

SERVICE
110A APPARATUS MOUNTING
1A2 KEY TELEPHONE SYSTEM

1. GENERAL

1.01 This section provides identification, installation, and connection information for the 110A apparatus mounting (Fig. 1) used in the 1A2 Key Telephone System (KTS).

1.02 This section is reissued to:

- Add information on the new 494B key telephone unit (KTU)
- Correct minor errors in various figures.

1.03 After January 1, 1980, connection of customer-provided equipment (CPE) or telephone company-provided equipment to the 1A2 KTS requires the use of a 33B voice coupler when providing music-on-hold. Also after January 1, 1980, the 401B, 415B, 471C, and 479C KTUs must be used when providing their related services. Previously connected or Class C voice couplers and KTUs may be used for maintenance at grandfathered installations for the life of the equipment, provided they are not modified. Class C stock can be used in new installations after January 1, 1980.

1.04 Incoming central office (CO) lines to be installed in compliance with the Federal Communications Commission (FCC) Registration Program must be routed through a standard network interface. Information on approved interfaces is contained in Sections 463-400-100 through 463-400-150.

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

SD-69812, Issue 1—110A Apparatus Mounting

SD-69513, Issue 15—400D KTU (MD)

SD-69651, Issue 5—400G KTU (MD)

SD-69942, Issue 2—400H KTU

SD-69475, Issue 6—401-Type KTU

◆SD-69567, Issue 16—407-Type, 420A, 422B, 423A, 424-Type, 425B, 494A, and 494B KTUs◆

SD-69590, Issue 3—413A, 421A, 448A, and 449A KTUs

SD-69559, Issue 10—414A, 415-Type, 416A, 418A, 419A, 461A, and 469A KTUs

SD-69561, Issue 2—417A KTU

SD-69489, Issue 6—428A KTU

SD-69530, Issue 6—429-Type and 430A KTUs

SD-69922, Issue 3—451B, 498A KTU, and 116A1 Circuit Module (CM)

SD-69652, Issue 3A—452A KTU

SD-69917, Issue 1—467A KTU

SD-69921, Issue 3—471-Type and 479-Type KTUs

SD-69931, Issue 1—478B KTU.

If this section is to be used with equipment or apparatus reflecting later issues of the 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.

2. IDENTIFICATION

PURPOSE

2.01 The 110A apparatus mounting provides an alternate mounting facility for 400-series KTUs as add-on circuits to 1A2 KTS.

NOTICE

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

ORDERING GUIDE

2.02 Order basic unit as follows:

- Mounting, Apparatus, 110A (Fig. 1).

2.03 Replaceable components for the 110A apparatus mounting are to be ordered as follows:

- Fuse, 70B
- Fuse, 70G
- Fuse, 70H
- Guide, Card, Snap-in—furnished with 110A apparatus mounting (comcode 841683501).

2.04 The following associated apparatus or equipment is to be ordered separately:

- Block, Connecting, 66B4-25—two required
- Cable, Connector, A25B—two required
- Unit, Telephone, Key—as required, see Table A.

Design Features

2.05 The 110A apparatus mounting (Fig. 2) is designed with the following features:

- (a) Equipped with two connectors (A and B) aligned vertically to accommodate one 8-inch KTU or two 4-inch KTUs (Table A).

Note: The 110A apparatus mounting is factory equipped with a snap-in guide card (comcode 841683501) which is used to guide the 4-inch KTUs into connectors A and B. When using an 8-inch KTU, the snap-in guide card must be removed by unscrewing the two screws holding it to the connectors and then pulling the guide card from the connectors.

- (b) Connectors A and B are wired to two KS-16671, L1 plugs (P1 and P2) mounted on the lower right (or rear) of the apparatus mounting.
- (c) Louvered cover held in place on its upper and lower edges by screws.
- (d) Top, bottom, and center (when required for 4-inch KTUs) card guides hold KTUs in place.

- (e) Recessed fuse panel reveals 70-type fuses through a clear plastic cover. To replace fuse, remove cover by loosening two securing screws (Fig. 1 and Table B).

- (f) Dedicated leads (BAT, GRD, LF, LW, etc) appear on like-numbered pins of, and are strapped common between, connectors A and B. These leads are brought out of the apparatus mounting as individual conductors via plug P2.

- (g) Arranged for wall mounting with choice of positions:

- 2 by 8-1/2 inch surface using upper and lower holes provided on flanges
- 8-1/2 by 9 inch surface using three key holes inside apparatus.

- (h) Dimensions: approximately 8-1/2 inches by 9 inches by 2 inches.

- (i) A25B connector cables are required to extend the mountings to distributing terminals.

3. INSTALLATION

PLANNING

3.01 Select space for the apparatus mounting and connecting blocks in the same area as the KTS being supplemented and as reasonably close to its power supply as possible.

3.02 Decide which position and mounting holes of the apparatus mounting will be used.

3.03 Verify that fusing requirements for the apparatus mounting can be met (Table B).

INSTALLING

3.04 Mount the 110A apparatus mounting to the wall using appropriate fasteners.

3.05 Install the two 66B4-25 connecting blocks in the terminal field.



In installations where several 110A apparatus mountings are installed, be sure the connecting blocks and associated apparatus mountings are appropriately identified.

