

## SERVICE

### 2563HB, 2563HBM, AND 2563HBMS TELEPHONE SET

### MAINTENANCE AND CONNECTIONS

#### 1. GENERAL

**1.01** This section contains information for the 2563HB (MD), 2563HBM (MD), and 2563HBMS telephone sets equipped with headset jacks and 12-button TOUCH-TONE® dial for use with optional operator's headset.

**1.02** This section is reissued to:

- Add the 2563HBMS telephone set
- Show 2563HBM telephone set MD
- Add information on the D-181006 Kit of Parts (contains an 840364376 polarity guard and installation instruction sheet), Table A.

#### 2. MAINTENANCE

##### A. Replaceable Components

**2.01** Field replaceable items are listed under identification in the appropriate Reference section in Division 502.

**2.02** Maintenance of handsets and ringers is outlined in sections covering these components.

##### B. Loose Card Retainers

**2.03** The 812558039 (P-25E803) and 802695619 (P-269561) are nonadjustable card retainers. The P-25E785 (MD) card retainer is replaced by 812558039 (P-25E803).

**2.04** If P-25E785 (MD) card retainer becomes loose on the faceplate and the number card or designation strip slips, they can be tightened as follows.

- (1) Remove faceplate from set.

- (2) Remove card retainer from faceplate.

- (3) Bend the four arms of the retainer so that more pressure will be applied to the number card and designation strip. The bends should be made approximately 1/2-inch in from the tabs on the ends of the arms and in the opposite direction from the factory bent tabs.

- (4) Install the card retainer on the faceplate and insert the number card and designation strip.

- (5) Install faceplate on telephone set.

**Note:** If adjusting the arms of the retainer does not result in sufficient holding power, replace the card retainer.

##### C. Removing and Replacing Housing

**2.05** Sets without exclusion.

- (a) To remove housing, loosen captive screws in base of set. Lift housing up and toward front of set.

- (b) To replace housing, guide lower front of housing over pushbuttons, align housing with base of set, and gently press housing into place. Tighten captive screws in base of set.

**2.06** Sets with exclusion.

- (a) To remove housing, pull up exclusion plunger to its operated position, loosen captive screws in base of set, and lift housing up and toward the front of set.

- (b) To replace housing, guide lower front portion of housing over pushbuttons, align housing

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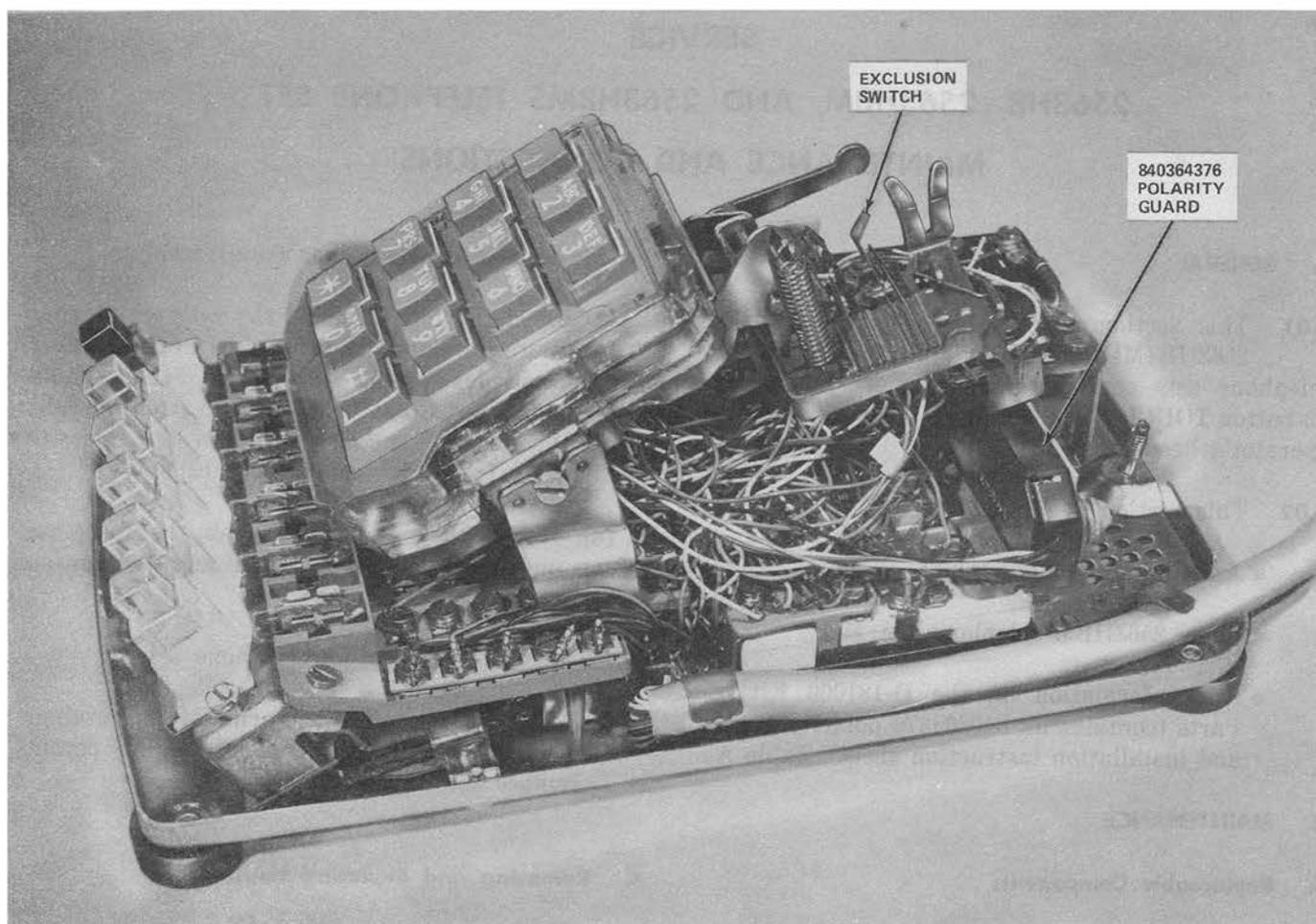


