

TELEPHONE SETS

1660 TYPE

1. GENERAL

1.01 This section contains description, assembly, installation, operation, maintenance, and connection information on the 1660-type telephone set.

1.02 The 1660-type telephone set is equivalent to the 660A1 telephone set except it has a TOUCH-TONE dial (Fig. 1 and 2).

2. IDENTIFICATION

2.01 Although four sets are coded, only the 1660A1 telephone set will be manufactured. Conversion to other codes is accomplished by adding kits of parts listed under Table A. Sets are converted at the distributing house or in the field.



Fig. 1 — 1660-Type Telephone Set

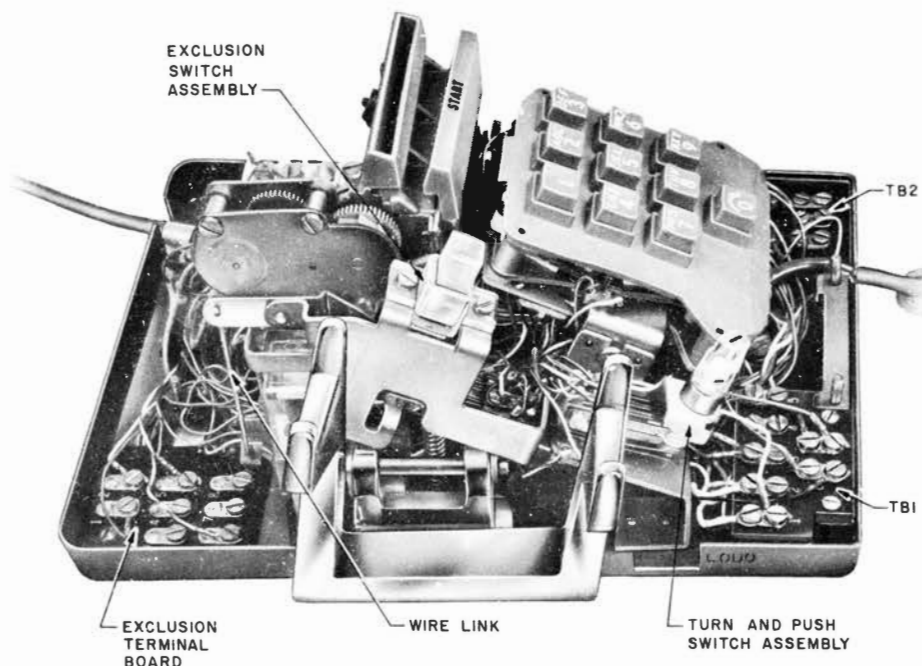


Fig. 2 — 1660-Type Telephone Set, Cover Removed

TABLE A

PIECE PART INFORMATION

| Set Code* | 2-Line Pickup Key | Card Dialer | Mtg Cord* | Regular Faceplate | Nonglare Faceplate |
|-----------|-------------------|-------------|-----------|-------------------|--------------------|
| 1660A1† | P-25E860 | 26B | D3BN | P-25E894 | P-26E625 |
| 1660A2 | | | D6AF | P-25E895 | P-26E626 |
| 1660A3 | | | D10L | P-25E897 | P-26E628 |
| 1660A4 | | | | P-25E896 | P-26E627 |

* Add suffix for desired color: moss green (-51), white (-58), light beige (-60), light gray (-61).

† To convert 1660A1 telephone set to:

- 1660A2 — Add D-179949 kit of parts (exclusion kit).
- 1660A3 — Add 179950 kit of parts (2-line pickup and signaling kit).
- 1660A4 — Add D-179951 kit of parts (exclusion and 2-line pickup and signaling kit).

2.02 The four coded sets and their features are as follows:

- 1660A1 telephone set — Pickup of central office or PBX line, line ringer, and automatic or manual dialing.
- 1660A2 telephone set — Same as 1660A1 with addition of exclusion feature.
- 1660A3 telephone set — Pickup of two central office or PBX lines, signaling, line ringer, and automatic or manual dialing.
- 1660A4 telephone set — Same as 1660A3 with addition of exclusion feature.

2.03 The 1660A1 telephone set is shop-wired for individual or flat-rate ring parties. With wiring changes it can be used on flat-rate tip parties, tip parties requiring an identifying ground, and 1A1 or 1A2 key telephone systems (Table B). When used with 1A1 or 1A2 key systems, replace D3BN with D4BK mounting cord.

2.04 The 1660-type telephone set is manufactured in four colors: green (-51), white (-58), light beige (-60), and light gray (-61). The set is also available on special order in black, yellow, rose pink, aqua blue, and turquoise.

Note: These special color sets are not to be promoted and should be ordered only on specific customer request.

