

TELEPHONE SETS 638, 639, 1638, AND 1639 TYPES CONNECTIONS

1. GENERAL

1.01 This section contains connection data for various service feature arrangements of 18- and 30-button Call Director telephone sets used with station line concentrators. They are equipped with a headset jack. This section includes terminal board connections in the set, mounting cord and connector cable conductors, and associated plugs and connectors.

1.02 Issue 3 of this practice had a limited distribution.

1.03 This section is reissued to add connections for:

- TOUCH-TONE dialing (Fig. 5A).
- New set components (Fig. 5B).
- Polarity guard diode protection (Fig. 5D).

1.04 See Table A for description of modules and Table B for telephone set codes and module arrangements.

1.05 Connection figures in this section pertain to all 638- and 639-type rotary dial sets, and 1638- and 1639-type TOUCH-TONE dial sets. Circuit figures are arranged so that various versions of telephone set circuits may be overlaid into the applicable cord assembly and connector cable figures. See circuit wiring guide (Table C).

1.06 These sets are equipped with two 517A jacks into which the plugs of a 52- or 53-type head telephone set may be connected. A G3L

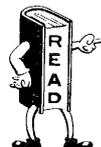
hand set with a P-10E100 resistor assembly across the transmitter may also be used in place of a headset. The internal wiring is arranged to electrically separate the G-type handle from the switchhook contacts when a 289B or equivalent plug is inserted into the jacks. Sets are equipped with a nonilluminated (amber button) flash key, a mechanical (clear plastic) release key, and various module arrangements.

1.07 Even-count color codes and lead designations are shown in red and Manufacture Discontinued (MD) color codes and lead designations are shown in green.

1.08 Fig. 6 shows the 18-button set and Fig. 7 shows the 30-button set using either MD color-coded or even-count color-coded cords.

1.09 Convert to even-count color codes and lead designations whenever practicable.

1.10 To facilitate use of this practice, the circuit leads follow a straight line pattern as nearly as possible from apparatus cabinet to key.



Some conductors of mounting cords are dead dressed with insulators (tubing). When necessary to use these conductors, do not use long-nose pliers to pull off the insulators. This may break the conductor or pull off the spade tip. Cut off the insulation with electrician scissors or diagonal pliers.

2. APPLICATION

2.01 These telephone sets may be used with 1A1, 1A2, and 6A key telephone systems.

2.02 A 235A KTU is associated with each 638- or 1638-type telephone set. A 236A KTU is associated with each 639- or 1639-type telephone set. Because of the single common talking and control lead pattern in these sets, a line concentrator unit must be associated with each

telephone set installed and cannot be shared, even on a bridged station basis. See appropriate sections for connections to station line concentrator using 235A and 236A key telephone units.

2.03 Table D shows the combination of relays operated in station line concentrator when associated key position is operated. Table E shows the conversion of the sets equipped with MD color-coded cords. Table F shows conversion of the sets equipped with even-count color-coded cords.

TABLE A
DESCRIPTION OF MODULES

Module	Description
105B Blank	Apparatus blank
598A Key	6 pickup keys
599A Key	5 pickup keys and hold key
599B Key	Turnbutton key, 4 pickup keys, and hold key
617A Key	12 signal keys

Note: These sets are not arranged for speakerphone service. Circuitry of the 667-type transmitter module is not applicable.

