

## TELEPHONE SETS

### 661 TYPE

#### 1. GENERAL

1.01 This section covers identification, operation, installation, connections, and maintenance for the 661-type telephone set (Fig. 1 and 2).

1.02 The information in this section was formerly found in another section on 661-type telephone sets.

#### 2. IDENTIFICATION

2.01 The 661-type telephone set permits manual or automatic dialing, answering, signaling, and holding on central office, PBX, private, or intercommunicating lines in 1A, 1A1 and 1A2, or 6A key telephone systems.

2.02 The 661-type telephone set is equipped with six square-face illuminated buttons and has an electromechanical dialing mechanism in addition to a regular rotary dial.

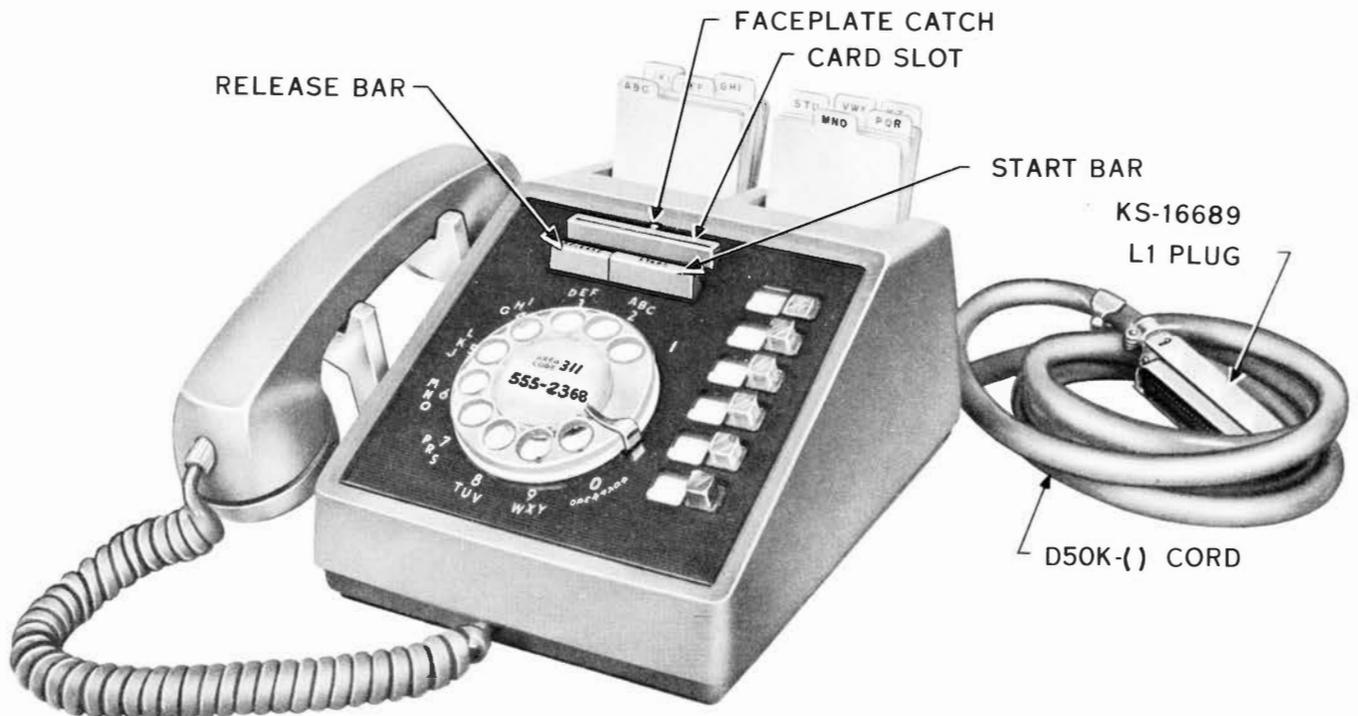


Fig. 1 — 661-Type Telephone Set

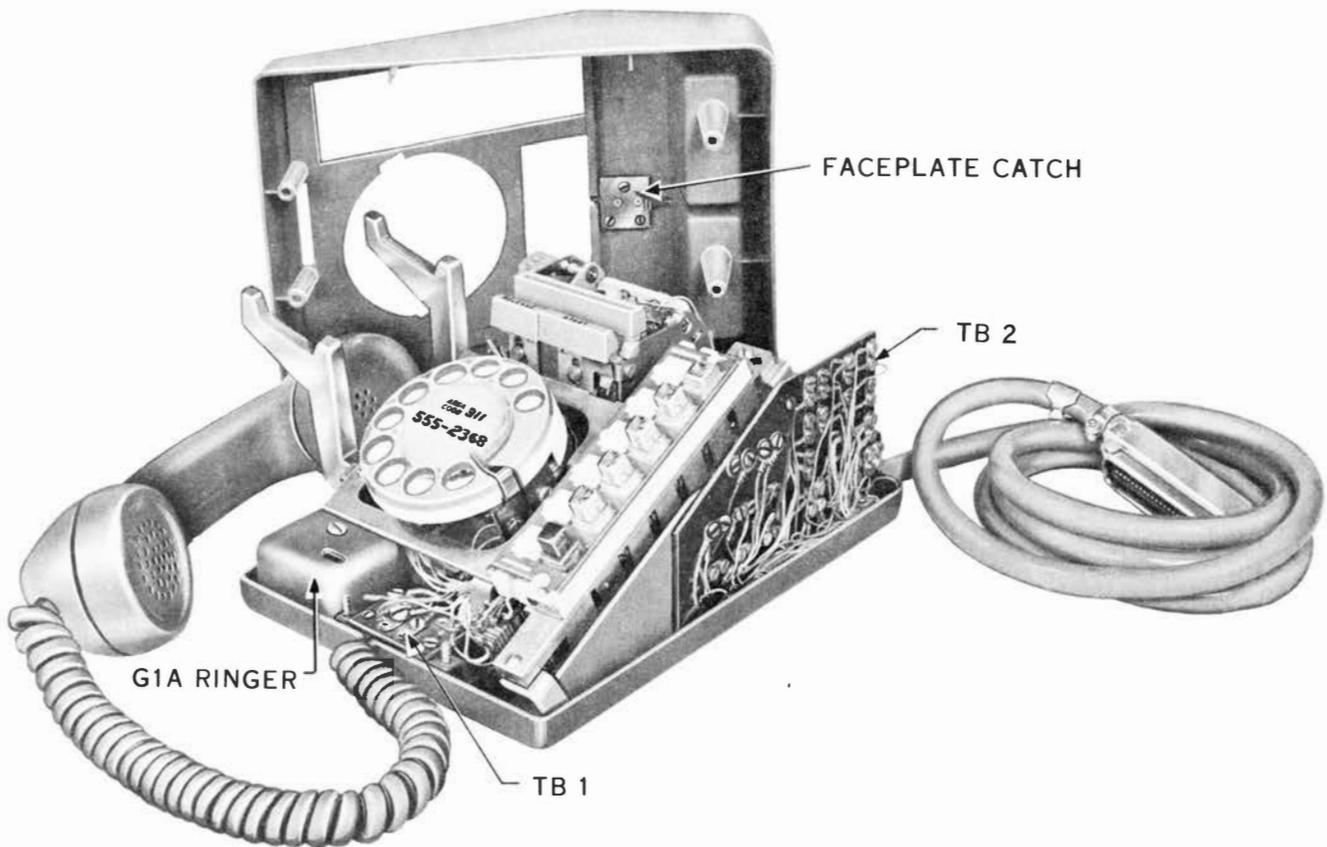
**TABLE A**  
**SELECTION OF SETS**

Set Code	Key	Color Code	Mtg Cord
661A1	599A	-51	D50K-51
661A2	598A	-58	D50K-58
661A3	599B	-60	D50K-60
		-61	D50K-61

*Note:* Color codes shown are: (-51) green, (-58) white, (-60) light beige, (-61) light gray.

**2.03** The 661-type telephone set is equipped with a D50K cord. Earlier 661A1 and 661A2 sets were equipped with a D50E cord. The set end is equipped with a KS-16671, List 1 plug. The opposite end terminates in a KS-16689, List 1 plug for connection to an A25B connector cable. Use a D50K cord for replacements.

**2.04** Although there are three coded sets (Table A), only the 661A1 is manufactured. Conversion to the other codes will be done at the distributing house or in the field. Keys are interchangeable between sets. When replacing keys, remove and discard any P-10E865 wire clips found in place.



