

## TELEPHONE SET — 1671A-TYPE

# Call-a-matic®

### IDENTIFICATION, INSTALLATION, OPERATION, MAINTENANCE, AND CONNECTIONS

#### 1. GENERAL

1.01 This section provides information on a 6-button TOUCH-TONE dial telephone set containing a magnetic tape memory capable of storing and dialing 500 fourteen digit telephone numbers, Fig. 1.

1.02 This section is reissued due to:

- Extensive changes in manufacture.

- Limited distribution of Issue 1.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

#### 1671A1 TELEPHONE SET

2.01 The 1671A1 telephone set (Fig. 1) is a desk type telephone about the size of a 30-button CALL-DIRECTOR. It consists of a

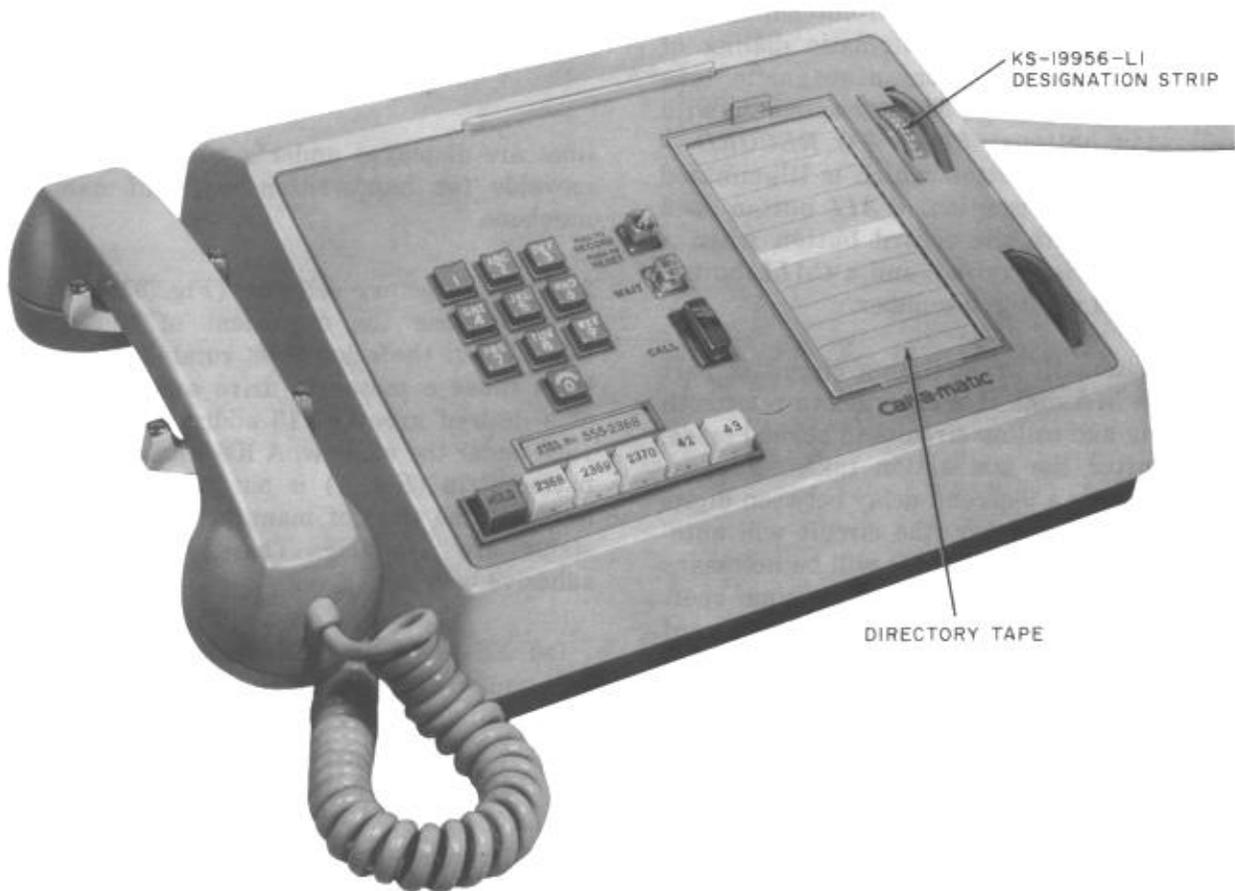


Fig. 1 — 1671A1 Telephone Set

25U3 TOUCH-TONE dial, 51A dial, 635A2 key, 4010D network, P1A ringer with 165A adapter, a D50Y mounting cord (5 feet, 6 inches in length), G3AR handset, and 1A cartridge.

**2.02** When a 673A transmitter (for 3B speaker-  
phone) is added to the 1671A1 set by conversion in the field or as otherwise instructed locally, the code is changed to 1671A7 set for information purposes only.

**2.03** Table A contains color information for these telephone sets.

### 25U3 DIAL

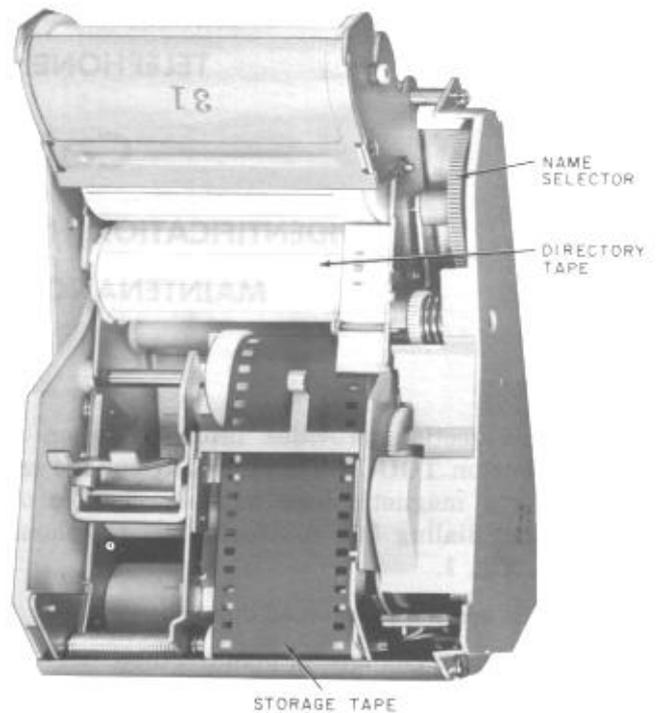
**2.04** The 25U3 dial is a 10-button TOUCH-TONE dialing device intended for use in the CALL-A-MATIC telephone set. Connections to the set are made by nine spade-tipped leads and a 33-pin amphenol connector.

