BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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TPT&TCo
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OBSERVATIONS AND TESTS TO BE MADE BEFORE CLIMBING, OR WORKING AT JOINT USE POLES

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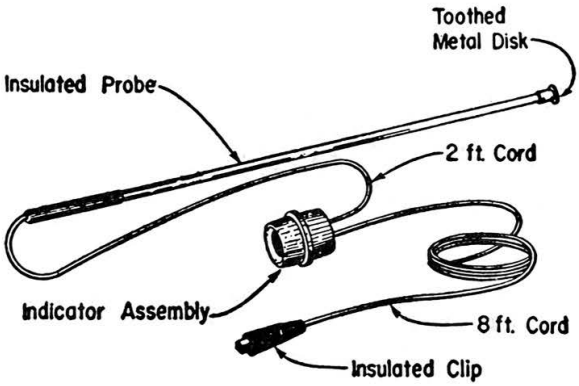
1. GENERAL

1.01 This section covers observations and tests to be made before climbing, or working at joint use poles, including work from platform ladders. The purpose is to protect the workman from electrical shock which might be caused by contact with normally grounded or non-energized equipment or hardware that may be energized.

1.02 These instructions supplement those given in the sections on "Safeguards To Be Taken Before Climbing Poles". Nothing in these instructions shall substitute for careful and complete visual observation for non-standard or hazardous conditions. Particular attention should be paid to clearances from power conductors of all non-energized guys, equipment, and hardware.

2. DESCRIPTION OF B VOLTAGE TESTER AND VOLTAGE PLUG

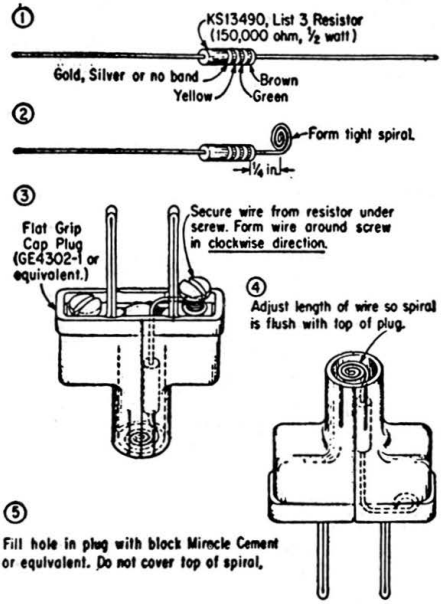
2.01 The B Voltage Tester is designed to detect the presence of voltages from 60 volts to 7600 volts. It consists of an indicator assembly which contains a small neon glow unit and reflector, and a plastic insulated probe equipped with a toothed metal disk on one end for making contact with the object to be tested. The probe is designed to limit the amount of current which can pass through the device. The probe, indicator assembly, and insulated clip are connected by insulated wire as illustrated.



B VOLTAGE TESTER

2.02 At 60 to 70 volts the indicator of the B Voltage Tester glows dimly. Higher voltages will produce a brighter glow. Because the higher voltages can damage the tester if left connected (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.

2.03 The Voltage Plug 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 illustrated, the resistor is connected to only one prong of the plug and this prong must be plugged into the "hot" side of the outlet. Normally the "hot" side may be identified as being the smaller of the two parallel slots in the outlet. (See Part 6 for use.)



VOLTAGE PLUG

3. OBSERVATIONS AND TESTS

3.01 Visually examine the pole for such potential hazards as a power guy, power vertical ground wire, a 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 and no voltage tests need be made.

3.02 In California, all power vertical grounding conductors are required to be covered by molding for their entire length on the pole. DO NOT climb any pole OR ATTEMPT TO MAKE A VOLTAGE TEST where this protective covering is missing, broken, or displaced so as to expose the ground wire at any point from the ground line up to the top of the neutral space. Report any missing or broken ground wire molding observed to your supervisor for correction by the power company.

3.03 Make a voltage test before climbing or working at any pole which has foreign metallic risers, conduits, equipment, and guys which can be tested while standing on the ground.

3.04 Street light fixtures, foreign metallic equipment, and guys which cannot be tested from the ground and which could be contacted during the work operation, shall be tested before reaching the full working position.

4. VOLTAGE TESTS -- FROM THE GROUND

4.01 Where voltage tests are called for by Paragraph 3.03, proceed as follows:

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

(1) A guy rod or the lower end of a sectionalized (insulated) anchor guy. DO NOT attach if a foreign non-sectionalized anchor guy is present on the same rod.

