

## 830- AND 2830-TYPE TELEPHONE SETS

### IDENTIFICATION, INSTALLATION, MAINTENANCE, AND CONNECTIONS

#### 1. GENERAL

1.01 This section contains information for the 830- and 2830-type telephone sets.

1.02 This section is reissued to:

- Show 830DM and 2830DM telephone sets MD
- Show G12A handset (A&M only)
- Show 3-type speakerphone MD
- Show 533K diode for use with Station Busy Lamp and Dial Restriction
- Add information on 830FM and 2830FM telephone sets
- Add Table A, ordering guide and replaceable components, Fig. 3
- Remove information on P-90D170 polarity guard
- Remove information on D-180656 Kit of Parts (wall mounting arrangement).

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

#### 2. IDENTIFICATION

##### A. Purpose

2.01 The 830-(Rotary dial) and 2830-(TOUCH-TONE® dial) type telephone sets are obtainable as modular or complete desk-type, 10- or 11-button, key telephone sets (Fig. 1, 2, or 3) equipped to provide standard key system features.

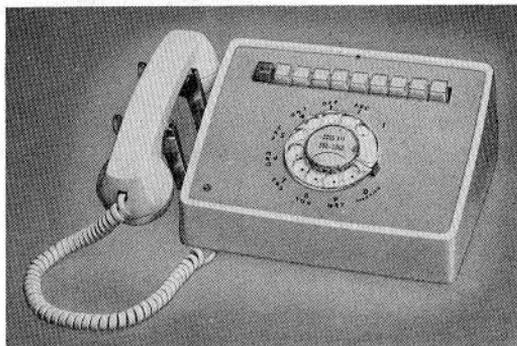


Fig. 1—830CM Telephone Set



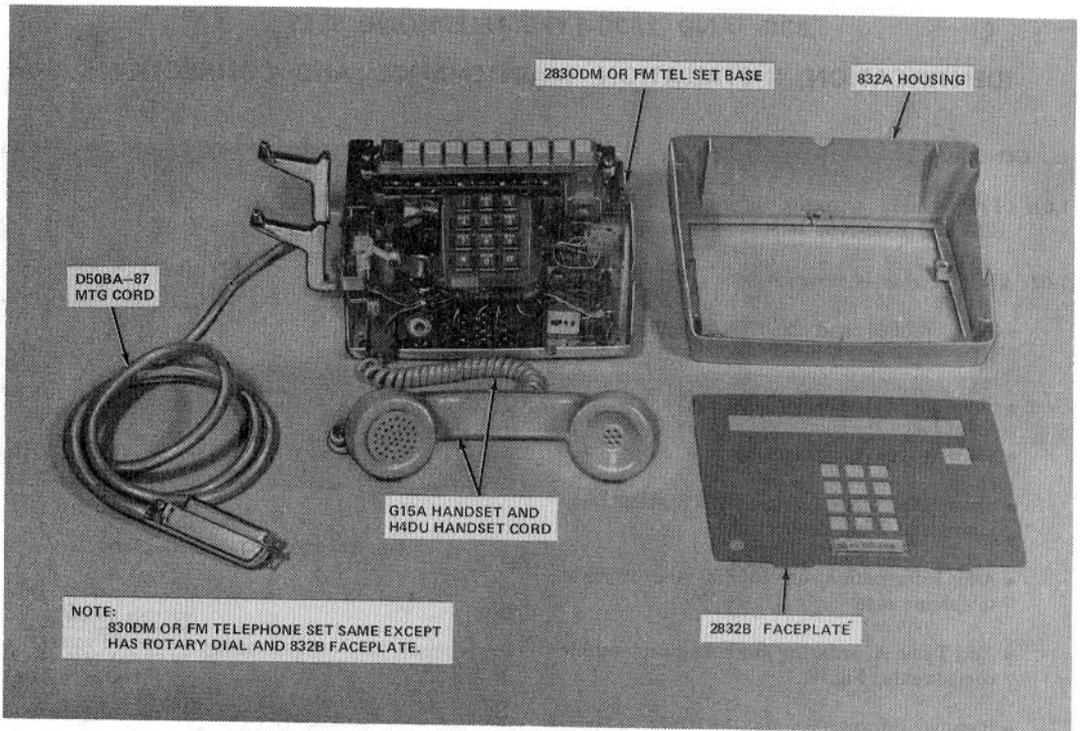
Fig. 2—830DM (MD) or 830FM Telephone Set

##### B. Application

2.02 Used with central office, PBX or intercommunication line circuits in 1A1, 1A2, or 6A key telephone systems (KTS). These sets are not equipped for use with 1A KTS.

#### NOTICE

Not for use or disclosure outside the Bell System except under written agreement



**Fig. 3—Station Modular Arrangement 2830DM (MD) or 2830FM Telephone Set**

**2.03** All 830- and 2830-type telephone sets may be used with the 3-type (MD) or 4A speakerphone system. When used with 3-type speakerphone, a D10R auxiliary mounting cord may be required due to the limited number of mounting cord conductors.

**C. Optional Components**

**2.04** Optional Components (order separately):

- Diode, 533K (for use with station busy lamp)
- Diode, 533K for dial restriction (830-type sets only)
- Buzzer, KS-8109L2
- Buzzer, KS-20419L1 (one provided with set)

- Dial, 8CA-58 (for 830-type set used with speakerphone)
- 819041971 (P-90D197) Polarity Guard (adhesive backed)
- Lamp, 51A (Hold button for message waiting).

**D. Ordering Guide**

**2.05** For telephone set, faceplate, and replaceable component ordering information, refer to Tables A and B.

**E. Design Features**

**2.06** Design features for the 830- and 2830-type sets are as follows:

- Modular set

TABLE A

## TELEPHONE SETS ORDERING GUIDE AND REPLACEABLE COMPONENTS

TEL SET	BASE	HOUSING	DIAL	KEY	FACE-PLATE	HANDSET	HANDSET CORD	LAMP
830CM	830CM	832A.*	8RA-58	647A5	830B.*	G15A.*	H4DU.*	51A
830FM	830FM	832A.*	8RA-58	647AJ5, 651K	832B.*	G15A.*	H4DU.*	51A
2830CM	2830CM	832A.*	35AF3A	647A5	2830B.*	G15A.*	H4DU.*	51A
2830FM	2830FM	832A.*	35AF3A	647AJ5, 651K	2832B.*	G15A.*	H4DU.*	51A

\* See Table B for color suffix.

TABLE B

## COLOR ORDERING GUIDE

HOUSING, HANDSET, AND HANDSET CORD		FACEPLATE	
COLOR	SUFFIX	COORDINATED COLOR	SUFFIX
Black	-03	Charcoal	-70
Ivory	-50	Muted Ivory	-80
Green	-51	Light Green	-71
Red	-53	Muted Red	-69
Yellow	-56	Light Yellow	-72
White	-58	Light Gray	-73
Light Beige	-60	Muted Beige	-75
Aqua Blue	-62	Muted Blue	-76

- 10-button [9-line pickup and hold on all sets except the 830DM (MD), 830FM, 2830DM (MD), and 2830FM]
- 11-button [7-line pickup, hold, recall, and 2 intercom on 830DM (MD), 830FM, 2830DM (MD) and 2830FM only, see Fig. 2]
- All pickup and intercom buttons are convertible to signaling
- Automatic Button Restoration (ABR) with preselect, 830DM (MD), 830FM, 2830DM (MD), and 2830FM telephone sets only

- Multiline Conferencing (MLC) 830DM (MD), 830FM, 2830DM (MD), and 2830FM telephone sets only, on pickup lines only (no conferencing on intercom lines or pickup-to-intercom lines)
- Hold button can be illuminated (lamp ordered separately)
- KS-20419L1 buzzer provided and connected to dedicated mounting cord leads
- Provision for mounting KS-8109L2 buzzer or additional KS-20419L1 buzzers on base pan
- Plug-in handset [G12A (A&M only) or G15A]
- Provision for polarity guard assembly (optional) all 2830-type telephone sets except 2830DM or 2830FM sets
- Limited number of mounting cord conductors restricts number of optional features which may be simultaneously provided. If additional conductors are required, use an auxiliary D10R cord
- An access hole is provided in the P1-type ringer for biasing spring adjustment, refer to Section 501-259-101
- 3-type (MD) or 4A speakerphone (paragraph 2.03)
- Tip and ring are common to all pickup buttons through internal mounting cord

wiring (current sets) and contact strips (early sets).