### 51A DIAL

**2.05** The 51A dial is an electromechanical device which permits automatic dialing of 500 prestored numbers from a magnetic tape memory. There is a P-20F386 key assembly with the following buttons: **PULL TO RECORD** — **PUSH TO RESET** button which is illuminated when in the record position, **WAIT** button used in conjunction with the record button when a second dial tone is required, and a **CALL** button to call a desired prestored number.

**2.06** An automatic reset timing circuit is part of the 51A dial. It is designed to reset both the recording and calling circuits to normal mode, 9 seconds after the last action taken. For example: if there is a 9-second delay between digits when recording a number, the circuit will automatically reset to normal and it will be necessary to repeat the recording. At the same time operation of the reset circuit will cause the record lamp to be extinguished. Another example is after calling a number, the calling circuit will automatically reset to normal after a 9-second delay. If it is desired to make another call or recording before automatic reset takes place, it will be necessary to manually reset by pushing the reset button.

**2.07** A customer-removable tape unit (1A cartridge, Fig. 2) is provided for typewritten entry of names and telephone numbers. Thirteen



**Fig. 2 — 1A Tape Cartridge — Bottom View**

lines are displayed under a window which is removable for handwritten entry of names and numbers.

**2.08** A directory selector (Fig. 3) is for controlling the movement of the directory tape. When the selector is rotated, electric contacts cause a motor to drive and stop the tape at a desired group of 13 addresses brought into view under the window. A KS-19956, List 1 designation strip (Fig. 1) is put on the directory selector at the time of manufacture. Two optional strips are available. These strips have self-adhesive backing.

- (a) KS-19956, List 2 designation strip is a numerical index only, 0 to 490.
- (b) KS-19956, List 3 designation strip is blank and may be indexed by the customer.

**2.09** A name selector (Fig. 3) is a thumbwheel used to move a specific name (from a field of 13) into position over the white index space. Further instructions on how to use this wheel are in Part 4 of this section.



Fig. 3 — Major Components of 1671A1 Telephone Set

**2.10** The 51A dial is powered by a 21A1 power unit (Fig. 4). This power unit is not furnished with this set and must be ordered separately.

#### 673A TRANSMITTER

**2.11** The 673A transmitter for 3B speakerphone service may be added to 1671A1 set. This transmitter unit consists of an AC3 transmitter

unit, a three-transistor amplifier, a volume control, two pushbuttons — an OFF button and ON button — illuminated by a 51A lamp, and seven spade-tipped leads for connection to associated circuits.

**2.12** An interlock switch is under the faceplate near the upper right-hand corner. Removal of the faceplate operates the interlock switch which disconnects the power to the 51A dial.

**TABLE A**  
**COORDINATED COLOR ORDERING INFORMATION**

COLOR	TEL. SET	HANDSET	MOUNTING CORD	FACE-PLATE	WINDOW
Black	1671A1-3	G3AR-3	D50Y-3	P-82G270	P-82G170
Moss Green*	-51	-51	-51	P-82G271	P-82G171
Pastel Yellow	-56	-56	-56	P-82G272	P-82G172
White*	-58	-58	-58	P-82G273	P-82G173
Rose Pink	-59	-59	-59	P-82G274	P-82G174
Light Beige*	-60	-60	-60	P-82G275	P-82G175
Light Gray*	-61	-61	-61	P-82G270	P-82G170
Aqua Blue	-62	-62	-62	P-82G276	P-82G176
Turquoise	-64	-64	-64	P-82G277	P-82G177
Black	1671A7-3†	G3AR-3	D50Y-3	P-82G370	P-82G170
Moss Green*	-51	-51	-51	P-82G371	P-82G171
Pastel Yellow	-56	-56	-56	P-82G372	P-82G172
White*	-58	-58	-58	P-82G373	P-82G173
Rose Pink	-59	-59	-59	P-82G374	P-82G174
Light Beige*	-60	-60	-60	P-82G375	P-82G175
Light Gray*	-61	-61	-61	P-82G370	P-82G170
Aqua Blue	-62	-62	-62	P-82G376	P-82G176
Turquoise	-64	-64	-64	P-82G377	P-82G177

\* Available colors, other colors obtained on special order.

† Informational code only.

### 3. INSTALLATION

**3.01** A 21A power unit is required for the 1671A-type telephone sets. When selecting a location for the power unit, the following limitations apply:

- (a) Must be located within 18 inches of a 3 wire, 105 to 130 volt ac power outlet that is not under control of a wall switch.
- (b) Must be located within 95 feet of the telephone set when 24 gauge inside wire is used or within 190 feet if two inside wire conductors are used for each lead.
- (c) Must be separated a minimum of 3 feet from a 55B control unit.

**3.02** A bracket is supplied with the 21A power unit for wall mounting. The unit must be mounted in a vertical position (power cord down). *Try the bracket on the power unit, before mounting, to determine the top of bracket Fig. 5.*

**3.03** For detailed description and a schematic drawing of the 21A power unit, refer to CD- and SD-81779-01.

**3.04** When a 673A transmitter is added to the 1671A1 telephone set, refer to Table C for connections. Table A shows the coordinated-color faceplate required for the internal transmitter. Choose the appropriate color opposite the listing for a 1671A7 set. Example: a 673A transmitter unit is added to a 1671A1-51 (Moss Green) set. The proper faceplate to accommodate the transmitter is P-82G371 as found in Table A.

