

## **PRESSURE TESTING**

### **MISCELLANEOUS TOOLS**

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#### **1. GENERAL**

1.01 This section describes several tools used in pressure testing work, such as the cable drill, pressure testing clamp, pressure testing pump, etc., and covers the methods of using them.

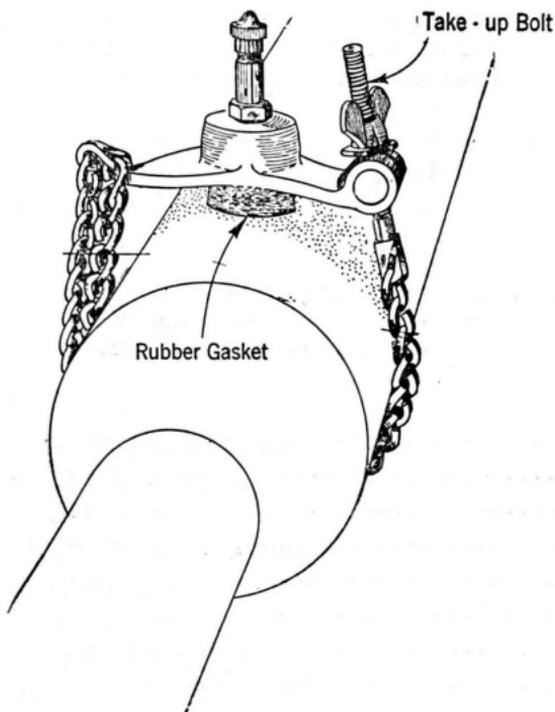
#### **2. CABLE DRILL**

2.01 The cable drill has a hollow bit with an outside diameter slightly under 1/4 inch. The tool is intended for boring holes in cable sheath and lead sleeves. In boring through cable sheath, the circular lead slug cut from the sheath fills the teeth of the bit in such a way as to prevent damage to the core wrapping paper. Because of this the length of the bit is not critical and either a short or long bit can be used for boring holes in cable sheath. The long bit is necessary for boring holes when F Pressure Testing Flanges are used.

2.02 In boring holes the drill turns fairly hard while cutting through the sheath. Boring should be continued until free turning is noticeable at which point no further pressure should be applied to the drill. The lead slug remains in the bit and may be removed by tapping the ejector plunger that projects slightly above the top of the knurled handle.

### 3. PRESSURE TESTING CLAMP

3.01 The pressure testing clamp is used to provide a temporary gas admission point such as required in flash testing individual sleeves. It should not be used in charging cables maintained under pressure; for such work it is generally advisable to use a valve soldered to the cable or screwed into an F pressure testing flange for admitting gas or for taking pressure readings.



3.02 To install the clamp a hole should be drilled in the cable sheath or sleeve with the cable drill. In the case of a sleeve the hole should be about 2 inches from one of the wiped joints. In the case of sheath, the core wrapping paper should be punctured so as to prevent the paper from acting as a check valve when taking pressure readings. A bone knitting needle which will not injure the cable conductors should be used for puncturing the paper.

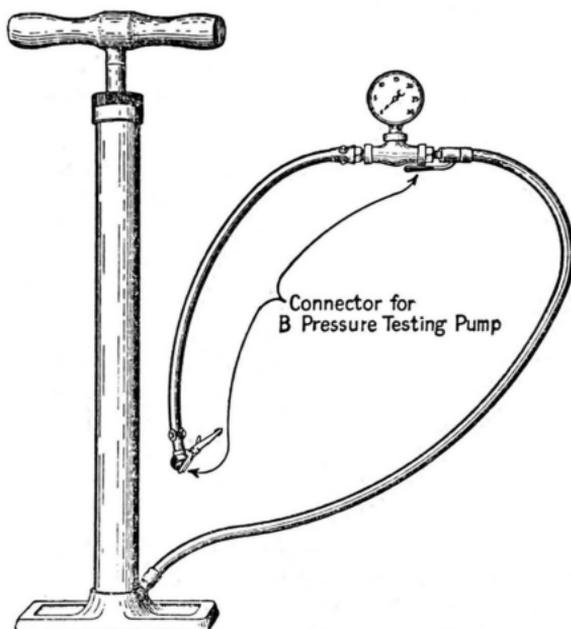
3.03 Apply the clamp so that the hole in the gasket is directly over the hole in the sheath or sleeve. Pass the chain around the cable and hook it over the lug provided on the clamp for this purpose. Secure the clamp firmly in place

by taking up the slack in the chain with the take-up bolt. Test the completed installation with soap solution.

3.04 When a clamp is left on a cable for more than a few hours, it will be advisable to tighten the take-up bolt occasionally to ensure that the seal between the rubber gasket and the cable remains gas-tight.

