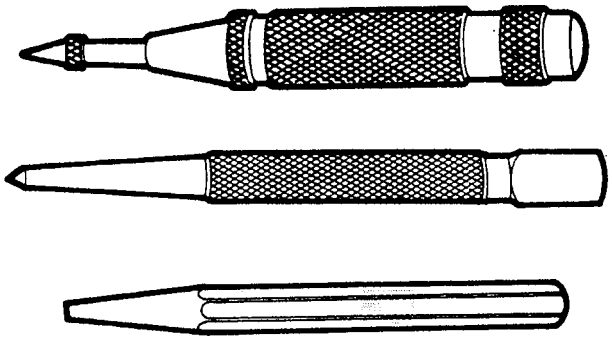
Chapter 27 PUNCHES

HOW TO CHOOSE AND USE THEM

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

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



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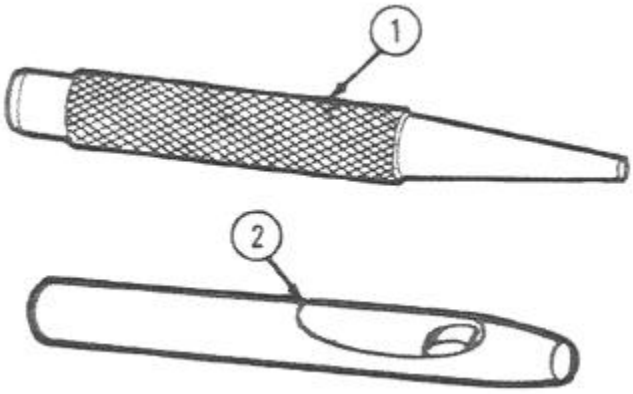
TYPES AND USES

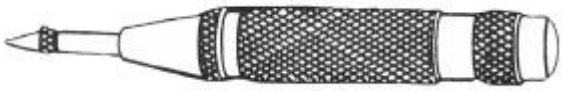
There are two basic types of punches; solid (1) which are the most common, and hollow (2) which are usually designed for punching holes in leather, paper, and other similar materials. Solid punches are used to mark metal, drive pins, align holes and to do other similar jobs.



CENTER PUNCHES

There are two types of center punches, both used for starting drill holes.

The hand-held type has a narrow, cone-shaped point terminating in a sharp, conical tip. Hand-held types; range from 1/8 to 5/8 inches in diameter and from 3 to 6 inches long. The hand-held punch must be struck with a hammer.



The automatic type has an adjustable regulator for determining the impact of the punch and also has interchangeable points. The automatic punch contains a tension spring for marking without the use of a hammer.

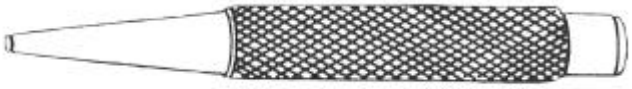
DRIFT PUNCH

The drift punch has a narrow, tapered flat point. The points range in size from 1/8 to 1/2 inch in diameter with an overall length from 7 to 9 inches. Drift punches may be used to remove shafts, pins, rivets (after heads have been removed), and to align small parts.

ALIGNMENT PUNCH

The alignment punch has a narrow, tapered flat point. The points range in size from 1/8 to 1/2 inch in diameter with an overall length of 12 to 15 inches. Alignment punches are used to line up mating parts for assembly. Make sure the punch is large enough for the job. A punch that is too small may bend or break.

DRIVE PIN PUNCH



The drive pin punch has a flat tip which may be tapered. Points may range in size from 0.03 to 1/2 inch and are from 3 to 6 inches long. Standard drive pin punches usually come in sets of nine. Drive pin punches are used to remove straight or tapered pins. Make sure the right size punch is used for the pin being removed.