**3.05** Table D shows possible conversion connections from pickup to signaling for the buttons on the 635A2 key. Remove locking pin



*Verify all power connections at 21A power unit and telephone set. Improper connections can cause damage to the dialer unit. See Table B for connections.*



Fig. 4 — 21A Power Unit

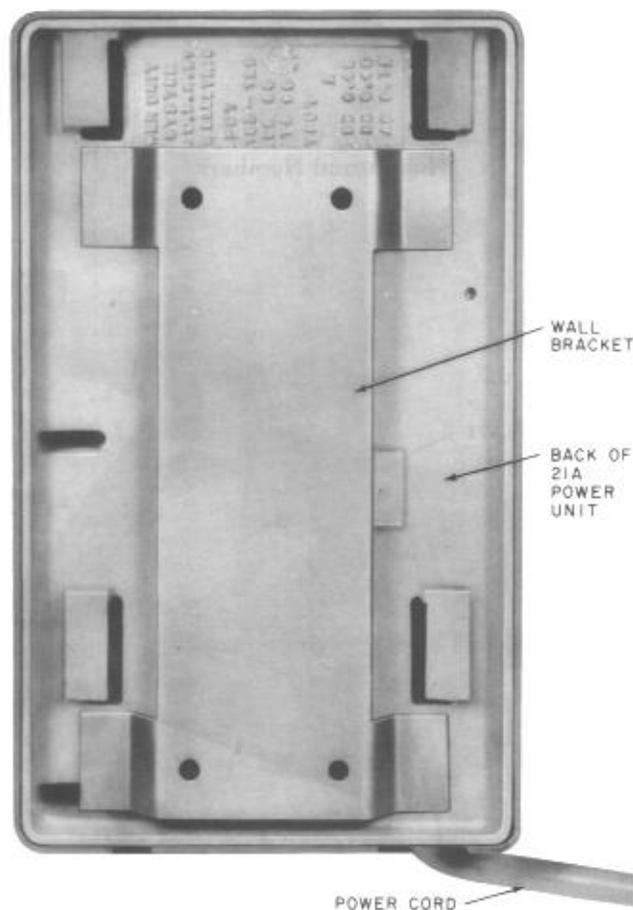


Fig. 5 — Rear of 21A Power Unit

P-28E773 to convert from locking to nonlocking. For detailed information on this key refer to the section covering pushbutton keys.

**3.06** A KS-8109, List 2 buzzer may be mounted on a plastic block located on the left side of the dial support bracket. Position buzzer so that adjusting screw can be reached by removing faceplate. Refer to Fig. 13 for connections.

**3.07** Optional designation strips (see 2.08) may be installed on the directory selector. Install self adhesive strips, as follows:

- (1) Remove the strip already in place by prying up one end. (Either end of the strip is at the *island* or raised place between YZ and 1.)
- (2) Start new self adhesive strip at *island* and apply while turning selector wheel.
- (3) Stop at the "I" section and remove the faceplate from the set. (Removal of faceplate disconnects power to the 51A dial.)
- (4) Continue applying strip around selector wheel, press firmly in place.
- (5) Replace faceplate. *Be sure it is in place so interlock switch is closed.*

#### 4. OPERATION

**4.01** Point out the features and demonstrate to the customer how to operate the CALL-A-MATIC telephone set. Also, *be sure to leave instruction pamphlet — Form No. GN2427 — with customer.*

- (1) *Directory Tape* (Fig. 2) has 50 index designations and provides spaces for entering 500 names and numbers. Five index positions (50 spaces) numbered 1 through 5 are for entering names that are called frequently or in sequence, such as sales contacts. These names may be listed functionally rather than alphabetically. For example: Members of a business group that are likely to be called in sequence might be entered in one of the five groups. The remaining 45 designations (alphabetical) provide space for 450 names and numbers.

(2) **Directory Window** (Fig. 6) is a small plastic window which can be lifted out to write names and numbers on the directory tape.

(3) **Directory Selector** (Fig. 3) is used for automatically scanning the directory tape. On the thumbwheel are 50 index designators which correspond to the index designations on the tape. When the Directory Selector is rotated, electric contacts cause a motor to move and stop the tape to the index selected.

(4) **Index Space** (Fig. 1) is the light area under the directory tape. To record or call a number, the desired space and/or name **MUST** appear over this index space.

(5) **Name Selector** (Fig. 3) is the thumbwheel used to move a specific name into the index space. To move tape **push down** to engage the gear teeth and turn in desired direction.

(6) **PULL TO RECORD — PUSH TO RESET Button** (Fig. 1) must be pulled up and released to condition the CALL-A-MATIC dialer for recording numbers. This button is illuminated when in the record position. To reset dialer, depress the button.



*If there is a 9-second delay between digits while recording, the dialer will automatically reset and the light will go out. It will then be necessary to reoperate the RECORD button and repeat the recording.*

*Also, the RESET button **MUST** be pushed if it is desired to initiate another recording before 9 seconds has elapsed (see 2.06).*

(7) **WAIT Button** (Fig. 1) is pushed after recording access digits for outside line service when dialing from a PBX. This button conditions the CALL-A-MATIC to stop for second dial tone after dialing access digits.

(8) **CALL Button** (Fig. 1) is pushed after hearing dial tone when making a call from the repertory. Outside calls from a PBX line will require a second push of the CALL button after second dial tone is heard. The CALL-A-

MATIC automatically resets after dialing a complete number.

(9) **Faceplate** (Fig. 7) is the large plastic cover which is lifted off for removal of the directory mechanism (when names are to be typewritten on the tape).



**Fig. 6 — Removing Window for Entering Names and Numbers**



**Fig. 7 — Removing Faceplate**

#### 4.02 How to Record a Number



*Encourage the use of a note pad to write the number before recording. This will help prevent the possibility of automatic reset action caused by a 9-second delay between digits and will help accuracy of recording.*

##### WITHOUT ACCESS CODE

- (1) Turn the directory selector to the proper group position. For example: to enter the name Smith on the directory, turn the directory selector to "Si." The directory tape will automatically stop in the "Si-So" area where Smith should be entered.
- (2) Press down and turn the name selector to position a vacant space on the tape over the white index space.
- (3) Remove the plastic window and write the name and number of the party in the space.
- (4) Pull up the RECORD-RESET button. (RECORD-RESET button will light.)
- (5) Dial area code, if necessary, and telephone number to be recorded.
- (6) Push RECORD-RESET button. (Light goes out in button and the telephone number is now recorded.)