3.06 Connect the A25B connector cables to plugs P1 and P2 and secure them with the connector clamp and screw provided with the mounting.

3.07 Route A25B connector cables to the 66B4-25 connecting blocks and cut down as shown in Fig. 3.

Note: When apparatus mounting is dedicated to a 407- or 424-type KTU, **do not** terminate final eight pairs of P1 connector cable (right connecting block). Tape and store those conductors. This provides terminals necessary for station multiples.

3.08 Terminate dedicated leads from power supply and interrupter, as required, to connecting block 1 (left) (Fig. 4). These connections should be made before installing KTUs in the apparatus mounting. Dedicated leads are those, such as BAT, GRD, LF, LW, etc, which appear on the same-numbered pin of each KTU. The RN leads, previously treated as dedicated leads, must be placed separately when required.

4. CONNECTIONS

4.01 The nondedicated lead connections of the 400-series KTUs that can be installed in the 110A apparatus mounting are shown in Fig. 5 through 33. Each figure is divided into three sections: field connections are shown on the left, row assignments in the center, and connector pin numbers on the right. Pin numbers are shown for reference only and provide a complete picture of the KTU circuitry when the connection drawing of any KTU is compared to the functional schematic.

4.02 Field connections are made for any KTU by determining the connector used (A or B) and the connecting block on which the connector appears. For example (Fig. 5), if a 400-type KTU is installed in connector A, field connections are made to block 1 (left); and if KTU is installed in connector B, connections are made to block 2 (right).

4.03 Power connections and strapping required to furnish a basic dial intercom, using a 407- or 424-type KTU, are shown in Fig. 34 and 35; connections and strapping required when using the 494A KTU for TOUCH-TONE® dialing only are shown in Fig. 36. ♦Connections and strapping required when using the 494B KTU for combined rotary and

TOUCH-TONE dialing are shown in Fig. 37. Station connections for basic intercom are shown in Fig. 38. ♦

4.04 Power supply connections and strapping required to furnish a deluxe dial intercom are shown in Fig. 39 and 40 (407- and 424-type KTUs) and Fig. 41 (425B KTU). Dial intercom station connections are shown in Fig. 42 and Table C shows necessary connections to associated and optional KTUs.

CONNECTION INDEX

Fig. 3 — Schematic of 110A Apparatus Mounting and Connections of the A25B Connector Cables to 66B4-25 Connecting Blocks

Fig. 4 — Dedicated Lead Connections (Interrupter and Power) for 110A Apparatus Mounting

Nondedicated Lead Connections for 400-Series KTUs Used in 110A Apparatus Mounting

Fig. 5 — 400D (MD), 400G (MD), and 400H KTUs (CO/PBX)

Fig. 6 — 401-Type KTU (Manual Intercom Line)

Fig. 7 — 413A KTU (Auxiliary Ringup)

Fig. 8 — 414A KTU (Manual Signaling, Ringdown Private Line)

Fig. 9 — 415-Type KTU (Automatic, DC Signaling Private Line)

Fig. 10 — 416A KTU (Station Line)

Fig. 11 — 417A KTU (Add-On Conference)

Fig. 12 — 418A KTU (Short Range, DC Signaling Private Line)

Fig. 13 — 419A KTU (Automatic Signaling, Ringdown Private Line)

Fig. 14 — 420A KTU (Long Line)

Fig. 15 — 421A KTU (Power Failure Transfer)

Fig. 16 — 421A KTU (Wired for Audible Signal Suppressor)

Fig. 17 — 421A KTU (Wired for DSS Feature)

- Fig. 18 — 421A KTU (Wired for Preset Conference)
- Fig. 19 — 422B KTU (Station Busy Selector)
- Fig. 20 — 423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone)
- Fig. 21 — 428A KTU (Multiline Exclusion)
- Fig. 22 — 429-Type KTU (Supplementary Hold Detector) and 430A KTU (Flutter Generator)
- Fig. 23 — 448A KTU (Variable Delay Timer)
- Fig. 24 — 449A KTU (Immediate Transfer Control)
- Fig. 25 — 451B KTU (Music-On-Hold)
- Fig. 26 — 452A KTU (Power Failure Ringing)
- Fig. 27 — 461A KTU (Manual Signaling, Ringdown Private Line)
- Fig. 28 — 467A KTU (Voltage Monitor)
- Fig. 29 — 469A KTU (Lamp Extender)
- Fig. 30 — 471-Type KTU (Battery Reversal Toll Restriction)
- Fig. 31 — 478B KTU (TOUCH-TONE Adapter)
- Fig. 32 — 479-Type KTU (Rotary Dial Toll Restriction)
- Fig. 33 — 498A KTU and 116A1 CM (Music-On-Hold)

Dial Intercoms

Table C — Basic and Deluxe Dial Intercom Connections—407- and 424-Type KTUs to Associated and Optional KTUs

