B VOLTAGE TESTER
DESCRIPTION

CONTENTS

1. GENERAL

1.01 This practice provides the description of the B Voltage Tester, CTS #74-94-310-3, (Figure 1) and accessories:

a. B Temporary Bond, CTS #74-88-011-0, (Figure 2).

b. B Shunting Capacitor, CTS #74-88-012-8, (Figure 3).

c. B Voltage Tester Carrying Case, CTS #74-94-327-8, (Figure 4).

d. B Voltage Plug, CTS #74-94-295-4.

1.02 This practice also includes information on field repairs that may be required on the tester.

2. DESCRIPTION OF B VOLTAGE TESTER

2.01 The B Voltage Tester is designed to detect the presence of voltages from 60 to 7600 volts. It consists of an indicator assembly which contains a small neon glow unit and reflector, and a plastic insulated probe equipped with a toothed metal disc on one end for making contact with the conductor, conduit, or street light fixture to be tested. The probe is designed to limit the amount of current which can pass through the device. The probe, indicator assembly, and an insulated clip are connected by insulated cord. See Figure 1.

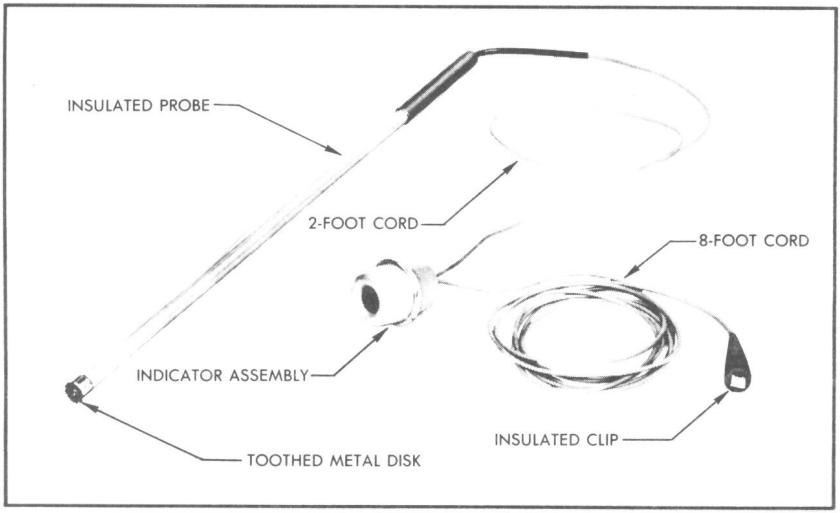

FIGURE 1. B Voltage Tester CTS #74-94-310-3

2.02 At 60 to 70 volts the indicator of the B voltage tester glows dimly. Higher voltages will produce a brighter glow. Higher voltages can damage the tester (7200 volts will burn it out in approximately one minute), it should be touched to the facility being tested **only long enough to determine whether or not the indicator glows.**

3. VOLTAGE PLUG

3.01 A voltage plug, to be made up locally (Figure 5), is designed to provide a safe and convenient means for checking the operation of the B voltage tester. When plugged into any standard 110 to 120 volt convenience outlet, it provides a source of voltage in series with a current limiting resistor. As shown in Figure 5, the resistor is connected to only one prong of the plug and this prong must be plugged into the **hot** side of the outlet. Generally, the **hot** side is the smaller of the two parallel slots in the outlet.

a. Voltage plug, CTS #74-94-295-4, designed for checking the B voltage tester can be ordered from the Test Equipment catalog. When the voltage plug is inserted into a standard 110-120 AC outlet, an electrical source will be provided that is controlled by a current limiting resistor.

b. The insulated clip of the B voltage tester is attached to a ground (as recommended in paragraph 6.02, c.) and the probe of the tester is inserted into the exposed end of the voltage plug so that the toothed metallic disc makes contact with the metal spiral in the plug.

c. If the indicator on the B voltage tester glows dim when contact is made, the tester is operating properly. If not, reverse the plug in the outlet. If there is still no glow, the B voltage tester is defective and should not be used.

