

**BELL SYSTEM PRACTICES**  
**Station Installation and Maintenance**

**SECTION C32.505**  
**Issue 1, 12-3-45**  
**AT&T Co Provisional**

## **TELEPHONE SETS**

### **NORTH ELECTRIC**

#### **1. GENERAL**

1.01 This section covers the description, use, installation, maintenance and connections for combined type telephone sets manufactured by the North Electric Company. Apparatus requirements and adjusting procedures for the associated hand set, ringer and mounting contact spring assembly are also included.

1.02 These telephone sets are anti-sidetone sets and consist of a hand set and a telephone set mounting which in addition to a dial or an apparatus blank houses a ringer, condensers and an induction coil. A three conductor cord for connecting the telephone set to the line is also included. The line is terminated at a 42A connecting block near the set.

1.03 In connection with ordering information or reporting equipment installed on service orders, etc., these telephone sets are coded N.E.4H6SLD. For dial sets add the word Dial or other suitable notations to this code. Other apparatus codes referred to herein are for apparatus of Western Electric manufacture.

1.04 These sets have housings made of thermoplastic and have a permanent finish but are fragile and should therefore be handled carefully.

1.05 In general, the sets are installed in accordance with instructions included in the sections in Division C30 covering the locating and mounting of hand telephone sets and the installation of connecting blocks. Consideration should be given to adapting the ringing signal to the subscriber's need as outlined in the section entitled "Service Order and Repair Work—Ringers and Loud Ringing Bells."

## 2. DESCRIPTION

2.01 These sets are in general similar to the 302 type telephone sets shown in Section C32.502, Figs. 1 and 2 and are used at common battery anti-sidetone stations on non-polarized ringing lines of the following classes of service:

**Individual Lines (Manual and Dial)**

**Two-Party Selective Flat Rate (Manual and Dial)**

**Two-Party Selective Message Rate (Manual and Ring Party Dial Only)**

**Four-Party Semi-Selective (Manual and Dial)**

**Regular P.B.X. Stations (Manual and Dial)**

2.02 For individual lines and regular P.B.X. stations a two conductor mounting cord between the connecting block and the set is required. As these sets are furnished with a three conductor cord the additional conductor at the connecting block end should be connected to terminal Y of the 42A connecting block. For grounded ringing lines the third conductor of the mounting cord is used, to bring a ground into the set. (See Fig. 1.)

2.03 The standard three conductor mounting cords may be used to replace the mounting cord furnished if required.

2.04 The hand sets are of North Electric manufacture but equipped with Holtzer-Cabot transmitter and receiver units and H3C-9 or equivalent cord. The F1 transmitter unit and HA1 receiver unit may be used in place of the Holtzer-Cabot units with the North Electric hand set. Also the complete F1A hand set may be used with these sets. North Electric hand sets may be zoned the same as the F1A hand set.

2.05 These sets are equipped with the 101A induction coil. The condenser and ringer are of North Electric manufacture and are not interchangeable with other standard ringers and condensers.

### 3. CONNECTIONS

3.01 The connections for these telephone sets are shown in Fig. 1.

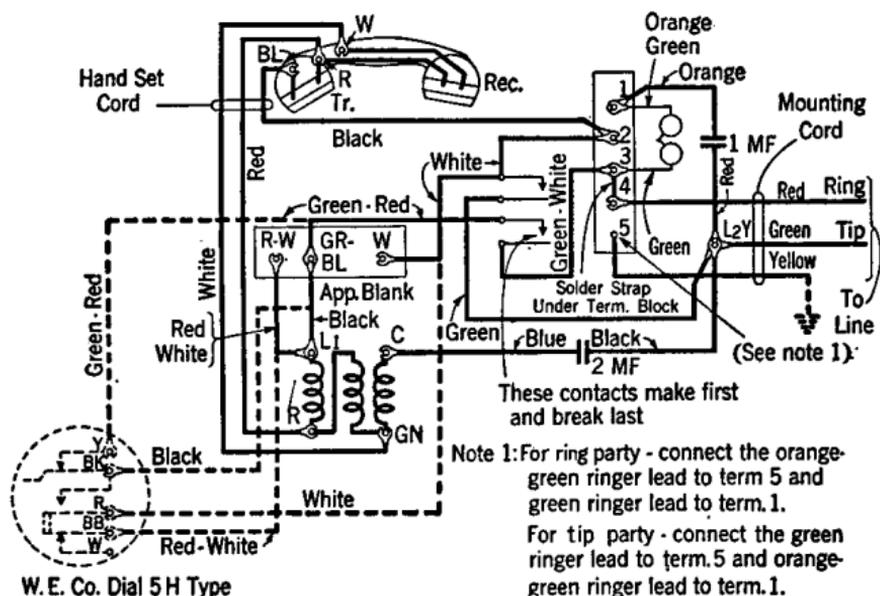


Fig. 1

3.02 The diagram in Fig. 1 shows the line and ringer connections for bridged ringing lines. Line and ringer connections for bridged and grounded ringing lines of the classes of service for which the set is used are given in Table 1.

