

PROTECTIVE CONNECTING ARRANGEMENT FTM

1. GENERAL

1.01 This section provides identification, installation, operation, maintenance, and connection information for the 451B key telephone unit (KTU) (Fig. 1) and Protective Connecting Arrangement (PCA) FTM. The 34A voice coupler is used to implement PCA FTM. This PCA provides a connection between a customer-provided (CP) music or information source and the music-on-hold circuit (451B KTU) in a telephone company 1A2 Key Telephone System (KTS).

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 If a copy of the Technical Reference which covers this Interface Specification is needed,

the customer can obtain a copy from the local Telephone Company Business Office or the Marketing Representative.

1.04 This issue of the section is based on the following drawings:

SD-69922-01, Issue 1—Audio Features

SD-69911-01, Issue 2—33- and 34-Type Voice Couplers.

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

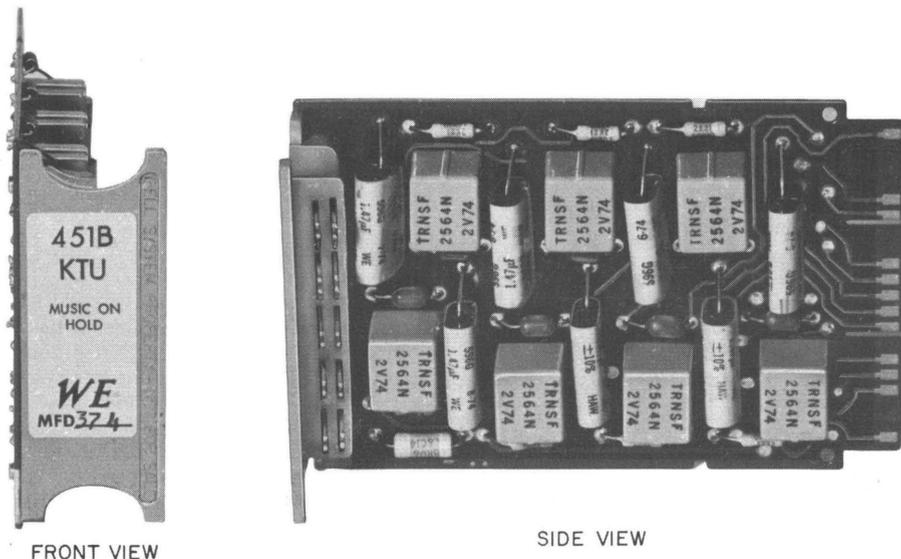


Fig. 1—451B KTU

NOTICE

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

2. IDENTIFICATION**2.01 Purpose**

- To provide a connection for music-on-hold between CO/PBX lines and a CP music or information source which does not require a start signal
- To limit excessive levels from customer-provided equipment (CPE) and to provide protection for telephone company personnel from hazardous voltage.

2.02 Application

- 1A2 Key Telephone System
- 7A and 14A Communication Systems

Note: When music is to be applied to both the music-on-hold and paging amplifier circuits in the 7A (570A KSU) or 14A (580A KSU) Communication System, refer to PCA FTP (Section 463-341-102). For application with 1A and 1A1 KTS or if start signal is required, refer to PCA LVH (Section 463-311-105).

2.03 Ordering Guide**(a) Basic Units:**

- Unit, Telephone, Key, 451B (one per up to 7 CO/PBX lines)
- Coupler, Voice, 34A (one per system).

(b) Replaceable Components:

- Fuse, 35P (3/4 ampere—2 required per 34A voice coupler)
- 818659492 (P86E949) Cover (34A voice coupler)
- 841223696 Guard (fuse guard—34A voice coupler).

(c) Associated Equipment:

See Table A.

2.04 Design Features**(a) 451B KTU**

- Provides a connection for music to be impressed on a CO/PBX line when the line is placed on hold
- One 451B KTU provides a music source for up to 7 CO/PBX lines
- Requires mounting arrangement for a 4-inch, 40-pin KTU.

(b) 34A Voice Coupler

- Approximate dimensions: 4 inches high by 2-3/4 inches deep by 2 inches wide
- Mounts on any flat surface
- Provides 8-ohm nominal input impedance to CP music or information source
- Limits excessive input level from CP music or information source
- Provides fused protection (3/4 ampere) between CPE and telephone company equipment
- Provides screw terminals for connection to CP music or information source and telephone company equipment.

3. INSTALLATION

3.01 Select a location close to the CP music or information source and mount the 34A voice coupler (Fig. 2). One 34A voice coupler will accommodate all the 451B KTUs in a system.

3.02 Select the proper mounting for the 451B KTU from Table A and install at easily accessible location close to the key telephone equipment. The 451B KTU does not require any battery supply to operate.

4. CONNECTIONS

4.01 Cable the leads T1(CO), R1(CO), T1(STA), R1(STA), etc, of the 451B KTU as pairs to the appropriate connecting block associated with the CO-ST A connections of the 400D KTU.