PRICK PUNCH

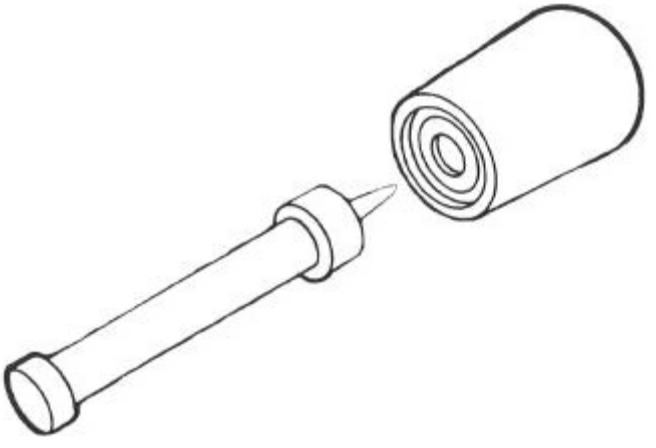
The prick punch has a long, conical-shaped point and ranges from 4 to 5 inches in length overall. It is used to mark soft metal.

TYPES AND USES - Continued

STARTING PUNCH

The starting punch has a strong tapered point capable of resisting applied force. It is used to start the removal of a pin from an assembly.

GROMMET-INSERTING PUNCH

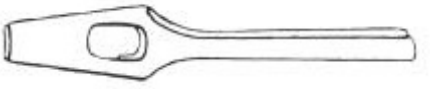


The grommet-inserting punch consists of two parts. The solid punch part has a tapered point and a flat shoulder. The round die part has flat ends with a bored hole in one end to receive the point of the punch. Grommet-inserting punches are used to form the flange on grommets which are installed along the edges of flags, sails, mail bags, and similar items.

CATAPUNCH

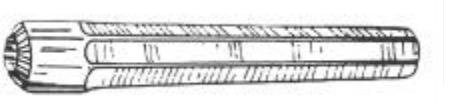
The catapunch consists of a pointed head mounted on a coiled spring shaft. It is used to mark centers on metal or wood without the use of a hammer.

METAL CUTTING PUNCH



The metal cutting punch has an open, sharpened edge on one end and a solid shaft on the other end. The center portion of the punch is bowed for catching the metal scrap. The metal cutting punch ranges in size from 1/4 inch to 1 inch. Metal cutting punches are used to punch holes in thin sheet metal and require the use of a mallet or machinists hammer.

TINMEN'S HOLLOW PUNCH

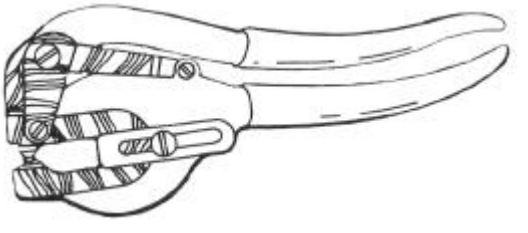


The tinmen's hollow punch has a solid metal shank terminating in a sharpened, hollowed end. It is used *to* punch holes through thin sheet metal.

SHEET METAL PUNCH

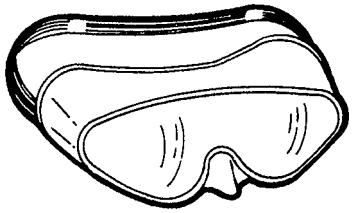
The sheet metal punch is a heavy-duty steel punch approximately seven inches in length. It tapers to a fine point and must be struck to produce the hole. It is used to punch holes through sheet metal to take fastenings.

LEVER PUNCH



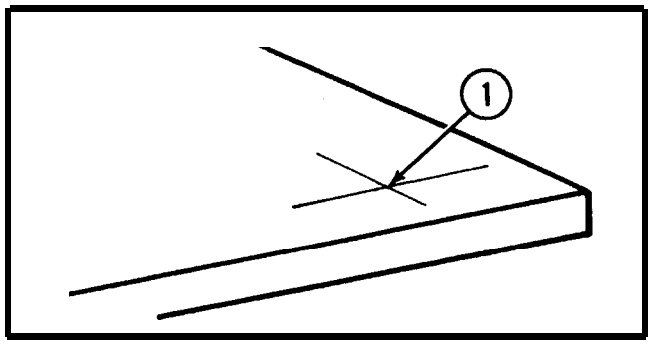
The lever punch incorporates an interchangeable punch and a matching die or "anvil." The die backs up the material, prevents distortion, and leaves a clean hole. This type of punch is used to punch small round holes near the edges of metal or leather material.