Basic Dial Intercom

- Fig. 34 — Strapping and Power Supply Connections for 407-Type KTU
- Fig. 35 — Strapping and Power Supply Connections for 424-Type KTU
- Fig. 36 — With TOUCH-TONE Dialing, Strapping and Power Supply Connections for 494A KTU
- Fig. 37 — With Rotary and TOUCH-TONE Dialing, Strapping and Power Supply Connections for 494B KTU
- Fig. 38 — Station Connections

Deluxe Dial Intercom

- Fig. 39 — Strapping and Power Supply Connections for 407-Type KTU
- Fig. 40 — Strapping and Power Supply Connections for 424-Type KTU
- Fig. 41 — Strapping and Power Supply Connections for 425B KTU
- Fig. 42 — Station Connections
- Fig. 43 — Nondedicated Lead Connections for Preset Conference Circuit of a Deluxe Dial Intercom Line (421A and 413A KTUs) in 110A Apparatus Mounting

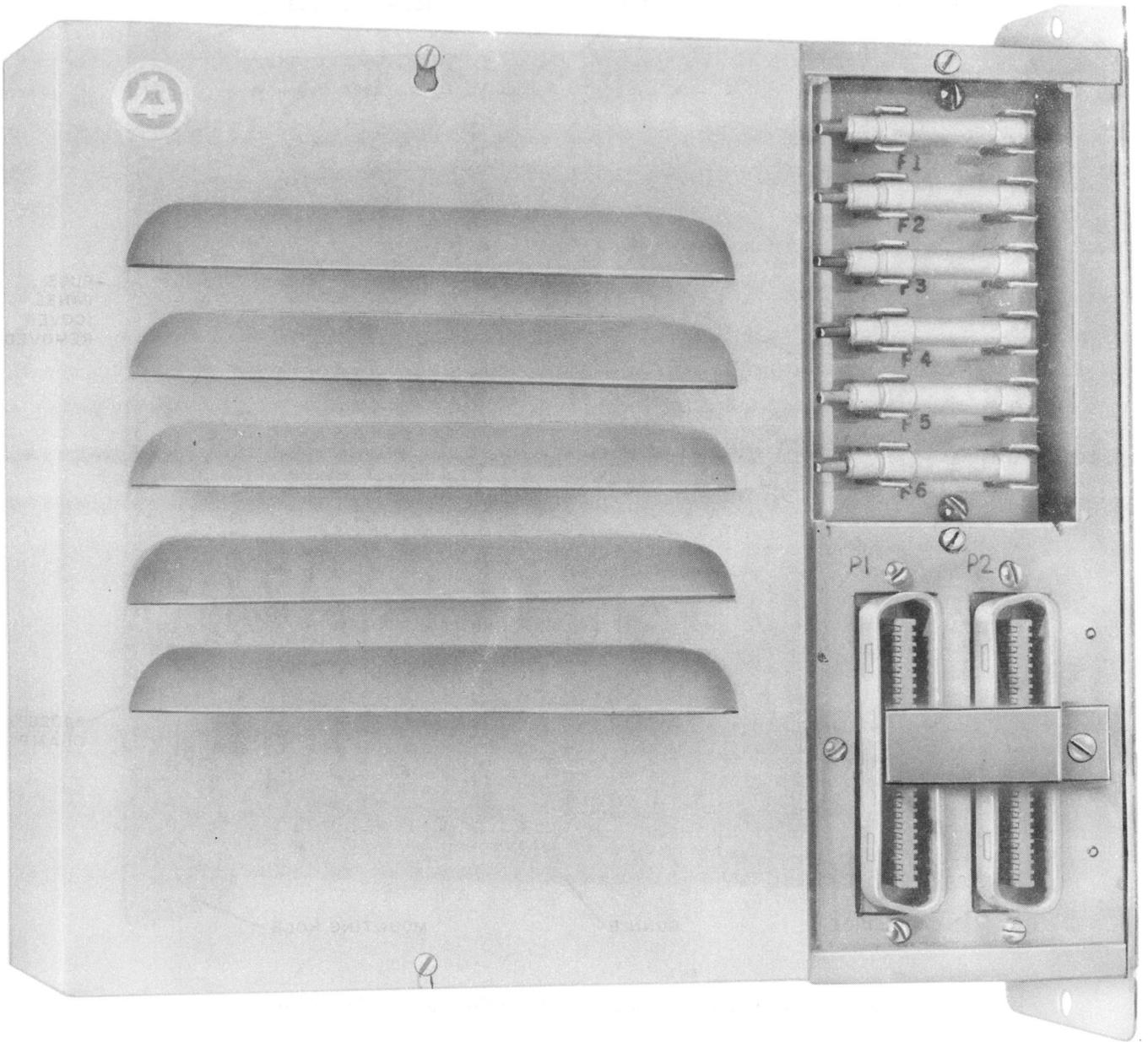


Fig. 1—110A Apparatus Mounting (With Cover)

