MISCELLANEOUS PRESSURE TESTING TOOLS

CONTENTS PAGE

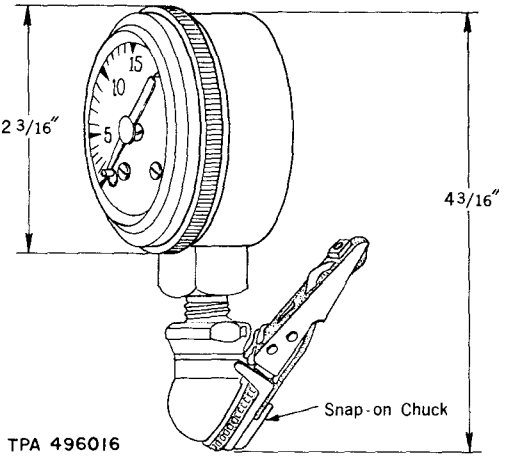

Fig. 1—B Pressure Gauge

1. GENERAL

1.01 This section describes the tools most commonly used in pressure testing work.

1.02 This section is reissued to include the latest version of the cable reel pressure alarm and to show installation on a cable reel.

2. B PRESSURE KIT

2.01 ***The B pressure kit,*** used for storing pressure testing tools, is equipped with the items covered in 2.02 through 2.08.

2.02 ***The B pressure gauge,*** shown in Fig. 1, is a relatively inexpensive device suitable for determining approximate pressure in a cable at a valve point. This tool can register up to 30 psi, and is equipped with a snap-on chuck. It is not suitable for gradient or flow analysis work; in such cases, the C pressure gauge, described in Section 081-602-103, or a manometer, described in Section 081-602-100, is required.

2.03 The 8-foot length of ***B pressure hose*** furnished with the B pressure kit is generally long enough for most underground and buried work. Each end of the hose has a spring guard coupling, one of which attaches to the pressure testing regulator while the other end attaches to the pressure testing valve by a snap-on chuck. Refer to Section 081-330-104 for additional information on the B and C pressure hoses.

2.04 The ***cable drill,*** shown in Fig. 2, has a double-ended, reversible hollow bit with an outside diameter slightly under 1/4 inch. This 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 covers the teeth of the bit and minimizes the likelihood of damage to the core wrapping paper. 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 The lead slug remains in the bit and may be removed after the drill has been withdrawn from the sheath by tapping the ejector plunger that projects slightly above the top of the knurled handle. Refer to Section 081-600-100 for information on the B, C, and D cable drills.

2.05 The ***C regulator wrench,*** described in Section 081-600-103, is used on the cylinder-connection

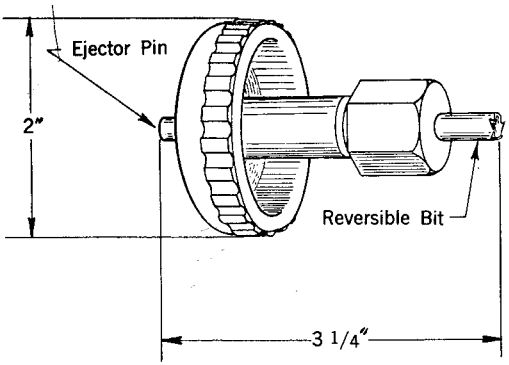

Fig. 2—Cable Drill

and hose-connection nuts of pressure testing regulators, and the hexagonal nut on gas manifolds and cylinder connectors.

2.06 The ***pressure testing clamp,*** shown in Fig. 3, is used to provide a temporary gas admission point, such as required in flash testing individual sleeves. The clamp should not be used for charging cables maintained under continuous pressure; for such work, it is generally advisable to use a valve soldered to the cable or screwed into a C pressure testing flange. Use the pressure testing clamp as follows:

(1) To install the clamp, a hole should be drilled in the cable sheath or sleeve with the cable drill.