Fig. 1—2563HBMS Telephone Set With Polarity Guard Installed

with base of set, and gently press housing in place.

(c) Depress exclusion plunger. With slight pressure it should snap into its unoperated position.

(d) Operate exclusion plunger several times to insure proper operation. Tighten captive screws in base of set.

#### D. Exclusion Switch

**2.07** Perform no field maintenance on exclusion switch and plunger other than cleaning contacts with a 265C tool.

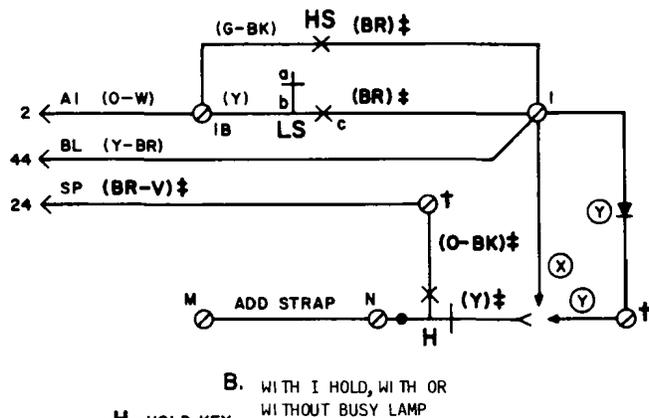
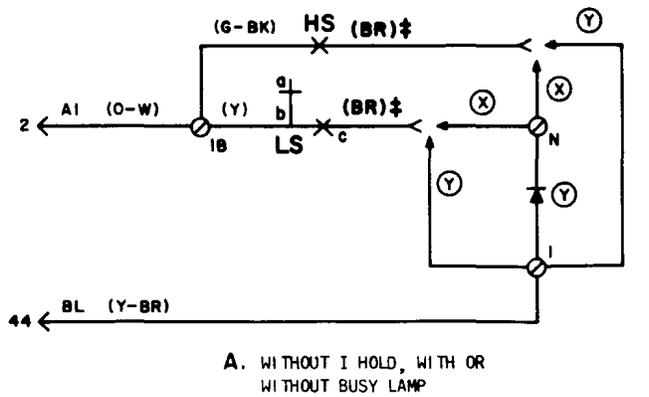
**2.08** Replace set or exclusion switch assembly if any of the following exclusion switch requirements cannot be met.

(a) Exclusion plunger should remain in the operated position when pulled up to the full extent of its stroke.

(b) The plunger should return to the fully depressed position when handset is replaced.

(c) With housing removed, normally closed contacts of the exclusion switch should have perceptible follow when operated manually.

(d) With housing removed, open contacts of the exclusion switch should have minimum separation of 1/64-inch; gauge by eye.



- H—HOLD KEY
- HS—HEADSET ON-OFF KEY
- LS—LINE SWITCH
- (X)—WITHOUT BUSY LAMP
- (Y)—WITH BUSY LAMP, USE 533K DIODE OR EQUIVALENT
- †—USE D-161488 CONNECTOR
- ‡—LEADS INVOLVED IN MODIFICATION

NOTE:  
ALL TERMINALS ARE ON KEY TERMINAL BOARD.

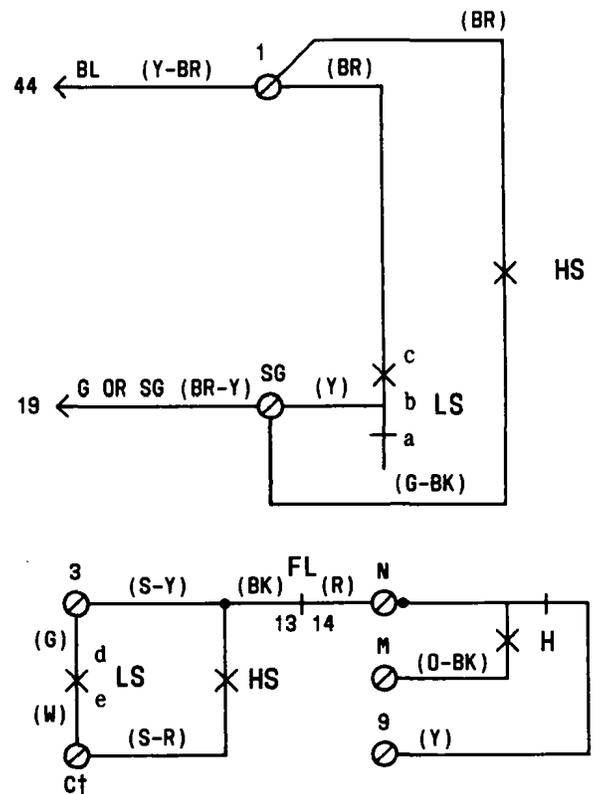
Fig. 2—2563HB (MD), 2563HBM, or 2563HBMS Telephone Set—1A1 or 1A2 KTS, 1 Hold and/or Station Busy Lamp Modifications