Table 1

Connections	Ringer Leads		Mtg. Cord		
	OR-GN	GN	R	GN	Y
Bridged	1	3	4	L2Y	5
Ring Party	5	1	L2Y	4	5
Tip Party	1	5	4	L2Y	5

Note: If bell tapping is encountered, try reversing the ringer leads disregarding the above table. If bell still taps replace the set.

3.03 The ringer in the set is low impedance. The number and type of ringing bridges connected to a particular line should be limited in accordance with the connection data for low impedance ringing bridges given in the section entitled "Ringer Connection Limitations—Non-Polarized Ringing Lines."

#### 4. NUMBER CARD

4.01 The apparatus blank on manual sets is equipped with a North Electric number card frame and number card. The standard paper number card (other than make-up types) may be used in this frame by removing the metal ring of the card frame with the 445 tool and inserting the standard number card between the window and the North Electric number card and then firmly snapping the metal ring securely in place on the frame. On dial sets, use the standard number card frame and card.

#### 5. MAINTENANCE

##### Ringer

5.01 The ringer is biased magnetically and is of low impedance. No adjustment is provided on this ringer except the position of the gongs. This may be done by loosening the screw which fastens the gong supports, moving the gong as desired, then tightening the screw.

5.02 Clean the points of contact between the armature and the pole faces by inserting a strip of Bell Seal bond or approved equivalent cleaning paper between the contact and each pole face in turn while pressing the armature against the respective pole face. Repeat until a clean paper shows no sign of dirt.

5.03 If satisfactory ringing can not be obtained by positioning the gongs, replace set. Gong dampers and other types of gongs suitable for controlling ringer volume or tone are not provided.

##### Plunger and Switch Contact Spring Assembly

5.04 The plunger and switch contact spring assembly is somewhat similar to Fig. 1, Section C32.575 except the contacts are of the point and disc type instead of the bar type.

5.05 **Cleaning:** Clean contacts with a clean 265B tool.

5.06 **Contact Alignment:** Contacts shall line up so that the point falls entirely within the opposing contact. If the contact springs do not meet this requirement, loosen the spring assembly with a 3-1/2 inch cabinet screwdriver and shift the springs until the opposing contacts are approximately centered. Take precautions to see that the bushings go through the holes and then tighten screws securely.

5.07 **Contact Follow:** Both contacts on the same spring shall make with their respective opposing contacts at approximately the same time and the contacts shall have a perceptible follow.

5.08 **Contact Separation:** There shall be an air gap of minimum .012 inch between the contacts when the plungers are depressed to the level of the hand set supporting surfaces.

5.09 **Contact Sequence:** The contact sequence shall be such that when the contacts to which the green white and green red conductors are connected make first, there will still be a separation of minimum .006 inch between the contacts to which the green and white conductors are connected.

5.10 **Spring Clearance:** There shall be a clearance between springs which are not intended to make contact of approximately 1/32 inch.

5.11 **Contact Margins:** To ensure proper contact margins, all contacts shall make before the plungers reach a point approximately 1/16 inch from their extreme upper position and break before they reach a point 1/16 inch from the lowest position they take with the hand set in place on the housing.

5.12 If the requirements in Paragraphs 5.07 to 5.11 inclusive are not met, adjust the contact springs close to a point where they leave the clamping plate and insulators with a 466A tool or approved equivalent. When adjusting contact springs take care not to kink them. If springs are kinked replace set.

5.13 **Plungers:** The plungers and plunger lever shall move freely without binding or squeaking throughout the entire travel. Plungers may be cleaned by removing the switch assembly in a manner similar to that described for other telephone sets in the section in the C30 Division entitled "Telephone Set Mountings—H Type—Maintenance."

5.14 When the hand set is slowly lifted from the housing, the plungers shall move upward and come to a positive stop.

5.15 When the hand set is slowly lowered into place on the housing, the plungers shall move downward until the hand set rests on the supporting surfaces.

5.16 If the plungers or plunger lever fails to operate properly, replace the set.

5.17 If plungers fail to operate properly only when hand set is placed on its supporting surfaces it is probably due to excessive tension of the long contact springs. If such is the case reduce the excessive tension of the springs by adjusting the springs as specified in 5.12. Check all other contact spring adjustments.

## Dial

5.18 The 5H or 4H type dial with the North Electric dial adapter may be used in these sets. The dial tests and adjustments shall be in accordance with the data given in the section in the C30 Division covering the maintenance of these dials. Mounting screws P-121457 the same as those furnished with the 59A dial adapter are to be used.

5.19 When a dial is used with the set, the dial-and-switch cord shall be removed from the grommet and bracket mounted on the mounting contact spring pileup and the conductors to the dial shall be so dressed as not to interfere with the dial springs. In removing the cord from the grommet and bracket, first remove the grommet from the bracket by squeezing the grommet with long nose pliers and pushing the grommet through the hole in the bracket. The conductors and cord tips can then be readily slipped through the holes in the grommet and the bracket. The grommet need not be replaced.

5.20 The dial-and-switch cord is of North Electric Company manufacture.

5.21 If apparatus or parts other than the transmitter unit, receiver unit, induction coil, complete hand set, hand set cord, mounting cord, or dial require replacement or can not be made to meet the above adjustments, replace the set.