

VOICE CONNECTING ARRANGEMENT CDX USING 31B VOICE COUPLERS

1. GENERAL

1.01 This section provides identification, installation, operation, maintenance, and connection information for Voice Connecting Arrangement CDX used to connect an incoming line through customer-provided (CP) equipment to an outgoing line.

1.02 This section is reissued to show information for single cord switchboard (557B PBX).

1.03 The 31B voice coupler is a direct replacement for the 31A (MD) voice coupler. The 31A (MD) voice coupler may still be used in areas where tone signaling is not required.

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.

1.05 This issue of the section is based on the following drawing:

SD-69613-01, Issue 2B—31B Voice Coupler

If this section is to be used with equipment or apparatus reflecting later issue(s) of the drawing(s), reference should be made to the SDs and CDs to determine the extent of the changes and the manner in which the section may be affected.

2. IDENTIFICATION

PURPOSE

- To connect a Bell System single or double cord manual switchboard to CP equipment and establish a through connection from an incoming line to an outgoing line (arranged for patching)
- To limit excessive levels from CP equipment and to provide protection for personnel against hazardous voltage.

APPLICATION

- Used with secretarial lines, tie trunks, foreign exchange lines, central office (CO) lines, etc, for voice application only.

ORDERING GUIDE

- Coupler, Voice, 31B-49 (Fig. 1, requires two per connecting arrangement).
- Jacks—(Table A, spare PBX jacks may be used when available.)
- Mounting, Jack—(Table A).
- Block, Connecting, 66M1-50 (Fig. 2).
- Cord, Patch—3P6A (557B PBX only).

Note: Other type blocks may be used when specified by local engineering.

DESIGN FEATURES (31B Voice Coupler)

- Can be mounted on any flat surface.
- Approximate dimensions are 4 inches long by 2-3/4 inches wide by 2 inches high.
- Maximum dc line current is 0.150 ampere.
- Provides dc isolation to CP equipment.
- Provides a means of holding the PBX circuit in the busy state.
- Voice transmission only.
- Permits tone signaling through the coupler.

3. INSTALLATION

A. 2-Cord Switchboards

3.01 The voice coupler will mount on any flat surface. A backboard is not required unless

mounting on a damp surface or when a backboard will facilitate mounting.

3.02 Install the patching jacks in the station jack area of the PBX switchboard. Follow the wiring plan shown in Fig. 3 and Table B. Label the connecting arrangement jack "PATCHING" and the associated PBX jack "PATCH". Refer to Division 536 for additional information covering the type PBX required.

3.03 Refer to Division 463 section entitled: "Backboards, Identification and Installation" for information on mounting backboards.

3.04 Refer to Division 461 section entitled: "Connecting Blocks, Identification, Connection, and Wiring" for information on mounting 66M1-50 connecting blocks.

3.05 Customer-provided equipment may be attached externally to the surface of the switchboard by means of a pressure-sensitive adhesive or other means that will not damage switchboard.

3.06 Perform tests of Part 5 after installation.

B. Single Cord Switchboard

3.07 The voice coupler will mount on any flat surface. A backboard is not required unless mounting on a damp surface or when a backboard will facilitate mounting.

3.08 Install the patching jacks in the transfer jack area of the PBX switchboard. Follow the wiring plan shown in Fig. 4 and Table B. Label the connecting arrangement jack "PATCHING" and the associated PBX jack "PATCH". Refer to Division 536 for additional information covering the type PBX required.

3.09 Refer to Division 463 section entitled: "Backboards, Identification and Installation" for information on mounting backboards.

3.10 Refer to Division 461 section entitled: "Connecting Blocks, Identification, Connection, and Wiring" for information on mounting 66M1-50 connecting blocks.

3.11 Customer-provided equipment may be attached externally to the surface of the switchboard

by means of a pressure-sensitive adhesive or other means that will not damage switchboard.

3.12 Perform tests of Part 5 after installation.

4. OPERATION

A. 2-Cord Switchboard (Fig. 3)

4.01 Standard operating procedures and functions of the PBX switchboard are not affected. Connecting Arrangement CDX is used only when an incoming line is to be connected to an outgoing line.

