G PRESSURE TRANSDUCER
DESCRIPTION AND INSTALLATION

CONTENTS PAGE

1. GENERAL

1.01 This section covers the description, installation, and adjustment of the G pressure transducer (AT-8772) for use in buried or underground cable routes.

1.02 This section is reissued to:

- Delete reference to LE6/42 cable closure (AT-8538) which is rated Manufacture Discontinued.
- Include use of B wire storage closure when transducer is required for buried installations.
- Change pipe thread compound to Teflon pipe scaling tape.
- Make minor changes to text.

1.03 The G pressure transducer, along with the F and H pressure transducers, is a direct replacement for the E pressure transducer. The F and H transducers are covered in Section 637-222-101.

2. PRECAUTIONS

2.01 Follow precautions for testing and ventilating the manhole as covered in Section 620-140-150.

Before flash-testing the splice case with a G transducer connected, remove the pneumatic connection.

3. DESCRIPTION

3.01 The G pressure transducer (Fig. 1) consists of an F pressure transducer (equipped with a 15-foot tinned, copper stub) attached to a mounting plate, which permits it to be used in single installations. This transducer is for use on working pairs without affecting subscriber service, and can be read using the Cable Pressure Monitoring System (CPMS) or manually from the test desk.

3.02 The G pressure transducer is a self-contained, air pressure activated unit which converts cable pressure to electrical resistance. It is capable of measuring pressures in the range of 0.0 to 9.5 psi in 0.5 increments, with corresponding resistance values from 100K ohms to 3.82M ohms.

3.03 A pressure testing valve and a zero adjustment screw are mounted on the faceplate of the transducer. The zero adjustment allows the zero output position to be adjusted for any local elevation from sea level to 10,000 feet.

3.04 Connection of the transducer to the assigned cable pair is made by bridging directly to the cable pair in a splice closure.

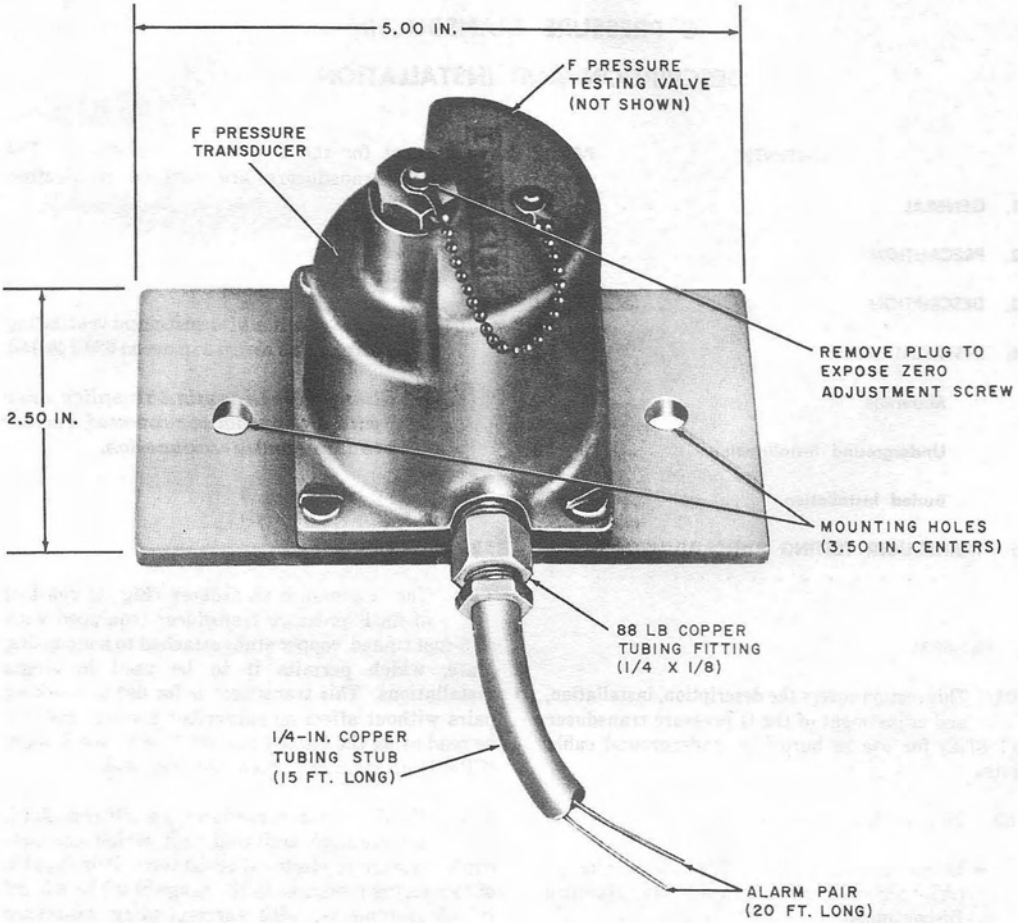

Fig. 1—G Pressure Transducer

4. INSTALLATION

Materials

4.01 In addition to the G transducer, the following is a list of materials to be obtained locally to complete the transducer installation:

QUANTITY	MATERIALS
1	1/4- by 1/8-inch (88-LB) copper tubing fitting
2	No. 12 D plastic anchors and galvanized round head screws
1	◗Teflon pipe sealing tape◖
2	5/16-20 x 7/8-inch long round head machine screws, flat washers, and nuts (buried installations)
1	◗B wire storage closure◖ (buried installations)
1	Copper tubing cutter.

Underground Installation

4.02 When required for underground installations, the G transducer (Fig. 1) and the associated materials should be installed as follows:

(1) Attach the transducer to the manhole wall, away from splicing area, as follows:

(a) Using the transducer as a template, position the transducer at the selected location and mark the holes to be drilled.

(b) Drill two holes in the manhole wall. The diameter and depth of the holes should correspond with the diameter and length of the anchor sleeve.

(c) Insert anchor into each drilled hole, tapping it lightly until the head is flush with the mounting surface.

(d) Insert a screw through each mounting hole (Fig. 1) of the transducer into the anchor and turn it down until it seats firmly.

(2) Prepare the copper tubing stub by cutting the tubing (using a tubing cutter) to a length which will reach between the transducer and the splice opening.

4.03 As an option for underground installation, the transducer may be strapped to the cable using a C lashed cable support.

Splice Case Method

4.04 When using a splice case to close the cable opening, proceed as follows:

(1) Locate and identify the assigned cable pair within the splice.

(2) Bridge a pair of conductors (approximately 3 feet long) to the assigned pair.

(3) Prior to closing the splice case, mount an 88-LB copper tubing fitting (1/4 by 1/8 inch) in one of the ports provided in the splice case.

(4) Pass the two conductors from the transducer through the copper tubing fitting and splice to the conductors installed in Step (2).

(5) Join the copper tubing to the fitting provided in (3) and close the case in the standard manner.

Alternative Method (Lead Sleeve)

4.05 If a lead sleeve is used to close the cable opening, perform Steps (1) and (2) in paragraph 4.04 and proceed as follows:

(1) Cut a 12-inch long piece of 3/4-inch lead sleeving.

(2) Prepare surface of the sleeve for soldering, and with a hammer or other suitable tool, carefully form one end of the sleeve to receive a C pressure flange (AT-7548).

(3) Solder flange in place. (See Fig. 2.)

(4) Apply pipe thread compound to threads of the copper 88-LB tubing fitting and screw the fitting into the C pressure flange.

(5) Pass the two conductors from the transducer through the fitting and sleeve and secure the copper tubing to the fitting.

(6) Place the 3/4-inch lead sleeve into the end plate of the lead sleeve which will cover the splice opening. (See Fig. 3.)

(7) Splice the two conductors from the transducer to the two 3-foot long conductors previously installed.

(8) Close the lead sleeve in the standard manner.