26B Dial

2.05 The 1660-type telephone set uses a 26B dial which consists of a mechanical card dialer and a 25D TOUCH-TONE dial combined as a unit. The card dialer uses the electrical circuitry of the 25D dial for multifrequency dialing.

2.06 Automatic dialing is accomplished by coding a card similar to that used in other card dialers (see 4.12). The punched card allows two sets of contacts to close at one time for each digit. This generates the proper pair of frequencies for the digit desired. This same function is accomplished when a button is depressed on the TOUCH-TONE dial.

TABLE B

LINE AND RINGER CONNECTIONS — 1660A1 AND 1660A2 TELEPHONE SETS

| Wire or Lead | | | Indiv- idual or Bridged | Ring Party | Tip Party | | | Key Equip. 1A1 or 1A2 † | Exclu- sion |
|------------------------------------|------------|------|----------------------------------|---------------|-----------------------|-----------------|--------------|----------------------------------|----------------|
| | | | | | No Ident Ground | Identifying GRD | | | |
| | | | | | | 1000 ohms | 2650 ohms | | |
| Mount- ing Cord in Set | Tip | G | L1 | L1 | L1 | L2 | L2 | A | L1 |
| | Ring | R | L2 | L2 | L2 | L1 | L1 | C | L2 |
| | GRD- A1 | Y | A | A | A | G | G | G | A |
| | A | BK | | | | | | L2 | * |
| | ET | BL | | | | | | | 6‡ |
| | ER | W | | | | | | | 5‡ |
| Ringer Leads | | R | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | | BK | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | S | * | * | * | 5 | * | * | * |
| | | S-R | * | * | * | * | 5 | * | * |
| Switch- hook Leads | | S-BR | F | F | F | C | C | F | F |
| | | S-G | C | C | C | F | F | L2 | C |
| | | S | * | * | * | K | K | * | * |
| | | S-Y | L1 | L1 | L1 | L1 | L1 | A | L1 |
| | | S-W | L2 | L2 | L2 | L2 | L2 | G | L2 |
| Ringer Straps | | G | L2 | L2 | L1 | A | A | C | L2 |
| | | V | K | K | K | G | G | K | K |
| Exclusion Straps | | BR | | | | | | | L1 |
| | | Y | | | | | | | L2 |

* Insulate and store.

† Replace D3BN with D4BK mounting cord.

‡ Terminals on exclusion terminal board.

2.07 Two P-24E238 packages, each containing twenty code cards, and one P-13E363 set of nine index cards are supplied with each set.

Ringer

2.08 The set is equipped with an M1A ringer. The ringer is adjusted by a lever on bottom of set. A machine screw blocks the volume control from the off position. For ringer cutoff, remove screw through hole in base of set.

Exclusion

2.09 The exclusion feature, when provided, is actuated by pulling up on the exclusion button at top left of faceplate (Fig. 1). Exclusion is cancelled when handset is restored.

Turnbutton and Pushbutton Switch Assembly

2.10 A turnbutton-pushbutton switch assembly is supplied in the 1660A3 and 1660A4 telephone sets (Fig 1). The switch can be used for 2-line pick-up, extension or ringer cutoff, and signaling.

3. ASSEMBLY OF PARTS

3.01 Piece part information for the 1660-type telephone set is shown in Table A.

3.02 To change set code, use kit of parts and designated mounting cord (Table A) which must be ordered separately.

Housing

3.03 To remove housing:

- (1) Loosen four captive screws through access holes in bottom of base.
- (2) Raise rear of housing slightly to clear buttons, then lift housing straight up.
- (3) When replacing housing, keep front slightly lower until buttons clear housing.

26B Dial

3.04 To remove 26B dial:

- (1) Remove housing as shown in 3.03.

- (2) Disconnect spade tipped leads from network and TB1.

- (3) Lay set on side and remove two screws holding dial to base. Dial can then be lifted out.

3.05 To install 26B dial:

- (1) Dress spade tipped leads toward components on which they terminate.

- (2) Move dial into position making sure that locating tabs on dial mounting enter slots in base.

Note: Take extreme care not to pinch wiring between dial and base or dial and other components. Check also that wiring or components on bottom of dial do not rest on gong. This will reduce ringer volume.

- (3) Fasten dial to base with two mounting screws.

- (4) Reterminate spade tipped dial leads.

- (5) Check dial both manually and with a properly coded card.

M1A Ringer

3.06 To remove ringer:

- (1) Remove housing and place telephone set on side.

- (2) Remove two screws holding dial to base.

- (3) Lift dial straight up and to the right, exposing ringer. Dial leads are of sufficient length and need not be disconnected.