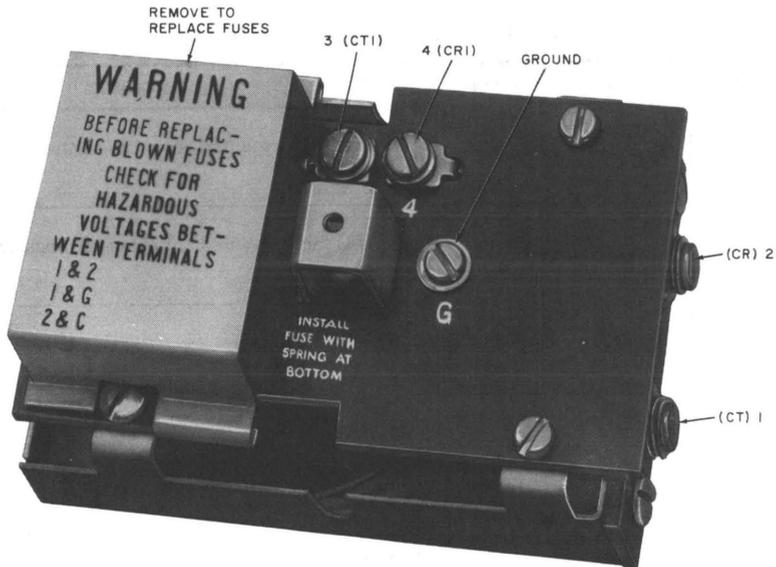


Fig. 2—34A Voice Coupler

4.02 Considering the first circuit as typical of all seven circuits of the 451B, install the music-on-hold circuit as follows:

- (1) At the designated connecting block, connect the T1(CO) and R1(CO) leads of the 451B KTU to the T(CO) and R(CO) leads of the first 400D KTU.
- (2) Connect the T1(STA) and R1(STA) leads of the 451B to the T(STA) and R(STA) leads of the first 400D KTU.
- (3) Proceed to T2(CO), R2(CO), T2(STA), R2(STA) and continue until desired CO/PBX lines have been terminated through the 451B KTU.
- (4) Wire leads associated with pins 35 and 36 (Fig. 3) of the jack(s) containing 451B KTUs to spare terminals in cross-connect field and label CT1 and CR1.

Note: This wiring arrangement, in conjunction with the 451B KTU circuitry, connects the music-on-hold input across the R(CO) to R(STA) side of the 400-type KTU. The tip side of

the line is run with the ring and connected together on the 451B to maintain circuit balance.

- 4.03** Cross-connect terminals 3 and 4 of the 34A voice coupler to the CT1 (pin 35) and CR1 (pin 36) of the 451B KTU. Cross-connect terminal G of 34A voice coupler to an approved circuit ground connection.
- 4.04** When all wiring is complete, insert 451B KTU(s) in proper jack and lock in place, depending on mounting arrangement.
- 4.05** The customer is required to provide the wiring (CT and CR) between screw terminals 1 and 2 of the 34A voice coupler and the CP music or information source.

Caution: The output of the CP music source must furnish ac coupling only, thus blocking all direct current to the input terminals of the 34A voice coupler.

TABLE A

MOUNTING INFORMATION FOR 451B KTU

400D MOUNTED IN	451B* MOUNTED IN	REMARKS
570A KSU† (7A COM KEY)	570A KSU† (7A COM KEY) (Fig. 13)	KSU is factory-wired for cross-connecting to 34A voice coupler.
580A KSU† (14A COM KEY)	580A KSU† (14A COM KEY) (Fig. 14)	KSU is factory-wired for cross-connecting to 34A voice coupler.
584-Type Panel	69D Apparatus Mounting (Fig. 4)	Cross-connects made at 66-type connecting blocks used to terminate panels.
	272A KTU (Fig. 5)	
	598-Type Panel‡ (Fig. 6)	
620A Mod Panel	642 Mod Panel (Fig. 7)	Direct panel-to-panel cross-connects.
513 KSU	513 KSU (Fig. 8 & 9)	The 451B can be mounted only in connectors 7 and 8.
515 KSU	515 KSU (Fig. 8, 9, 10, 11, 12)	The 451B can be mounted only in connectors 7, 8, 11, and 13 or with 69E or F apparatus mounting.

* Not recommended with 550/551 KSU or any arrangement using 69B mounting with 400-type CO/PBX line circuits.

† When music is to be applied to both music-on-hold and paging amplifier circuits in the 7A and 14A Communication Systems, use PCA FTP (Section 463-341-102). PCA FTM should be used if only music-on-hold is required.

‡ 598-type panel should not be used unless customer orders 15 or more CO/PBX lines with music-on-hold (3 or more 451B KTUs) or unless it can be shared with other circuits.



The maximum permissible power from CP 8-ohm source, when averaged over any 3-second interval, should not exceed 1 dB below 1 watt (+ 29 dBm).

the hold resistor, and the 451B KTU is in parallel with the L relay in the ring side of the line. Music is impressed on the ring side of the line from the CP music source through the 451B KTU to the 400D KTU, and is heard by the held party.

5. OPERATION

5.01 When an incoming CO/PBX line is placed on hold, the L relay of the 400D KTU appears across the tip and ring leads in series with

5.02 When the line hold is terminated, the A relay operates to shunt the L relay of the 400D KTU, causing it to release. This removes the music from the line.

6. MAINTENANCE



Before replacing blown fuses or attempting any maintenance on the 34A voice coupler, check for hazardous voltages between terminals 1 and 2, 1 and G, and 2 and G.

6.01 When trouble is reported, check for blown fuses and loose or broken connections at 34A voice coupler. If fuses are blown, replace with 35P (3/4 amp) fuse.

6.02 Remove customer connections to terminals 1 and 2 and telephone company connections from terminals 3 and 4 of the voice coupler. Make the following resistance measurements:

<u>Between Terminals</u>	<u>Resistance</u>
1 and 2	8 ohms
1 and 3	0
2 and 4	0
Any term. and G	4 ohms

6.03 When trouble is indicated in the 451B KTU, replace it with another 451B KTU known to be working properly.

6.04 When trouble is suspected in the CPE, notify the Repair Service Bureau 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).



Do not attempt any tests or repairs to the CPE.

