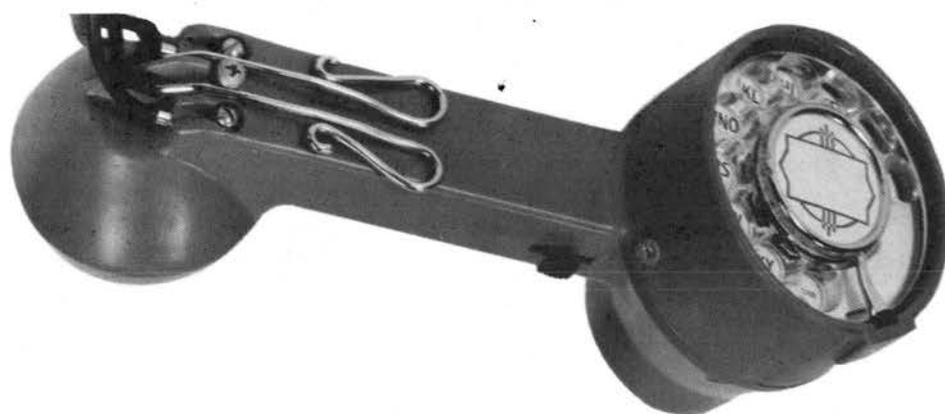


Type 800 Hand Test Telephone 100-930

Type 800 Hand Test Telephone



Technical
bulletin 100-930

AUTOMATIC ELECTRIC



Subsidiary of

GENERAL TELEPHONE & ELECTRONICS



Factory, development laboratories, and general office at Northlake, Illinois, U.S.A.

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TYPE 800 HAND TEST TELEPHONE

1. INTRODUCTION

The Type 800 Hand Test Telephone (figure 1) is a dial equipped handset designed for use by installers and central office maintenance personnel. The hand test telephone can be used to perform dialing, talking, monitoring, and line polarity tests. A test switch located in the handgrip is used to condition the telephone for the various tests. The hand test telephone can be connected to an equipment shelf in the central office permitting the maintenance personnel to observe the operation of the equipment under test. Entry and withdrawal from a subscriber's line can be accomplished without any disturbing clicks.

The hand test telephone can be equipped with one of several connecting cords which enable it to be connected to a line outside the central office, a test jack at the switching equipment in the central office, or to a switchboard jack.

2. PHYSICAL DATA AND EQUIPMENT

2.1 Physical Data

The housing of the hand test telephone is made of red plastic (acetal resin) and measures 9-15/16" long and 3" wide at the widest part, which is the dial shell. The dial and receiver are located on opposite sides at one end of the housing. The transmitter is located at the other end of the housing.

The hand test telephone is supplied with a belt hook. The hand test telephone can also be mounted on a frame with an optional main frame mounting plate.

2.2 Test Equipment

The Type 800 Hand Test Telephone is equipped with a standard Type 51A dial. The dial is adjusted to an operating speed of 8 to 12 pulses per second. The per cent break of the impulse springs is 58 1/2 to 61 1/2 per cent.

2.2.1 C/R switch.

The C/R switch is located in the handgrip of the hand test telephone. With the C/R switch in the neutral position the hand test telephone is in the same condition as a telephone with the handset off-hook.

When the C/R switch is operated to the C position (figure 2), the inductor circuit of the hand test telephone is opened, leaving only the receiver and a .47-mf capacitor in the circuit. The C/R switch is operated to the C position when connecting the hand test telephone to a line or switching equipment, or when monitoring a line. Operating the switch to the C position will also release the central office switching equipment between successive calls.

When the C/R switch is operated to the R position (figure 3) a 1500-ohm resistance is added in the dialing and talking circuit to simulate a long or high resistance subscriber loop.

2.2.2 Test cords.

The Type 800 Hand Test Telephone can be provided with the test cords listed in Table 1. The various plugs and clips attached to the test cords are shown in figure 4.

3. THEORY OF OPERATION

With the C/R switch in the neutral position line current entering the hand test telephone at terminal 1 (figure 5 schematic), flows through the dial impulse springs, through the transmitter to terminal 3. From terminal 3 the AC and DC components of the line current flow through different paths. The DC component flows through the 95-ohm inductive winding through terminal 5 and test switch to line terminal 2 forming a DC loop. The AC component (voice currents) cannot follow the same path as the DC because it is impeded by the 95-ohm inductive winding so its path is through the receiver, .47-mf capacitor, to terminal 4, through the C/R switch to terminal 2. The DC current cannot follow the path of the voice currents because it is blocked by the .47-mf capacitor.

The C/R switch must be in the neutral position (except to simulate a high resistance subscriber loop) when using the hand test telephone dial. DC line current flows through the impulse springs of the dial, through the dial shunt springs which are closed when dial is operated, through terminal 4, C/R switch, to terminal 2. During dialing operation, the receiver and .47-mf capacitor are shunted out of the circuit.