- (4) Disconnect ringer leads from TB1.

- (5) Remove two screws holding ringer to base, and remove ringer.

3.07 To install ringer, reverse procedure shown in 3.06, again taking care that no wiring is pinched between components.

4. INSTALLATION

Station Number Card

4.01 To install station number card, remove faceplate as follows:

- (1) Place KS-16750,L1 releaser at edge of faceplate catch (Fig. 1).
- (2) Push catch toward rear of set until releaser hits notched portion of faceplate.
- (3) Turn point of releaser under faceplate and raise faceplate.

4.02 Slide number card behind number card retainer into proper position (Fig. 1).

4.03 Replace faceplate, using releaser to hold catch until faceplate is in proper position.

Kits of Parts

4.04 The 1660A1 telephone set may be converted to furnish either exclusion, or 2-line pickup and signaling, or both. To convert, add a kit of parts listed under Table A.

4.05 The D-179949 exclusion kit contains:

- Exclusion switch assembly with leads and terminal board attached (Fig. 2).
- Wire link.
- Faceplate with opening for exclusion switch.
- Necessary hardware.

4.06 The D-179950 2-line pickup and signaling kit contains:

- Turnbutton-pushbutton switch assembly with leads and terminal board attached.
- Faceplate with opening for turnbutton-pushbutton switch.
- Necessary hardware.

4.07 The D-179951 kit of parts used to supply both features contains all the parts supplied in the other two kits except there is only one faceplate. This faceplate has openings for both exclusion and turnbutton-pushbutton switches.

Conversion to Exclusion

4.08 To add exclusion to set:

- (1) Connect wire link to exclusion switch assembly. The wire link has two 90-degree bends on both ends. Insert short end of wire link (Fig. 2) into hole provided at rear of switch assembly.
- (2) Mount switch assembly to switchhook mounting bracket. Be sure wire link enters hole provided in arm of switchhook. Fasten assembly with three furnished screws.
- (3) Dress wiring between switchhook and dial so terminal board is located at left rear of set (Fig. 2).
- (4) Fasten terminal board to base with two furnished screws.
- (5) Replace D3BN with D6AF mounting cord and make proper connections.
- (6) Replace faceplate.
- (7) Replace housing and check set for proper operation.

2-Line Pickup and Signaling

4.09 To add 2-line pickup and signaling to set:

- (1) Mount turnbutton-pushbutton switch assembly (Fig. 2) on left side of set in front of switchhook. Use two shouldered screws furnished in kit.
- (2) Dress wiring across front of dial so terminal board is located at right front of set. Fasten terminal board to base with two furnished screws.
- (3) Replace D3BN with D10L mounting cord and make proper connections.
- (4) Replace faceplate.
- (5) Replace housing and check set for proper operation.

Coding Card

4.10 The card used with the 1660-type telephone set is similar to that used with the rotary card dialer except:

- (a) The digit "0" appears in both groups of numbers instead of just one.
- (b) A heavy black line separates the two groups of numbers.

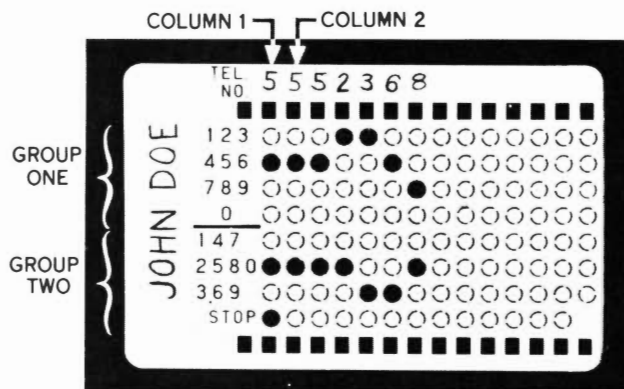


Fig. 3 - Card Coded for 7-Digit Telephone Number

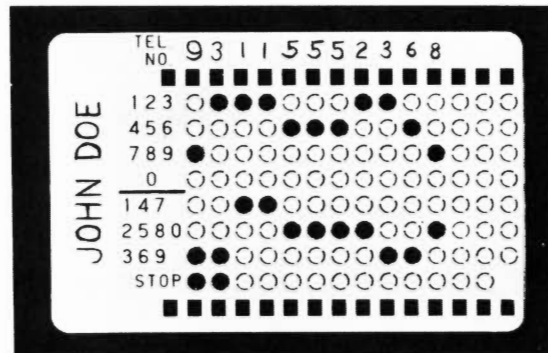


Fig. 4 - Card Coded for Access Code (9) Stop, Area Code (311) and 7-digit Telephone Number

4.11 It is important that cards be properly punched and checked for accuracy to ensure satisfactory results.

4.12 Code cards as follows:

- (1) Write name and telephone number in spaces provided as shown in Fig. 3 and 4.
- (2) Convert exchange letters to numbers. For example use 2 for A, B, or C and 7 for P, R, or S.

