CABLE PRESSURE SYSTEMS
C PRESSURE TRANSDUCER (AT-8311)
DESCRIPTION, USE, AND INSTALLATION

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Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

2. DESCRIPTION

2.01 The C pressure transducer (Fig. 1) is a bellows-actuated stepped switch instrument which converts cable pressure to electrical resistance. This transducer is capable of measuring pressures in the range of 0.0 to 8.0 psi (pounds per square inch) in 0.5 psi increments with corresponding resistance values from 100K to 898K ohms.

2.02 The C transducers are connected to working pairs without affecting subscriber service, and can be monitored by the Cable Pressure Monitoring System (CPMS) or manually from the test desk.

2.03 The transducer requires no adjustments.

2.04 Air from the pressurized cable enters the transducer through the entrance at the rear of the unit and controls the bellows which in turn determines the resistance value placed across the cable pair.

NOTICE
Not for use or disclosure outside the Bell System except under written agreement

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Fig. 1—C Pressure Transducer
3. USE

3.01 The C pressure transducer is used to monitor the air pressure in aerial cable maintained under pressure. Do not install in manholes or on buried cable.

3.02 The transducer is installed on lateral or feeder cables at or near riser poles. At such locations, the following pressure measurements may be made:

1. Approximate pressure in underground cable at the manhole adjacent to the transducer location.
2. Pressure at transducer location.
3. Repeated test to determine speed of pressure drop. Such information can be helpful for scheduling corrective action.

4. INSTALLATION

4.01 The C transducer must be installed within a maximum of 5 feet from the distribution terminal due to the length of the transducers 2-conductor cord. Do not splice additional wire to the 2-conductor cord.

4.02 Before the transducer is installed, test the transducer and assigned cable pair as follows:

1. Connect the spade clipped conductors of the transducer to the assigned cable pair in the distribution terminal.
2. Confirm that the voltmeter reading at the test center is 50 volts ±2.5. Refer to paragraph 5.01.
3. If the reading is not within limits, request a test of the assigned cable pair. If pair tests good, replace the transducer and repeat Steps (1) and (2).
4. If the reading is within limits, disconnect the 2-conductor cord from the distribution terminal and proceed with transducer installation.

4.03 The C pressure transducer may be installed on:

1. A lead sleeve (Fig. 2)
2. A lead sheath (Fig. 3)
3. A plastic sheath cable maintained under pressure
4. Splice cases or closures (Fig. 4)
5. Superseded 61- or T-type terminal (Fig. 5).

4.04 At each transducer installation, a separate F pressure testing valve must be used in conjunction with the transducer for making operational checks with the test center. Reading and bleeding from a single point will not permit satisfactory tests.
SECTION 637-220-100


2 - APPLY TEFLON TAPE TO THE THREADS OF AN F PRESSURE VALVE AND INSTALL VALVE IN THE C FLANGE FURTHEST FROM THE POLE.

3 - APPLY TEFLON TAPE TO THE THREADS OF THE 1/8-INCH PIPE FITTING ON THE TRANSDUCER.

4 - INSTALL TRANSDUCER IN THE C PRESSURE FLANGE NEAREST THE POLE.

5 - DRESS THE 2-CONDUCTOR CORD IN PERMANENT POSITION AND TERMINATE THE SPADE CLIPPED CONDUCTORS TO THE ASSIGNED PAIR IN THE DISTRIBUTION TERMINAL.

6 - TEST TRANSDUCER OPERATION AS OUTLINED IN PART 5.

Fig. 2—Installation on Lead Sleeve
STEP
1 - INSTALL TWO C PRESSURE FLANGES ON THE SHEATH (APPROX 10-INCHES APART) AND DRILL Holes IN SHEATH AS OUTLINED IN SECTION 637-235-201.
2 - APPLY TEFLON TAPE TO THE THREADS OF AN F PRESSURE VALVE AND INSTALL VALVE IN THE C FLANGE FURTHEST FROM THE POLE.
3 - APPLY TEFLON TAPE TO THE THREADS OF THE 1/8-INCH PIPE FITTING ON THE TRANSUCER.

STEP
4 - INSTALL TRANSUCER IN THE C PRESSURE FLANGE NEAREST THE POLE.
5 - DRESS THE 2-CONDUCTOR CORD IN PERMANENT POSITION AND TERMINATE THE SPACE CLIPPED CONDUCTORS TO THE ASSIGNED PAIR IN THE DISTRIBUTION TERMINAL.
6 - TEST TRANSUCER OPERATION AS OUTLINED IN PART 5.

Fig. 3—Installation on Lead Sheath
**SECTION 637-220-100**

**DISTRIBUTION TERMINAL**

**2-CONDUCTOR NEOPRENE-JACKETED CORD**

1/8 IN. CADMIUM-PLATED STREET ELBOW FURNISHED WITH C PRESSURE TRANSDUCER

**PRESSURE TESTING VALVE**

**2-CONDUCTOR CORD**

**C PRESSURE TRANSDUCER**

**F PRESSURE TESTING VALVE IN SPLICE CASE FLANGE**

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**STEP**

1. REMOVE THE PIPE PLUGS FROM THE FLANGES ON THE FRONT AND REAR OF THE SPLICE CASE.

2. APPLY TEFLOM TAPE TO THE THREADS OF AN F PRESSURE TESTING VALVE AND INSTALL VALVE IN THE FLANGE ON THE REAR OF THE SPLICE CASE.