With the C/R switch in "C" position the DC loop is open. Voice current will follow the



Figure 1. Type 800 Hand Test Telephone.

same path as when the C/R switch is in the neutral position. The hand test telephone user can monitor the line with the C/R switch in this position, but can not talk to parties on the line. The C/R switch should be in this position when connecting the line clips to a subscribers line. Interference with subscribers dialing or disturbing clicks will not occur because the DC loop is open.

When the C/R switch is in the "R" position, the line currents will follow the same paths as when the C/R switch was in neutral or "C" position with the exception that they will now flow through the 1500-ohm resistor before flowing through line terminal 2. The 1500-ohm resistor is placed in series with the line currents, thus simulating a long (high resistance) subscriber loop. Operating the C/R switch to the R position facilitates checking central office switching equipment such as Strowger - switch pulsing relays, by stepping devices while simulating a high-resistance subscriber loop.

4. METHOD OF OPERATION

Use the following procedures to connect the hand test telephone to the equipment to be tested.

4.1 Monitoring and Dialing on a Line

- a. Operate the C/R switch to the C position.
- b. Connect the test clips to the line being tested and ascertain that the line is idle or busy. If busy, withdraw from the line.
- c. If dialing operation is to follow, return the C/R switch to the neutral position before dialing.

4.2 Testing Central Office Switching Equipment

- a. Ensure the switch is idle.
- b. Busy out the switch by operating the busy key on the switch and insert test plug into the switch test jack.
- c. To pulse or step the equipment under test using the dial, the C/R switch should be in the neutral position unless simulating a high resistance loop.
- d. To simulate a high resistance loop operate the C/R switch to the R position.

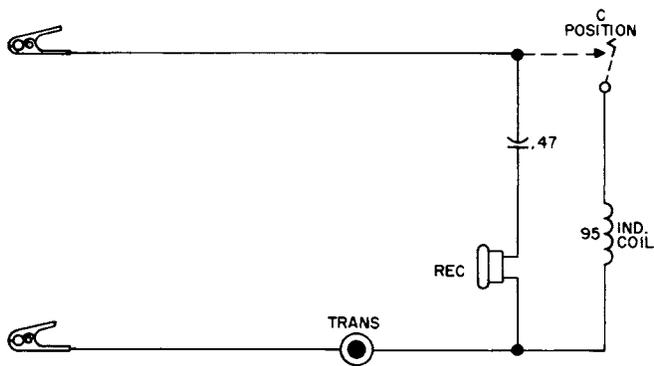


Figure 2. C/R switch operated to C position.

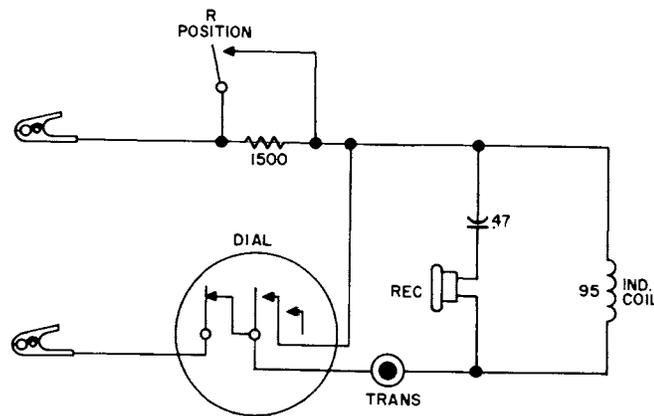


Figure 3. C/R switch operated to R position.

- e. To release the switching equipment between successive tests operate the C/R switch to the C position.
- f. At completion of testing, remove the test plug and return the switch to normal by restoring its busy key.

4.3 Line Polarity Tests

Polarity of the line wires must be identified at divided ringing party line stations, at pay-stations and at station installations in a SATT system.

- a. If the line under test is a party line, monitor (paragraph 4.1) before identifying the polarity of the leads.
- b. With the C/R switch in the neutral position connect one clip to a known ground as shown in figure 6.

- c. Touch the other clip to first one line lead and then the other. The lead giving the louder click in the receiver of the hand test telephone and possibly returning dial tone is the “-” lead or the ring side of the line.