#### F. Operating Features

**2.07** The operating features for the 830- and 2830-type telephone sets are the same as all standard key type telephone sets with the following exception. The 830DM (MD), 830FM, 2830DM (MD), and 2830FM telephone sets provide the following additional features.

- (a) **Multiline Conferencing:** Any combination of pickup buttons may be simultaneously depressed, for this feature, however, it is not possible to conference CO/PBX lines with the dedicated intercom lines, or intercom lines with each other.



*When lines are conferenced, distant stations may have difficulty hearing each other and transmission quality is not guaranteed.*

- (b) **Automatic Button Restoration (ABR):**

The ABR feature releases locked-down buttons when the handset is restored. The buttons may be preset without removing the handset from the cradle.

- (c) **Line Recall:** An amber-capped recall button provides switchhook flash without releasing the buttons.

- (d) **Intercom:** Two buttons are dedicated to the intercom feature. These buttons are located on the right end of the 10-button key. These buttons may be converted in the standard manner to provide signaling or may be used for CO/PBX lines. However, CO/PBX lines when terminated at these positions will not be conferenceable.

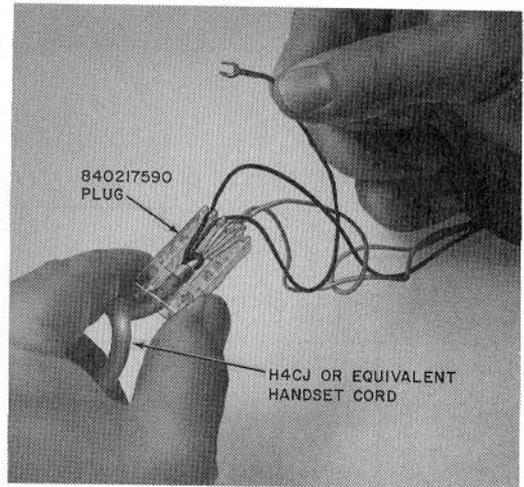
### 3. INSTALLATION

**3.01** Install the completely assembled telephone set or assemble the required components to the telephone set base (Fig. 3).

**Note:** On current production keys the cap must be properly oriented to lock the cap on the button.

**3.02** Individual signaling may be provided by converting a locking key button to nonlocking. Remove the 812857738 (P-28E773) locking pin from the button to be converted and modify per Table C.

**3.03** If an additional buzzer is required, plastic screw grommets and mounting screws are provided for installation. The KS-8109L2 or additional KS-204191L buzzer must be ordered separately.



**Fig. 4—Installation of Spade-Tipped Handset Cord Leads**

#### 3.04 Dial Restriction:

- (1) 830-Type Telephone Set:

(a) Install a 533K diode between terminals RR and F of the network as shown in Fig. 5.

(b) Wire telephone set as shown in Table D.

- (2) 2830-Type Telephone Set:

(a) Wire telephone set as shown in Table D.

- (3) Installations as described above will restrict dialing on all lines of the respective telephone

**TABLE C**  
**PICKUP SIGNAL KEY CONVERSION**

CONVERSION OPTION (NOTE)	647A5 OR 647AJ5 KEY LEADS								
	O-W	S-W	G-R	BL-BK	BR-BK	BK-BR	BK-BL	R-G	W-S
HPPPPPPPPP	7	7	7	11	11	11	15	15	15
HPPPPPPPPS	7	7	7	11	11	11	15	15	26
HPPPPPPPSS	7	7	7	11	11	11	15	26	26
HPPPPPPSSS	7	7	7	11	11	11	26	26	26
HPPPPPPSSSS	7	7	7	11	11	26	26	26	26
HPPPPSSSSS	7	7	7	11	26	26	26	26	26

**Note:** Move (O-Y) mounting cord lead from terminal ⑥ 12 to terminal 26. Beyond five signal conversions strap terminal 26 to a spare terminal and move the signal leads consecutively to that terminal. Example: (BL-BK) lead from terminal 11 to spare terminal, then (G-R) from 7 to spare terminal, etc.

○ 830A1M (MD) or 2830A1M (MD) (early version).

□ All other telephone sets.

set. To permit dialing on selected lines reverse tip and ring leads of the line involved at the distribution terminal or 66-type connecting block. When a 2A1 matrix block is used, the reversing of tip and ring conductors must be done on the telephone set side of the matrix block.

(4) For additional information on dial restriction, refer to Section 500-155-100.

**3.05** Polarity guard (all 2830-type telephone sets except the 2830DM and 2830FM) (see paragraph 3.06) should be used only when specified by local instructions for end-to-end signaling installations where battery and ground reversals may be encountered. An 819041971 (P-90D197) polarity guard assembly (adhesive backed) is installed wherever space permits. Connect per Table E.

**3.06** The 830DM, 830FM, 2830DM, and 2830FM telephone set employs the 2A1 matrix block in place of polarity guard described in paragraph 3.05. This unit provides eight polarity guard circuits. One polarity guard circuit is required for each line which is conferenceable by multibutton depression. The polarity guard is located between

the station side of the line circuit and the station cut-down field.

**3.07** Where conditions warrant, G3A6, G12A, or G15A handset can be replaced with other types as follows:

- For impaired hearing — G6-type
- For weak speech — G7-type
- For noisy location—G8-type

Refer to Division 501 for connections of these handsets. When either of these handsets are used, an H4DU or H4CJ or equivalent handset cord must be provided (see paragraph 3.08).

**3.08 *Installing Spade-Tipped Handset Cords in Early Production Sets Equipped with G12A Handset:*** To install spade-tipped handset cord (H4CJ or equivalent) remove J Hook Stayband from the cord. Cut back and remove cord sheath to stayband marks. Thread spade-tipped conductors through plug (Fig. 4) (spade tips must be bent to clear cord entrance). Pull cord until about 1/4-inch of cord sheath is in the central

TABLE D

## DIAL RESTRICTION MODIFICATION (NOTE 1)

TEL SET	LEAD		REMOVE FROM		CONNECT TO	
	FUNCTION	COLOR	NET.	SET	NET.	SET
830FM and 2830FM	Line Tip	G		8		3
	Line Ring	R		3		8
830CM and 2830CM E/W New Line Switch MFR after 1-77 (Note 3)	Line Tip	G		8		6
	Line Ring	R		6		8
830CM and 2830CM E/W New Line Switch and MFR Before 2-77 (Notes 2 and 3)	Line Tip	G		16		6
	Line Ring	R		6		16
830A1M, 830B1M 830C, 830CT, or 830CM E/W Old Line Switch	Line Tip	G	F			6
	Line Ring	R		6	F	
2830A1M, 2830B1M, 2830C, 2830CT, or 2830CM E/W Old Line Switch (Note 3)	Line Tip	G		8		6
	Line Ring	R		6		8

*Note 1:* Rotary dial telephone sets must have a 533K diode (ordered separately), installed between RR and F of the network see Fig. 5.