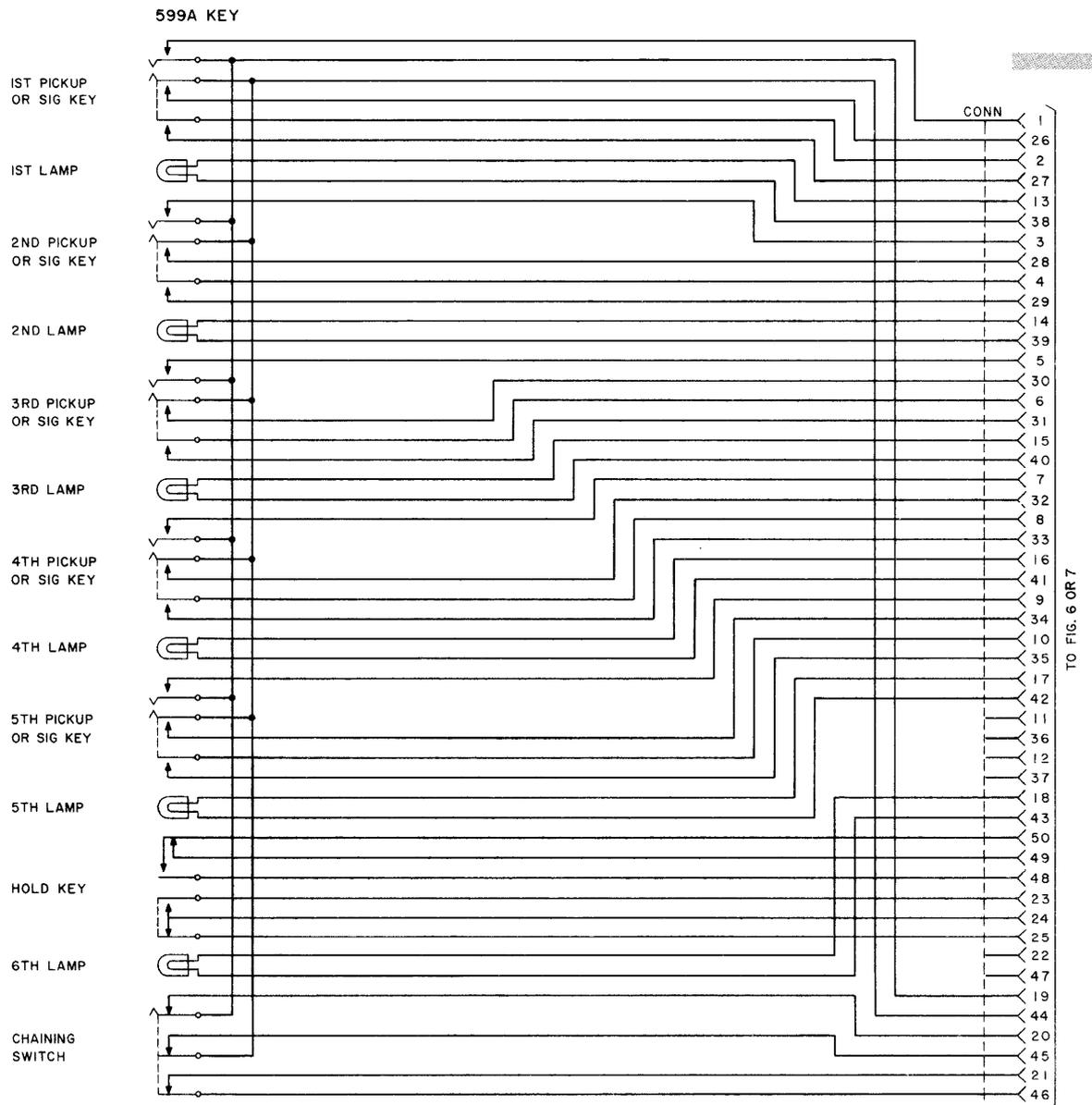


Fig. 1 – 599A Key

TABLE B
TELEPHONE SET CODES AND MODULE ARRANGEMENTS

Telephone Set		Set Equipped With													
		1st Module (Left)		2nd Module		3rd Module		4th Module		5th Module					
Type	Code	Key	Fig.	Key	Fig.	Key	Fig.	Key	Fig.	Key	Fig.				
638A 638B 638C 1638C	1	599A	1	598A	2	105B									
	2					598A	2								
	4					617A	4								
	6	599B	3			105B									
	7					598A	2								
	9	598A	2			105B									
	10					598A	2								
639A 639C 639D 1639D	1	599A	1	598A	2	598A	2	105B		105B					
	2							598A	2			598A	2	598A	2
	3									617A	4				
	4	599B	3					105B		105B					
	10							598A	2						
	11							598A	2	598A	2	598A	2		
	12														

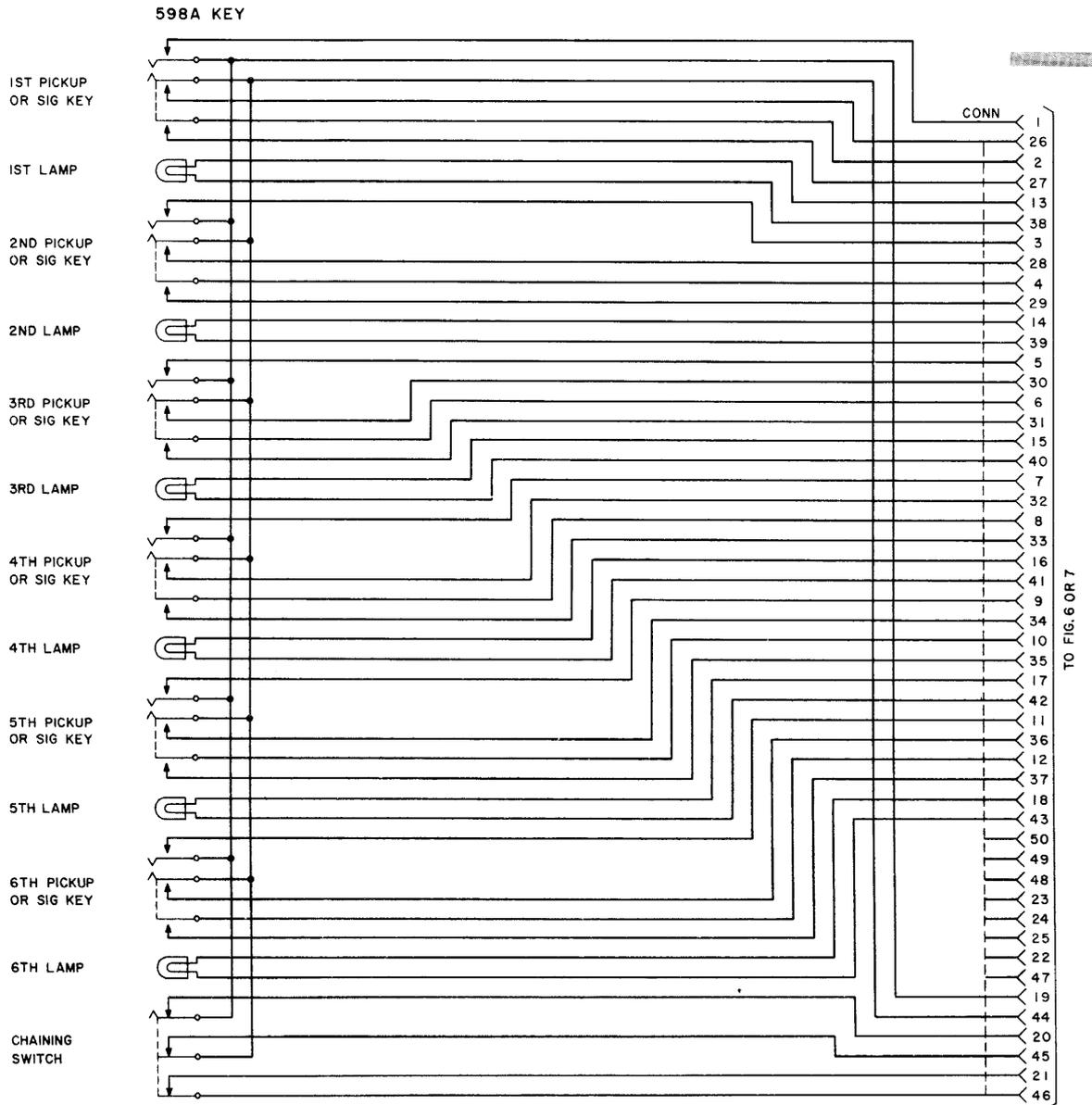


Fig. 2 - 598A Key

TABLE C
CIRCUIT WIRING GUIDE

Set Code	Description of Cord Arrangement	Mtg Cord	Tel Set Circuit		Cord and Cable Connections	
			Fig.	Page	Fig.	Page
638A	(MD) Color code	D50A, B	5 C	14	6	16
	(MD) Color code*	D50A, B	5 D	15	6	16
638B	Even-count color code	D50L	5 C	14	6	16
	Even-count color code	D50L	5 D	15	6	16
638C	Even-count color code	D50L	5 B	13	6	16
	New components					
1638C	Even-count color code	D50L	5 A	11	6	16
	TOUCH-TONE dial					
639A	(MD) Color code	D80A	5 C	14	7	17
	(MD) Color code	D80A	5 D	15	7	17
639C	Even-count color code	D80B	5 C	14	7	17
	Even-count color code*	D80B	5 D	15	7	17
639D	Even-count color code	D80B	5 B	13	7	17
	New components					
1639D	Even-count color code	D80B	5 A	11	7	17
	TOUCH-TONE dial					

* Modified for polarity guard diode protection.