4. B TEMPORARY BOND

4.01 The B Temporary Bond is a 5-foot length of stranded copper, rubber covered cord with battery clips at each end. The B Temporary Bond is used to prevent electrical shock to craftsmen by temporarily grounding to cable strand and can be used with the B Voltage Tester and the B Shunting Capacitor to prevent false indication on the B Voltage Tester.

5. SHUNTING CAPACITOR

5.01 The B Shunting Capacitor (Figure 3) is used to distinguish dangerously energized street light fixtures from weakly energized fixtures which are not dangerous. For further information, refer to CTSP 490-050-106.

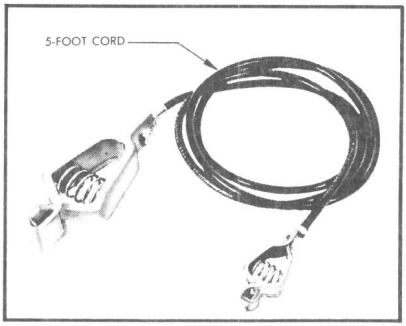

FIGURE 2. B Temporary Bond CTS #74-88-011-0

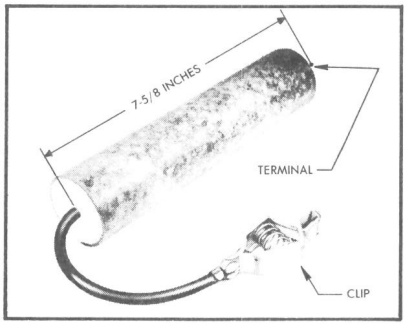

FIGURE 3. B Shunting Capacitor CTS #74-88-012-8

5.02 Because the B Voltage Tester is extremely sensitive and operates with very small currents, street light fixtures may cause the indicator to glow even though they are energized only by leakage across damp cobwebs or induction between the fixture and its wiring.

5.03 The B Shunting Capacitor will drain off harmless voltages such as those described in paragraph 5.02. It will not interfere with the operation of the B Voltage Tester if the fixture is dangerously energized (as it would be if the wiring insulation in the fixture broke down).

5.04 The B Shunting Capacitor should not be used in making other tests except as specifically authorized by local instructions.

5.05 The B Shunting Capacitor should not be dropped and should be kept reasonably clean and dry. It does not require testing or any special maintenance.

6. TESTING THE B VOLTAGE TESTER

6.01 The B Voltage Tester should be tested weekly to ensure that it is operating satisfactorily.

6.02 The method of testing the B Voltage Tester is:

a. Locate a standard 110 to 120 volt convenience outlet which is energized. This may be checked with an extension cord and lamp.

b. Insert the voltage plug into the outlet; first choose the smaller of the two slots in the outlet to insert the prong connected to the resistor.

c. Attach the insulated clip of the voltage tester to a ground such as a water pipe, radiator, metallic power conduit, etc. If none of these are available, lay the B temporary bond, uncoiled, on concrete floor and attach to one of its clips.

d. Touch the toothed metal disc of the probe to the metal spiral of the voltage plug. The indicator should glow faintly. If the indicator does not glow, release the tension in the wire, but keep the probe in contact with the voltage plug. If the indicator glows after the tension has been released, the wire is broken under the insulation and the tester should be disposed of.

e. If the indicator does not glow, reverse the voltage plug in the outlet by removing it, turning a half turn and inserting again into the outlet. Repeat the test.

f. If the indicator still does not glow and it is known that the convenience outlet is not defective, then the voltage tester must be defective and should be disposed of.

