

## SERVICE

### 636- AND 637-TYPE TELEPHONE SETS

#### 1. GENERAL

**1.01** This section contains connection and maintenance information for 18- and 30-button general purpose CALL DIRECTOR<sup>®</sup> telephone sets equipped with headset jacks.

**1.02** Connection information for these sets was formerly contained in Section 502-636-401 which is hereby canceled.

**1.03** These sets are not intended for use with 3-type speakerphone systems.

#### 2. CONNECTIONS

**2.01** These sets are factory-wired for use with 1A1, 1A2, or 6A KTS line circuits. They may also be used with 1A KTS line circuits by modifying the set as shown in Table A. Line circuits for 1A, 1A1, or 1A2 KTS may be connected to the same set under the following conditions:

- (a) 1A1 or 1A2 KTS lines must be connected to the first key units with 1A lines connected to supplementary key modules.
- (b) 1A, 1A1, or 1A2 KTS lines should not be connected to the same 6 line key module.
- (c) 1A, 1A1, or 1A2 KTS lines appearing behind a manual switchboard should not be intermixed or a CALL DIRECTOR telephone set due to the different time out intervals provided by the associated KTU's.

**2.02** These 636- and 637-type (rotary dial) telephone sets are equipped with 517A jacks for the plugs of a G3L handset, 52- or 53-type head telephone set. The internal wiring is arranged to electrically connect either the line switch or the headset jacks to the line.

**2.03** Replacement or substitution of the key in the first module may require wiring changes as shown in the notes for Fig. 4 and 5.



*Some spade-tipped conductors or mounting cord leads are insulated with tubing which should be cut off with electrician scissors or diagonal pliers. Other conductors are insulated with stiff plastic pockets. Pinch open the mouth to release the spade tips.*

**2.04** When station busy lamp feature is required with these sets having 1A1 or 1A2 KTS line circuits, a P-90D033 Printed Wiring Board Assembly must be ordered separately and installed in the 636- or 637-type telephone set. With this option, the busy lamp will light whenever a line pickup button is depressed and the handset is off-hook or the headset is plugged into the jack. Install the wiring board assembly as follows:

- (1) Remove set housing.
- (2) Loosen screws on dial mounting plate, move mounting to left and lift out.
- (3) Remove right-hand dial mounting screw.
- (4) Place dial mounting screw through hole in wiring board and replace screw in dial. Components on board should be positioned so as not to interfere with other set components when dial mounting plate is replaced.
- (5) Replace and secure dial mounting plate.
- (6) Connect wiring board leads and make wiring changes as shown in Fig. 6. For a schematic on the printed wiring board assembly refer to SD-69580-01.

**2.05** Sets equipped with a D120C mounting cord manufactured prior to III-68 must use circuit per Fig. 7 to provide station busy lamp feature.

**2.06** Tip, ring, A and lamp leads of lines wired for supplementary hold feature must be routed per SD-69530-01 and section in Division 518 rather than directly to the line circuit. Supplementary

hold can be furnished in either of the following arrangements:

- (a) **Priority Hold:** Substitute the 599- or 657-type key in the first module with a 599H or 657H key which is equipped with a second hold button and wired per Fig. 8 to transfer the A lead from ground to -24 volt.
- (b) **I Hold:** Transfer A lead from ground to -24 volt; connect stored (BR-V) [S-Y] lead

from first module plug to any spare mounting cord lead using spare terminal or D-161488 connector. Mounting cord lead becomes SP lead at key equipment.

- 2.07** To convert a key position from pickup (locking) to signal (nonlocking) remove the screw detail P-10E837 entirely from plunger at the key position to be converted. Make the necessary wiring changes as shown in Table B.

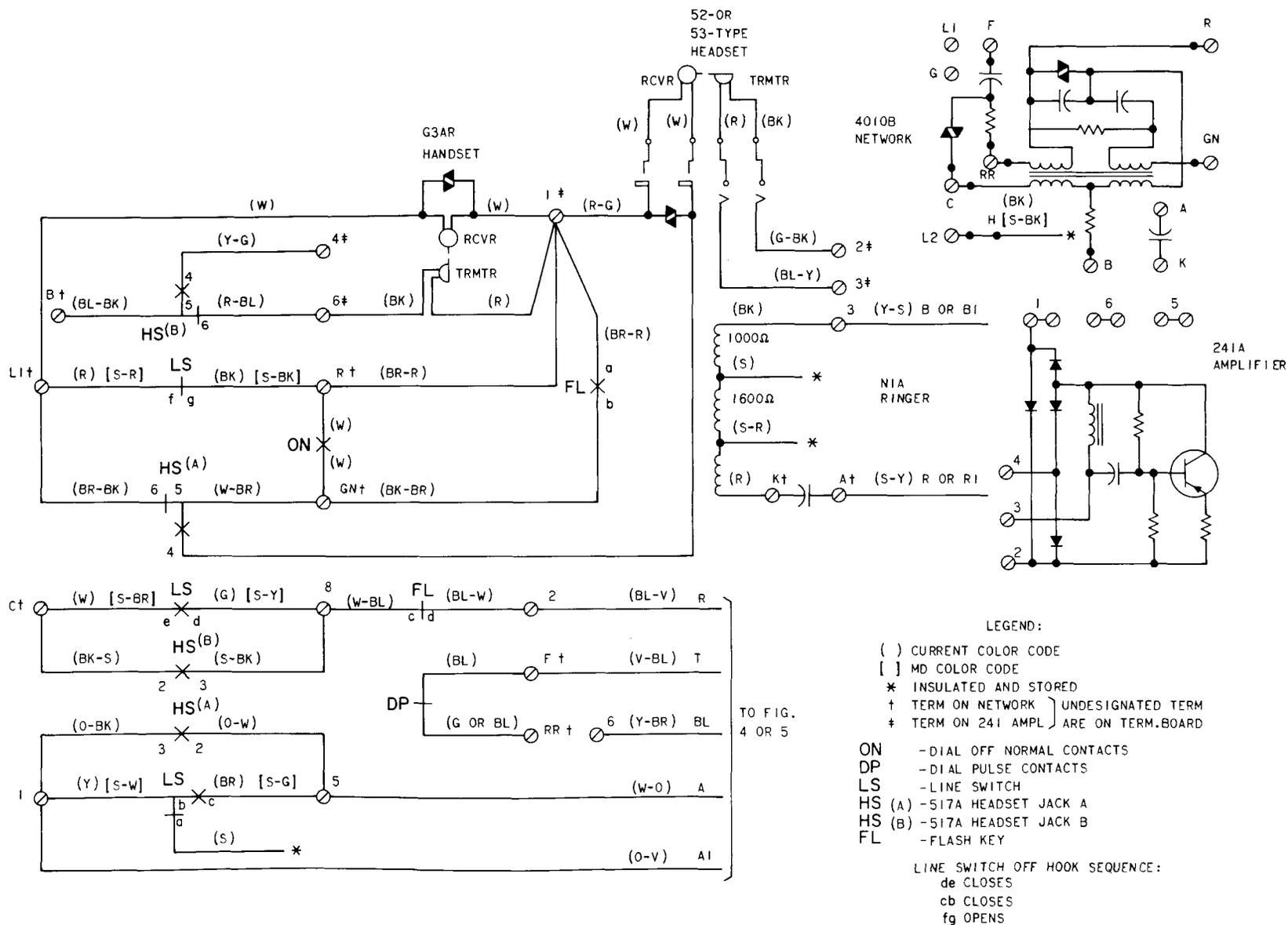


Fig. 1—Current 636- and 637-Type Telephone Set, Connections

NOTE:

LINE SWITCH OFF-HOOK SEQUENCE:

- de - CLOSES
- cb - CLOSES
- fg - OPENS

( ) CURRENT COLOR CODE

[ ] MD COLOR CODE

\* INSULATED AND STORED

† TERM.ON NETWORK

‡ TERM.ON TERM.BOARD 2

UNDESIGNATED

TERMS.ARE ON

TERM.BOARD 1

LEGEND:

ON - DIAL OFF NORMAL CONTACTS

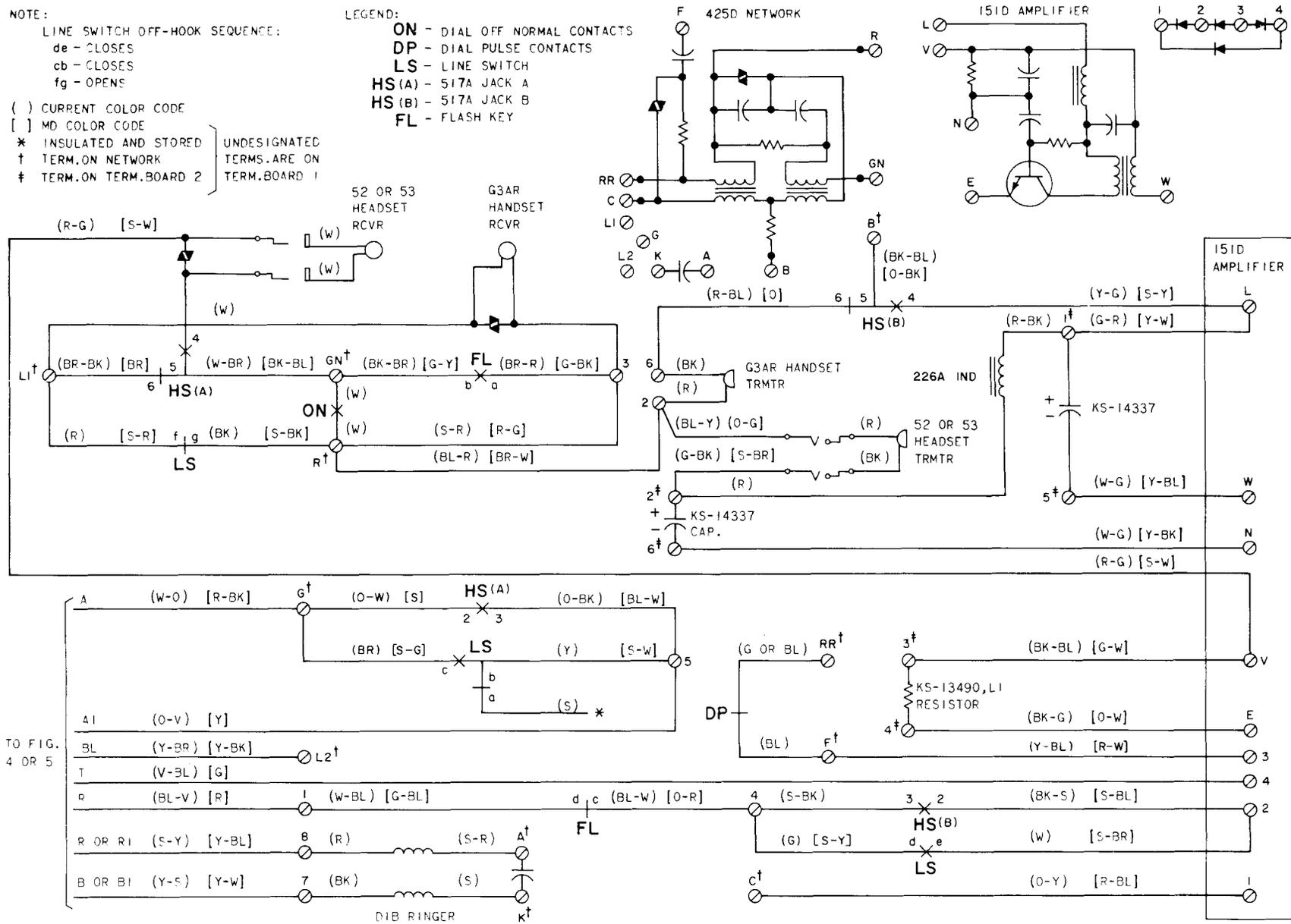
DP - DIAL PULSE CONTACTS

LS - LINE SWITCH

HS(A) - 517A JACK A

HS(B) - 517A JACK B

FL - FLASH KEY



TO FIG. 4 OR 5

Fig. 2—Early 636- and 637-Type Telephone Set, Connections



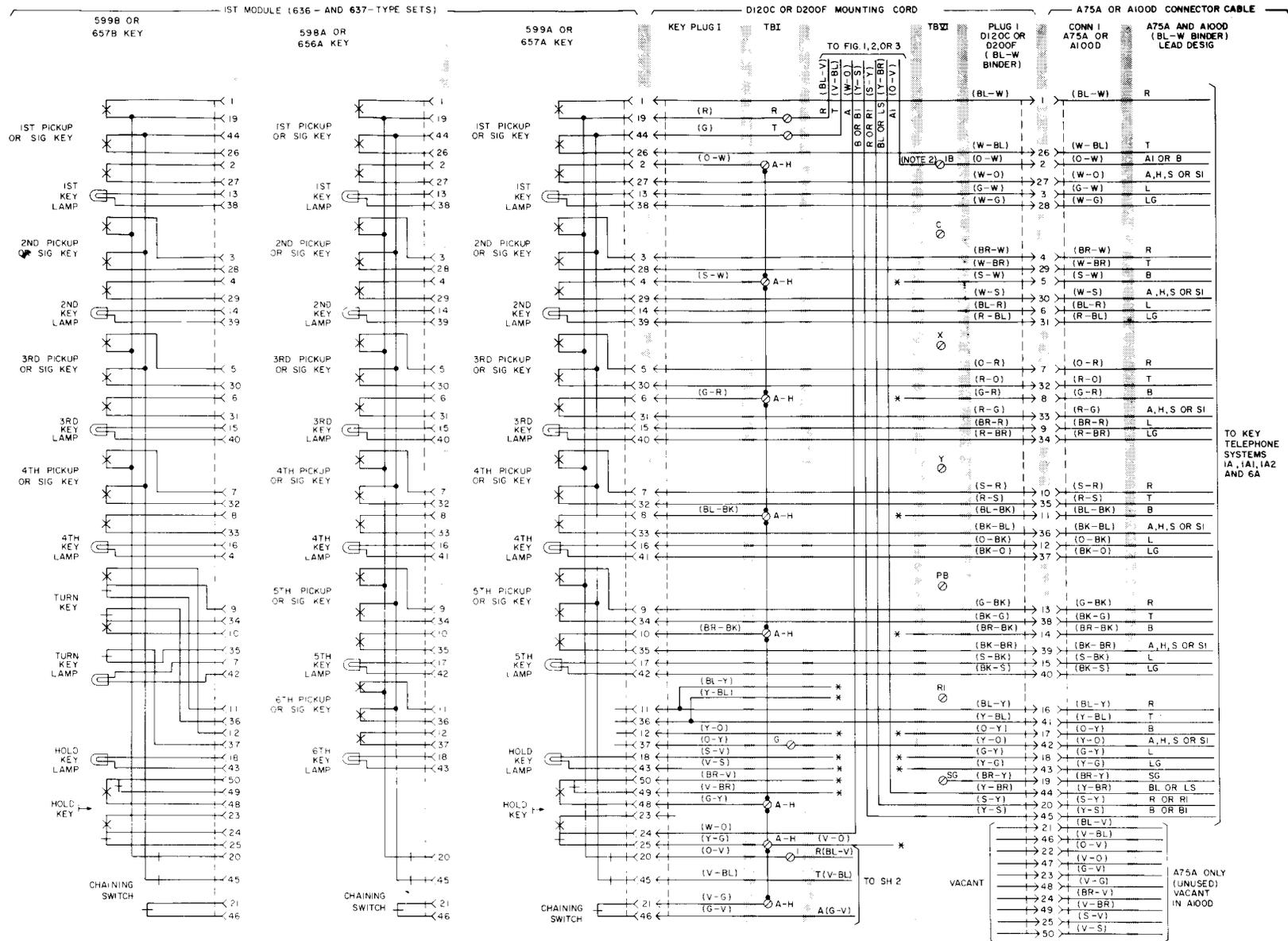


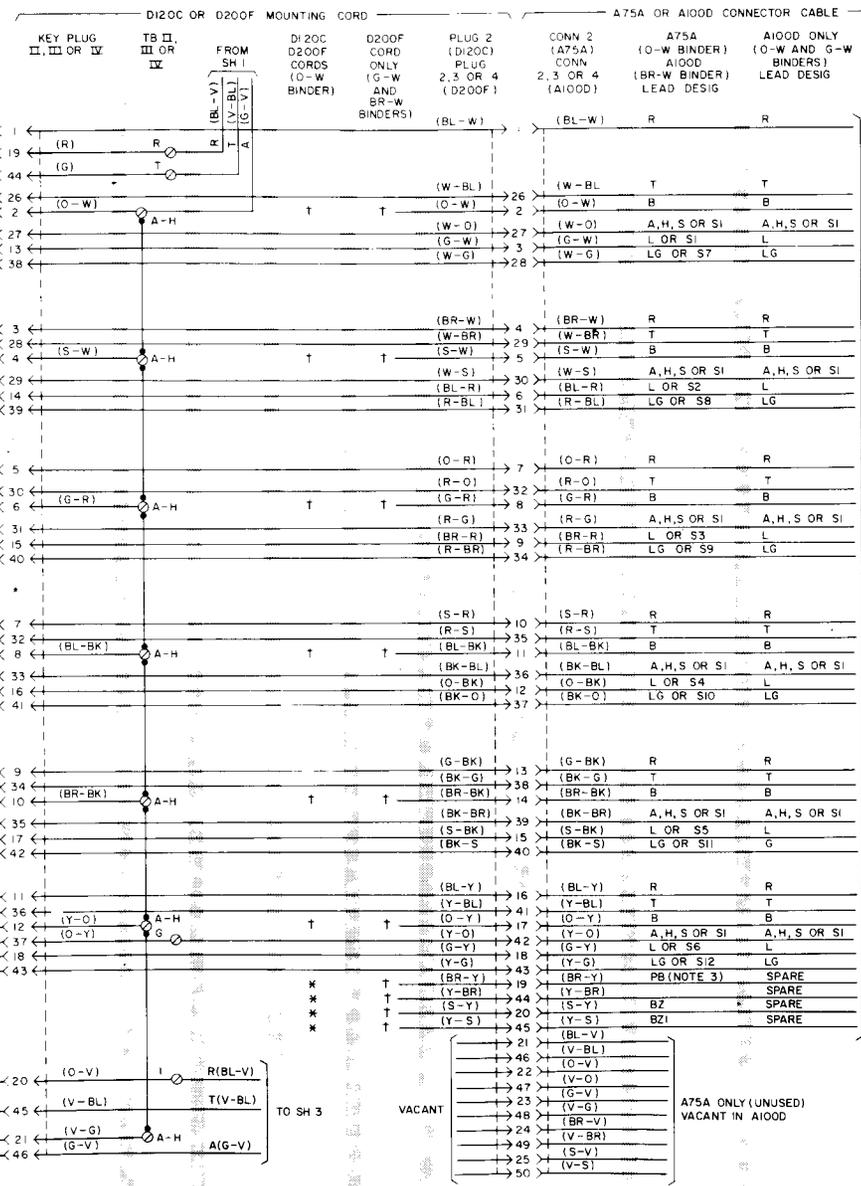
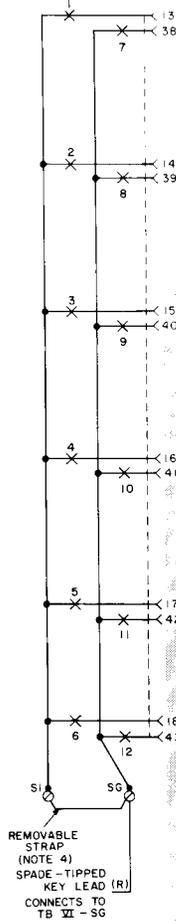
Fig. 4—Module Arrangements and Cord and Cable Connections for Sets Equipped with Even-Count Color-Code Cords (Sheet 1 of 3)

NOTES:

- WITH 599A OR 657A KEY IN FIRST MODULE; SPADE TIPPED LEADS FROM KEY PLUG I AND MOUNTING CORD BINDER GROUP (BL-W) ARE INSULATED AND STORED AS SHOWN.  
WITH 599B OR 657B KEY IN FIRST MODULE; (BR-BK) LEAD MUST BE REMOVED FROM A-H OF TBI, INSULATED AND STORED.  
WITH 598A OR 656A KEY IN FIRST MODULE; STRAP A-H OF TBI TO TERMINAL G ON NETWORK. CONNECT (Y-O) AND (BR-BK) LEADS FROM KEY PLUG I TO A-H OF TBI.  
TO EXTEND HOLD LAMP LEADS CONNECT (S-V) AND (V-S) KEY PLUG LEADS TO (G-Y) AND (Y-G) MOUNTING CORDS LEADS RESPECTIVELY USING SPARE TERMINALS OR D-161408 CONNECTORS.