(2) On a lead sleeve, the hole should be about 2 inches from one of the wiped joints. When installing the clamp on lead sheath, the core wrapping paper should be punctured to prevent the paper from acting as a check valve when taking pressure readings. A bone knitting needle, which is less likely to injure the cable conductors, should be used for puncturing the paper.

(3) Apply the clamp so 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.

(4) Test the completed installation with pressure testing solution. 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 gastight.

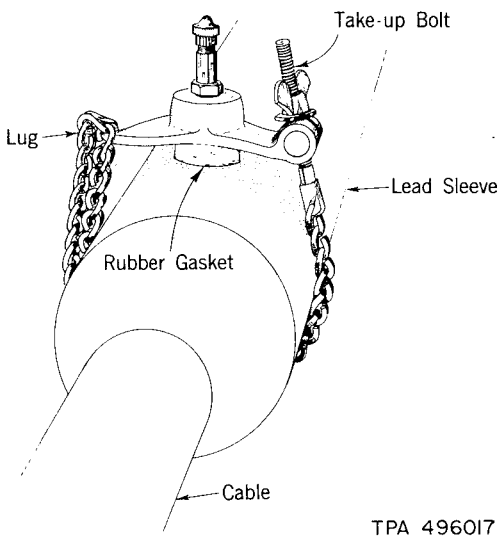

Fig. 3—Pressure Testing Clamp

2.07 The ***C pressure testing regulators,*** described in Section 081-601-100, control the flow of gas from a cylinder into the cable.

2.08 The ***valve repair tool,*** shown in Fig. 4, is used to remove or replace a valve core from a valve stem. ***When installing a valve, the core must be removed from the stem so the core will not be damaged from the heat of the soldering copper, or torch, if soldering is required.***

3. AIRFLOW INDICATOR

3.01 The ***airflow indicator,*** illustrated in Fig. 5, provides a simplified means of determining the direction of gas flow in "leak locating" work

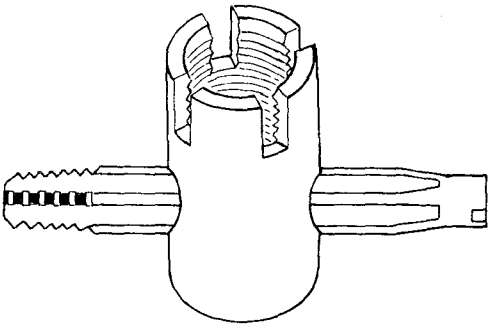

Fig. 4—Valve Repair Tool

on pressurized cables. The indicator consists of a clear, plastic block enclosing two gas-flow tubes, each of which contains an indicator pellet. A 5-foot length of plastic tubing with a valve chuck is connected to each flow tube. A shut-off valve is provided in the gas connection between the flow tubes.

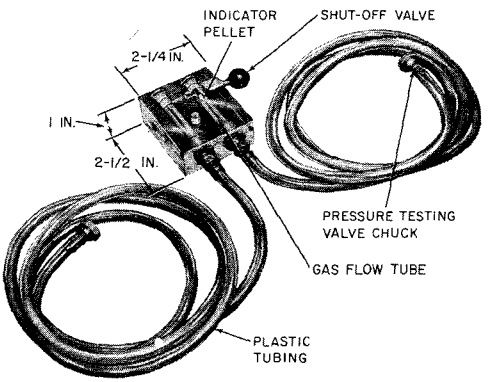

Fig. 5—Airflow Indicator

3.02 The valve chucks of the indicator are connected to pressure testing valves on the cable to be checked. The shut-off valve is opened and the position of the indicator pellets is observed. Gas flow in a right-to-left direction is shown by the right tube pellet rising, while the left tube pellet stays at the bottom. With left-to-right flow, the pellet positions are reversed.

3.03 The position of the indicator is important when the gas flow is small. For example, at flows in the range of 0.15 to 1.0 standard cubic foot per hour, it is necessary to place the indicator flat (with the flow tubes horizontal) to permit proper movement of the pellets. It is not practical to use this device where the flow is less than 0.1 scfh.