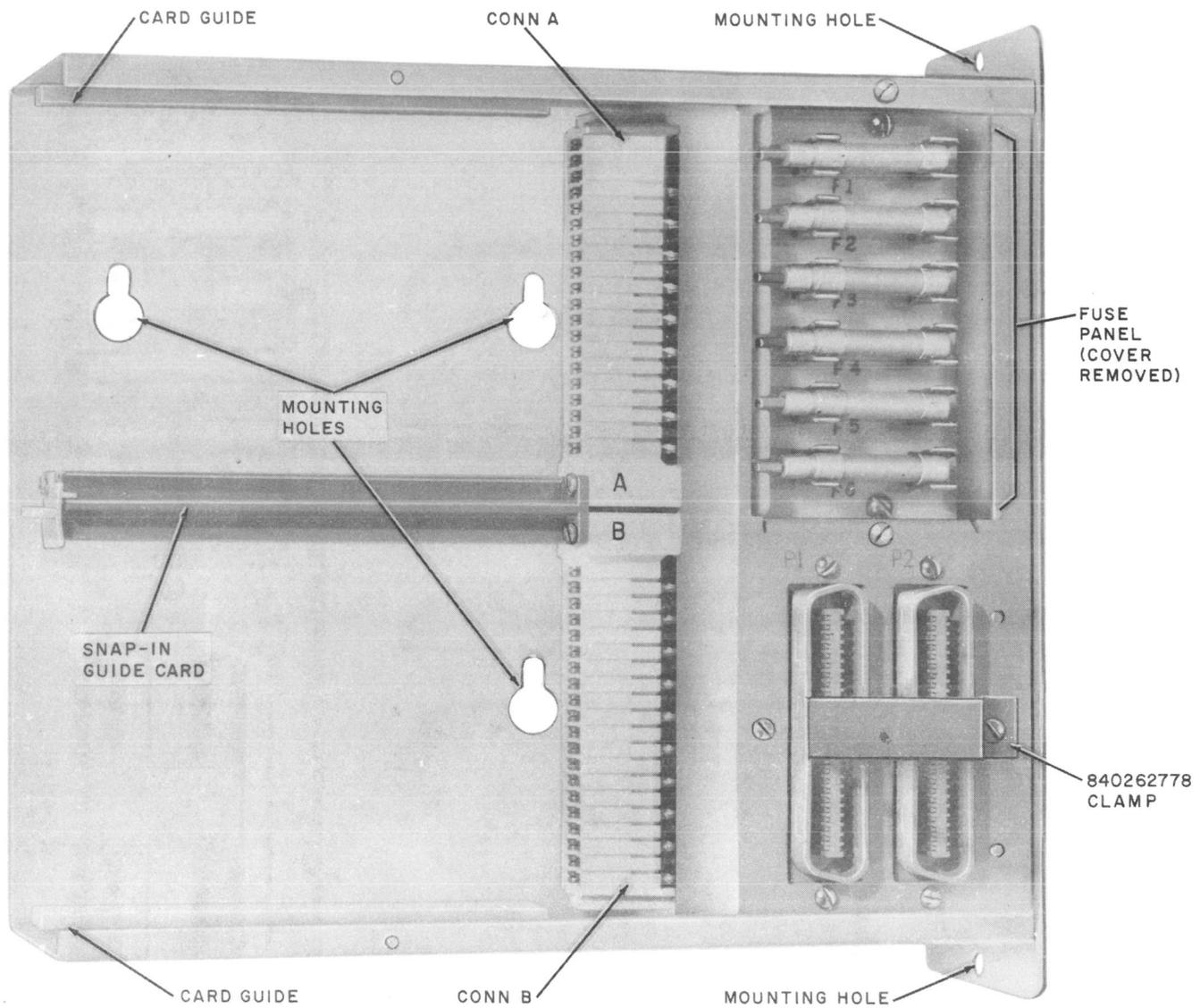


Fig. 2—110A Apparatus Mounting (With Card Guide, Cover Removed)

◆ TABLE A ◆

KTU SELECTION AND CONNECTION FIGURE INDEX

KTU	SIZE		CIRCUIT FUNCTION	FIGURE (SEE NOTE)	REMARKS
	IN.	PINS			
400D,G,H	4	18	CO or PBX Line	5	<p>When the 417A, 420A, or 421A KTU is used in the 110A apparatus mounting, the cable run from the apparatus mounting to the connecting block should be as short as possible, preferably not longer than 10 feet to reduce the possibility of noise pickup on unpaired leads.</p> <p>WORKING LIMITS: The maximum permissible length of cable run for the lamp feeder pairs (10V±, LW, LF) is determined by the lamp load. For a load of 20 lamps, the run from apparatus mounting to power supply shall be a maximum of 30 feet. For lesser loads, the length of run may be increased proportionately.</p>
401-Type	4	18	Manual Intercom	6	
407-Type	8	80	Dial Intercom 10-Code Selector	34, 39	
413A	4	18	Auxiliary Ringup	7	
414A	4	20	Manual Signaling, Ringdown Private Line	8	
415-Type	4	18	Automatic DC Signaling, Private Line	9	
416A	4	20	Station Line	10	
417A	4	20	Add-On Conference	11	
418A	4	20	Short Range, DC Signaling, Private Line	12	
419A	8	80	Automatic Signaling, Ringdown Private Line	13	
420A	4	18	Long Line	14	
421A	4	18	Power Failure Transfer	15	
			Audible Signal Suppressor	16	
			Direct Station Selector	17	
			Preset Conference	18, 42	
422B	4	40	Station Busy Selector	19	
423A	4	20	Dial Tone, Busy Tone, and Audible Ringback Tone	20	