*Note 2:* The new line switch can be identified by two additional leads which are (BL).

*Note 3:* On TOUCH-TONE sets dial restriction and polarity guard cannot be provided simultaneously.

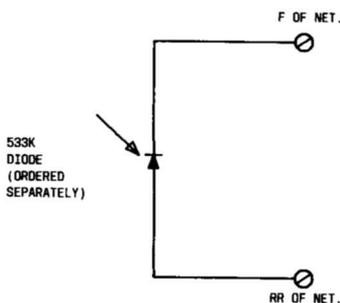


Fig. 5—Installing Diode for Dial Restriction

cavity of the plug. Separate the conductors into two groups and tie an overhand knot, pulling the knot to the cord sheath. Pull the cord from plug until strain relief position is attained by knot entering sheath and resting against plug. Feed spade-tipped conductor straight through jack 812266203 (P-22F620) and connect to proper terminals. Insert plug in jack.

**Note:** On later version of the telephone set base, a plug (Fig. 4) is not required and a notch is provided on front lip of base pan for J Hook Stayband of nonmodular type cords.

**3.09** When adding speakerphone to 830-type telephone sets; the 8RA dial must be replaced by an 8CA dial (order separately) to provide the additional off-normal contacts required for speakerphone connections.

**3.10** When using speakerphone with telephone sets equipped with the new line switch assembly, make wiring changes shown in Table I. The new line switch can be identified by two additional leads which are blue (BL).

**3.11** The 830FM and 2830FM telephone sets may be used in all cases to directly replace the 830DM (MD) and 2830DM (MD) telephone sets, respectively. However, due to wiring changes, the DM codes can not always be used to replace the FM codes.

#### 4. MAINTENANCE

**4.01** Maintenance of the 830- and 2830-type telephone set should be limited to checking for loose or broken connections and replacement of items per local instructions.

**4.02** Early manufactured cords in neutral light pearl-gray (-82) and dark gray-brown (-83) have been MD. All new mounting cords will be satin-silver (-87).

**4.03** Current sets are equipped with a P1B ringer which does not have the (S-R), (S), and (BL) leads. For maintenance purposes, either the P1B or P1A ringer may be used. (If P1A ringer is used, insulate and store the unused leads.)

**4.04** For maintenance of keys, buzzers, dials, speakerphone components, and polarity guard, refer to appropriate sections pertaining to these items.

**4.05** The current production 647-type keys have been modified for easy lamp replacement by merely removing the button cap and inserting a 553-type tool through the hole in the top of the button. In early production models it is necessary to remove faceplate, key collar, and button for lamp replacement.

 **Telephone sets should NOT be carried by the handset cradle. Line switch failure may be caused by applying excessive strain to the handset cradle and the line switch mounting arrangement.**

#### 5. CONNECTIONS

 **Due to the limited number of mounting cord conductors the 830- and 2830-type**

**telephone sets do not follow standard wiring arrangements (Fig. 6 through 12).**

**5.01** To provide mounting cord leads for illuminating the HOLD button, the ringer or buzzer leads must be used, meaning only two of the three options (ringer, buzzer, or hold lamp) may be provided at the same time.

**5.02** To provide station busy lamp modify the telephone set wiring and connect the 533K diode (ordered separately) per Table F.

**5.03** To provide priority hold (I HOLD) modify the telephone set per Table G.

**5.04** To provide 3-type (MD) speakerphone leads in the mounting cord, the buzzer leads along with the lamp and lamp ground leads from the 8th and 9th key buttons must be used. An auxiliary D10R cord may be used if these leads are not available. For connections for all sets, refer to Section 512-620-485 and Table I.

**5.05** To provide 4A speakerphone connections, refer to Section 512-740-470 and Table I.

**5.06** To provide polarity guard for all 2830-type telephone sets except the 2830DM and 2830FM, refer to Table E. The 2A1 matrix block is used for a polarity guard for the 2830DM and 2830FM telephone sets (see paragraph 5.07).

**5.07** The 2A1 matrix block (ordered separately) provides the polarity guard function to telephone set with multiline conferencing via multibutton depression. The matrix block consists of a 66-type molded plastic connecting block, containing quick-connect terminals wired and equipped with eight diode bridges for eight lines. The matrix block is connected between the line circuit and the station cut-down field. For connections to the 2A1 matrix block, refer to Table H.



**If a station requires line ringing on a particular line, connect the ringing leads from the key telephone set to the appropriate terminals on the LINE SIDE of the matrix block, not to the station side.**

**5.08** For schematic, refer to Fig. 6 through 12.

TABLE E

## POLARITY GUARD CONNECTIONS (GUARD ASSEMBLY)

WIRE OR LEAD	COLOR	REMOVE FROM	CONNECT TO	
		NET.	GUARD ASSY.	NET.
Dial	BK	RR	T	
	G-W	C	S	
Line Switch	W	C	S	
Guard Assembly	G			RR
	W			C

**Note:** For use when specified by local instructions for end-to-end signaling installations.

♦ TABLE F ♦

## STATION BUSY LAMP CONNECTIONS

LEAD	OPERATION
Hold Key (G-W)	Remove from term. 22 and connect to 27 or other spare term.
533K Diode (Ordered Separately)	Connect as shown or to same spare term. as above 
Mtg Cord (Y-O) (Note)	Remove from <input type="checkbox"/> 15 <input type="checkbox"/> 14 connect to 22

**Note:** Use spare mounting cord lead if (Y-O) lead is used to provide other options.

830A1M (MD) or 2830A1M (MD) (early version)

All other telephone sets.