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

(3) A 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, a long bar of solder, etc., and lay the object on the ground or pavement about 5 feet from the pole.

(b) Standing about 3 feet from the pole, grasp the insulated handle end of the probe in one hand and the indicator assembly in the other. Touch the toothed metal disk at the end of the probe to the facility being tested, and promptly look into the open end of the indicator assembly. Under bright light conditions or low fault voltage, the indicator should be held close to the eye and shielded to be sure the glow is seen. Safety glasses should not be removed.

(c) If the indicator glows, the facility being tested is energized. Immediately remove the probe from contact and notify your supervisor. DO NOT CLIMB OR CONTACT POLE IF THE INDICATOR GLOWS.

4.02 If the voltage tester does not glow in making the test as described in Paragraph 4.01, the pole may be climbed in accordance with safe climbing practices. However, care should be taken to avoid contacting foreign equipment and telephone strand, cable or guys at the same time as a small voltage (less than 60 volts) may be present. This precaution is recommended to avoid possible surprise shocks which might, under some circumstances, cause a workman to fall from the pole.

4.03 If a shock is experienced as a result of an accidental contact between foreign equipment and telephone cable, strand, guy, or other grounded object, descend the pole at once and report the matter to your supervisor immediately.

5. VOLTAGE TESTS -- FROM THE POLE

5.01 Where voltage tests are called for by Paragraph 3.04, proceed as follows:

(a) Climb to a position on the pole safely below the facility to be tested and from which the test can be made.

(b) Attach the insulated clip of the voltage tester to one of the following (CAUTION -- DO NOT ALLOW THE INSULATED WIRE OF THE TESTER TO CONTACT THE FACILITY TO BE TESTED)

(1) A telephone cable messenger or any hardware electrically connected to it.

(2) A non-sectionalized anchor guy which has no foreign non-sectionalized guys attached to the same rod.

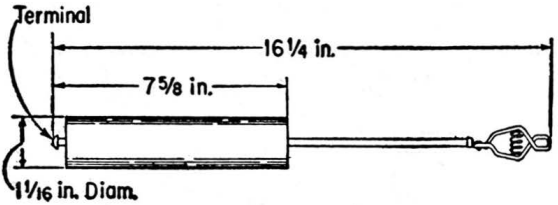
(3) The support wire bracket of multiple urban or rural wire.

(4) A crossarm or guard arm brace.

If none of the above means is available, any suitable insulated wire may be used to extend one of the test grounds listed in Paragraph 4.01.

(c) Complete the test in a manner similar to that outlined in Part 4. If the indicator glows, immediately remove the probe from contact and carefully descend the pole.

5.02 Certain types of street light fixtures may cause the indicator to glow as if the fixture were energized. A second test using a shunting capacitor is necessary to definitely determine if the fixture is safe. Notify your supervisor to obtain this device and consider the fixture "hot" until it is proved otherwise. DO NOT MAKE ANY TESTS NOT COVERED IN THIS PRACTICE.



B SHUNTING CAPACITOR

5.03 The B Shunting Capacitor is used with the B Voltage Tester together with the B Temporary Bond under the conditions described in Paragraph 5.02. Under the direction of a supervisor, proceed as follows:

(a) Take the steps outlined in Paragraph 5.01 to connect the B Voltage Tester.

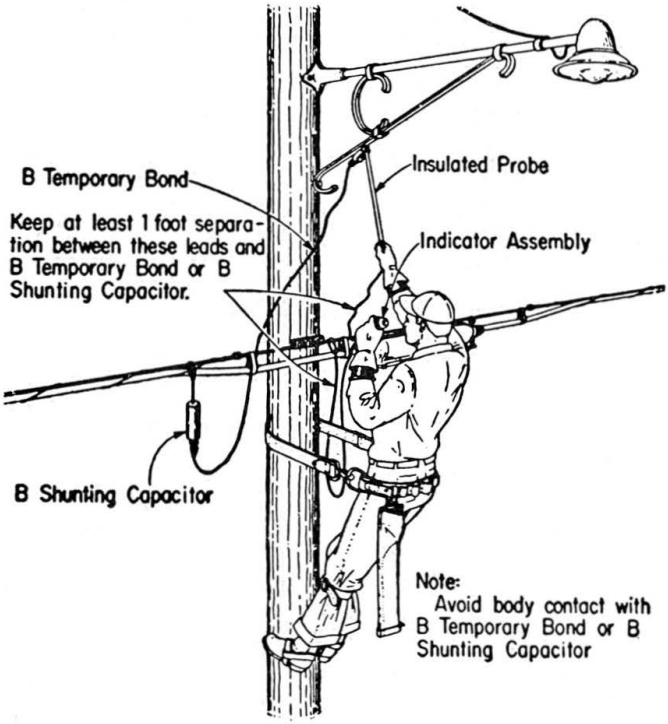
(b) Connect the clip of the B Shunting Capacitor to the same test ground used in (a) above.

