

TYPE 80E TELEPHONE SET  
ROTARY DIAL VERSION

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1. GENERAL

1.01 This section provides description, installation, and field maintenance information for the Type 80E telephones (HC 802, HF 802, HF 808 Series) and for the Type 80EK telephones (HC 819 and HF 819 Series) equipped with a rotary dial. The Type 80E and 80EK telephones are also available equipped with a Touch Calling Unit (TCU). For additional information on the TCU version, refer to Section 473-215-203 of GTE Practices.

1.02 The HC 802, HF 802, and HF 808 telephones are Type 80E telephones designed for standard usage. HC 819 and HF 819 Series (Type 80EK)

telephones are Type 80E telephones designed for key system usage. The HC 819 and HF 819 Series telephones differ from the HC 802, HF 802, and HF 808 Series telephones in certain wiring details and in the type of line cord used (paragraph 2.02). Refer to part 6 for information on conversion of Type 80E telephones to Type 80EK telephones.

1.03 This section is reissued to include additional maintenance and modification information. Due to the extensive changes involved, change indicators are omitted. Remove the previous issue of this section from the binder or microfiche file and replace it with this issue.

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2. DESCRIPTION

2.01 The Type 80E telephone (Figures 1 and 2) is approximately 9-1/4 inches long, 8-1/2 inches wide, and 5 inches high with the handset in the cradle. The housing and handset are available in black, basic white, sand beige, autumn gold, espresso brown, and antique white. A clear plastic faceplate and a color-coordinated facemat are provided with each telephone. The current version telephone is provided with a plastic baseplate. Refer to Section 473-215-201 for information on the previous version telephone equipped with a metal baseplate.

2.02 The Type 80E telephone is equipped with a 7-foot-long, retractile handset cord and a flat, transparent, aluminum line cord having miniature plug ends. Refer to Table 1 for additional line cord information pertaining to each telephone series.

2.03 The Type 80E telephone is equipped with either a Type 45 frequency ringer or a Type 48 straight-line ringer. If an external ringer is required, refer to Section 473-810-201 for installation procedures.

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2.04 The rotary dial version of the telephone offers four dial choices; a regular Type 52 dial, a SATT A dial, a SATT B dial, and a dial blank. A clear plastic faceplate, and either a standard-colored facemat with standard lettering and 1 to 0 numbering, or a clear facemat with dial nomenclature and a customer-supplied decorator matting, can be used. Five standard facemats are available, one for each of the five available housing colors. Also available are eight optional-colored facemats and two clear facemats. (Refer to part 6 for dial-less conversion information.)

2.05 The transmission network (part No. HB-1008-A) is standard for all rotary dial Type 80E and 80EK telephones. This transmission network has quick-connect terminals for fast connection and disconnection of electrical components. The hook-switch assembly is an integral part of the transmission network.

### 3. PREINSTALLATION

3.01 In locating the telephone, be guided by the customer's wishes if installation requirements permit. If the customer's wishes cannot be followed, explain the reason to the customer. Be careful to ensure that the location provides adequate ringer sound intensity throughout the area to be served.

### 4. INSTALLATION

#### Location

4.01 Set the telephone on a table or desk as specified by the customer. Mount the terminal block or miniature jack in an inconspicuous location on a wall or desk within 5 feet of the telephone to allow connection of the line cord. Check the polarity of the line wires before making any electrical connections. When a miniature-plug-ended line cord is used, simply insert the miniature plug into the jack. The FCC-approved miniature jacks and line cords are listed in Table 1.

NOTE: When a spade-ended line cord is used, exercise caution when inserting the spade-ended leads into their receptacles. The receptacles are manufactured for spade tips of 0.016-inch thickness.

#### Electrical Connections

4.02 Line polarity is important at divided-ringing party-line stations and in SATT systems. Connection instructions in this section assume that interior wires between the protector (or PBX switchboard, etc) and the telephone on the customer's premises are identified by the following standard tracers:

- (a) RED - negative (ring).
- (b) GRN - positive (tip).
- (c) YEL - ground.

4.03 To determine polarity of the line conductors when a ground wire is readily available, use a Type 801 Hand Test Telephone or equivalent. Clip one lead of the hand test telephone to the ground wire and listen for a click while touching the other clip to each line wire. The louder click, followed

sometimes by dial tone, indicates the negative side of the line (ring). The positive side of the line (tip) usually will not sound completely dead but will give a weaker click due to the earth potential difference.

4.04 Connect the telephone line cord and interior wires after the line polarity is determined. On earlier versions of the telephone, two of the line cord spades are color-dip coded (red and green) and were provided with color-coded insulation.

4.05 The telephone is wired for bridged ringing and can be installed without any internal wiring changes. If the internal wiring must be modified for a particular wiring scheme, refer to Tables 2 and 3 and Figures 3 through 6.

### 5. FIELD MAINTENANCE

5.01 Maintenance is normally limited to the cleaning and replacing of components. Components that are normally replaceable on the customer's premises are the rotary dial, ringer, handset, and line cord. The components in the handset are also replaced on the customer's premises. The following paragraphs provide procedures for replacing components. Refer to Figure 2 to identify parts. Refer to Figures 3 through 6 for wiring and schematic diagrams.

NOTE: When inserting the spade-terminated leads into the quick-connect terminals, use terminal insertion tool 588908 (Figure 7). If the quick-connect terminals on the transmission network have opened up either accidentally or by previous use of two connections, a receptacle adjusting tool, CT-900514SP (Figure 8) must be used to adjust the receptacle size. To resize this quick-connect terminal, insert the fingers of the adjusting tool into the terminal until the fingers contact the terminal network card. Squeeze the handles together firmly but do not twist the tool.

CAUTION: Properly dressed wires should not contact the hookswitch actuator, hookswitch actuator spring, or dial pileup springs and should not contact any other wire and terminal assembly (Figure 9). Wire terminals should not be bent. Incorrectly dressed wires could cause binding of the actuator or malfunction of the telephone.

5.02 If the telephone is no longer usable, replace the telephone.

NOTE: Adjustment of the hookswitch should be limited to shop adjustment and is not recommended for adjustment in the field.

#### Faceplate and Facemat Removal

5.03 To remove the rotary dial faceplate and/or facemat, proceed in the following sequence:

- (a) Using a 3/32-inch blade screwdriver, push the arm of the faceplate-holding clip upward.
- (b) Lift the faceplate out at the top and remove it from the housing.
- (c) Remove the facemat.

Housing Removal

CAUTION: For telephones manufactured prior to September 1980, when the housing is removed, caution should be exercised not to overtravel the hookswitch actuator. Overtravel could cause permanent damage.

5.04 To remove a housing equipped with a front tab and one lock-up screw, proceed as follows:

- (a) Remove the faceplate and facemat.
- (b) Loosen the rear lock-up screw (POZ-I-DRIVE® required).
- (c) Lift the rear of the housing to an angle of approximately 25 or 30 degrees (about 2 inches). (See Figure 10.)
- (d) Rotate the housing clockwise, dropping the right front corner and raising the left front corner.
- (e) Continue rotating the housing while pulling it forward and off the telephone(s).

5.05 To remove the housing equipped with two lock-up screws, proceed as follows:

- (a) Loosen the two lock-up screws.
- (b) Lift the housing.

Rotary Dial Assembly Replacement

5.06 To replace the rotary dial assembly, proceed in the following sequence:

- (a) Remove the faceplate, facemat, and housing.
- (b) Disengage the shock absorbers from their mounting posts.
- (c) Disconnect the dial leads from the transmission unit.
- (d) Remove the two dial mounting bracket screws and remove the dial assembly from the bracket.
- (e) Attach the new dial assembly to the U-shaped mounting bracket with the two mounting bracket screws.
- (f) Connect the dial leads to their respective terminals.
- (g) Snap the shock absorbers (with the dial attached) in place over the mounting posts.
- (h) Twist the dial wires with the ringer and line cord jack assembly wires.
- (i) Position the wires over the terminals on the transmission network card at the lower left front of the rotary dial. Fold the ringer capacitor over the rotary dial, ringer, and line cord jack assembly wires to hold them in place. (Refer to Figure 9.)
- (j) Replace the housing, facemat, and faceplate.

Miniature Jack Replacement

5.07 To replace the miniature jack assembly from the telephone, proceed as follows:

- (a) Unplug the line cord from the miniature jack.
- (b) Remove the faceplate, facemat, and housing.
- (c) Disengage the dial assembly and shock absorbers from the baseplate assembly.

- (d) Disconnect the miniature jack assembly leads from the transmission network.
- (e) Loosen the ringer mounting screws enough to allow removal of jack assembly leads.
- (f) Place the new miniature jack into position with the leads routed under the ringer (Figure 9.)
- (g) Retighten the ringer mounting screws.
- (h) Route the jack assembly leads around the outside of the dial shock absorber post and between the two large capacitors on the transmission network card as shown in Figure 9.
- (i) Connect the jack assembly leads.
- (j) Replace the dial assembly, housing, facemat, and faceplate.

Line Cord Replacement

5.08 To replace the spade-ended line cord, perform the following procedures in sequential order and refer to Tables 2 and 3, and Figures 3 through 6, as appropriate, for wiring information.

CAUTION: When removing the line cord, the plug should be removed from the wall connection first to prevent the possibility of an electric shock. The line cord should be plugged into the telephone base before it is plugged into the wall receptacle to avoid the possibility of an electric shock.

- (a) Open the connecting block and disconnect the line cord conductors from their respective terminals.
- (b) Disengage the dial or TCU assembly and shock absorbers from the baseplate assembly.
- (c) Disconnect the line cord leads from the transmission network terminals.
- (d) Disengage the line cord from the strain reliefs in the baseplate.
- (e) Pass the end of the new cord through the opening in the baseplate and engage the line cord into its mounting post. Route the cord down the side of the baseplate on the outside of the shock absorber mounting post. For TCU telephones, the wires should be routed around the front of the large capacitor on the transmission network card. For rotary dial telephones, the wires should be routed between the two large capacitors on the transmission network card (Figure 9).
- (f) Connect the line cord leads to the transmission network.
- (g) Replace the rotary dial or TCU assembly and shock absorbers on the mounting posts on the baseplate assembly and dress the leads clear of the hookswitch actuator and spring.
- (h) For spade-ended line cords, connect the line cord conductor leads to their respective terminals on the terminal blocks.
- (i) Replace the housing, facemat, and faceplate.