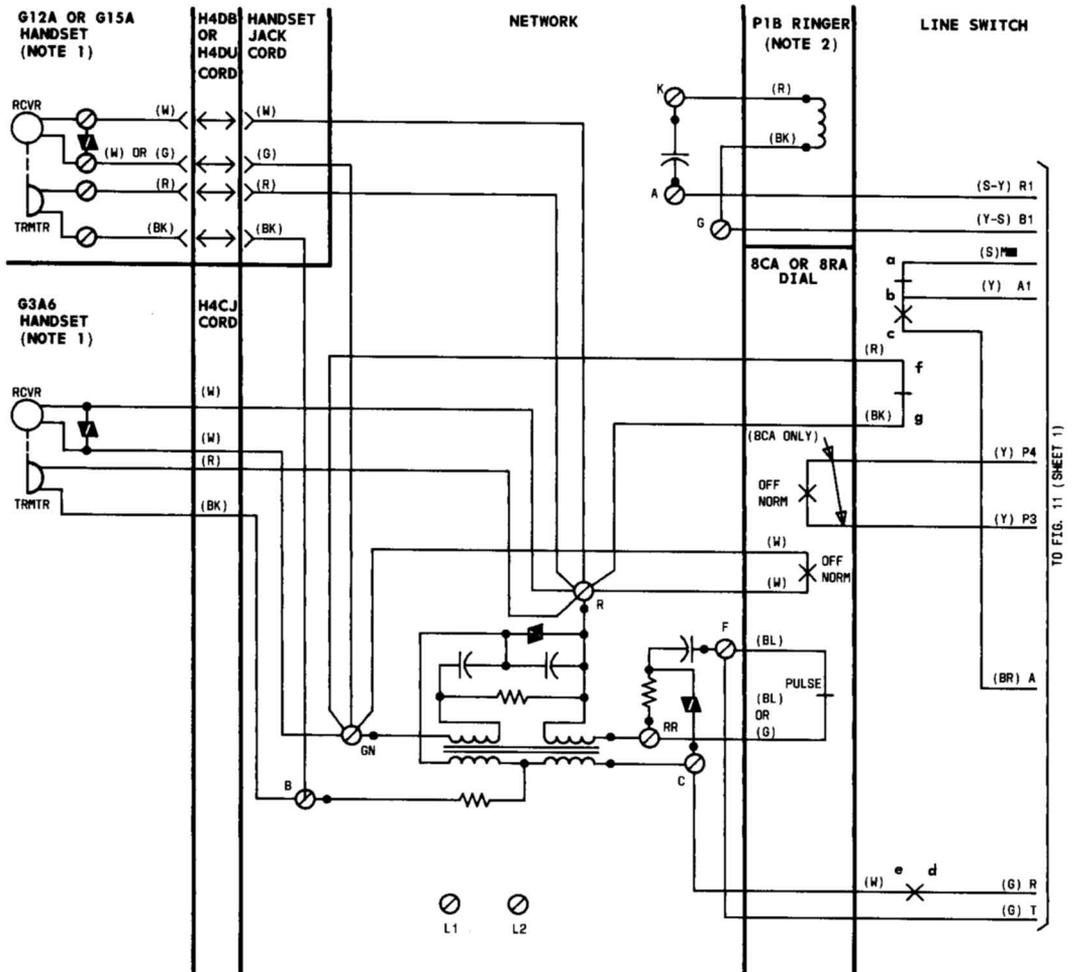
TABLE G

## I HOLD CONNECTIONS (NOTE)

LEAD		REMOVE FROM	CONNECT TO
Hold Key	(G-W)	22	7
	(BK-BL)	7	22
SP Lead — Use (Y-O)* or spare mounting cord conductor			13

**Note:** For additional information see SD-69530-01.

\* (Y-O) lead may be used unless connected for other options.

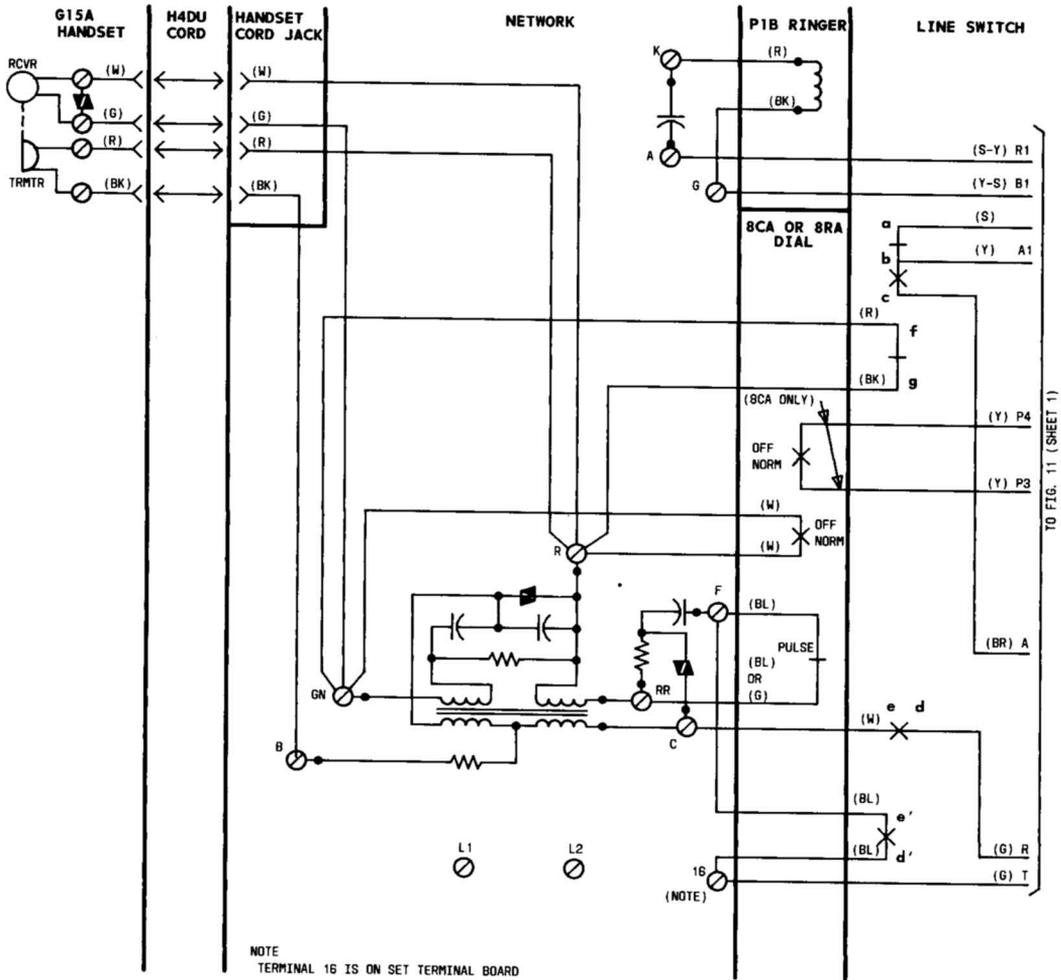


TO FIG. 11 (SHEET 1)

## NOTES:

1. 830C(MD) TELEPHONE SET IS EQUIPPED WITH A G3A6 HANDSET WHICH IS WIRED DIRECTLY TO THE TELEPHONE SET. EARLY PRODUCTION 830-TYPE TELEPHONE SETS WERE EQUIPPED WITH A G12A HANDSET. 830CM TELEPHONE SETS ARE EQUIPPED WITH G15A HANDSET.
2. EARLY PRODUCTION TELEPHONE SETS MAY BE E/W P1A RINGERS WHICH WILL HAVE (S), (S-R), AND (BL) LEADS WHICH ARE INSULATED AND STORED.

Fig. 6—Part of 830A1M(MD), C(MD), CT(MD), or CM (Equipped With Old Line Switch) Telephone Set, Connections



TO FIG. 11 (SHEET 1)

Fig. 7—Part of 830CM (Equipped With New Line Switch and Manufactured Before 2-77) Telephone Set, Connections

