

## **MODEL 100B TEST SET**

### **1. DESCRIPTION AND FEATURES**

1.01 The 100B Test Set (Fig. 1) provides the features outlined in Paragraph 1.03 and is housed in a yellow plastic case which measures approximately 7/8 inch thick, 2-1/4 inches wide and 4 inches long. Red and black test leads are provided, which are equipped with alligator clips, and are permanently attached to the set. A 4-conductor modular plug and cord, plus a Light Emitting Diode (LED) provide a line polarity test feature. A four-position slide switch controls the modes of operation.

1.02 The tone, battery and resistance features are powered by an internal 9-volt "transistor" battery. The polarity test feature is line powered.

1.03 The 100B Test Set provides the following features:

- (a) **TONE:** A dual tone audio trace signal is used to identify cable pairs, drop wires, and I-O wire pairs, and for proving continuity of single conductors.
- (b) **BATTERY:** Approximately 9 volts of talk battery is provided for two-way communications.
- (c) **RESISTANCE:** This feature provides an audible indication of various levels of circuit and insulation resistance.
- (d) **POLARITY TEST:** A Light Emitting Diode (LED) provides a visible indication of the polarity of central office battery present.
- (e) **CALIBRATION:** An internal resistor valued at 1 megohm is provided for comparison to the fault resistance of the circuit or facility being tested. (See Figure 2)

### **2. OPERATION**

**NOTE: ALL TESTS AND OPERATIONS OUTLINED IN THE FOLLOWING PARAGRAPHS ARE TO BE CONDUCTED WITH CENTRAL OFFICE BATTERY AND ANY OTHER SOURCE OF ELECTRICAL CURRENT DISCONNECTED FROM THE FACILITIES UNDER TEST.**

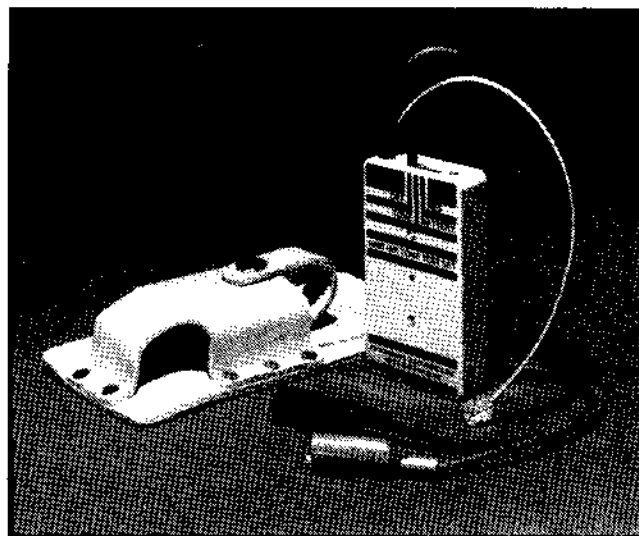


Figure 1 - 100B Test Set and Leather Carrying Case

2.01 Battery check and operational test.

- (a) Short the test leads together and place the slide switch in the "Resistance" position. This should produce a rapid series of beeps from the speaker.
- (b) If no beeps are heard, replace the battery.
- (c) To replace the battery, remove the two (2) screws from the front panel. Replace the battery, being sure no leads are exposed. Re-screw the two halves together.

2.02 Calibration:

- (a) With the slide switch in the "Resistance" position, touch the clip of the Red test lead to the screw head next to the slide switch opening. (See Figure 2) This places a 1 megohm short on the test set leads through an internal resistor. The set should then produce a series of beeps at a rate of slightly less than one per second. This beep rate will subsequently be referred to as the "Calibration Rate."
- (b) During dry weather, no further testing is necessary if the circuit or facility under test produces a beep rate equal to or slower than the "Calibration Rate." Such a circuit can be considered clear of insulation faults.