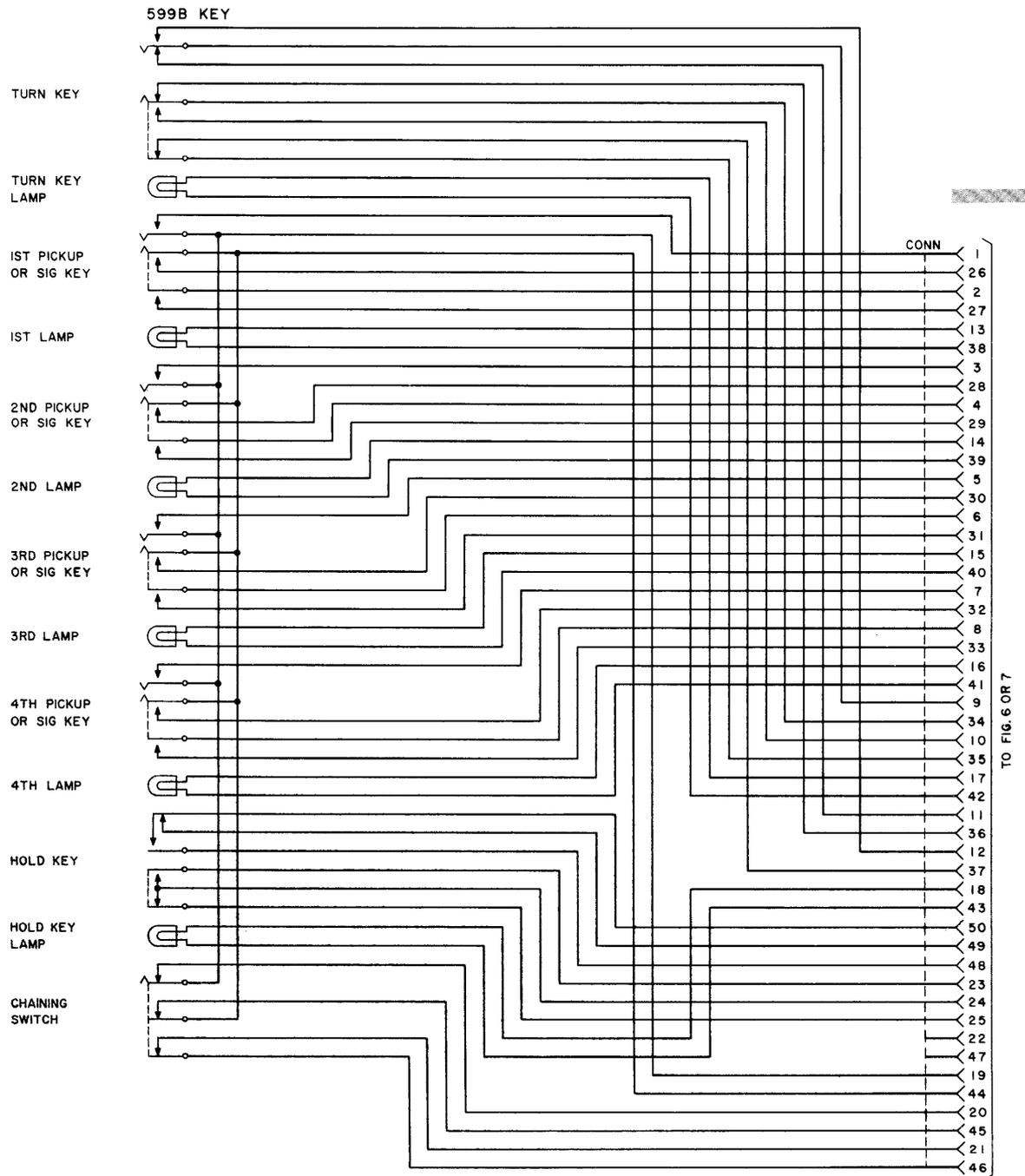
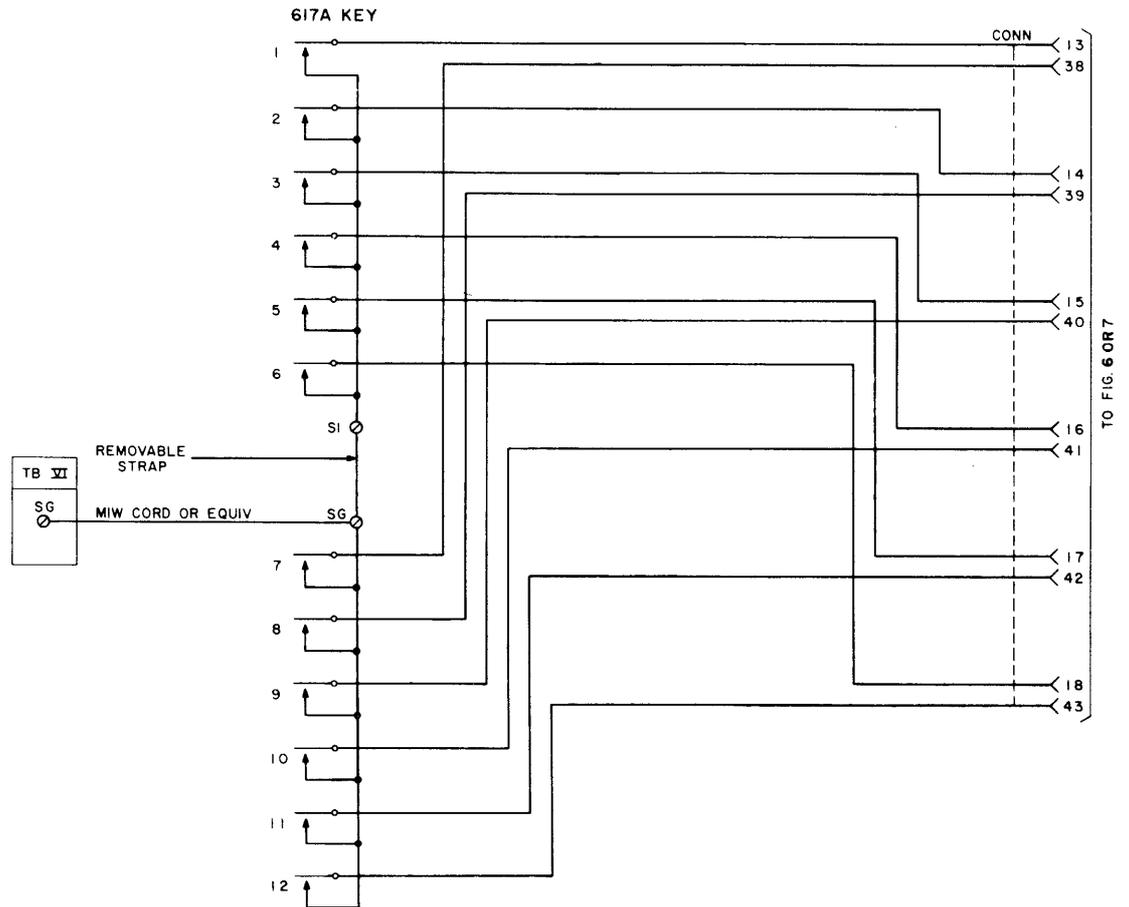