**Fig. 2 — 661-Type Telephone Set, Cover Removed**

**2.05** The electromechanical dialer (40A dial) provides automatic dialing up to 14 digits. It is a dc pulse generator drawing its operating power from two sources: line current and a spring motor. Its output is controlled by contacts on the fingers of a card-reading device.

**2.06** Insertion of the card winds the spring motor. Operation of the START bar allows the card to be fed past the reader mechanism. The coded portion of the card controls the output of the pulse generator. If user wishes to stop dialing for any reason, depression of the RELEASE bar ejects the card without further dial pulsing.

**2.07** Card sets supplied with the set for use in the 40A dial are coded P-13E353 at the present time (Fig. 3 and 4). When stocks of this card are depleted, the P-24E238 card sets (Fig. 5 and 6) will be substituted. The cards differ slightly in number groupings and procedures for coding telephone numbers.

**2.08** Two card sets, each containing twenty cards, are supplied with the set. A set of nine P-13E363 index cards is furnished with the set.

**2.09** The sets are equipped with either a 4010A or 4010B network. The networks are the same electrically, but the 4010B network contains L1, L2, G, and H terminals which are not used in this set.

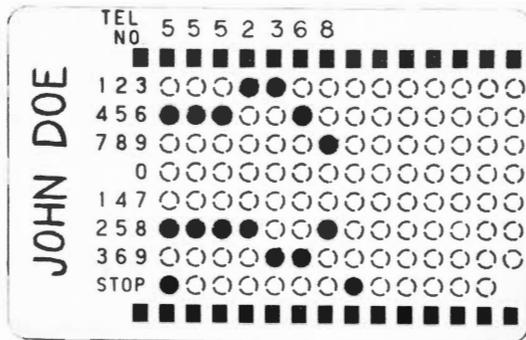


Fig. 3 - P-13E353 Card Coded for 7-Digit Telephone Number (555-2368)

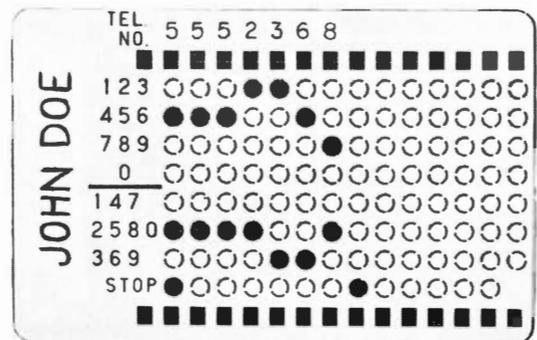


Fig. 5 - P-24E238 Card Coded for 7-Digit Telephone Number (555-2368)

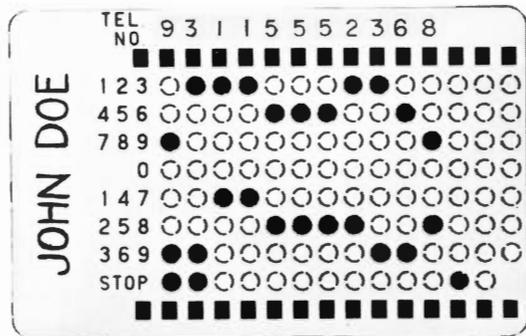


Fig. 4 - P-13E353 Card Coded for Access Code (9), Area Code (311), and 7-Digit Telephone Number (555-2368)