USING A CENTER PUNCH

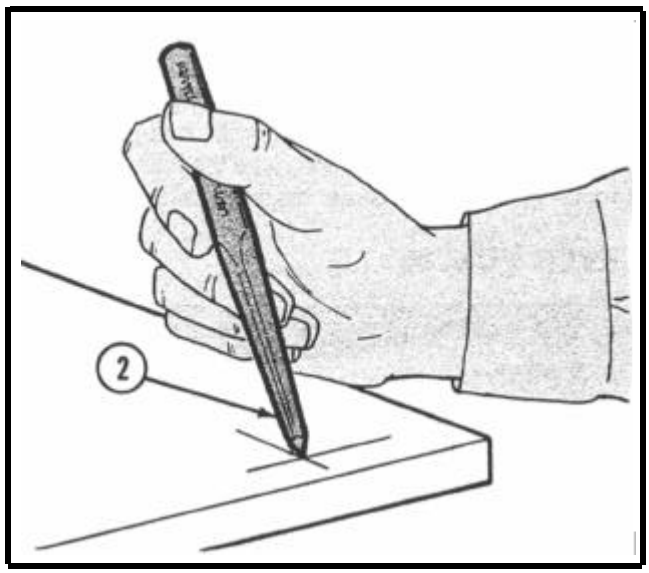


WARNING
WEAR EYE PROTECTION

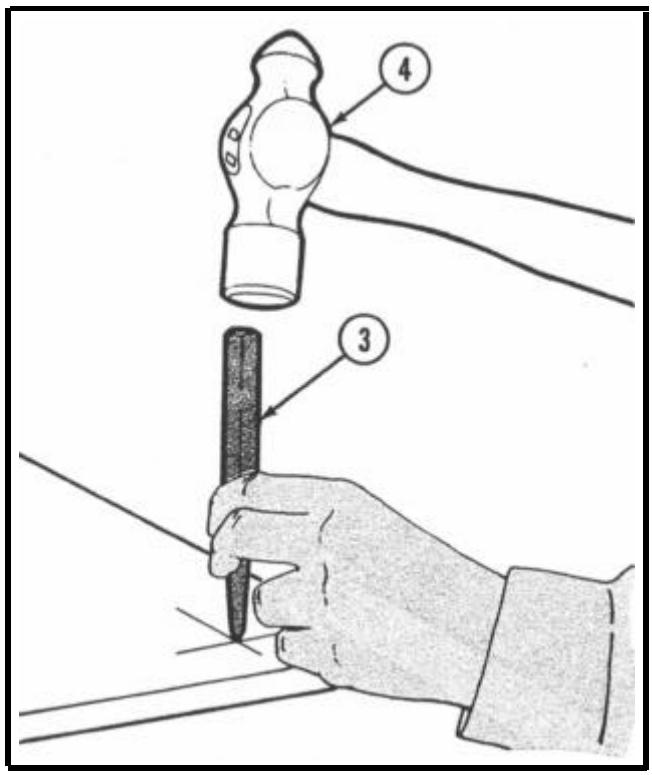
NOTE
The procedure which follows is only one of many uses of a hand-held center punch.



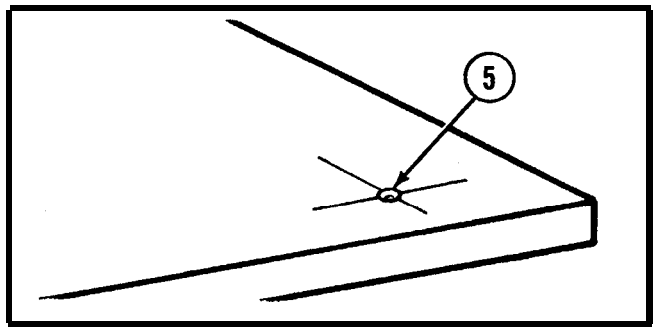
1 Mark the material to be punched with an "X" (1).



2 Hold the punch (2) over the mark. Tilt it so that you can align the tip with the center of the “X.”



3 Position the punch upright and strike the blunt end (3) of the punch with a hammer (4).

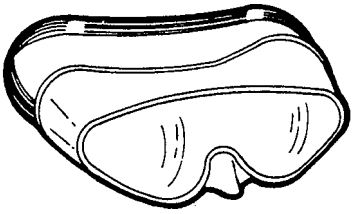


4 Remove the punch and check your mark (5). If it is not in the center of the "X," or not deep enough, you will have to repeat the procedure.