Fig. 3 – 599B Key

TABLE D
COMBINATIONS OF RELAYS OPERATED IN STATION
LINE CONCENTRATOR WHEN ASSOCIATED KEY POSITION IS OPERATED

Key Pos	Relays																
	236A KTU										235A KTU						
	A	B	C	CA1	D	E	F	G	H	J	A	B	C	D	E	F	G
1	•	•									•	•					
2	•		•								•		•				
3		•	•									•	•				
4	•				•						•			•			
5		•			•							•		•			
6				•					•				•	•			
7			•		•						•				•		
8		•				•						•			•		
9			•			•							•		•		
10					•	•								•	•		
11			•				•				•					•	
12					•		•					•				•	
13						•	•						•			•	
14					•			•						•		•	
15						•		•			•					•	
16							•	•				•				•	
17	•								•				•			•	
18		•							•					•		•	
19			•						•								
20					•				•								
21						•			•								
22							•		•								
23								•	•								
24	•									•							
25		•								•							
26			•							•							
27					•					•							
28						•				•							
29							•			•							
30								•		•							



NOTE: 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 MIW CORD OR EQUIVALENT TO CONNECT S1 TERMINAL OF 617A KEY TO A DISSIMILAR GROUND OR A NONGROUNDED CIRCUIT.