NOTE: If converting from a spade-ended to a miniature-plug-ended line cord, the terminal block must be replaced with a miniature jack. (Refer to part 6.)

5.09 To replace the line cord provided with a miniature plug on each end, refer to the precautionary note in paragraph 5.08 and proceed as follows:

- (a) Depress the locking tab of the miniature plug and pull to disengage the plug from the miniature wall jack.
- (b) Repeat (a) for the other end of the line cord which is connected to the miniature jack in the telephone base.
- (c) Replace the line cord.
- (d) Insert the miniature plug into the miniature jack (in the telephone base) until the locking tab clicks.
- (e) Repeat (d) for the other miniature plug into the miniature wall jack.

NOTE: To replace the line cord having a miniature plug on one end and spade-ended wires on the other end, follow instructions in paragraph 5.08 and those in this paragraph.

#### Handset Replacement

5.10 To replace the Type 811 handset, refer to Figure 9 and proceed as follows:

- (a) Remove the faceplate, facemat, and housing.
- (b) Remove the rotary dial assembly and its shock absorbers from the baseplate assembly.
- (c) Loosen the ringer mounting screws enough to allow removal of the handset cord.
- (d) Disconnect the handset leads from the transmission network.
- (e) Disengage the handset cord from the strain reliefs and the J-hook clamp from the telephone baseplate.
- (f) Insert the new handset cord through the U-shaped slot in the side of the baseplate and route the handset cord under the mounting tab and between the two round mounting bosses.
- (g) Connect the handset cord J-hook clamp in place.
- (h) Route the handset cord on the outside of the shock absorber mounting post.
- (i) Connect the handset cord leads to the proper transmission network terminals.
- (j) Replace the rotary dial assembly and shock absorbers on the mounting posts of the baseplate assembly.
- (k) Dress the ringer and rotary dial leads over the terminals on the transmission network card. Fold the ringer capacitor over the wires to hold them in place.
- (l) Replace the housing, facemat, and faceplate.

#### Handset Cord Replacement

5.11 To replace the handset cord, proceed as follows:

- (a) Remove the telephone housing and disconnect the handset cord.
- (b) Remove the caps and capsules from the handset.
- (c) Lift out and remove the transmitter central contact spring.
- (d) Loosen the terminal screw on the central contact spring and rim contact spring and disconnect the green and red leads (Figures 11, 12, and 13).
- (e) Loosen the strain relief clamp screw and free the clamp.

- (f) Loosen the terminal screws at the receiver end (Figures 11, 12, and 13) and remove the cord lead.
- (g) Pull out the old cord and feed the leads of the new cord through the entrance hole in the transmitter end of the handset. Feed the leads that must be connected at the receiver end through the handset handle and into the receiver cavity.

NOTE: Some Type 81 handsets have a separate spade-tipped green wire connected to the transmitter central contact spring and receiver central contact spring (Figure 11). This wire must be removed. Others are equipped with a Type 810/811 handset cord, with a separate black conductor connected to the receiver central contact spring. The green lead of the replacement handset cord (3HA6) is of sufficient length to reach the receiver cavity and has two spade terminals so that it can be connected at both the transmitter central contact spring and receiver central contact spring.

- (h) Connect the handset cord leads, fasten the strain relief clamp, and replace the springs, capsules, and caps.
- (i) Connect the cord at the telephone and make a test call.

#### Handset Disassembly and Assembly

5.12 To disassemble the handset, refer to Figure 14 and proceed as follows:

- (a) Unscrew the receiver cap and lift the receiver capsule out of the handset shell.
- (b) Disconnect the two leads (yellow and black) from the Spanish or screw terminals located on the back of the receiver capsule.

NOTE: Leave the receiver gasket mounted in the receiver cap unless it requires replacement. The receiver gasket is glued to the receiver cap of the handset.

- (c) Unscrew the transmitter cap from the handset and lift out the capsule.
- (d) Lift the transmitter center contact spring out of the handset.
- (e) Disconnect the green lead from the transmitter center contact spring.
- (f) Disconnect the red lead from the transmitter rim contact spring.
- (g) Loosen the strain relief clamp securing screw which is also in the rim contact spring and remove the strain relief clamp from under it.
- (h) Pull the handset cord out of the handset shell.
- (i) Lift the transmitter rim contact spring out of the handset transmitter well.

5.13 To assemble the handset, proceed as follows:

- (a) Place the transmitter rim contact spring in the handset transmitter well.
- (b) Insert the end of the handset cord with the longest conductor leads through the hole in the handset shell. Push the yellow and black

conductors through the handset shell into the receiver well.

- (c) Engage the handset cord strain relief clamp with the strain relief clamp screw on the transmitter rim contact spring.
- (d) Connect the red handset cord lead to the transmitter rim contact spring.
- (e) Connect the green handset cord lead to the transmitter center contact spring.
- (f) Install the transmitter center contact spring in the handset transmitter shell.
- (g) Place the transmitter capsule into position in the handset transmitter well.
- (h) Place three drops of switch lubricant on the threads of the transmitter cap, and install it on the handset.
- (i) Place the receiver cushion spring into position on the receiver.
- (j) Connect the black and yellow handset cord leads to the terminals on the back of the receiver capsule.
- (k) Place the receiver capsule into position in the handset receiver well. Align the receiver cushion spring with the edges of the receiver well and receiver capsule.
- (l) Place three drops of switch lubricant on the threads of the receiver cap, and install it on the handset shell over the receiver capsule.

#### Ringer Replacement

5.14 To replace the Type 45 ringer assembly, refer to Tables 2 and 3 and proceed in the following sequence:

NOTE: If field adjustments are deemed necessary, they should be limited to the bias spring and clapper-to-gong clearance. Disassembly of the ringer should not be performed. When adjusting the ringer mechanically, bias spring adjustment should be performed by adding or removing tension. Clapper-to-gong clearance should be adjusted by rotating the gong in the clockwise direction only.

- (a) Remove the faceplate, facemat, and housing.
- (b) Remove the three ringer mounting screws.
- (c) Detach the rotary dial assembly.
- (d) Disconnect the ringer capacitor leads if required.
- (e) Disconnect the RED and GRN ringer leads from the transmission network terminals.
- (f) Place the new ringer over the ringer mounting holes in the telephone base.
- (g) Insert and tighten the ringer-mounting screws.
- (h) Connect the ringer capacitor if required.
- (i) Dress the ringer wires (with the line cord jack assembly wires) around the dial shock absorber mounting post and between the two large capacitors on the transmission network card as shown in Figure 9.
- (j) Connect the RED and GRN ringer leads to the transmission network terminals.
- (k) Replace the rotary dial assembly and shock absorbers onto the mounting posts of the baseplate assembly.
- (l) Dress the ringer and rotary dial leads over the terminals on the transmission network card. Fold the ringer capacitor over the

wires to hold them in place. Replace the housing, facemat, and faceplate.

5.15 Replace the Type 48 ringer assembly in the same manner as the Type 45 ringer assembly with the following exception: removal of the Type 48 ringer assembly requires the removal of one mounting screw from the center on the top of the ringer. Then (b) through (i) above can be followed.

NOTE: When telephone ringers are replaced, the Ringer Equivalency Number (REN) shown on the registration label (located on the baseplate) should be verified and/or changed to ensure that the REN is correct. Refer to Table 4 to identify the correct number.

#### Housing Assembly

NOTE: For telephones equipped with a half-modular configuration, assemble the miniature jack to the notch in the housing before assembling the housing to the base.

5.16 For telephones provided with a front tab and one lock-up screw, position the tab under the baseplate assembly and lower the housing over the baseplate. Assemble and tighten the screw.

5.17 For telephones provided with two lock-up screws, lower the housing over the baseplate. Assemble and tighten the two screws.

#### Facemat and Faceplate Assembly

5.18 Install the facemat and faceplate. Using a straightened paper clip or other sharp object, push the arm of the faceplate clip upward while exerting a small downward pressure on the faceplate. When the faceplate has seated against the housing, remove the paper clip and allow the arm of the faceplate clip to snap into the rectangular recess of the faceplate.

## 6. MODIFICATIONS

#### Conversion of Rotary Dial to Touch Calling Unit Configuration

6.01 To change from rotary dial operation to TCU operation, proceed as follows:

- (a) Perform (a) through (e) of paragraph 5.04.
- (b) Remove the two strapping bars from terminals 7-11 and 2-3 on the transmission network.
- (c) Disconnect the GRN and YEL handset leads from transmission network terminals 23 and 4. Reconnect the handset leads to terminals 15 and 12 or 23 and 12 per Figures 3 through 6 as applicable.
- (d) Remove the shock absorbers from their mounting bracket.
- (e) Remove the dial from the mounting bracket.
- (f) Turn the mounting bracket over so the T's on the mounting tabs are facing up and place the shock absorbers over these mounting tabs.
- (g) Assemble the TCU to the mounting bracket.
- (h) Connect the TCU leads to the transmission network terminals in accordance with Table 5.

- (i) Place the shock absorbers (with TCU attached) over the mounting posts.
- (j) Twist the TCU wires with the ringer and line cord jack assembly wires. Position the wires over the terminals on the transmission network card. Fold the ringer capacitor over the wires to hold them in place. (Refer to Figure 9.)
- (k) Replace the housing.
- (l) Install the proper Touch Calling facemat and faceplate.