E. Mounting Cords

2.09 Cords, designed for use with 636A key assemblies, feature slotted wafer sections for each line appearance. This allows easy rearrangement of lines to pickup buttons.



*No field maintenance should be performed on the plug of plug-ended mounting cords.*



STATION BUSY LAMP MODIFICATION 1A KTS			
LEAD		FROM	TO
LINE SWITCH	(Y)	1B	SG
	(BR)	N	1
HEADSET ON-OFF KEY	(BR)	N	1
	(G-BK)	1B	SG
FLASH KEY	(R)	9	N
HOLD KEY	(O-BK)	*	M
	(Y)	M	9

\*INSULATED AND STORED

†NETWORK TERMINAL. UNDESIGNATED TERMINALS ARE ON KEY TERMINAL BOARD

- H - HOLD KEY
- FL - FLASH KEY
- HS - HEADSET ON-OFF KEY
- LS - LINE SWITCH

Fig. 3—2563HBM (MD), 2563HBM, or 2563HBMS Telephone Set Modified for 1A KTS Station Busy, Lamp

**F. Lamps and Pushbuttons**

**2.10** Replace cracked pushbuttons or collars.

Remove accumulated dirt or film from lamps, collars, and pushbuttons with a water dampened cloth. **DO NOT USE SOLVENTS OF ANY KIND.** If cleaning does not correct binding of pushbuttons, replace button and collar assembly.

**2.11** To replace defective lamp.

- (1) Lift lamp from socket with KS-6320 orange stick.
- (2) Align lamp contact surfaces when placing new lamp in socket.

**2.12** The button and collar assembly should be carefully aligned to avoid interference with removal or replacement of housing.

**G. 636-Type Keys**

**2.13** Field maintenance of these keys consist of cleaning contacts with a 265C tool or adjusting with a 363 tool.

**2.14** Contact follow and separation is obtained by using a 363 tool at a point adjacent to contact spring pile-up. When adjusting springs—

- (a) There should be a minimum spring clearance of 1/64-inch between contact springs and those parts of the key which do not make contact with springs.
- (b) Normally open contacts should make with perceptible follow on locking keys before key plunger assumes locked position.

**2.15** Replace set if the following requirements cannot be met.

- (a) When depressed locking plunger should, on its downstroke, release any previously locked plunger.
- (b) When any pushbutton plunger is released from its operated position, it should return with a snap to its nonoperated position.
- (c) An operated key plunger should not release during downstroke of hold button.

(d) An operated key plunger should release from its operated position on the upstroke of the hold button.

**H. 241-Type Amplifier**

**2.16** Used in telephone sets with headset jacks to amplify the output of the headset transmitter. **NO FIELD MAINTENANCE SHOULD BE ATTEMPTED ON 241-TYPE AMPLIFIER.**

**2.17** Replace the amplifier if it is suspected of being defective (as evidenced by poor or no transmission). When replacing, always use a 241B.

**I. TOUCH-TONE Dial**

**2.18** Check line polarity if no tones are heard in the receiver when a button is depressed.



*The 35-type dial will function only when the green dial lead is positive (+) and when the orange-black lead is negative (-).*

**2.19** A dial hand test set connected to line terminations can be used to test for defective dials.



*Do not attempt repair of TOUCH-TONE dials in the field. Replace defective dials.*

**J. Handsets**

**2.20** When special conditions exist the G3- and G15-type handsets may be replaced by the following:

- G6B (MD) or G6BM handset for impaired hearing
- G7B (MD) or G7BM handset for weak speech
- G8B (MD) or G8BM handset for noisy locations.

**2.21** Refer to Section 501-211-102 for additional information on these handsets.

**3. CONNECTIONS**

**3.01** These sets are factory-wired for use with 1A1, 1A2, ♦6A, or 6B♦ key telephone system line circuits and are equipped with a 241-type amplifier providing headset operation. A 52- or 53-type headset must be ordered separately.

**3.02** A D-181006 Kit of Parts containing an 840364376 polarity guard and instruction sheet should be used with these sets when specified by local instruction to eliminate the affects of battery and ground reversals encountered in end-to-end signaling (Fig. 1 and Table A). Station busy lamp indication, showing only that the handset is off-hook or that the headset key is in the ON position, can be provided for 1A1, 1A2, ♦6A, or 6B♦ KTS by use of a 533K diode or equivalent♦ which must be ordered separately and connected as shown in Fig. 2. This connection **will not** indicate that a line pickup button is depressed. Station busy for 1A KTS is a wiring option shown in Fig. 3.