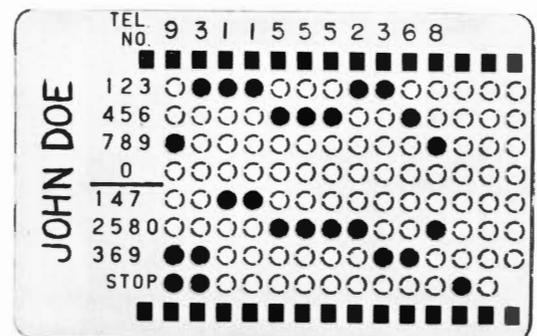


Fig. 6 - P-24E238 Card Coded for Access Code (9), Area Code (311), and 7-Digit Telephone Number (555-2368)

2.10 The G1A ringer in the set can be used as an individual line ringer or as a common audible signal. It also has a control adjustment for high or low volume. A machine screw is factory placed, blocking the volume control from the OFF position. For ringer cutoff, remove machine screw through a hole provided in the base of the set.

2.11 Provision is made for mounting a KS-8109 buzzer for use as a second audible signal. Two plastic screws and four fiber washers are furnished as part of the set, but the buzzer must be ordered separately.

### 3. OPERATION

3.01 The operation of 661-type telephone set keys is the same as regular 4- or 6-button sets.

3.02 Coding instructions for cards (Fig. 3, 4, 5, and 6) are as follows:

(1) Write name and desired telephone number in spaces provided as shown in Fig. 3 and 4. Convert the two exchange letters to numbers by referring to the telephone dial. (For example: use 2 for A, B, or C.)

(2) There are two groups of numbers on the left side of the card (Fig. 3 and 4). On the P-13E353 card set (Fig. 3 and 4), the zero appears only once; on the P-24E238 card set (Fig. 5 and 6), the zero appears in both number groups.

(3) Each digit in the telephone number heads a column. For example: in Fig. 3 and 5, the first digit of the telephone number is 5. Locate the 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 and punch out the 5 in the second group of numbers. If not already removed, punch out the STOP in the same column.

(4) Repeat this procedure for each digit in the telephone number except for punching out the STOP. When zero appears in the telephone number, punch out the same as other digits. The type of card determines whether one or two punches are required.

(5) In the column immediately following the last digit, punch out the STOP hole. This hole will stop the card and immediately prepare the telephone for talking even though the card still has some distance to travel.

(6) For DDD calls punch out the required digits including the directing code, if required, area code, and 7-digit local telephone number.



*Check the card before using to be sure that it has been properly punched for the number desired. It is important that each hole be punched completely.*

3.03 In certain PBX systems it is necessary to dial an access code to obtain central office dial tone. To prepare a card for dialing an access code (Fig. 4 and 6):

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

(2) Punch out the STOP in the next column. Starting in the same column punch out, in the regular manner, the telephone number, including any directing and area codes.

**3.04** Operate card dialer as follows:

- (1) Insert punched card into dialer slot and push down as far as possible. Card can only be inserted with name on top, facing front of set.
- (2) Remove handset and listen for dial tone.
- (3) Depress dialer START bar.
- (4) When call is completed, replace handset.
- (5) Depress RELEASE bar before attempting to remove card from slot.

**3.05** For cards coded for an access code, repeat steps 1 through 3 in 3.04. Card will stop after access code is dialed. When second dial tone is heard, depress START bar again to dial remaining digits. Then steps 4 and 5 in 3.04 apply.

**3.06** To abandon call during dialing, replace handset. Depress RELEASE bar before attempting to remove card.

**4. INSTALLATION**

**4.01** The 661-type set is installed as a regular 4- or 6-button set in accordance with standard sections.



*Correct line polarity must be maintained on all lines for proper operation. Dialer will not operate properly if line is reversed. In dial PBX systems, any reversal in the switching train will cause failure of the 40A dial, but not the 8C dial.*



*Never place 48-volt test battery across tip and ring of pickup keys without placing a current limiting resistor in series with the battery. Use a KS-13490, List 1 (1000 ohm, 1/2 watt) resistor or one of equivalent value. Failure to do so will result in damage to pulsing switch or start switch of the 40A dial.*

**4.02** An E-4646 designation strip is supplied with each set. To gain access to the key, place the KS-16750, List 1 releaser at edge of faceplate catch. Push faceplate catch toward rear of set until releaser engages notched portion of faceplate cutout. Turn point of releaser under faceplate and raise faceplate. To restore, reverse the procedure. Designation strip is installed in the usual manner.

**5. CONNECTION INDEX**

Fig. 7—661A1 Telephone Set with 599A Key

Fig. 8—661A2 Telephone Set with 598A Key

Fig. 9—661A3 Telephone Set with 599B Key

Fig. 10—D50E Cord Connections

Fig. 11—D50K Cord and Connector Cable Connections

Table B—Connections to 3A Speakerphone Using 148A Adapter

Table C—Connections to 3A Speakerphone Using 149A Adapter

Table D—1A1 and 1A Conversion

Table E—Pickup to Signal Key Conversion

6. MAINTENANCE

6.01 Maintenance on the 661-type telephone set is limited to the following items:

- (a) On reports of mechanical trouble with the card dialer, such as cards sticking, etc, make a visual inspection of dial for loose parts or wires interfering with the dialer. Check to see if any foreign material (paper clips, hairpins, etc) is lodged in the card slot. Check faulty cards for proper size by comparing them with a working card. Replace bent or mutilated cards. Do not attempt to adjust springs or dialer contacts.



