

## VOICE CONNECTING ARRANGEMENT QKP 32A VOICE COUPLER

### 1. GENERAL

**1.01** This section provides identification, installation, operation, maintenance and connection information for the 32A voice coupler when used to provide Voice Connecting Arrangement (VCA) QKP. Voice Connecting Arrangement QKP uses the 32A voice coupler to permit voice transmission and tone address signaling from the customer-provided equipment (CPE).

**1.02** This section provides information on modification and connections to telephone sets to permit their use with the 32A voice coupler.

**1.03** The 32A voice coupler (Fig. 1) consists of a printed wiring board and components, phone jack, and a mounting bracket with mounting screw. The coupler is part of the "D" Kit of Parts ordered for the type of telephone set to be modified.

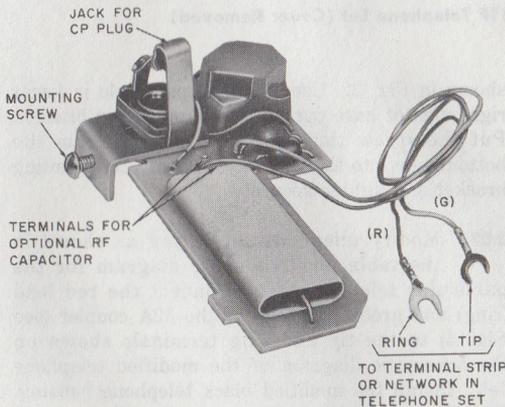


Fig. 1—32A Voice Coupler

**1.04** If the customer wants a copy of the Technical Reference which covers this interface specification, the customer should contact the local

Telephone Company Business Office or the Marketing Representative.

### 2. IDENTIFICATION

**2.01 Purpose:** The 32A coupler permits a customer to connect voice transmitting or receiving equipment to a Telephone Company central office (CO) line through a jack and plug arrangement. The coupler provides dc isolation and limits excessive signals.

**2.02 Application:** To Bell System central office lines terminated in a telephone set equipped with an exclusion key.

**2.03 Ordering Guide (Fig. 2 and 3):** Each kit contains a black telephone housing with a clearance hole for the plug and a 32A voice coupler. Fig. 2 shows a 32A voice coupler mounted on the telephone base pan, and Fig. 3 shows the modified housing installed. The kits are coded as follows:

- Kit of Parts, D180550 (for modifying a 502B telephone set)
- Kit of Parts, D180551 (for modifying a 511F/H telephone set)
- Kit of Parts, D180552 (for modifying a 2502B or 2511F/H telephone set)

#### Associated Apparatus (Order Separately)

- Coupler, Voice, 32A, Modified for radio frequently interference (RFI) (if required)
- Set, Telephone, 502B\*
- Set, Telephone, 511F/H\*
- Set, Telephone, 2502B\*
- Set, Telephone, 2511F/H\*

\*Telephone sets should be ordered modified for RFI if required.