#### 4. B PRESSURE TESTING PUMP

4.01 The B Pressure Testing Pump is intended for testing the gas-tightness of taped splice coverings and for testing wiped joints in small cables. The pump can also be used in testing CR Tape coverings on uncompleted splices. The pump is illustrated below.



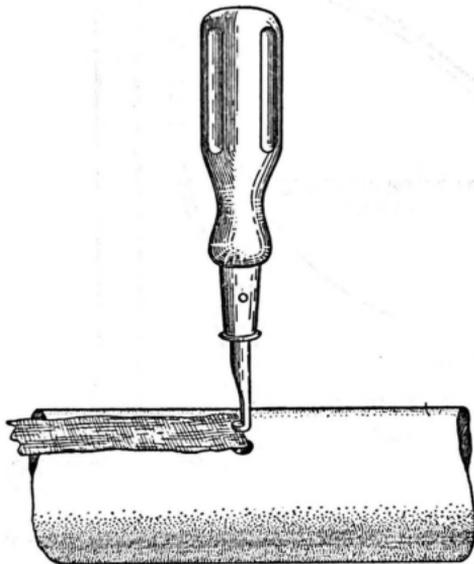
4.02 In testing taped splice coverings a relatively low pressure is required and the pump can therefore be used on all sizes of cable.

4.03 In testing wiped joints, a higher pressure is required and consequently the pump can be used satisfactorily only on cables in the order of one-inch diameter, or smaller, where about 100 feet or more of the small cable intervenes between the sleeve being tested and any large cable to which the small cable under test is connected.

4.04 The hose outlet at the base of the pump is equipped with a check valve so that the gauge will indicate the back pressure in the cable when pumping ceases. In making a test, pumping should be continued until the back pressure is sufficient for the test under way.

## 5. B CABLE CORE DEPRESSOR

5.01 The cable core depressor, illustrated below, is used to tuck strips of muslin between the core and sheath at the point where valves or other pressure testing fittings are to be installed in the cable sheath. The separation thus obtained is necessary to prevent electrical breakdown from core to sheath where the core wrapping paper is punctured to provide a free flow of air through the valve.



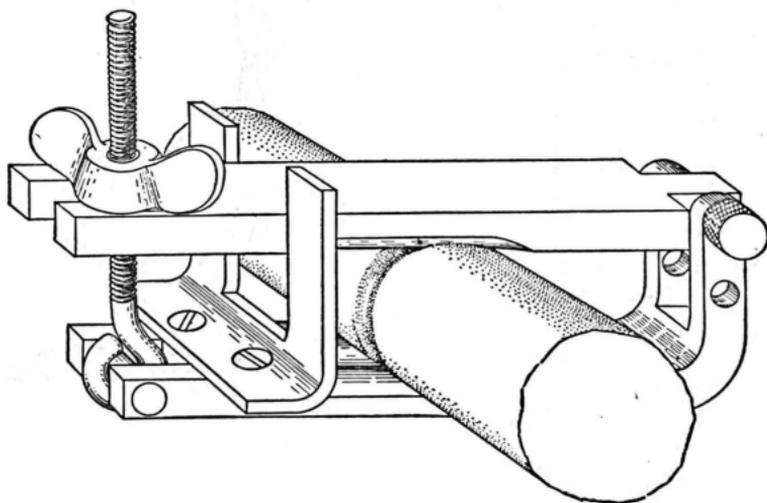
5.02 The procedure in using the tool is as follows:

- (1) Prepare two strips of dry muslin approximately  $3/8$ -inch wide and 3 to 4 inches long, depending on the size of the cable.
- (2) Bore the hole in the sheath with the cable drill in the usual manner.
- (3) Place the end of tool in the hole, and insert the toe under the edge of the sheath. Then rotate the tool so as to smooth any projections resulting from the drilling operation.

- (4) To insert the muslin, lay the end of one strip across the opening as illustrated above and push it into the hole. Then tuck the muslin under the sheath lengthwise of the cable with the toe of the tool.
- (5) The tool is then removed, the muslin strip is moved over the hole and the tucking operation is repeated until a separation of about 3/16-inch is obtained between core and sheath.
- (6) The second strip of muslin is tucked under the sheath in the opposite direction in the same manner.
- (7) The core wrapping paper should then be punctured with a bone knitting needle in the usual manner, to ensure a free flow of air.