5. ORDERING INFORMATION

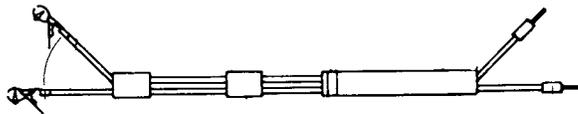
Type 800 Hand Test Telephone (no cords)-
L-9066

Main Frame Mounting Plate (if required)-
D-780869-A

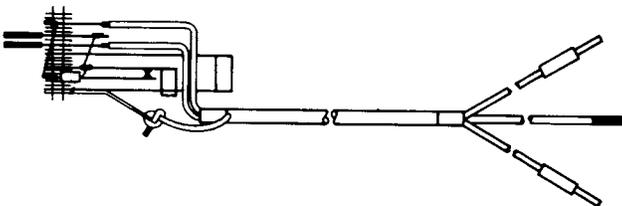
Cord and Plug Assemblies-
See Table 1

Table 1: Test Cords

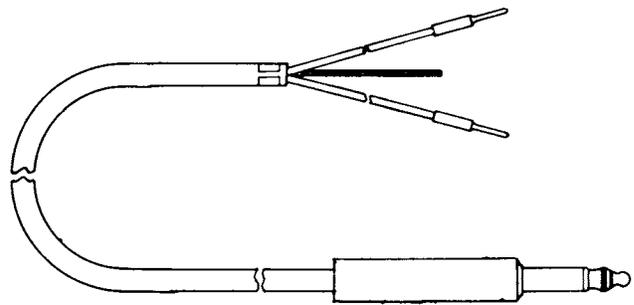
Test Cord Number	Description
D-542349-A	Equipped with switchboard-type plug and 4' cord.
D-543395-A	Equipped with test clips and 4' cord.
D-543392-A	Equipped with 2-prong test plug with push-button break combination and 100K resistance for interference suppression on DATA transmission and a 3' cord.



D-543395-A



D-543392-A



D-542349-A

Figure 4. Test cord assemblies.

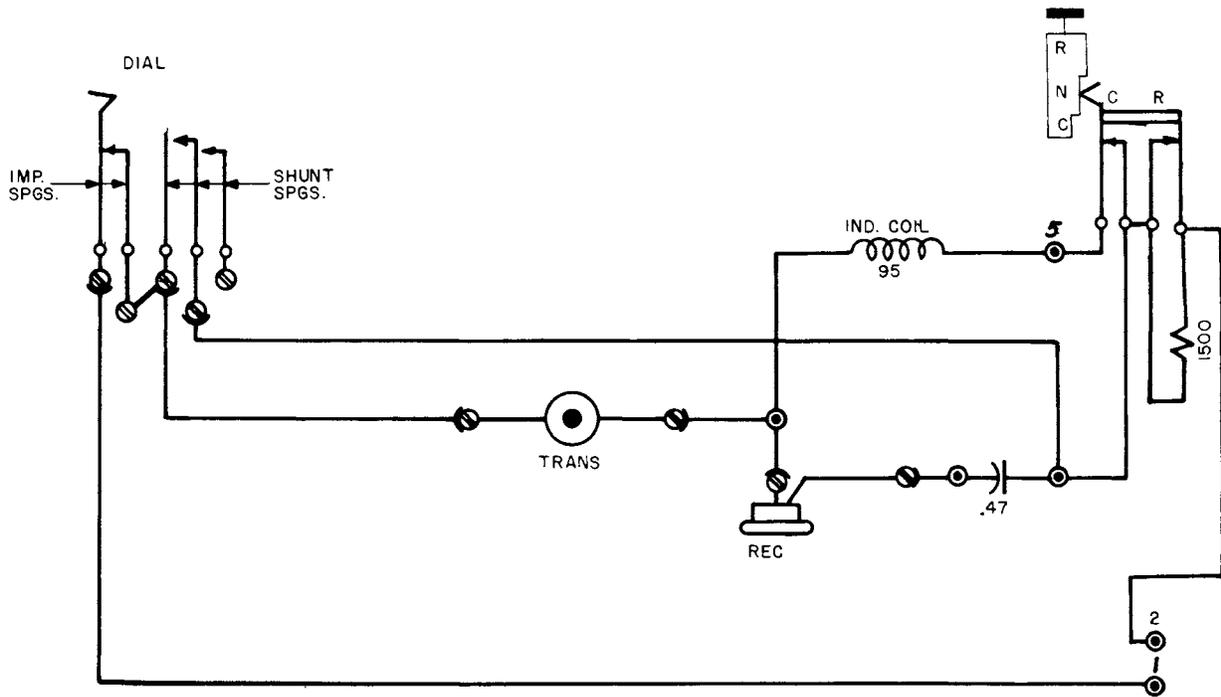
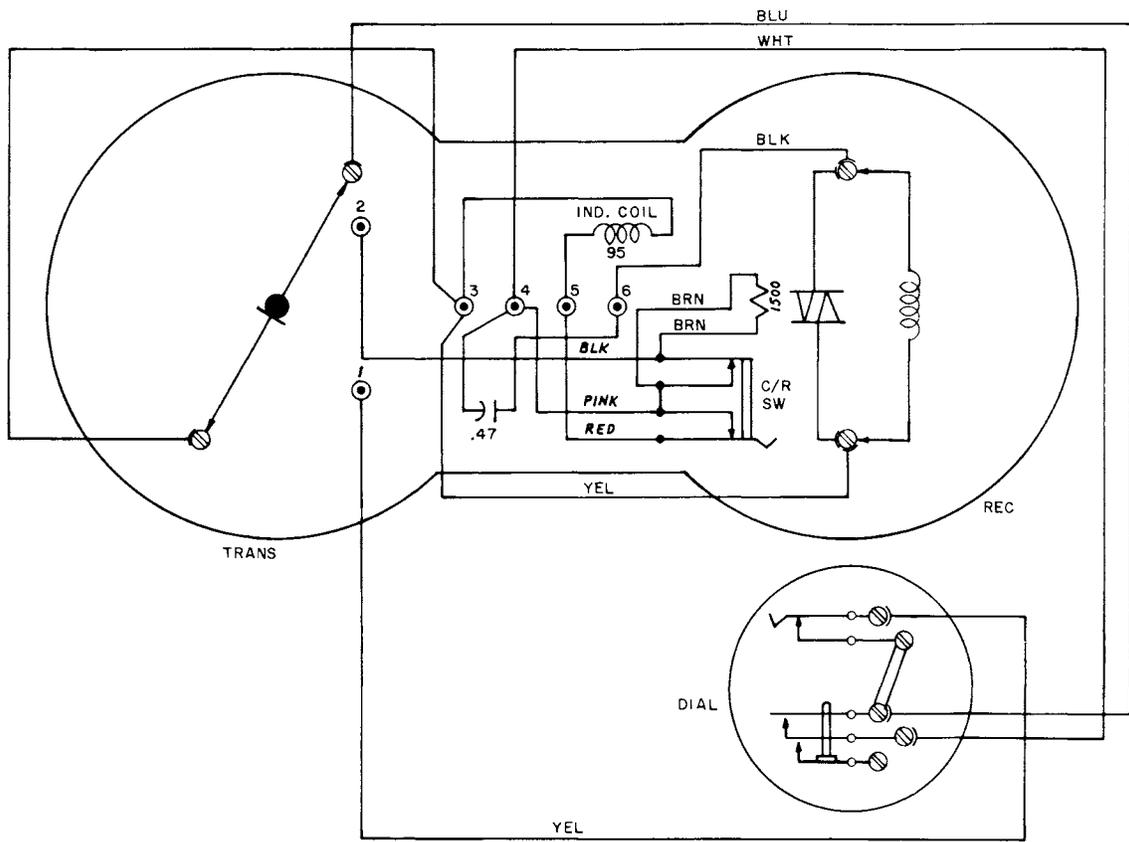


