

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G85.142.1
Issue 1, October, 1945
AT&T Co Standard

PRESSURE TESTING

GAUGES

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1. GENERAL

1.01 This section describes the 2-inch and 3-1/2-inch gauges used in pressure testing work, outlines the method of using them and covers the calibration of the 3-1/2-inch gauge.

2. 2-INCH GAUGE

2.01 This gauge is equipped with a snap-on air chuck and may be used in cases where approximate pressure measurements are desired, as in flash-testing. The dial of the gauge is 2 inches in diameter and is graduated to read pressures from 0 to 30 pounds per square inch in steps of 1/2 pound. The accuracy of the gauge is about ± 1.0 pound, and within this limit of accuracy, the reading is not affected by the position of the gauge. When making measurements, the air chuck of the gauge should be connected tightly to the pressure testing valve.

3. 3-1/2-INCH GAUGE

3.01 This gauge is intended for use where more accurate measurements of pressure are necessary. The gauge has a 3-1/2-inch dial and is graduated to read pressures from 0 to 30 pounds per square inch in steps of 0.2 pound. The gauge has an absolute accuracy of about ± 0.3 pound per square inch at any point on its scale, but its relative accuracy, for any two points on the scale not more than a few pounds apart, is about ± 0.1 pound. For this reason it is important to use the same gauge for all measurements made in connection with a series of pressure readings. The gauge should be tapped each time a reading is made.

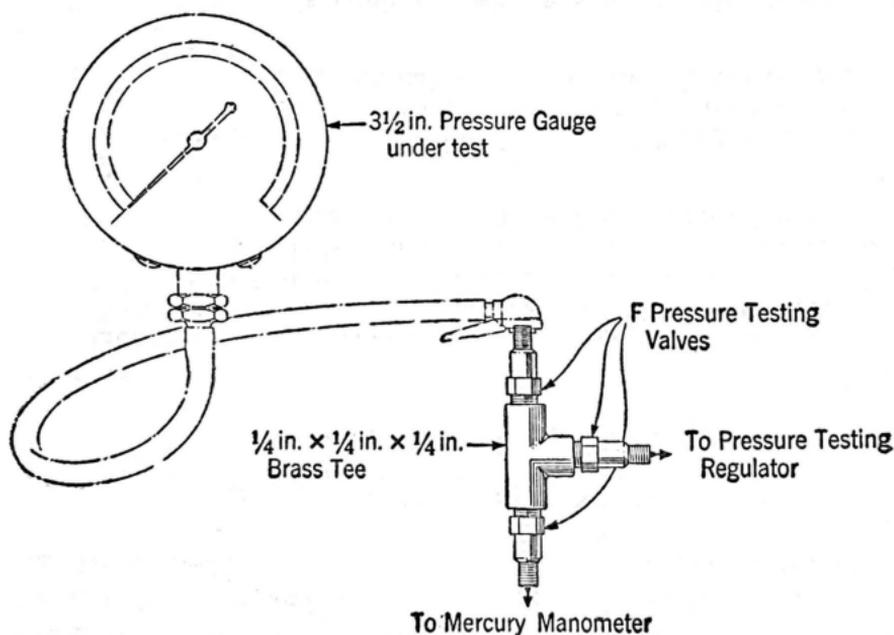
3.02 When taking pressure readings the air chuck should be connected tightly to the pressure testing valve and the gauge should be held in an upright position. To facilitate this, the gauge is equipped with an 18-inch length of rubber hose.

3.03 An open faced leather carrying case provided with a shoulder strap is furnished with each gauge.

3.04 The gauge is of sufficiently rugged construction to withstand the handling incidental to ordinary use, if reasonable care is exercised. Heavy shocks or jars may, however, impair its accuracy. Inaccuracy will usually be indicated by failure of the hand to point to zero when the gauge is held in a vertical position or by failure of the needle to move freely when gas is applied to the gauge. A check of the accuracy of the gauge should be made by comparing with a mercury manometer about every three months, or whenever there is any indication of inaccuracy.