Conversion of Type 80 to Type 80E Configuration

6.02 To convert Type 80 telephone(s) (NC-802 or ND 802 Series) to the Type 80E configuration, conversion kit HH-880028 is necessary. To make this conversion, proceed as follows:

- (a) Remove the rotary dial housing by removing both housing lock-up screws from the baseplate.
- (b) Remove the rotary dial assembly by unsnapping it from the tripod assembly and remove the two machine screws securing the dial assembly to the mounting bracket.
- (c) Remove the fingerwheel and remove the three screws that are used to retain the extended number plate. Remove the finger stop. Replace the extended number plate with the dial pointer plate (D-530390-M).
- (d) Replace the finger stop and tighten the retaining screw.
- (e) Place the spacer (HD-650020-A) between the dial assembly and the mounting bracket and reassemble the mounting bracket to the rotary dial assembly by using the two (HD-765440-PM06) mounting screws.
- (f) Snap the rotary dial assembly back in place onto the tripod assembly.
- (g) Refer to paragraph 5.06(h) and (i) for wire dressing information.
- (h) Install the actuator spacer (HD-650019-A) onto the actuator arms by snapping it into position.
- (i) Install the faceplate clip (HD-780079-A) on the housing assembly.
- (j) Install the housing assembly.
- (k) Install the facemat and then the faceplate.
- (l) Replace the fingerwheel.

Conversion of Type 80E to Type 80EK Configuration

6.03 To convert a Type 80E rotary dial version telephone (HC 802, HF 802, and HF 808 Series) to a key system Type 80EK telephone (HC 819 or HF 819 Series), refer to Figures 3 and 4, or 5 and 6 and proceed as follows:

- (a) Remove the three-conductor line cord or the four-conductor miniature jack.
- (b) Remove the strapping bar from transmission network terminals 2 and 3.
- (c) Move the RED ringer lead from terminal 10 to terminal 5 of the transmission network.
- (d) Add the six-conductor line cord (SMC-433807) or the six-conductor miniature jack and make

the following line cord connections to the transmission network:

- (1) GRN to 2
- (2) YEL to 3
- (3) BLK to 8
- (4) RED to 10
- (5) BLU to 15
- (6) WHT to 9

- (e) Move the ringer condenser from terminal 8 to terminal 9 of the transmission network.
- (f) Refer to paragraph 5.06(h) and (i) for wire dressing.

Conversion of Type 80E to Dialless Configuration

6.04 To convert a Type 80E telephone to a dialless version, kit H-880030-1 is required. The kit includes one solid faceplate, one solid facemat, one strapping bar, and one strapping wire. To install kit HH-880030-1 in a Type 80E telephone, proceed as follows:

- (a) Remove the strapping terminal between terminals 7 and 11.
- (b) Connect the blue strapping wire (D-543069) between terminals 7 and 1.

NOTE: Refer to Table 4 to verify the REN number.

- (c) Connect the blue strapping wire (D-543069) between terminals 7 and 1.
- (d) Replace the housing, facemat, and faceplate. Refer to paragraph 5.06(h) and (i) for wire dressing information.
- (e) Replace the housing, facemat, and faceplate.

Conversion of Type 80E and 80EK Telephones to Quarter-Modular or Half-Modular Configuration

6.05 To convert the Type 80E and 80EK telephones to a quarter-modular (line cord has one miniature plug end) or half-modular configuration (line cord has miniature plugs on both ends), refer to Figures 15 through 20 and Table 1. Proceed as follows:

- (a) Remove the housing from the base.
- (b) Locate the area to be notched (Figure 16).
- (c) Notch the housing by using a notching tool (Figure 17).
- (d) Remove the spade-ended line cord leads from the transmission network.
- (e) Wire the miniature jack assembly to the transmission network (refer to Figures 18 through 20 for wiring and assembly information).
- (f) Insert the miniature jack assembly into the notch of the housing.
- (g) Replace the housing on the base while holding the miniature jack in position (refer to paragraphs 5.17 and 5.18).

Conversion for Station Restriction

6.06 Selected stations may be prevented from dialing outgoing calls on any or all lines. The modi-

fications required to provide a station restriction in the telephone are provided in Table 6.

#### Conversion of Straight-Line Ringing to Superimposed Ringing

6.07 To convert a straight-line ringer to a superimposed ringer, it is necessary to have a cold cathode tube (part No. D-52144) and a connector (HD-150047-A). Use either of the following methods to mount the tube and refer to Figures 21 and 22 for wiring information.

- (a) Method A.
- (1) Cut a piece of 1/16-inch-thick, double-sided adhesive foam tape 1 inch by 3/4 inch.
  - (2) Place the tape on the mounting surface of the tube socket and attach it to the baseplate between the transmission card and the ringer.
- (b) Method B.
- (1) Drill a 0.156-inch-diameter hole at the rear of the baseplate.
  - (2) Mount the tube with the screw provided.

NOTE: Refer to Table 4 to verify the REN number.

#### Radio-Frequency-Interference Correction

6.08 This telephone generates and uses low-level Radio-Frequency (RF) energy. This telephone complies with FCC Part 15, Subpart J for Class B computing devices. If not used in strict accordance with the manufacturer's instructions, this telephone can cause interference to radio and/or television reception. The Radio-Frequency Interference (RFI) may occur within any of the telephone components or in a line connection external to the telephone. To determine whether RFI is external or internal, refer to the 471-150 subdivision of GTE Practices and perform the test procedures.

6.09 In the event that such interference does occur, make certain that this telephone is the RFI source. To do so, proceed as follows:

- (a) If applicable, disconnect from the ac power source.
- (b) If interference is still present, disconnect the telephone from the telephone line. If interference is still present, this telephone is not the RF source.

6.10 If either of the above does stop the interference, proceed as follows:

- (a) Reorient the receiving antenna on the unit (radio or television) being interfered with.
- (b) Relocate this telephone relative to the (radio or television) being interfered with.
- (c) Plug the telephone into a different wall jack and/or the radio television being interfered with into a different ac wall outlet.

6.11 If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

#### ANI Inductor Installation

6.12 When second tip party ANI is required, the telephone must be wired for an inductive ground connection. For use in the 2,650-ohm inductive ANI service, only six Type 45 harmonic frequency ringers (30, 33.3, 40, 42, 50, and 54 Hz) are available with a brown tap lead for connection to transmission network terminal 21. The Type 48 ringer can also be used for ANI service. When no ringer or ringer tap is available and the 2,650-ohm inductive mark is required, Inductor Assembly Kit D-284686-C should be used. To mount the inductor assembly kit, refer to Figure 23 and proceed as follows:

- (a) Mount the inductor assembly on the ANI mounting boss and fasten it with the self-tapping screw provided.
- (b) Connect the inductor leads to the terminal network as follows:
  - (1) BLK lead to terminal 21.
  - (2) RED lead, tape and store.
  - (3) GRAY lead to terminal 9.

6.13 For wiring information on providing further ANI service, refer to Table 2.

#### Type 820 Handset (SOUND-BOOSTER) Installation

6.14 Installation of the Type 820 handset is basic to all self-compensating telephones. To install the Type 820 handset, proceed as follows:

- (a) Gain access to the transmission unit of the particular telephone to which the Type 820 handset is to be connected.
- (b) Before removing the standard retractile handset cord, make note of the color of each handset cord lead and the terminal screw to which the colored lead is connected.
- (c) Remove the four standard retractile handset cord leads from their respective terminals.
- (d) Connect the Type 820 handset retractile cord leads to the same terminals (color for color) from which the standard retractile handset cord leads were disconnected.
- (e) Reassemble the telephone, make a test call, and check operation of the volume control.

#### Message-Waiting Lamp Installation

6.15 To install a message-waiting lamp in Type 80E telephones, use kit HH-880052-1. This kit contains a lamp assembly that consists of a neon lamp with one yellow fluted cap; one 82-kilohm, 1/4-watt

resistor; and two spade-tipped leads. To install a message-waiting lamp, refer to Figure 24 and proceed as follows:

- (a) For Type 80E telephones, equipped with a TCU, or any Type 80E telephones, remove the telephone housing, and drill a 5/16-inch-diameter hole at the location indicated on the template provided with the modification kit (Figure 24a). (The lamp location on the outside of the telephone housing can be seen in Figure 24b.)
- (b) Place the escutcheon ring over the lamp wires and into position at the base of the lamp.
- (c) Place the lamp in the mounting hole and install the push nut.
- (d) Connect the lamp leads as follows:
  - (1) Terminals 8 and 10 on self-compensating NC-series telephones (WA-1154 and WA-1155 printed wiring card transmission units).

- (2) Terminals 7 and 10 on self-compensating NB-series telephones (WA-1120 printed wiring card transmission unit or potted transmission unit).
- (3) Terminals 6 and 10 on manually adjusted rheostat sets.
- (4) Terminals 8 and 10 on HF series telephones (HB-1008 printed wiring card transmission unit).
- (e) Replace the telephone housing.

Type 33 Ringer Box Installation

6.16 When harmonic or superimposed ringing schemes must be used, install the external Type 33 ringer box. The Type 33 ringer box is wired from the factory for bridged ringing. Refer to Section 473-810-201 for ringing scheme options and installation information.

NOTE: Refer to Table 4 to verify the REN number.

TABLE 1. JACK CONVERSION KITS AND LINE CORD ORDERING INFORMATION.

PART NO. (MATERIAL CODE NO.)	DESCRIPTION	TELEPHONE SERIES
HH-880085-1	Type 80 series telephone sets four-wire jack conversion kit.	
HH-880085-2	Type 80 series series telephone sets six-wire jack conversion kit.	
(578907)	Notching tool - Type G1305.	
HD-540166-A (432312)	Line cord - four conductors, plug-to-plug, 7 feet (packaged).	HF-808
HD-540166-B (432313)	Line cord - four conductors, plug-to-plug, 14 feet (packaged).	HF-808
HD-540166-C (432314)	Line cord - four conductors, plug-to-plug, 25 feet (packaged).	HF-808
HD-540166-A (432315)	Line cord - four conductors, plug-to-plug, 7 feet (bulk).	HF-808
HD-540166-B (432316)	Line cord - four conductors, plug-to-plug, 14 feet (bulk).	HF-808
HD-540166-C (432317)	Line cord - four conductors, plug-to-plug, 25 feet (bulk).	HF-808
HD-540149-A (432700)	Line cord - six conductors plug-to-plug, 7 feet.	HF-819
HD-540149-B (432701)	Line cord - six conductors plug-to-plug, 14 feet.	HF-819
HD-540149-C (432702)	Line cord - six conductors plug-to-plug, 25 feet.	HF-819
HD-540199-A (432964)	Line cord - eight conductors non-keyed spade-to-plug, 7 feet.	