  - FOR USE WITH IA KEY SYSTEM ONLY, MOVE A1 (O-V) STRAP FROM IB TO SG ON TBI AND MAKE CONVERSATION SHOWN IN TABLE A.
  - FOR ADD-ON CONFERENCE CONTROL IN THE 6A KEY TELEPHONE SYSTEM, CONNECT (BR-Y) MOUNTING CORD LEAD (O-W BINDER GROUP) TO TBI-PB. ALSO REMOVE COMMON LEAD OF ADD-ON CONFERENCE BUTTON (CONVERTED TO SIGNALING) FROM A-H TERMINAL AND CONNECT TO PB. THE 617A KEY MAY ALSO BE USED IN A SIMILAR MANNER. ALSO SEE NOTE 4.
  - WHEN THE 617A KEY IS REQUIRED AS A DUAL-PURPOSE KEY, THE BRASS STRAP BETWEEN THE SI AND SG TERMINALS OF THE KEY MAY BE REMOVED. USE MIW CORD OR EQUIVALENT TO CONNECT SI TERMINAL OF 617A KEY TO A DISSIMILAR GROUND OR A NONGROUNDED CIRCUIT.
  - WHEN INSTALLING P-90D033 PRINTED BOARD ASSEMBLY TO PROVIDE STATION BUSY LAMP FEATURE IN IA1 OR IA2 KTS CONNECT A OR H LEAD (G-V) FROM LAST MODULE TO TERMINAL X OF TBI.
- \* INSULATED AND STORED  
† DEAD ENDED

617A KEY  
2ND MODULE  
(636-TYPE SETS)  
4TH MODULE  
(637-TYPE SETS)

598A OR 656A KEY  
2ND MODULE (636-TYPE SETS)  
2ND, 3RD OR 4TH MODULE  
(637-TYPE SETS)



TO KEY TELEPHONE SYSTEMS IA, IA1, IA2 AND 6A

Fig. 4—Module Arrangements and Cord and Cable Connections for Sets Equipped with Even-Count Color-Code Cords (Sheet 2 of 3)