◆TABLE A (Contd)◆

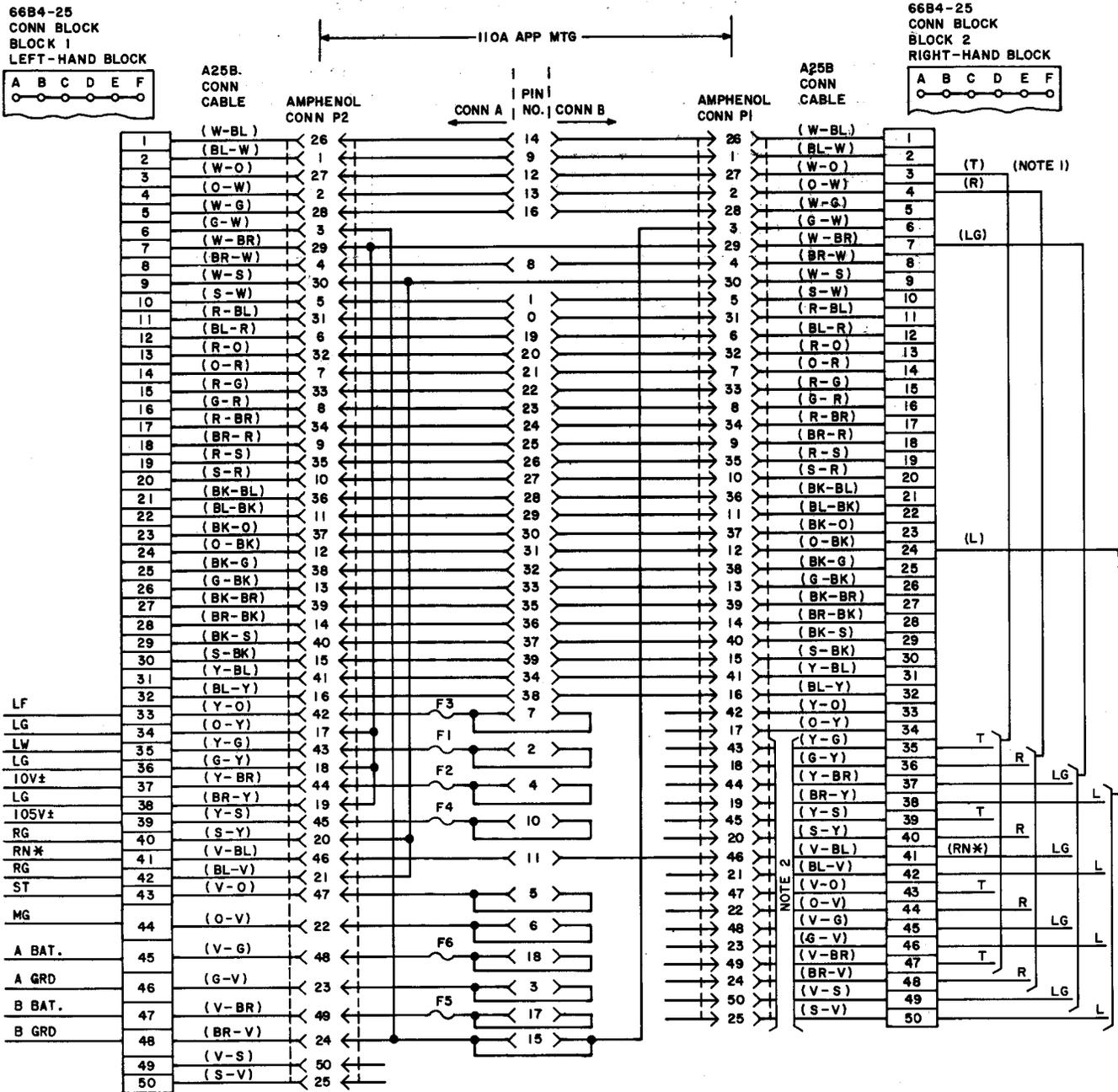
KTU SELECTION AND CONNECTION FIGURE INDEX

KTU	SIZE		CIRCUIT FUNCTION	FIGURE (SEE NOTE)	REMARKS
	IN.	PINS			
424-Type	8	80	Dial Intercom, 19-Code Selector	35, 40	<p><i>Note:</i> Connection figures are designated for current model KTUs but are applicable for all codes indicated in this table.</p>
425A	8	80	Flashing Lamp Circuit	41	
428A	4	40	Multiline Exclusion	21	
429-Type	4	40	Supplementary Hold Detector	22	
430A	4	20	Flutter Generator		
448A	4	40	Variable Delay Timer	23	
449A	4	40	Immediate Transfer Control	24	
451-Type	4	40	Music-on-Hold	25	
498A				33	
452A	4	40	Power Failure Ringing	26	
461A	4	20	Manual Signaling, Ringdown Private Line	27	
467A	4	18	Voltage Monitor	28	
469A	4	18	Lamp Extender	29	
471-Type	4	18	Battery Reversal Toll Restriction	30	
478B	8	80	<i>TOUCH-TONE</i> Adapter	31	
471-Type	8	20	Rotary Dial Toll Restriction	32	
494A	8	80	<i>TOUCH-TONE</i> Selector	36	
494B	8	80	Rotary and <i>TOUCH-TONE</i> Selector	37	

