

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. *Do not remove the cover from the housing.*

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.

1. GENERAL

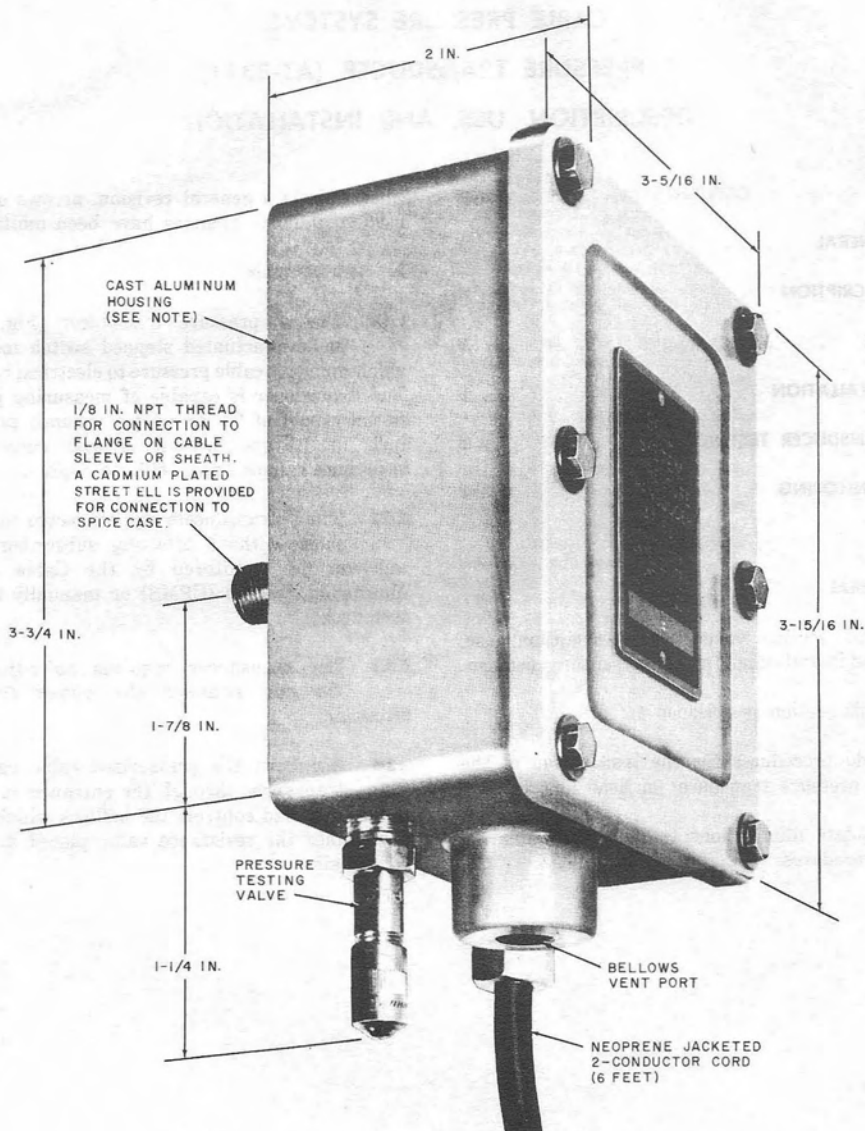
1.01 This section covers the description, use, and installation of the C pressure transducer.

1.02 This section is reissued to:

- Add procedures for the installation of the C pressure transducer on lead sheath.
- Update illustrations to include installation procedures.

NOTICE

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



NOTE:
 A BELLOWS ACTUATED STEPPED SWITCH ARRANGEMENT IS CONTAINED IN THE CAST ALUMINUM HOUSING. NO ACCESS IS REQUIRED WITHIN THE HOUSING.

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.