Figure 5. Type 800 Hand Test Telephone wiring and schematic diagram.

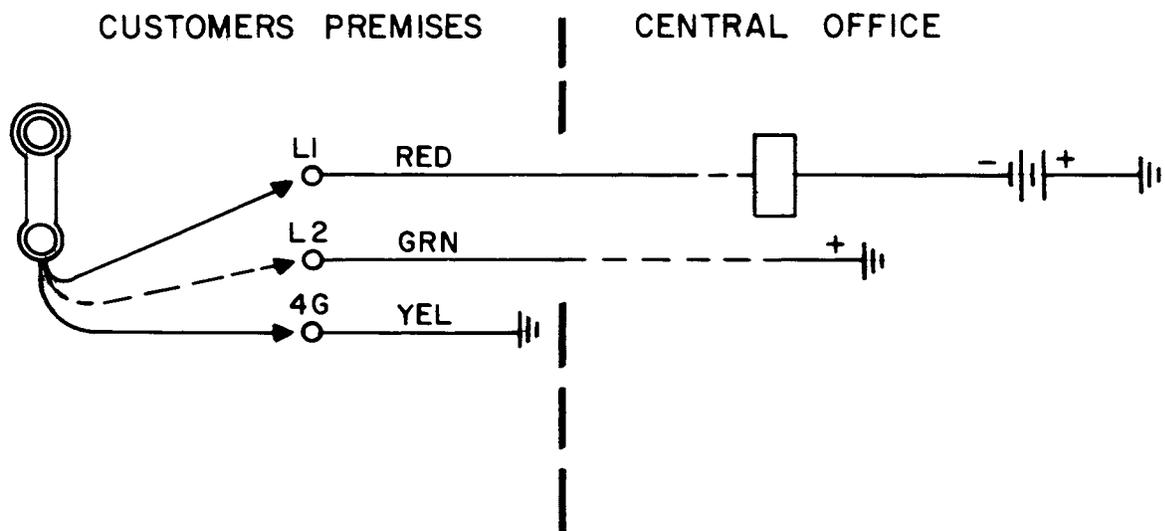


Figure 6. Connection for line polarity test.

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