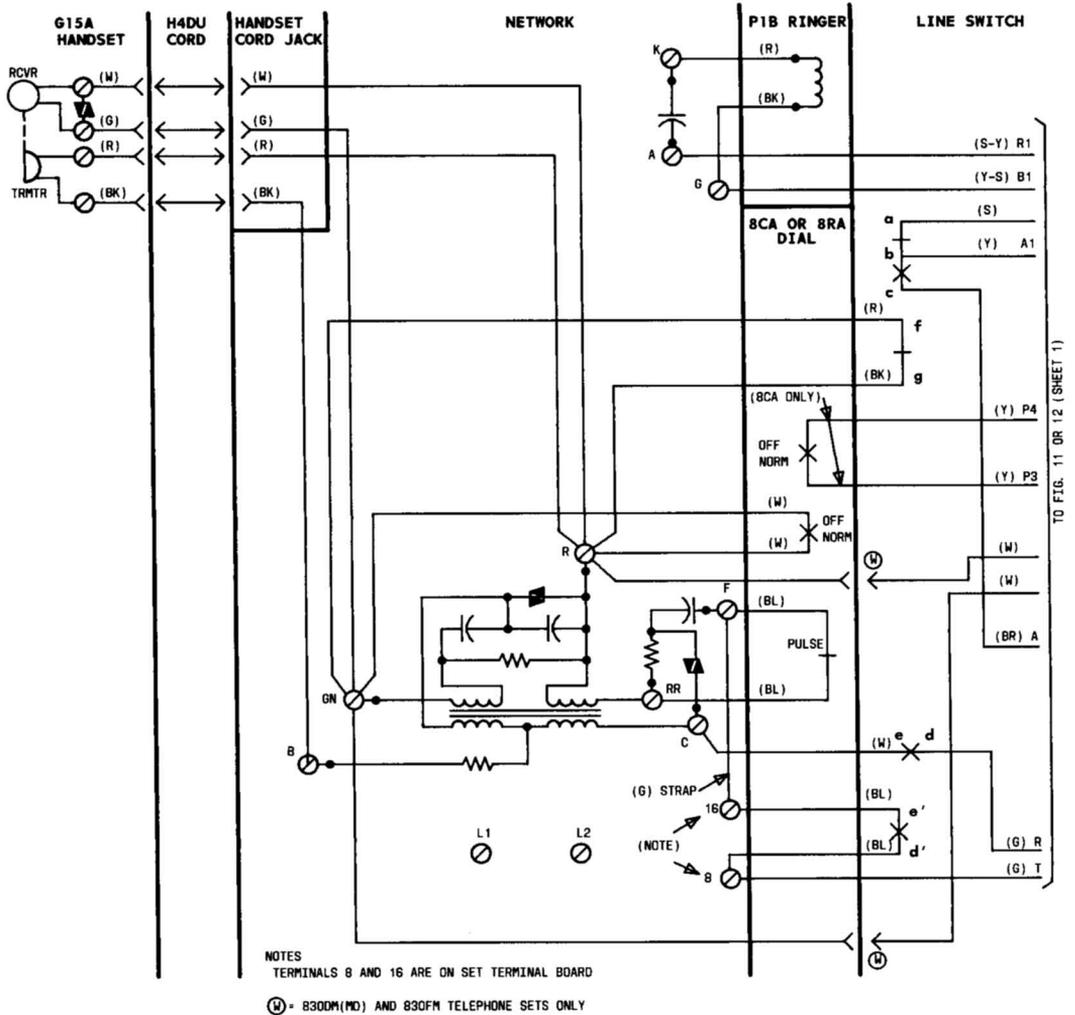
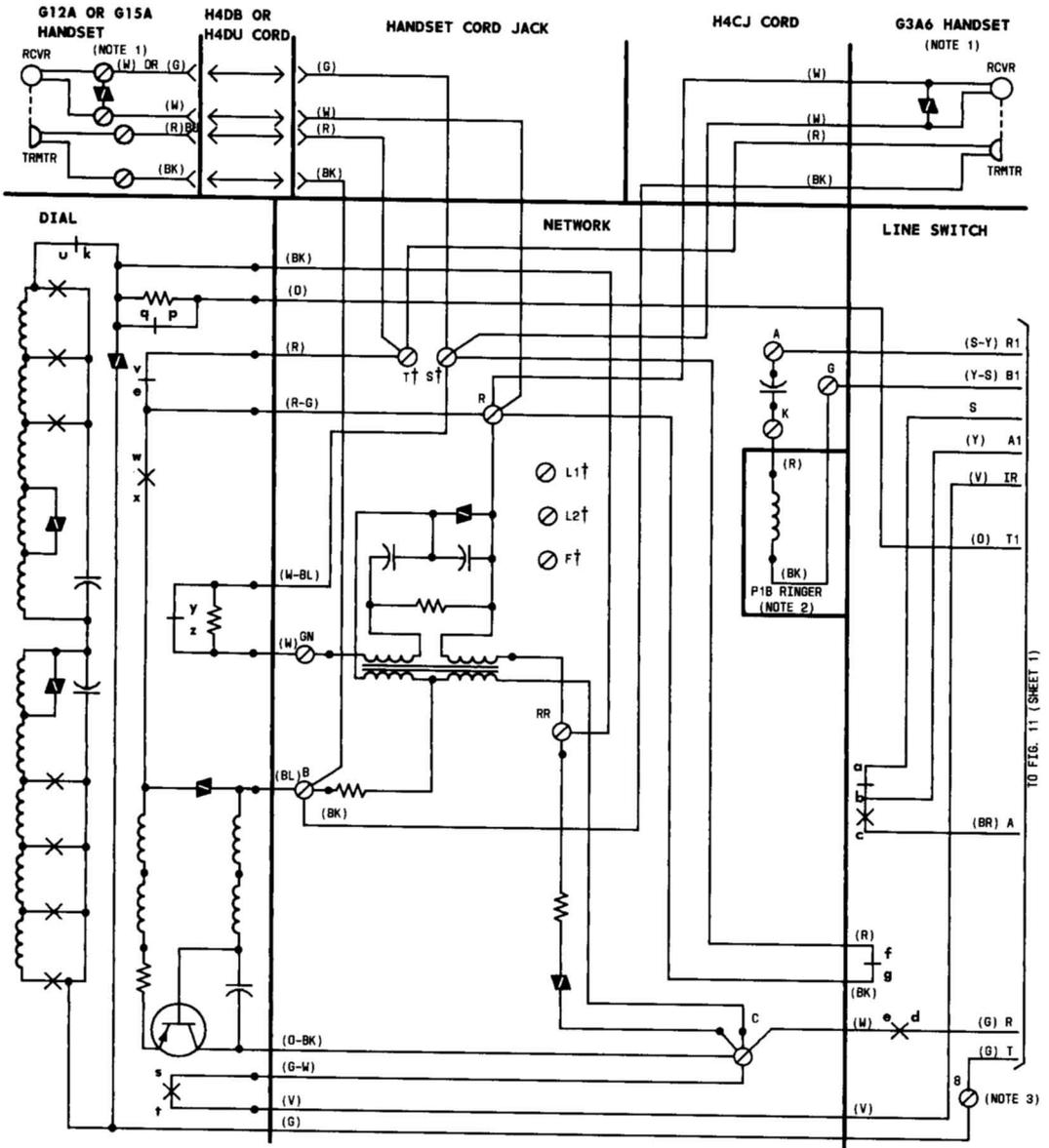


Fig. 8—Part of 830CM (Manufactured 2-77 or Later) or 830DM Telephone Set, Connections



10 FIG. 11 (SHEET 1)

Fig. 9—Part of 2830A1M(MD), B1M(MD), C(MD), CT(MD), or CM (Equipped With Old Line Switch) Telephone Set, Connections

## NOTES FOR FIG. 9:

1. 2830C(MD) TELEPHONE SET IS EQUIPPED WITH A G3A6 HANDSET WHICH IS WIRED DIRECTLY TO THE TELEPHONE SET. EARLY PRODUCTION 2830-TYPE TELEPHONE SETS WERE EQUIPPED WITH A G12A HANDSET. 2830CM, TELEPHONE SETS ARE EQUIPPED WITH G15A HANDSET.
2. EARLY PRODUCTION TELEPHONE SETS MAY BE E/W P1A RINGERS WHICH WILL HAVE (S), (S-R), AND (BL) LEADS WHICH ARE INSULATED AND STORED.
3. TERMINAL 8 IS ON SET TERMINAL BOARD.