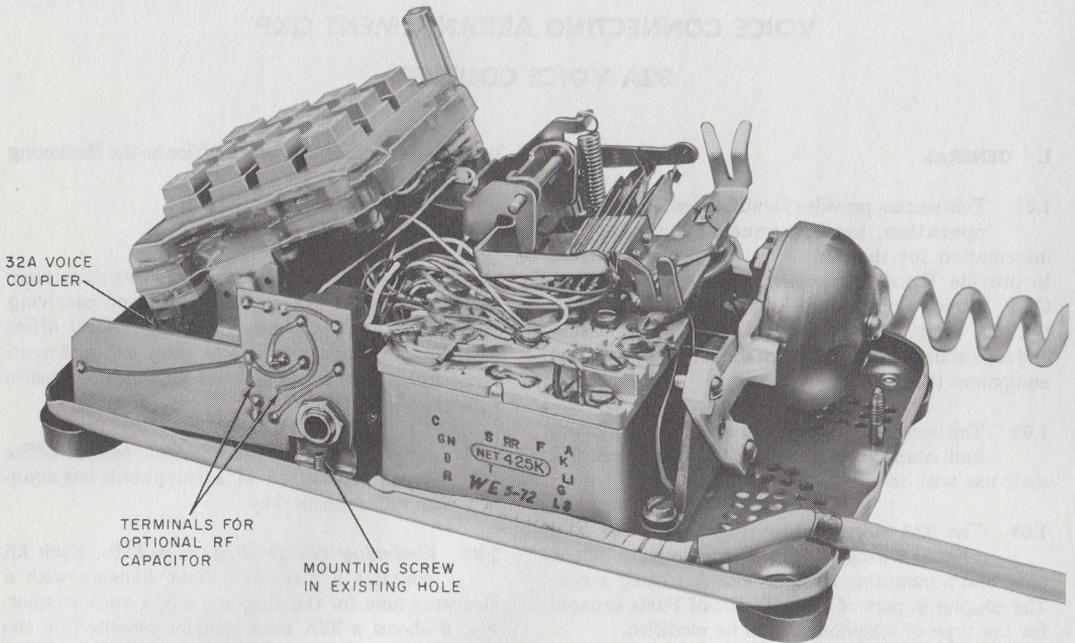


Fig. 2—32A Voice Coupler Mounted in 2511F Telephone Set (Cover Removed)

#### 2.04 Design Features:

- Component parts mounted on a printed circuit board. Approximate dimensions are 1-7/8 inches high by 3-1/4 inches long.
- A standard 1/4-inch tip-sleeve phone jack permits electrical connection of CPE.
- DC power is not available at the coupler and must not be applied to the coupler. Any power required for the CPE must be supplied by the customer.
- Permits customer tone address signaling from the CPE.
- Electrically equivalent to the 30B voice coupler.

### 3. INSTALLATION

**3.01** Modify telephone set by removing existing cover and installing 32A coupler in set as

shown in Fig. 2. Use existing spare hole in lower right side of base pan to fasten mounting bracket. Put the screw through the base pan from the bottom side into the threaded hole of the mounting bracket and tighten securely.

**3.02** Modify telephone set wiring as shown in the table and schematic diagram for the particular telephone set. Connect the red lead (ring) and green lead (tip) of the 32A coupler (see Fig. 4) to the tip and ring terminals shown on the schematic diagram of the modified telephone set. Install the modified black telephone housing. Test the modified set as shown in Part 5.

**3.03** When the customer only needs a single bridge, a 502B or 2502B telephone set is recommended. If the customer requires the transmitter and/or receiver to be disabled, a 511- or 2511-type telephone set is recommended.

**3.04** If the exclusion switch has spare contacts available, they may be used in place of the



Fig. 3—2511F Telephone Set With 32A Voice Coupler Installed (Cover on)

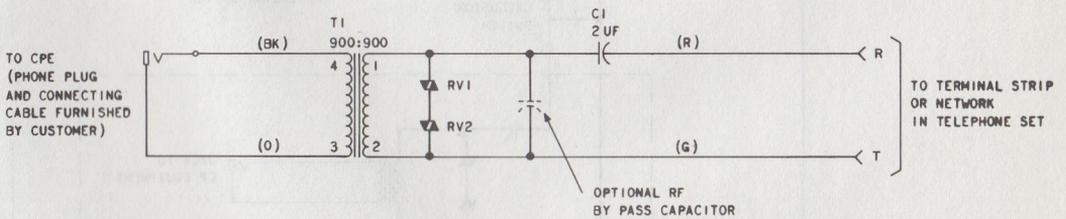


Fig. 4—Connections-32A Voice Coupler

line key to *automatically* disable transmitter and/or receiver.

**3.05** Voice Connecting Arrangement QKP was developed for portable telephone sets; when it is desirable to use a particular telephone set not suitable for the 32A coupler, refer to Section 463-311-100 (VCA QKT and VCA QKTBT). Where no exclusion key is available, as with CALL DIRECTOR® sets, refer to Section 463-311-106 (VCA CEBAV and CEBAW).

#### 4. OPERATION (Fig. 5)

**4.01 Incoming Call:** An incoming call is received in the normal manner. The exclusion key is lifted to remove the closure across the coupler output and to connect the coupler to the line.

**4.02 Outgoing Call:** The coupler should be disconnected and output shorted (exclusion

key down) when dialing to prevent possible dial pulse distortion and transmission of dial pulses through the coupler to the CPE. An outgoing call is placed in the normal manner, and the coupler is connected to the line by lifting the exclusion key.

**4.03 Disconnect:** The 32A voice coupler will be disconnected when the telephone set goes on-hook to terminate the call or when the exclusion key is pushed down to normal position.

**4.04** When the coupler is in use, the telephone set remains connected to the line and is functional on both incoming and outgoing calls.