USING A DRIFT PUNCH

NOTE

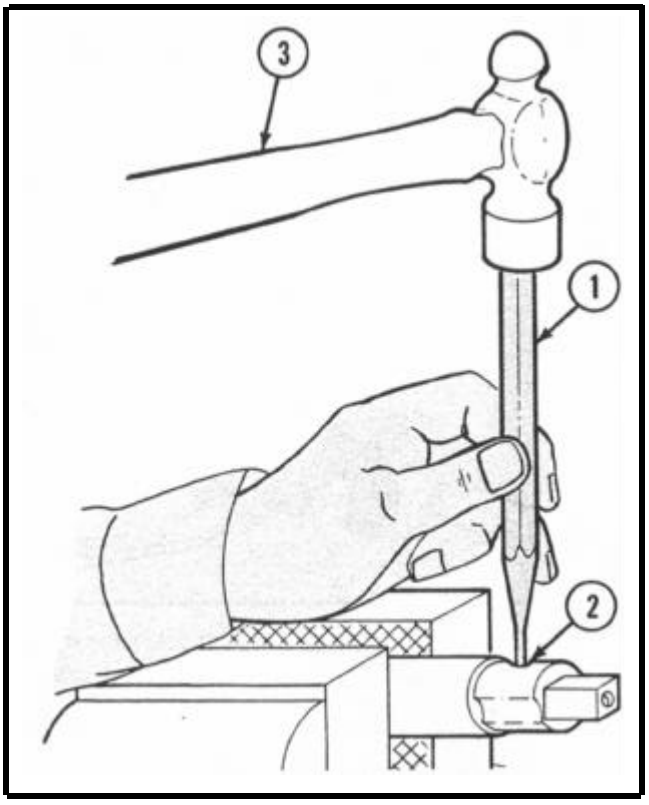
The removal of a pin from a shaft is only one of many uses for a drift punch.



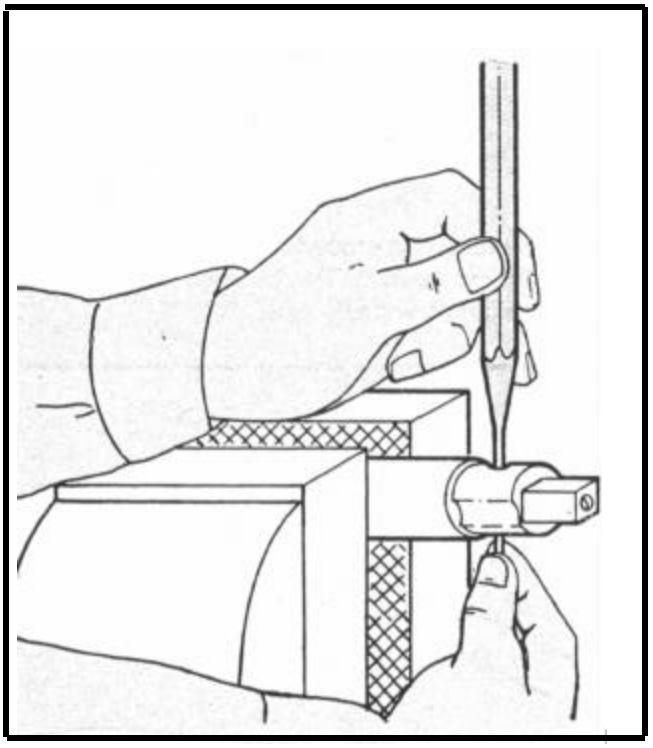
WARNING

WEAR EYE PROTECTION.

1 Select a punch which is slightly smaller than the pin which is to be removed. Care must be taken when selecting a punch for removing a split pin. If the punch is too small, it may become lodged in the pin.

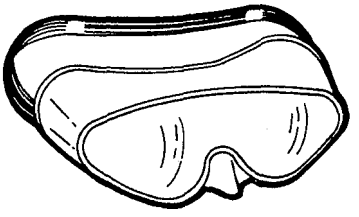


2 Hold punch (1) centered over pin (2). Tap punch lightly with hammer (3). This should move the pin. It may be necessary to apply penetrating oil to the pin before it will move.



3 Catch the pin before it falls out of the Shaft. When the pin is about half way out of the shaft, you can let go of the punch.

