

# Chapter 39 REAMERS

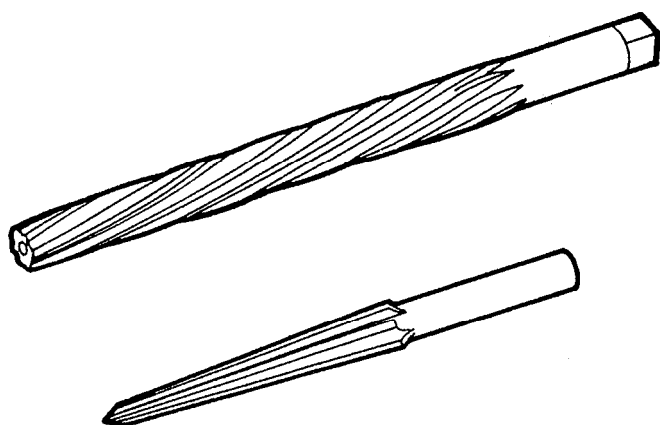
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## HOW TO CHOOSE AND USE THEM

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The "Types and Uses" section provides you with a list of some of the types of reamers. These pages should help you select the right reamer to do the job.

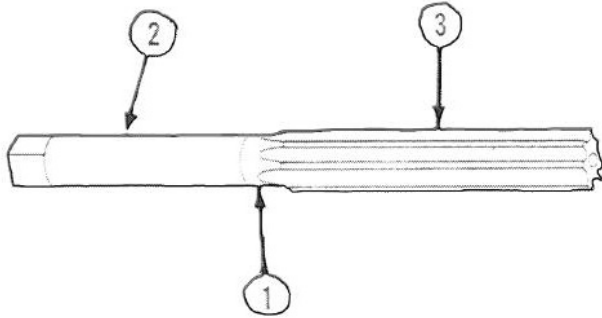
The "Using" section tells you how to use the reamer to perform the desired function. The "Care" procedures tell you how to care for the items.



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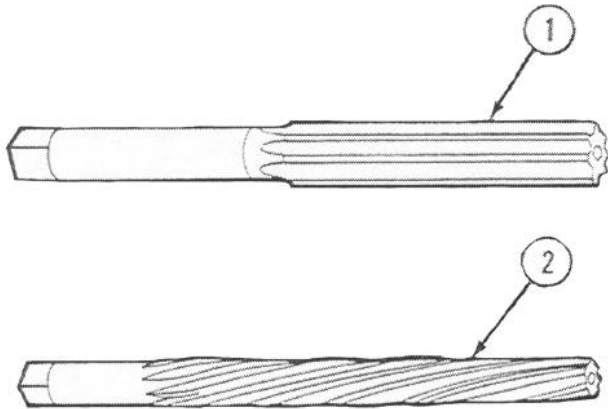
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## TYPES AND USES



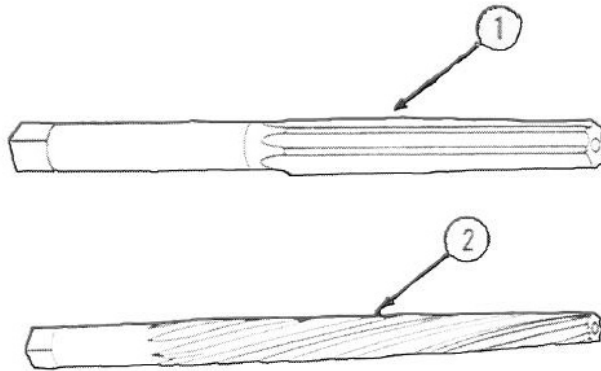
Reamers are used to enlarge and true a hole. They are also used to remove burrs from the inside diameters of pipes and drilled holes. The reamer consists of three parts, the body (1), the shank (2), and the blades (3). The shank has a square tang to allow the reamer to be held with a wrench for turning.

### SOLID STRAIGHT-HOLE REAMER



A solid straight-hole reamer is made of one solid piece of high-speed steel having a straight shank and straight (1) or spiral flutes (2). The cutting edges, or lands, between the flutes are usually evenly spaced. Some have irregularly spaced lands to prevent the tool from chattering. They come in sizes from 1/16 inch to include 3-inch diameters. Reamers are also available in sets containing 25 reamers in 1/64-inch increments from 1/8 inch to 1/2 inch. The sets may be mixed to include straight and taper pin reamers. Each reamer size is stamped on the shank of the tool. Solid straight-hole reamers are used for most work since they are the most accurate and the most rugged of the straight-hole reamers.