NOTE: Line cords for the HC-802, HF-802, and HC-819 are manufacture discontinued.

TABLE 2. RINGING OPTIONS.

RINGING OPTIONS	INTERIOR WIRES TO MINIATURE USOC JACK (RJ11C)			TRANSMISSION NETWORK TERMINALS			LINE CORD		SATT SPOTTER	ANI RINGER TAP TO NETWORK TERMINAL 21					
	RED	GRN	YEL	LINE CORD MINIATURE JACK LEADS	RINGER LEADS	CAPACITOR LEADS	RED	YEL			GRN	BRN			
Bridged Standard Dial	3	4	5	3	4	5	10	16	8	16	10	9	8	-	
Divided - L2 Grd. Standard Dial	3	4	5	3	4	5	16	9	8	16	10	9	8	-	
Divided - L1 Grd. Standard Dial	3	4	5	3	4	5	10	16	9	16	10	9	8	-	
Bridged SATT Dial	3	4	5	3	4	5	10	16	8	16	10	9	8	9	
Divided - L2 Grd. SATT Dial	3	4	5	3	4	5	8	16	A	16	10	9	8	9	
Divided - L1 Grd. SATT Dial	3	4	5	3	4	5	10	16	A	16	10	9	8	9	
ANI Inductive Tip for Type 45 Ringer	3	4	5	3	4	5	9	16	16	6	10	9	8	-	Brown
ANI Inductive Tip for Type 48 Ringer	3	4	5	3	4	5	16	9	16	6	10	9	8	-	Black

TABLE 3. SUPERIMPOSED RINGING.

STATION	MINIATURE PLUG AND JACK						TRANSMISSION NETWORK TERMINALS												
	LINE CORD			INTERIOR WIRE			LINE CORD				RINGER			CATHODE TUBE LEADS			CAPACITORS		
	RED	GRN	YEL	RED	GRN	YEL	RED	YEL	GRN	BLK	GRN	RED	YEL	BLK	RED	BLK	BLK		
No. 1 or No. 5 - Station on - (Ring) Line.	3	4	5	3	4	5	10	9	8	9	16	Note	10	16	9	Note	16		
No. 2 or No. 6 - Station on + (Tip) Line.	3	4	5	3	4	5	10	9	8	9	16	Note	8	16	9	Note	16		
No. 3 or No. 7 + Station on - (Ring) Line.	3	4	5	3	4	5	10	9	8	10	16	Note	9	16	10	Note	16		
No. 4 or No. 8 + Station + (Tip) Line.	3	4	5	3	4	5	10	9	8	8	16	Note	9	16	8	Note	16		

NOTE: Connect the RED ringer lead and BLK capacitor lead with the connector (part No. HD-150047-A).

TABLE 4. REN IDENTIFICATION.

RINGER TYPE	HARMONIC		SYNCHROMONIC		DECIMONIC	
	FREQUENCY	VALUE	FREQUENCY	VALUE	FREQUENCY	VALUE
C	16.6	1.2	16.6	1.2		
D			20	1.0	20	1.0
E	25	1.0				
F			30	1.0	30	1.0
G	33.3	1.0				
H					40	1.0
J			42	1.0		
K	50	1.0			50	1.0
L			54	1.0		
M					60	1.0
N	66.6	1.0	66.6	1.0		
P*	33.3-25		20-30		TYPE 48 SL. 1.0 TYPE 46 SL. 1.2 TYPE 45 SL. 1.0	

\* GTE AE Straight-Line Ringers.

NOTE: ITT 148 SL Mini Ringer 1.0P (ITT 151 FREQUENCY MINI RINGER 1.0X, replace X with an alpha character for ringer frequency. EXAMPLE: 33.3 = 1.0G).

TABLE 5. TCU INSTALLATION.

LEAD COLOR	THREE CONDUCTORS		SIX CONDUCTORS	
	Type 12 C	Types 12C, 1C, and 12D	Type 12 C	Types 12C, 1C, and 12D
BRN	TN-3	TN-3	TB-A	TB-A
RED	TN-7	TN-7	TN-7	TN-7
GRN	TN-2	TN-2	TN-2	TN-2
WHT	TN-1	TN-1	TN-1	TN-1
BLU	TN-13	TN-13	TN-13	TN-13
SL	TN-12	TN-12	TN-12	TN-12
PINK	TN-15	TN-15	TN-15	TN-15
BLK-WHT		TN-5		TN-5

NOTE: TN = Transmission Network Terminal.  
TB = Terminal Board Terminal or Terminal Strip Terminal.

TABLE 6. STATION RESTRICTION CONVERSION.

LEAD, STRAP, OR DIODE FD-1029-DG	THREE CONDUCTORS			SIX CONDUCTORS		
	ROTARY DIAL	TCU TYPE 12C	TCU TYPES 12C, 1C, AND 12D	ROTARY DIAL	TCU TYPE 12C	TCU TYPES 12C, 1C, AND 12D
BRN		TN-3 Tape and store	TN-3 Tape and store		TB-A Tape and store	TB-A Tape and store
RED		TN-7 Tape and store	Move from TN-7 to TN-1		TN-7 Tape and store	Move from TN-7 to TN-1
WHT		Move from TN-1 to TN-11*	TN-1 Tape and store		Move from TN-1 to TN-11	TN-1 Tape and store
GRN			Move from TN-2 to TN-11*			Move from TN-2 to TN-11*
STRAP		TN-1 to TN-7 and TN-2 to TN-3	TN-1 to TN-3 and TN-2 to TN-7		TN-1 to TN-7 and TN-2 to TB-A	TN-1 to TB-A and TN-2 to TN-7
CATHODE (BAND END)	TN-11	TN-11*	TN-11*	TN-11	TN-11*	TN-11*
ANODE	TN-1	TN-1	TN-2	TN-1	TN-1	TN-2

\*If the rotary dial spark suppression capacitor is connected to TN-11, it should be removed. This capacitor is not needed in a TCU-equipped telephone.

NOTES:

1. TN = Transmission Network Terminal.  
TB = Terminal Board Terminal or Terminal Strip Terminal.
2. This modification prevents dialing whenever the polarity of the Tip (T) wire is positive with respect to the Ring (R) wire. When T is negative with respect to R, dialing is not restricted.

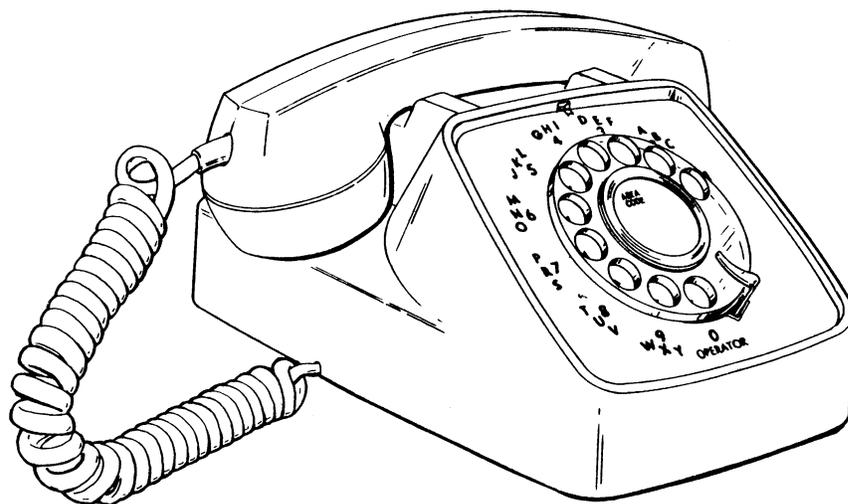


Figure 1. Type 80E Telephone Set (Rotary Dial Version).