6.05 Connection Index

Fig. 3—Schematic of 451B KTU With 34A Voice Coupler

Fig. 4—Connections for 451B KTU Mounted in 69D Apparatus Mounting (400D KTUs Mounted in a 584-Type Panel)

Fig. 5—Connections for 451B KTU Mounted in 272A KTU (400D KTUs Mounted in a 584-Type Panel)

Fig. 6—Connections for 451B KTU Mounted in 598-Type Panel (400D KTUs Mounted in a 584-Type Panel)

Fig. 7—Connections for 451B KTU Mounted in 642A Modular Panel (400D KTUs Mounted in a 620A Modular Panel)

Fig. 8—Connections for 451B KTU Mounted in Jack 7 of 513- or 515-Type KSU (400D KTUs Mounted in 513- or 515-Type KSU)

Fig. 9—Connections for 451B KTU Mounted in Jack 8 of 513- or 515-Type KSU (400D KTUs Mounted in 513- or 515-Type KSU)

Fig. 10—Connections for 451B KTU Mounted in Jack 11 of 515-Type KSU (400D KTUs Mounted in 515-Type KSU)

Fig. 11—Connections for 451B KTU Mounted in Jack 13 of 515-Type KSU (400D KTUs Mounted in 515-Type KSU)

Fig. 12—Connections for 451B KTU Mounted in 69E or F Apparatus Mounting and Connections From Externally Mounted Connecting Blocks to (CO) and (STA) Lines of 515-Type KSU

Fig. 13—Connections of 34A Voice Coupler When 451B KTU is Mounted in 570A KSU

Fig. 14—Connections of 34A Voice Coupler When 451B KTU is Mounted in 580A KSU.

