BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G85.145.3
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AT&T Co Standard

PRESSURE TESTING
B LEAK LOCATOR—DETECTOR

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1. GENERAL

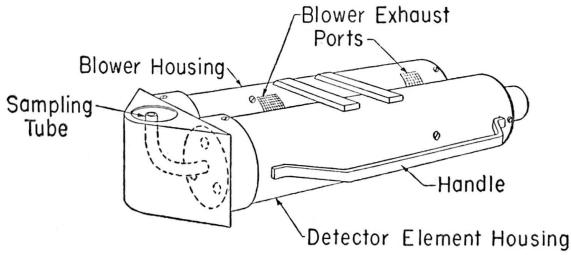
1.01 This section describes the Detector unit of the B Leak Locator and outlines its operation and maintenance.

1.02 The maintenance operations covered are those that can be handled in the field. If other repairs appear necessary, the unit should be returned in accordance with local routine.

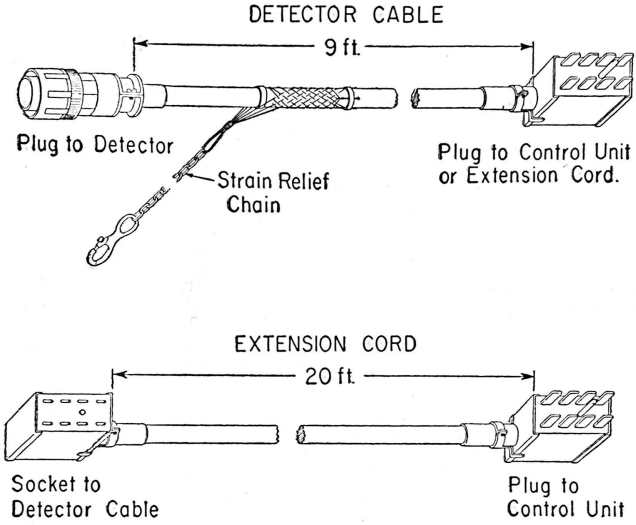
2. DESCRIPTION

2.01 The detector which is illustrated, is a unit consisting of two cylindrical chambers, one of which houses the sensitive element and associated air filters. The other contains two electrically driven blowers and an air filter that requires periodic replacement. The blowers are so arranged that one draws a sizable volume of air from the collector through the large opening; the second blower draws a small portion of the air through the sensitive element.

DETECTOR



2.02 The sensitive element is connected to the vacuum tube circuit of the control unit by means of the shielded 3-conductor Detector Cable, alone or with the 20-foot extension cord which is illustrated below.



2.03 When Freon passes through the sensitive element, it results in a change in current flow through the input circuit of the control unit, causing operation of the alarm.

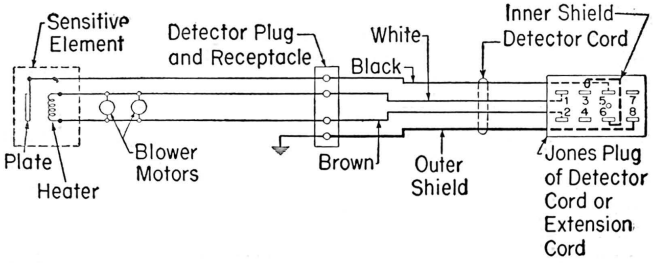
2.04 The detector is normally carried in a chamber underneath the collector, from which it can be removed to determine the exact location of leaks.

2.05 The detector is arranged to permit periodic field replacement of the filter in the blower chamber, also the Detector Element (assembly of sensitive element and associated filters).

3. OPERATING TESTS

3.01 The over-all tests necessary to determine whether the detector has the required sensitivity are indicated in the General section of this group.

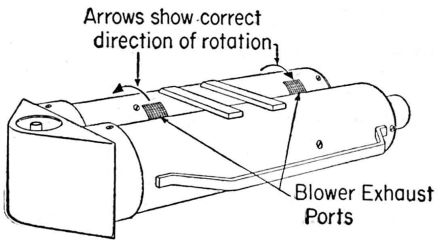
3.02 **Continuity:** The following is a schematic wiring diagram of the detector and the associated cords.