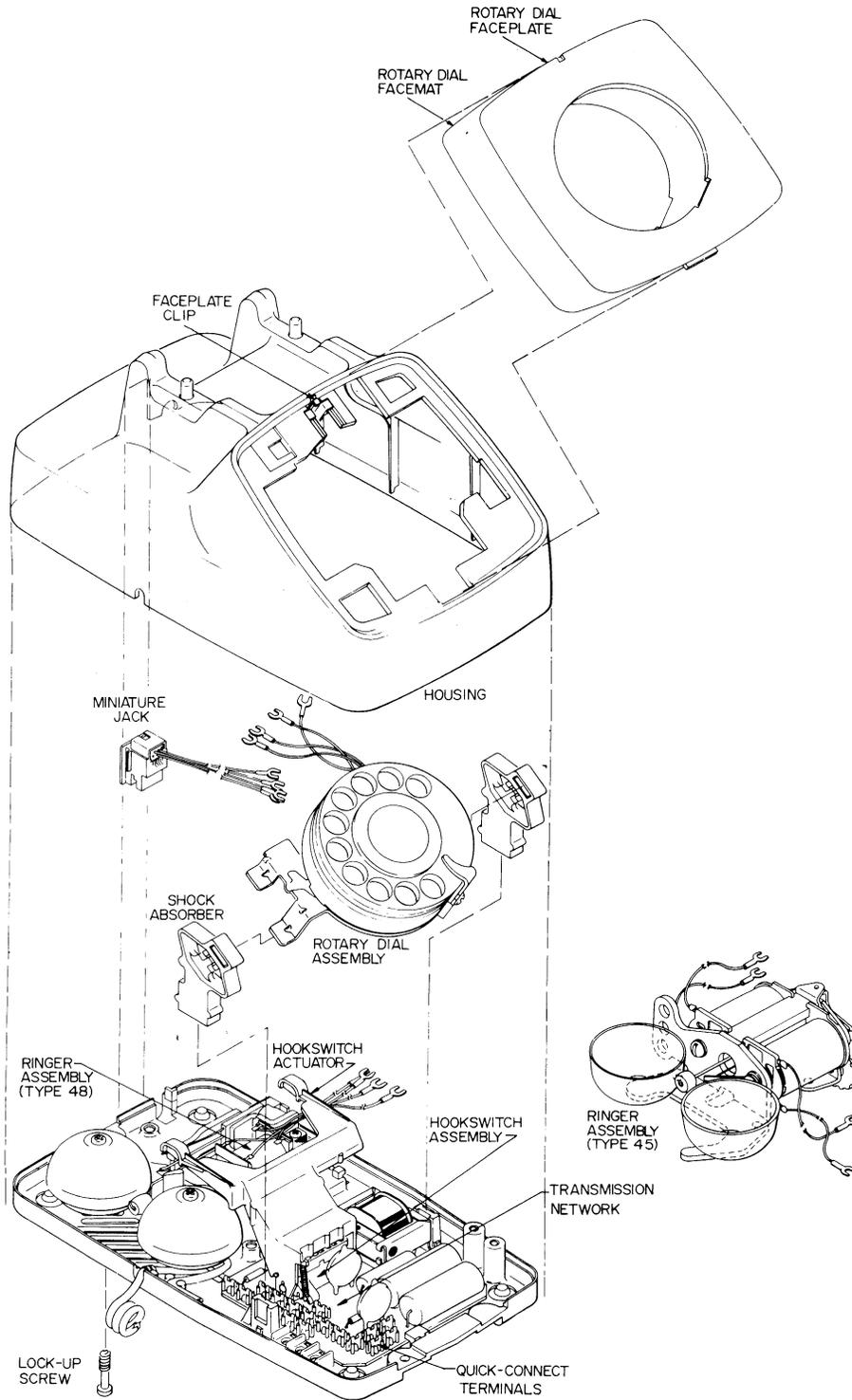


Figure 2. Type 80E (Exploded View of Telephone).



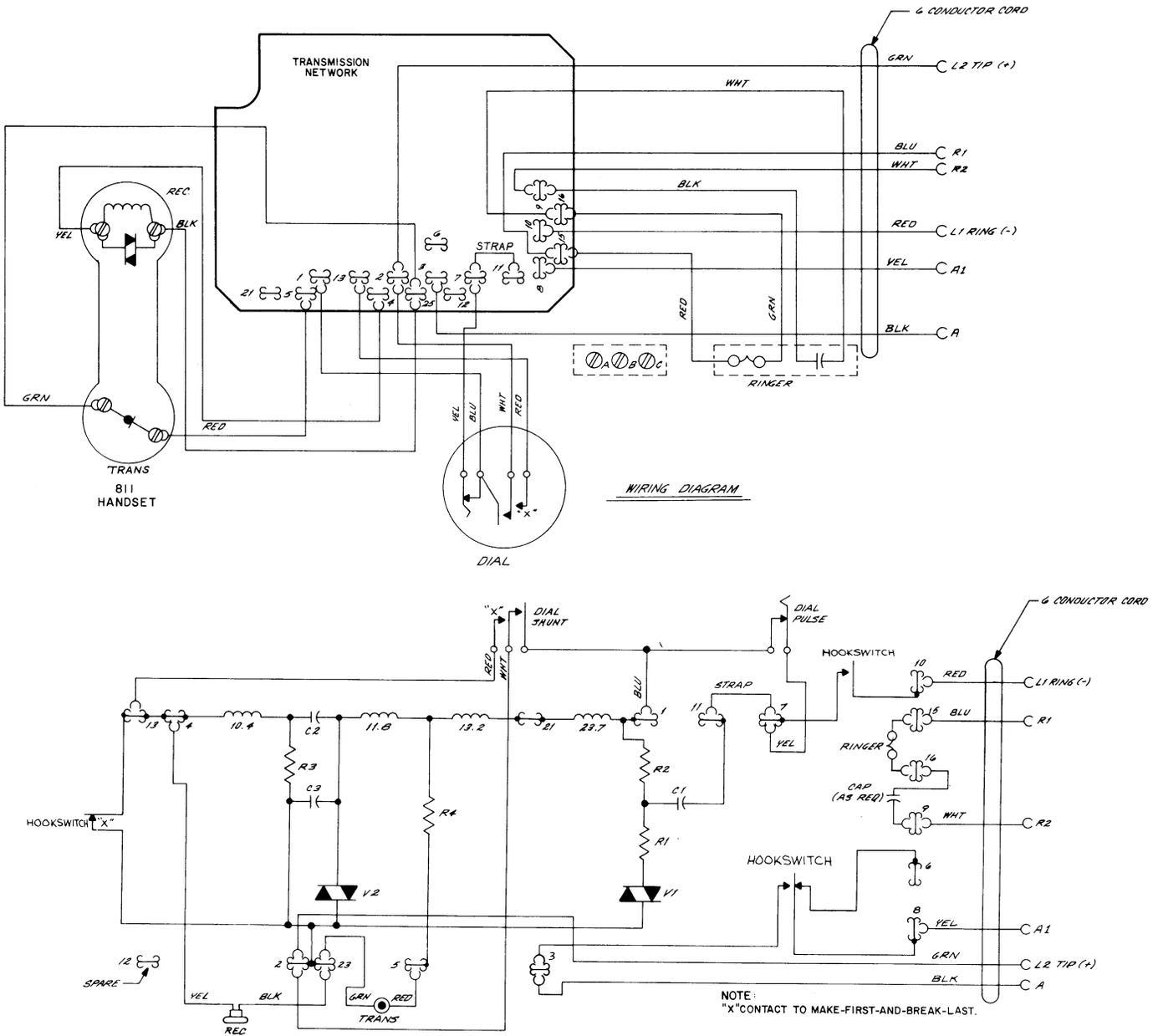


Figure 4. Wiring and Schematic Diagram, Six-Conductor Rotary Dial Version.

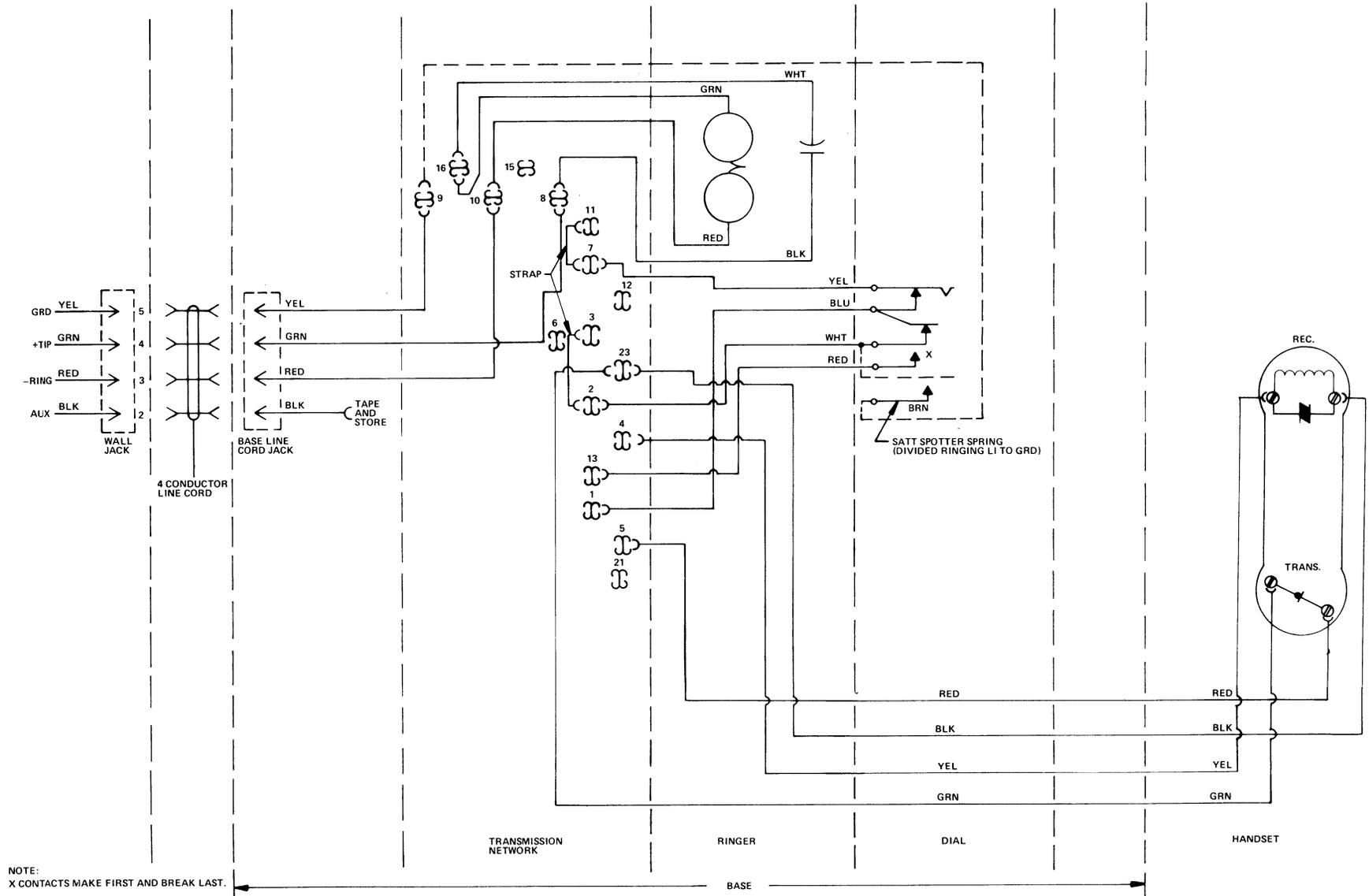


Figure 5. Wiring Diagram, Half-Modular Four-Conductor Rotary Dial Version.