##### WITH ACCESS CODE

- (1) Turn directory selector to the proper group position.
- (2) Press down and turn the name selector to position a vacant space on the tape over the white index space.
- (3) Remove the plastic window and write the name and number of the party in the space.
- (4) Pull up the RECORD-RESET button. (RECORD-RESET button will light.)
- (5) Dial access digits.

- (6) Push the WAIT button firmly.
- (7) Dial area code, if necessary, and telephone number to be recorded.
- (8) Push RECORD-RESET button. (The light goes out in button and telephone number is now recorded.)

#### 4.03 To Call a Recorded Number

- (1) Turn the directory selector to the group position where the name and number of the party is stored.
- (2) Move the desired name into the index space with the name selector.
- (3) Select an idle line on 635A2 key.
- (4) Lift handset or push speakerphone ON key.
- (5) Listen for dial tone.
- (6) Push CALL button.

*Note:* If an access code is required, the dialer will stop and another dial tone will be heard. Push the CALL button again.

- (7) Wait for called number to ring.

#### 4.04 How to Record a Number While Making a Call

##### WITHOUT ACCESS CODE

- (1) Turn the directory selector to the proper group position.
- (2) Press down and turn the name selector to position a vacant space on the tape over the white index space.
- (3) Remove the small plastic window and write the name and number of the party in the space.
- (4) Select an idle line on 635A2 key.
- (5) Pull up handset or push the speakerphone ON button.

- (6) Listen for dial tone.
- (7) Lift the RECORD-RESET button. (RECORD-RESET button will light.)
- (8) Dial area code, if necessary, and telephone number to be recorded.
- (9) Push RECORD-RESET button. (Light goes out in button and the telephone number is now recorded.)
- (10) Wait for called number to ring.

#### WITH ACCESS CODE

- (1) Turn the directory selector to the proper group position.
- (2) Press down and turn the name selector to position a vacant space on the tape over the white index space.
- (3) Remove small plastic window and write the name and number of the party in the space.
- (4) Select an idle line on 635A2 key.
- (5) Lift handset or push the speakerphone ON button.
- (6) Listen for dial tone.
- (7) Pull up the RECORD-RESET button. (RECORD-RESET button will light.)
- (8) Dial the access digits.
- (9) Push WAIT button firmly.
- (10) Dial area code, if necessary, and telephone number to be recorded.
- (11) Push RECORD-RESET button. (Light goes out in button and the telephone number is now recorded.)
- (12) Wait for called number to ring.

#### 4.05 How to Type Names on the Directory Tape

- (1) Rotate directory selector to the "1" position and allow tape to come to rest.
- (2) Grasp tab at top of faceplate and remove faceplate (Fig. 7).
- (3) Rotate end of directory latch upward (Fig. 8).
- (4) Grasp directory latch and lift 1A tape cartridge out of CALL-A-MATIC set.

