BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G82.640.1
Issue 1, August, 1950
AT&T Co Standard

B FLOW INDICATOR

Contents **Page**

1. General 1
2. Description 1
3. Setting Up and Reading Instrument 2
4. Maintenance 4
5. Replacement Parts 5

1. GENERAL

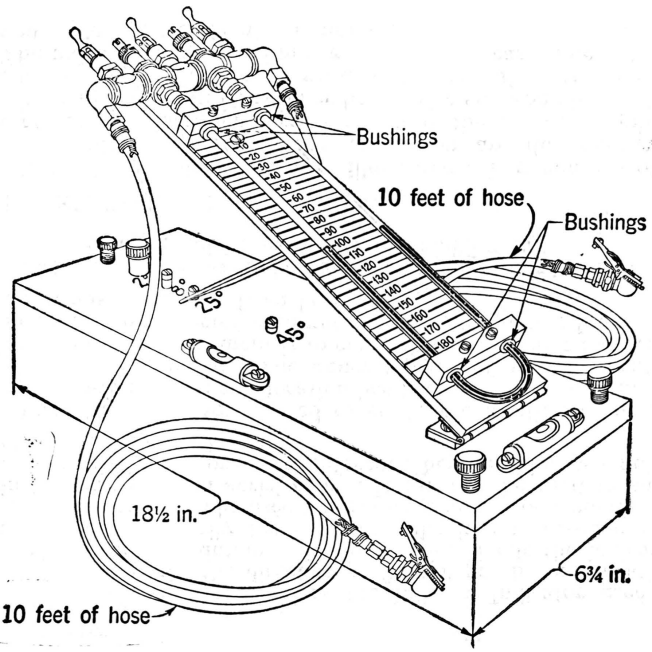
1.01 This section describes the B Flow Indicator used to determine the direction of flow of gas in leak locating work on cables maintained under pressure. While the indicator is intended primarily for locating leaks in underground and buried cables, it can be used to advantage under some conditions in locating leaks in aerial cables. It can also be used to show quantitatively the pressure difference between the two points of attachment to the cable.

1.02 The indicator is used to verify the location of a leak after its general location has been determined by means of pressure gradients. The general plan followed in locating leaks with the instrument is to connect it to the cable at several points in the suspected area until the cable section is found into which gas is flowing from both ends.

1.03 The B Flow Indicator is a precision instrument and care should be exercised in handling it.

2. DESCRIPTION

2.01 The B Flow Indicator, illustrated below, consists of an alcohol manometer mounted on an aluminum plate hinged to an aluminum base. Each end of the U tube is equipped with a 10-foot length of rubber hose and a snap-on air chuck for connecting the indicator to pressure testing valves on the cable. The indicator is supplied in a wood carrying case. The indicator and case weigh about 21 pounds.



2.02 Colored alcohol is used as the pressure indicator. A spare bottle of alcohol is supplied with the instrument. In an emergency, uncolored alcohol can be used. Oil must not be used.

2.03 The scale on the top surface of the plate is for reading the pressure difference. The tube can be set at angles of 45°, 25°, 8° and 2° to the horizontal. The pressures measured in pounds per square inch per scale division at these angles are approximately .001, .0006, .0002 and .00005 respectively.

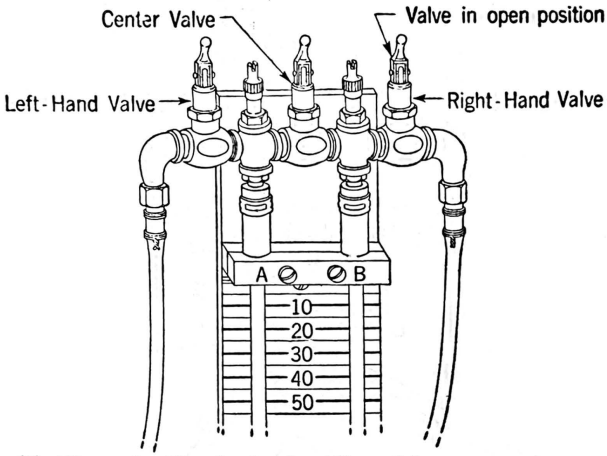
2.04 The base of the indicator is equipped with three screws and two spirit levels for leveling the instrument.