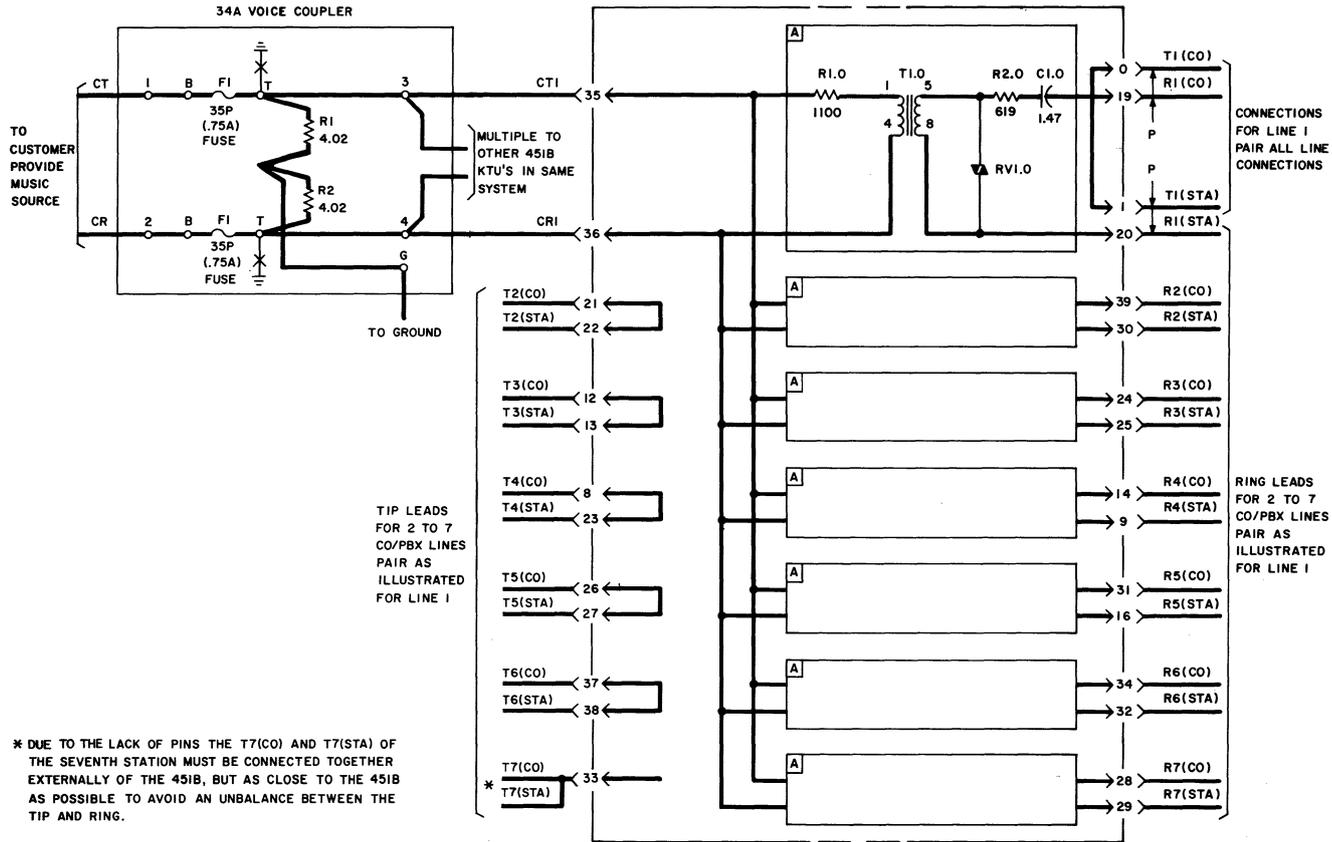


Fig. 3—Schematic of 451B KTU With 34A Voice Coupler

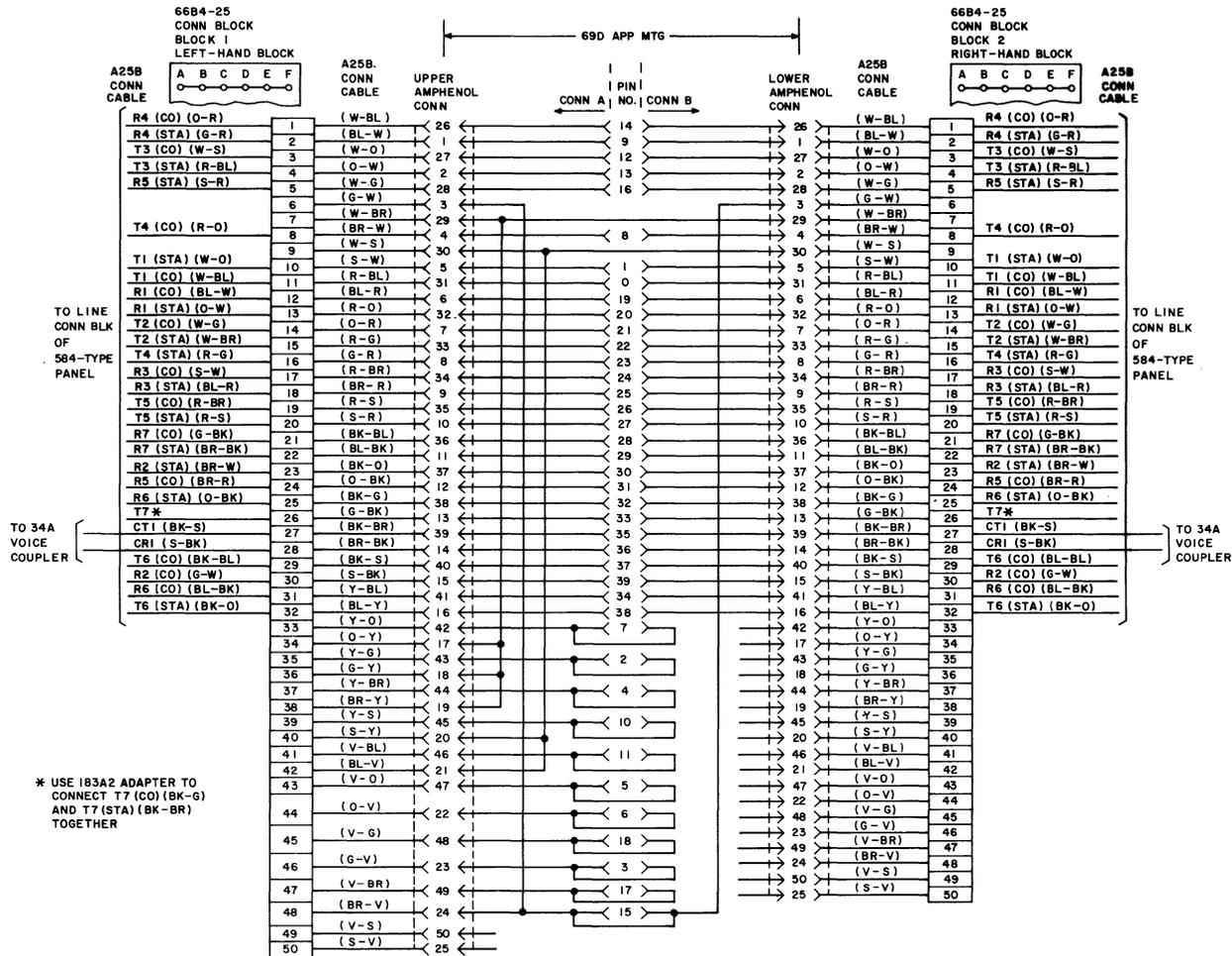


Fig. 4—Schematic of 451B KTU Mounted in 69D Apparatus Mounting (400D KTUs Mounted in a 584-Type Panel)

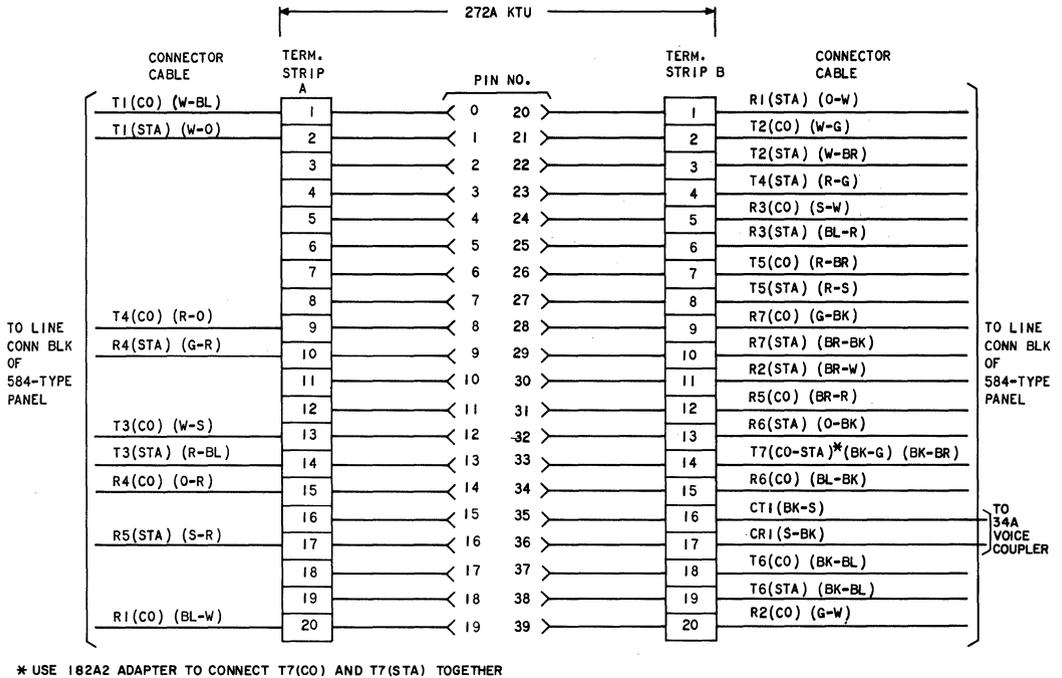


Fig. 5—Schematic of 451B KTU Mounted in 272A KTU (400D KTUs Mounted in a 584-Type Panel)