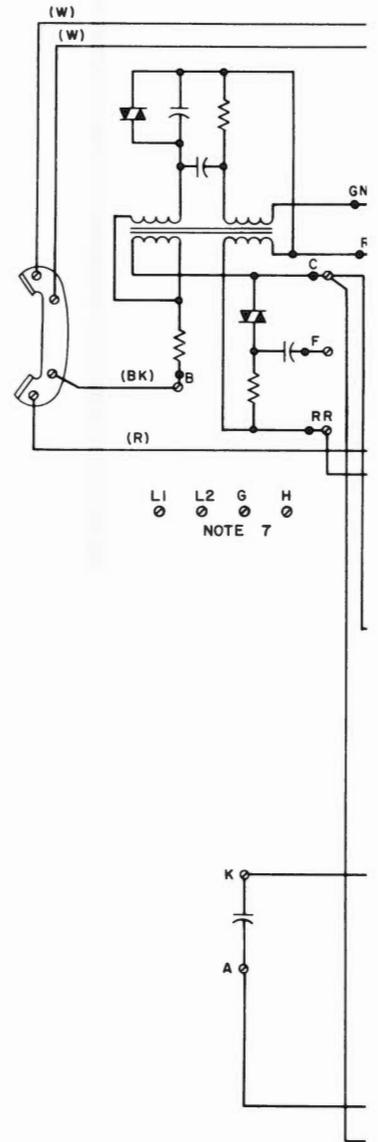
*Check all lines for proper polarity.*

- (b) For electrical troubles, such as dialing wrong numbers, use a card coded with a local test number. Check at least twice on each line with test code card. Inspect customer cards for proper coding.

- (c) See appropriate sections for maintenance of 8C dial, 40-type dial, G3-type hand set, and keys.

- (d) If trouble still persists, replace set.

6.02 A nonglare faceplate (P-25E607) is available for replacement when subscriber specifically complains of glare in dial area. See 4.02 for method of removing faceplate.



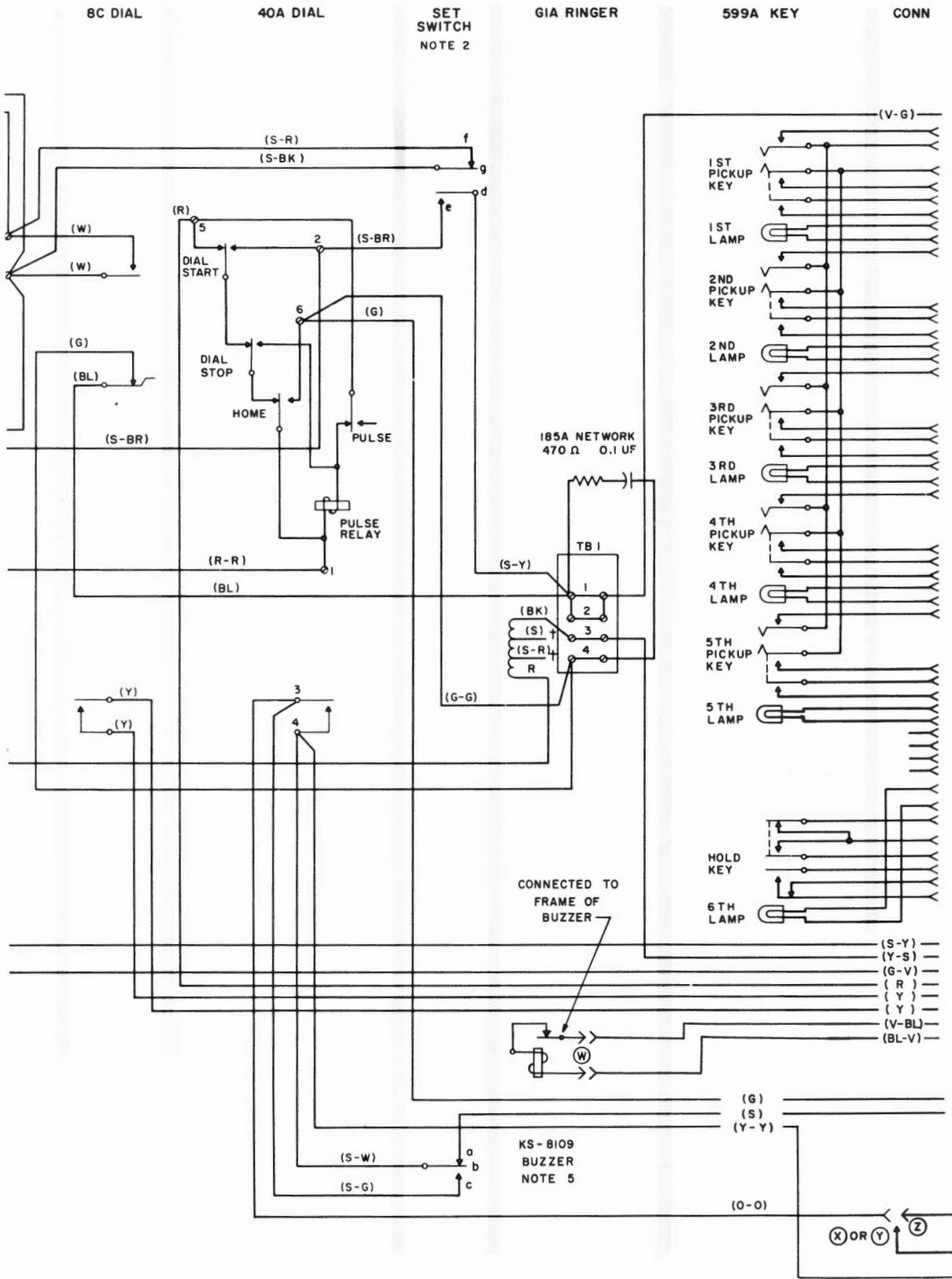
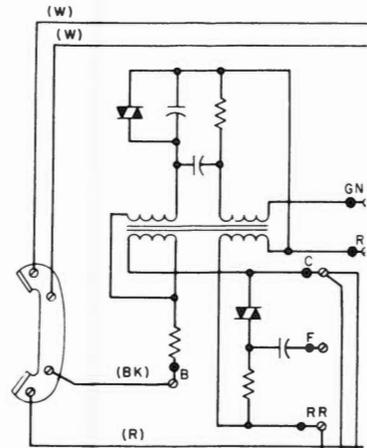