Note: There are two groups of numbers 1 through 0 at top of card.

- (3) In Fig. 3 the first digit of the telephone number is 5. In column 1, locate digit 5 in the first group of numbers and punch out the perforation with a pencil or ball-point pen. In the same column, locate digit 5 in the second group of numbers and again punch out the perforation.

Note: The STOP in column 1 is already punched.

- (4) Repeat this procedure for each digit in the telephone number. The digit "0" must be punched out in each group of numbers just as any other digit.
- (5) Do **not** punch out the STOP in column following the last digit.
- (6) For DDD calls, punch out the access code (if required), area code, and 7-digit telephone number.

4.13 In certain PBX systems it may be necessary to dial an access code to obtain central office dial tone. To prepare card for dialing an access code (Fig. 4), do the following:

- (1) Punch out access code in the first column.

Note: The STOP in column 1 is already punched.

- (2) In the next column, punch out the STOP. Starting in the same column, punch out in the regular manner the remainder of the telephone number, including access and area code if any.

4.14 Check card before using to be sure it is properly punched for the number desired. There should be two holes in each column. Punch holes out completely.

5. OPERATION

5.01 Operate card dialer as follows:

- (1) Insert punched card into dialer slot with name on top, facing front of set. Push card down completely.
- (2) Remove handset and listen for dial tone.
- (3) Depress dialer START bar (Fig. 1). Card dialer will read entire card in 2 to 3 seconds.

- (4) After entire card has been read, remove card from dialer slot and store.
- (5) After completing call, replace handset.
- (6) To abandon call during dialing, restore handset. The card dialer will continue to read the entire card.

5.02 For cards coded for the access code, repeat steps 1 and 2 in 5.01. Depress START bar. After access code is dialed, card will stop. When second dial tone is heard, depress START bar again and the remaining digits will be dialed. Then follow steps 4 through 6 in 5.01.

5.03 Letters and numbers on the TOUCH-TONE dial are grouped in the same sequence as those on a rotary dial. To dial a number using the TOUCH-TONE dial, depress button for that letter or number. Press buttons firmly and in order of telephone number.

6. MAINTENANCE

- 6.01** See appropriate sections for maintenance of components such as handset, ringer, etc.
- 6.02** Maintenance of the 26B card dialer is limited to the following:
 - (a) Sticking Cards — Make visual inspection of dialer for loose parts or wires interfering with dialer.
 - (b) Foreign Material — Check for material such as paper clips, hairpins, etc. lodged in card slot.

- (c) Faulty Cards — Check cards for proper size by comparing with a working card. Replace bent or mutilated cards.
- (d) Inoperative Dial — Check polarity of line. Maintain battery or negative potential on the O-BK of the dial and ground or positive potential on the G of the dial.
- (e) Wrong Numbers — Check at least twice on each line with a test code card. Check operation of TOUCH-TONE dial by pulsing test number on buttons.

6.03 For more complete test of TOUCH-TONE dial, see the section concerning 25-type station dials.

6.04 If trouble tests in 26B card dialer, replace dialer.

Note: No adjustments of dialer are to be made in the field.

6.05 A nonglare faceplate (Table A) is available for replacement at locations where there is trouble in dialing due to light reflections in the dial area. See 4.01 for removal of faceplate.

7. CONNECTIONS

- 7.01** Connections for the 1660A1 and A2 are shown in Fig. 5 and Table B.
- 7.02** Connections for the 1660A3 and A4 are shown in Fig. 6 and Table C.

LINE AND RINGER CONNECTIONS — 1660

| Features (Note 2) | | | | | | | | Connections to Terminals | | | | | | | | | |
|---------------------------|-----------|-----------------------|------------------------|-------------------------|---------------|-------------------------|---------------|----------------------------|------|-----|-----|-----|-----|------|------|-----|-----|
| Number of Lines Picked Up | Signaling | Ringer in Set Used as | | Turn Key Used to Cutoff | | Excn Key Used to Cutoff | | Mounting Cord Leads at TB2 | | | | | | | | | |
| | | Line Ringer | Com or Prv Line Ringer | Ext Sta or Ext Ringer | Ringer in Set | Ext Sta or Ext Ringer | Ringer in Set | | | | | | | | | | |
| | | | | | | | | W-BL | BL-W | W-O | O-W | W-G | G-W | W-BR | BR-W | W-S | S-W |
| 1 | • | • | | • | | • | | 5 | 6 | 3 | 4 | 7 | 8 | * | * | 9 | 10 |
| 1 | • | • | | • | • | • | | 5 | 6 | 3 | 4 | 7 | 8 | * | * | 9 | 10 |
| 2 | • | • | | | | • | | 1 | 2 | 3 | 4 | 7 | 8 | * | * | 9 | 10 |
| 2 | • | | • | | | • | | 1 | 2 | 3 | 4 | 7 | 8 | * | * | 9 | 10 |
| 2 | • | | • | | | | • | 1 | 2 | 3 | 4 | 7 | 8 | † | † | 9 | 10 |