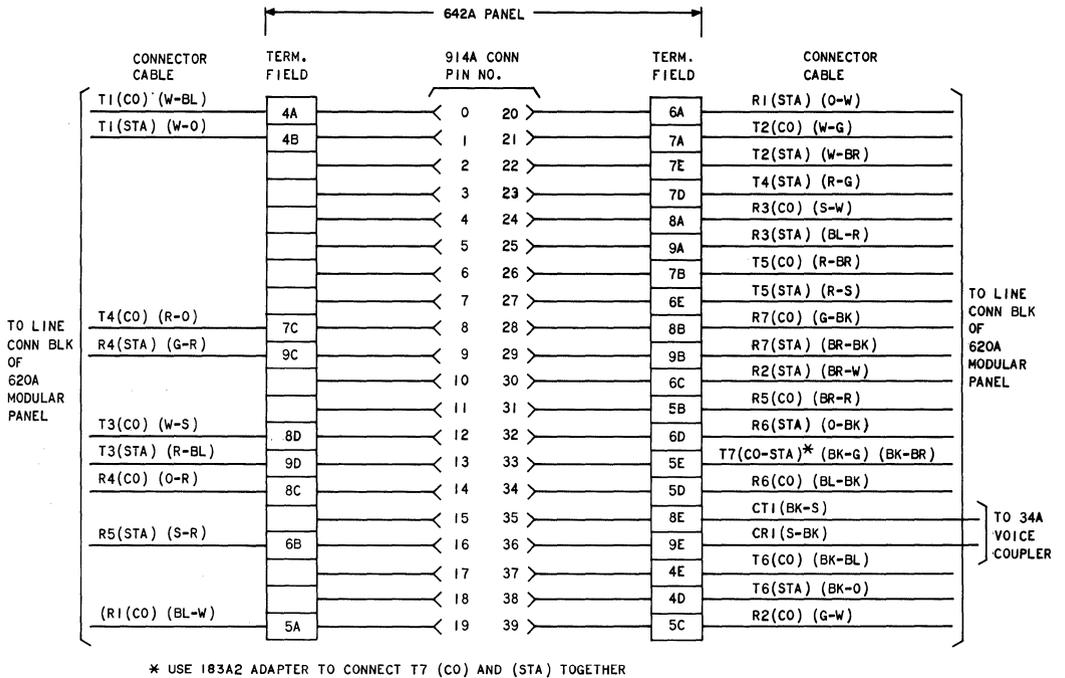


Fig. 7—Schematic of 451B KTU Mounted in 642A Modular Panel (400D KTUs Mounted in a 620A Modular Panel)

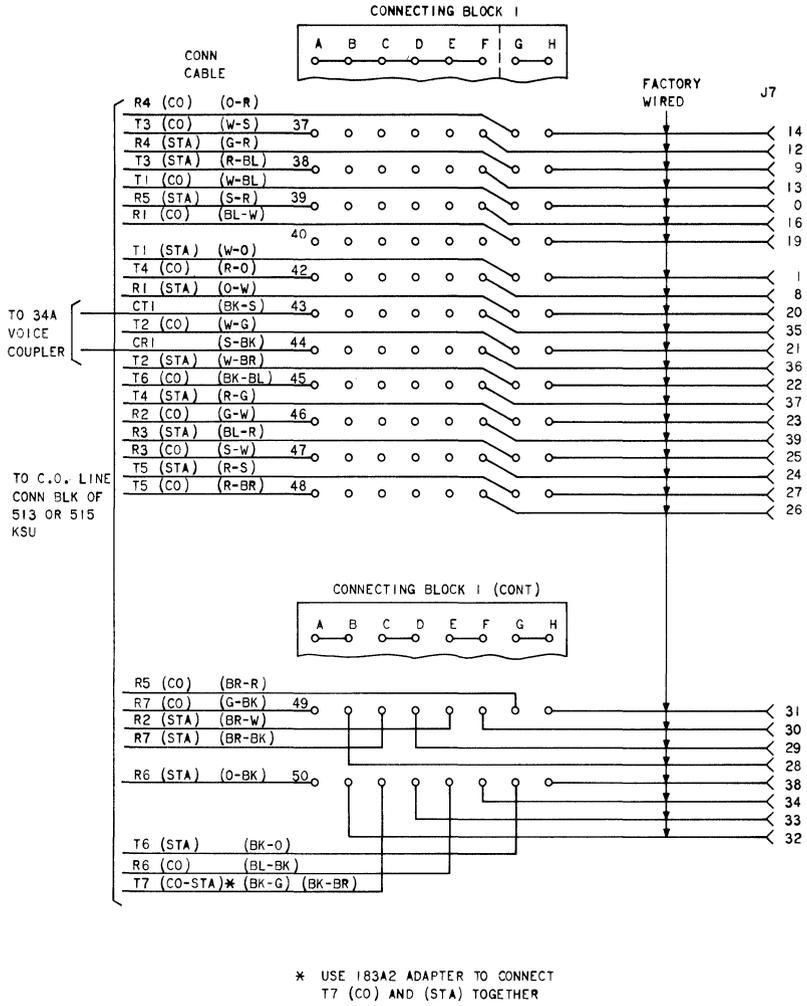


Fig. 8—Schematic of 451B KTU Mounted in Jack 7 of 513- or 515-Type KSU (400D KTUs Mounted in 513- or 515-Type KSU)

