

KS-8455 TEST SET DESCRIPTION AND USE

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spring clip at one end and a crimped solderless terminal at the other end. The cords are connected to the test set by machine screws located above the dial. The free ends of the cords are coiled and stored in the case behind the set when not in use.♦

(d) ♦A KS-8456 carrying case with shoulder strap. The front of the leather case has cutouts for operating the set without removing it from the case. The wrap-around flap cover is equipped with snap fasteners for securing the cover and protecting the test set during handling and transportation.♦

(e) ♦A 45-volt KS-14369 primary battery is required to operate the test set. The battery is not supplied with the set and must be ordered separately or purchased locally as described in 2.02.♦

1. GENERAL

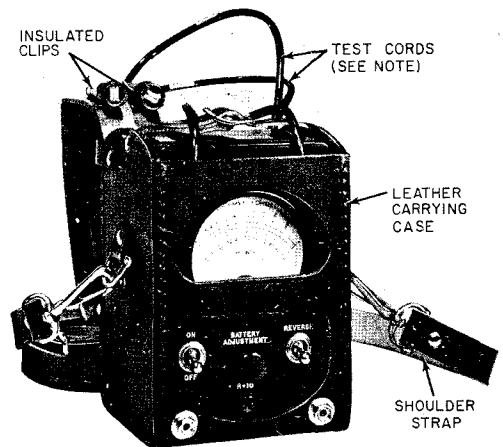
1.01 This section covers the description and use of the KS-8455 Test Set which is intended primarily to aid in locating cable or wire troubles in distribution plant.

1.02 This section is reissued to update the text material and illustrations.

2. DESCRIPTION

2.01 The KS-8455 Test Set (Fig. 1) consists of the following items:

- (a) KS-8455 L1 Test Set—Complete set except battery.
- (b) KS-8455 L2 Test Set—Volt-ohmmeter only. Battery not included.
- (c) ♦Two 6-foot W1AH test cords.—The neoprene covered cords are equipped with an insulated



NOTE:
STORE CORDS BEHIND TEST SET
WHEN NOT IN USE.

Fig. 1—KS-8455 L1 Test Set

2.02 The KS-8455 Test Set is furnished without a battery. The 45-volt KS-14369 primary battery used in the test set must be ordered separately, or its equivalent, the commercial No. 455 Eveready Battery must be purchased locally.

2.03 Fig. 2 illustrates a schematic diagram of the KS-8455 Test Set. This circuit consists essentially of a microammeter, resistances, a 45-volt battery, and switches which permit setting up a voltmeter or ohmmeter circuit.

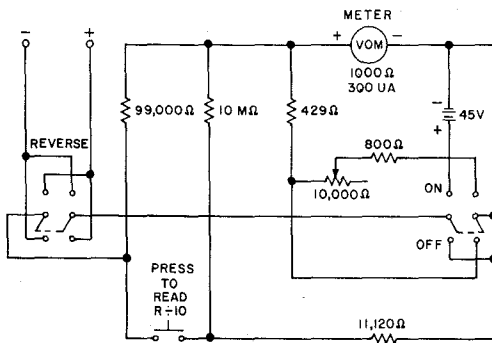


Fig. 2—KS-8455 Test Set (Schematic Diagram)

2.04 Fig. 3 is a simplified schematic diagram of the ohmmeter circuit for which the ON-OFF switch must be in the ON position.

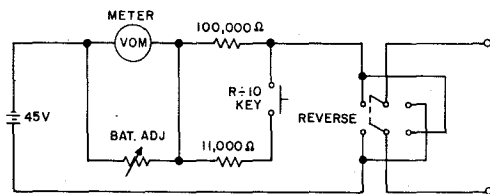


Fig. 3—1 Ohmmeter Circuit—ON-OFF Switch at ON Position

2.05 The ohmmeter circuit is used for:

- (a) Determining insulation resistance of a line, between wires or between one wire and ground.
- (b) Making ballistic tests to detect opens or to check bridged capacitor connections. The meter scale is calibrated to read insulation resistance directly in ohms, megohms, or "points" which correspond approximately to the "points" reading obtained on the voltmeter in the No. 2 Test Cabinet usually provided in community dial offices. The range of the ohmmeter is 0 to 2 megohms with the (R ÷10) key in the normal position; with this key depressed the range is 0 to 0.2 megohms.

2.06 Fig. 4 is a simplified schematic diagram of the voltmeter circuit for which the ON-OFF switch must be in the OFF position.

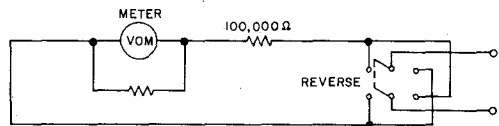


Fig. 4—Voltmeter Circuit—ON-OFF Switch at OFF Position

2.07 The voltmeter circuit is used primarily for measuring line voltage and foreign EMF (dc voltages only). The range of the voltmeter is 0 to 100 volts.