Note 1: 2-line pick-up connections provide exclusion on Line 1. To exclude Line 2, connect exclusion key 1

Note 2: The 1660A3 telephone set does not provide the exclusion features.

* Connect to terminals 5 and 6 of exclusion terminal board.

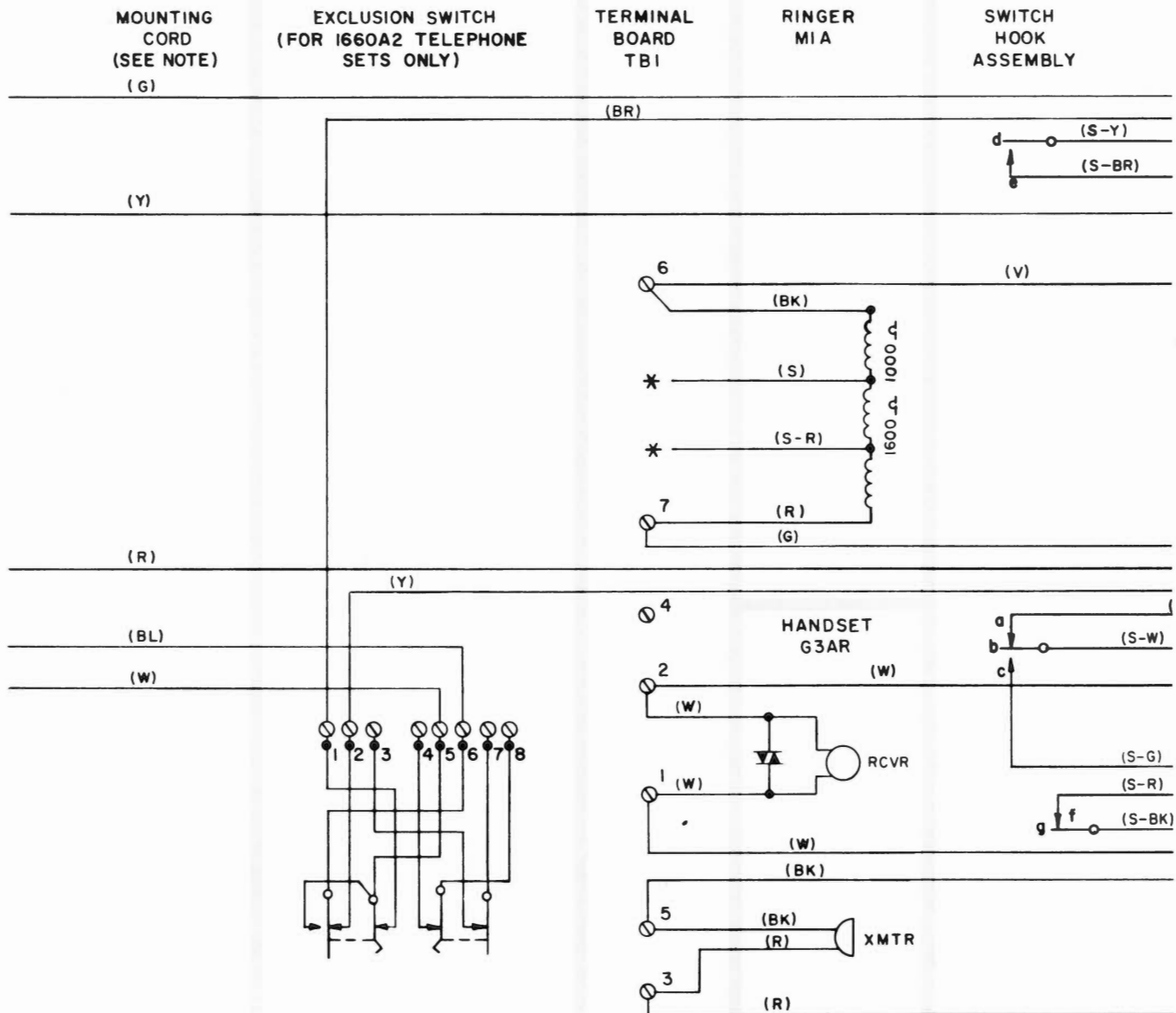
† Insulate and store.