### SOLID TAPER-PIN REAMER



Solid taper-pin reamers are used to finish tapered holes for the insertion of tapered pins or other tapered parts. They are made with a standard taper of 1/4 inch per foot. Solid taper-pin reamers come with straight (1) or spiral flutes (2). Sizes range from 5/0 to 14, with the diameter at the large end ranging from 0.0984 to 1.5412 inches. They also come in sets of 10, sizes 3/0 to 7, and a set of 11, sizes 0 to 10. They are also included in mixed sets of straight and taper-pin reamers.

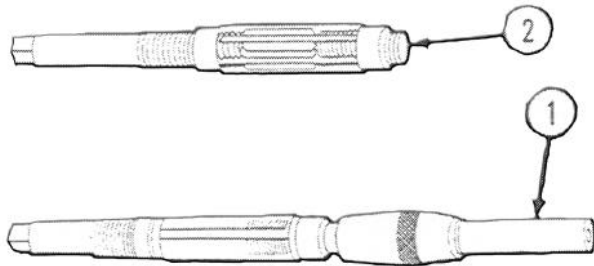
### EXPANSION REAMER



Expansion reamers are adjustable, and their sizes may be changed by 1/8 inch for a 1-inch reamer and 5/16 inch for a 2-inch reamer. The expansion reamer is made of carbon steel and has longitudinal cuts in some of its flutes. It is hollowed out and threaded to receive a tapered screw plug. The diameter of the reamer is changed by screwing in or backing out the screw plug. The standard sizes range from 1/4 inch to 1 inch, by 32nds. A 1/4-inch expansion reamer will enlarge the hole to a 9/32-inch hole, etc. It is used for general purposes and is considered the most practical reamer.

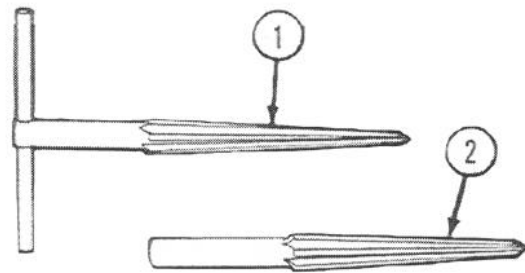
## TYPES AND USES - Continued

### ADJUSTABLE-BLADE REAMER



The blades of an adjustable reamer are separate from the body and are fitted into grooves in the threaded shank of the tool. Adjusting nuts located below and above the blades control the diameter of the reamer. The reamers come with straight (1) or spiral flutes (2), with or without a floating pilot on solid mandrels, and in several sizes. Adjustable reamers are also available in sets. They are used to enlarge drilled holes to an exact true size using a series of small cuts rather than one deep cut.

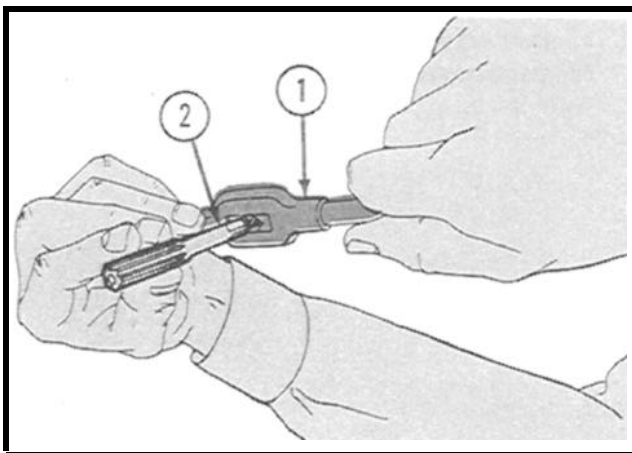
### PIPE REAMER



Pipe reamers are made of carbon steel. They are tapered with straight or spiral flutes. They come in three sizes, 1/8-inch to 1-inch pipe capacity, 1/4-inch to 1-1/4-inch pipe capacity, and 1/4-inch to 2-inch pipe capacity. Most pipe reamers are designed to receive a T-handle (1). Others (2) have a tapered square shank for use with a brace, or a round shank for use with a hand drill. They are used to remove burrs from the inside diameters of pipe and drilled holes.