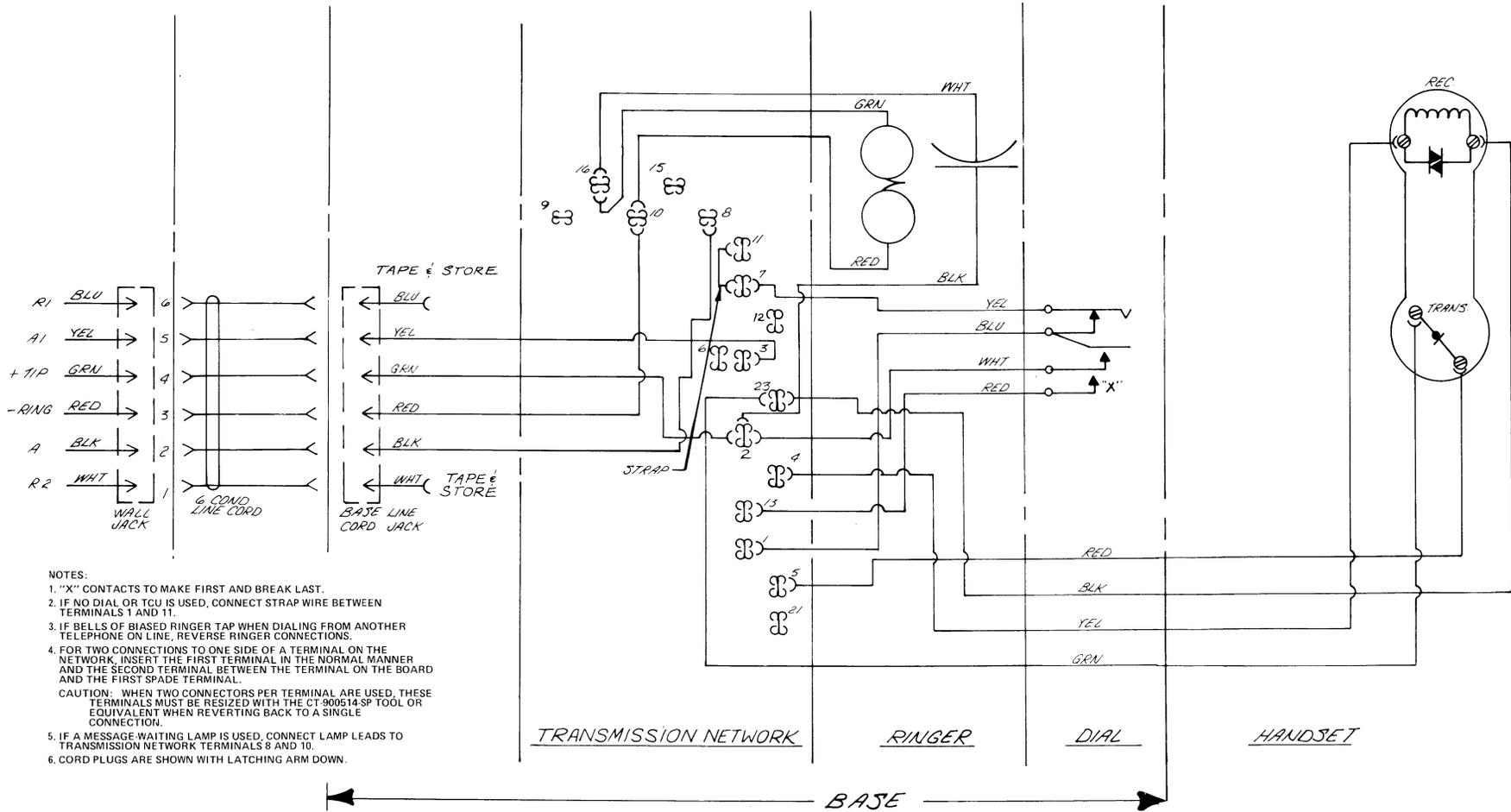


Figure 6. Wiring Diagram, Half Modular, Six-Conductor Rotary Dial Version.

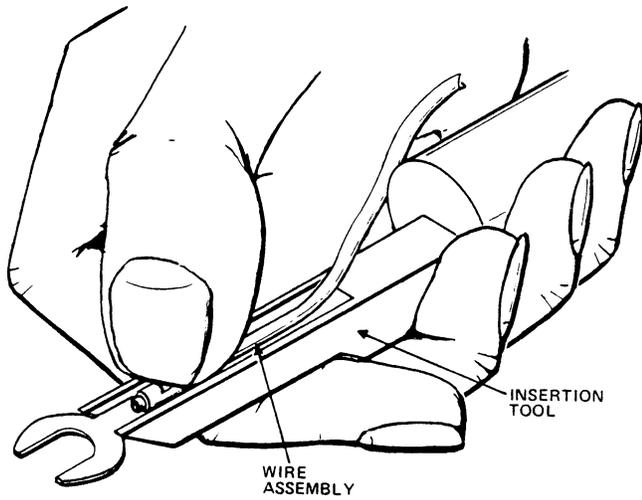


Figure 7. Wire Assembly Insertion Method.

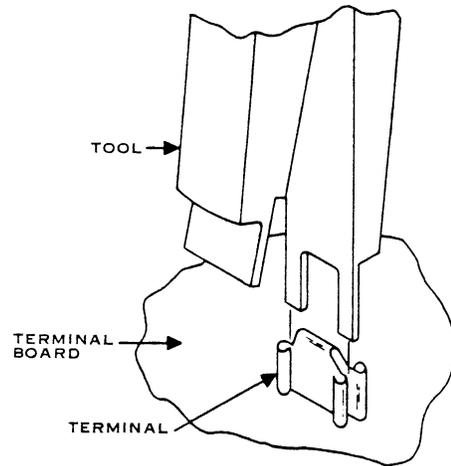


Figure 8. Receptacle Adjustment Tool (CT-900514SP).

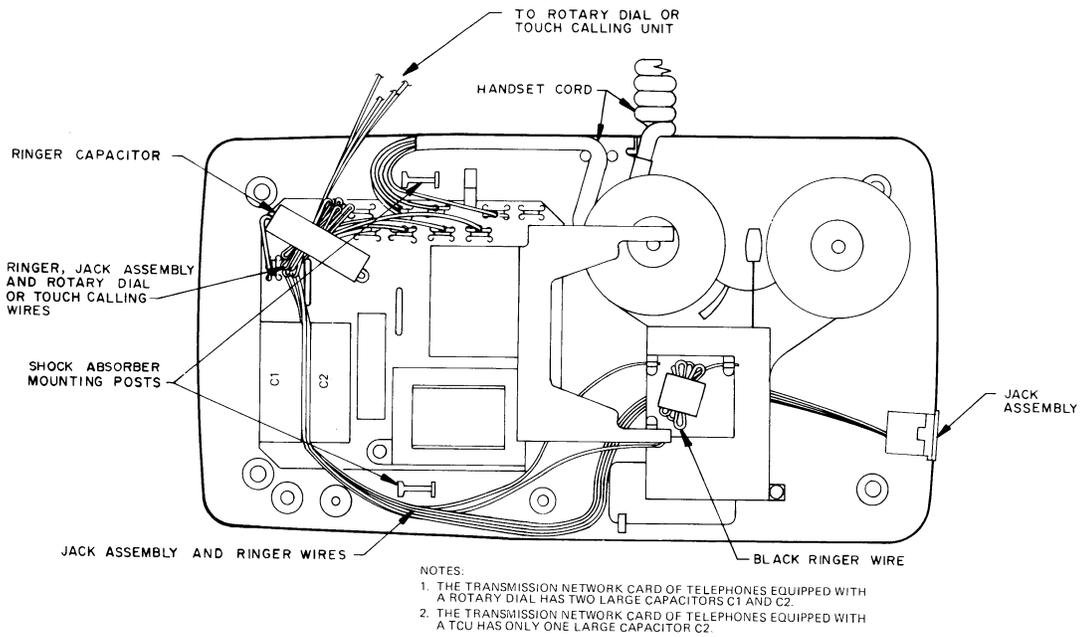


Figure 9. Type 80E Telephone Wire Dressing.

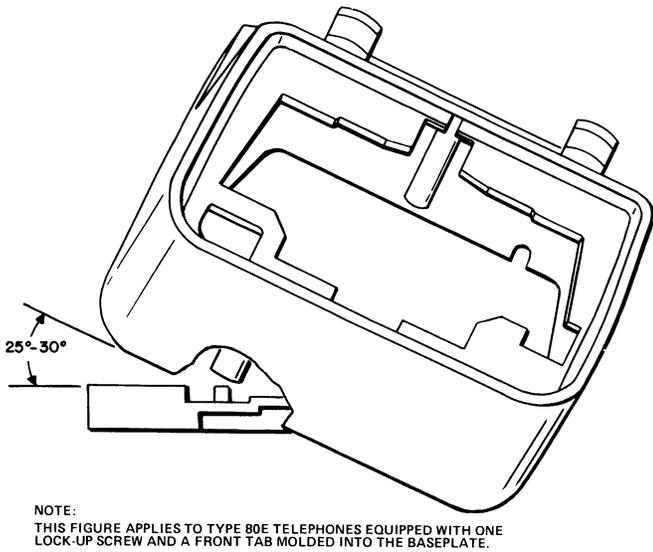


Figure 10. Housing Removal.