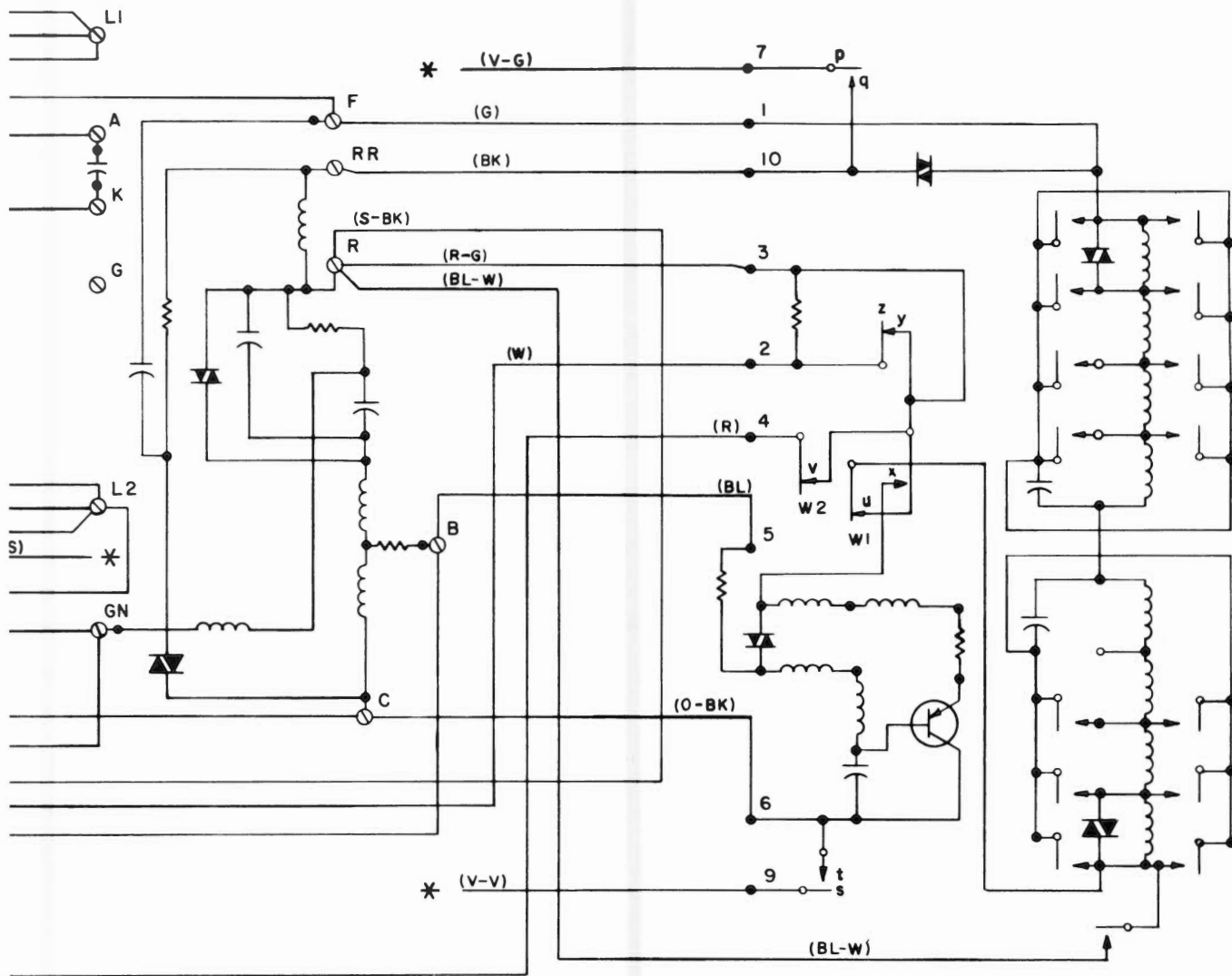
TABLE C

A3 AND 1660A4 TELEPHONE SETS (See Note 2)

