

OBSERVATIONS AND VOLTAGE TESTS

TO BE MADE BEFORE

WORKING AT JOINT USE POLES

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1. GENERAL

1.01 This section covers observations and tests to be made with the Z Voltage Tester before working on joint use poles to protect workmen against electrical shock from vertical power ground wires, metallic power conduit, or street light fixtures that may be energized.

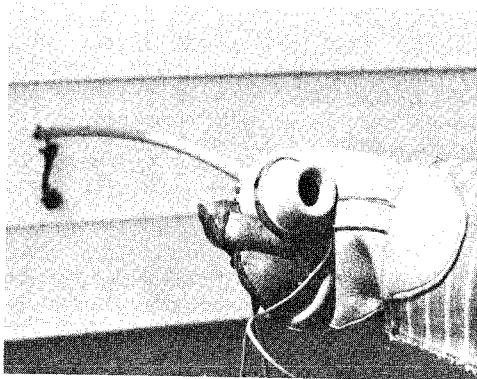


Fig. 1 — Gunsight Method

1.02 This section is reissued to illustrate the new method of holding the indicator and the probe in one hand (Gunsight Method) (See Fig. 1). This method will enable the workman to keep his eyes on the indicator at all times, and in case of high voltage that would burn out the indicator, he would see the glow before the indicator burns out and will not be mistaken and take the situation as a no voltage condition.

1.03 The equipment required for the following tests is as follows:

Z Voltage Tester

B Voltage Tester Bag

Z Temporary Bond

B Shunting Capacitor

"E" Insulating Gloves

1.04 The description, maintenance and care of the Z Voltage Tester and its attachments, is now covered in Section 106-220-925.

1.05 INSULATING GLOVES AND PROTECTIVE GLOVES SHALL BE WORN DURING THE COMPLETE TESTING PROCEDURE.

2. OBSERVATIONS TO BE MADE BEFORE CLIMBING

2.01 Examine the pole for potential hazards such as a vertical power ground wire, vertical metallic power conduit, or a street light fixture. Also observe the pole for such hazards as improper clearances from power conductors or equipment, dangling power wires, etc. If none of these is present, the pole may be climbed in accordance with safe climbing practices.

SECTION 620-105-010CA

2.02 If a vertical power ground wire is present, make a voltage test in accordance with Part 3 before climbing or working at the pole unless it meets one of the following conditions:

- (a) It can be clearly seen that the ground wire is bonded to a telephone cable strand, or
- (b) The ground wire is covered with wood molding, or equivalent, up through telephone space, and the ground connection is not broken, or
- (c) The ground wire is of the insulated type and the insulation is in good condition.

2.03 If vertical metallic power conduit is present, make a voltage test in accordance with Part 3 before climbing or working at the pole unless it can be clearly seen that the conduit is bonded to the telephone cable strand.

2.04 If a street light fixture is present, make a voltage test in accordance with Part 4, only if the pole also carries multiple line wire, telephone cable (including isolated cable), or a bare vertical power ground wire.

2.05 Poles carrying street light fixtures may be worked on without making a voltage test under any of the following conditions:

- (a) The fixture is located in power space, or
- (b) The fixture is located ABOVE telephone attachments and it can be clearly seen that it is bonded to the telephone cable strand, or
- (c) The fixture is located BELOW telephone cable and it can be clearly seen that it is bonded to the telephone cable strand. However, in this case **INSULATING GLOVES SHALL BE WORN** in climbing the pole unless the wiring through and below telephone space is either 40 inches out from the pole surface or is otherwise made inaccessible.

2.06 If a street light fixture is present in the telephone space on a pole not carrying a telephone cable or a bare vertical power ground wire, **WEAR INSULATING GLOVES AND AVOID CONTACT WITH IT OR ITS WIRING**, even though a voltage test has been made, since

it is not possible to place a temporary bond to an effective ground.

3. VOLTAGE TESTS - VERTICAL POWER GROUND WIRES OR METALLIC POWER CONDUIT

3.01 When a voltage test is required by Paragraph 2.02 or 2.03, proceed as follows before climbing or working on the pole.

- (a) Attach the insulated clip of the voltage tester to one of the following:

- (1) A guy rod or telephone anchor guy. (Do not attach to an anchor rod that carries an uninsulated guy which is bonded to the power vertical ground wire.)

- (2) A fire hydrant, a projection on a man-hole cover, or a metallic curb box.

- (3) A 5-inch screwdriver blade pushed into the earth about 5 feet from the pole.

- (4) A substantial metal object such as a piece of lead sleeving, a metal crossarm brace, or a half-pound bar of D Seam Solder, etc, laid on the ground or pavement about 5 feet from the pole.

- (b) Standing about 3 feet from the pole, grasp the insulated probe and the indicator assembly in one hand. Push the toothed metal disk at the end of the probe firmly against the ground wire or metal conduit being tested while looking into the open end of the indicator assembly.