† IF SET HAS BEEN CONVERTED IN SERVICE CENTER TO A 2830-TYPE AND HAS A 4228AA NETWORK LEADS SHOWN TERMINATED ON S WILL BE ON L1 AND LEADS SHOWN TERMINATED ON T WILL BE ON L2 AND TERMINAL F CANNOT BE USED AS A SPARE TERMINAL.

**Fig. 9—Notes**

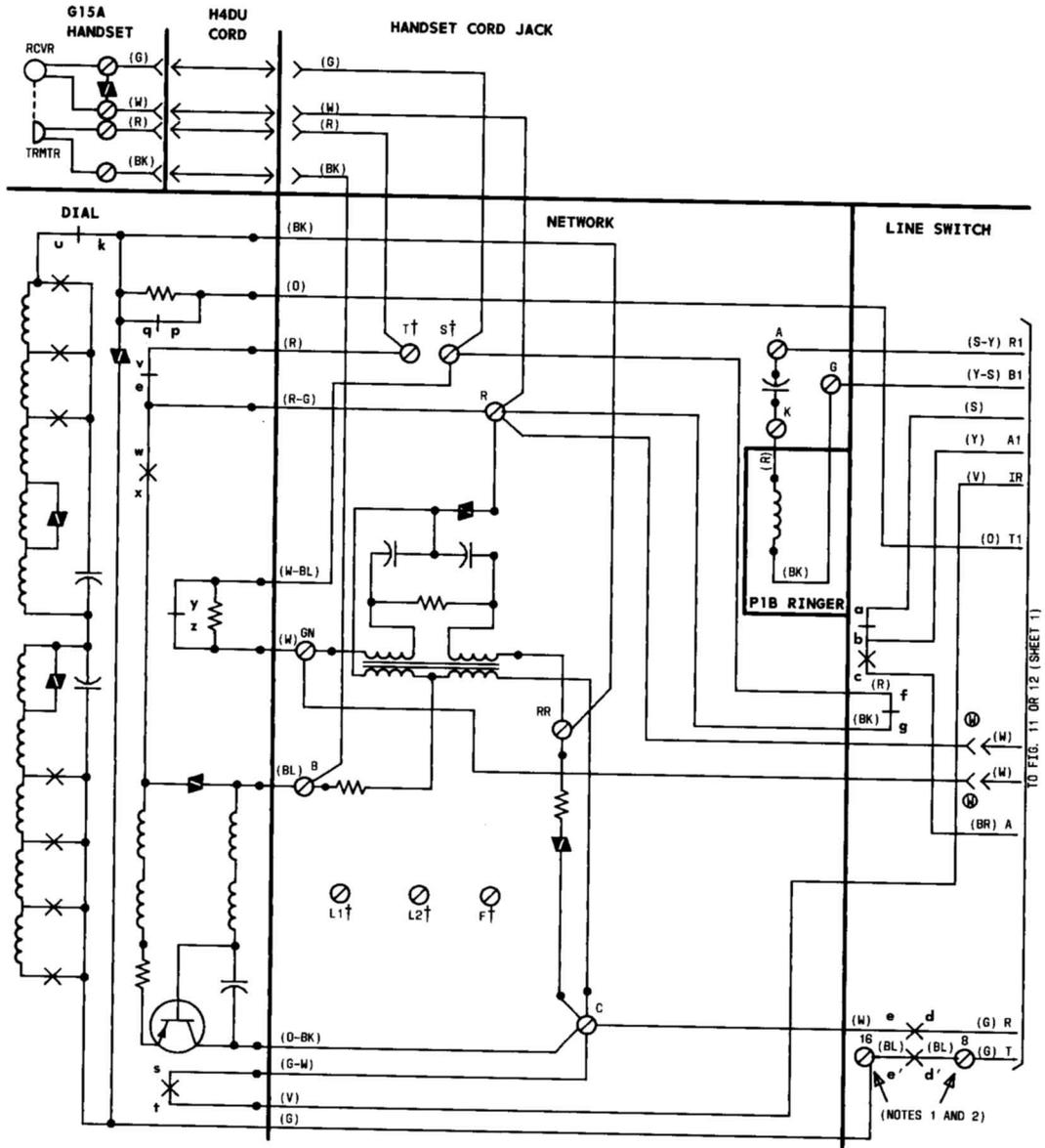


Fig. 10—Part of 2830CM, 2830DM (MD), or 2830FM Telephone Set, Connections

## NOTES FOR FIG. 10:

1. ON CM SETS MANUFACTURED BEFORE 2-77 AND EQUIPPED WITH NEW LINE SWITCH, TERMINALS 8 AND 16 ARE REVERSED.
2. TERMINALS 8 AND 16 ARE ON SET TERMINAL BOARD

† IF SET HAS BEEN CONVERTED IN SERVICE CENTER TO A 2830-TYPE AND HAS A 4228AA NETWORK LEADS SHOWN TERMINATED ON S WILL BE ON L1 AND LEADS SHOWN TERMINATED ON T WILL BE ON L2 AND TERMINAL F CANNOT BE USED AS A SPARE TERMINAL.