| in Set | | | | | | | External Connections To Mounting Cord | | | | | | | | | | | |
|----------------|------|------------------------------|----|---------------|------|---|---------------------------------------|------|--------|------|----------------|-----|------------------|------|----------------------------------|-----|----------------|------|
| Turn Key Leads | | Exclusion Key Leads (Note 1) | | Ringer Straps | | | Line 1 | | Line 2 | | Signal Circuit | | Excluded Circuit | | Common or Private Ringer Circuit | | Cutoff Circuit | |
| BR-BL | BR-G | Y | BR | O | G-BK | V | Tip | Ring | Tip | Ring | S | GRD | Tip | Ring | R | B | Tip | Ring |
| 5 | 6 | 5 | 6 | 5 | 6 | K | W-BL | BL-W | | | W-G | G-W | W-BR | BR-W | | | W-O | O-W |
| 5 | 6 | 5 | 6 | 1 | 2 | K | W-BL | BL-W | | | W-G | G-W | W-BR | BR-W | | | W-O | O-W |
| 5 | 6 | 1 | 2 | 1 | 2 | K | W-BL | BL-W | W-O | O-W | W-G | G-W | W-BR | BR-W | | | | |
| 5 | 6 | 1 | 2 | 9 | 10 | A | W-BL | BL-W | W-O | O-W | W-G | G-W | W-BR | BR-W | W-S | S-W | | |
| 5 | 6 | 9 | 10 | * | * | A | W-BL | BL-W | W-O | O-W | W-G | G-W | | | W-S | S-W | | |

leads Y and BR to terminals 3 and 4, respectively.

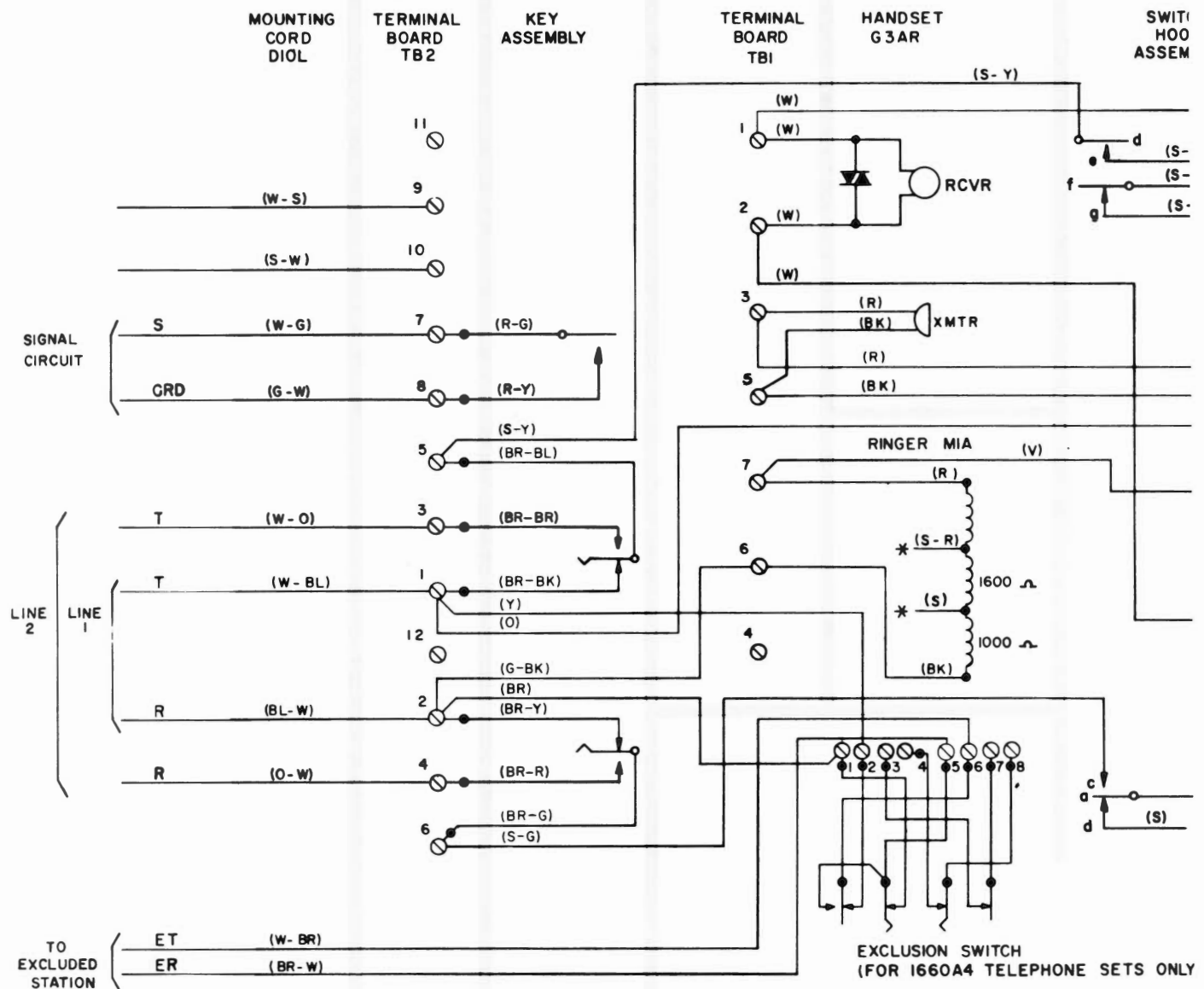


NETWORK
425EDIAL
26B

Note: The 1660A1 telephone set is equipped with D3BN mounting cord. When converting to 1660A2, replace D3BN with D6AF cord. To add 1A1 or 1A2 control leads to 1660A1, replace D3BN with D4BK cord.