3.03 The resistance measured between terminals 1 and 2 of the Jones plug at the end of the Detector Cable or extension cord should normally be close to 3 ohms. If the resistance is in excess of 5 ohms it indicates that the circuit of the sensitive element is open or that there is a faulty connection in the wiring of the detector or the cords.

3.04 When the detector is connected to the control unit equipped with fully charged batteries, the normal operating current is approximately 3.1 amperes.

3.05 **Blower Motors:** The following illustration shows the correct rotation of the blowers as viewed through the exhaust ports.



3.06 These motors have a permanent magnet field and if the connections are reversed, the direction of rotation reverses.

3.07 The direction of rotation can be determined by connecting the detector to the control unit, turning the ON-OFF switch to ON momentarily and observing the blower vanes as the rotation ceases. If the rotation is incorrect, refer to the paragraphs covering Maintenance.

3.08 The blowers do not necessarily operate quietly; a recurring WOW may be heard due to differences in the speed and vibration characteristics of the two blowers. These should not affect the serviceability of the blowers.

3.09 **The Vibration Test** to check the security of cord, connections and internal wiring is made as follows:

(1) Connect the detector to the control unit with the Detector Cable (and extension cord if it is to be used), and turn the ON-OFF switch to ON.

(2) Set the SENSITIVITY control at HIGH.

(3) After about 5 minutes warm-up time, set the heater current at 3.1 amperes (with fully charged new batteries, it may not be possible to adjust to less than 3.2 amperes).

(4) Then adjust.

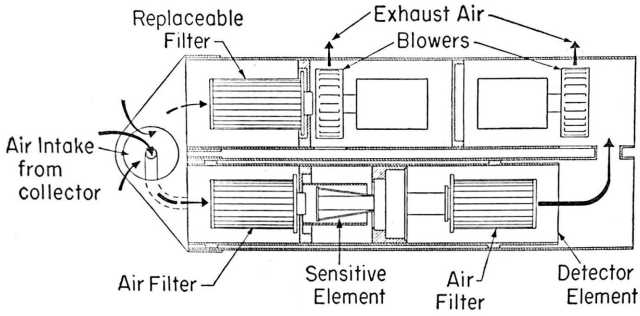
(5) No more than .2 milliampere change in the reading of milliammeter should occur in moving the detector to various positions and shaking gently; nor in flexing the cords at the various connections. The ammeter should remain steady.

3.10 If substantial changes in meter readings occur or if the signal bell operates it may indicate loose plugs or some other fault. In this event, refer to Section G73.145.1 which covers trouble symptoms.

4. MAINTENANCE

4.01 **Cleaning Cap:** Because of the position of the detector under the collector hood, particles of dirt and corrosion products from cable and strand are drawn into the cap of the detector. The larger particles remain in the cap which should be cleaned regularly, about once an hour when the unit is in use.

4.02 This is done by holding the detector horizontally and with the air intake opening down and shaking it from side to side. The smaller dirt particles and air-borne dust are trapped by air filters in the blower and detector element sections, as illustrated in the air flow diagram. The filters associated with the sensitive element handle a relatively little volume of air and do not require attention in the field.

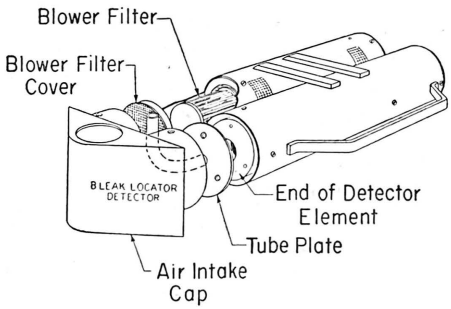


4.03 **Replacing Air Filter:** The air filter in the motor section handles a large volume of air and requires periodic replacement in the field, as follows:

(1) Remove the Detector Cable.

(2) The air intake cap of the detector is held in place by 4 screws; unscrew these and carefully remove the cap as illustrated below, being careful to avoid bending the sampling tube.

DISMANTLING TO REPLACE BLOWER FILTER OR DETECTOR ELEMENT



(3) Then remove the Blower Filter Cover which is held in place by 3 screws.

Note: These screws are smaller than those which hold the cap in place.

(4) Remove the blower filter. Then carefully wipe the inside of the filter chamber as well as the cap and clean the screen of the Blower Filter Cover.