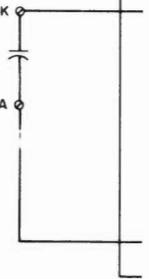
Fig. 7 - 661A1 Telephone Set with 599A Key

G3 - TYPE  
HAND SET

4010 TYPE NETWORK



L1 L2 G H  
NOTE 7



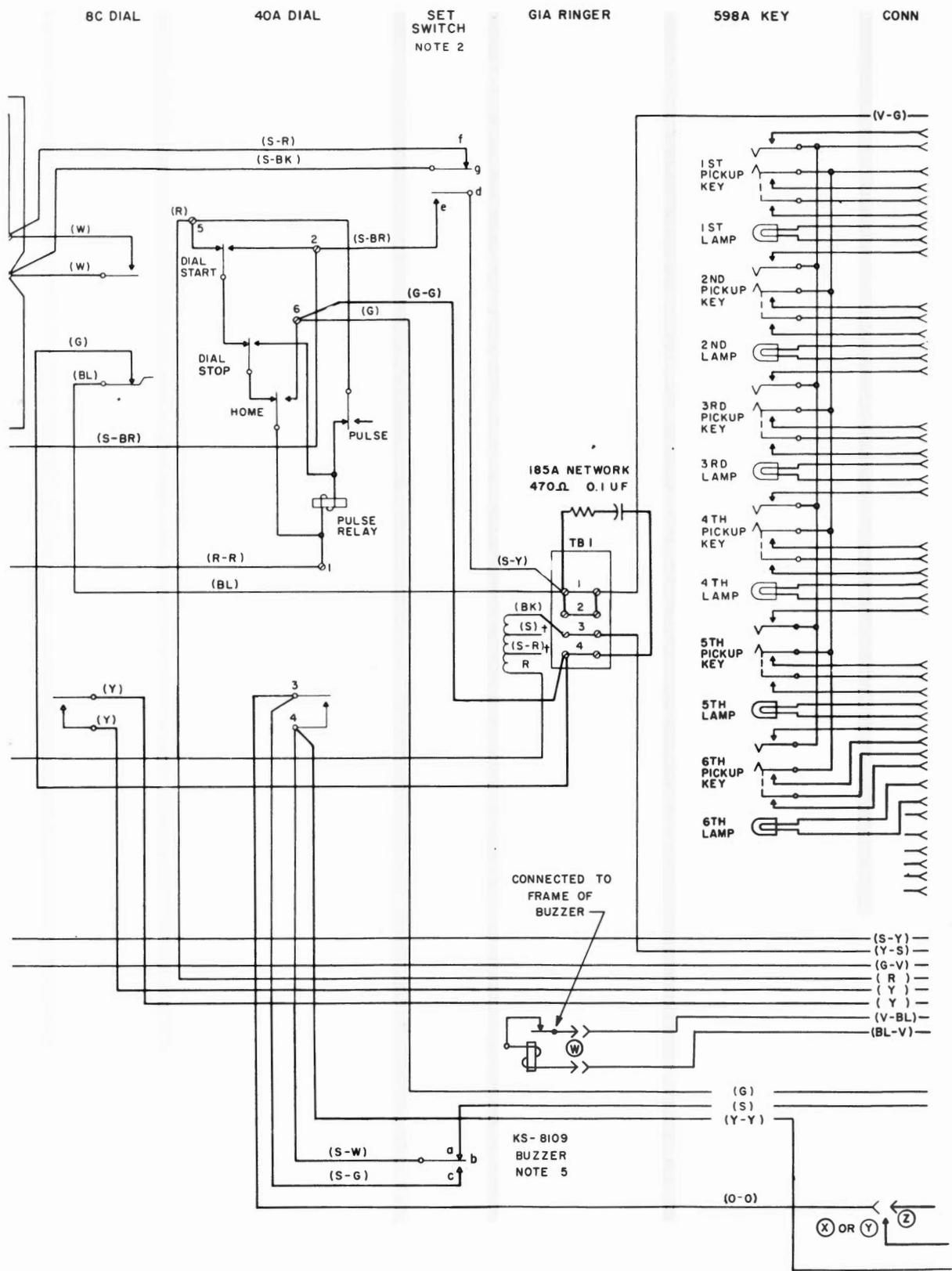
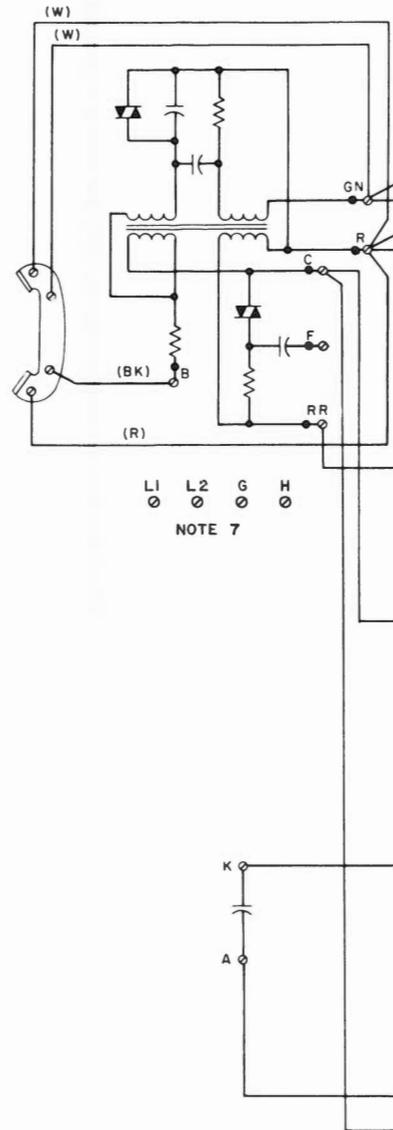