**4.05** As a customer option, the transmitter and/or receiver of the telephone set may be disconnected when the CPE is in operation. The telephone set may be equipped with a 2-line key

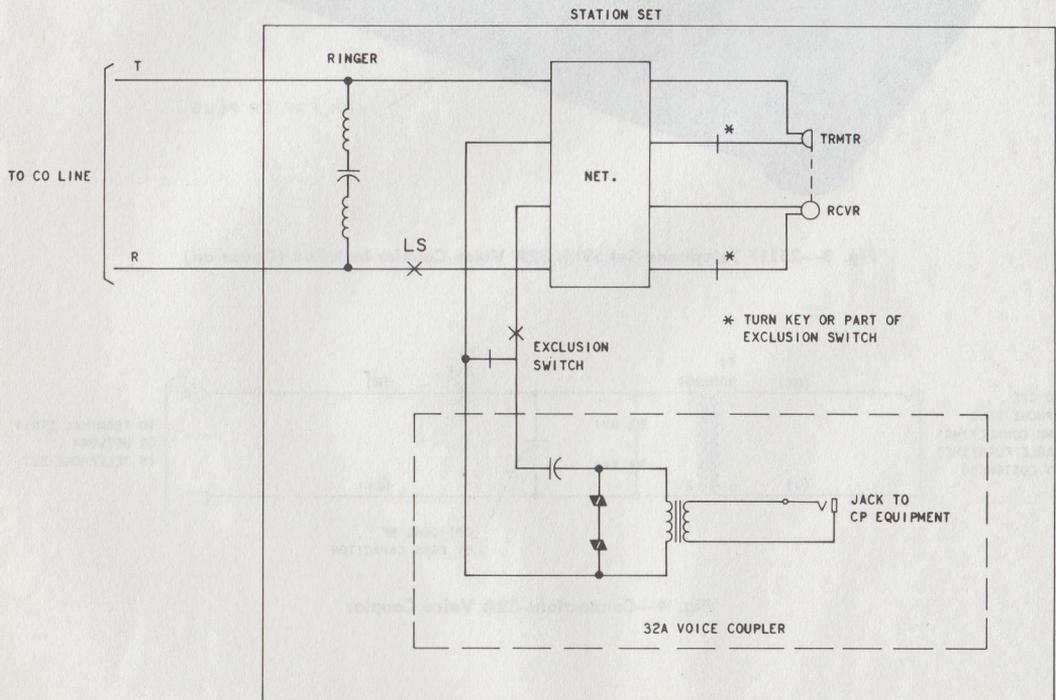


Fig. 5—Schematic-Voice Connecting Arrangement QKP

(511- or 2511-type) or spare exclusion key contacts used for this purpose.

**4.06** When the line key is used to disconnect the transmitter and/or the receiver, the line key must be in the "on" position to receive or make a call and turned "off" to disconnect transmitter and/or receiver when the coupler is used. The line key must be manually restored when the call is terminated. When spare exclusion switch contacts are used to disconnect the transmitter and/or receiver, lifting the exclusion switch will automatically disconnect the transmitter or receiver or both. When the telephone set goes on-hook to terminate the call, the transmitter and/or receiver will be automatically connected.

## 5. MAINTENANCE

**5.01** Maintenance is limited to checking connections and determining if the coupler is working properly by monitoring reception at the coupler with the CPE disconnected as follows:

- (1) Connect a 1013A (or equivalent) hand test set to the tip and sleeve of the jack on the 32A voice coupler with the hand test set MON-TALK switch in the MON position.
- (2) Go off-hook on the telephone set and verify normal dial tone through the handset. Dial tone should not be heard on the hand test set.
- (3) Dial digit "9" using the telephone set dial; no dial clicks or tones should be heard on the hand test set.
- (4) Go on-hook and off-hook; verify dial tone and lift the exclusion key. Dial tone at normal volume will now be heard on the hand test set.

**5.02** If the telephone set is equipped with a cutoff turnkey, operate the turnkey to the off position and verify that the transmitter and/or receiver of the telephone handset is disconnected while dial tone at normal volume is heard on hand test set at coupler.

**5.03** If the telephone set is using spare contacts on the exclusion switch to disconnect the transmitter and/or receiver, verify that the transmitter and/or receiver of the telephone handset is disconnected while dial tone at normal volume is heard on the hand test set at the coupler. If the

above tests are satisfactory, the coupler is working properly.



**Do not attempt any tests or repairs to the CPE.**

**5.04** When in the repairman's judgment the trouble is located in the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge billing can be initiated as outlined in Section 660-101-312 entitled Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE).