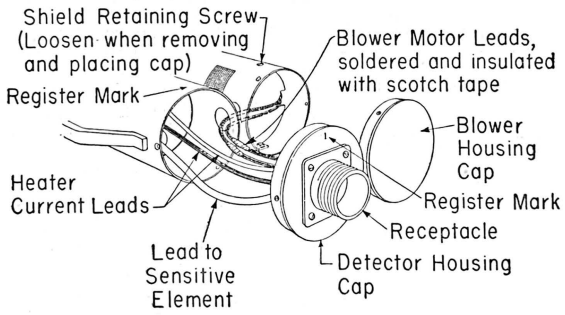
(5) Install the new filter and replace the Blower Filter Cover—also the air intake cap, if no other maintenance is necessary.

4.04 **The Detector Element** (a replaceable assembly consisting of the sensitive element, associated filters, detector housing cap and receptacle) requires no field maintenance. However, the sensitive element may, after 500 or more hours of use, show a loss of sensitivity in the over-all tests which warrants replacing the detector element. The replacement can be made as follows:

(1) Remove the cap as before and then remove the tube plate which is held in place by 3 screws. (See illustration Paragraph 4.03.)

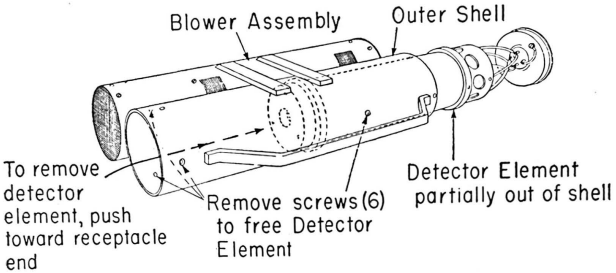
(2) Remove the Detector Housing Cap and Blower Housing Cap as illustrated below.

REMOVING REAR END PREPARATORY TO REPLACEMENT OF DETECTOR ELEMENT



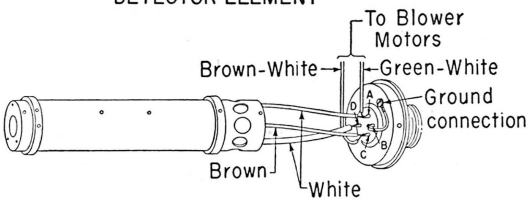
(3) Expose the soldered joints in the blower motor leads and carefully disconnect the wires. Note the colors of the wires; misconnection will reverse the rotation of the motors.

(4) The Detector Element is held in place by 6 screws as illustrated below. Remove these screws and push out the detector element using a heavy wooden dowel or equivalent.



(5) Install the new Detector Element, illustrated below, and replace the retaining screws, making sure that the holes are properly aligned—register marks are provided for this purpose.

DETECTOR ELEMENT



(6) Solder and insulate the blower motor leads.

(7) In replacing the caps, carefully feed the blower motor leads through the air passage to avoid damage. Register marks are provided to ensure that the receptacle is correctly aligned.

(8) The tube plate at the air intake end can now be replaced, as well as the air intake cap.

4.05 If a new Detector Element has been installed, the reassembled detector should be tested as outlined in Part 3, to ensure satisfactory operation.

4.06 **Detector Cable and Extension Cord:** The open end of the Detector Cable grip on the cord should be kept securely clamped, to ensure that there is no pull on the cord connections at the plug.

4.07 If the cord appears loose at any of the plugs, tighten the clamps as required. If the over-all tests of the B locator indicate low insulation in the Detector Cable or Extension Cord, it may be due to dirt or moisture in the plugs. In this event, wipe off the plugs and then dry by directing a stream of nitrogen against them, using a valve stem as a jet.

4.08 The insulation resistance between the terminations of the cord conductors will ordinarily be in excess of 100 megohms as measured with a standard Megger Test Set.

4.09 If the steps outlined do not correct the cord trouble, the detector cable or extension cord should be replaced.

5. REPLACEMENT PARTS

5.01 The following are replacement parts:

Cable, Detector, for B Leak Location	
Cord, Extension 20 ft., for B Leak Locator	
Detector, for B Leak Locator	(Complete Detector)
Element, Detector, for B Leak Locator	(Asssembly of sensitive element, filters detector housing cap and receptacle)
Filter, Air, for B Leak Locator	(For replacing filter in blower housing)