3. INSULATION RESISTANCE MEASUREMENTS

3.01 Before making insulation resistance measurements adjust the set as follows:

- (1) Turn ON-OFF switch to ON.
- (2) Short circuit the two cords by clipping them together.
- (3) Turn BATTERY ADJUSTMENT knob until needle is at 100 on the "points" scale.

Repeat this adjustment from time to time to compensate for any change that may occur in the battery voltage.

3.02 The procedures for using the KS-8455 Test Set to localize insulation faults are the same as those recommended in Section 462-800-500.

4. TESTS FOR GROUNDS

4.01 To test for a fault to ground proceed as follows:

- (1) Open the line at a convenient location such as at a cable terminal or bridging point.
- (2) Connect one clip to ground. A suitable ground connection may be secured from the suspension strand or other associated grounded plant, from the grounded side of an adjacent line, or from a temporarily driven ground rod (Fig. 5).
- (3) Connect the other clip to the wire to be measured.
- (4) Throw ON-OFF key to ON.
- (5) Read meter deflection. If read on the ohm or megohm scale, the reading indicates the insulation resistance of the measured wire to ground; if read on the "points" scale, the insulation resistance is obtained in terms of points.

5. SHORT CIRCUITS AND CROSSES

5.01 To test for short circuits between wires of a pair or a cross between the wires of different pairs the procedure is the same as in Part 4, except that the clips are placed across the wires under test as shown in Fig. 6.

6. BALLISTIC TESTS

6.01 The KS-8455 Test Set can be used in the same manner as the test desk voltmeter to detect opens or the presence of a capacitor on the line. Fig. 7 shows the method for making the test to detect an open on either an individual or party line. It also shows the procedure for testing for grounded ringers on party line circuits.

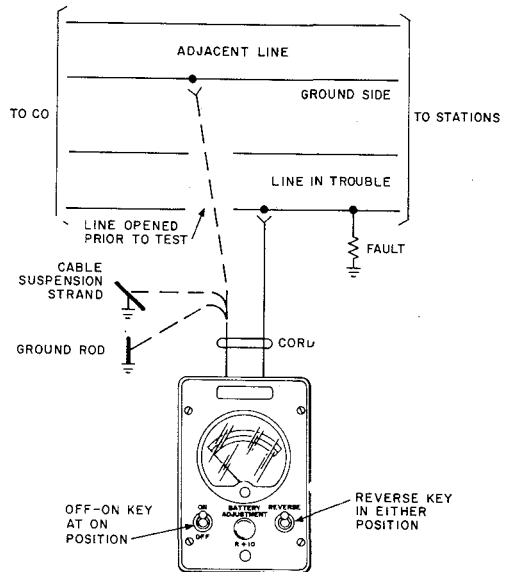


Fig. 5—Test for Grounds

6.02 Having made the connections illustrated operate reverse (REV.) key back and forth slowly enough so the needle will return to zero at the end of each swing. If the needle deflects off the scale, keep the $R \div 10$ key depressed while operating the reverse key.

7. VOLTMETER TESTS

7.01 To use the KS-8455 Test Set as a dc voltmeter, place the ON-OFF key in the OFF position. Connect the clips across the circuit on which the voltage is to be measured. If the voltmeter reads backwards operate the reverse key. The reading on the points scale is the value of the applied potential in volts.

7.02 The $R \div 10$ key should not be depressed when taking voltmeter readings.

8. STRAPPED SLEEVE METHOD OF TESTING IN COMMUNITY DIAL OFFICES

8.01 In many instances testing with the KS-8455 Test Set may be facilitated by utilizing the operation of the cutoff relay which removes battery

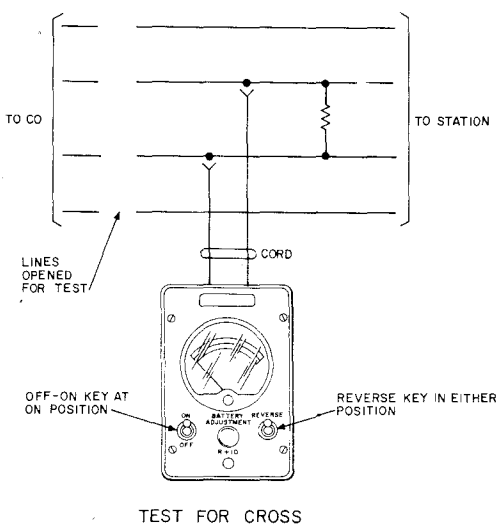
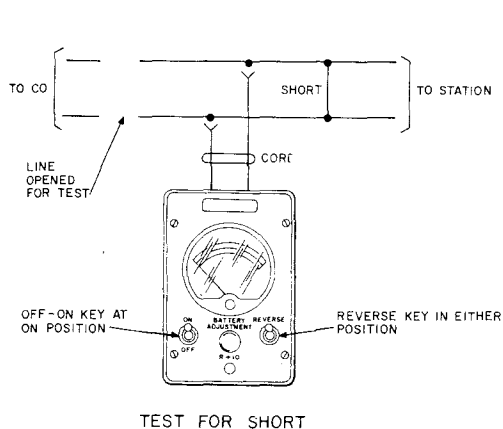