TABLE A — WIRING MODIFICATIONS FOR COMBINING 1A AND 1A1 OR 1A2 KTS LINES

KEY TELEPHONE SYSTEM	MOUNTING CORD LEADS (NOTE 1)												SET LINE SWITCH
	HOLD KEY					CHAINING SWITCH					TEL SET CONTROL (NOTE 2)		
						18- AND 30-BUTTON SETS			30-BUTTON SETS ONLY		RING	A1	
	(Y-G) [BK-BL]	(G-Y) [BK-W]	(V-O) [S-W]	(BR-V) [S-Y]	(V-BR) [S-BK]	1ST KEY (V-G) [BL-W]	2ND KEY (V-G) [BL-W]	3RD KEY (V-G) [BL-W]	4TH KEY (V-G) [BL-W]	5TH KEY (V-G) [BL-W]	(BL-V) [R]	(O-Y) [Y]	
1A1 or 1A2 (shop wiring)	A-H (I)	A-H (I)	*	*	*	A-H (I)	A-H (II)	A-H (III)	A-H (IV)	A-H (V)	R (I)	1B (Note 4)	†
1A1 or 1A2 on first key unit; 1A on remaining key units	A-H (I)	Y (Note 4)	*	1‡ (I)	R (II)	(Y) (Note 4)	A-H (II)	A-H (III)	A-H (IV)	A-H (V)	R (I)	1B (Note 4)	†
1A1 or 1A2 on first and second key units; 1A on remaining key units	A-H (I)	Y (Note 4)	*	1‡ (II)	R (III)	A-H (I)	Y (Note 4)	A-H (III)	A-H (IV)	A-H (V)	R (I)	1B (Note 4)	†
1A1 or 1A2 on 1st, 2nd, and 3rd key units; 1A on remaining key units (30-button sets)	A-H (I)	Y (Note 4)	*	1‡ (III)	R IV	A-H (I)	A-H (II)	(Y) (Note 4)	A-H (IV)	A-H (V)	R (I)	1B (Note 4)	†
1A1 or 1A2 on 1st through 4th key units; 1A on fifth key unit (30-button sets)	A-H (I)	Y (Note 4)	*	1‡ (IV)	R (V)	A-H (I)	A-H (II)	A-H (III)	Y (Note 4)	A-H (V)	R (I)	1B (Note 4)	†
1A only (see Note 2 Fig.9 or 10)	Y (Note 4)	A-H (I)	*	R1 (VI)	R (I)	A-H (I)	A-H (II)	A-H (III)	A-H (IV)	A-H (V)	R1 (Note 4)	SG (Note 4)	6 (Note 5)

\* Indicates lead is spade-tipped; insulate and store.

† (BR) [S-G] line switch lead connects to terminal 5 of telephone set terminal board (terminal G of network for MD color code) when station busy circuit is not provided and to terminal 9 of telephone set terminal board when station busy lamp circuit (P-90D033 printed wiring board assembly) is provided (1A1 or 1A2 KTS only).

‡ Disconnect, insulate, and store (BL-V) chaining switch lead at this terminal.

( ) Current color code.

[ ] MD color code.

#### Notes:

1. Mounting cord lead colors in parentheses are in D120C or D200F even count cord; mounting cord lead colors in brackets are in D120B (MD) or D200B (MD) cord.
2. Ring (BL-V) [R] lead connects to (G) [S-Y] line switch lead through flash key contacts and terminals 2 and 8 of telephone set terminal board (even count color code) or terminals 1 and 4 of telephone set terminal board (MD color code). A1 (O-V) [Y] lead connects to (Y) [S-W] line switch lead at terminal 1 (even count color code) or terminal 5 (MD color code) of telephone set terminal board.
3. Roman numerals in parentheses indicate terminal board designations.
4. Terminal on terminal board VI.
5. Terminal on telephone set terminal board.

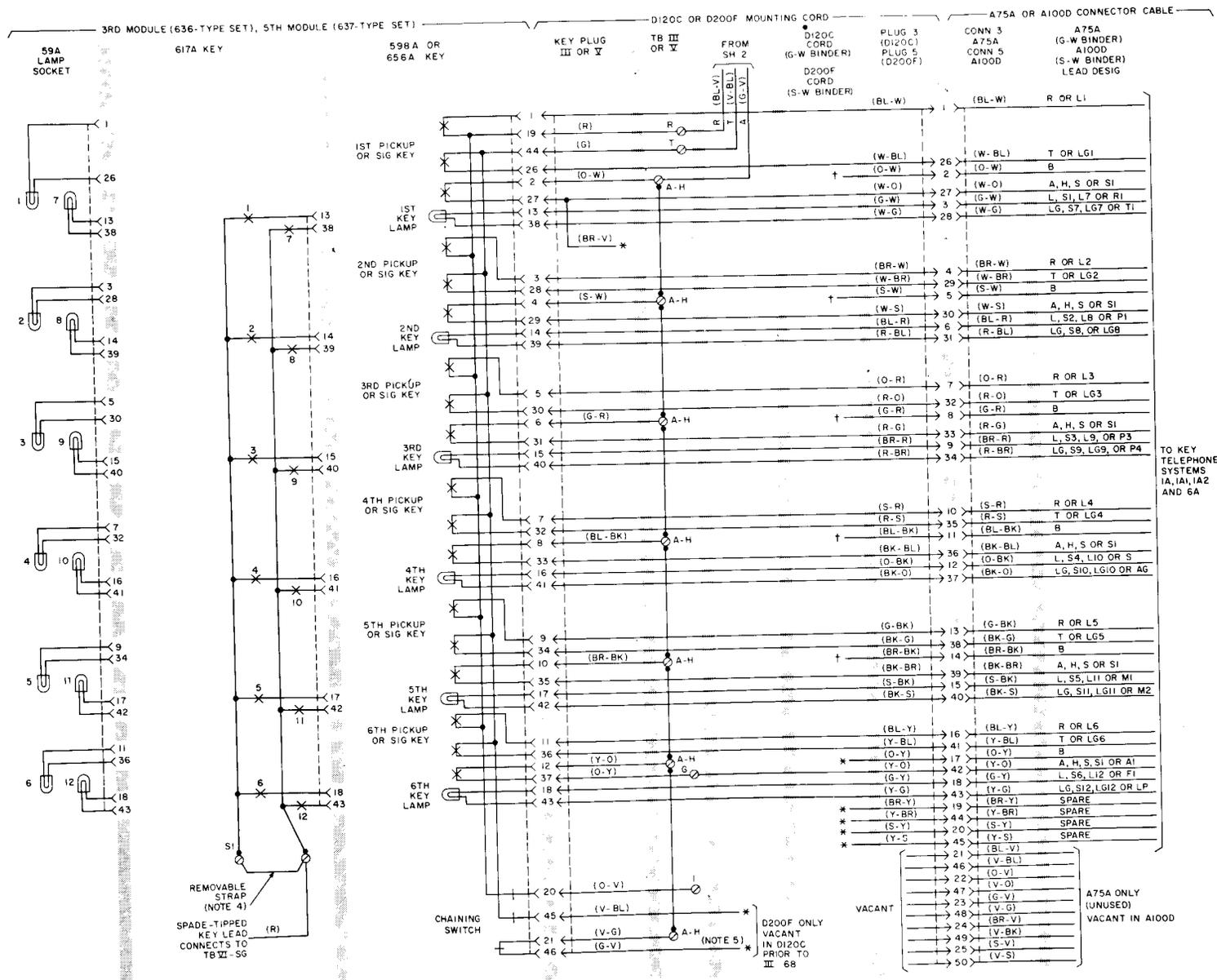


Fig. 4—Module Arrangements and Cord and Cable Connections for Sets Equipped with Even-Count Color-Code Cords (Sheet 3 of 3)

NOTES:

1. WITH 599A OR 657A KEY IN FIRST MODULE; SPADE TIPPED LEADS FROM KEY PLUG I AND MOUNTING CORD BINDER GROUP [W] ARE INSULATED AND STORED AS SHOWN.