Fig. 8 — 661A2 Telephone Set with 598A Key

G3 - TYPE  
HAND SET

4010 TYPE NETWORK



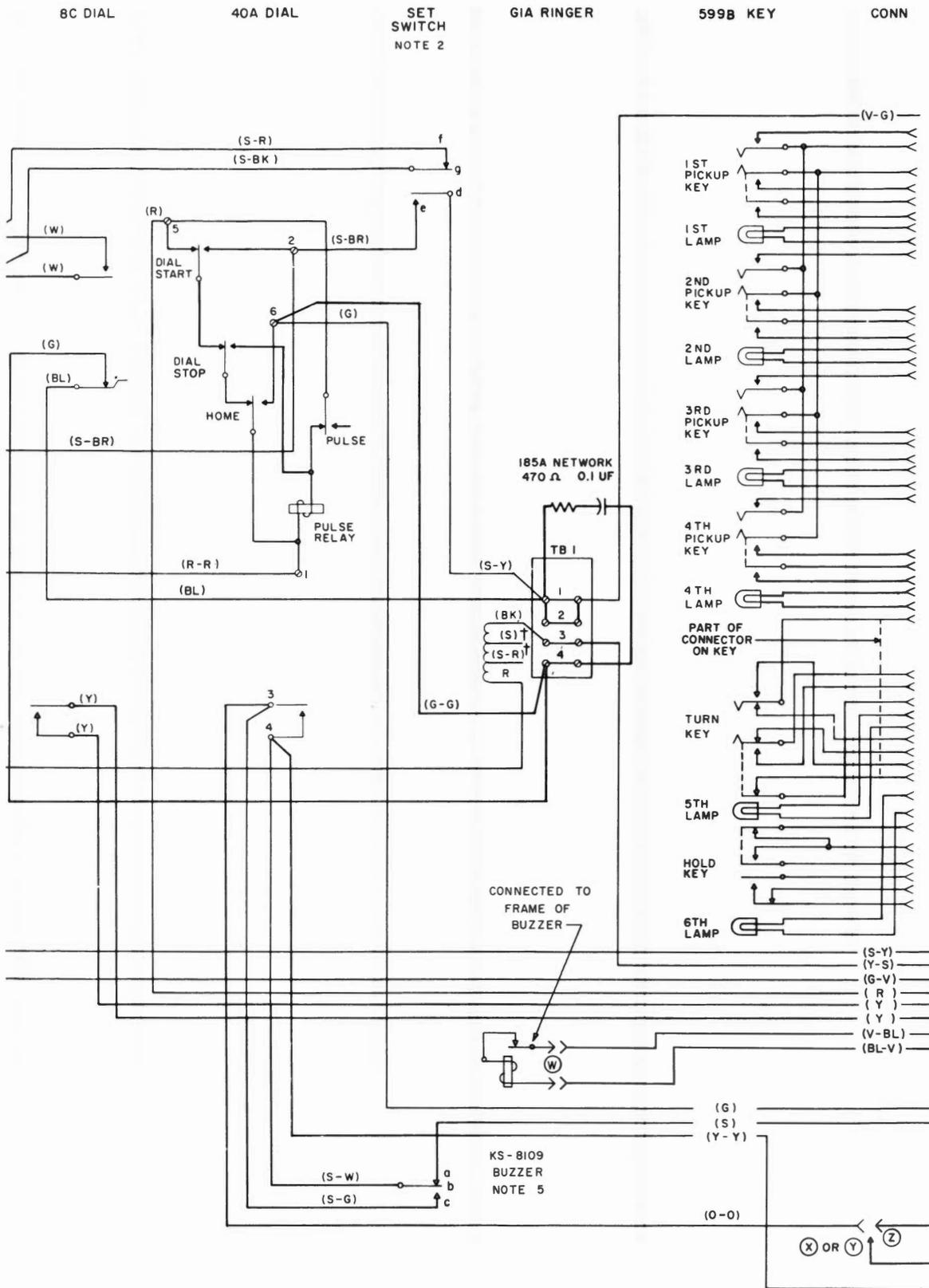


Fig. 9 — 661A3 Telephone Set with 599B Key

**TABLE B**  
**CONNECTIONS TO 3A SPEAKERPHONE**  
**USING 148A ADAPTER**

Terminals in Set	Mtg Cord	148A Adapter Cord	Lead Desig	Term. on 55A Control Unit
A-BL	V-S	S-BK	AG	5
LK	S-V	S-Y	LK	*
2	V-BL	Y-BK	BZ1	6
1	BL-V	G-W	BZ	7
10	V-BR	S	P3	21
9	BR-V	BL-W	P4	30
1 †	V-G	BK-W	T1	19
C ‡	G-V	BK-BL	R-1	28
3 †	Y-S	G-Y	B-B1	8
A ‡	S-Y	R-W	R-R1	9
A1	O-W	G-BK	A1	12 §
		O-W	A1	12 §

**TABLE C**  
**CONNECTIONS TO 3A SPEAKERPHONE**  
**USING 149A ADAPTER**

Terminals in Set	Mtg Cord	149A Adapter Terminals	Lead Desig	Term. on 55A Control Unit
A-BL	V-S	12A	AG	5
LK	S-V	11A	LK	*
10	V-BR	10A	P3	21
9	BR-V	9A	P4	30
1 †	V-G	8A	T1	19
C ‡	G-V	7A	R1	28
3 †	Y-S	2A	B-B1	8
A ‡	S-Y	1A	R-R1	9
A1	O-W	A1	A1	12 §
SG	BR-Y	SG	SG	12 §
1	V-BL	4B	BZ1	6
2	BL-V	3B	BZ	7

**Note:** For 3A speakerphone component connections refer to section 3A speakerphone system, connections, 660 telephone sets.