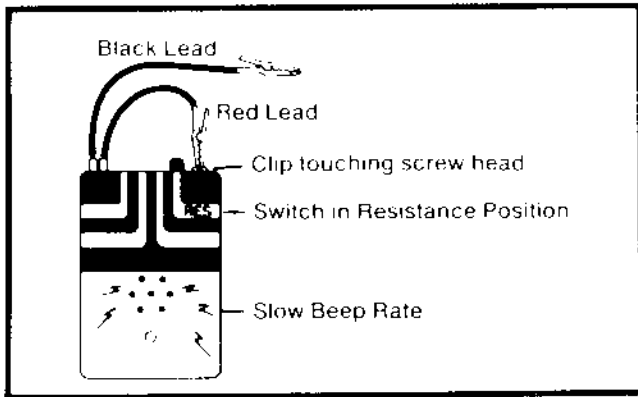


Figure 2 — Calibration

- (c) During wet weather a circuit or facility can be considered clear if the beep rate is approximately half "Calibration Rate."
- (d) Any circuit or facility which produces beep rate which is faster than outlined above has an insulation breakdown level which is too low. Such circuits or facilities are to be repaired or replaced.

2.03 Tone Operation:

- (a) Before an attempt is made to identify a pair of conductors, the pair should first be tested for shorts and grounds. Either of these conditions will attenuate (lower) the signal and produce false indications.
- (b) After the pair has been "cleared," place the slide switch in the "Tone" position and connect the test leads as shown in Figure 3.
- (c) Figure 3 also illustrates the indications that can be expected. A pair with an "open" conductor will produce a low tone similar to a "split" pair.

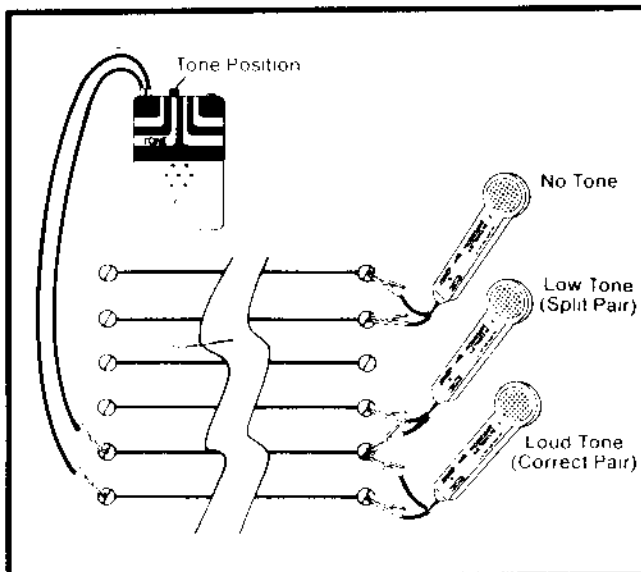


Figure 3 "Toning" a Pair

- (d) Continuity can be proven by using the "Resistance" feature of the 100B Test Set. Proceed as outlined below.

- (1) Place the slide switch in the resistance position and connect the test leads to one end of the pair to be tested.
- (2) Short the pair at the far end and listen for beeps to be emitted from the speaker.
- (3) A rapid series of beeps indicates continuity. Compare the results by alternately shorting the test leads and connecting the Test Set to the test conductor. No discernible difference should be noted in the beep rate.

2.04 Battery Operation:

- (a) If a source of "talk" battery is required, place the slide switch in the "Batt" position. Then connect Lineman's Test Sets or telephones in series with the Test Set lead as shown in Figure 4.

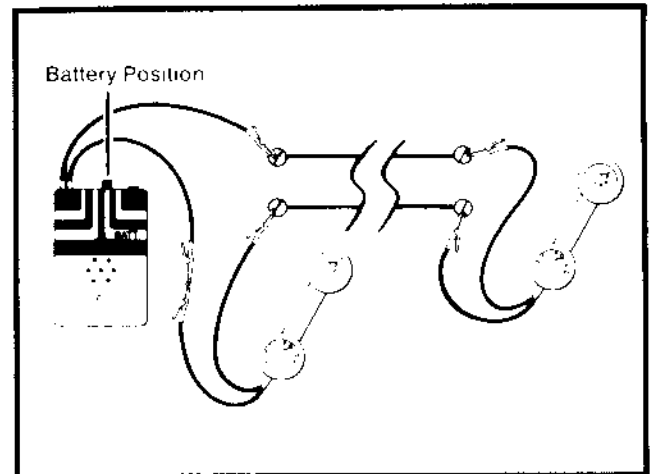


Figure 4 Connections for Talk Battery

2.05 Resistance Testing:

- (a) To test relative resistance levels between two conductors or between a single conductor and ground, place the slide switch in the "Resistance" position. The speaker will emit a series of beeps when the test leads are shorted or connected to a resistance circuit. The time interval between beeps increases as the resistance of the circuit being tested is increased. Thus, a solid short produces a very rapid series of beeps.
- (b) SHORTS: To test a pair of conductors for shorts proceed as follows:
  - (1) Connect the 100B Test Set to the pair as shown in Figure 5.