4.02 When a call is received, an incoming signal appears at the switchboard, the attendant inserts the left or back (trunk) cord into the jack directly beneath the lighted lamp of the incoming signal, operates the DIAL or TALK key to the talk position, and answers the call.

4.03 The attendant secures the necessary information to complete the call and then restores the DIAL or TALK key to its normal position to hold the incoming line. This cord may be used for monitoring when required.

4.04 The attendant takes the left or back (trunk) cord of an adjacent cord pair, inserts it into a CO trunk jack (patch jack) associated with a patching jack, operates the DIAL or TALK key to dial position and dials the requested number. After completion of dialing, the attendant restores the DIAL or TALK key to its normal position to hold the dialed number.

4.05 The attendant then takes the right or front (station) cord associated with the cord connected to the incoming line and inserts it into the connecting arrangement jack (patching jack) associated with the CO trunk jack used to dial the requested number. The left or back (trunk) cord should then be removed from the CO trunk jack. When a plug is inserted into the patching jack, the CS and CG leads are connected to provide a seizure signal to the CP equipment and VC2 is bridged across the CO trunk.

Caution: *Removing the cord removes busy lamp indication at all appearances of this CO trunk.*

The incoming line is now connected through the connecting arrangement and CP equipment to the outgoing line.

4.06 Supervision is not provided by Connecting Arrangement CDX. The CP equipment may or may not provide supervision. If supervision is not provided, it will be necessary for the attendant to periodically monitor the circuit and remove the left or back (trunk) cord from the answer jack when the conversation is terminated.

B. Single Cord Switchboard (Fig. 4)

4.07 Standard operating procedures and functions of the PBX switchboard are not affected. Connecting Arrangement CDX is used only when an incoming line is to be connected to an outgoing line.

4.08 When a call is received, an incoming signal appears at the switchboard, the attendant inserts the intercept cord into the jack directly beneath the lighted lamp of the incoming signal, operates the DIAL or TALK key to the talk position, and answers the call.

4.09 The attendant secures the necessary information to complete the call and then restores the DIAL or TALK key to its normal position to hold the incoming line. This intercept cord may be used for monitoring when required.

4.10 The attendant takes another intercept cord and inserts it into a CO trunk jack (patch jack) associated with a patching jack, operates the DIAL or TALK key to the dial position and dials the requested number. After completion of dialing, the attendant restores the DIAL or TALK key to its normal position to hold the dialed number.

4.11 The attendant then takes the 3P6A patch cord and inserts one end into the transfer jack connected to the incoming line and inserts the other end into the connecting arrangement jack (patching jack) associated with the CO trunk jack used to dial the requested number. The intercept cord should then be removed from the CO trunk jack. When a plug is inserted into a patching jack, the CS and CG leads are connected to provide a seizure signal to the CP equipment and VC2 is bridged across the CO trunk. The incoming line is now connected through the connecting arrangement and CP equipment to the outgoing line.

4.12 Supervision is not provided by Connecting Arrangement CDX. The CP equipment may or may not provide supervision. If supervision is not provided, it will be necessary for the attendant to periodically monitor the circuit and remove the intercept cord from the calling line when the conversation is terminated.¶

5. MAINTENANCE (Fig. 3 and 4)

5.01 When trouble is reported, check the CO pair and check for loose or broken connections at the PBX station jacks and 31B voice couplers.

5.02 Open the six leads to the circuit under test by removing the B bridging clips (or wire straps) at the 66M1-50 interface connecting block to verify in which direction trouble exists by performing the following test.

(a) Connect an 81A or KS-16990, List 1 test set across terminals 3 and 4 (CS and CG) of 66M1-50 interface connecting block. (Make all test connections on the Telephone Company side of the 66M1-50 interface connecting block.)

(b) Place the test set in continuity position to indicate a contact closure across the CS and CG leads when the station cord is inserted into the connecting arrangement jack.

(c) Strap terminal 1 (CT) to terminal 5 (CT1) and strap terminal 2 (CR) to terminal 6 (CR1).

(d) Connect a 1013A (or equivalent) hand test set to terminals 1 and 2 of the incoming 31B voice coupler (VC1).