- (c) **IF THE INDICATOR GLOWS, THE GROUND WIRE OR METAL CONDUIT IS ENERGIZED.** Immediately remove the probe from contact with the ground wire or metal conduit and notify your supervisor. **DO NOT CLIMB OR CONTACT THE POLE IF THE INDICATOR GLOWS.**

- (d) If the ground wire is broken, test the **UPPER** part as described above, unless the break occurs above the telephone space. Do **not** attempt to test a broken ground wire if the break is observed to be in the power space. Report the broken power wire to your supervisor.

- (e) If the lower 8 feet or so of the ground wire is protected with wood molding, test above the molding.

3.02 If the voltage tester DOES NOT GLOW in making the test described in Para. 3.01, poles carrying vertical power ground wires and telephone cable may be climbed in accordance with safe climbing practice. Care should be exercised to avoid simultaneous contact between power ground wires and telephone cable or guys as a small voltage (60 volts or less) may be present. This is recommended to avoid the possibility of surprise shock which might (under some circumstances) cause a fall from the pole.

3.03 After making the voltage test on a pole carrying vertical metallic power conduit or bare vertical ground wire and telephone cable, put on insulating gloves and place a Z Temporary Bond as follows. **FIRST ATTACH THE SMALL CLIP TO THE TELEPHONE STRAND;** then attach the large clip to the conduit (or a conduit fastening if the conduit is too large). **LEAVE THE BOND IN PLACE UNTIL ALL WORK OPERATIONS AT THIS POLE HAVE BEEN COMPLETED FOR THE DAY.** If the bond starts to smoke, put on insulating gloves and descend the pole. Avoid contact with the bond, the ground wire or the conduit and notify your supervisor and follow up with a B.T. Form 732.

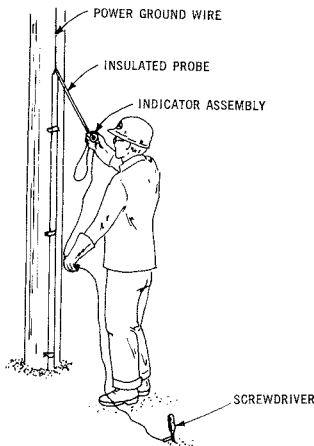


Fig. 2 — Testing Vertical Wire

3.04 On completion of work operations on the pole, remove the bond as follows:

- (a) Put on insulating gloves.
- (b) Remove the clip from the conduit. Remove this clip **FIRST**.
- (c) Remove the other clip from the strand.
- (d) If a spark is observed in removing the bond; notify your supervisor.

3.05 If a shock is experienced as a result of an accidental contact between the ground wire or conduit and telephone cable, strand guy or other grounded objects, descend the pole at once and report the matter to your supervisor immediately.

4. VOLTAGE TESTS AND SAFEGUARDS - POLES WITH STREET LIGHT FIXTURES

4.01 The B Shunting Capacitor is required under certain conditions in testing street light fixtures. In general, areas where it will be required will be known and workmen will be so equipped.

4.02 Where a voltage test is required under conditions of Paragraph 2.04, proceed to test and safeguard the street light fixture as follows:

- (a) Attach B Voltage Tester bag containing test equipment to body belt.
- (b) Put on insulating gloves and climb to a convenient height to make the test. **AVOID CONTACTING THE LIGHT FIXTURE OR ITS WIRING.**
- (c) Attach the insulated clip of the voltage tester to the cable suspension strand, support bracket of urban or rural wires or a bare vertical power ground wire. Push the toothed metal disk firmly against the street light fixture while looking into the open end of the indicator assembly.
- (d) If the indicator glows, immediately remove the probe from contact with the fixture, then remove the insulated clip from its attachment. If a B Shunting Capacitor is not available, descend the pole and notify your supervisor. **AVOID CONTACT WITH FIXTURE OR ITS WIRING.** If a B Shunting Capacitor

is available, make a second test as described in subparagraphs (h), (i), and (j) following.

(e) If the indicator does NOT glow, contact the fixture with the probe again to be sure that good contact has been made. If the indicator still does not glow, place a temporary bond as described in (f) below.

(f) Attach the small clip of the Z Temporary

Bond to the cable suspension strand or the bare power vertical ground wire so as not to be in the way of work operations. DO THIS FIRST. Then attach the other clip of the bond wire to the street light fixture. DO NOT BOND to the support bracket of multiple line wire or the suspension strand of ISOLATED cable.

DO NOT ATTACH TO THE STREET LIGHT WIRES OR TERMINALS TO WHICH THEY ARE ATTACHED. NEVER ATTACH THE

CLIP TO A FIXTURE WHICH CAUSES THE INDICATOR TO GLOW.

(g) The insulating gloves may be removed

ONLY AFTER the temporary bond is in place, and then only if other protection requirements permit. LEAVE THE Z TEMPORARY BOND IN PLACE UNTIL ALL WORK OPERATIONS HAVE BEEN COMPLETED AT THIS POLE FOR THE DAY. If the bond starts smoking, put on insulating gloves and descend the pole immediately. Avoid contact with the bond, the fixture or its wiring. Notify your supervisor.