**5.05** If RFI is encountered, the 32A voice coupler should be replaced with a 32A coupler stamped modified for RFI. Install a 1542A inductor in series with the tip and ring of the CO line; use as a connecting block for the telephone set cord. A telephone set modified for RFI and a 40BA capacitor installed at the protector may also be required. Refer to Section 500-150-100 entitled "Radio Signal Suppression for Telephone Sets" for complete modifications necessary when RFI is encountered.

## 6. CONNECTION INDEX

Table A—502B or 2502B Telephone Set Modified for Use With 32A Voice Coupler

Table B—511F/H Telephone Set Modified for Use With 32A Voice Coupler

Table C—2511F/H Telephone Set Modified for Use With 32A Voice Coupler

Table D—1542A Inductor Connections to Telephone Sets Modified for RFI

Fig. 4—Connections—32A Voice Coupler

Fig. 6—502B Telephone Set Modified for Use With 32A Voice Coupler

Fig. 7—2502B Telephone Set Modified for Use With 32A Voice Coupler

Fig. 8—511F/H Telephone Set Modified for Use With 32A Voice Coupler

Fig. 9—2511F/H Telephone Set Modified for Use With 32A Voice Coupler.

**TABLE A**  
**502B OR 2502B TELEPHONE SET**  
**MODIFIED FOR USE WITH 32A VOICE COUPLER**

	WIRE OR LEAD		REMOVE FROM		CONNECT TO	
			TERM. STRIP	NETWORK	TERM. STRIP	NETWORK
Modification to connect voice coupler to line and telephone set.	Mtg. Cord*	Y	E1			Store
		BK	E2			Store
	Exclusion Key	BL	E1			C
		BK		L1		RR
		Y		L2	E1	
	32A Voice Coupler	R			E2	
		G				RR

\*Insulate and store (BL) and (W) mounting cord leads if not required for A lead control.

*Note:* Refer to Fig. 6 for CO, mounting cord, and interconnections to 32A voice coupler. If A lead control is required, use (BL) and (W) mounting cord leads to extend A and A1 to line circuit.