TABLE B

FUSING FOR 110A APPARATUS MOUNTING

DESIG	FUNCTION		VOLTAGE	TYPE	SIZE (AMP)
F1	Lamp Wink	LW	10Vac	70B	2
F2	Lamp Steady	10Vac			
F3	Lamp Flash	LF			
F4	Ringing	105Vac	105Vac	70G	1/2
F5	Signal Battery	B Bat.	24Vdc	70H	3/4
F6	Talk Battery	A Bat.			



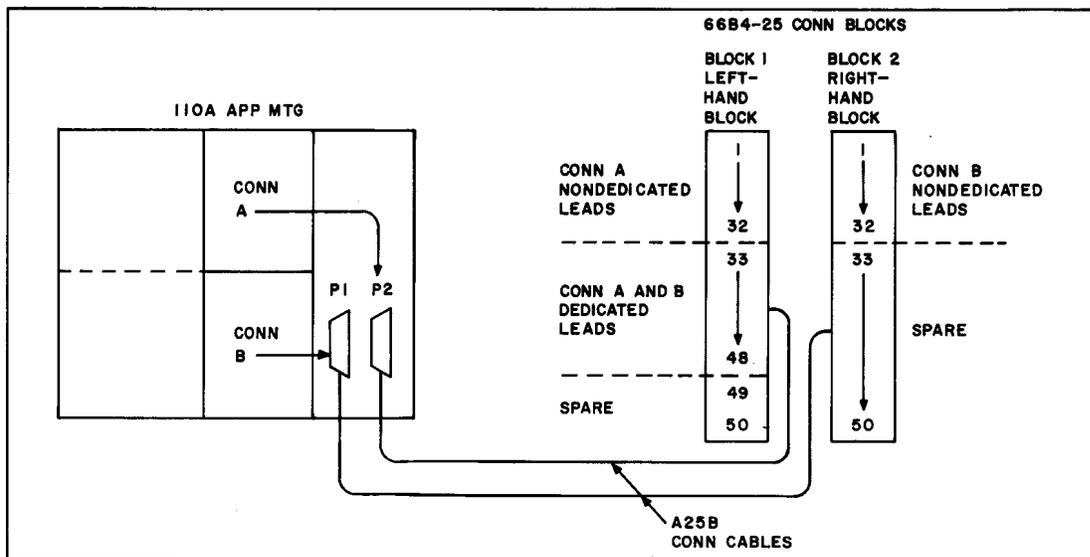
* RN LEADS MUST BE PLACED SEPARATELY WHEN REQUIRED.

NOTES:

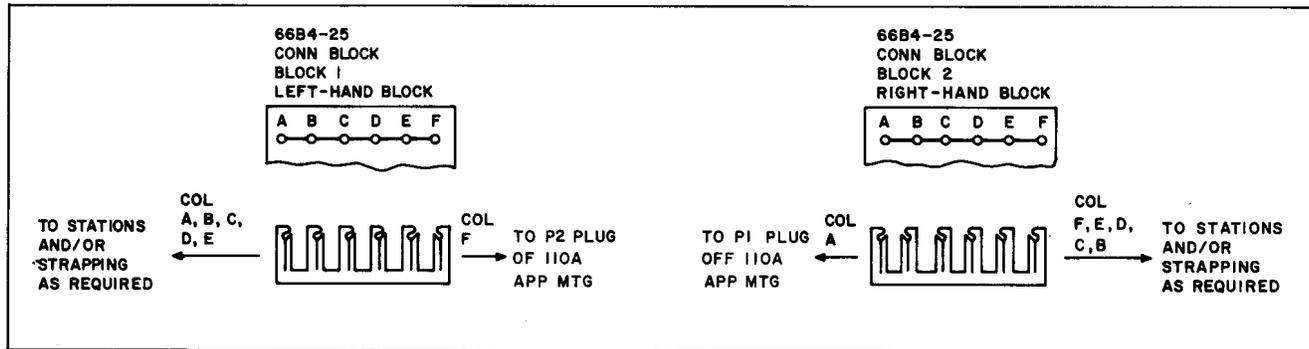
1. PROVIDE T, R, LG, L STRAPPING WHEN FURNISHING BASIC DIAL INTERCOM. PROVIDE T, R STRAPPING (ONLY) WHEN FURNISHING DELUXE DIAL INTERCOM AND 110A APP MTG IS DEDICATED TO A 407- OR 424-TYPE KTU.
2. REMOVE (OR DO NOT TERMINATE) THESE LEADS WHEN 110A APP MTG IS DEDICATED TO A 407- OR 424-TYPE KTU. IN THIS CASE THE SPACE IS USED TO PROVIDE FOR STATION MULTIPLES.