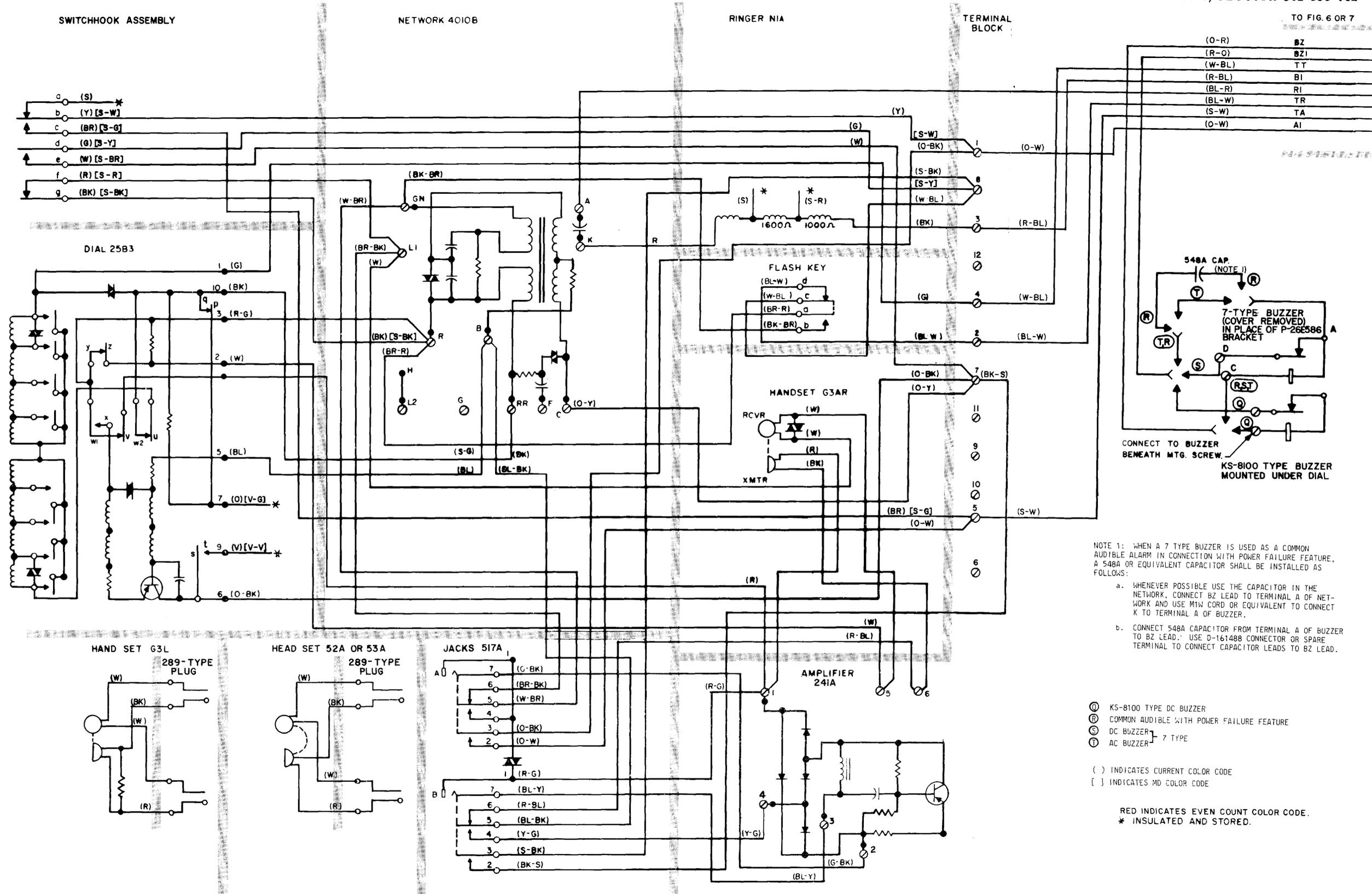
Fig. 4 – 617A Key

TABLE E

**CONVERSION OF 638- AND 639-TYPE TELEPHONE SETS
EQUIPPED WITH MANUFACTURE DISCONTINUED (MD) CORDS**

Feature	Work Operation	Key Position							
		1-7-13-19-25	2-8-14-20-26	3-9-15-21-27	4-10-16-22-28	5-11-17-23-29	12-24-30	18	6
Buzzer Signal	Connect stored spade-tipped lead indicated to term. SG of TB VI.	BK	BR-G	BR-W	R-BL	G-BL	S-BR	S-BR	638—Not convertible. 639—Connect S-BR to term. SG of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.
	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	S-BK	S-W	BR	BK-W	S	O-W	O-W	
6A Add-on	Connect stored spade-tipped lead indicated to term. PB of TB VI.	BK	BR-G	BR-W	R-BL	G-BL	S-BR	S-BR	638—Not convertible. 639—Connect S-BR to term. PB of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.
	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	S-BK	S-W	BR	BK-W	S	O-W	O-W	
6A Pushbutton	Connect stored spade-tipped lead indicated to term. A (638) or to term. 1A (639) of TB VI.	BK	BR-G	BR-W	R-BL	G-BL	S-BR	S-BR	638—Not convertible. 639—Connect S-BR to term. 1A of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.
	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	S-BK	S-W	BR	BK-W	S	O-W	O-W	
Locked-in Lamp Release	Connect stored spade-tipped lead indicated to term. SG of TB VI.	BK	BR-G	BR-W	R-BL	G-BL	S-BR	S-BR (639) (638—Not Convertible.)	638—Not convertible. 639—Connect S-BR to term. SG of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I. Connect O-W to avail. lamp grd.
	Move spade-tipped lead indicated from assoc TB to avail. lamp grd.	S-BK	S-W	BR	BK-W	S	O-W	O-W (639) (638—Not convertible.)	
Line Pickup		Factory equipped and wired						639—Factory equipped 638—Connect O-W to avail. lamp grd.	Replace 599A key with 598A key. Connect O-W to avail. lamp grd. Connect BR-BL to term. A (638) or to term. 1A (639) of TB VI.

Note: All pickup key positions converted to nonlocking for features in Table E must have P-11E977 insulating details placed over the two key contacts adjacent to the key plunger. Insulating details are furnished with the telephone set. Remove the P-10E837 screw detail entirely from the plunger at the key position to be converted.



NOTE 1: WHEN A 7 TYPE BUZZER IS USED AS A COMMON AUDIBLE ALARM IN CONNECTION WITH POWER FAILURE FEATURE, A 548A OR EQUIVALENT CAPACITOR SHALL BE INSTALLED AS FOLLOWS:

- WHENEVER POSSIBLE USE THE CAPACITOR IN THE NETWORK, CONNECT BZ LEAD TO TERMINAL A OF NETWORK AND USE M1W CORD OR EQUIVALENT TO CONNECT K TO TERMINAL A OF BUZZER.
- CONNECT 548A CAPACITOR FROM TERMINAL A OF BUZZER TO BZ LEAD. USE 0-161488 CONNECTOR OR SPARE TERMINAL TO CONNECT CAPACITOR LEADS TO BZ LEAD.