Ⓢ = 2830DM(MD) OR 2830FM ELEPHONE SETS ONLY

**Fig. 10—Notes**

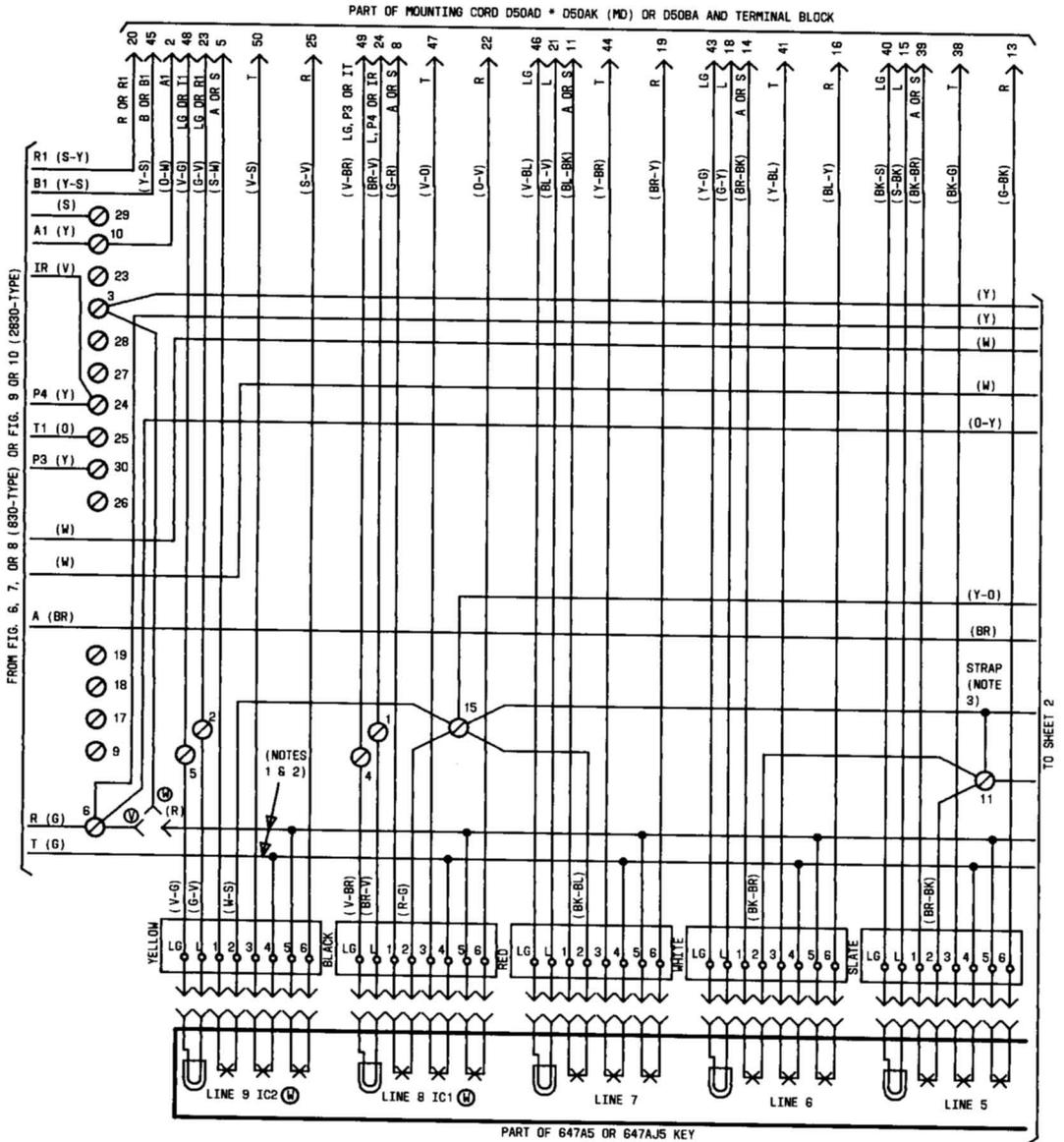


Fig. 11—830- or 2830-Type (Except 830FM and 2830FM) Telephone Set, Key and Mounting Cord Arrangement (Sheet 1 of 2)

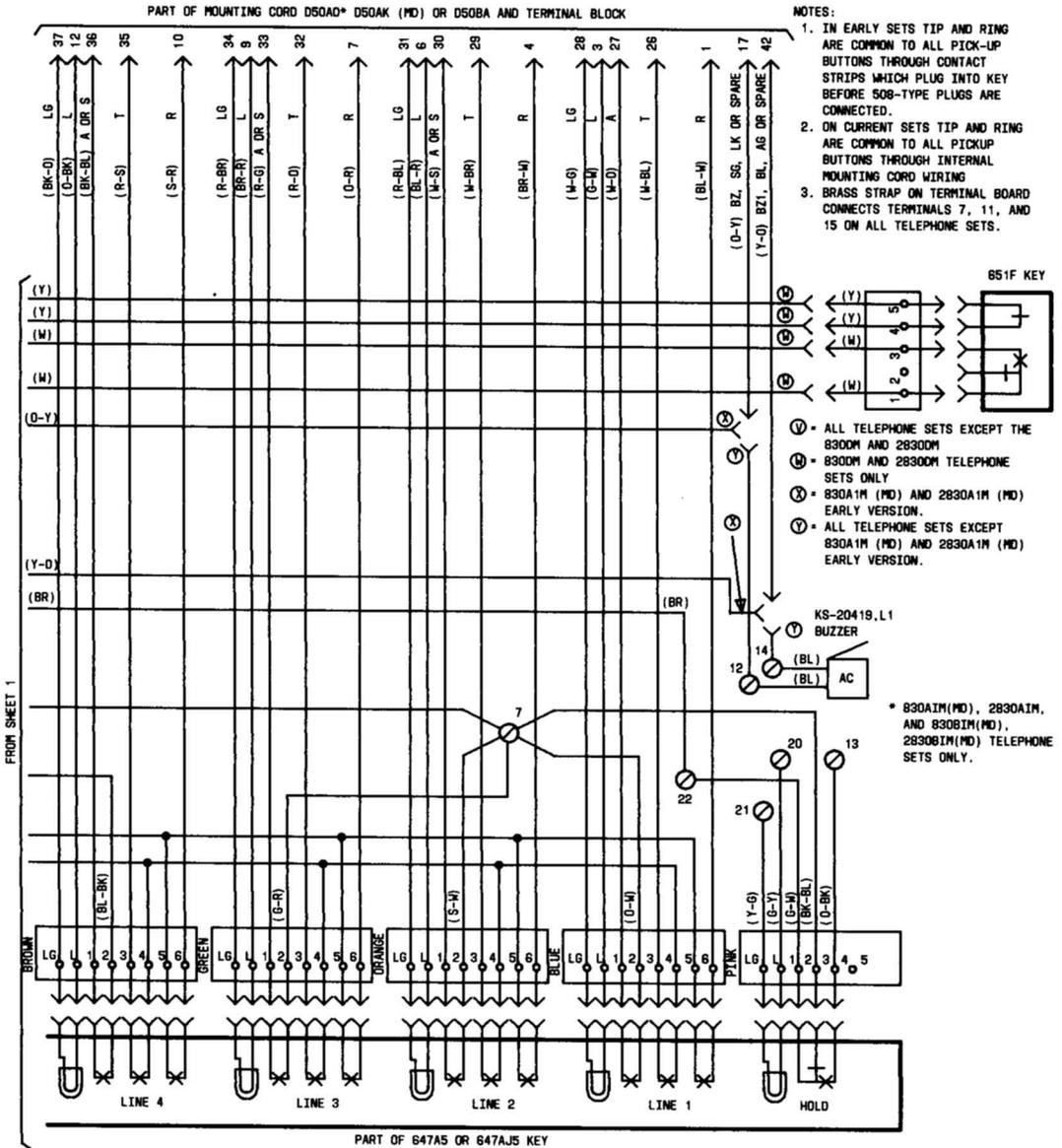


Fig. 11—830- or 2830-Type (Except 830FM and 2830FM) Telephone Set, Key and Mounting Cord Arrangement (Sheet 2 of 2)