WITH 599B OR 657B KEY IN FIRST MODULE; [G-BL] LEAD MUST BE REMOVED FROM A-H OF TBI, INSULATED AND STORED.

WITH 598A OR 656A KEY IN FIRST MODULE; STRAP A-H OF TBI TO TERMINAL G ON NETWORK.

CONNECT [S-BR] AND [G-BL] LEADS FROM KEY PLUG I TO A-H OF TBI.

TO EXTEND HOLD LAMP LEADS CONNECT [BR-Y] AND [BR-BR] KEY PLUGS LEADS TO [O-BL] AND [O-W] MOUNTING CORDS LEADS RESPECTIVELY USING SPARE TERMINALS OR D-161488 CONNECTORS.

2. FOR USE WITH 1A KEY SYSTEM ONLY, MOVE A1 [Y] STRAP FROM 1B TO SG ON TBVI AND MAKE CONVERSION SHOWN IN TABLE A.
3. FOR ADD-ON CONFERENCE CONTROL IN THE 6A KEY TELEPHONE SYSTEM, CONNECT [G-W] MOUNTING CORD LEAD (RED BINDER GROUP) TO TBVI-PB. ALSO REMOVE COMMON LEAD OF ADD-ON CONFERENCE BUTTON (CONVERTED TO SIGNALING) FROM A-H TERMINAL AND CONNECT TO PB. THE 617A KEY MAY ALSO BE USED IN A SIMILAR MANNER. ALSO SEE NOTE 4.
4. WHEN THE 617A KEY IS REQUIRED AS A DUAL-PURPOSE KEY, THE BRASS STRAP BETWEEN THE S1 AND SG TERMINALS OF THE KEY MAY BE REMOVED. USE M1W CORD OR EQUIVALENT TO CONNECT S1 TERMINAL OF 617A KEY TO A DISSIMILAR GROUND OR A NONGROUNDED CIRCUIT.
5. WHEN INSTALLING P-90D033 PRINTED WIRING BOARD ASSEMBLY TO PROVIDE STATION BUSY LAMP FEATURE IN 1A1 OR 1A2 KTS CONNECT A OR H LEAD [S-BL] FROM LAST KEY MODULE TO TERMINAL X OF TBVI. SEE FIG. 6.

\* INSULATED AND STORED

† DEAD ENDED

( ) CURRENT COLOR CODE

[ ] MD COLOR CODE

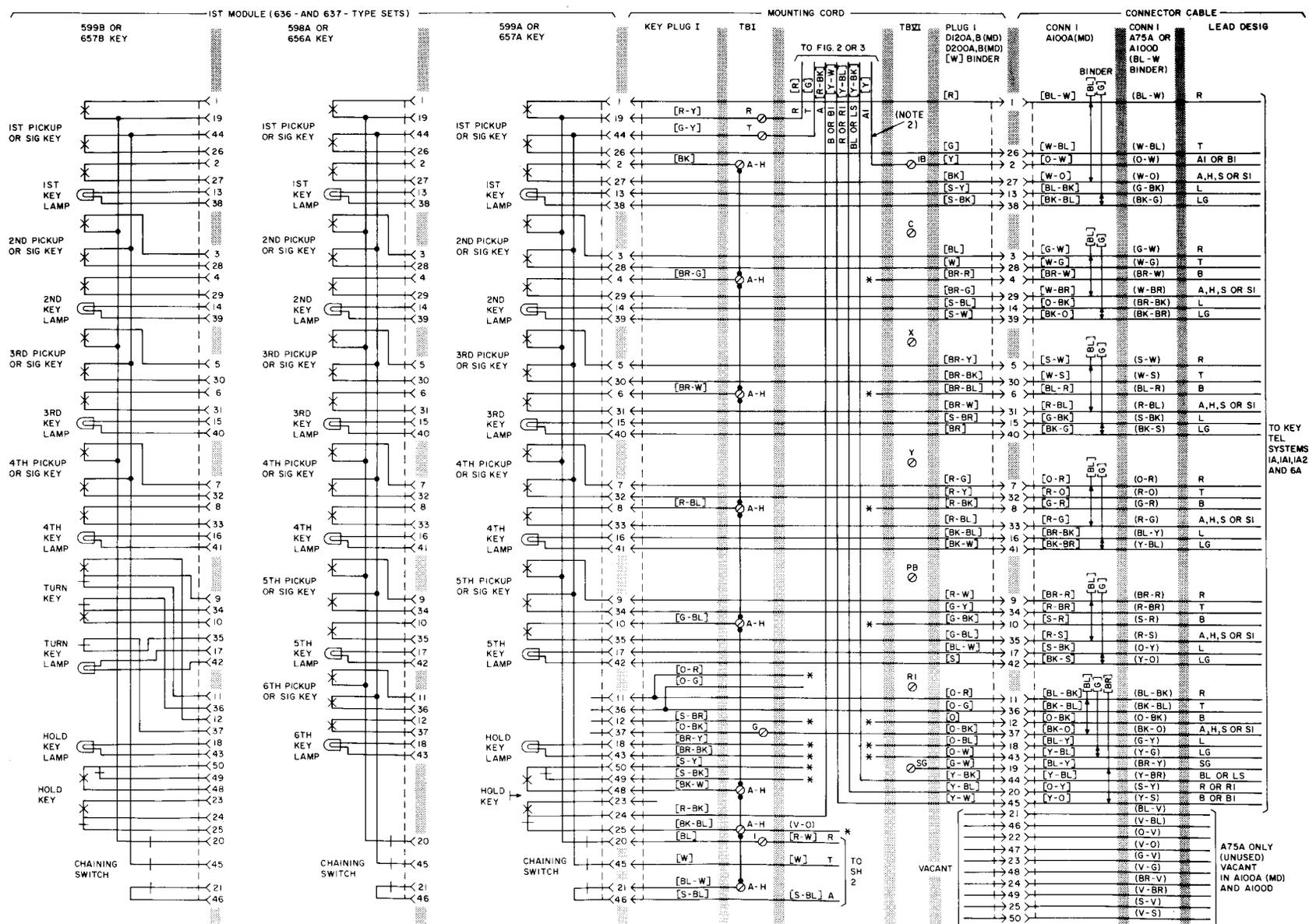


Fig. 5—Module Arrangement and Cord and Cable Connections for Sets Equipped with (MD) Mounting Cords (Sheet 1 of 3)