**3.03** The *I hold* feature of SD-69530-01 can be incorporated with these sets when used with 1A1, 1A2, ♦6A, or 6B♦ KTS. Telephone set wiring

changes are shown in Fig. 2 and key system component requirements are shown in SD-69530-01.

**3.04** Line exclusion feature can be provided by installation of a D-179935 Kit of Parts (ordered separately). Connect as shown in Table B.

**3.05** The set ringer may be connected as a bridged ringer on any line if desired (Note 4, Fig. 4, 5, and 6).

**3.06** The 2563HB (MD), HBM (MD), and HBMS telephone sets are factory-equipped with a KS-20419L1 (10 volt ac only) buzzer.

**3.07** The 2563HBM (MD) modular telephone set (Fig. 5) is similar to the 2563HB (MD) set (Fig. 4) except the G15A handset with its associated H4DU cord and 616D jack is used in place of the hard-wired G3A handset. The 2563HBMS telephone set (Fig. 6) is similar to the 2563HBM (MD) set except for a new line switch and headset jack which breaks both the tip and ring sides of the line. Previous line switch and headset jack assemblies only broke the ring side of the line.

**3.08** To convert the 2563-type telephone set keys for signaling, refer to Table C.

♦ TABLE A ♦

840364376 POLARITY GUARD CONNECTIONS  
(NOTE)

LEAD	COLOR	REMOVE FROM	CONNECT TO	
		NET TERM.	NET TERM.	POLARITY GUARD TERM.
Line Switch	W	C		S
Headset On-Off Key	S-R	C		S
Dial	BK	RR		T
Polarity Guard	W G		C RR	

*Note:* The 840364376 polarity guard comes in the D-181006 Kit of Parts with instruction sheet. The guard should be installed on any surface having an area equivalent to the adhesive backing.