- ⓐ KS-8100 TYPE DC BUZZER
- ⓑ COMMON AUDIBLE WITH POWER FAILURE FEATURE
- ⓒ DC BUZZER 7 TYPE
- ⓓ AC BUZZER

() INDICATES CURRENT COLOR CODE
 [] INDICATES MD COLOR CODE

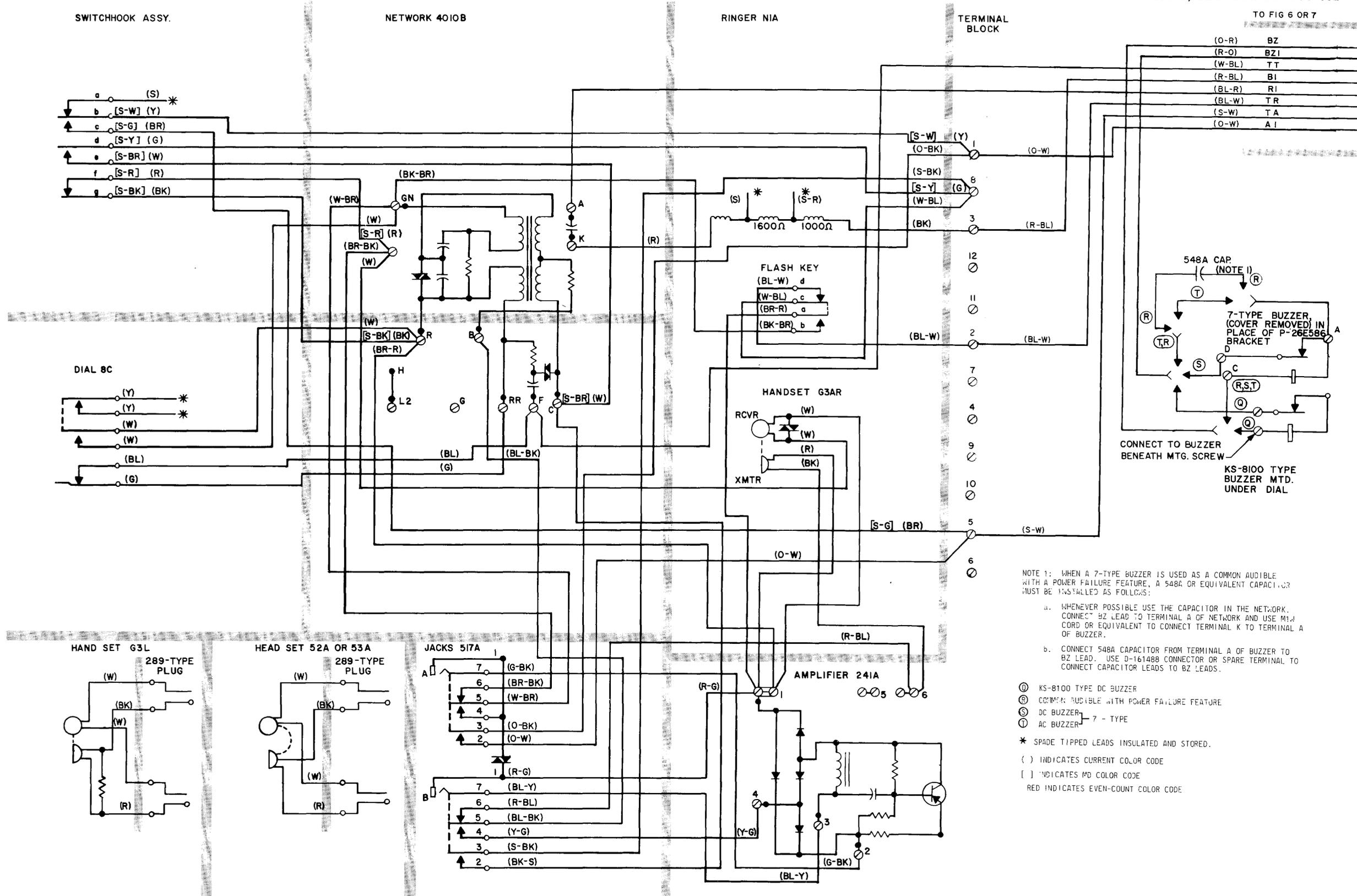
RED INDICATES EVEN COUNT COLOR CODE.
 * INSULATED AND STORED.

Fig. 5A - Telephone Set Circuit, TOUCH-TONE Dial

TABLE F
CONVERSION OF 638- AND 639-TYPE TELEPHONE SETS
EQUIPPED WITH EVEN-COUNT COLOR-CODED CORDS

Key Position	Service Feature Options								Line Pickup
	Buzzer Signal		6A Add-On		6A Pushbutton		Locked-In Lamp Release		
	Connect stored spade-tipped lead indicated to terminal SG of TB VI.	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	Connect stored spade-tipped lead indicated to terminal PB or TB VI.	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	Connect stored spade-tipped lead indicated to terminal A (638) or to terminal 1A (639) of TB VI.	Disconnect spade-tipped lead indicated from assoc TB. Insulate and store.	Connect stored spade-tipped lead indicated to terminal SG of TB VI.	Move spade-tipped lead indicated from assoc TB to avail. lamp grd.	
1	BL	R-BR	BL	R-BR	BL	R-BR	BL	R-BR	638 and 639—Factory equipped and wired
2	O	R-S	O	R-S	O	R-S	O	R-S	
3	G	BK-BL	G	BK-BL	G	BK-BL	G	BK-BL	
4	BR	BK-O	BR	BK-O	BR	BK-O	BR	BK-O	
5	S	BK-G	S	BK-G	S	BK-G	S	BK-G	
6	638—Not convertible. 639—Connect W to term. SG of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.		638—Not convertible. 639—Connect W to term. PB of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.		638—Not convertible. 639—Connect W to term. 1A of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I.		638—Not convertible. 639—Connect W to term. SG of TB VI. Connect one of two spares from Fig. 7 to term. 6 of TB I. Connect G-R to avail. lamp grd.		Replace 599A key with 598A key. Connect G-R to avail. lamp grd. Connect W-O to term. A (638) or to term. 1A (639) of TB VI.
7	BL	BK-BR	BL	BK-BR	BL	BK-BR	BL	BK-BR	638 and 639 Factory equipped and wired
8	O	BK-S	O	BK-S	O	BK-S	O	BK-S	
9	G	Y-BL	G	Y-BL	G	Y-BL	G	Y-BL	
10	BR	Y-O	BR	Y-O	BR	Y-O	BR	Y-O	
11	S	Y-G	S	Y-G	S	Y-G	S	Y-G	
12	W	Y-BR	W	Y-BR	W	Y-BR	W	Y-BR	
13	BL	W-BL	BL	W-BL	BL	W-BL	BL	W-BL	
14	O	W-O	O	W-O	O	W-O	O	W-O	
15	G	W-G	G	W-G	G	W-G	G	W-G	
16	BR	W-BR	BR	W-BR	BR	W-BR	BR	W-BR	
17	S	W-S	S	W-S	S	W-S	S	W-S	
18	W	R-BL	W	R-BL	W	R-BL	W (639) (638—not convertible.)	R-BL (639) (638—not convertible.)	639—Factory equipped 638—connect R-BL to avail. lamp grd.
19	BL	R-O	BL	R-O	BL	R-O	BL	R-O	639—Factory equipped and wired
20	O	R-G	O	R-G	O	R-G	O	R-G	
21	G	R-BR	G	R-BR	G	R-BR	G	R-BR	
22	BR	R-S	BR	R-S	BR	R-S	BR	R-S	
23	S	BK-BL	S	BK-BL	S	BK-BL	S	BK-BL	
24	W	BK-O	W	BK-O	W	BK-O	W	BK-O	
25	BL	Y-S	BL	Y-S	BL	Y-S	BL	Y-S	
26	O	V-BL	O	V-BL	O	V-BL	O	V-BL	
27	G	V-O	G	V-O	G	V-O	G	V-O	
28	BR	V-G	BR	V-G	BR	V-G	BR	V-G	
29	S	V-BR	S	V-BR	S	V-BR	S	V-BR	
30	W	V-S	W	V-S	W	V-S	W	V-S	

Note 1: Reference to 638- and 639-type sets also applies to 1638- and 1639-type sets.
Note 2: All pickup key positions converted to nonlocking for features in Table F must have P-11E977 insulating details placed over the two key contacts adjacent to the key plunger. Insulating details are furnished with the telephone set. Remove the P-10E837 screw detail entirely from the plunger at the key position to be converted.