(e) Set hand test set to MON position. Request the PBX attendant to plug the station cord into the connecting arrangement jack and set the TALK or DIAL key in the normal position to hold the line.

Continuity should be indicated at the test set connected to terminals 3 and 4 (CS and CG), and dial tone at normal volume should be heard on the 1013A (or equivalent) hand test set connected to terminals 1 and 2 of VC1.

5.03 When trouble is suspected in the 31B voice coupler, exchange it with another unit known to be working properly.

5.04 If the tests are satisfactory, remove all test connections and replace the B bridging clips (or wire straps) at the 66M1-50 interface connecting block.



Do not attempt any tests or repairs to the CP equipment.

6. CONNECTIONS

6.01 Refer to Table B and Fig. 3 for 2-cord switchboards.

6.02 Refer to Table B and Fig. 4 for single cord switchboard (557B PBX).**◆**

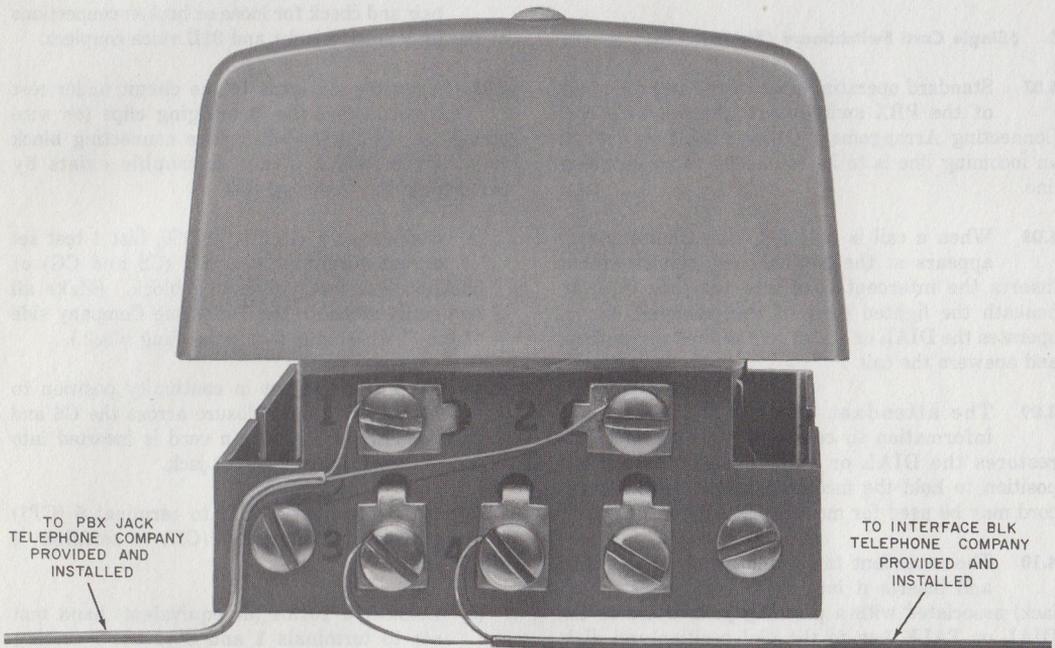


Fig. 1—31B Voice Coupler

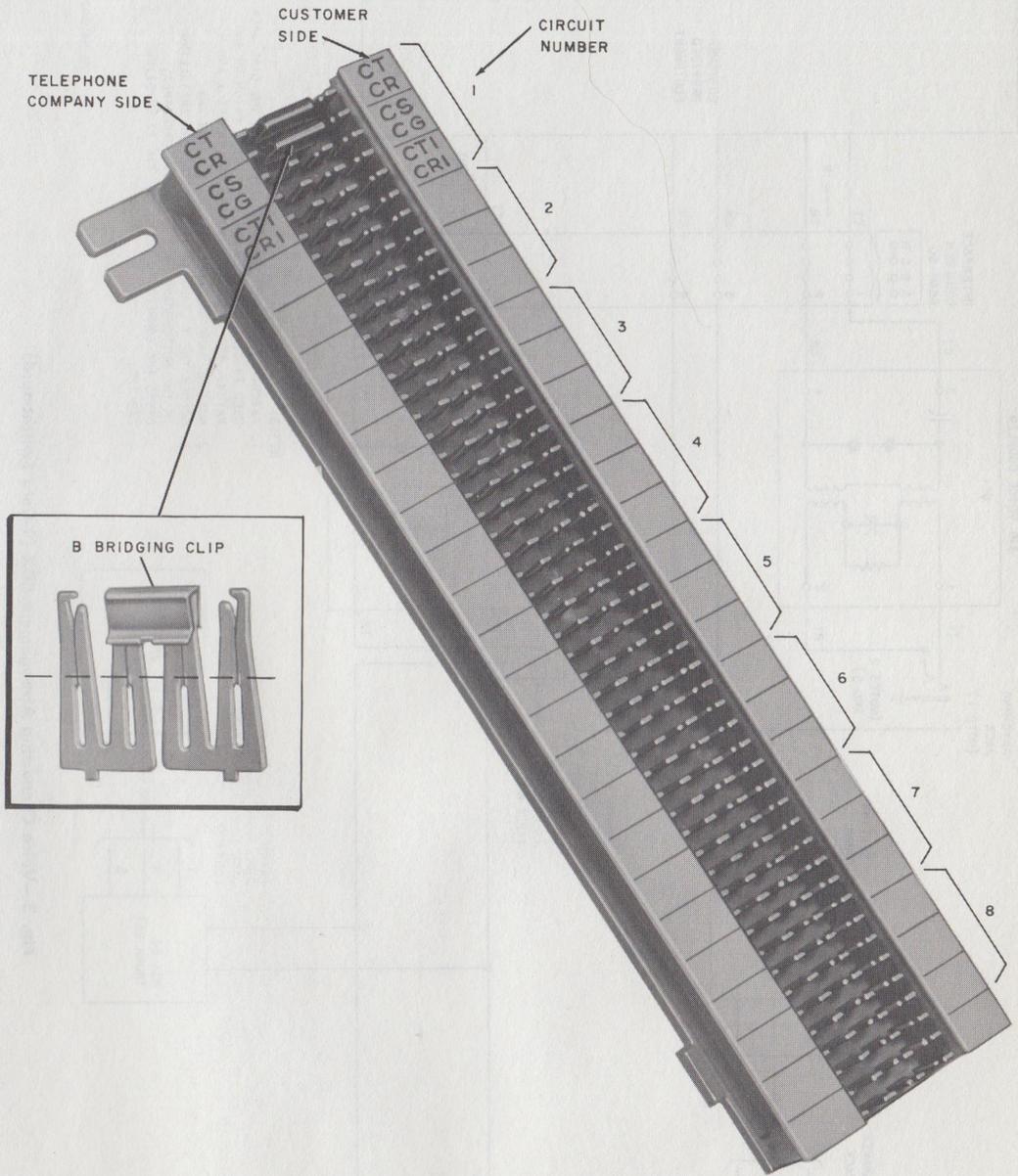
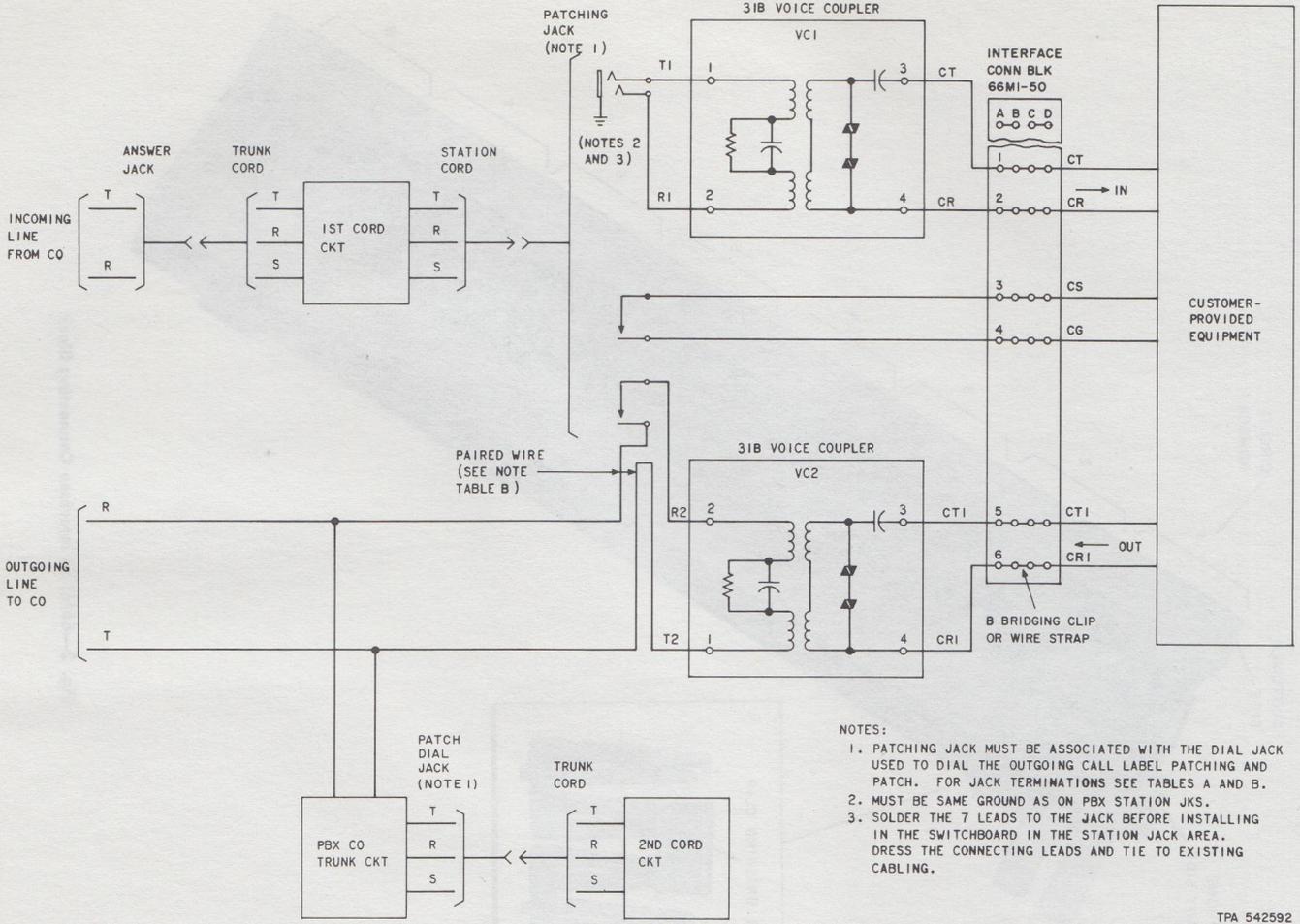


