 319-0690	\$38.37
13/16	1 3/8	10	1/2	1/8	² 319-0691	81.88

¹Requires 1/2" pilot hole ²Requires 3/4" pilot hole



The Right Price
 1/8 - 1" Drill Bit
 Model 319-0690
\$38³⁷

Enco Introduction to Reamers



As the complexity of manufactured products intensifies, so does the need to create consistent, highly tolerant holes. Reamers are the perfect solution for enlarging or finishing an existing hole to a specific size and tolerance.

TYPE

Chucking Reamers - Intended for use in drill presses, lathes and screw machines. Most commonly used style for reaming holes to a tight tolerance. Come in straight flute, RHS/RHC, LHS/LHC and expansion styles in standard and jobber lengths

Hand Reamers - Have a square at the end of the shank, similar to a hand tap. This allows the user to turn the reamer with an adjustable wrench or a standard tap wrench. Constructed with a tapered cutting head to help the user push the tool into the workpiece

Pipe Reamers - Used to prepare a hole for tapping with a taper pipe tap. Constructed with a square end on the shank. This allows the user to turn the reamer with an adjustable wrench or a standard tap wrench

Expansion Reamers - Built with an adjusting screw to alter the size of the cutting head. This allows an expansion reamer to be reground many times

Bridge Reamers - Designed to enlarge and align holes for rivets. Primarily used in steel construction using I-beams. Shanks come in a variety of styles for portable electric drills, drill presses and square-drive impact wrench sockets

SPECIAL SIZES

Over/Under Reamers - Come in sizes 1/10th above or below standard key sizes. For example, an oversize reamer measuring 0.2600" or undersize of 0.2400" are offered as alternatives to a 1/4" or 0.2500" reamer. These sizes will allow the user to create a tighter or looser hole than the standard fractional size

Special Decimal Sizes - Cover all sizes outside of the standard fractional, letter, wire and metric sizes. Manufactured in increments of 0.0010"

Dowel Pin Sizes - Help the user prepare a perfect hole for dowel pin insertion

FLUTE STYLES

Straight Flute - The most common reamer 45° Chamfer angle to ease the reamer into the existing hole. With straight flutes, chips are forced forward into the hole, and should be used in through-hole applications only

Right Hand Spiral/Right Hand Cut (RHS/RHC) - Pull chips out of an existing hole. Ideal for blind-hole applications. Design adds extra shear to the finished hole

Left Hand Spiral/Right Hand Cut (LHS/RHC) - Push chips forward and are ideal for through-hole applications. Design provides the finest hole finish

Taper Pin - Have a taper of 1/4" to the foot. Designed to ream holes into which standard taper pins will fit

Straight Flute and Left Hand Spiral Taper Pin - Meant primarily for hand reaming. Best results are usually obtained if the hole to be reamed is drilled a few thousandths smaller than the small diameter of the finish-reamed hole

Helical Taper Pin - Designed especially for the shop producing taper-pin holes by machine reaming. Due to the High-Spiral construction, chips do not pack in the flutes

MATERIAL

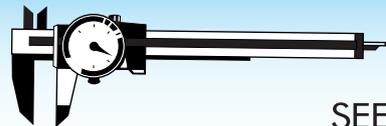
High Speed Steel (HSS, M1, M2, M7, M50) - Combines good tool life and productivity with minimal cost. Works well in free cutting and carbon steels, as well as soft, non-ferrous materials such as aluminum, brass, bronze and copper

Cobalt (M-35, M-42) - Better wear resistance, higher hardness and toughness than HSS. Very little chipping or microchipping under severe cutting conditions, allowing the tool to run 10% faster than HSS. With the right point angle and helix, cobalt is the most cost-effective for machining cast iron, heat-treated steels and titanium alloys

Solid Carbide - For high-performance applications. Carbide can run faster and withstand higher temperatures, while providing good wear resistance. Carbide is brittle and tends to chip when conditions are not ideal; heavy feed rates are more suitable for HSS and cobalt tools. Used in abrasive and tough-to-machine materials: cast iron, non-ferrous alloys, glass, plastics and composites

Carbide Tipped - Offers many of the advantages of solid carbide tooling at a reduced cost, especially in larger diameter tools

Measuring Tools



SEE SECTION **3**