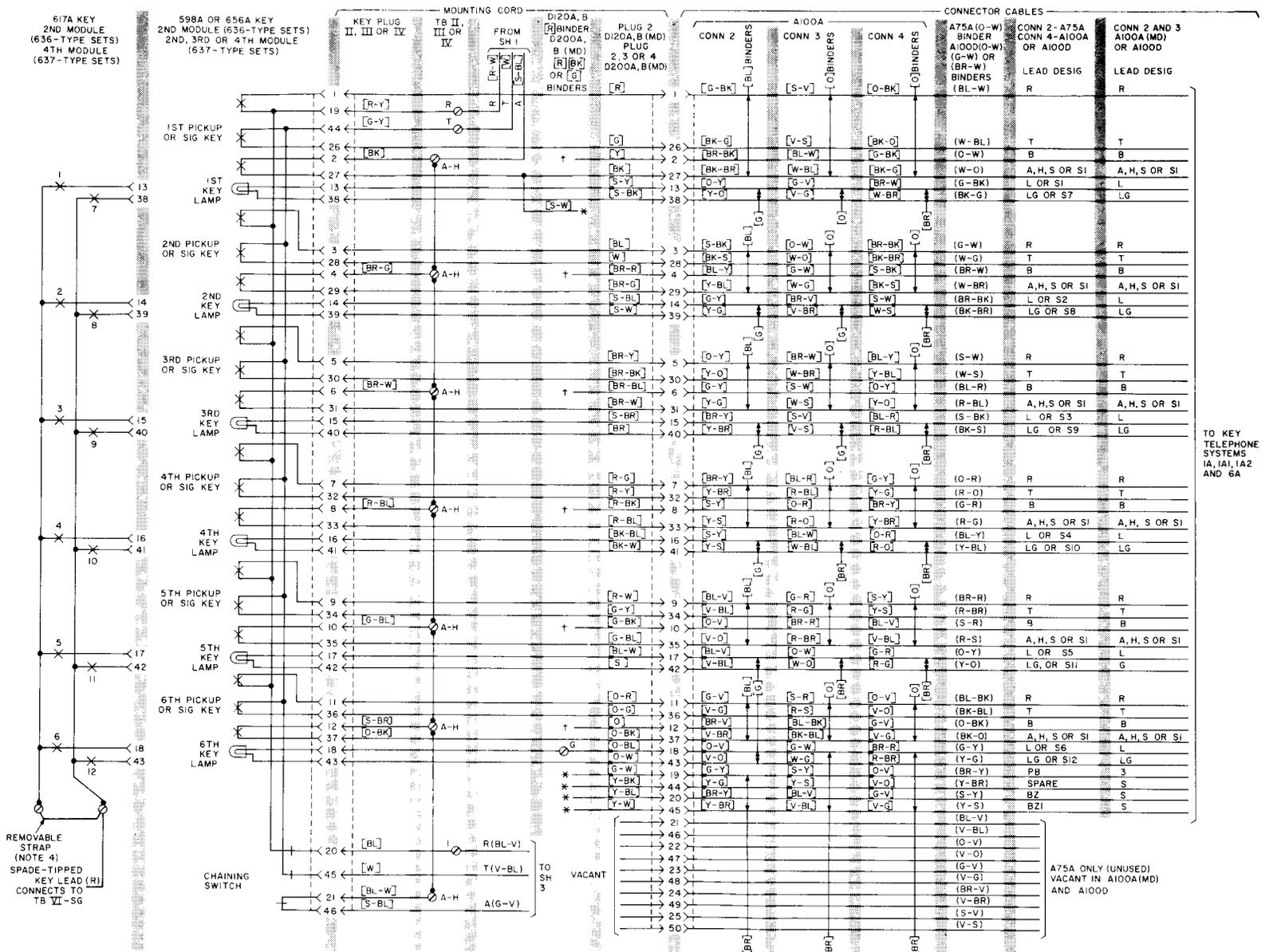


Fig. 5—Module Arrangement and Cord and Cable Connections for Sets Equipped with (MD) Mounting Cords (Sheet 2 of 3)



TABLE B

## PICKUP-SIGNAL KEY CONVERSION (3RD OR 5TH MODULE)

CONVERSION OPTIONS (NOTES)	598A OR 656A KEY						
	(O-W) [BK]	(S-W) [BR-G]	(G-R) [BR-W]	(BL-BK) [R-BL]	(BR-BK) [G-BL]	(Y-O) [S-BR]	(O-Y) [O-BK]
PPPPPP	A-H	A-H	A-H	A-H	A-H	A-H	G
PPPPPS	A-H	A-H	A-H	A-H	A-H	SG	G
PPPPSS	A-H	A-H	A-H	A-H	SG	SG	G
PPSSSS	A-H	A-H	A-H	SG	SG	SG	G
PPSSSSS	A-H	A-H	SG	SG	SG	SG	G
PSSSSSS	A-H	SG	SG	SG	SG	SG	G
SSSSSSS	SG	SG	SG	SG	SG	SG	G
PPPP*P*S	A-H	A-H	A-H	C	C	A-H†	C
PPP*P*P*S	A-H	A-H	C	C	C	A-H†	C
PP*P*P*P*S	A-H	C	C	C	C	A-H†	C
P*P*P*P*P*S	C	C	C	C	C	A-H†	C

**Notes:**

1. Convert buttons on right hand key module first. If more than six (five with common signaling) are required use module preceding right hand position, repeat connection modifications as shown in table.
2. All key positions are arranged in the shop as pickup positions. To convert to signaling (nonlocking), remove the screw detail P-10E837 from the plunger at the key position to be converted. Make the necessary connection changes as shown in Table B.

\* These arrangements use line switch controlled ground for common signal key used with private or intercommunicating lines. Common signal should be used to operate a common signal relay. Do not wire directly to a buzzer.

† Terminal A-H used with 1A1 or 1A2 KTS, and terminal 5 used with 1A KTS.

( ) Current color code.

[ ] MD color code.

TABLE C

599B (TURNKEY) KEY CONNECTIONS

FEATURE	FIRST MODULE KEY LEADS						SPADE-TIPPED LEADS OF MOUNTING CORD				
	5TH			6TH			(BL-Y) [O-R]	(Y-BL) [O-G]	(O-Y) [O-BK]	(Y-O) [S-BR]	(BR-BK) [G-BL]
	R	T	A	R	T	A					
	(G-BK) [R-W]	(BK-G) [G-Y]	(BK-BR) [G-BL]	(BL-Y) [O-R]	(Y-BL) [O-G]	(Y-O) [O-BK]					
Cutoff sta on 1A1 or 1A2 sys	To KTS Equip			To Ext Sta			Insulate and store				
Cutoff sta on 1A sys without hold feature	To KTS Equip			To Ext Sta			Insulate and store				
Cutoff station on 1A system with hold feature	To Aux Relay used to cut off T, R, B, and H						Insulate and Store			SG*	SG*
Cutoff external ringer or buzzer	To KTS Equip			To Ext Ringer or Buzzer			Insulate and Store				
Cutoff ringer in set (Note 1)	To KTS Equip						3† (Note 2)	A‡ (Note 2)	Insulate and Store		
Cutoff Buzzer in Set (Note 1 and 2)	AC Buzzer		To BZ and BZ1 at KTS Equip				A	C	Insulate and Store		
	DC Buzzer			D	C						
	Com. Audible			Cap.	C						
Monitoring	To MON Equip						R TBI	T TBI			

\* Terminal on TBVI.

† Terminal on telephone set terminal board.

‡ Terminal on set network.

( ) Current color code.

[ ] MD color code.

**Notes:**

1. Insulate and store BZ and BZ1 leads at buzzer or telephone set terminal board.
2. The (BL-Y) [O-R] and (Y-BL) [O-G] mounting cord leads should be insulated and stored at the equipment end when the bridged spade-tipped leads are used in the set.