\* Connect to *BK* of 666A transmitter.

† TB1.

‡ Terminals on Network.

§ See option (S) or (T), Fig. 7.

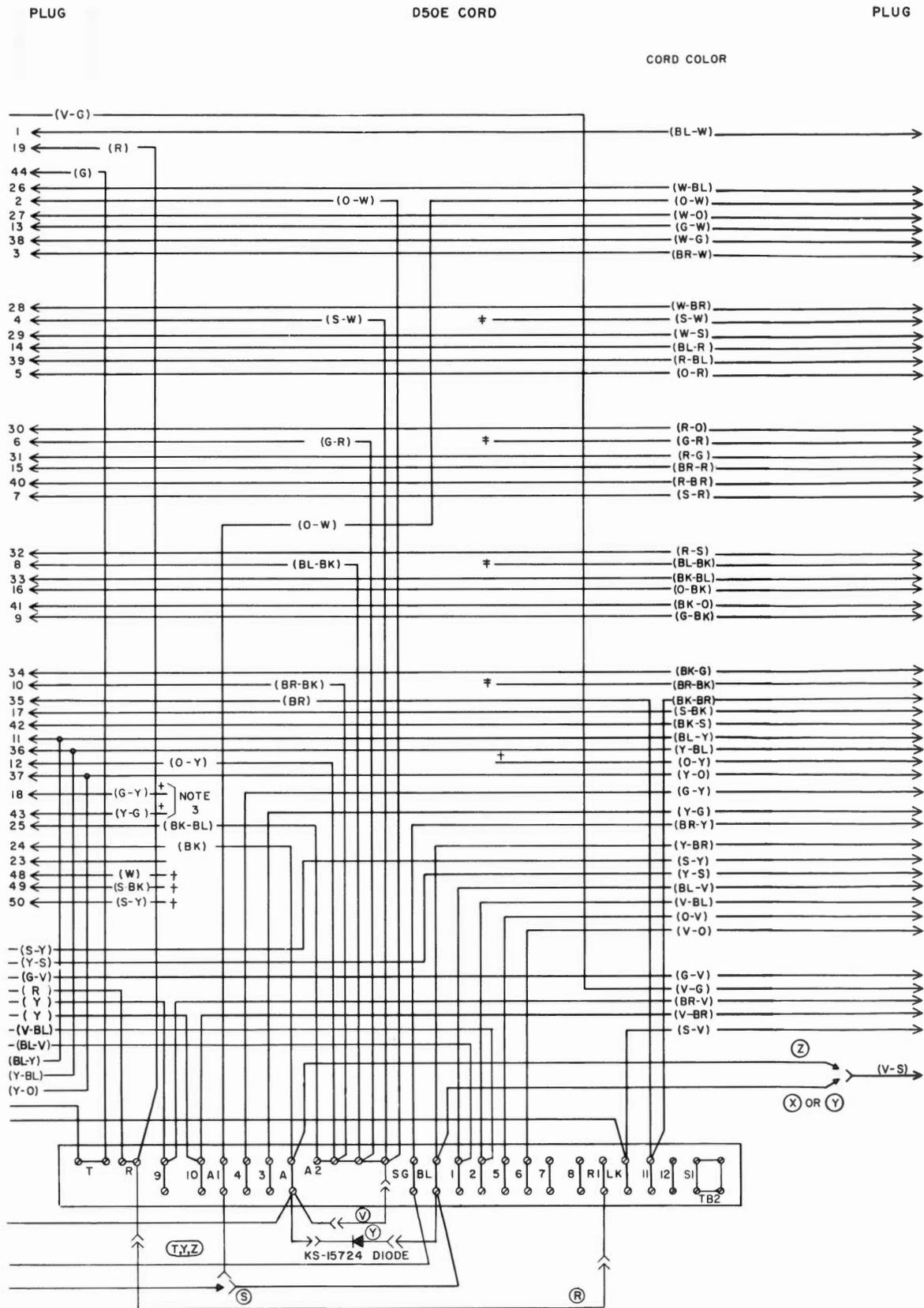


Fig. 10 - D50E Cord Connections Tables B and C

**SECTION C38.665.00**

**Note 1:** Set is wired for 1A1 and 1A2 telephone systems. See conversion tables for 1A key telephone system.

**Note 2:** Contact sequence for switch shall be as follows:

Removing handset

- (1) cb makes.
- (2) de makes.
- (3) ab breaks (may break before de makes).
- (4) fg breaks after de makes.

Restoring handset

- (1) ab makes and de breaks before cb breaks.
- (2) Other contacts no requirement.

**Note 3:** When 6th lamp is required in 661A1 or 661A3 telephone sets, terminate (Y-G) on terminal 3 and (G-Y) on terminal 4 of TB 2. These leads are terminated in the 661A2 telephone set. Make proper connections at equipment.

**Note 4:** Set is shop wired for use with external

3A speakerphone. A 149A adapter may be required for connection to speakerphone control unit.