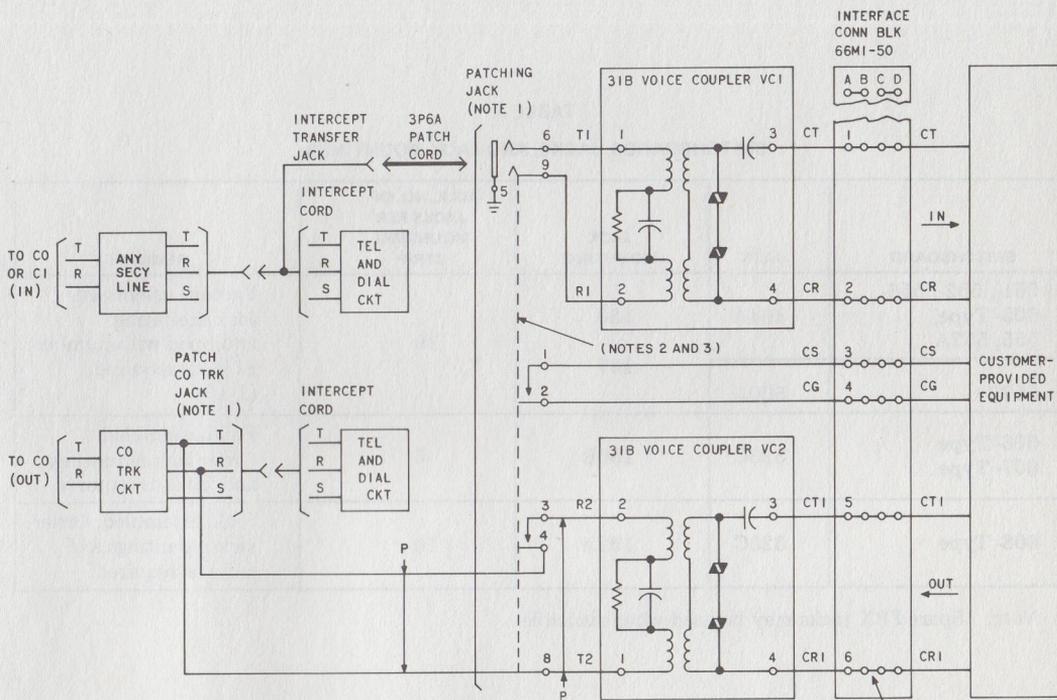
Fig. 2—66MI 50 Interface Connecting Block



