

TESTER FOR ELECTRIC SERVICE

1. GENERAL

1.01 This section covers a description and the method of using a tool known as an Electric Service Tester by a teletypewriter repairman. The tester is designed for use in testing electric services up to 550 volts and will enable the user to make the following tests.

- (a) To determine if service is connected to a source of power (Paragraph 3.01).
- (b) Distinguish between a-c and d-c services (Paragraph 3.01).
- (c) Determine the polarity of conductors of d-c services (Paragraph 3.01).
- (d) Identify the neutral (grounded) and live (ungrounded) wires of electric services (Paragraph 3.02).
- (e) Distinguish between 110 volts and materially higher voltage services (Paragraph 3.03).
- (f) Distinguish between 25-cycle and other frequencies (Paragraph 3.04).
- (g) Identify fuses that are blown (Paragraph 3.05).

1.02 This section is reissued to show a different type of tester since the Ideal is no longer available. ↗

1.03 To assure connecting to a proper circuit and to eliminate an accident hazard that is created when the grounded side of a circuit is not connected to the proper terminal in the teletypewriter when required, tests should be made to insure the proper connection of the wires. Due to wiring errors in portions of electric circuits outside of our control, it is not sufficient to depend, without testing, on the white wire being the grounded side and the black wire being the ungrounded side as they are intended to be.

1.04 Because the tester is used in live electric circuits, persons making the tests should exercise care while using the tool to avoid coming in direct contact with electric power of the circuit.

2. DESCRIPTION

2.01 A sketch of the tester is shown in Fig. 1. The tester consists of a molded plastic body containing a small neon lamp. The electrodes from the lamp extend four inches from the plastic body and end in testing tips. The test points are protected by a heavy rubber tubing to be grasped as a handle when testing. The entire tool is about six inches long including the leads and test points.



Fig. 1

3. TESTING

3.01 To determine whether a service is a-c or d-c, touch the test leads to the two test wires. If both the electrodes glow, the service is a-c. If only one electrode glows, the service is d-c, and the glowing electrode is connected to negative side of the circuit. If no glow is obtained, the service is not connected to the source of power, a fuse is blown or a switch is open.

3.02 To determine whether the service has a grounded connection, hold one test point in contact with a locally grounded part (outlet box, conduit, cover screw) and touch the other test point to each side of the service in turn. If the lamp glows when one side is touched and does not glow when the other side is touched the latter side is grounded.

3.03 To determine whether a service is of a voltage materially higher than 110 volts, test across the service connection with the tester and observe the brightness of the glow. If the glow is noticeably brighter than that which is obtained when testing across the usual 110-volt lighting circuit, the service is higher than 110 volts. An inquiry should be made to verify the voltage.

3.04 If the tester is connected across 25-cycle services the flicker will be perceptible, but this is not true if it is connected across 50 or 60-cycle services.

3.05 To determine whether or not fuses are blown or defective, test first across the service connectors to be sure power is available and then across the local circuit conductors. If the tester glows when testing service conductors and does not glow when testing local service conductors one or both fuses are blown or defective. To locate a defective fuse, test from the local circuit side of the suspected fuse to the service side of the other fuse. If the tester glows the fuse being tested is not defective. An alternate method which may be used when it is known that the load is connected across the local circuit (lamp or motor) is to test across the terminals of the circuit fuse or fustat. If the tester glows the fuse is defective.

3.06 **Caution: High resistance grounds may cause misleading indications.**