4. B CABLE CORE DEPRESSOR

4.01 The ***B cable core depressor,*** illustrated in Fig. 6, 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 gas through the valve.

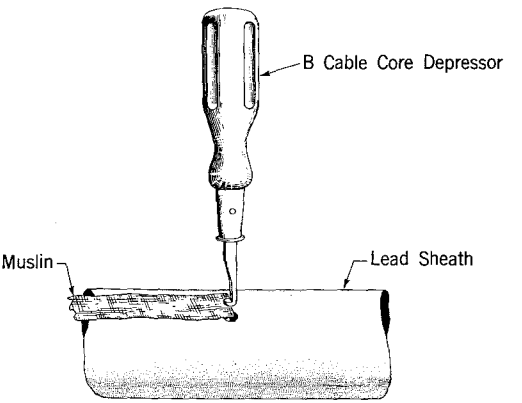

Fig. 6—B Cable Core Depressor

4.02 The ***B cable core depressor*** is used as follows:

(1) Prepare two strips of dry muslin approximately 3/8 inch wide and 3 to 4 inches long, depending upon 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 the depressor into the hole, and insert the toe under the edge of the sheath. In the case of alpeth or stalpeth sheath, the toe of the depressor should be inserted under the aluminum shield. Rotate the tool to smooth any projection resulting from the drilling operation.

(4) To insert the muslin, lay the end of one strip across the opening, as illustrated in Fig. 6, and push it into the hole. Tuck the muslin under the cable sheath lengthwise 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 gas.

5. B CABLE SHEATH CONSTRICTOR

5.01 The ***B cable sheath constrictor,*** illustrated in Fig. 7, is used to restrict the flow of plug compound where a temporary plug is to be made in a defective lead sheath cable section. See Section 637-305-300. 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.

5.02 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 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.

6. B PRESSURE TESTING PUMP

6.01 The ***B pressure testing pump,*** illustrated in Fig. 8, is intended for testing the gas-tightness of taped splice coverings, and for testing wiped joints on small cables where a nitrogen cylinder and pressure regulator are not available. The pump can also be used in testing CR tape coverings on uncompleted splices.

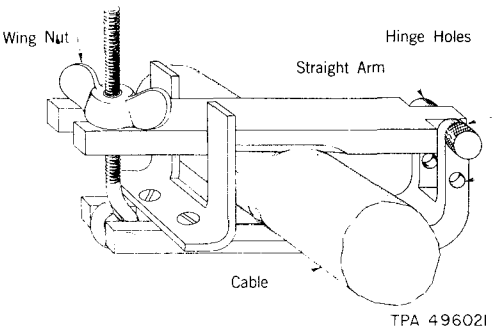

Fig. 7—B Cable Sheath Constrictor

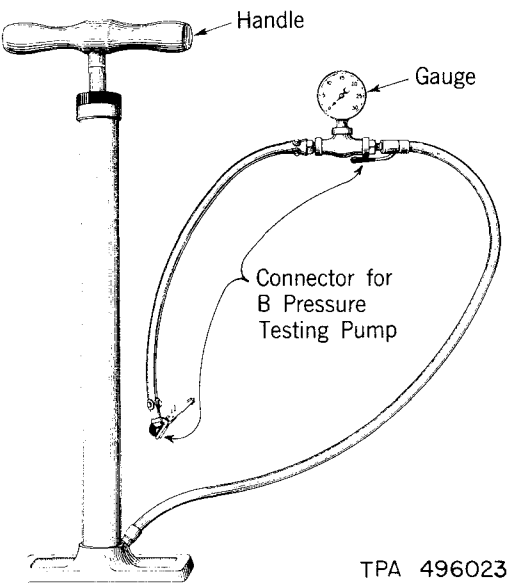

Fig. 8—B Pressure Testing Pump

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

6.03 In testing wiped joints, a higher pressure is required and consequently the pump can be used satisfactorily only on cables 1 inch in 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.

6.04 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.