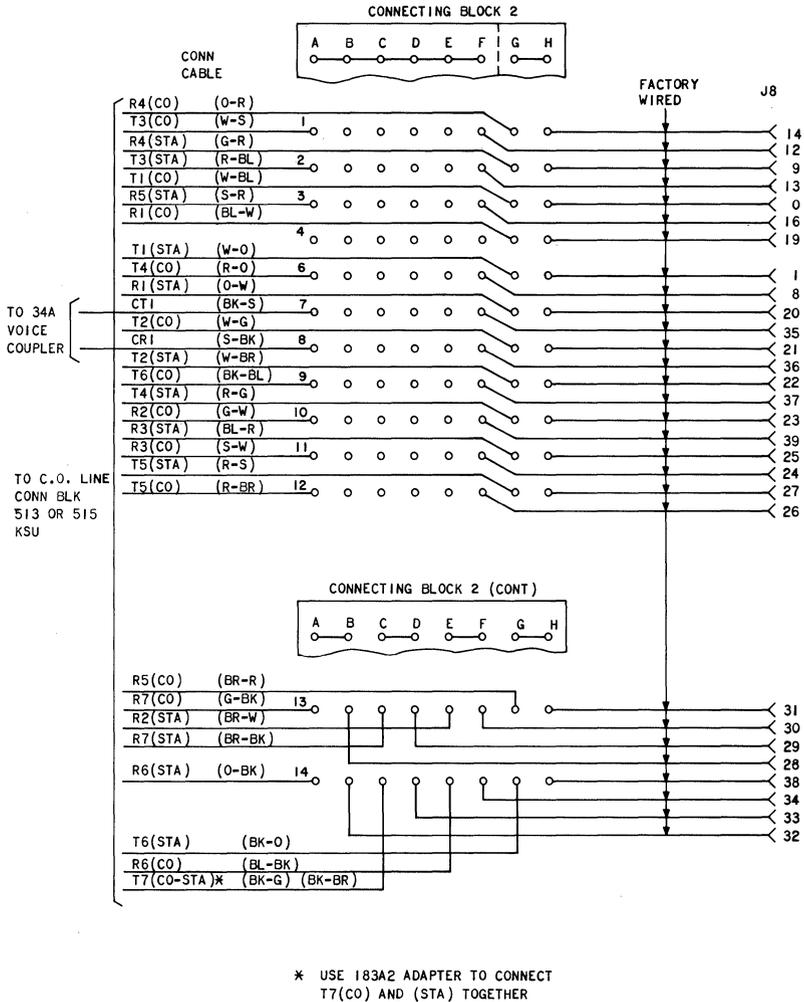


Fig. 9—Schematic of 451B KTU Mounted in Jack 8 of 513- or 515-Type KSU (400D KTUs Mounted in 513- or 515-Type KSU)