NOTE 1: WHEN A 7-TYPE BUZZER IS USED AS A COMMON AUDIBLE WITH A POWER FAILURE FEATURE, A 548A OR EQUIVALENT CAPACITOR MUST BE INSTALLED AS FOLLOWS:

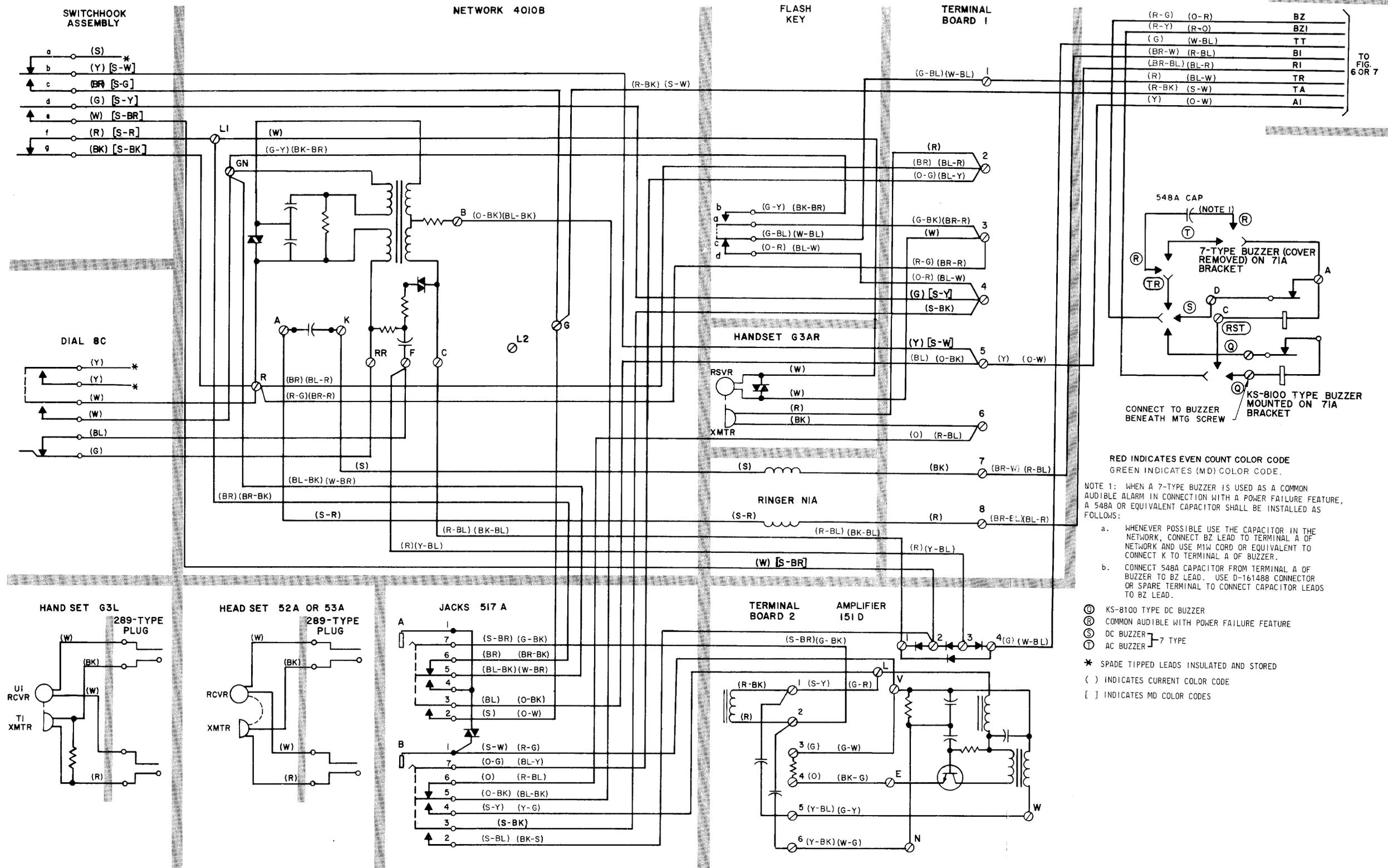
- WHENEVER POSSIBLE USE THE CAPACITOR IN THE NETWORK. CONNECT BZ LEAD TO TERMINAL A OF NETWORK AND USE M.I.W. CORD OR EQUIVALENT TO CONNECT TERMINAL K TO TERMINAL A OF BUZZER.
- CONNECT 548A CAPACITOR FROM TERMINAL A OF BUZZER TO BZ LEAD. USE D-161488 CONNECTOR OR SPARE TERMINAL TO CONNECT CAPACITOR LEADS TO BZ LEADS.

ⓐ KS-8100 TYPE DC BUZZER
 ⓑ COMMON AUDIBLE WITH POWER FAILURE FEATURE
 ⓒ DC BUZZER - 7 - TYPE
 ⓓ AC BUZZER

* SPADE TIPPED LEADS INSULATED AND STORED.