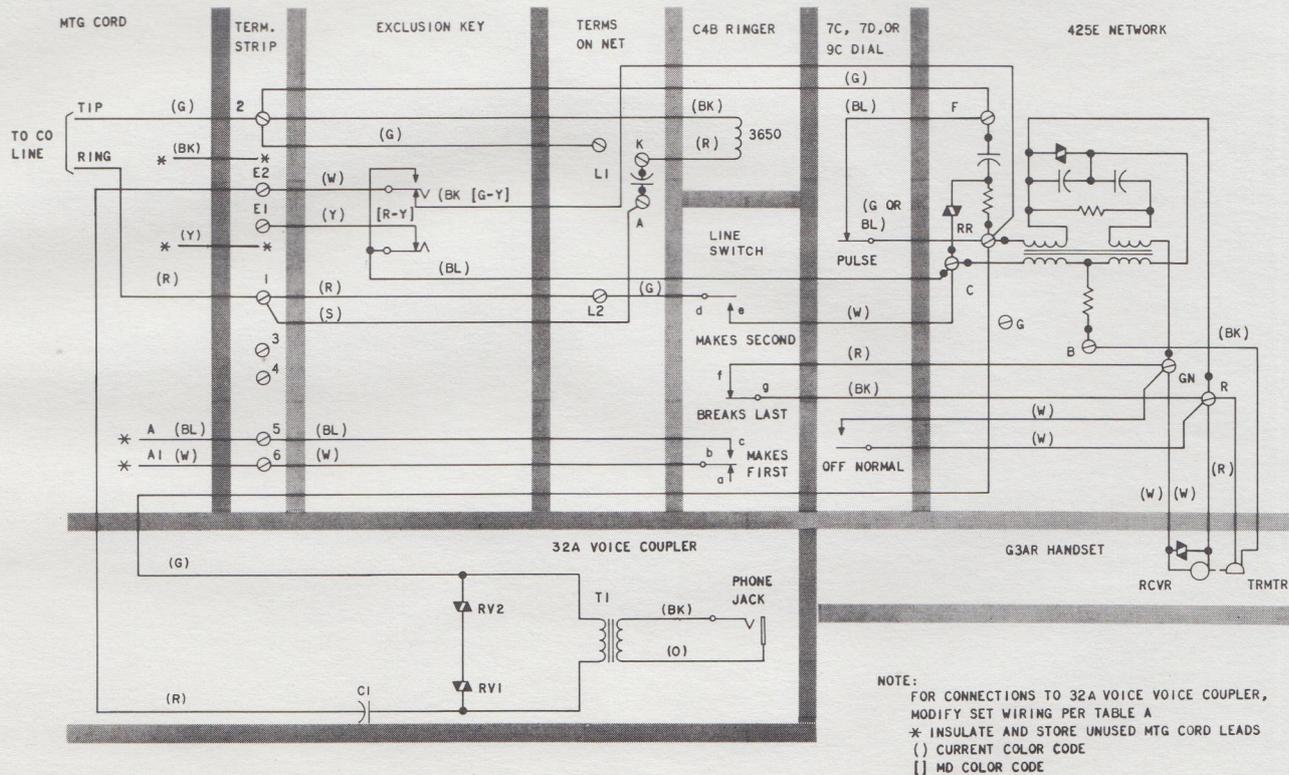
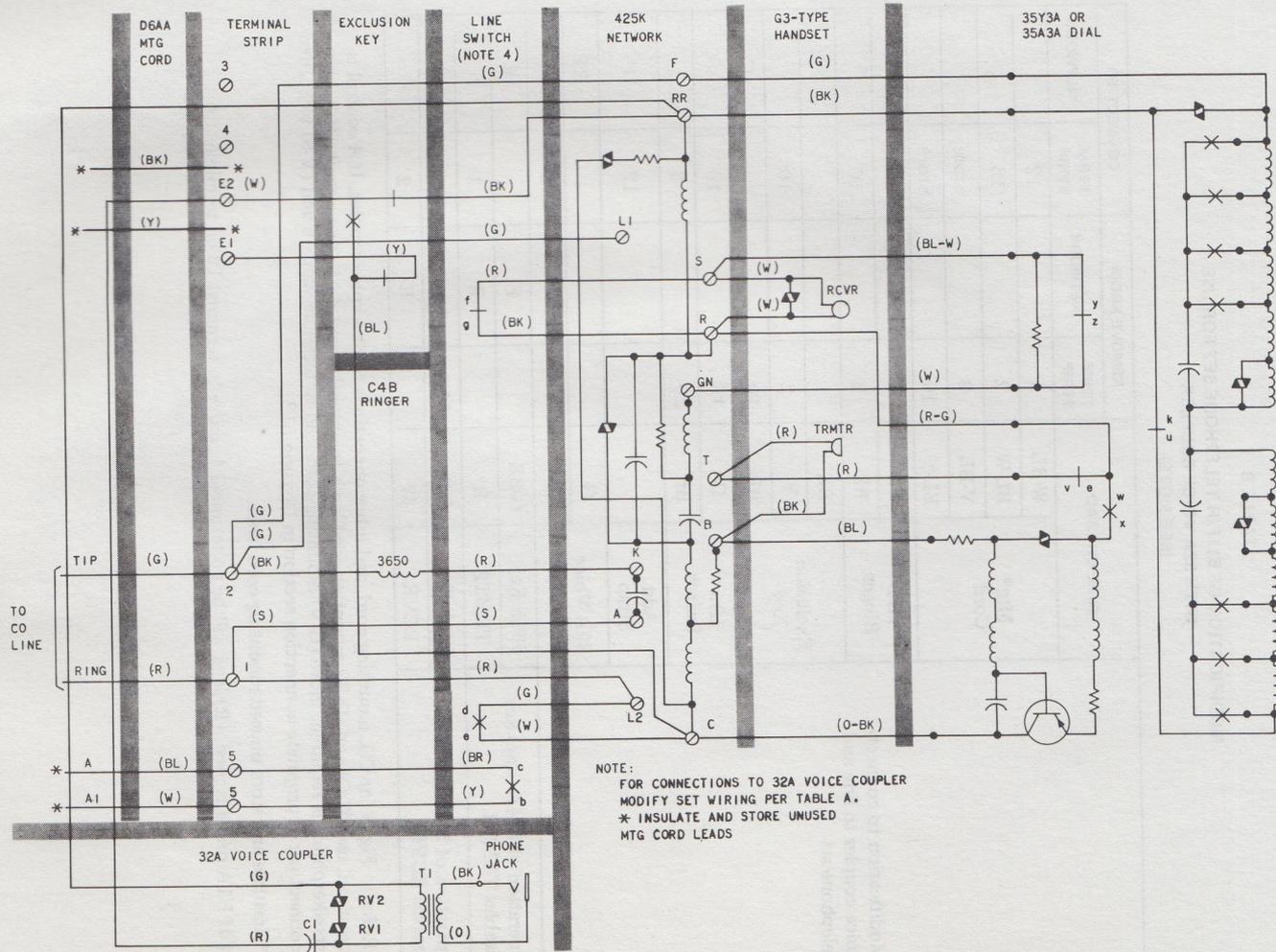