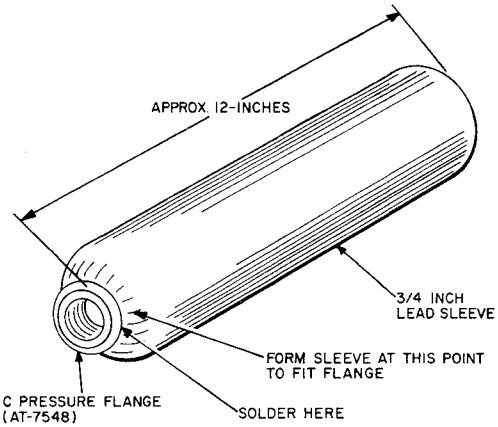

Fig. 2—Lead Sleeve

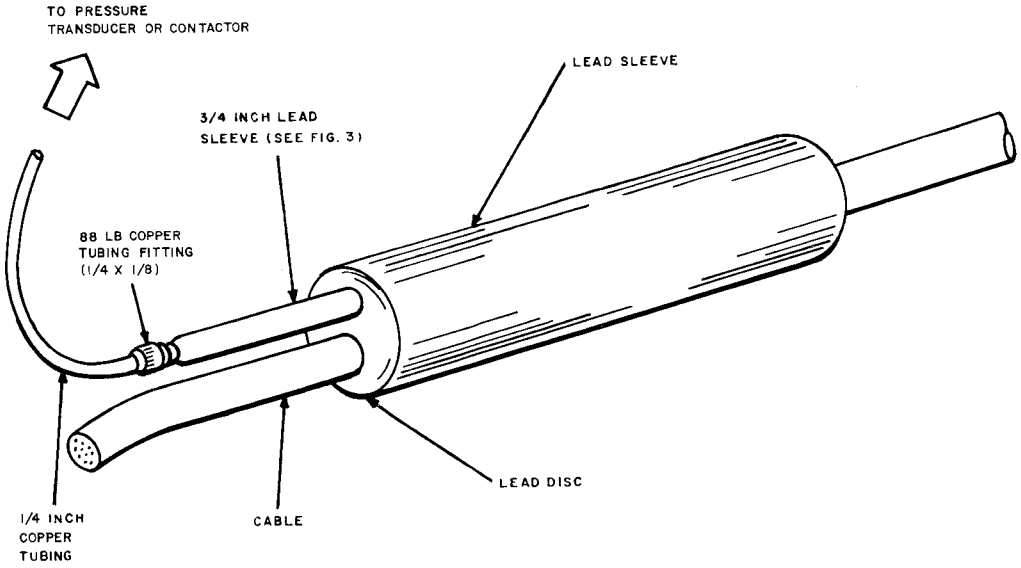

Fig. 3—Installation at Lead Splice Sleeve Complete

Buried Installation

4.06 ◗When required for buried installations, the G transducer is installed inside the B wire storage closure as follows:

(1) Remove the four screws securing the transducer to the mounting plate. Do not damage O-ring.

(2) Using the mounting plate as a template, position the plate at the selected location on the back of the closure and mark the holes to be drilled (Fig. 4).

(3) Drill two 3/8-inch holes in the back and mount the plate to the back using two 5/16-20 by 7/8-inch long round head machine screws, flat washers, and nuts.

(4) Install the transducer on the mounting plate using same hardware and O-ring. The copper tubing stub must extend downward (90 degrees from original mounting position). See Fig. 4.◖

(5) Prepare the copper tubing stub by cutting the tubing (using a tubing cutter) to a length which will reach between the transducer and the splice opening.

(6) When closing the cable opening, using either splice case or lead sleeve, follow the procedures outlined in paragraphs 4.04 or 4.05, respectively.