() INDICATES CURRENT COLOR CODE
 [] INDICATES MTD COLOR CODE
 RED INDICATES EVEN-COUNT COLOR CODE

Fig. 5B - Telephone Set Circuit, 8C Dial and New Components



RED INDICATES EVEN COUNT COLOR CODE
 GREEN INDICATES (MD) COLOR CODE

NOTE 1: WHEN A 7-TYPE BUZZER IS USED AS A COMMON AUDIBLE ALARM IN CONNECTION WITH A POWER FAILURE FEATURE, A 548A OR EQUIVALENT CAPACITOR SHALL BE INSTALLED AS FOLLOWS:

- WHENEVER POSSIBLE USE THE CAPACITOR IN THE NETWORK, CONNECT BZ LEAD TO TERMINAL A OF NETWORK AND USE M1W CORD OR EQUIVALENT TO CONNECT K TO TERMINAL A OF BUZZER.
- CONNECT 548A CAPACITOR FROM TERMINAL A OF BUZZER TO BZ LEAD. USE D-161488 CONNECTOR OR SPARE TERMINAL TO CONNECT CAPACITOR LEADS TO BZ LEAD.

ⓐ KS-8100 TYPE DC BUZZER
 ⓑ COMMON AUDIBLE WITH POWER FAILURE FEATURE
 ⓒ DC BUZZER - 7 TYPE
 ⓓ AC BUZZER

* SPADE TIPPED LEADS INSULATED AND STORED
 () INDICATES CURRENT COLOR CODE
 [] INDICATES MD COLOR CODES

Fig. 5C - Telephone Set Circuit, 8C Dial

CIRCUIT SYMBOLS:
* INDICATES LEADS ARE SPADE TIPPED
† INDICATES LEADS ARE SPADE TIPPED AND STORED.

RED INDICATES EVEN-COUNT COLOR CODE.
GREEN INDICATES (MD) COLOR CODE.

CIRCUIT NOTES:
NOTE 1: WHEN 599A OR 599B KEYS ARE USED IN FIRST MODULE, HOLD KEY LAMP (64K LAMP) MAY BE USED FOR A MISCELLANEOUS VISUAL SIGNAL. CONNECT INDICATED LEAD TO AN AVAILABLE LAMP GROUND. WHEN 598A KEY IS USED IN FIRST MODULE, INDICATED LEAD IS CONNECTED TO GROUND ON TERMINAL 5 OF TB1.
NOTE 2: WHEN 598A KEY IS USED IN FIRST MODULE, INDICATED LEAD IS CONNECTED TO TERMINAL 1A OF TB6.
NOTE 3: TO CONVERT A KEY POSITION FROM PICKUP (LOCKING) TO SIGNALING (NONLOCKING), REMOVE THE SCREW DETAIL P-106837 ENTIRELY FROM THE PLUNGER AT THE KEY POSITION TO BE CONVERTED. MAKE THE NECESSARY CHANGES AS SHOWN IN TABLES OR F. TO CONVERT A KEY POSITION FROM NON-LOCKING TO LOCKING, INSERT SCREW DETAIL P-106837. WHEN CONVERTING A KEY FOR SIGNALING, PLACE A P-115979 INSULATING DETAIL OVER THE 2 KEY CONTACTS ADJACENT TO KEY PLUNGER.

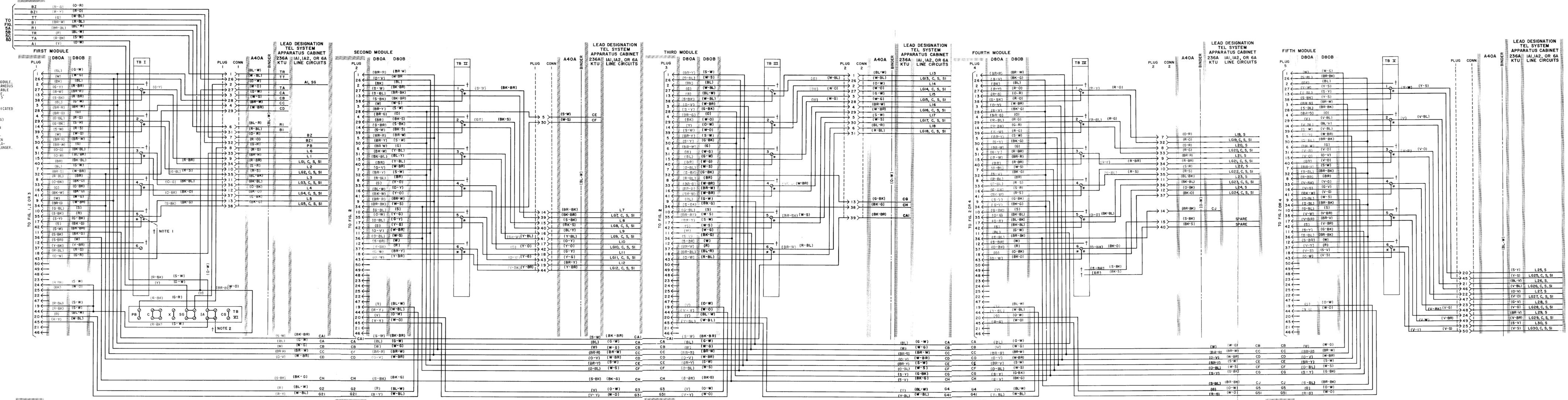
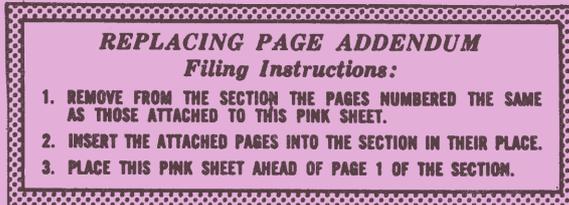


Fig. 7 — Cord and Cable Connections for 639-Type Telephone Sets Equipped with Manufacture Discontinued (MD) and 639- and 1639-Type Telephone Sets Equipped With Even-Count Color-Coded Cords



**TELEPHONE SETS
638, 639, 1638, AND 1639 TYPES
CONNECTIONS**

I. GENERAL

1.001 This addendum supplements Section 502-636-402, Issue 4. The attached pages must be inserted in the section in accordance with the filing instructions above.

1.002 This addendum is issued to show current switchhook lead color codes, current TOUCH-TONE dial lead color codes, and correct common switch wiring in TOUCH-TONE dial.

Attached:

Page 11 dated March 1964, revised.
Page 12 dated March 1964, reissued.
Page 13 dated March 1964, revised.
Page 14 dated March 1964, revised.
Page 15 dated March 1964, revised.