Fig. 6—502B Telephone Set—Modified for Use With 32A Voice Coupler



NOTE:  
 FOR CONNECTIONS TO 32A VOICE COUPLER  
 MODIFY SET WIRING PER TABLE A.  
 \* INSULATE AND STORE UNUSED  
 MTG CORD LEADS

Fig. 7—2502B Telephone Set—Modified for Use With 32A Voice Coupler

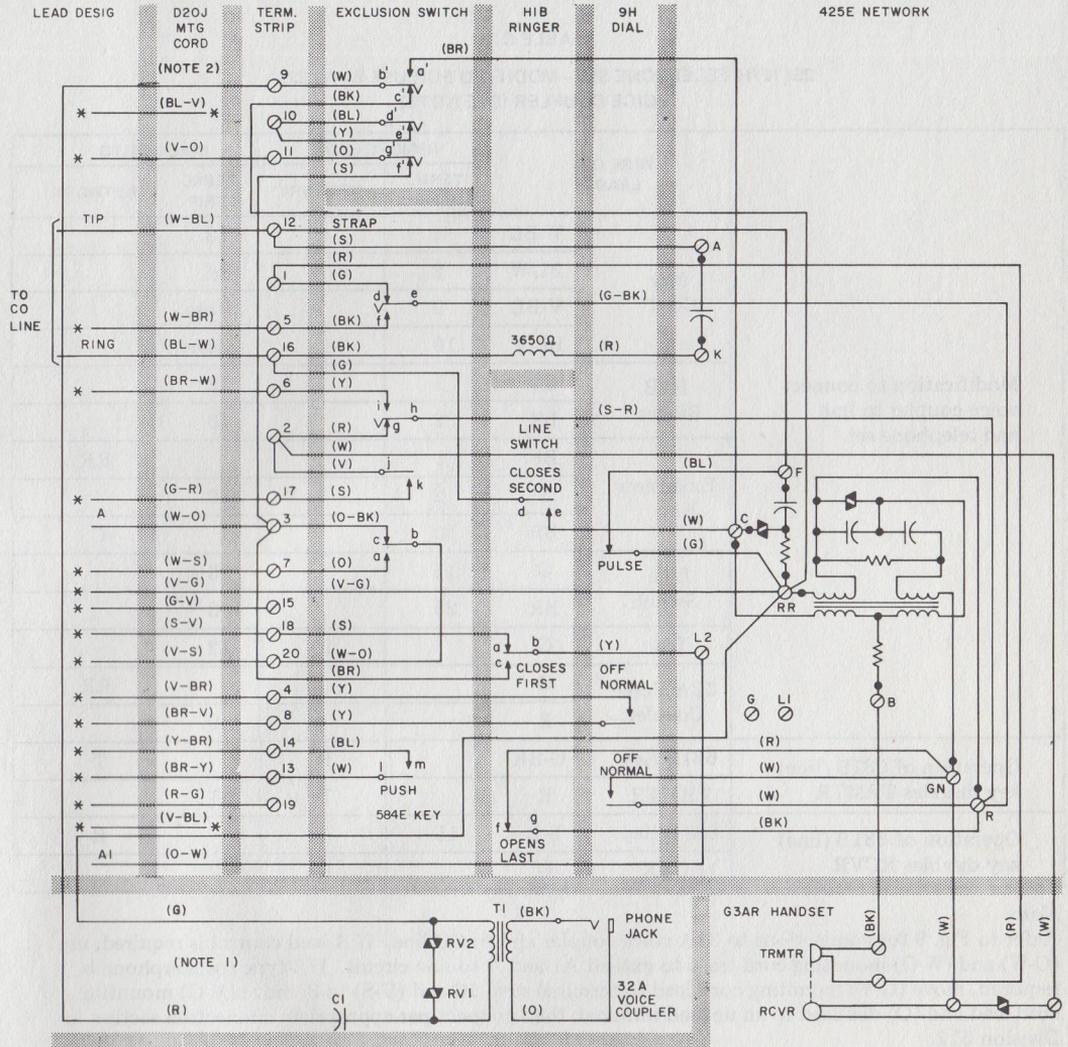
TABLE B  
 MODIFICATION OF 511F/H TELEPHONE SET FOR USE  
 WITH 32A VOICE COUPLER  
 (SEE NOTE)