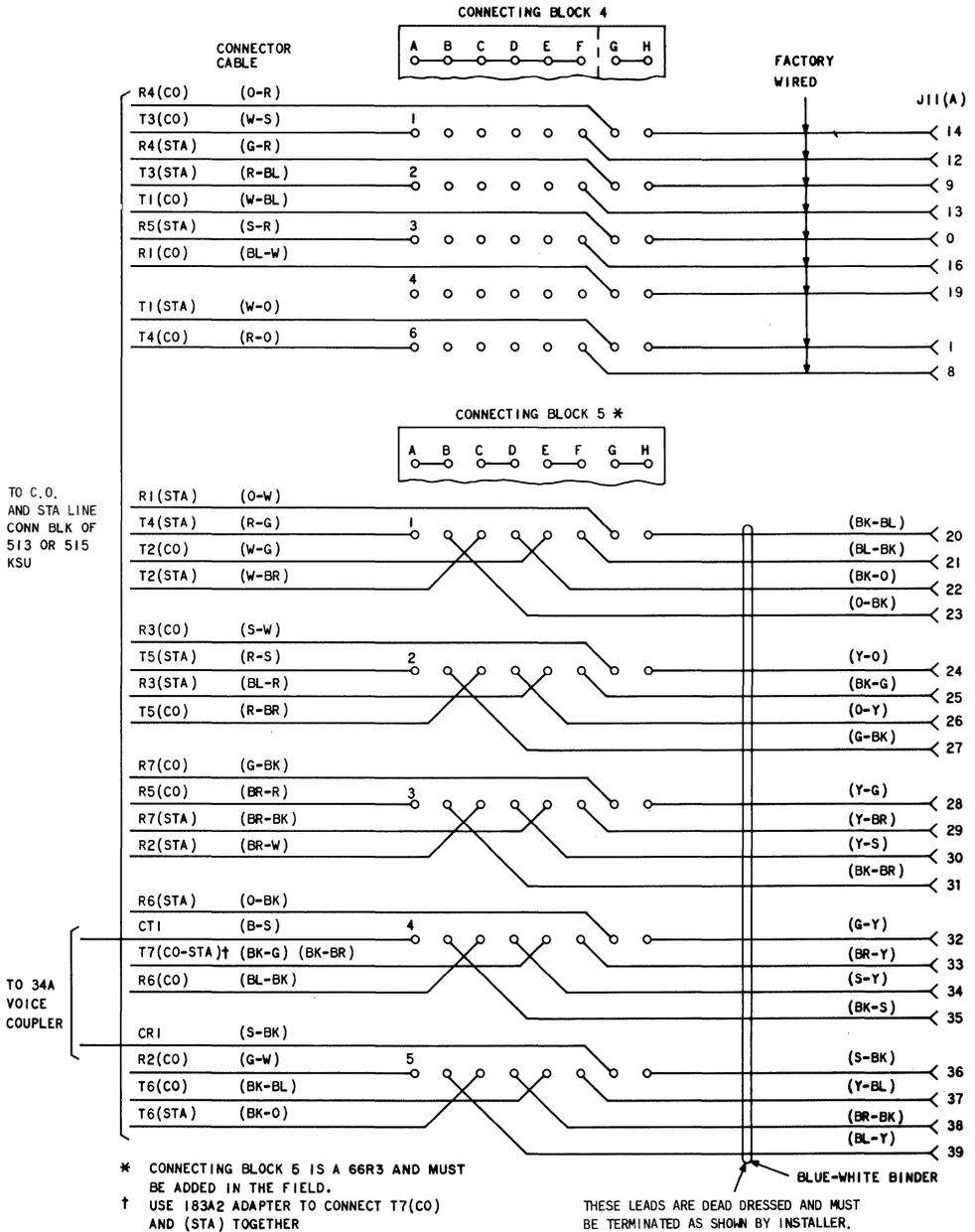


Fig. 10—Schematic of 451B KTU Mounted in Jack 11 of 515-Type KSU (400D KTUs Mounted in 515-Type KSU)

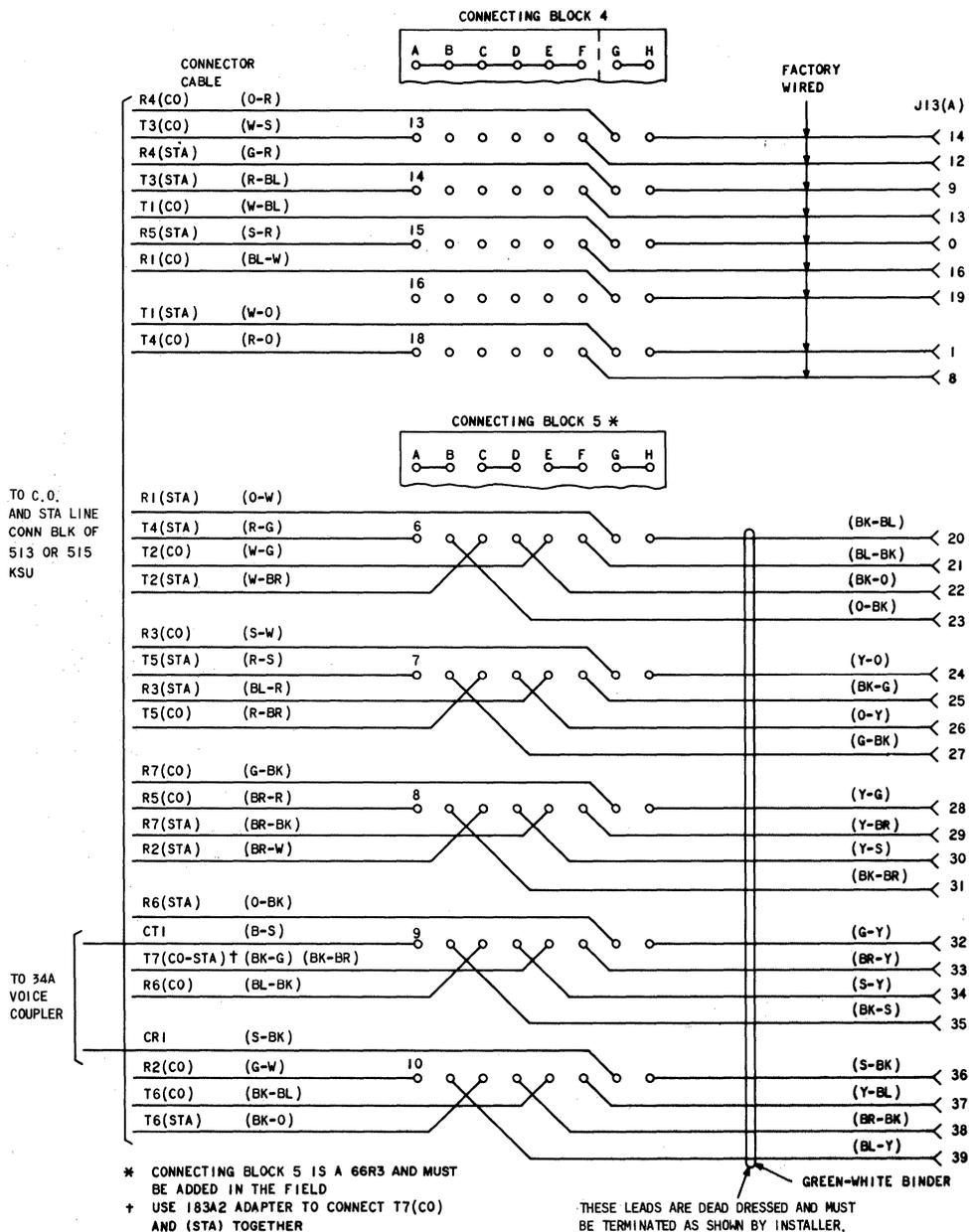


Fig. 11—Schematic of 451B KTU Mounted in Jack 13 of 515-Type KSU (400D KTUs Mounted in 515-Type KSU)