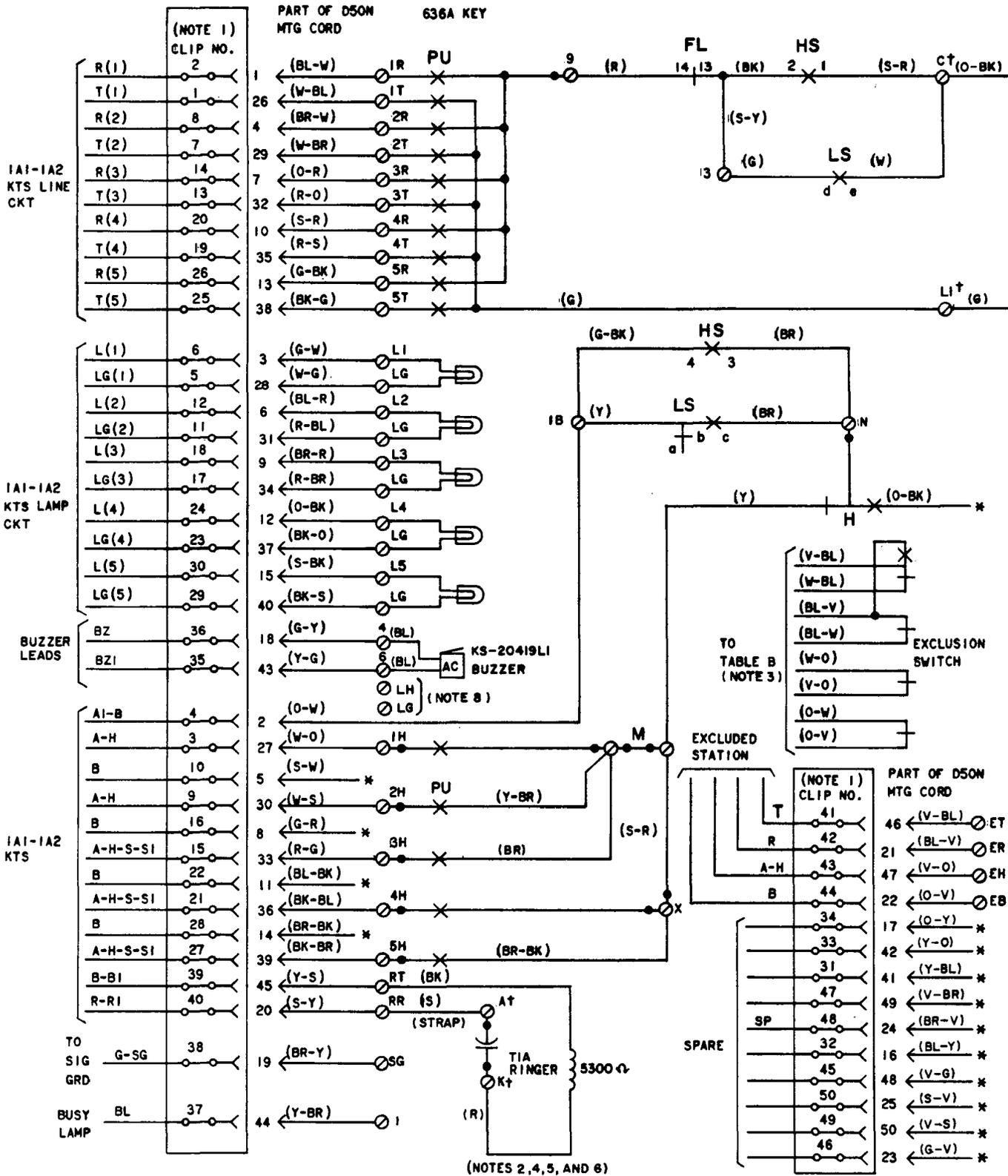
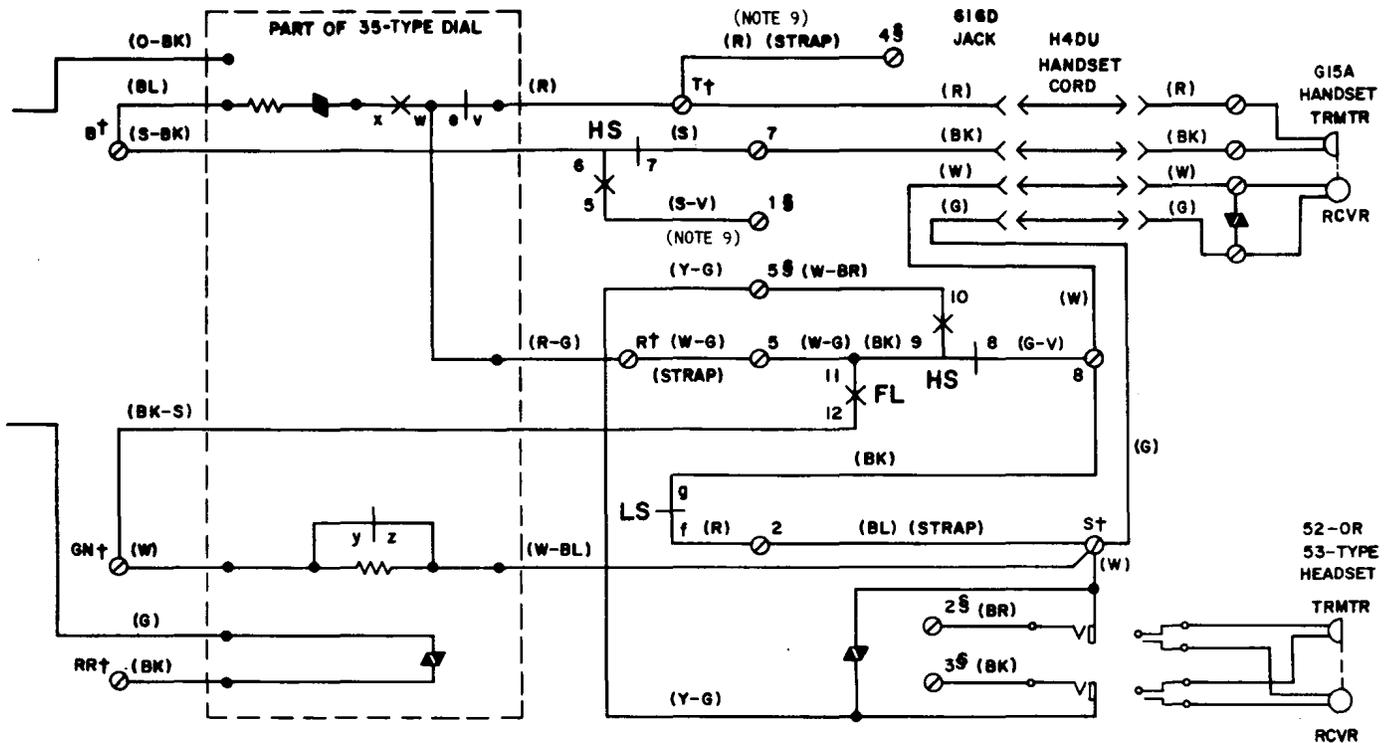


Fig. 4—2563HB (MD) Telephone Set, Connections (Sheet 1 of 2)