	WIRE OR LEAD		REMOVE FROM		CONNECT TO	
			TERM. STRIP	NETWORK	TERM. STRIP	NETWORK
Modification to connect voice coupler to line and telephone set	Mtg* Cord	W-BL	1		12	
		BL-W	2		16	
		V-BL	9		Store	
		BL-V	10		Store	
	H1B Ringer	S †	1		12	
		BK	2		16	
	Exclusion Key	BK	1			RR
		Y	2		10	
		BR	10			C
	Line Switch	G	15		16	
		BR	20		3	
	Add Strap				12	F
	32A Voice Coupler	G				RR
		R			9	
Operation of 584E (line) key disables TRMTR	584E Key	G-BK		F	R	
	TRMTR	R		R	1	
Operation of 584E key disables RCVR	584E Key	S-R	15		R	
	RCVR	W		R	2	

**Note:** Refer to Fig. 8 for CO, mounting cord, and interconnections to 32A voice coupler. If A control is required, use (W-O) and (O-W) mounting cord leads to extend A and A1 to line circuit. If 3-type speakerphone is required, move (G-V) mounting cord lead to terminal strip 16 and (V-S) to 3; then connect per appropriate connection section in Division 512.

\* Insulate and store unused mounting cord leads.

† If H1A ringer is used, (R) lead will be on terminal 1; move to terminal 12 on terminal strip.



NOTES:

1. FOR CONNECTIONS TO 32A VOICE COUPLER, MODIFY SET WIRING PER TABLE B.
2. D20J SPADE TIPPED MTG CORD FOR 511F TEL SET SHOWN. 511H IS IDENTICAL EXCEPT EQUIPPED WITH D20K PLUG ENDED MTG CORD.

\* INSULATE AND STORE UNUSED MTG CORD LEADS.

Fig. 8—511F/H Telephone Set—Modified for Use With 32A Voice Coupler (Using Line Key to Disable Transmitter and Receiver)

TABLE C  
2511F/H TELEPHONE SET—MODIFIED FOR USE WITH 32A  
VOICE COUPLER (SEE NOTE)