- NOTES:
1. PATCHING JACK MUST BE ASSOCIATED WITH THE DIAL JACK USED TO DIAL THE OUTGOING CALL LABEL PATCHING AND PATCH. FOR JACK TERMINATIONS SEE TABLES A AND B.
 2. MUST BE SAME GROUND AS ON PBX STATION JKS.
 3. SOLDER THE 7 LEADS TO THE JACK BEFORE INSTALLING IN THE SWITCHBOARD IN THE STATION JACK AREA. DRESS THE CONNECTING LEADS AND TIE TO EXISTING CABLING.

TPA 542592

Fig. 3—Voice Connecting Arrangement CDX (2-Cord Switchboard)



- NOTES:
1. PATCHING JACK MUST BE ASSOCIATED WITH THE CO TRK JACK USED TO DIAL THE OUTGOING CALL, LABEL PATCH AND PATCHING.
 2. MUST BE SAME GROUND AS ON PBX STATION JKS.
 3. SOLDER THE 9 LEADS TO THE JACK BEFORE INSTALLING IN THE SWITCHBOARD IN THE TRANSFER JACK AREA. DRESS THE CONNECTING LEADS AND TIE TO EXISTING CABLING.

TPA 562569

Fig. 4—Voice Connecting Arrangement CDX (Single Cord Switchboard 557B PBX)

TABLE A
SWITCHBOARDS, JACKS, AND JACK MOUNTINGS

SWITCHBOARD	JACK	JACK MOUNTING	MAX. NO. OF JACKS PER MOUNTING STRIP	REMARKS
551-, 552-, 556-, 605- Type, 555, 557A	494A	136 or 137	10	Factory assembled. Jack mounting equipped with number of jacks required (1-10).
557B	500A			
606- Type 607- Type	323C	190B	5	Field assembled. Order jack mountings and jacks as required.
608- Type	323C	197A	10	Field assembled. Order jack mountings and jacks as required.

Note: Spare PBX jacks may be used when available.

TABLE B
CONNECTIONS FOR 323C, 494A, 500A JACKS AND 31B VOICE COUPLERS

FROM PATCHING JACK				TO
JACK NUMBER	JACK CONTACTS			
	*323C	*494A	*500A	
1, 2, 3, etc.	3	1	1	CS on 66M1-50 Conn. Blk. CG on 66M1-50 Conn. Blk. VC2 Term. 2 GRD (same as cord ckt.) VC1 Term. 2 VC1 Term. 1 RING (of outgoing line associated with Patch JK 1, 2, 3, etc.) VC2 Term. 1
	2	2	2	
	6	4	3	
	7	5	5	
	1	6	9	
	4	7	6	
	5	3	4	
FROM VOICE COUPLER				CT on 66M1-50 Conn. Blk. CR on 66M1-50 Conn. Blk. CT1 on 66M1-50 Conn. Blk. CR1 on 66M1-50 Conn. Blk.
VC1 Term. 3				
VC1 Term. 4				
VC2 Term. 3				
VC2 Term. 4				

*From the rear of the jack the contacts count from top to bottom on the 323C jack and from left to right on the 494A and 500A jacks.

Note: For transmission reasons do not split the tip from the ring. Run both leads to the connecting arrangement jack although only the ring will be terminated for the 494A and 323C jacks (Fig. 3).