**Note:** The tape mechanism is pivoted about two cylindrical members (Fig. 9).



Fig. 8 — Unlatching 1A Tape Cartridge



Fig. 9 — Lifting 1A Tape Cartridge Out of Set

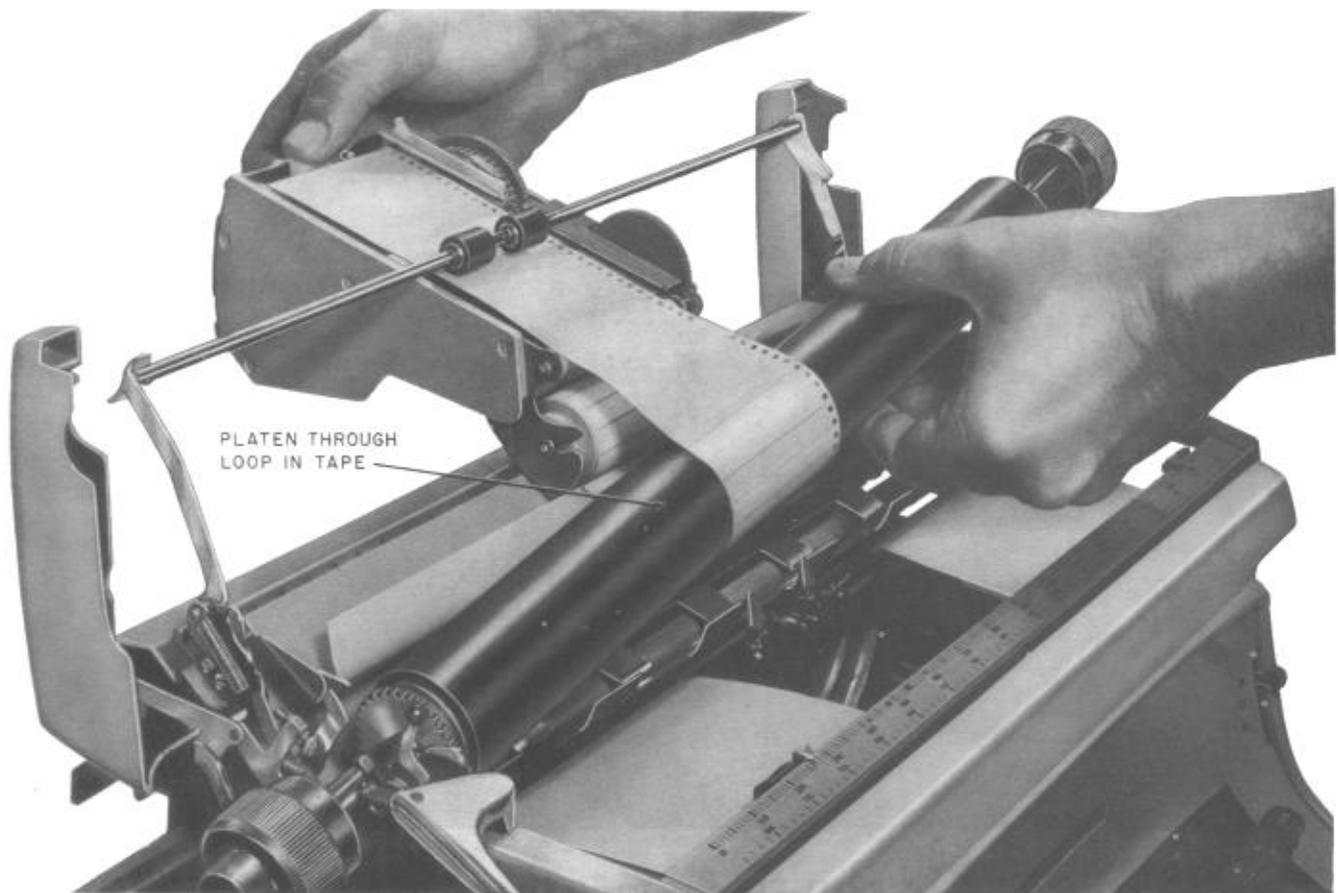
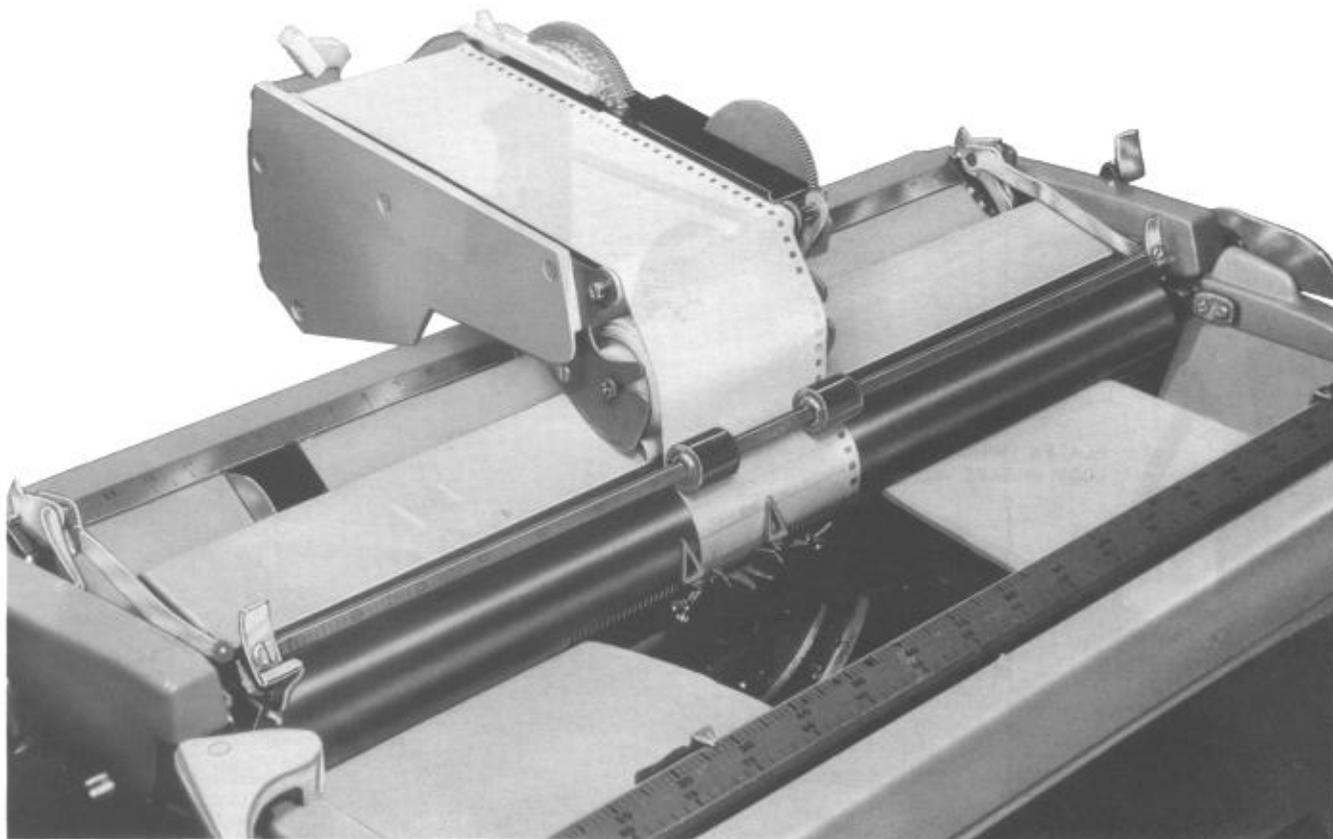
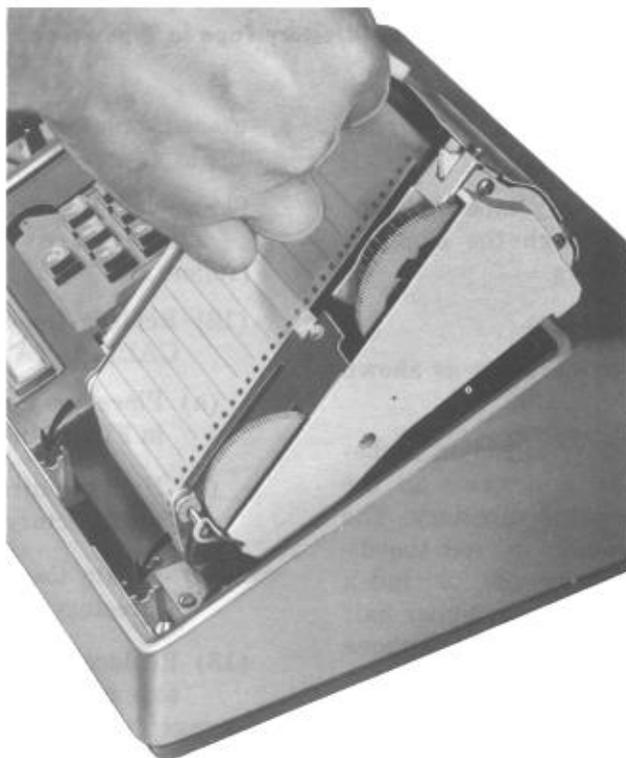