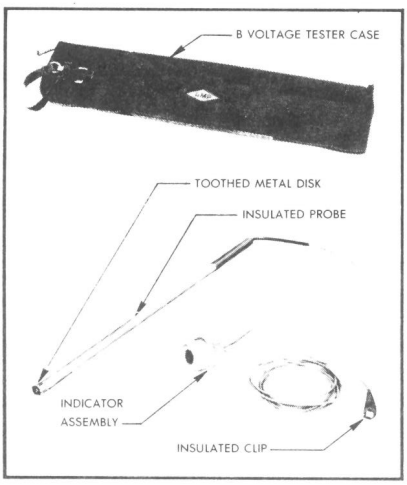

FIGURE 4. B Voltage Tester and Case CTS #74-94-327-8

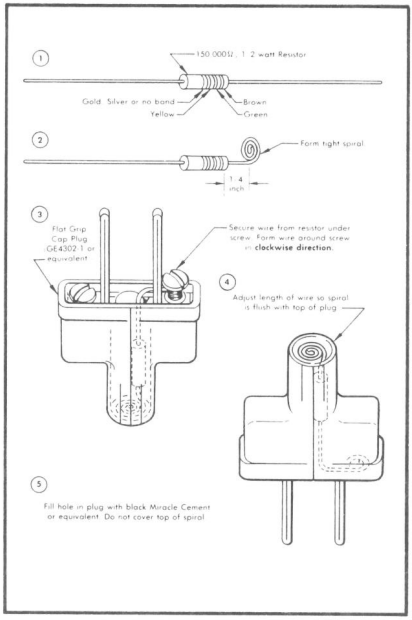

FIGURE 5

7. FIELD REPAIR OF B VOLTAGE TESTER

7.01 Certain limited field repairs to the B Voltage Tester will be required. Testers which cannot be repaired by using the methods described in this practice should be disposed of in accordance with local instructions.

7.02 The wire or cord of the B Voltage Tester may be spliced under the following conditions:

a. Between the probe and the indicator assembly, a maximum of two splices are permitted. Do not attempt to splice wire if the break is within 4 inches of either the indicator assembly or the grip of the probe.

b. Between the indicator assembly and the grounding clip, a maximum of three splices is permitted. No attempt should be made to splice wire breaks within 4 inches of the indicator assembly. No attempt should be made to splice wire breaks if the overall length of the cord between the clip and the indicator assembly will be less than 7 feet 6 inches. Each splice will reduce the length of the cord about 2 inches.

7.03 To splice broken cords (Figure 6):

a. Strip 2 inches of insulation from the wire on each side of the break using the wire stripping hole of the standard 6-inch diagonal pliers.

b. Clean the insulation of the wire adjacent to the break for a distance of at least 1 inch to remove mud, grease, etc.

c. Tie a square knot in the middle of the exposed wire so the ends will lie parallel and extend approximately to the beginning of the insulation.

d. Tape the joint with 3/4-inch vinyl tape or friction tape. Start the tape at about a 45-degree angle beginning at the knot and continue until about 1/2-inch of the rubber insulation has been covered. Continue taping until the splice has two layers. End the tape in the middle of the splice.

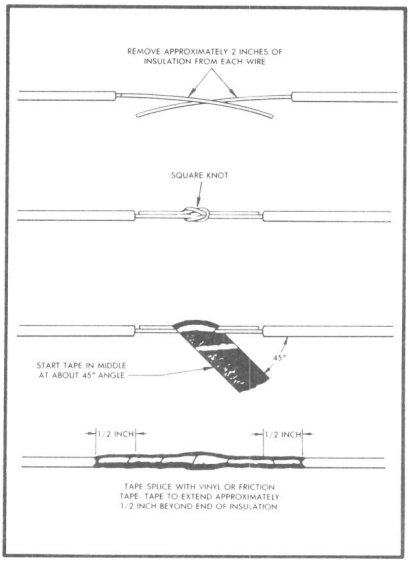

FIGURE 6. Repairing Broken Cord

8. CARE AND STORAGE

8.01 In placing the tester in the case, place the toothed metal disc first. The capacitor and bond should be carried in the lower pocket of the case.

8.02 The B Voltage Tester should be handled and stored with reasonable care. Remove any dampness or dirt with a clean cloth before using or storing. Keep the instrument free of grease or oil to prevent deterioration of insulation.

8.03 Avoid exposing the instrument to excessive heat as the plastic rod may become deformed under high temperatures.

8.04 The instrument should be **carried down and lowered** from poles, **not dropped,** as the impact may short-circuit the elements in the neon glow unit of the indicator.