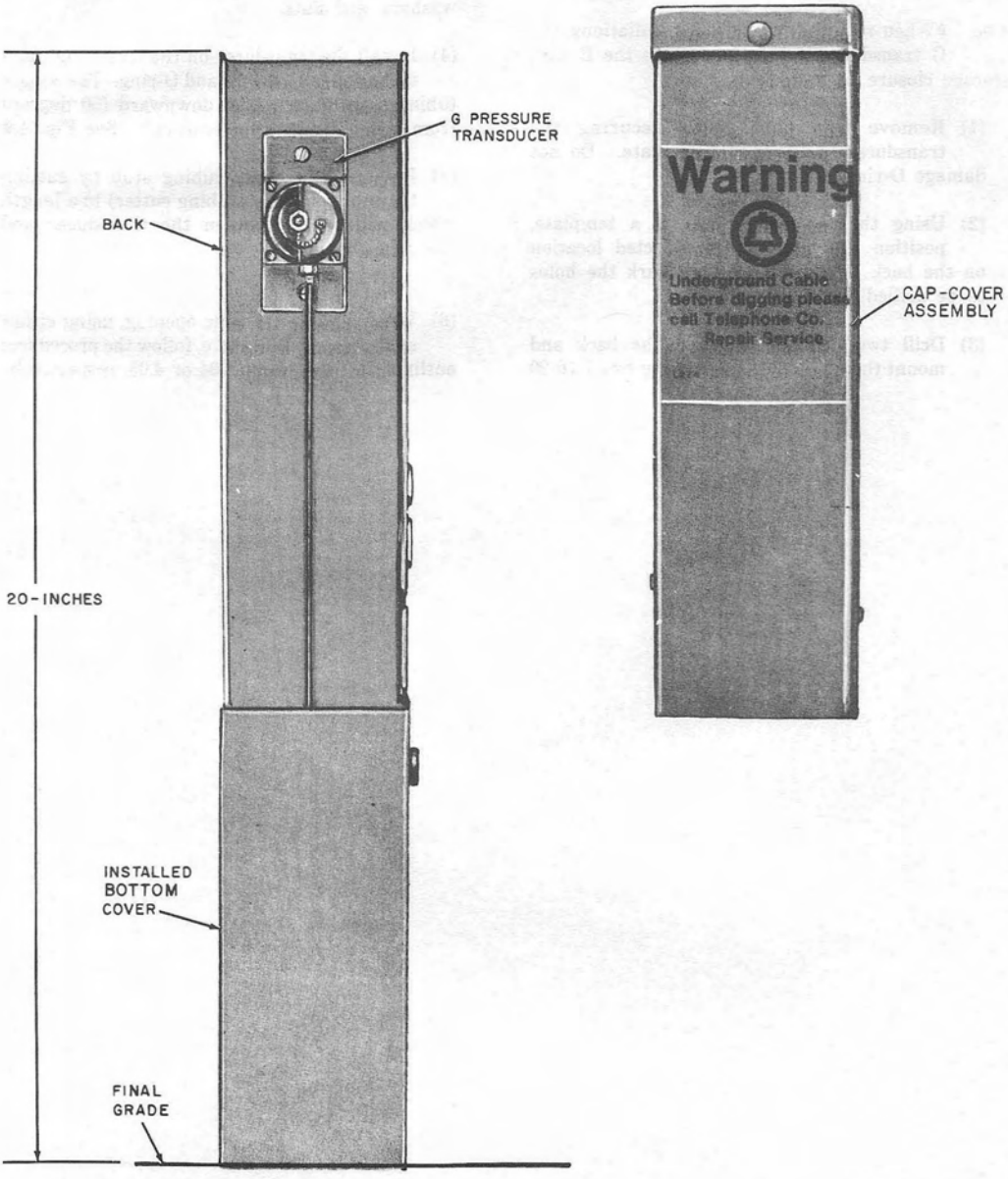

Fig. 4—B Wire Storage Closure With G Pressure Transducer Installed

5. TRANSDUCER TESTING AND ADJUSTMENT

5.01 The relation of cable pressure, transducer resistance, and voltmeter reading is shown in Table A. The resistance values are such that when read from a 14-type test desk, a 50-volt reading on the 120-volt scale corresponds to zero pressure. Each 2.5-volt drop denotes a 0.5 psi pressure increase.

TABLE A

RELATION OF CABLE PRESSURE, TRANSDUCER RESISTANCE, AND VOLTMETER READING

NOMINAL CABLE PRESSURE AT TRANSDUCER (PSI)	ELECTRICAL RESISTANCE (KILOHMS)	VOLTMETER READING AT TEST DESK (120V SCALE)
0.0	100	50.0
0.5	110	47.5
1.0	122	45.0
1.5	135	42.5
2.0	150	40.0
2.5	166	37.5
3.0	186	35.0
3.5	208	32.5
4.0	232	30.0
4.5	265	27.5
5.0	301	25.0
5.5	344	22.5
6.0	400	20.0
6.5	468	17.5
7.0	568	15.0
7.5	698	12.5
8.0	898	10.0
8.5	1200	7.5
9.0	1820	5.0
9.5 and higher	3820	2.5

5.02 Pressurize the cable in the range of 4 to 9 psi. If the test desk voltmeter reading agrees with that indicated by a C pressure gauge, as shown in Table A, no further test or adjustments are necessary. If the readings are not within the limits (±2.5 volts) of Table A, proceed as follows:

(1) Remove the plug to expose the zero adjustment screw (Fig. 1).

(2) Turn the zero adjustment screw (clockwise to decrease and counterclockwise to increase test desk voltmeter reading) until this reading (±2.5 volts) agrees with the cable pressure as indicated on the C pressure gauge.

(3) At zero pressure the test desk voltmeter reading must be 50.0 volts ±2.5 volts.

(4) If the transducer adjustments per (2) and (3) cannot be accomplished, the following possibilities should be considered:

- If the voltmeter reading is ***lower*** than that indicated by the C pressure gauge (ie, voltmeter reading of 17.0 when pressure gauge reads 6.0 psi), the assigned cable pair should be suspected. Verify that the pair resistance is greater than 10 megohms when the transducer pair is disconnected (less than 1 volt as read at the test desk).

- If the voltmeter reading is ***greater*** than that indicated by the C pressure gauge (ie, voltmeter reading of 23.0 when pressure gauge reads 6.0 psi), the transducer stub or splicing should be suspected. Verify that the loop resistance is less than 2000 ohms when the assigned cable pair is shorted (greater than 98 volts as read at the test desk).

- If the transducer adjustment has no effect and if cable pairs test good, the transducer should be replaced.

Note: While the transducer is pressurized for electrical testing, the pneumatic connections may be checked for leaks with E pressure testing solution.