Fig. 10— Placing Directory Tape in Typewriter

- (5) Remove platen (roller) from typewriter (Fig. 10).
- (6) Pull a loop in the directory tape and feed the platen (roller) through the loop. Be sure tape is under paper rollers.
- (7) Lock platen (roller) in place.
- (8) Position mechanism on carriage as shown in Fig. 11.
- (9) Using a list of names arranged in alphabetical order, type the first name on the list in the proper place on the directory. The platen (roller) may be rotated to roll the directory tape downward toward the "Z" index designation. Type each name in the upper half of a space and the corresponding telephone number in the lower half.
- (10) Continue typing names and numbers until the last name on the list has been entered. Errors or previously written names may be erased, but care must be taken not to damage the tape.
- (11) Remove the directory mechanism from the typewriter by removing the platen (roller).
- (12) Replace the directory mechanism in the CALL-A-MATIC telephone set as follows:
  - (a) Place the cylindrical numbers as shown in Fig. 11 in the two upright saddles.
  - (b) Hold the directory latch (Fig. 12), lower the directory mechanism into the set.
  - (c) Rotate the latch downward locking the directory in position.
- (13) Replace the faceplate by hooking the bottom tabs in place and lowering tab into engagement with the spring detent. *Be sure faceplate is down fully so that interlock switch is closed.*



**Fig. 11 — Directory Tape In Typewriter**



**Fig. 12 — Replacing 1A Tape Cartridge in Set**

## 5. MAINTENANCE

**5.01** Work done on the customer's premises should be limited to verification of customer's trouble report, analysis of the trouble, readily made adjustments, and replacement of accessible parts which are readily available through supply channels.

**5.02** Make a visual inspection of the exterior and interior of the sets for defects, such as loose, displaced, or broken parts or loose connections; obstruction of moving parts; or the presence of foreign matter that may interfere with the proper operation of the set. If replacement parts are needed and are not readily available, replace set.

**5.03** The following components may be replaced if found defective:

- Handset and cord
- 1A Cartridge
- Transmitter and Receiver Unit
- 673A Transmitter
- 25U3 Dial
- Ringer or Buzzer
- 635A2 Key and Lamps
- KS-19956, List 1, 2, or 3 Designation strip
- Faceplate

- Directory window
- 21A Power Unit



*Make sure power unit is not disconnected from outlet or turned off in cases where the index tape will not rotate. Also, check for possible foreign matter obstructing gears.*

**5.04** Maintenance, on the customer's premises of the 51A dial is not recommended. 1A tape cartridges may be interchanged with another set so as not to inconvenience the customer by requiring the entry of listings on a new directory tape.

## 6. CONNECTIONS INDEX

Table B — Power Unit Connections

Table C — 3B Speakerphone Connections for Adding 673A Transmitter to 1671A1 Set

Table D — Conversion of 635A2 Key — Pickup to Signaling

Table E — Connections for Adding Station Busy Lamp

Table F — Wiring Options

Fig. 13 — 1671A1 Telephone Set — Connections

**TABLE B**  
**POWER UNIT CONNECTIONS (See Note)**

21 TYPE POWER UNIT TERMINAL DESIG.		INSIDE WIRING CABLE	66E3-25 CONN. BLK.	D50Y MOUNTING CORD		
OLD (21A)	NEW (21A1)	COND. COLOR	CLIP NO.	PIN NO.	CON- DUCTOR COLOR	LEAD DESIG.
AC	AC	W-BL	34	17	O-Y	AC
*AC	†AC GRD	BL-W	33	42	Y-O	AC GRD
*REP GRD	†DC GRD	W-G	28	14	BR-BK	AMP GRD
		G-W	16	8	G-R	SCS GRD
-	-	W-O	22	11	BL-BK	-24V
+	+	O-W	10	5	S-W	+24V

\*Strap these terminals, use minimum 20 GA. wire.

†AC GRD and DC GRD terminals are strapped at factory.

**Note:** To prevent "hum" in talking circuits, place a strap between a mounting screw for the terminal strip and REP GRD or DC GRD.



*Be sure power connections are correct. Wrong or reversed connections may damage the 51A dial.*

**TABLE C**  
**3B SPEAKERPHONE CONNECTIONS FOR ADDING 673A**  
**TRANSMITTER TO 1671A1 SET**

LEAD DESIG.	673A TRMTR	D50Y* MTG. CORD	CONNECT TO TB1	EXTEND TO 55B CONTROL UNIT TERM.
T1		V-G	4	1
A1 (GRD)		O-W†	20	2
1R		BR-V	18	6
M1	S-BK	BL-V	5	7
P1	BL-R	S-V	11	8
R1		G-V	15	10
AG		V-S	G ( 4010D Network )	11
-15 (M2)	BK-S	V-BL	8	16
F1	G-Y	O-V	10	17
S	O-BK	V-O	3	18
A1 (Trmtr)	Y-O	BL-Y	6	19
LK	O-Y		L1 ( 4010D Network )	—
SP1				20
SP2				29
2012B Trnsf				27 36

\*Conductors are insulated and stored under 635A key.

†Connected at factory.

**TABLE D**  
**CONVERSION OF 635A2 KEY — PICKUP TO SIGNALING**

KEY ARRANGEMENTS	KEY LEADS ON TB1				
	R	BK	Y	V	S
HPPPPP	26	26	26	26	25
HPPPPS	26	26	26	17	25
HPPPSS	26	26	17	17	25
HPPSSS	26	17	17	17	25
HPPP*P*S*	19	26	26	17	26
HPP*P*P*S*	26	26	26	17	26

\*For common signaling remove (G) strap between terminals 19 and 26. The sixth key is converted to nonlocking and used as the signaling key.