## 6. B CABLE SHEATH CONSTRICTOR

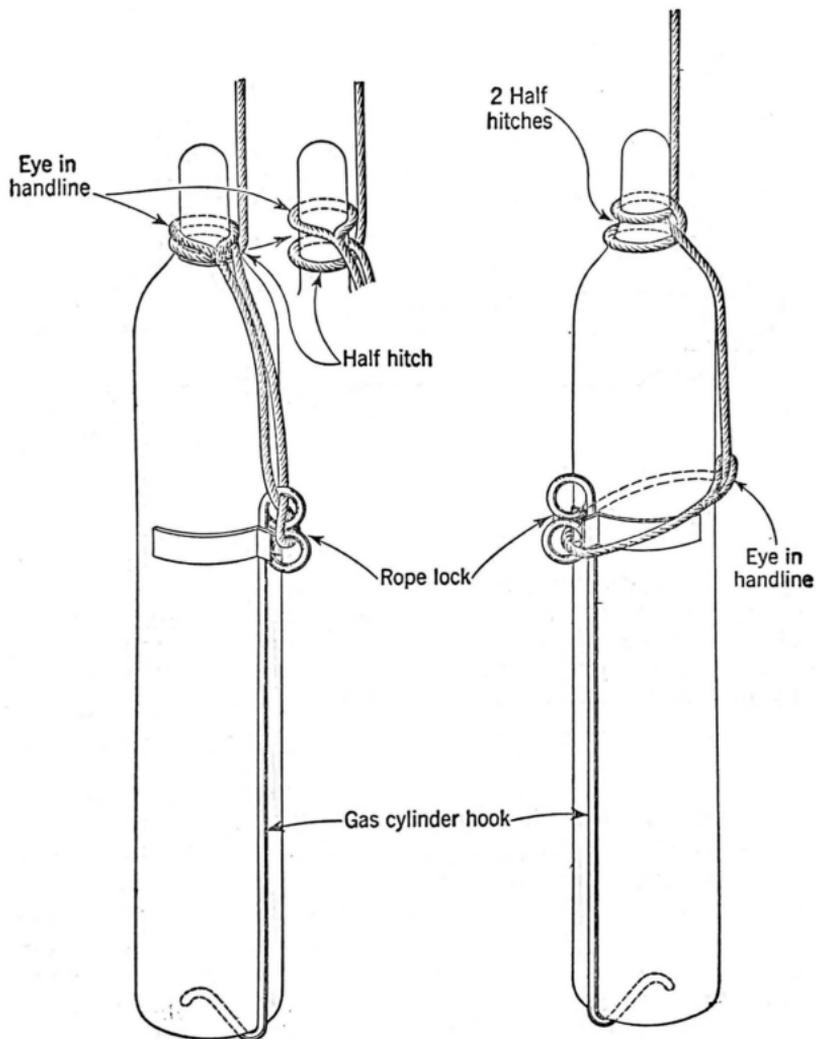
6.01 The B Cable Sheath Constrictor is illustrated in the following sketch. To make rings in cables up to 1-1/2 inches in diameter, the straight arm should be placed in the lower set of hinge holes. For cables larger than 1-1/2 inches in diameter the arm should be placed in the upper set of holes, as illustrated.



6.02 The cable should be lubricated with stearine where the ring is to be formed. The tool should then be placed over the cable and tightened by means of the wing nut. The ring is formed by rotating the tool around the cable, the wing nut being tightened one turn for each revolution, until a ring of the desired depth is formed in the sheath.

## 7. GAS CYLINDER HOOK

7.01 The Gas Cylinder Hook is designed for lowering and raising 200 cu. ft. nitrogen cylinders in manholes and should be attached to the gas cylinder with the handline by one of the methods illustrated in the sketch.



## 8. PRESSURE TESTING HOSE

8.01 Before using a new length of pressure testing hose it should be blown out, using nitrogen gas, with the regulator pressure set at 5 pounds. In the event that moisture is present, the hose should be flushed with nitrogen gas until all evidence of moisture disappears. During cold weather pressure testing hose received from the supplier should remain for a period of not less than one day in a place where the temperature is well above 32° F. before the hose is blown out. During this time the hose should be uncoiled and hung vertically in a single loop with the ends downward to permit the escape of any water that may be in the tube.

## 9. LEAD PIPE SOLDERING MOLD

9.01 The lead pipe soldering mold is used in making lead pipe connections to lead sleeves and cable sheath. The tool illustrated is designed to permit soldering the pipe to the top of the sleeve or cable. When using this mold on aerial cable in rings it is advisable to offset it slightly from the vertical, so as to minimize the possibility of interference with the strand.

9.02 Before placing the mold, it is necessary to clean the sheath, prepare the opening in the usual manner, and place the lead pipe and copper ell as shown. In placing the mold, it is advisable to tap it lightly with a hammer so that the long edges are in firm contact with the sheath. Pieces of a Cable Soldering Form should be used to seal the ends of the mold when necessary, and thus avoid the loss of molten solder from the mold.