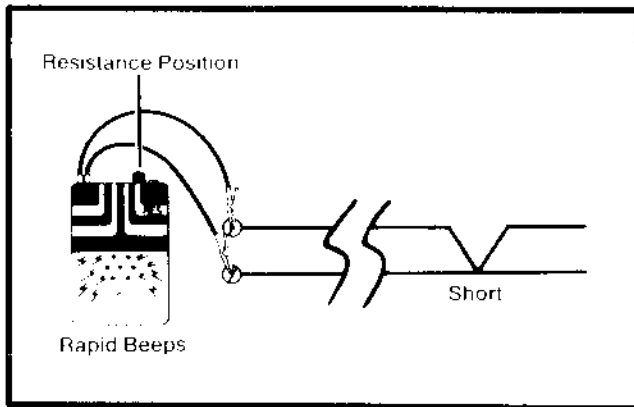


Figure 5 — Testing for Shorts

- (2) Place the slide switch in the “Resistance” position and listen for “beeps” to be emitted from the speaker.
  - (3) A rapid series of beeps indicates a solid short.
- (c) **GROUNDS:** A “ground” is similar to a “short” in that it is caused by an insulation breakdown between two conductors. In this case, the breakdown is between a conductor and ground. To test a circuit or pair for “grounds,” proceed as follows:

- (1) Connect the 100B Test Set as shown in Figure 6.

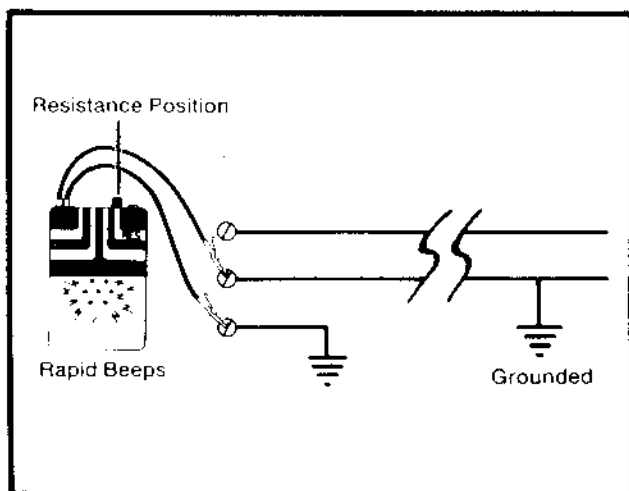


Figure 6 Testing for Grounds

- (2) Place the slide switch in the “Resistance” position and listen for “beeps” to be emitted from the speaker.
  - (3) A rapid series of beeps indicates a low resistance path to ground.
- (d) **CROSSES:** A cross is basically a short between a conductor of one pair and a conductor of another pair. To test for crosses in a given group of pairs, proceed as follows:

- (1) Place the slide switch in the resistance position and connect one test lead to a conductor of the first pair in the group.
- (2) Connect the remaining test lead momentarily to each of the remaining conductors. A cross will be indicated when the Test Set emits a series of beeps.
- (3) Proceed by moving the initial test lead to each conductor in turn and testing it against the remaining conductors as shown in Figure 7.

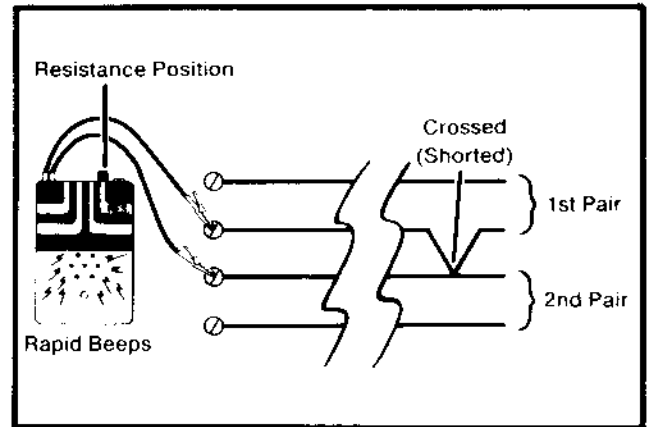
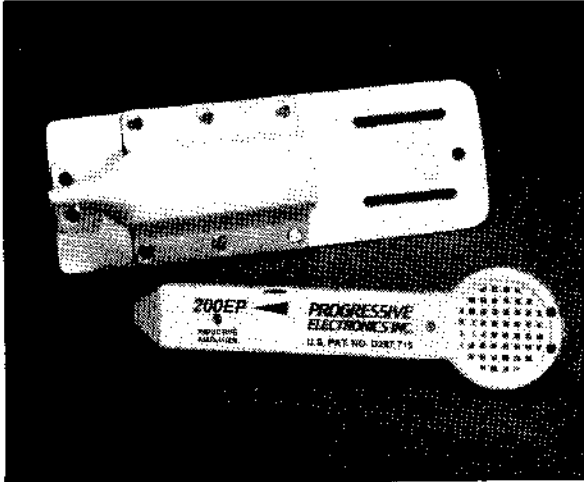