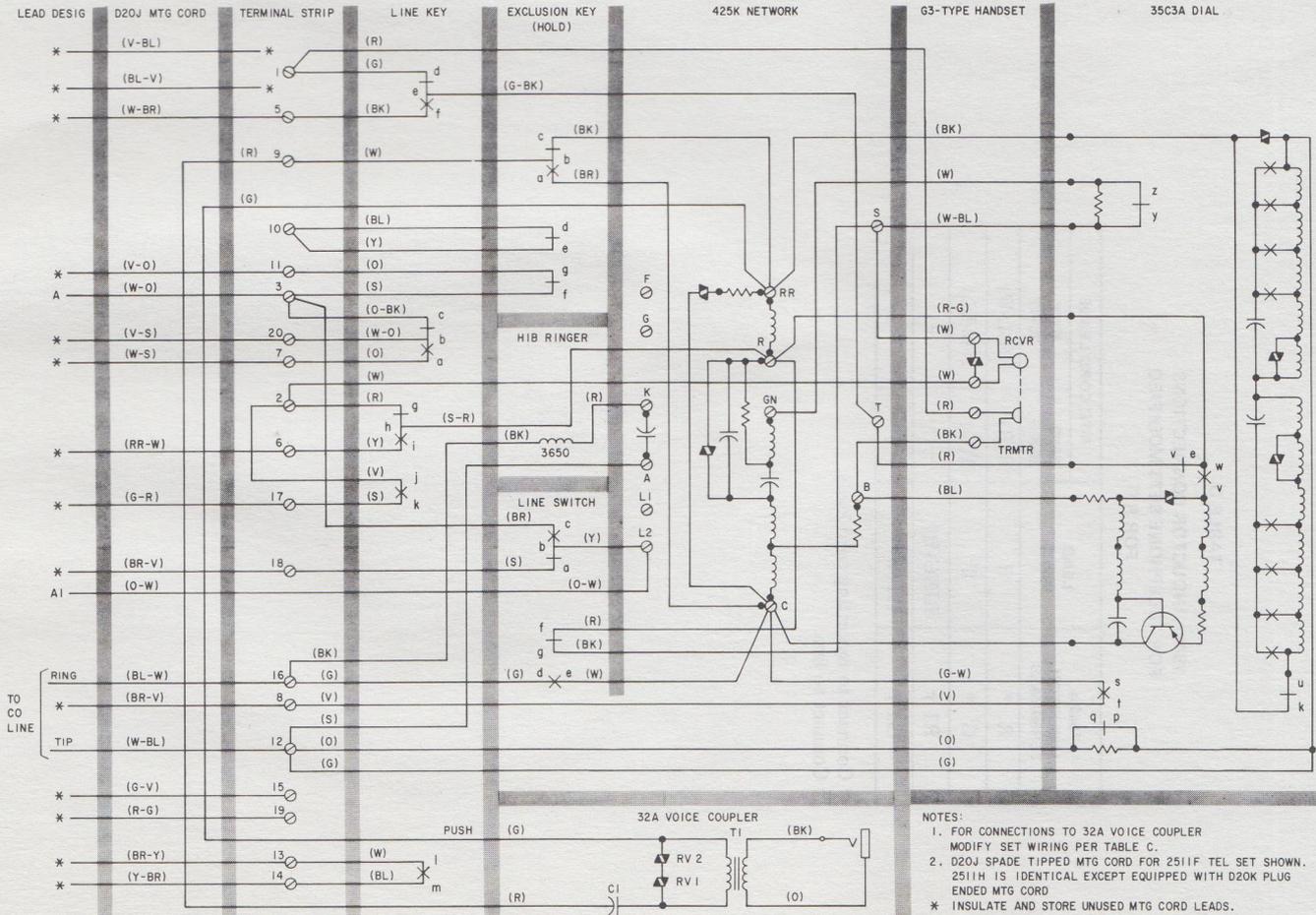
	WIRE OR LEAD		REMOVE FROM		CONNECT TO	
			TERM. STRIP	NETWORK	TERM. STRIP	NETWORK
Modification to connect voice coupler to line and telephone set	Mtg Cord*	W-BL	1		12	
		BL-W	2		16	
		V-BL	9		Store	
		BL-V	10		Store	
	H1B Ringer	S†	1		12	
		BK	2		16	
	Exclusion Key	BK	1			RR
		Y	2		10	
		BR	10			C
	Line Switch	G	15		16	
		BR	20		3	
	Dial	G		F	12	
		G				RR
	32A Voice Coupler	R			9	
Operation of 631B (line) key disables TRMTR	631B Key	G-BK		F	T	
	TRMTR	R		T	1	
Operation of 631B (line) key disables RCVR	631B Key	S-R	15		R	
	RCVR	W		R	2	

**Note:**

Refer to Fig. 9 for connections to 32A voice coupler and to CO line. If A lead control is required, use (O-W) and (W-O) mounting cord leads to extend A1 and A to line circuit. If 3-type speakerphone is required, move (G-V) mounting cord lead to terminal strip 16 and (V-S) to 3; move (V-G) mounting cord lead and (O) dial lead to an unused terminal; then connect per appropriate connection section in Division 512.

\*Insulate and store unused mounting cord leads.

† If H1A ringer is used, (R) lead will be on terminal 1; move to terminal 12 of terminal strip.



- NOTES:
1. FOR CONNECTIONS TO 32A VOICE COUPLER MODIFY SET WIRING PER TABLE C.
  2. D20J SPADE TIPPED MTG CORD FOR 2511F TEL SET SHOWN. 2511H IS IDENTICAL EXCEPT EQUIPPED WITH D20K PLUG ENDED MTG CORD
- \* INSULATE AND STORE UNUSED MTG CORD LEADS.

Fig. 9—2511F/H Telephone Set—Modified for Use With 32A Voice Coupler (Using Line Key to Disable Transmitter and Receiver)

TABLE D  
 1542A INDUCTOR CONNECTIONS  
 FOR TELEPHONE SETS MODIFIED  
 FOR RFI

1542A INDUCTOR TERMINALS	LEAD DESIG	MTG CORD LEADS	
		502B 2502B	511F 2511F
R *	R	R(R)	R(BL-W)
G *	T	T(G)	T(W-BL)
R1 †	RING(R)	—	—
G1 †	TIP(G)	—	—

\* Connect to mounting cord leads.

† Connect to line.