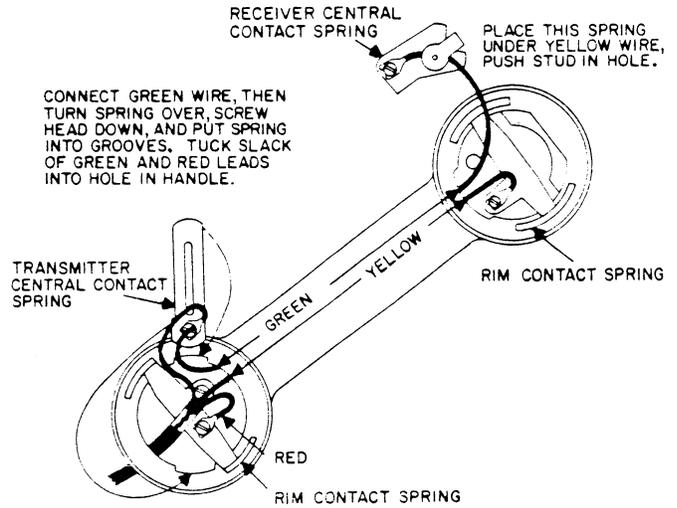


Figure 11. Internal Wiring for Type 81 Handset.

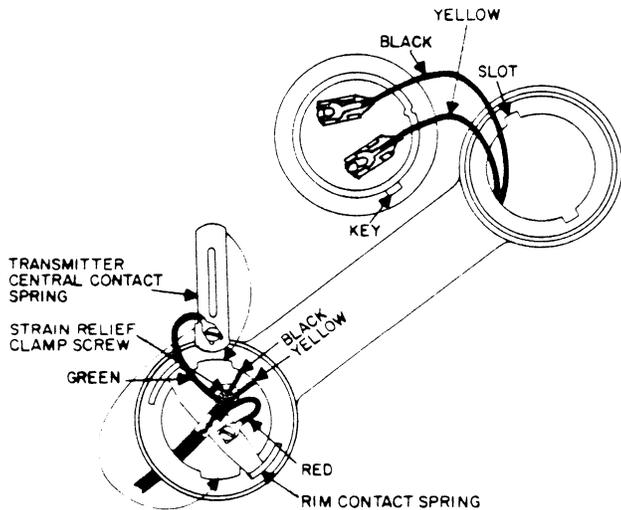


Figure 12. Internal Wiring for Type 810 and 811 Handsets.

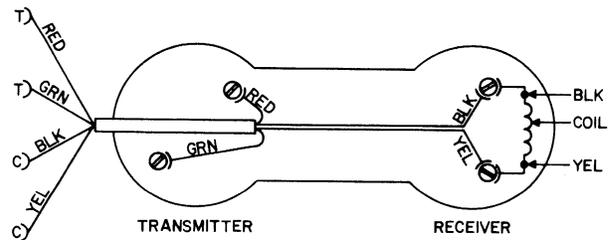


Figure 13. Internal Wiring for L-9080 and L-9081 Handset.

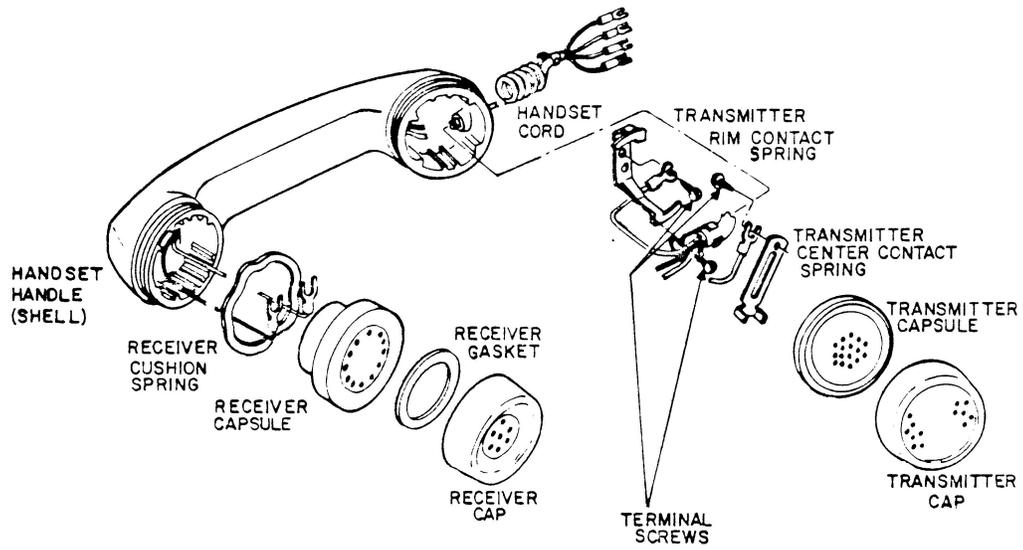


Figure 14. Exploded View of Handset.

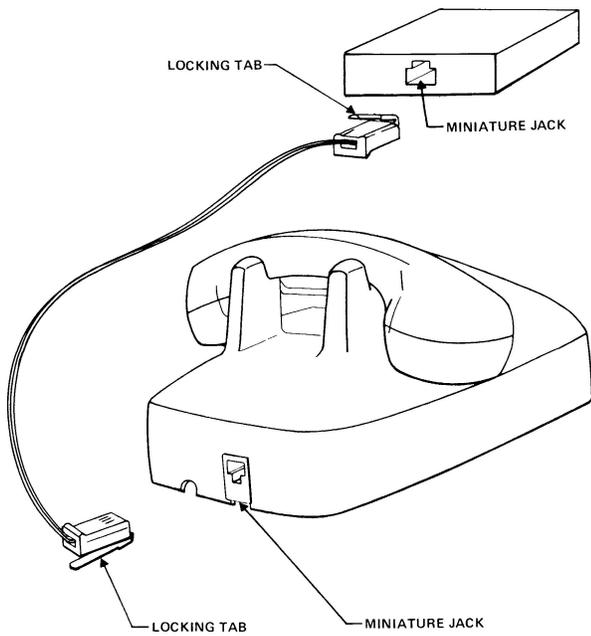


Figure 15. Assembly of Miniature Plug-Ended Line Cord.

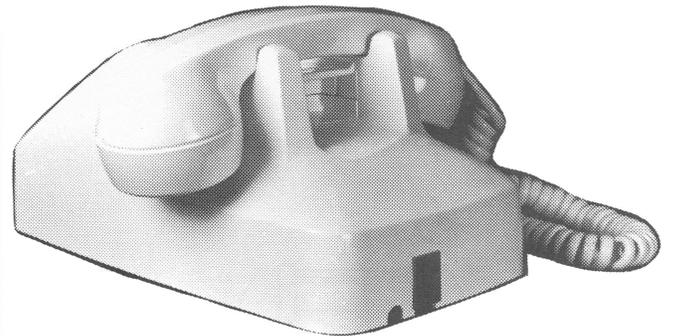


Figure 16. Type 80E Telephone With Notched Housing.

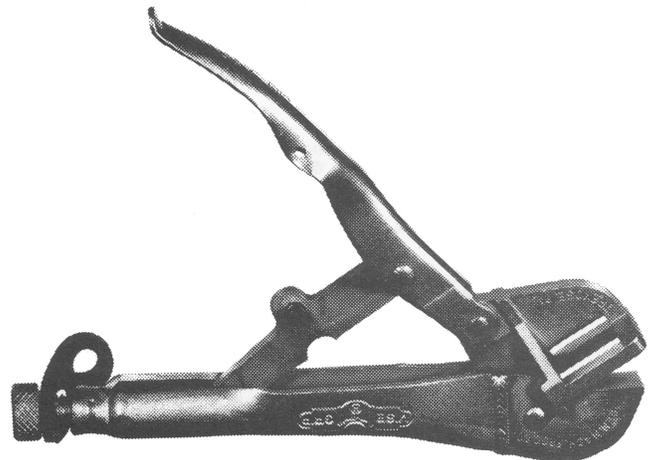


Figure 17. Notching Tool.

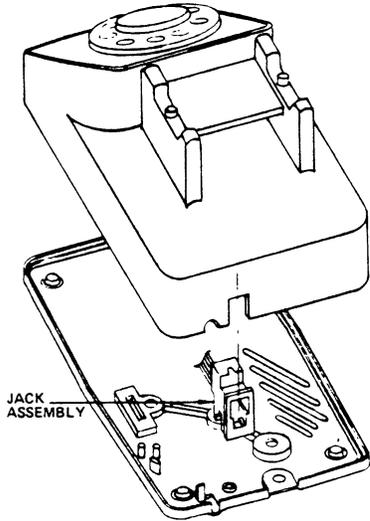


Figure 18a. Miniature Jack Assembly Position.

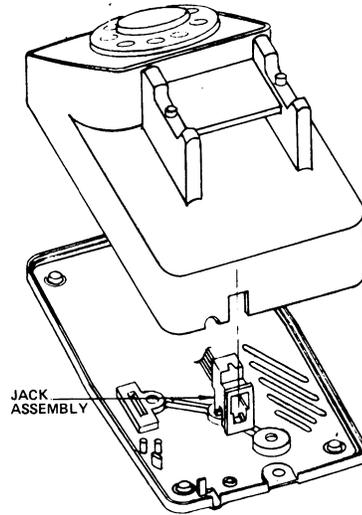
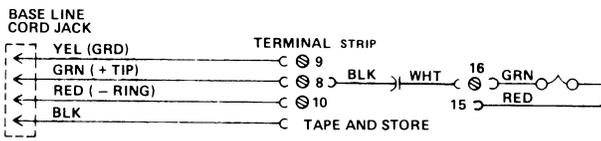
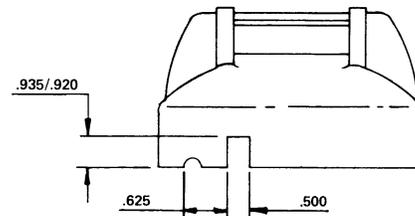
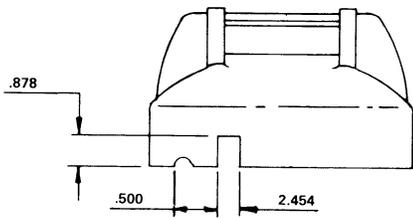


Figure 19a. Miniature Jack Assembly Position.