Figure 7 — Testing for Crosses

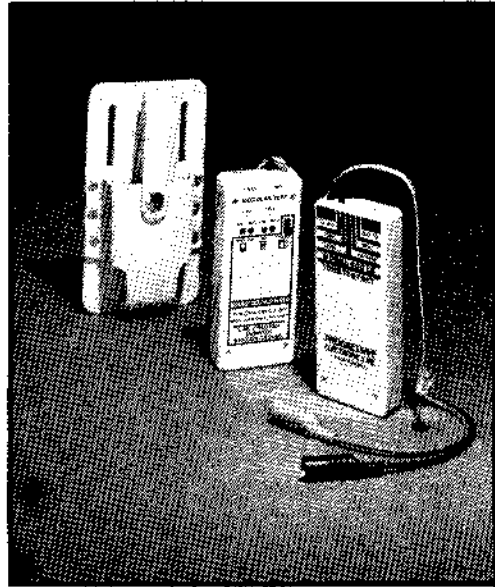
## 2.06 Polarity Testing:

- (a) To test for line polarity, place the Slide Switch in the “off” position.
- (b) To test Line 1, insert the modular plug into an outlet. A lighted LED indicates presence and proper polarity of CO Battery.
- (c) Any line may be tested with the clip leads for CO Battery. The LED will light with the red lead on the ring side of the line.

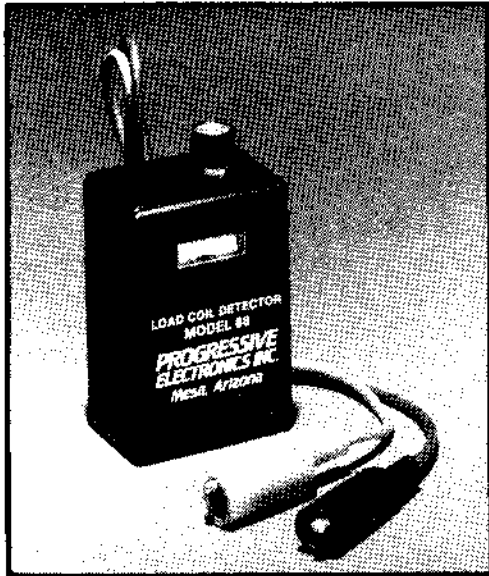
# COMPATIBLE PRODUCTS



200EP INDUCTIVE AMPLIFIER



600LS TONE TEST SET



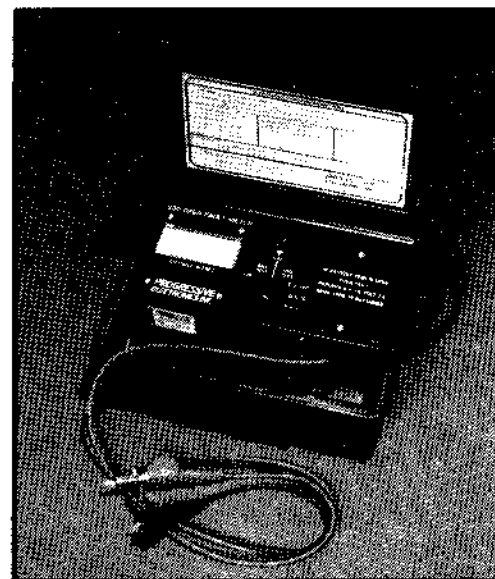
88 LOAD COIL DETECTOR



508 COMPACT CABLE LOCATOR



210 RESISTANCE FAULT METER



230 OPEN FAULT METER