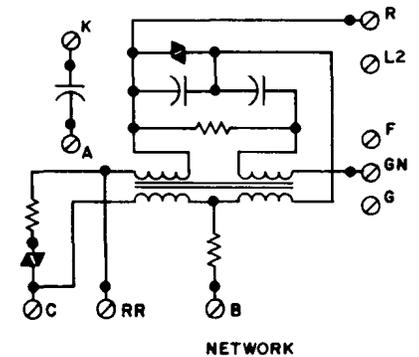




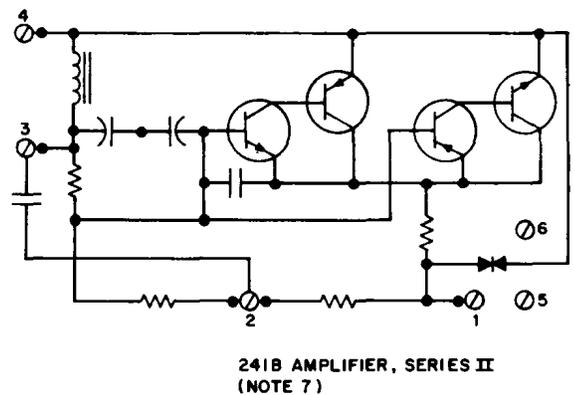


**NOTES:**

1. 66E-TYPE CONNECTING BLOCK SHOWN. MOUNTING CORD MAY BE PLUGGED DIRECTLY INTO CONNECTOR CABLE. CORD AND PIN NUMBERS FOR CONNECTOR CABLE ARE SAME AS MOUNTING CORD.
2. CONNECTIONS FOR TIA RINGER SHOWN. CONNECTIONS FOR NIA RINGER IDENTICAL EXCEPT INSULATE AND STORE (S) AND (S-R) LEADS.
3. IF EXCLUSION FEATURE IS ADDED, CONNECT SWITCH LEADS PER TABLE B.
4. FOR BRIDGED RINGER ON ANY LINE CONNECT (R) RINGER LEAD TO K OF NETWORK AND (BK) RINGER LEAD TO TIP OF LINE INVOLVED. CONNECT (S) STRAP FROM A OF NETWORK TO RING OF LINE INVOLVED.
5. IF CAPACITOR IS NOT REQUIRED IN RINGER CIRCUIT, MOVE (R) RINGER LEAD TO A OF THE NETWORK.
6. TO SILENCE RINGER REFER TO APPROPRIATE RINGER SECTION IN DIVISION 501.
7. SET MUST BE EQUIPPED WITH 241B SERIES II AMPLIFIER IF EXCLUSION FEATURE IS ADDED.
8. IF HOLD POSITION LAMP IS REQUIRED, USE SPARE PAIR AND TERMINATE ON LH AND LG TERMINALS.
9. IN SETS MANUFACTURED PRIOR TO 1980 LEADS ON TERMINALS 1 AND 4 OF 241B AMPLIFIER WERE REVERSED. WIRE AMPLIFIER AS SHOWN TO PREVENT TELEPHONE CIRCUIT FROM OSCILLATING.



- \* - INSULATED AND STORED
- † - NETWORK TERMINAL UNDESIGNATED TERMINALS ARE ON KEY TERMINAL BOARD.
- § - 241B AMPLIFIER TERMINAL
- PU- PICKUP KEY
- H- HOLD KEY
- LS- LINE SWITCH
- HS- HEADSET ON-OFF KEY (644A)
- FL- FLASH KEY (644A)