USING AN ALIGNMENT PUNCH



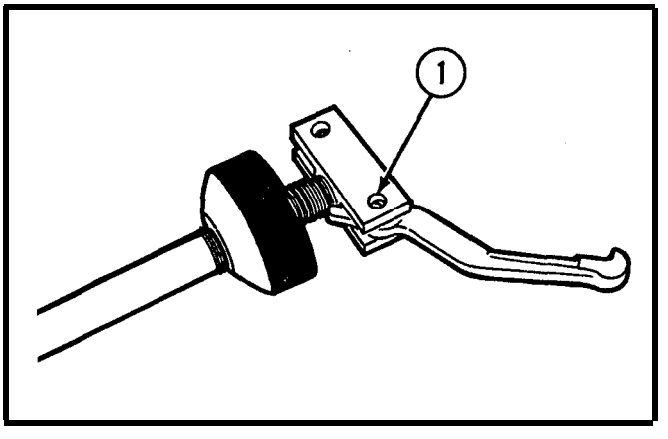
WARNING

WEAR EYE PROTECTION.

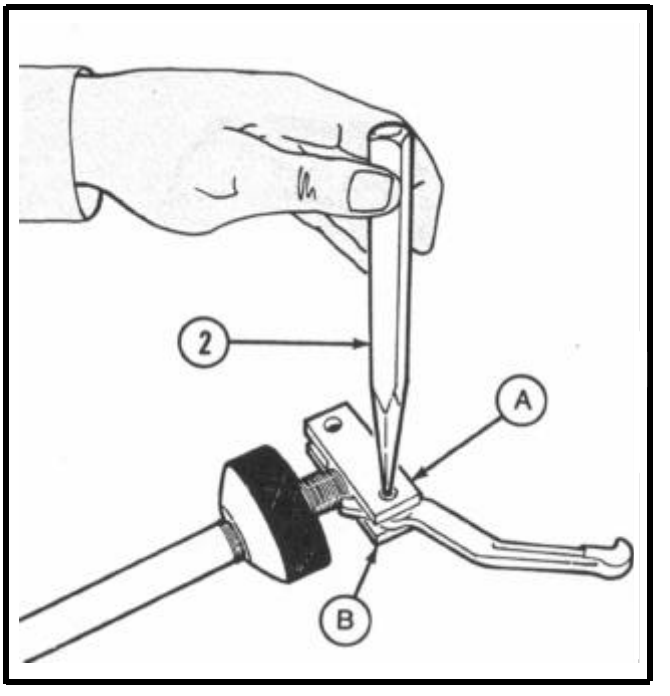
DO NOT STRIKE THIS PUNCH WITH A HAMMER.

NOTE

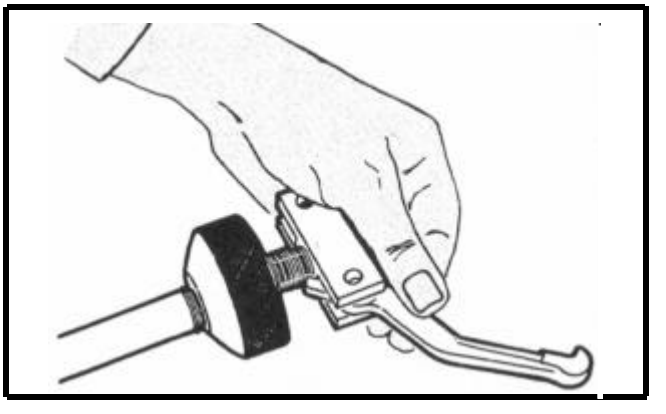
The following procedure is for using an alignment punch. This tool, unlike others, has only one basic use.



1 Select a punch having a smaller diameter than the smallest hole (1) to be aligned.



2 Insert tip of punch (2) through hole in part A using only hand pressure, and move punch and part A until you can get the tip of the punch into part B.



3 Hold the assembled parts while you remove the punch. Proper use of an alignment punch prevents damaging threaded parts.

4 Place screw in alined holes and tighten.

CARE OF PUNCHES

1. Clean punches with a clean rag after each use,
2. Apply a light coat of oil before storing.
3. Store punches in racks, tool rolls, or in your tool box so that the edges will not be damaged.
4. Replace punches that have mushroomed ends.