7. CABLE REEL PRESSURE ALARM

7.01 The ***cable reel pressure alarm,*** illustrated in Fig. 9 and 10, consists of combination pressure gauge and contactor, a 7.5-volt battery, a control switch, and a buzzer mounted in an aluminum housing. A 4-foot length of plastic tubing with a valve chuck is connected to the gauge.

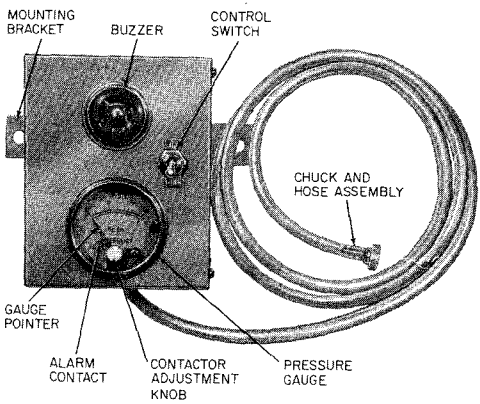

Fig. 9—Cable Reel Pressure Alarm

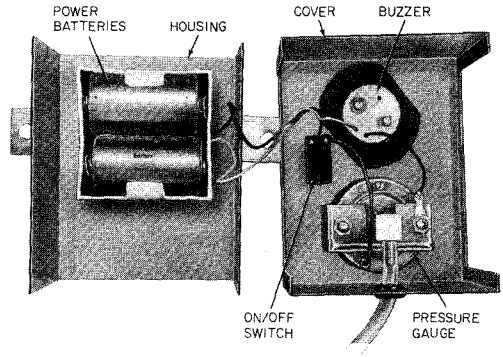

Fig. 10—Cable Reel Pressure Alarm (With Cover Removed)

7.02 The alarm is secured with a C split sleeve clamp, or other strapping material, to the inside of the channel beam of a steel cable reel (Fig. 11). The valve chuck is connected to the pressure testing valve on the inner end of the pressurized cable on the reel. The point on the gauge will indicate the cable pressure. The adjustment knob of the contactor is then turned until the contactor arm just clears the gauge pointer. In the event of damage to the sheath during the placing operations, the cable pressure will drop, causing the gauge pointer to swing back toward zero and close the buzzer circuit through the contactor arm.

8. LEAD PIPE SOLDERING MOLD

8.01 The ***lead pipe soldering mold*** is used in making lead pipe connections to lead sleeves and cable sheath. The tool, illustrated in Fig. 12, 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 to minimize the possibility of interference with the strand.

8.02 Before placing the mold, it is necessary to clean the sheath, prepare the opening in the usual manner, and place the lead pipe and pressure testing ell as illustrated in Fig. 12. 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.

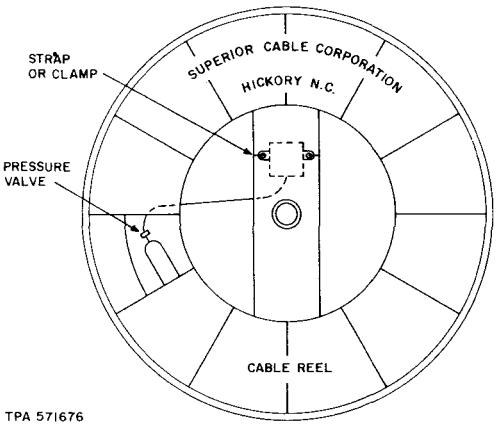

Fig. 11—Cable Reel Pressure Alarm Attached to Reel

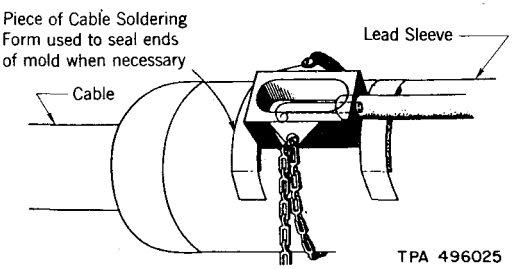

Fig. 12—Lead Pipe Soldering Mold