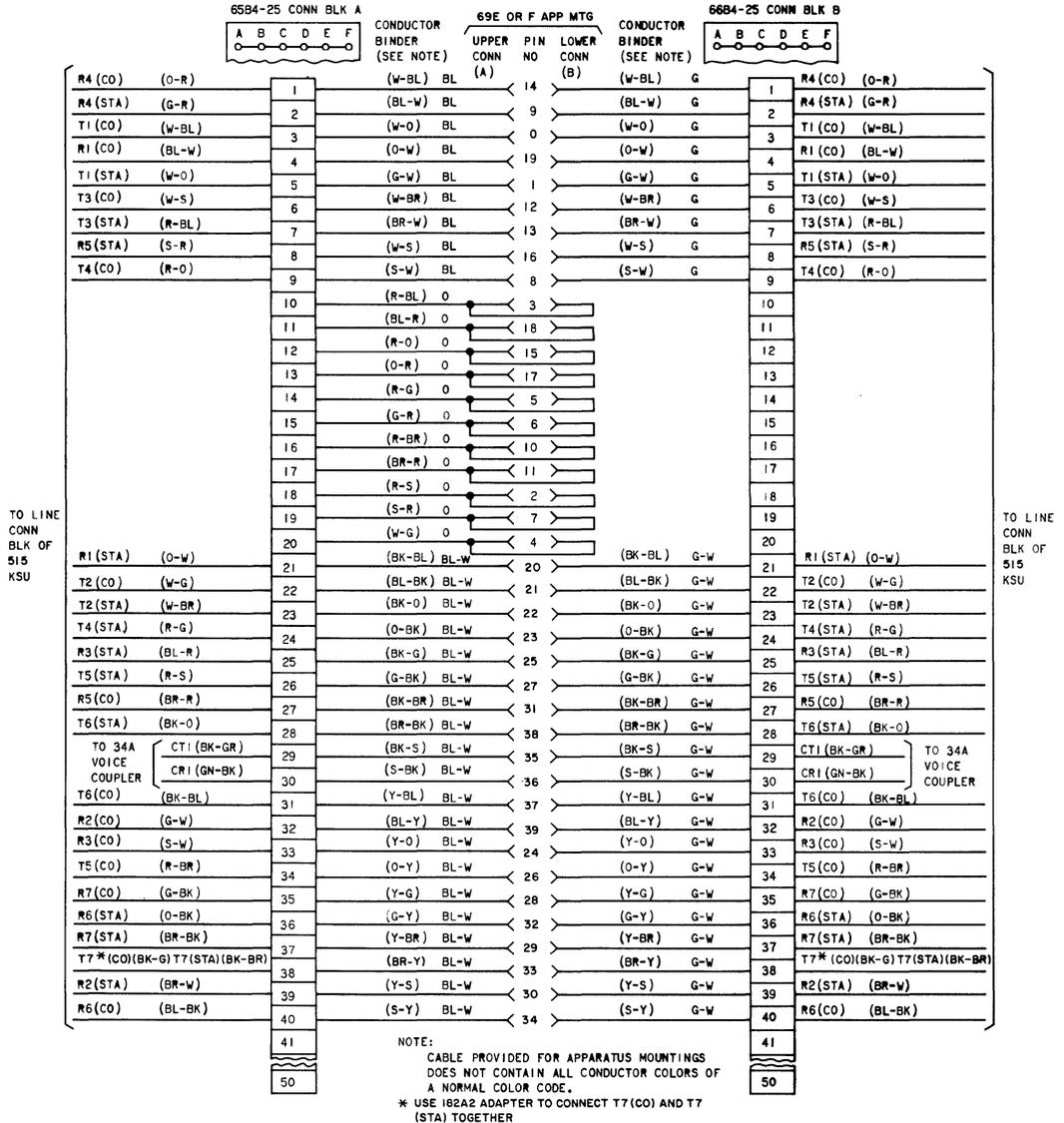


Fig. 12—Schematic of 451B KTU Mounted in 69E or F Apparatus Mounting and Connections From Externally Mounted Connecting Blocks to (CO) and (STA) Lines of 515-Type KSU

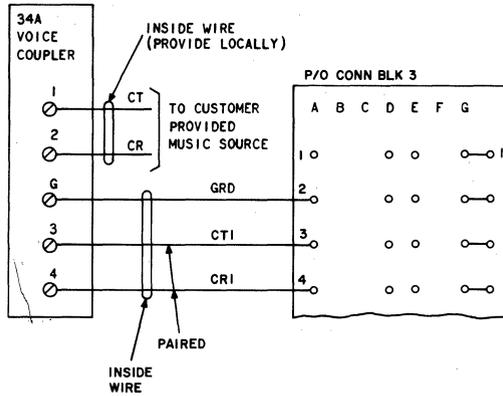


Fig. 13—Connections of 34A Voice Coupler When 451B KTU is Mounted in 570A KSU

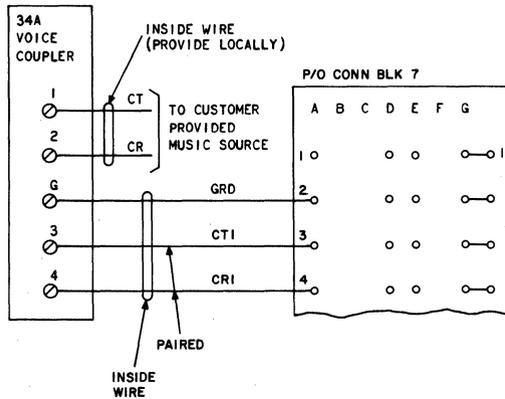


Fig. 14—Connections of 34A Voice Coupler When 451B KTU is Mounted in 580A KSU