* Insulate and store.

Fig. 5 — 1660A1 and 1660A2 Telephone Sets, Connections



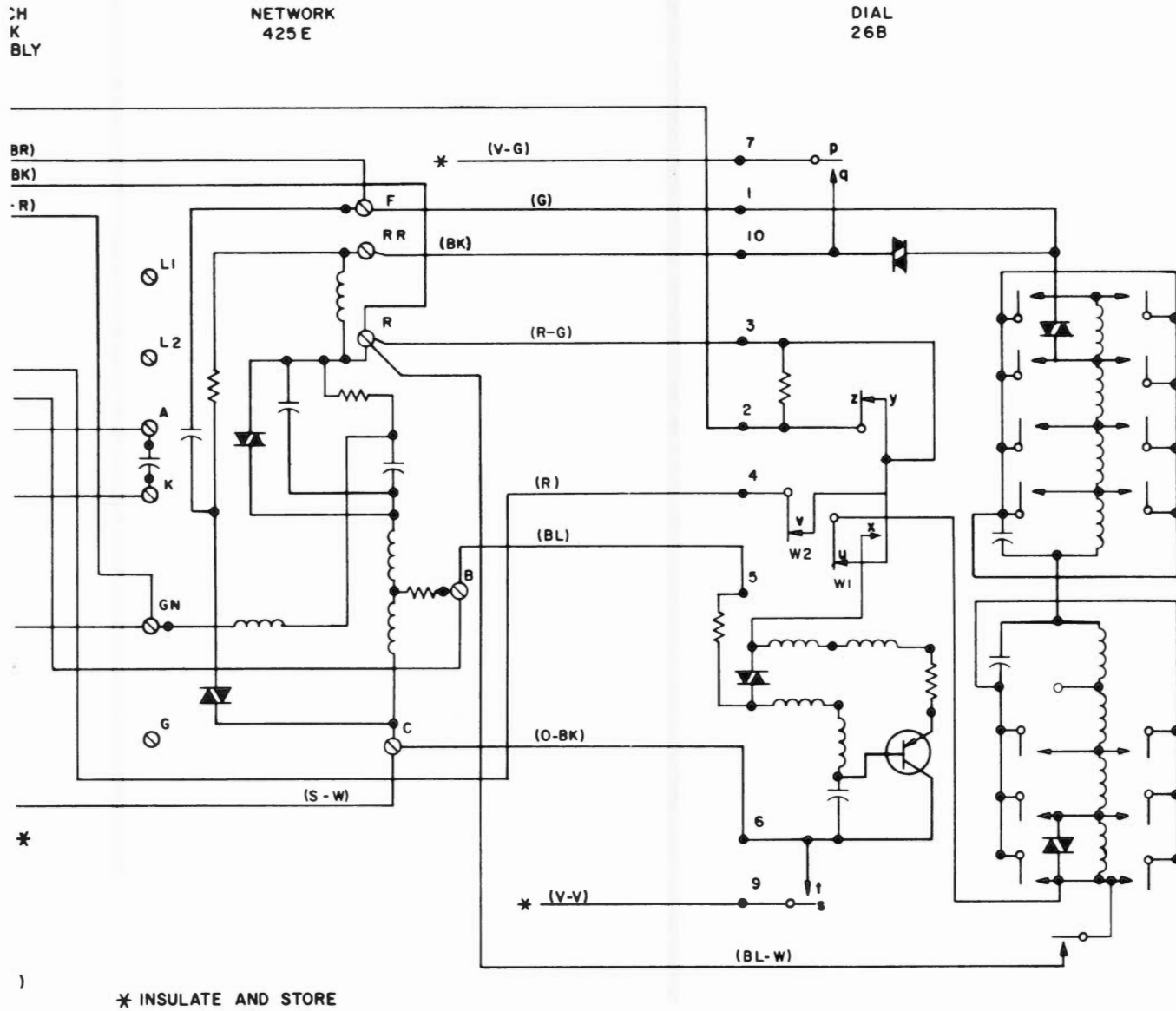


Fig. 6 — 1660A3 and 1660A4 Telephone Sets,
Connections