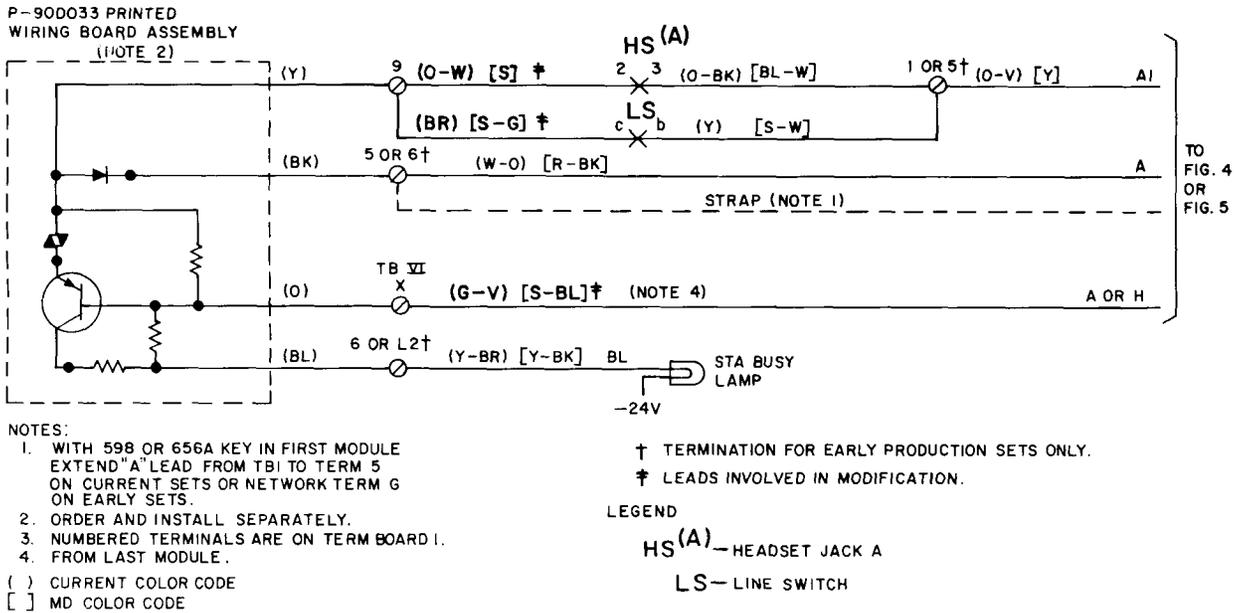


Fig. 6—Station Busy Lamp Circuit Using Printed Wiring Board Assembly

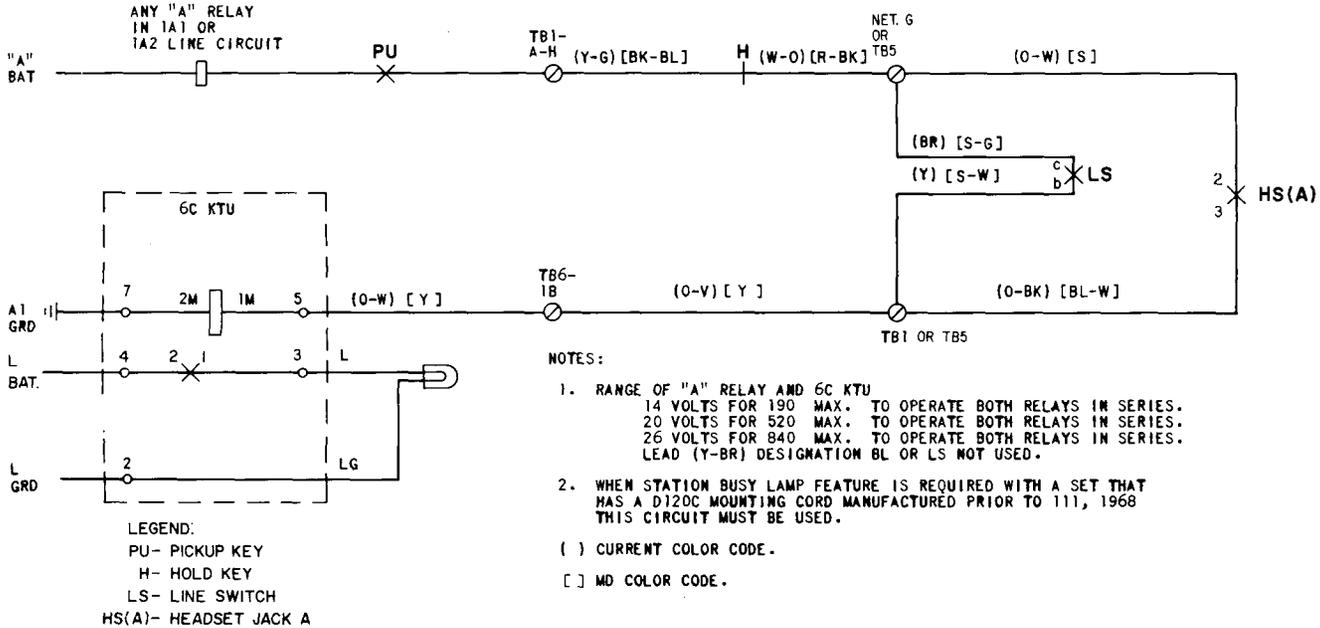
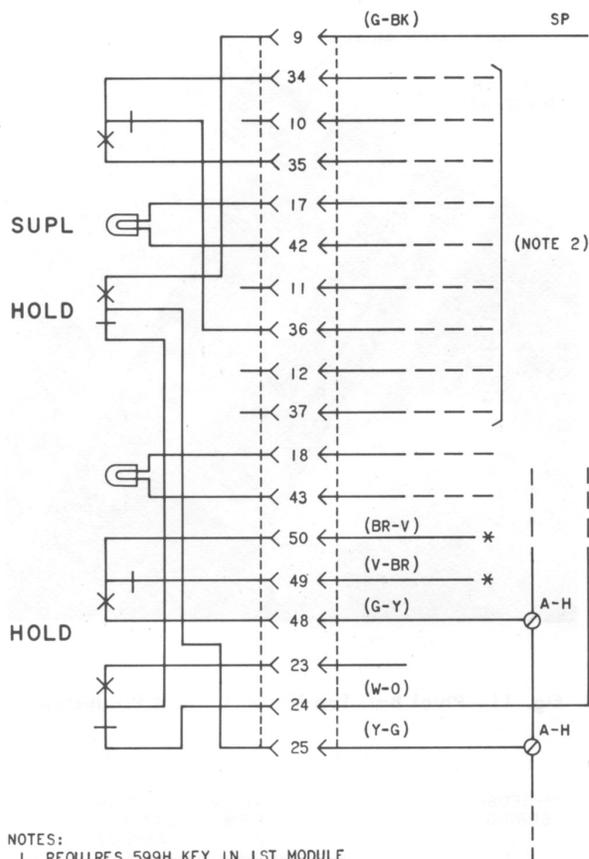


Fig. 7—Busy Lamp Control Circuit with 6C KTU



## NOTES:

1. REQUIRES 599H KEY IN 1ST MODULE
2. DO NOT USE THESE LEADS FOR OTHER FEATURES WHEN ASSOCIATED WITH 599H KEY

Fig. 8—Priority Hold

**3. MAINTENANCE**

**3.01** Maintenance of handset, dials, ringers, and modular keys is outlined in sections covering these components.

**3.02** Refer to the appropriate Reference section in Division 502 for replaceable components.

**3.03** To remove a defective ringer from early or current production sets:

- (1) Remove housing.
- (2) Loosen dial mounting plate and move to left.
- (3) Disconnect ringer leads.

(4) Remove N1A ringer mounting screws from underside of baseplate (Fig. 9), or loosen captive screws of D1-type ringers (Fig. 10).

(5) Lift out ringer.