**Note 5:** On sets equipped with D50E cord, the BZ (BL-V) and BZ1 (V-BL) are terminated on 1 and 2 of TB2. On sets with D50K cord, these leads are insulated and stored. When KS-8109 buzzer is provided, terminate these leads directly on buzzer. The buzzer shall be mounted to the two PEM nuts on the base plate by means of two plastic screws and two fiber washers to insulate it from the base plate. The plastic screws and fiber washers are furnished in place as part of the telephone set. Care should be taken that terminal of buzzer does not touch base of set.

**Note 6:** (W) in D50E cord or (W-G) in D50K cord.

**Note 7:** These terminals appear on 4010B network only.

† Insulate and store.

‡ Dead end at butt.

**TABLE D**  
**1A1 AND 1A2 OF 1A CONVERSION TERMINAL STRIP TB 2**

Lead Color	BK-BL	R of Key	Note 6	S-BK	S-Y
1A1 & 1A2	A2	R	†	†	†
1A	†	R1	A2	R1	R

**TABLE E**  
**PICKUP TO SIGNAL KEY CONVERSION**

Key No.	Cord Color	From Pickup	To Individual Signal	To Common Signal
6	O-Y	A2	SG	S1
5	BR-BK	A2	SG	S1
4	BL-BK	A2	SG	S1
3	G-R	A2	SG	S1
2	S-W	A2	SG	S1
1	O-W	A2	SG	S1

- Ⓜ Buzzer
- Ⓧ 1A key telephone system
- Ⓨ 1A1 and 1A2 with station busy lamp
- Ⓩ 1A1 and 1A2 no station busy lamp
- Ⓢ 1A key telephone system with 3A speakerphone
- Ⓣ 1A1 and 1A2 key telephone system with 3A speakerphone
- Ⓡ 1A without hold (598A key)
- Ⓥ 1A1 and 1A2 without hold (598A key)



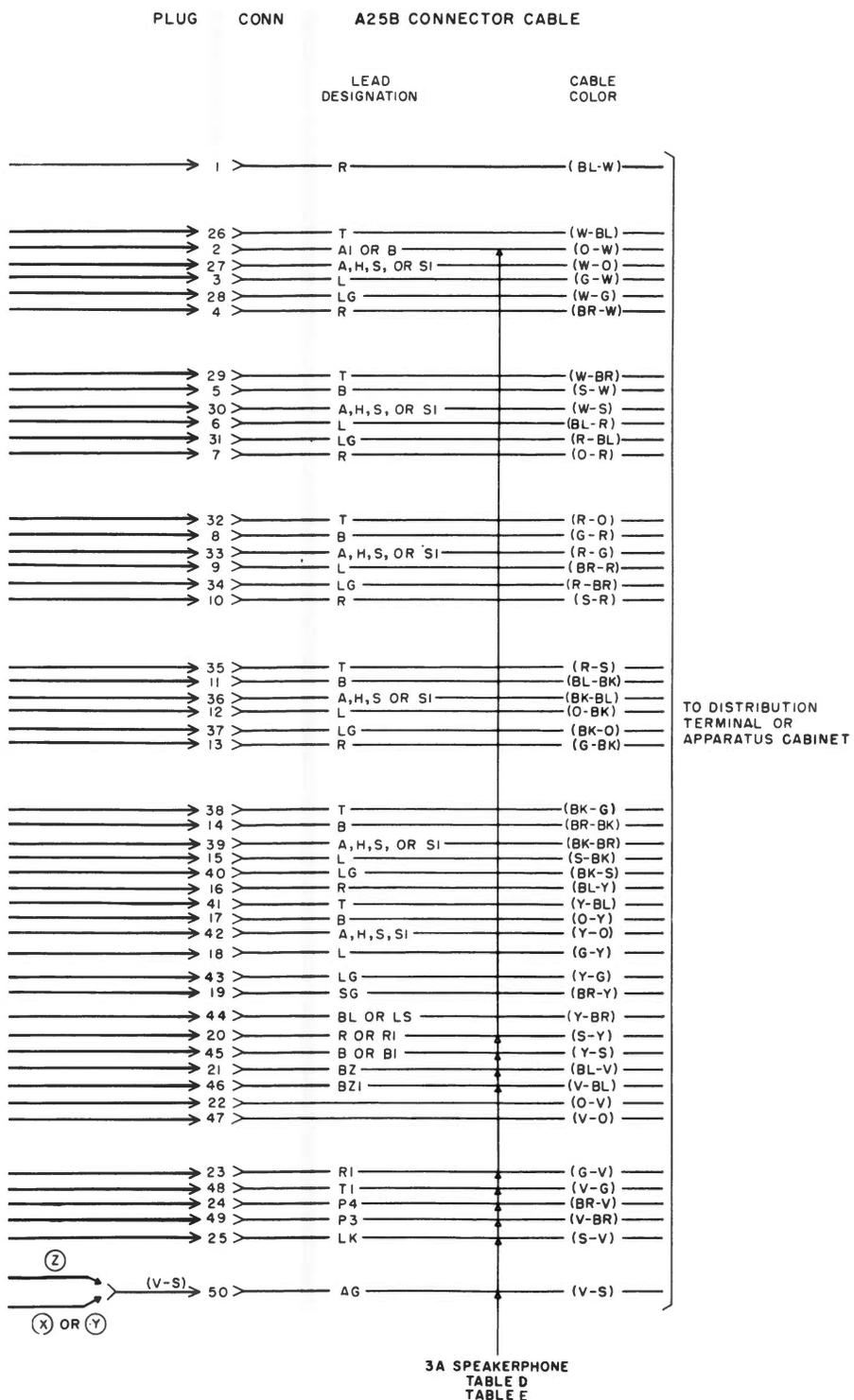


Fig. 11 – D50K Cord and Connector Cable Connections  
Tables D and E