

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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101- AND 105-TYPE TEST SETS

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1. GENERAL

1.01 This section describes the 101- and 105-type Test Sets used in locating low-resistance faults in nonloaded cable by the exploring coil method.

1.02 The section has been revised to advise of the 105C[†] and 105D Test Sets which supersede the 105A and 105B sets, respectively.

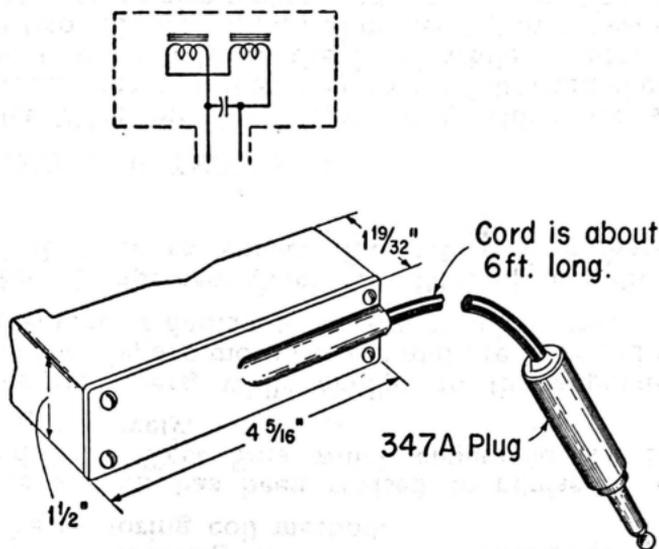
1.03 The new sets, while similar to the superseded sets electrically, are more rugged and are designed to permit easy replacement of damaged parts at repair shops. ↙

1.04 **The 105-type sets should be returned annually for electrical tests to ensure the sets will withstand high voltage.**

2. 101A AND 101B TEST SETS

2.01 The 101A and 101B Test Sets, which are similar in appearance, are illustrated in the following sketch. They are intended to be held in the hand while in use. Each set consists of two balanced windings connected in series, as shown, to minimize power noise pickup and a small capacitor to bypass radio interference. The windings and capacitor (exploring unit) are cast in a small resin block approximately 4-5/16 inches long, 1-1/2 inches wide and 1-19/32 inches high. The resin

block gives mechanical and moisture protection to the windings and provides the unit with high dielectric strength.

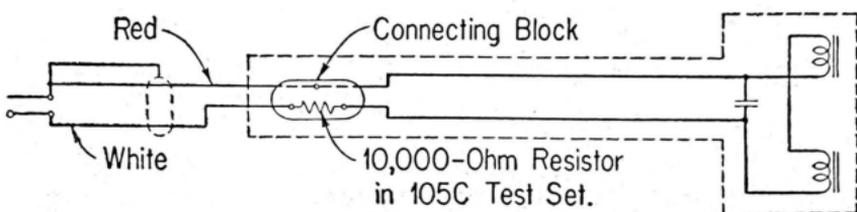
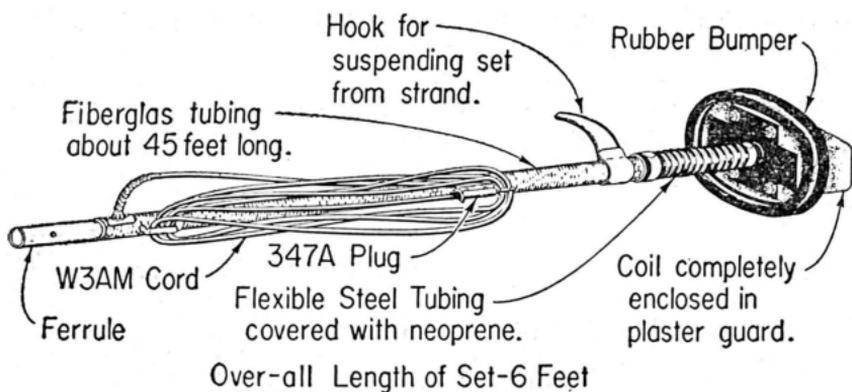


2.02 The 101A set, which is intended for use with the 107A Amplifier, has a high-impedance winding and an .03 mf capacitor. The 101B set, which is intended for use with the 147-type Amplifier or a receiver having about 300 ohms resistance, has a low-impedance winding and an .01 mf capacitor.

2.03 The face of the coil has V-shaped grooves which aid in positioning the coil on the cable. Each set is equipped with a six-foot two-conductor neoprene jacketed cord. The cord enters the back of the block and is anchored inside. The entrance is covered with a plate to minimize flexing of the cord at that point. The free end of the cord terminates in a 347A Plug. Each set weighs about 8 ounces.

3. 105C AND 105D TEST SETS

3.01 These sets, which supersede the 105A and 105B sets, respectively, are similar in appearance and are illustrated in the following sketch. Each set consists of an exploring unit, similar to that in the 101-type set, mounted at the end of a Fiberglas tube and equipped with a 22-foot neoprene jacketed cord, coded W3AM Cord. The set, in turn, can be connected to tree pruner handle extensions to permit operation of the set from the ground in locating faults in aerial, house and block cables. Each set weighs about 4-1/2 pounds.



3.02 The 105C set has a high-impedance winding and is intended for use with the 107A Amplifier. The 105D set has a low-impedance winding and is intended for use with the 147-type Amplifier.