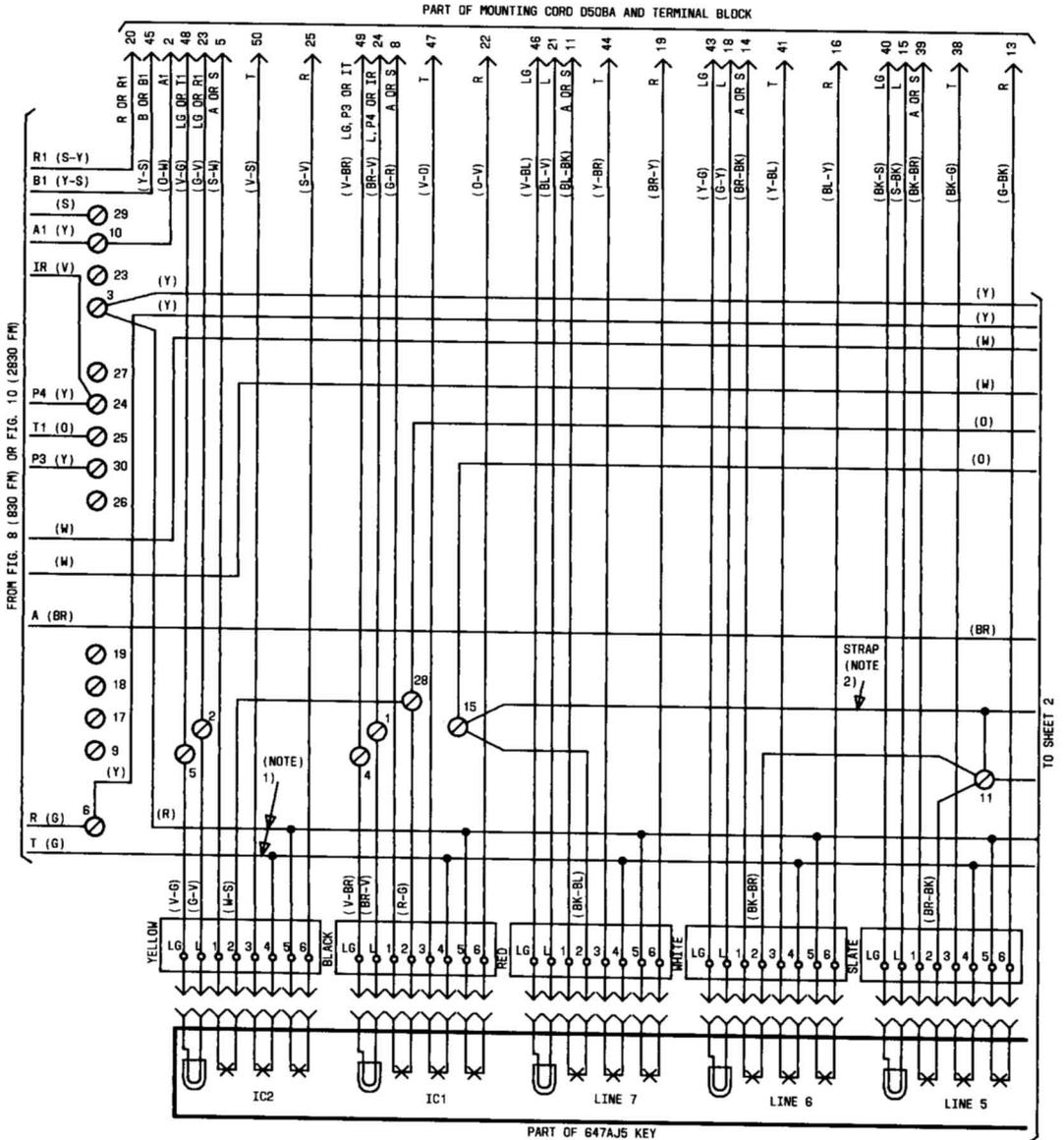


Fig. 12—830FM or 2830FM Telephone Set, Key and Mounting Cord Arrangement (Sheet 1 of 2)

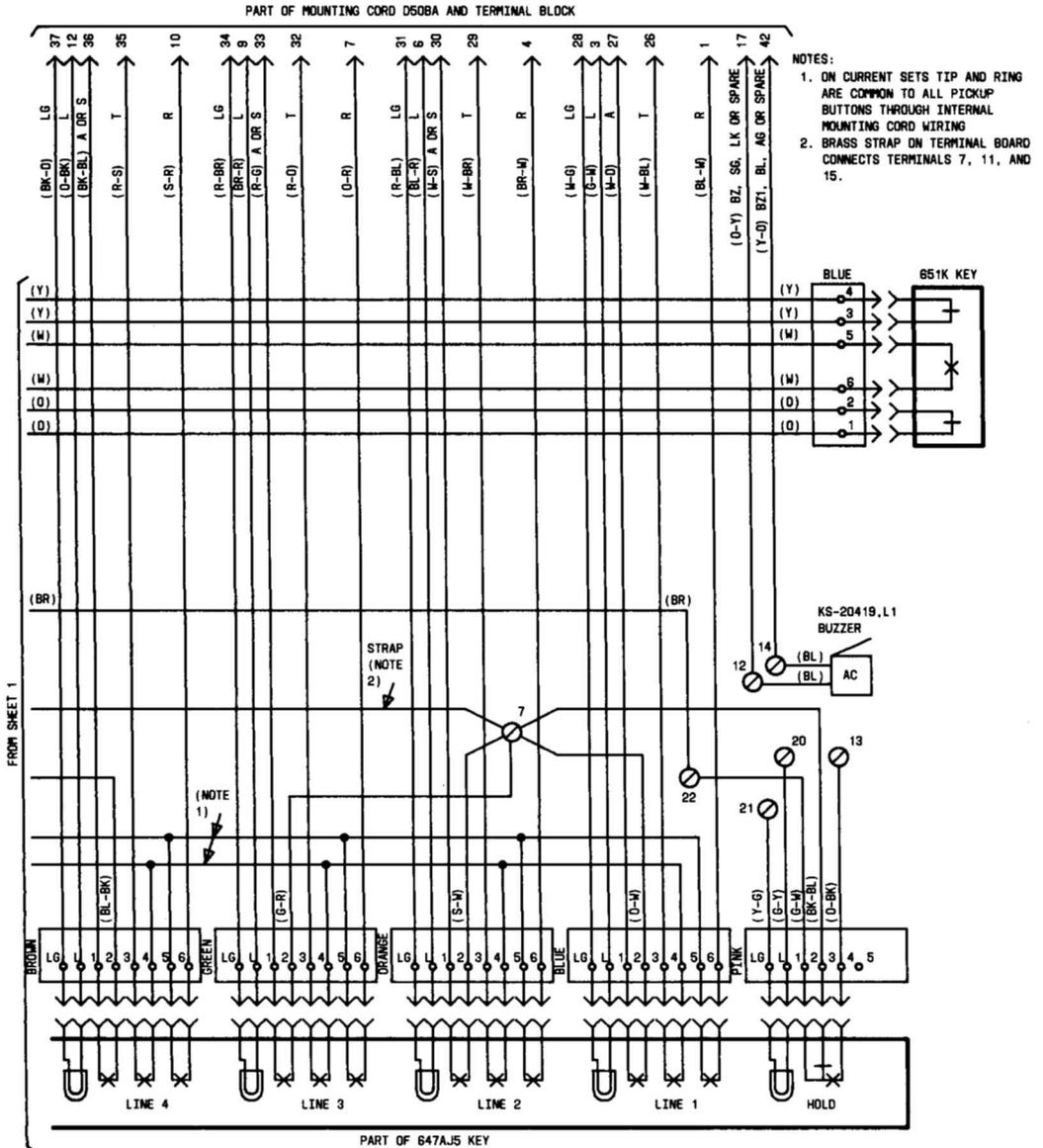


Fig. 12—830FM or 2830FM Telephone Set, Key and Mounting Cord Arrangement (Sheet 2 of 2)

TABLE H

## 2A1 MATRIX BLOCK

LINE		LINE TERM. (LEFT)	STATION TERM. (RIGHT)
1	T	1	1
	R	5	5
2	T	7	7
	R	11	11
3	T	13	13
	R	17	17
4	T	19	19
	R	23	23
5	T	25	25
	R	29	29
6	T	31	31
	R	35	35
7	T	37	37
	R	41	41
8*	T	43	43
	R	47	47

\*If more than 8 lines are provided, additional 2A1 matrix blocks are required.

TABLE I

3-TYPE (MD) OR 4A  
SPEAKERPHONE MODIFICATION FOR  
TELEPHONE SETS EQUIPPED WITH NEW  
LINE SWITCH (NOTE)

TEL. SET	LEAD COLOR	REMOVE FROM TERM.	CONNECT TO TERM.
830FM, DM, CM, or 2830FM, DM, CM (MFR 2-77 or later)	G	16	8
830CM (MFR before 2-77)	G	16	F
2830CM (MFR before 2-77)	G	8	16

*Note:* The new line switch can be identified by two additional leads which are (BL). No modification is required on sets equipped with the old type line switch, [no (BL) leads].