**TABLE E**  
**CONNECTIONS FOR ADDING STATION BUSY LAMP**

LEADS	4010D NETWORK TERMINALS
	L2                  G
KS-15724, L1 Diode	
BR (line switch)	From G    To    L2
V-S (AG lead, Mtg. Cord)	From G    To    L2

**TABLE F**  
**WIRING OPTIONS**

FEATURE	OPTION
1A1 and 1A2 Key Telephone System	
With Station Busy Lamp	Y
Without Station Busy Lamp	Z
Common Ringer	X
With 3B Speakerphone System	
Internal Transmitter	V
Exclusion (Not provided)	
KS-8109, L2 Buzzer	
DC Operated	W
AC Operated	S

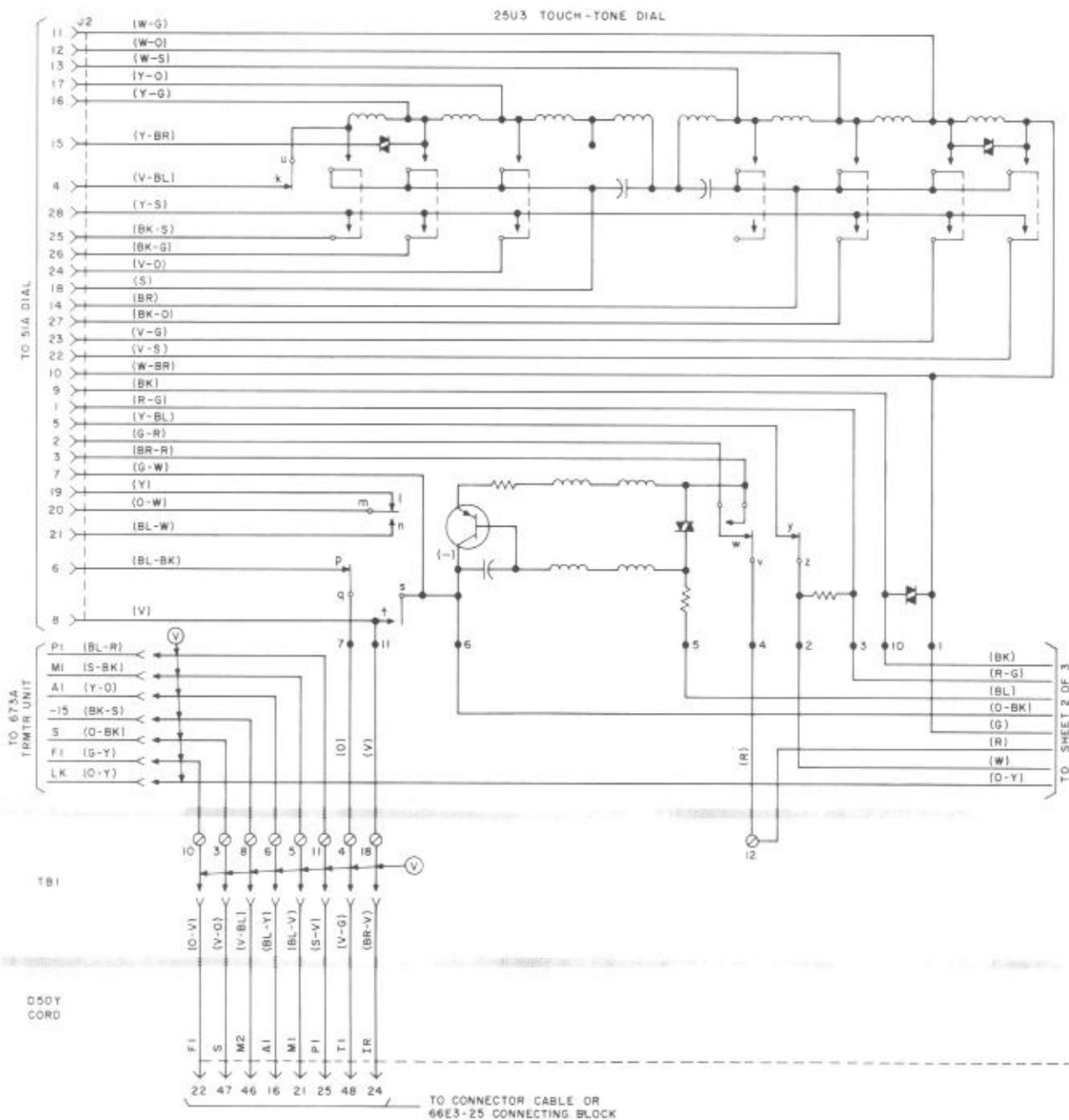


Fig. 13 — 1671A1 Telephone Set — Connections (Sheet 1 of 3)