4. CALIBRATING 3-1/2-INCH GAUGE

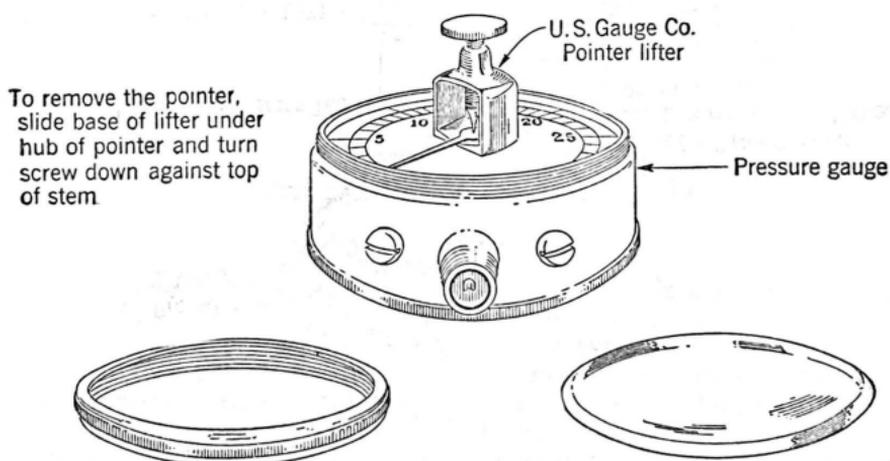
4.01 The gauge can be calibrated by connecting it and a manometer to a tank of gas by means of a three-way connector made as illustrated below. The regulator should be adjusted so that a pressure of 10 pounds is indicated on the manometer. The regulator hose should now be disconnected from the three-way connector, being careful to avoid lowering the pressure as read on the manometer below 9 pounds. Then allow the pressure to stand for about a half minute to ensure that the connections are gas-tight.



4.02 Lower the pressure by releasing gas slowly at the free valve until the manometer reading is 9 pounds. Then tap the gauge and read the pressure, making note of any error in gauge reading. Next lower the gas pressure and take similar gauge readings at 6 pounds and at 3 pounds manometer pressure.

4.03 If the gauge under test is one used for establishing pressure gradients to locate leaks, the pointer should be reset to give a correct indication at 6 pounds if there is any appreciable error in the reading at this pressure. This can be done by unscrewing the glass face retaining ring, lifting the pointer and turning it to show the correct reading. The U. S. Gauge Co. Pointer Lifter illustrated below should be used for this purpose, to prevent damaging the gauge. After the pointer has been adjusted, carefully press it onto the stem with the finger and make a check test to ensure that the setting is correct.

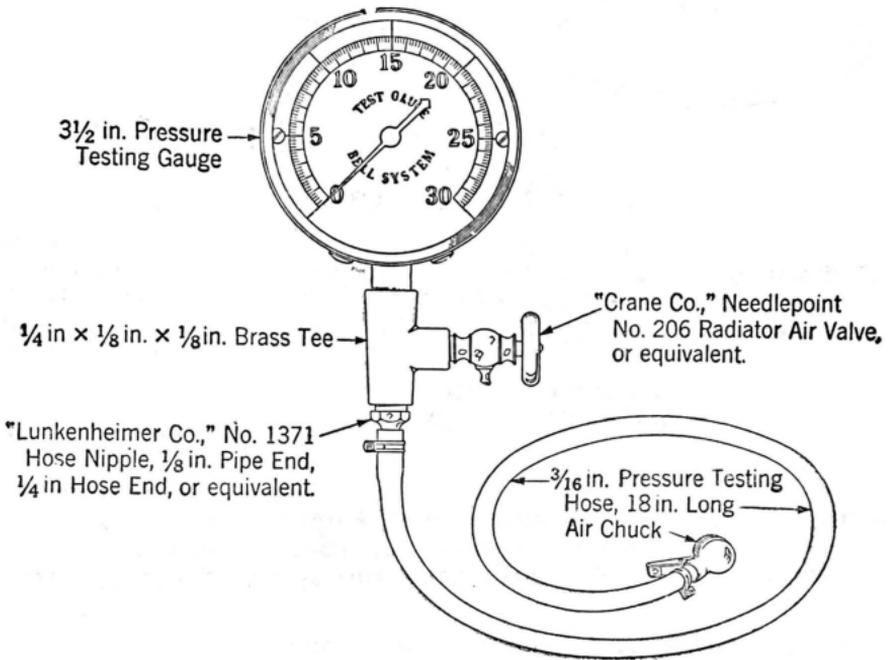
4.04 If the gauge is one used primarily for taking routine pressure readings, the pointer need not be reset unless the error in gauge reading at 6 pounds manometer pressure is in excess of .3 pound.