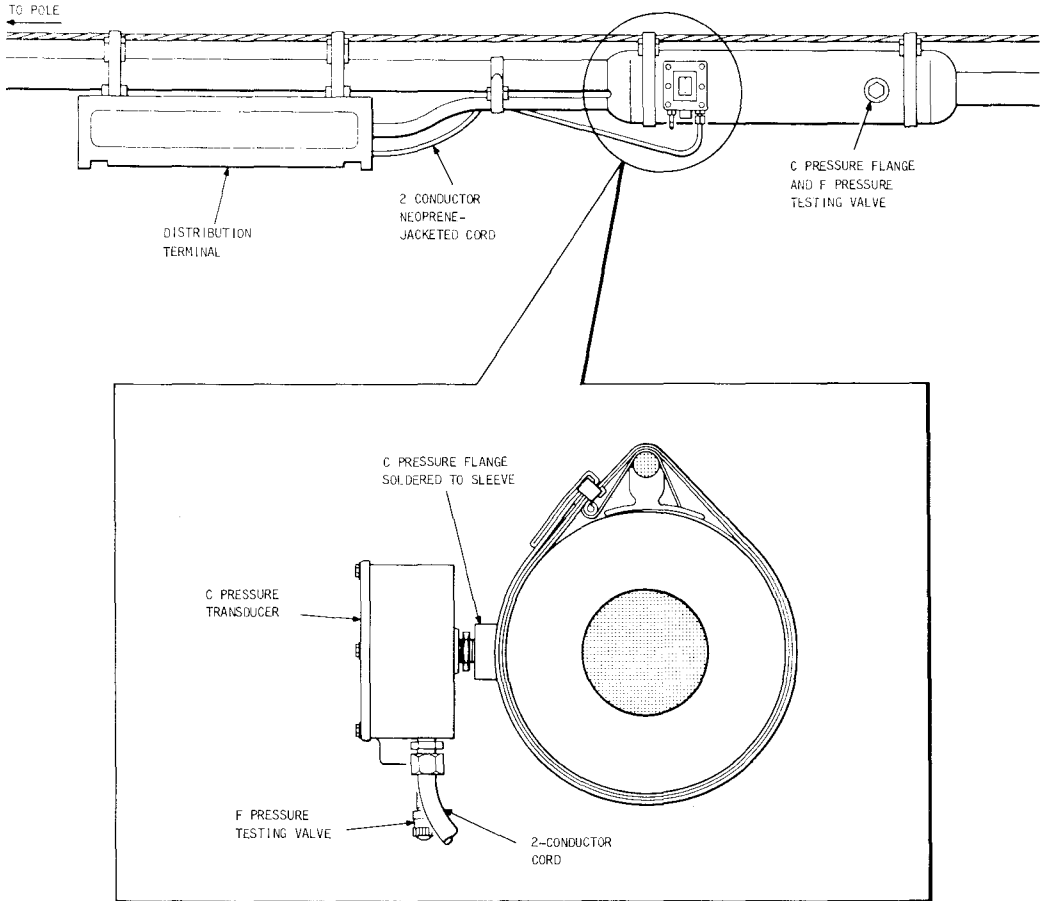
(3) **If the reading is not within limits,** request a test of the assigned cable pair. If pair tests good, replace the transducer and repeat Steps (1) and (2).

(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.



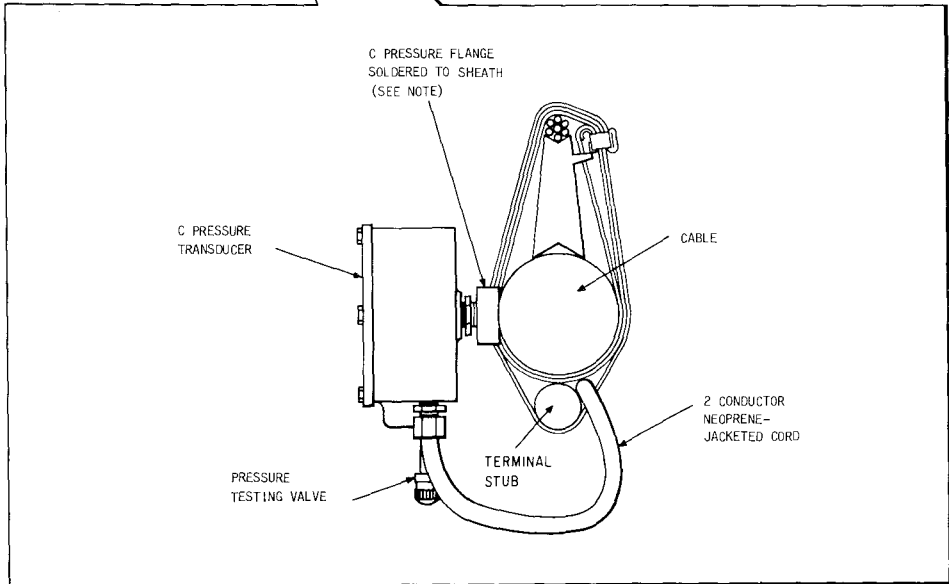
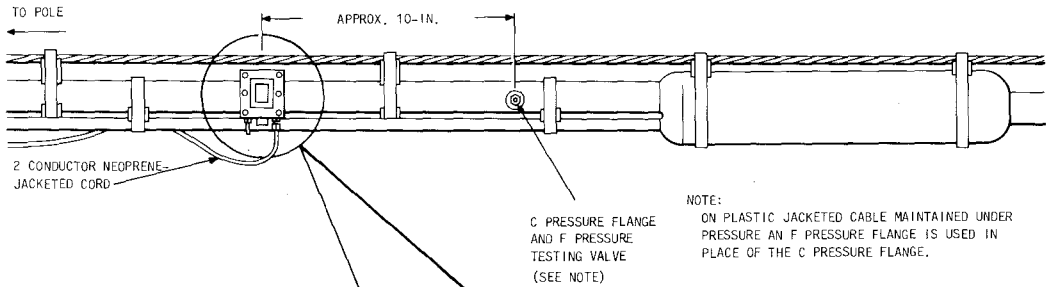
STEP