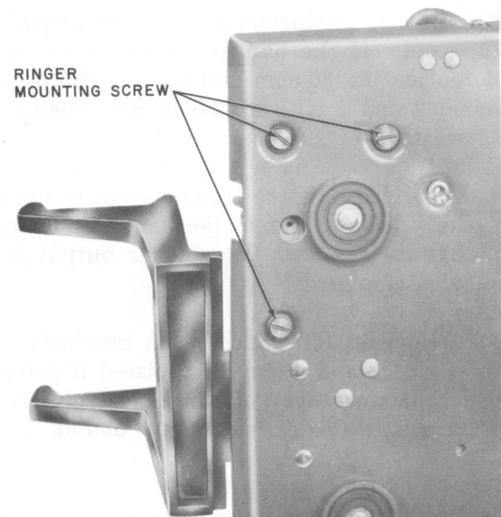


Fig. 9—Location of Mounting Screws for N1A Ringers

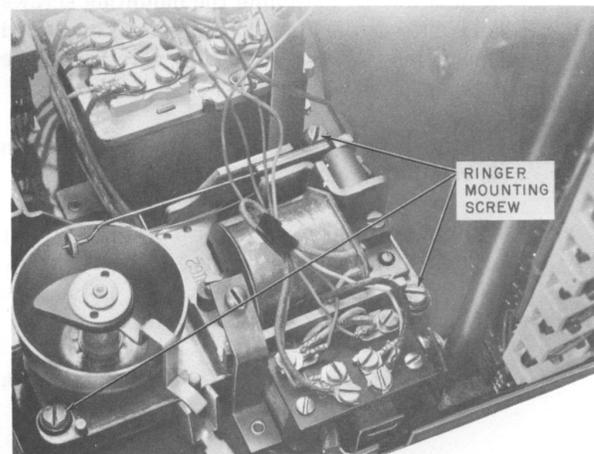


Fig. 10—Location of Mounting Screws for D1-Type Ringers

## SECTION 502-610-410

**3.04** The use of the head telephone set requires an amplifier to equalize the level of the N1 transmitter with the T1 transmitter in the handset. If the headset transmission in current production sets is too loud or inadequate replace the 241A amplifier.

**3.05** In early production sets a 151D amplifier is used. If the handset transmission is too loud replace the 30-ohm resistor on TB2 between terminal 3 and 4 with a 62-ohm KS-13490L1 1/2-watt resistor.

**Note:** If handset transmission is too loud check connections to the amplifier to insure that the handset transmitter output is not being amplified.

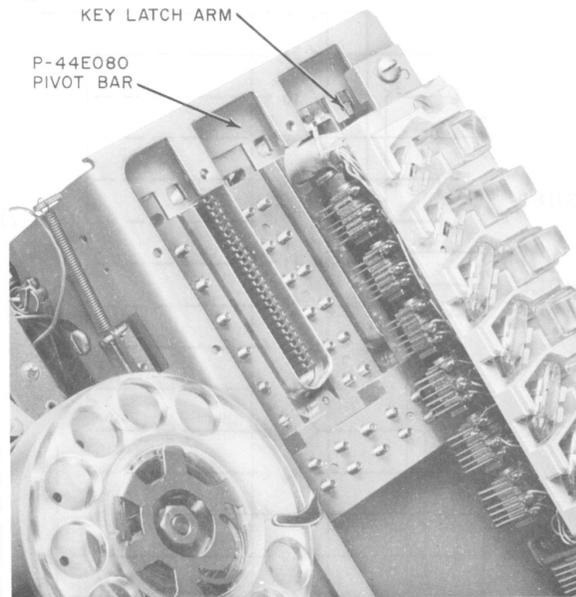
**3.06** Two KS-14337 capacitors on terminals 1 and 5 and 2 and 6 may be replaced if defective. These capacitors are polarized electrolytics and polarity must be maintained (Fig. 2 and 3).

**3.07** When an operated pickup key does not remain depressed or release any previously operated key on current sets (Fig. 11):

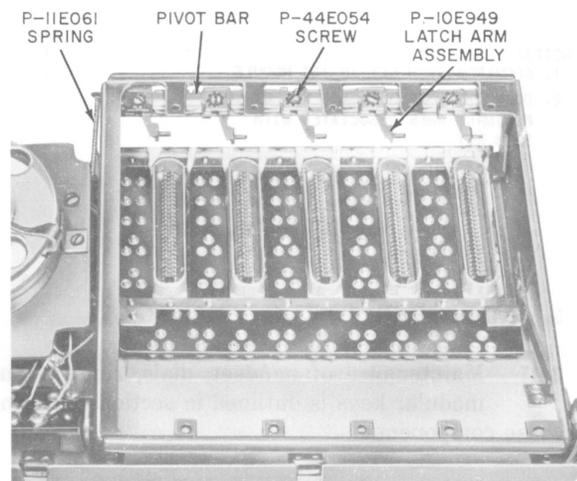
- (1) Check that key latch arm is properly inserted in the pivot bar.
- (2) Adjust key by loosening the mounting screws and shifting the key within limits of oversized hole provided for the mounting screws before refastening mounting screws.
- (3) Test key for proper operation if malfunction is related to one key module.

**3.08** When an operated pickup key does not remain depressed or release any previously operated key on early production sets, adjust the latch arm assembly (Fig. 12) as follows:

- (1) Loosen P-44E054 screw holding latch arm assembly on the pivot bar.
- (2) Move latch arm assembly to position where front edge of the shorter arm extends 1/16-inch beyond front edge of the pivot bar.
- (3) Tighten screw.
- (4) Test operation of key unit.



**Fig. 11—Pivot Bar, Top View (Current Production)**



**Fig. 12—Pivot Bar Assembly (Early Production)**

**3.09** To prevent release button from binding on 636- and 637-type early production sets, install a P-12E672 collar as follows:

- (1) Remove faceplate assembly.

- (2) Remove two switch assembly screws (Fig. 13).
- (3) Remove button assembly.
- (4) Place P-12E672 collar around P-11E928 plunger (Fig. 13).
- (5) Reassemble switch assembly.

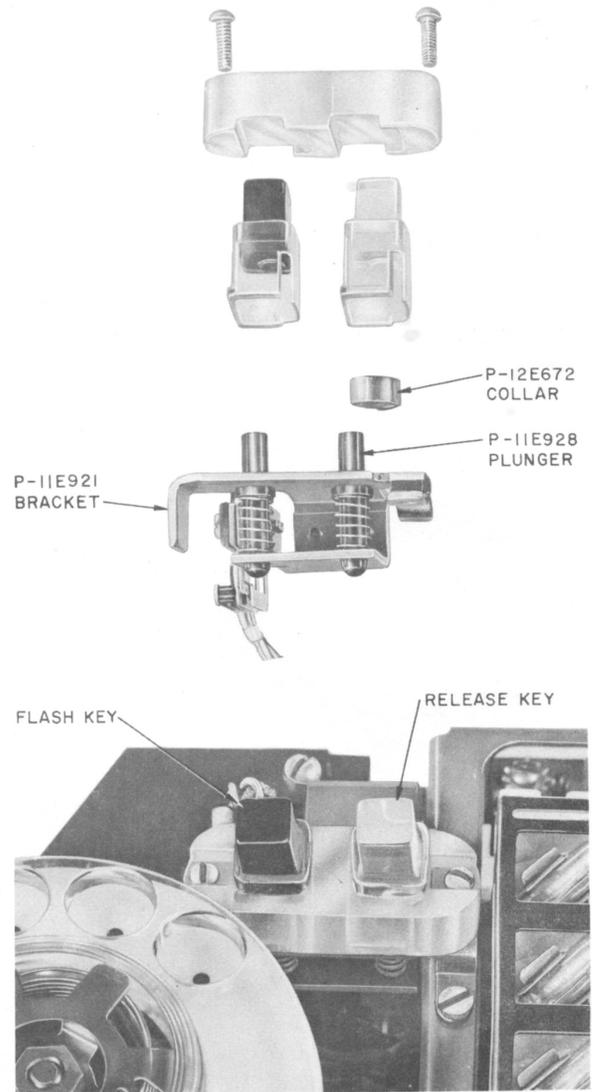


Fig. 13—P-11E987 Switch Assembly