(h) If a B Shunting Capacitor is available, under the circumstances described in Subparagraph (d) preceding, make a second test as explained in the following paragraphs and Fig. 3.

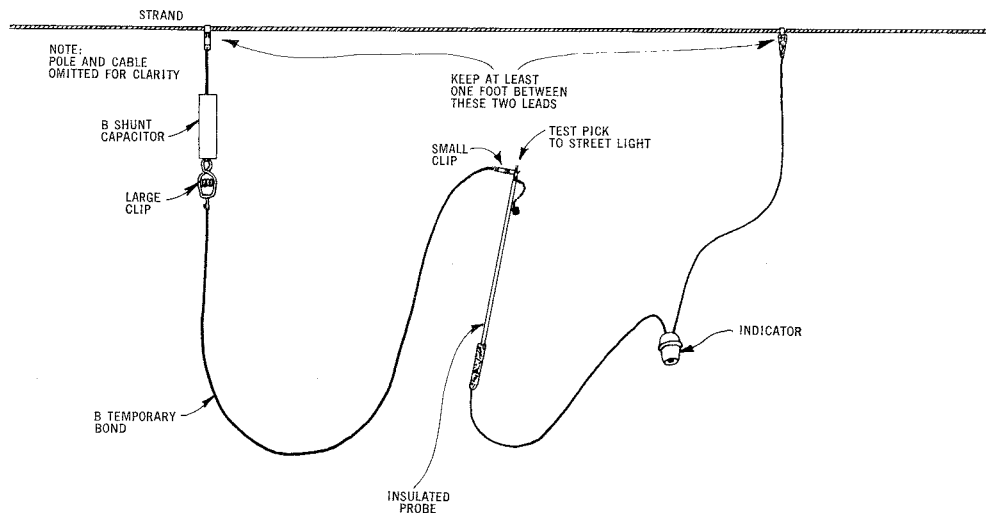


Fig. 3 — B Shunt Capacitor Connection Diagram

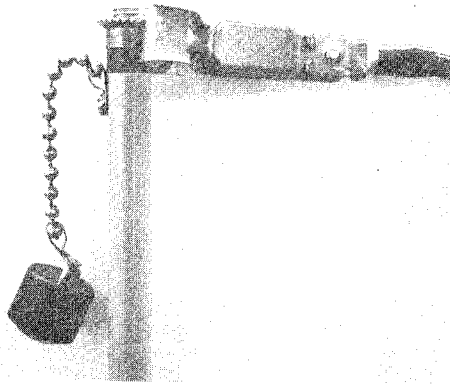


Fig. 4 — Bond Connection to Probe

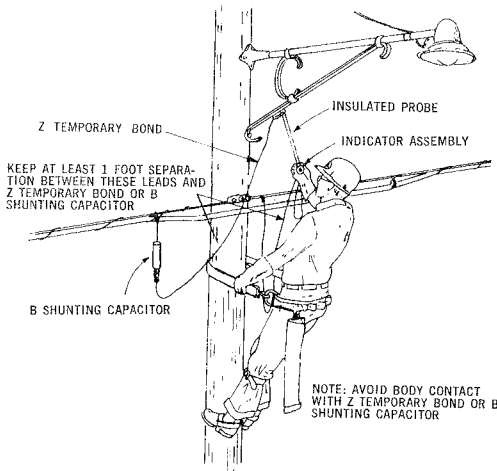


Fig. 5 — Testing Street Light

(1) Attach the clip of the voltage tester and the clip of the shunting capacitor to the cable suspension strand or to the bare power vertical ground wire.

(2) Attach the large clip of the temporary bond to the metal terminal of the capacitor and the other clip to the toothed metal disk of the insulated probe. (See Fig. 4).

(3) MAKE ATTACHMENTS IN (1) AND (2) ABOVE SO THAT AT LEAST 1-FOOT SEPARATION IS MAINTAINED BETWEEN THE LEADS OF THE VOLTAGE TESTER AND THE TEMPORARY BOND OR SHUNTING CAPACITOR.

(4) Touch the toothed metal disk or picks to the street light fixture while looking into the open end of the indicator assembly. (See Fig. 5) AVOID BODY CONTACT WITH TEMPORARY BOND OR CAPACITOR DURING TEST.

(i) IF THE INDICATOR GLOWS, THE FIXTURE IS ENERGIZED. Immediately remove the probe from contact with the fixture, replace testing equipment in the carrying case, descend the pole and notify your supervisor. AVOID CONTACT WITH THE FIXTURE OR ITS WIRING.

(j) If the indicator does not glow, contact the fixture with the probe again to be sure that good contact has been made. If the indicator still does not glow, place a temporary bond as described in Subparagraphs (f) and (g) preceding.

4.03 On completion of work operations on a pole, remove the Z Temporary Bond as follows:

- (a) Put on insulating gloves.
- (b) Remove the clip attached to street light fixture. REMOVE THIS CLIP FIRST.
- (c) Remove the other clip from its attachment. If a spark is noticed on removing the bond, descend the pole immediately and notify your supervisor.