Fig. 6—Test for Shorts and Crosses

and ground from the line in trouble. This permits tests to be made at various locations on the line both "ahead" and "toward" the central office, and allows certain tests to be made on open wire sections without cutting the line. This test is made as follows:

- (1) Tie the sleeve of a spare connector terminal to the sleeve of the connector terminal of the line in trouble at a common appearance

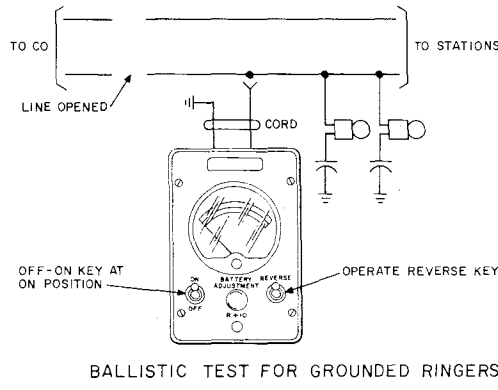
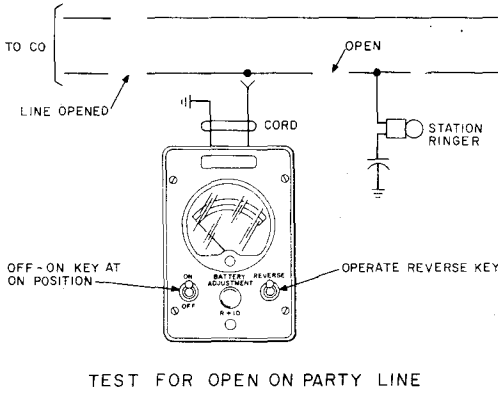
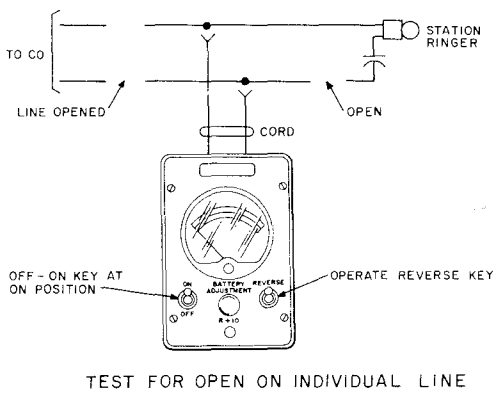


Fig. 7—Test for Opens and Grounded Ringers

(location of the common appearance differs in different types of offices). The strap may be removed after the tests, at the convenience of the tester, as no trouble will be caused while it is in place in the office with a standard strap or shunt cord.

- (2) At the testing location of the line in trouble, connect a dial hand test set to an adjacent working line, if available, and dial the spare connector terminal.

—If a busy signal is encountered, it is an indication that the line to be tested is busy or has become permanent.

—If ringing signal is heard, it is an indication that the cut-off relay has operated and the line to be tested is open at the central office. As long as the connection to the spare connector terminal is held up and the ringing signal is heard, the line to be tested will remain in this condition.

- (3) If an adjacent line is not available for dialing the spare connector terminal, and if the fault on the line in trouble is not of sufficient value to interfere with dialing, use the hand test set on the line in trouble to call the test desk or operator at the master office. Have the test deskman or operator dial the spare connector terminal and hold the connection for a prearranged length of time, eg, two minutes. With the TALK-MON. key on the dial hand test set in the monitoring position, the combinationman may monitor on the line while the test deskman is placing the call. Evidence of the operation of the cut-off relay will be a click in the receiver of the hand set or a change in the volume of line noise.
- (4) After the battery and ground have been removed from the line, proceed with the desired tests.

- 8.02** A typical application of this method of testing is illustrated in Fig. 8.

9. MAINTENANCE OF TEST SET

- 9.01** Reasonable care should be exercised in handling the test set. The set should be protected against unnecessary shocks or jars.

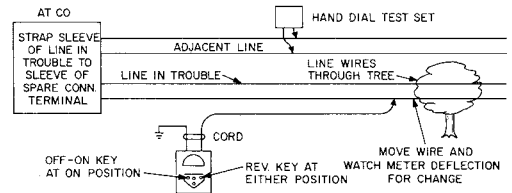


Fig. 8—Strapped Sleeve Method Test

- 9.02** The battery should be replaced when it is impossible to adjust the meter needle to 100 on the points scale by use of the battery adjustment knob.
- 9.03** To replace the battery (2.02) remove the set from the leather case. Remove the panel on the back of the set by taking out the four screws which hold it in place. Disconnect the old battery from the terminals (snap fasteners) and replace it with a new one. The terminals are so arranged that it is impossible to reverse the polarity.