NOTE:  
 SHOWN FOR METALLIC BRIDGE RINGING  
 STANDARD DIAL. FOR OTHER OPTIONS  
 SEE TABLES 1 AND 2.

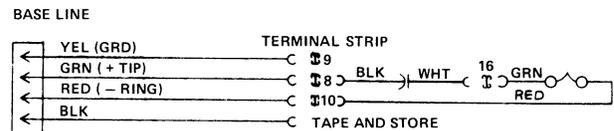


Figure 19b. Line Cord and Ringer Connections.

Figure 19. Conversion of Type 80E Telephone to Half-Modular Configuration.

Figure 18b. Line Cord and Ringer Connections.

Figure 18. Conversion of Type 80 Telephone to Half-Modular Configuration.

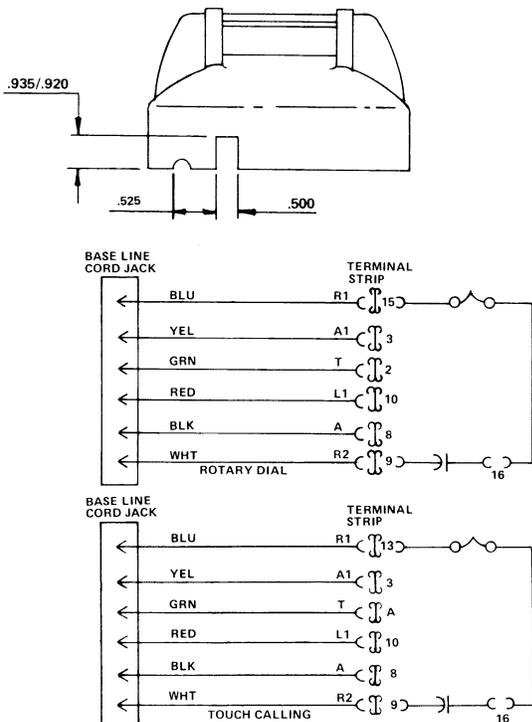


Figure 20a. Conversion of Type 80K/80EK Spade Telephone to Half-Modular Configuration.

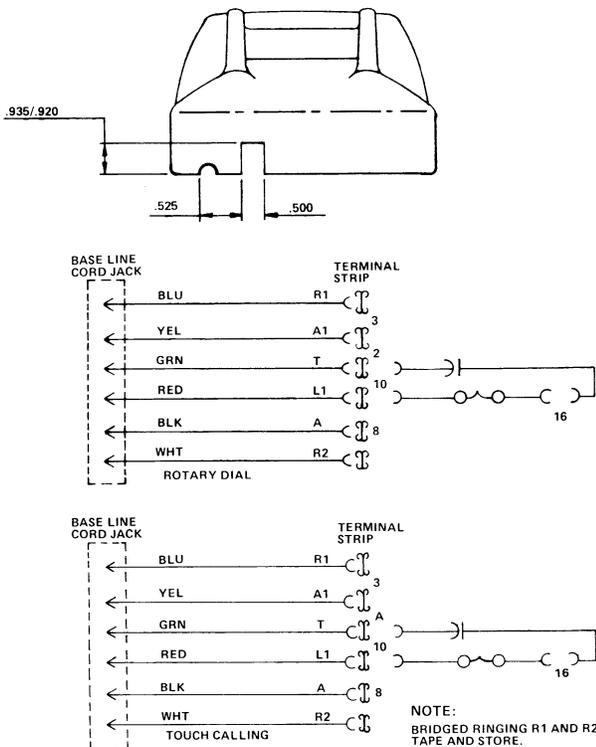


Figure 20b. Conversion of Type 80EK Modular Telephone Set to Half-Modular Configuration.

Figure 20. Conversion for Type 80K and 80EK Telephone to Half-Modular Configuration.

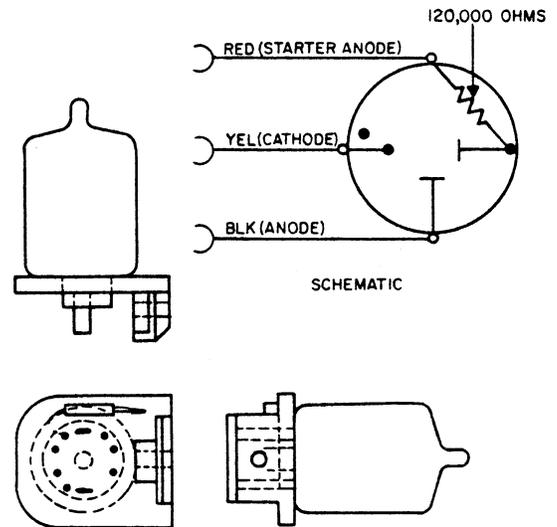


Figure 21. Mounting Cold Cathode Tube.

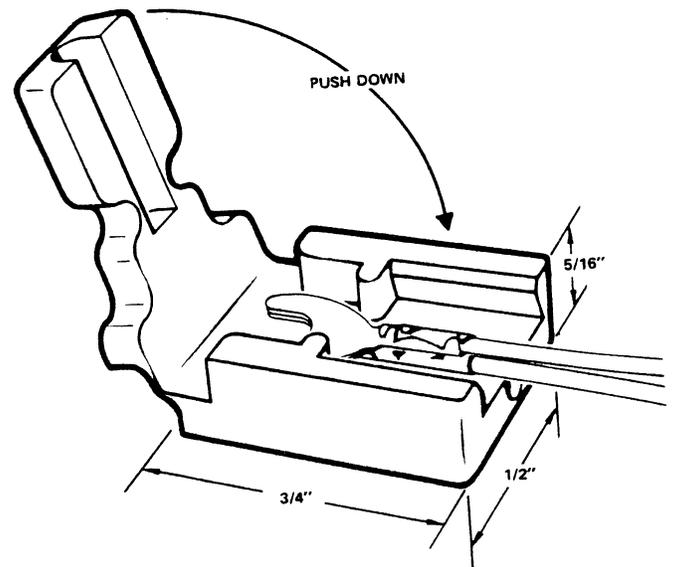


Figure 22. Lead Connector for Superimposed Ringing.

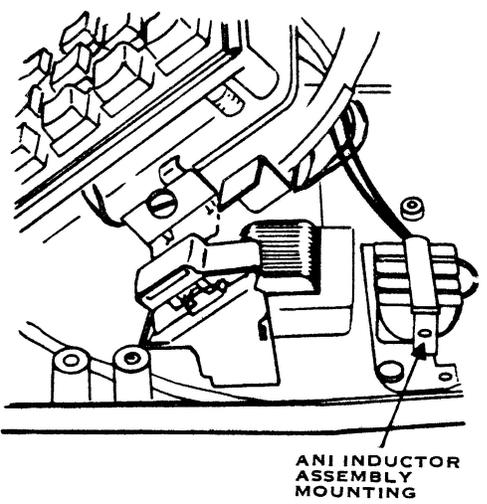
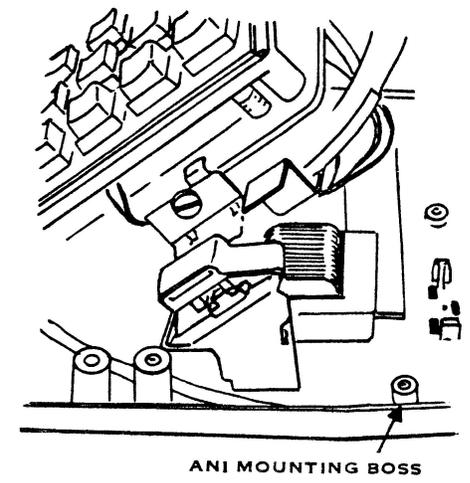


Figure 23. ANI Inductor Assembly Installation.

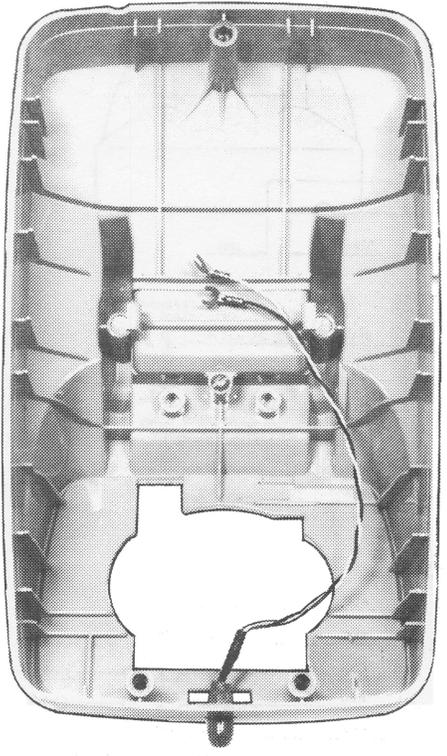
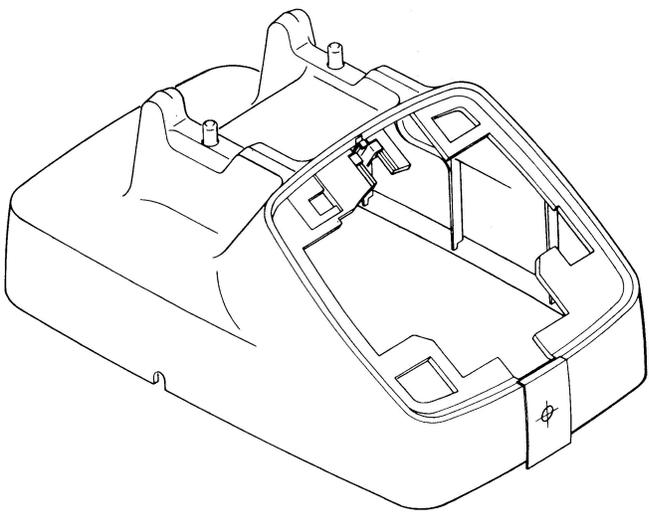


Figure 24. Message Waiting Lamp Installation.