Fig. 3—Schematic of 110A Apparatus Mounting and Connections of the A25B Connector Cables to 66B4-25 Connecting Blocks (Sheet 1 of 2)

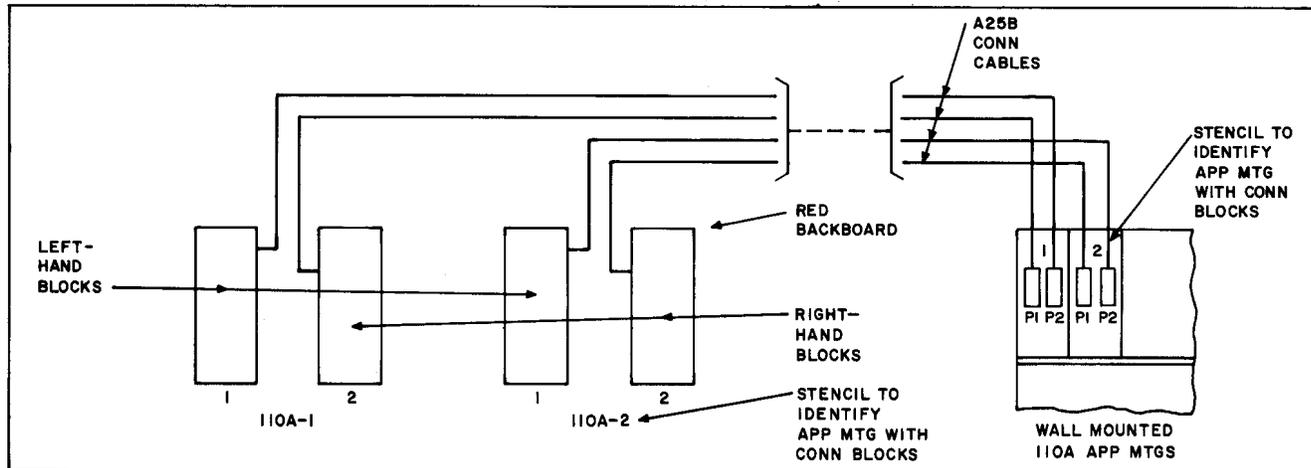
BLOCK DIAGRAM 110A APP MTG



BLOCK DIAGRAM OF 66B4-25 CONN BLOCKS



BLOCK DIAGRAM FOR CENTRALIZED INSTALLATIONS *



* REFER TO SECTION 518-010-101 FOR BACKBOARDS TO BE USED IN CENTRALIZED LOCATIONS.

Fig. 3—Schematic of 110A Apparatus Mounting and Connections of the A25B Connector Cables to 66B4-25 Connecting Blocks (Sheet 2 of 2)