- 1 - INSTALL A C PRESSURE FLANGE AT EACH END OF THE SLEEVE AND DRILL HOLES IN THE SLEEVE 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 TRANSDUCER.

STEP

- 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



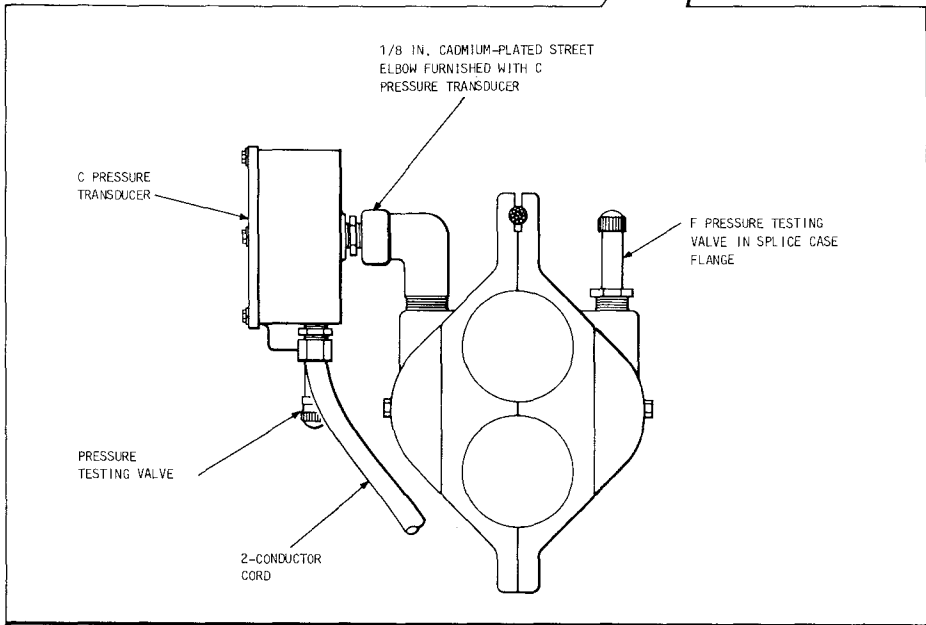
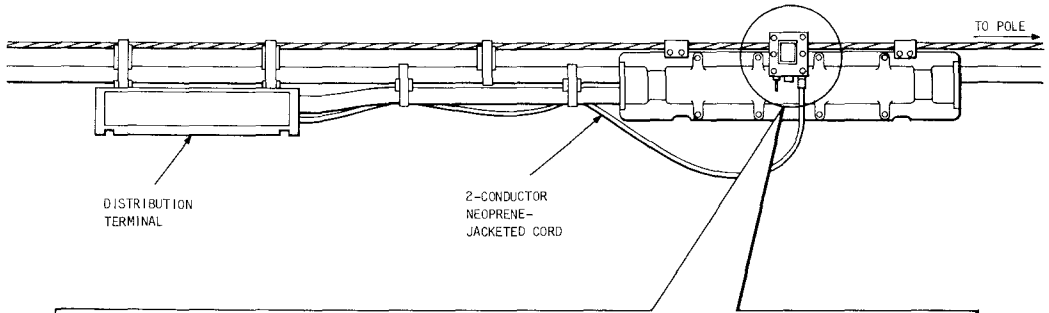
STEP

- 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 TRANSDUCER.