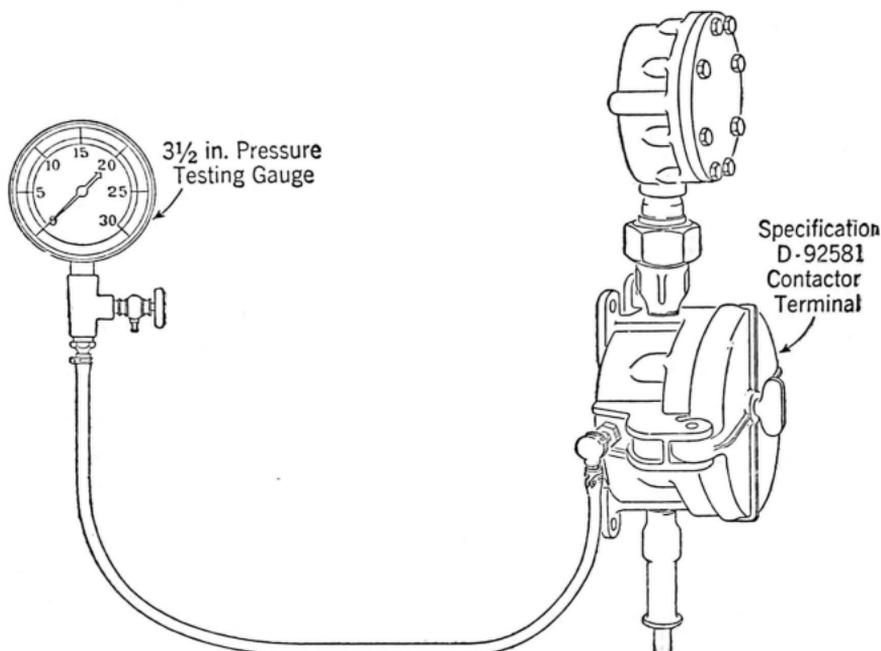
4.05 If the gauge error at 3 and 9 pounds differs from that at 6 pounds by more than .1 pound the gauge should be tagged to indicate this defect, and should be returned for repair. Damaged gauges or gauges that do not maintain their calibration should likewise be returned for repairs.

5. 3-1/2-INCH GAUGE EQUIPPED WITH NEEDLEPOINT VALVE

5.01 The following illustration shows a standard 3-1/2-inch pressure testing gauge equipped with a needlepoint valve to facilitate making certain tests of pressure testing apparatus.



5.02 Field men who maintain a considerable number of Specification D-92581 contactor-terminals will find it helpful to use a gauge so equipped in making routine tests of operating pressure. The gauge and valve are used as shown below.



5.03 The needlepoint valve on this gauge is **not satisfactory** for lowering the gas pressure in testing contactor-terminals and contactors of the latest type in which the stub offers a low resistance to gas flow, nor BB100 contactors that are connected to the cable by means of a short length of brass pipe. Due to the low resistance of the stub or brass pipe to the flow of gas from the cable to the contactor, the pressure indicated by the gauge is not the same as that in the contactor and inaccurate adjustment may result. In adjusting these devices it is necessary to connect the gauge to the valve on the contactor or to one of the valves on the pedestal in buried cable, and to lower the cable pressure by depressing the core of the second valve on the pedestal or the second valve mounted on the lead sleeve adjacent to the contactor.