3. APPLY TEFLOM TAPE TO THE THREADS OF THE 1/8-IN. PIPE FITTING ON THE TRANSDUCER AND THREAD THE FITTING INTO THE STREET ELBOW.

4. DRESS THE 2-CONDUCTOR CORD IN PERMANENT POSITION AND TERMINATE THE SPADE CLIPPER CONDUCTORS TO THE ASSIGNED PAIR IN THE DISTRIBUTION TERMINAL.

5. TEST TRANSDUCER OPERATION AS OUTLINED IN PART 5.

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Fig. 4—Installation on Splice Case or Closure
1 - REMOVE THE PIPE PLUGS FROM THE PRESSURE TESTING FLANGES ON THE FRONT AND BACK OF THE TERMINAL.

2 - APPLY TEFLOM TAPE TO THE THREADS OF AN F PRESSURE TESTING VALVE AND INSTALL VALVE IN THE FLANGE CLOSEST TO THE POLE.

3 - APPLY TEFLOM TAPE TO THE THREADS OF THE CADMIUM-PLATED STREET ELBOW AND INSTALL ELBOW IN THE FLANGE FURTHEST FROM THE POLE.

4 - APPLY TEFLOM TAPE TO THE THREADS OF THE 1/8-INCH PIPE FITTING ON THE TRANSDUCER AND THREAD THE FITTING INTO THE STREET ELBOW.

5 - DRESS THE 2-CONDUCTOR CORD IN PERMANENT POSITION AND TERMINATE THE SPADE CLIPPED CONDUCTORS TO THE ASSIGNED PAIR IN THE TERMINAL.

6 - TEST TRANSDUCER OPERATION AS OUTLINED IN PART 5.

Fig. 5—Installation on Superseded 61- or T-Type Terminal
5. TRANSDUCER TESTING

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 an 0.5 psi pressure increase.

### TABLE A
RELATION OF CABLE PRESSURE, TRANSDUCER RESISTANCE, AND VOLTMETER READING

<table>
<thead>
<tr>
<th>NOMINAL PRESSURE RANGE AT TRANSDUCER (PSI)</th>
<th>ELECTRICAL RESISTANCE (KILOHMS)</th>
<th>VOLTMETER READING 120V SCALE</th>
</tr>
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<tbody>
<tr>
<td>0.0</td>
<td>100</td>
<td>50.0</td>
</tr>
<tr>
<td>0.5</td>
<td>110</td>
<td>47.5</td>
</tr>
<tr>
<td>1.0</td>
<td>122</td>
<td>45.0</td>
</tr>
<tr>
<td>1.5</td>
<td>135</td>
<td>42.5</td>
</tr>
<tr>
<td>2.0</td>
<td>150</td>
<td>40.0</td>
</tr>
<tr>
<td>2.5</td>
<td>166</td>
<td>37.5</td>
</tr>
<tr>
<td>3.0</td>
<td>186</td>
<td>35.0</td>
</tr>
<tr>
<td>3.5</td>
<td>208</td>
<td>32.5</td>
</tr>
<tr>
<td>4.0</td>
<td>222</td>
<td>30.0</td>
</tr>
<tr>
<td>4.5</td>
<td>232</td>
<td>30.0</td>
</tr>
<tr>
<td>5.0</td>
<td>265</td>
<td>27.5</td>
</tr>
<tr>
<td>5.5</td>
<td>301</td>
<td>25.0</td>
</tr>
<tr>
<td>6.0</td>
<td>344</td>
<td>22.5</td>
</tr>
<tr>
<td>6.5</td>
<td>400</td>
<td>20.0</td>
</tr>
<tr>
<td>7.0</td>
<td>468</td>
<td>17.5</td>
</tr>
<tr>
<td>7.5</td>
<td>568</td>
<td>15.0</td>
</tr>
<tr>
<td>8.0 or higher</td>
<td>698</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>898</td>
<td>10.0</td>
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5.02 If cable pressure is **2 psi or higher** at the pressure testing valve on the transducer, proceed as follows:

1. With pressure testing solution or ultrasonic equipment, test for leaks.

2. Attach the C pressure gauge to the pressure testing valve on the transducer.

3. Verify with the test center that the pressure, as read on the gauge, conforms to the specified voltmeter reading (±2.5 volts). See Table A.

4. Disconnect the pressure gauge.

5.03 If cable pressure is **less than 2 psi** at the pressure testing valve on the transducer, proceed as follows:

1. Connect a pressure hose, from a nitrogen cylinder, to the pressure testing valve on the sleeve, sheath, or splice case. Regulate the delivery pressure to 8 psi.

2. Attach the C pressure gauge to the pressure testing valve on the transducer and wait 5 minutes. This allows the pressure to stabilize at the valve.

3. With pressure testing solution or ultrasonic equipment, test for leaks.

4. Verify with the test center, that the pressure as read on the gauge conforms to the specified voltmeter reading (±2.5 volts). See Table A. This conformance test should not be made until the pressure reading has been stabilized for 5 minutes.

5. Disconnect the pressure gauge and pressure hose.

6. MONITORING

6.01 The procedures for monitoring pressure transducers either manually or automatically are covered in Sections 637-050-300 or 637-600-050, respectively.