STEP

- 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. 3—Installation on Lead Sheath



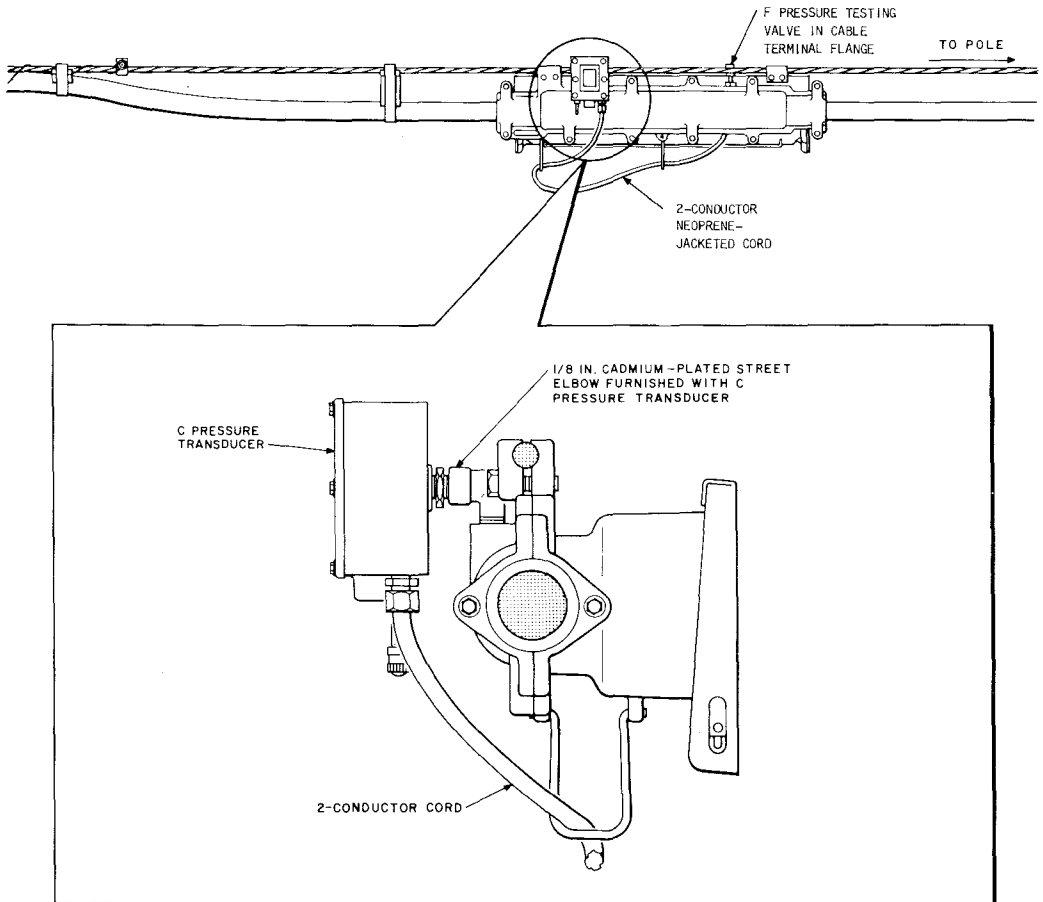
STEP

- 1 - REMOVE THE PIPE PLUGS FROM THE FLANGES ON THE FRONT AND REAR OF THE SPLICE CASE.
- 2 - APPLY TEFLON 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 TEFLON TAPE TO THE THREADS OF THE CADMIUM-PLATED STREET ELBOW AND INSTALL ELBOW IN THE FLANGE ON THE FRONT OF THE SPLICE CASE.

STEP

- 4 - APPLY TEFLON TAPE TO THE THREADS OF THE 1/8-IN. 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 DISTRIBUTION TERMINAL.
- 6 - TEST TRANSDUCER OPERATION AS OUTLINED IN PART 5.

Fig. 4—Installation on Splice Case or Closure



STEP

- 1 - REMOVE THE PIPE PLUGS FROM THE PRESSURE TESTING FLANGES ON THE FRONT AND BACK OF THE TERMINAL.
- 2 - APPLY TEFLON TAPE TO THE THREADS OF AN F PRESSURE TESTING VALVE AND INSTALL VALVE IN THE FLANGE CLOSEST TO THE POLE.
- 3 - APPLY TEFLON TAPE TO THE THREADS OF THE CADMIUM-PLATED STREET ELBOW AND INSTALL ELBOW IN THE FLANGE FURTHEST FROM THE POLE.

STEP

- 4 - APPLY TEFLON 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

NOMINAL PRESSURE RANGE AT TRANSDUCER (PSI)	ELECTRICAL RESISTANCE (KILOHMS)	VOLTMETER READING 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 or higher	898	10.0

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.