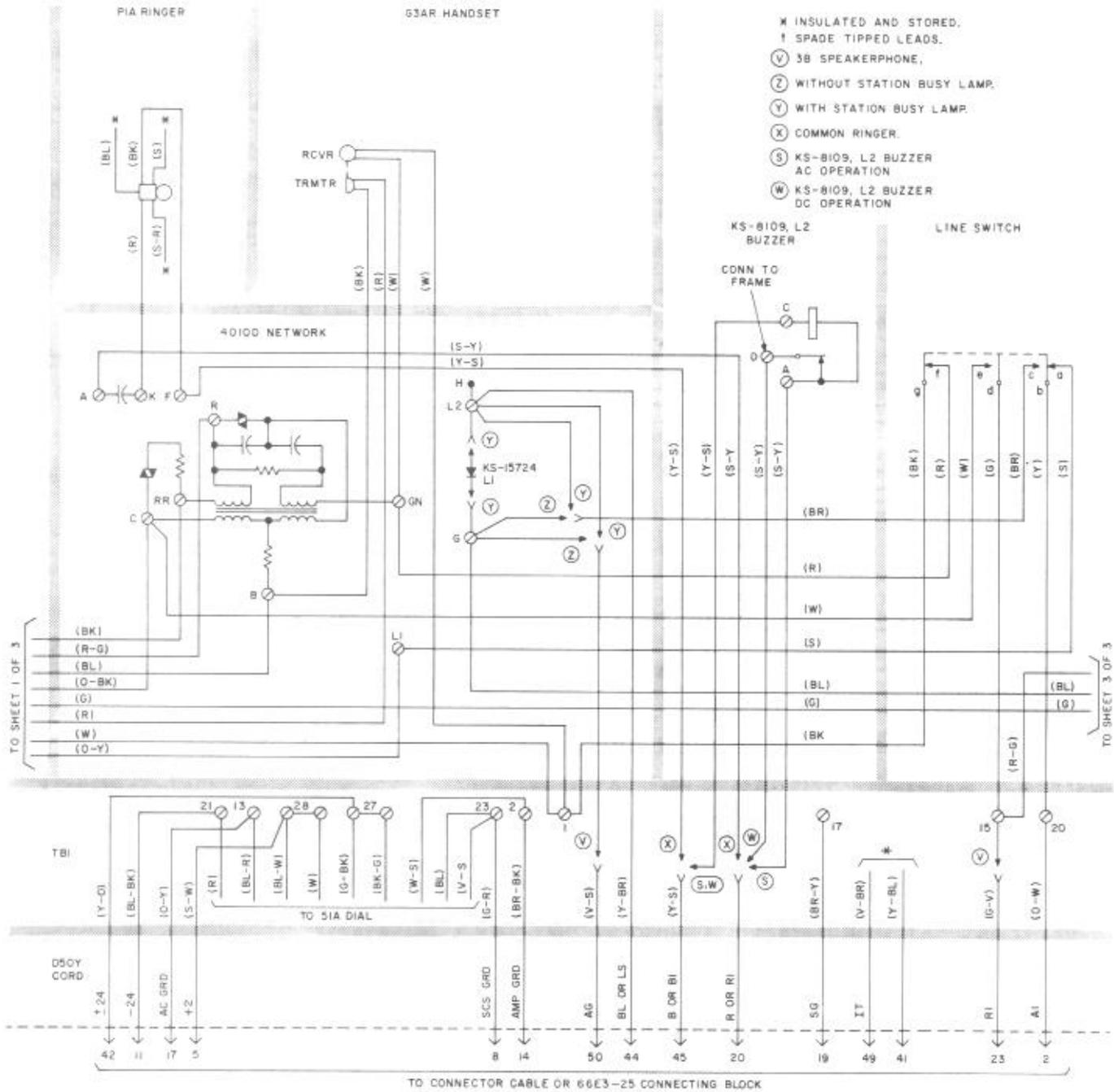


Fig. 13 — 1671A1 Telephone Set — Connections (Sheet 2 of 3)

635A2 KEY

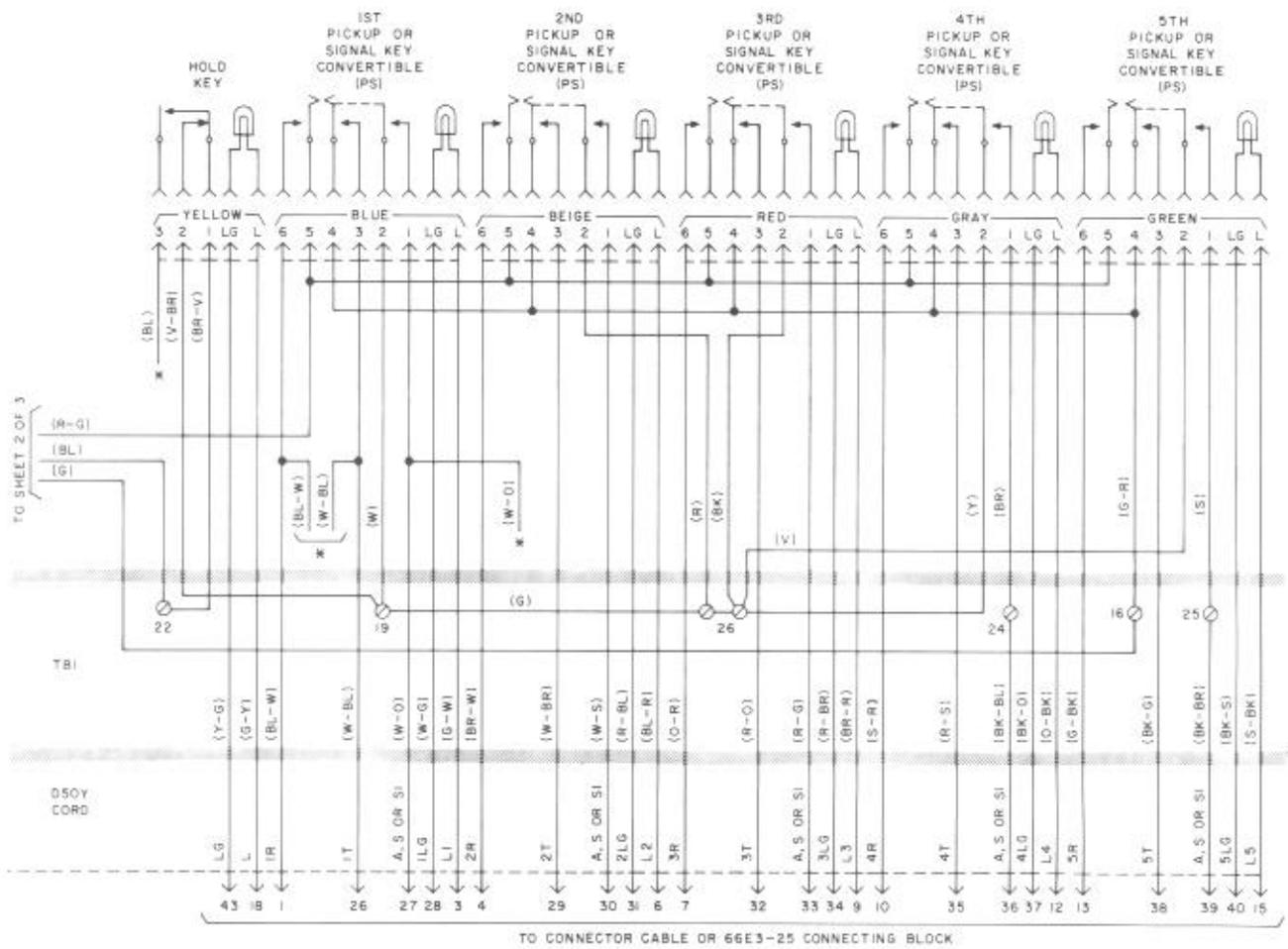


Fig. 13 — 1671A1 Telephone Set — Connections (Sheet 3 of 3)