## USING A SOLID STRAIGHT-HOLE REAMER

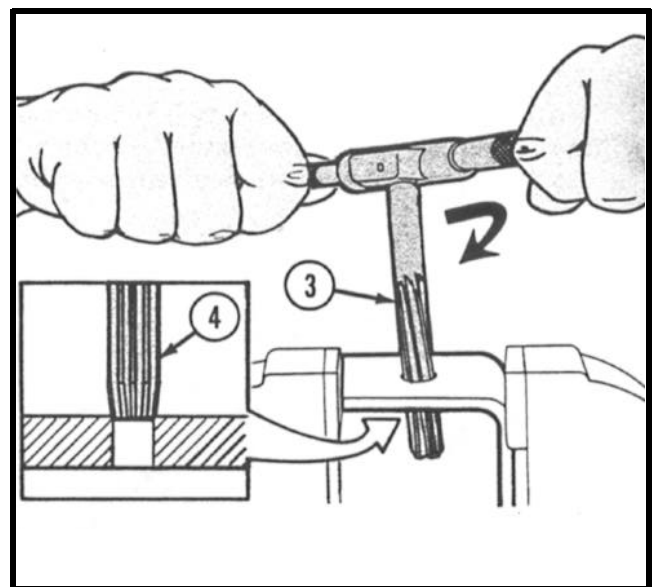
- 1 Secure the work in a vise so that the hole to be reamed is perpendicular to the top of the vise jaws.



- 2 Using a tap wrench (1), tighten the handle to the square end of the reamer shank (2).

#### CAUTION

Do not turn the wrench counterclockwise at any time. To do so will cause the reamer to become dull.



- 3 Position the reamer (3) at the top of the hole. Turn the wrench clockwise very slowly until the reamer is centered in the hole. Straight-hole reamers (4) have a slight taper at the end so they will fit into the hole easily.

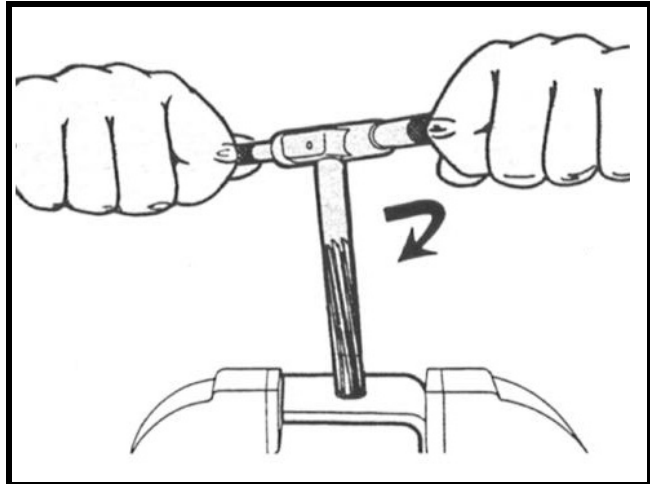
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## USING A SOLID STRAIGHT - HOLE REAMER - Continued

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**4** Turn the wrench clockwise with a steady, firm pressure until the reamer has been turned in the hole. When reaming steel, use cutting oil or machine oil to lubricate the tool. When reaming soft iron, do not lubricate the tool. Turning the wrench too fast or too slowly will cause the reamer to chatter, producing an unevenly reamed hole.

**5** Remove the reamer from the hole by turning the wrench clockwise and raising the reamer at the same time.




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## CARE OF REAMERS

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1. Keep reamers absolutely clean to do accurate work.
2. Do not use the reamer to remove more than 0.002 to 0.003 inches of metal. If the hole is too small, enlarge it with a drill before reaming it.
3. If the proper pressure is applied in use and the reamer chatters, replace it to insure accurate work.
4. If the reamer edges are only slightly dulled, honing the edges on an oilstone may restore the sharpness. On an adjustable reamer, the blades may be replaced.
5. To prevent chipping or dulling the reamer when you are reaming a hole, turn the reamer in the cutting direction only.
6. To prevent damage to the reamer for short-term storage, wrap it in an oily cloth and keep it in a box.
7. For long-term storage, clean reamer thoroughly and coat with rust-preventive compound. Wrap each reamer separately in oiled cloth and store in a dry, safe place.