**Fig. 5—2563HBM Telephone Set, Connections (Sheet 2 of 2)**

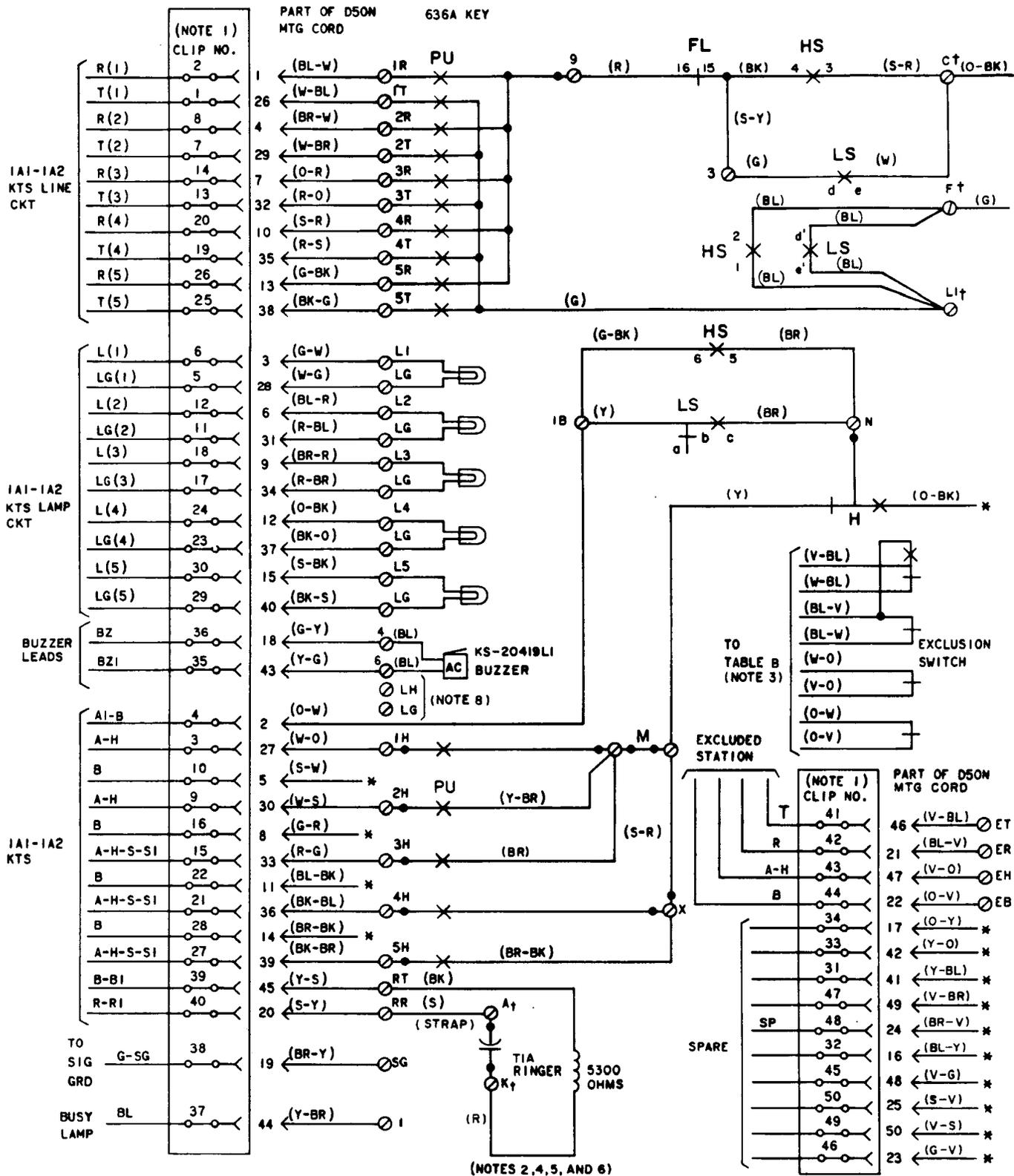
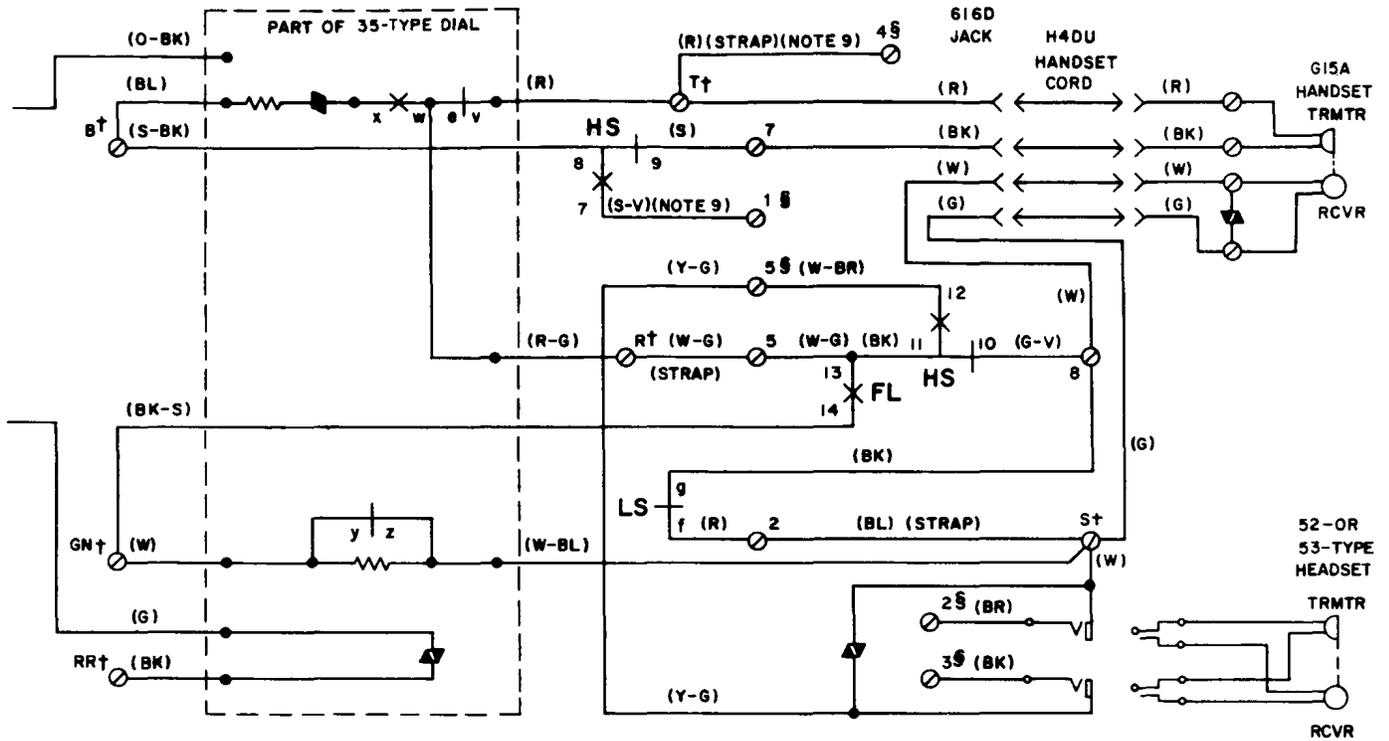


Fig. 6—2563HBMS Telephone Set, Connections (Sheet 1 of 2)



NOTES:

1. 66E-TYPE CONNECTING BLOCK SHOWN. MOUNTING CORD MAY BE PLUGGED DIRECTLY INTO CONNECTOR CABLE. CORD AND PIN NUMBERS FOR CONNECTOR CABLE ARE SAME AS MOUNTING CORD.
2. CONNECTIONS FOR TIA RINGER SHOWN. CONNECTIONS FOR NIA RINGER IDENTICAL EXCEPT INSULATE AND STORE (S) AND (S-R) LEADS.
3. IF EXCLUSION FEATURE IS ADDED, CONNECT SWITCH LEADS PER TABLE B.
4. FOR BRIDGED RINGER ON ANY LINE CONNECT (R) RINGER LEAD TO K OF NETWORK AND (BK) RINGER LEAD TO TIP OF LINE INVOLVED. CONNECT (S) STRAP FROM A OF NETWORK TO RING OF LINE INVOLVED.
5. IF CAPACITOR IS NOT REQUIRED IN RINGER CIRCUIT, MOVE (R) RINGER LEAD TO A OF THE NETWORK.
6. TO SILENCE RINGER REFER TO APPROPRIATE RINGER SECTION IN DIVISION 501.
7. SET MUST BE EQUIPPED WITH A 241B SERIES II AMPLIFIER IF EXCLUSION FEATURE IS ADDED.
8. IF HOLD POSITION LAMP IS REQUIRED, USE SPARE PAIR AND TERMINATE ON LH AND LG TERMINALS.
9. IN SETS MANUFACTURED PRIOR TO JULY 1980 THE (S-V) AND (R) LEADS WERE REVERSED ON TERMINALS 1 AND 4 OF 241B AMPLIFIER. WIRE AMPLIFIER AS SHOWN TO PREVENT TELEPHONE CIRCUIT FROM OSCILLATING.

- \* - INSULATED AND STORED
- T - NETWORK TERMINAL UNDESIGNATED TERMINALS ARE ON KEY TERMINAL BOARD.
- S - 241B AMPLIFIER TERMINAL
- PU - PICKUP KEY
- H - HOLD KEY
- LS - LINE SWITCH
- HS - HEADSET ON-OFF KEY (644A)
- FL - FLASH KEY (644A)

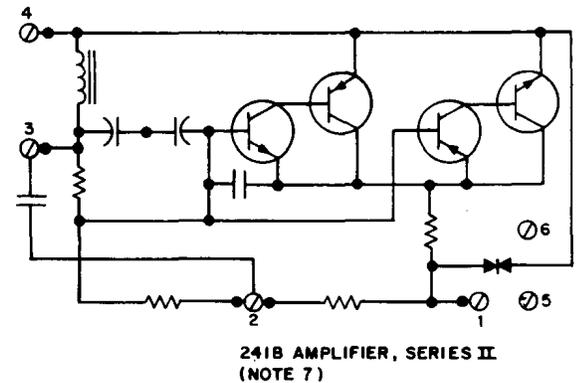
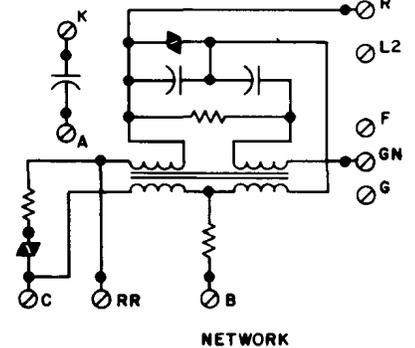


Fig. 6—2563HBMS Telephone Set Connections (Sheet 2 of 2)

**TABLE B**  
**CONVERSION FOR LINE EXCLUSION KEY (NOTE)**

EXCLUSION	KEY TEL SYS	EXCLUSION KEY LEADS							
		BL-W	W-BL	O-W	W-O	V-BL	BL-V	V-O	O-V
On any line	1A	R*	T*	1B†	H*	ET	ER	EH	EB
	1A1, 1A2, 6A, or 6B	R*	T*	EB	H*	ET	ER	EH	EB

\* Connect to terminal of line being excluded.

† When other than Line 1 is excluded in a 1A key telephone system, remove the O-W mounting cord conductor from terminal 1B, insulate and store. Connect balance lead cord conductor of line involved to terminal 1B.

**Note:** To allow access to and operation of the exclusion switch plunger during headset operation, **handset** must be lifted and left off of its cradle. Returning handset to on-hook position cancels exclusion.

**TABLE C**  
**PICKUP-SIGNAL KEY CONVERSION (NOTES)**

CONVERTIBLE KEY OPTIONS	KEY LEADS			
	Y-BR	BR	S-R	BR-BK
HPPPPP	M	M	M	X
HPPPPS	M	M	M	SG
HPPPSS	M	M	SG	X
HPPSSS	M	X	SG	X
HPPP*P*S*	M	X	5H	N <sup>+</sup>
HPP*P*P*S*	X	X	5H	N <sup>+</sup>

\*These pickup key options use line switch or headset switch controlled ground through the common signal key and the S lead of the selected line to operate a common signal relay.

†For 1A KTS connect to terminal 1. Obtain common signal ground through (Y) line switch lead or (G-BK) headset key connected to SG terminal.

**Note 1:** All convertible key positions are arranged in the factory as pickup positions. To convert a key position from pickup (locking) to signaling (nonlocking), remove the 811218924 (P-12A892) screw detail from plunger at the key position to be converted. Make necessary connection changes as shown in Table C. To convert a key position from nonlocking to locking, insert 811218924 (P-12A892) screw detail.

**Note 2:** When keys are converted for signaling, the S lead of key involved provides the signal circuit and SG lead provides the common signal ground.