3. SETTING UP AND READING INSTRUMENT

3.01 The indicator should be set up at a location where it will not interfere with traffic and where the hose will reach the cable, as follows:

(1) Carefully remove the instrument from the case and set it up on the pavement or on top of the case.

(2) Level the instrument by means of the screws and spirit levels.



(3) Place the U tube in the 45° position.

(4) The level of the alcohol should be approximately at the midpoint of the scale. If not, open the center valve and then the right and left-hand valves of the indicator.

(5) Connect the chucks to the valves on the cable quickly to avoid appreciable loss of gas which may disturb the pressure gradient in the cable.

(6) Close the center valve of the indicator.

(7) Note the difference in pressure on the scale. The legs of the manometer are marked "A" and "B" to facilitate reading and recording. If the difference in level is small, lower the tube, as necessary, to obtain greater sensitivity. The liquid level should come to rest in about one minute. If the liquid level does not settle within a minute or two, the connections may be faulty and should be soaped and inspected for tightness.

(8) When the direction of flow has been determined, open the center valve, interchange the chucks on the cable valves and repeat the test.

(9) After a positive indication has been obtained, close the three valves on the instrument, remove the chucks and replace the instrument in the case.

4. MAINTENANCE

4.01 When required, alcohol can be added to the instrument as follows:

(1) Open the center valve.

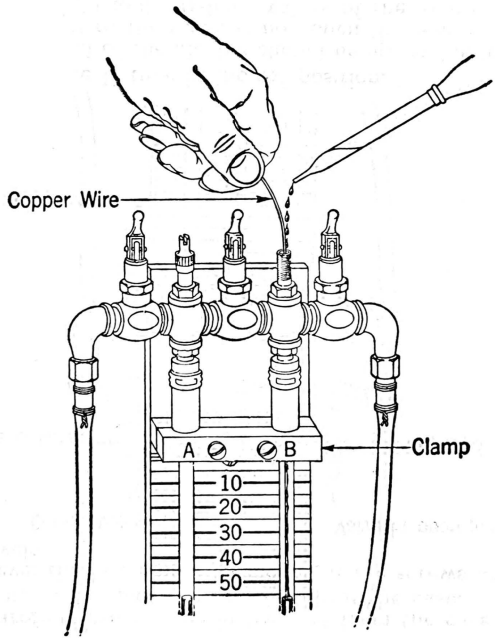
(2) Remove the cap and valve core at one end of the U tube.

(3) Run a copper wire (preferably tinned copper wire) into the glass tube several inches.

(4) Add alcohol by means of the medicine dropper, as shown below, moving the copper wire up and down to break any bubbles that form in the tube.

(5) Remove the wire, close the center valve and then tilt the instrument so that the liquid will flow first into one leg of the U tube and then the other. This should be done to obtain a thorough mixture of the liquids.

(6) Replace core and valve cap.



4.02 If carefully handled the indicator should require very little maintenance. The tube is fragile and must be handled carefully to avoid breakage. In case of breakage, the U tube can be replaced as follows:

(1) Remove the clamps from the U tube and then the rubber bushings under the lower clamp.
(2) Lubricate the bushings and rubber hose connection between the tube and valves with water.
(3) Slide the bushings over the tube into proper position.
(4) Carefully press the ends of the tube into the rubber hose connections.
(5) Replace the clamps.
(6) Refill the tube as indicated in Paragraph 4.01.

5. REPLACEMENT PARTS

5.01 The standard listings for the replacement parts are given below:

Tube, Glass, U, for **B Flow Indicator**

Alcohol for **B Flow Indicator** (available in two-ounce bottle).