(c) Attach the small clip of the temporary bond to the metal terminal of the capacitor and the other clip to the metal cap behind the disk of the insulated probe.

Make attachments in (a), (b), and (c) above so that at least 1-foot separation is maintained between the leads of the voltage tester and the temporary bond or shunting capacitor.

(d) Touch the toothed metal disk to the street light fixture as before, and promptly look into the open end of the indicator. (See sketch) If the indicator glows, immediately remove the probe from contact and carefully descend the pole.

Avoid body contact with temporary bond or capacitor during test.

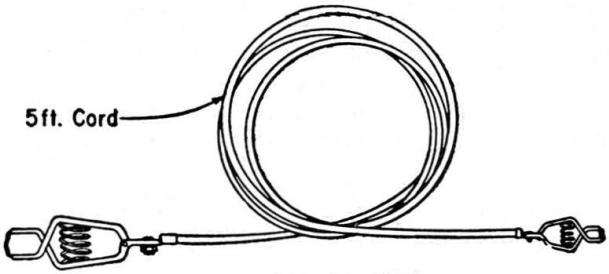


USE OF CAPACITOR

5.04 In those cases where both a telephone cable messenger and a street light fixture which could be contacted during the work operation are present on the same pole, a temporary bond shall be made if the indicator did not glow in the previous test. Proceed as follows:

(a) Put on rubber gloves.

(b) Attach the small clip of the B Temporary Bond to the cable messenger 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 under any circumstances.



B TEMPORARY BOND

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.

(c) The rubber gloves may be removed only after the temporary bond is in place, and then only if other protection requirements permit. Leave the B temporary bond in place until all work operations have been completed at this pole for the day. If the bond starts smoking while working on the pole, put on rubber gloves and descend immediately without touching it, the fixture or its wiring. Notify your supervisor.

(d) On completion of work operations on a pole, remove the B Temporary Bond as follows:

(1) Put on rubber gloves.

(2) Remove the clip attached to the street light fixture. Remove this clip **first.**

(3) Then remove the other clip from its attachment. If a spark is noticed on removing the bond, descend the pole immediately and notify your supervisor.

6. TESTING THE B VOLTAGE TESTER

6.01 The B Voltage tester should be tested weekly to ensure that it is operating satisfactorily as follows:

(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, described in Paragraph 2.03, 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 the floor and attach to one of its clips.

(d) Touch the toothed-metal disk of the probe to the metal spiral of the voltage plug. The indicator should glow faintly.

(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, and 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 shall be disposed of in accordance with the Company's established routine.

7. CARE AND STORAGE

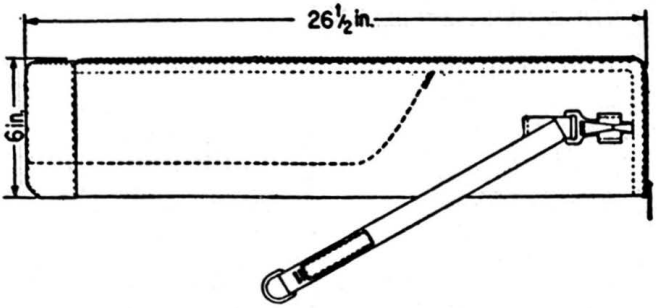
7.01 A canvas carrying case has been provided to store the B Voltage Tester and protect it from damage.

7.02 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.

7.03 Do not alter, tape or spray, the instrument. All of the safety in the use of the B Voltage Tester is in the insulation of the plastic probe. Do not impair the effectiveness of this insulation. Allowable field repairs are covered in another section of the practices.

7.04 Avoid exposing the instrument to excessive heat such as may be encountered near radiators, etc., as the plastic rod may deform under these temperatures.

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



B VOLTAGE TESTER BAG