3.03 The coils in the 105C and D sets are enclosed in a tough plastic. The rim of the guard is equipped with a rubber bumper. The guard has V notches to facilitate positioning the coil on a cable in order to neutralize sheath currents. The section of flexible steel tubing between the coil and handle provides means for adjusting the angle of the coil with respect to the handle. This feature facilitates using a set in locating faults in house and block cables. The flexible steel tubing is covered with neoprene hose for additional dielectric strength. The W3AM Cord is shielded to minimize electrostatic pickup of noise from power lines. The cord, where it emerges from the handle, is equipped with a tapered flexible bushing to minimize damage to the cord at this point. About three feet of the cord at the bushing is equipped with vinyl tubing for additional dielectric strength. In the 105C set, a 10,000-ohm resistor is connected on the ungrounded side of the line to attenuate radio frequency interference. The resistor is located inside the handle near the strain relief bushing.

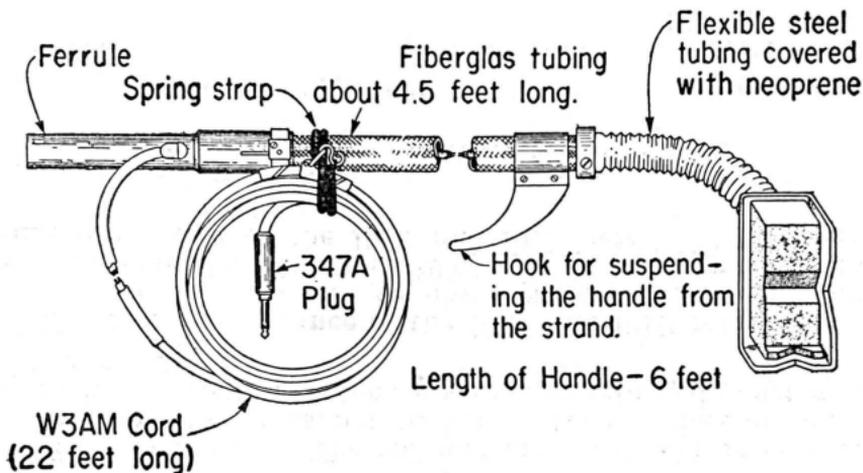
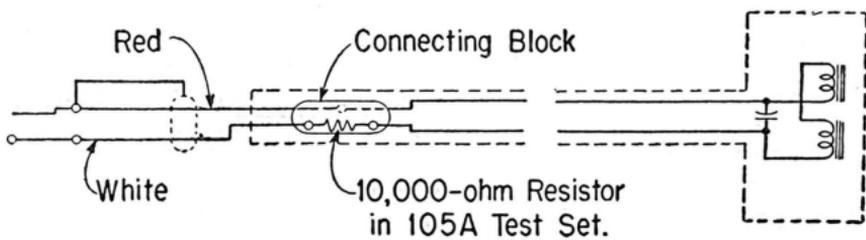
3.04 The rod is equipped with a pair of cleats for storing the cord. The lower cleat provides a permanent hook for holding one end of the stored wire. The upper cleat accommodates the plug which, when in place, provides an adequate projection for storing the other end of the stored wire. This arrangement preserves the high dielectric strength of the set over the entire length of the Fiberglas rod by preventing storage of any part of the wire while the set is in use.

3.05 The upper end of the handle is equipped with a hook for suspending the handle from the strand. The lower end of the handle is equipped with an aluminum ferrule for connecting the set to a tree pruner handle extension section.

4. 105A AND 105B TEST SETS

4.01 These superseded sets are illustrated in the following sketch. The 105A and B sets are comparable to the 105C and D sets from an electrical standpoint. They differ mechanically in the following respects:

- (1) The coil is mounted on a platform made of glass fabric impregnated with plastic resin which encloses two sides of the coil. Each side of the platform has a V notch for positioning the coil on a cable. The platform is yellow so that it can readily be seen from the ground.
- (2) The rod at the point where the cord emerges is equipped with a rigid strain relief bushing.
- (3) The cord is equipped with a spring strap for securing the coiled cord on the handle.

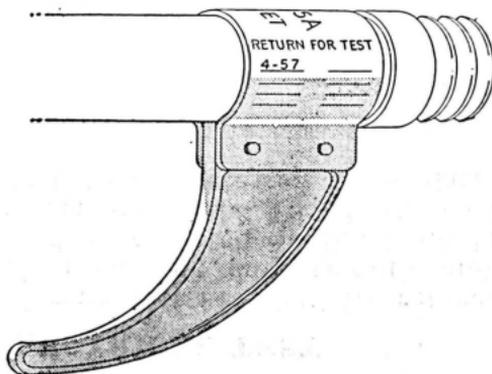


5. OPERATION

5.01 The exploring unit should be placed lengthwise against the cable in running down short circuits and crosswise to the cable in locating crosses and grounds.

6. ANNUAL ELECTRICAL TEST

6.01 Each 105-type test set shall be returned annually for electrical tests. The date (month and year) the set should be returned is indicated on the hook band underneath the marking "Return for Test." This is shown in the following sketch. Each time the set is retested, a new date will be stamped on the band.



7. MAINTENANCE

7.01 **101-type Set:** No field maintenance of the 101-type set is required. The cord is not replaceable. Reasonable care should be exercised in handling the set to avoid damaging the cord.

7.02 **105-type Set:** The coil and handle should be kept clean and dry so as not to impair their dielectric strength. If repairs are necessary, the set should be returned in accordance with local routine.

7.03 The dc resistance of the 101A and 101B sets is approximately 4,000 and 40 ohms each, respectively. The dc resistance of the 105A and 105C sets is approximately 14,000 ohms each; that of the 105B and 105D sets is 40 ohms each.