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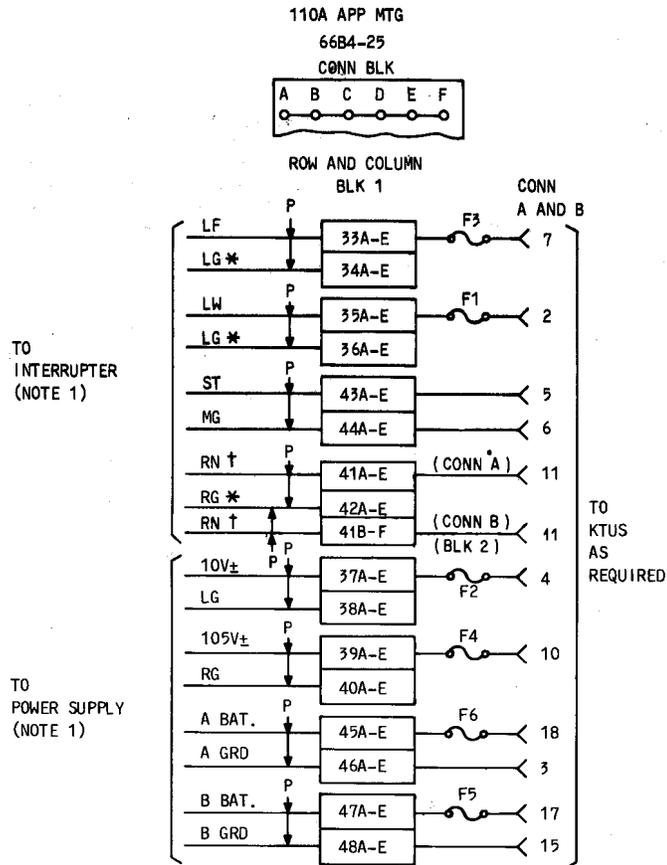
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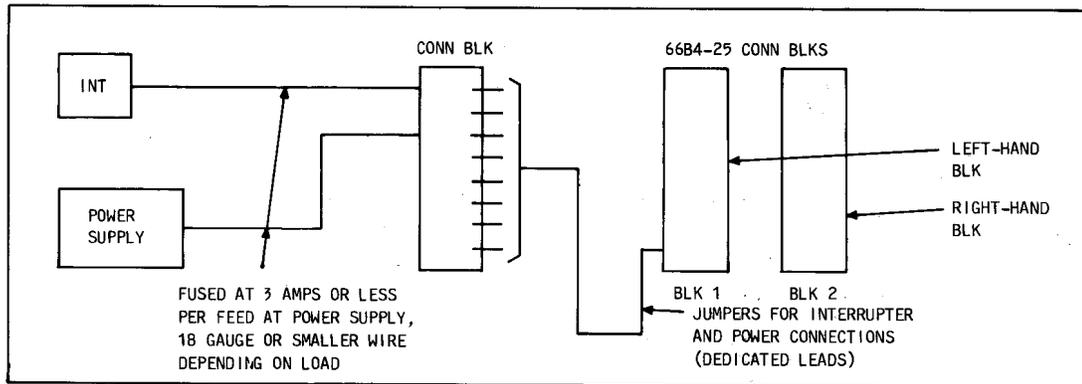
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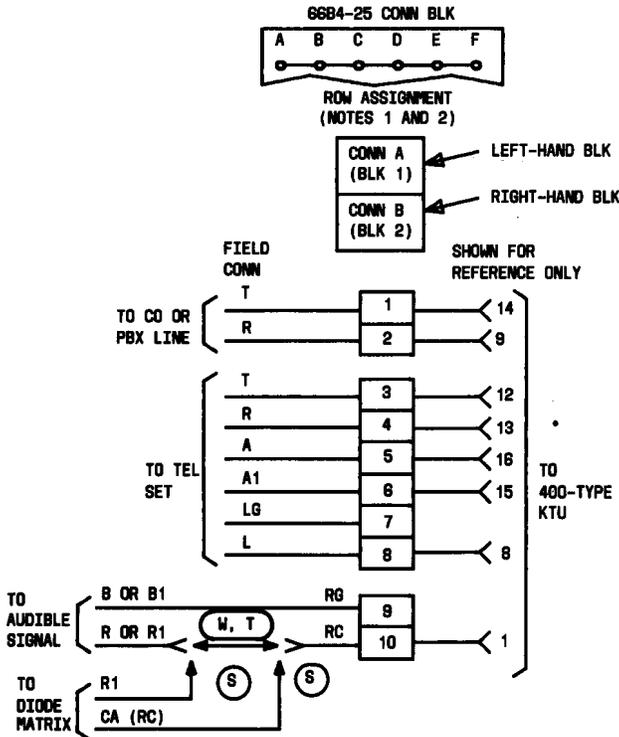
- * THESE LEADS USED FOR BALANCING PURPOSES TO PREVENT INDUCED NOISE. THEY MUST BE TERMINATED TO APPROPRIATE GROUND TERMINAL ON PANEL NEAR THE INTERRUPTER.
- † RN LEADS ARE TO BE PLACED INDIVIDUALLY AS REQUIRED PER CONNECTOR.



NOTES:

1. CONNECT AS REQUIRED SO AS NOT TO EXCEED THE MAXIMUM LOAD LIMITATIONS OF THE POWER SUPPLY. THESE LEADS MAY BE MULTIPLIED FROM BLOCK TO BLOCK PROVIDING THE LIMITATION OF THE POWER SUPPLY IS NOT EXCEEDED.
2. REFER TO SECTION 518-010-101 FOR BACKBOARDS TO BE USED IN CENTRALIZED INSTALLATIONS.

Fig. 4—Dedicated Lead Connections (Interrupter and Power) for 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 6684-25 CONNECTING BLOCK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. WHEN ZC OPTION IS USED, DUE TO THE DELAYED RELEASE OF THE HOLD BRIDGE, SOME TRANSMISSION LOSS IS ENCOUNTERED FOR APPROXIMATELY ONE SECOND WHEN STATION REENTERS A HELD CALL.
4. OPTION PLUG NOT PROVIDED FOR THIS POSITION: USE PLUG NORMALLY USED TO PROVIDE OPTION R.

* FACTORY PROVIDED OPTIONS

† TO PROVIDE TIME-OUT CYCLES OF RING-UP CIRCUITS FROM 2.5 TO 7.5 SECONDS, INSTALL KS-13490, L1, 1 WATT OR EQUIVALENT RESISTOR BETWEEN TERMINALS 1 AND 3 WITH A STRAP FROM 1 TO 2. TIME-OUT CYCLE AND RESISTOR VALUES ARE AS FOLLOWS:

2.5 SECONDS	-	0.13 MEGOHM RESISTOR
3.3 SECONDS	-	0.20 MEGOHM RESISTOR
5.0 SECONDS	-	0.39 MEGOHM RESISTOR
6.7 SECONDS	-	0.75 MEGOHM RESISTOR
7.5 SECONDS	-	1.2 MEGOHM RESISTOR

‡ FOR 30-SECOND TIME-OUT CYCLE REMOVE ALL STRAPS FROM TERMINALS 1, 2, AND 3. WHEN THE DURATION OF MACHINE RINGING IS 1 SECOND OR LESS, TIME-OUT SHALL NOT BE REDUCED BELOW 5 SECONDS.

OPTION STRAPPING ON 400D (MD) KTU OPTION BLK

OPT	FEATURE	STRAP TERMINALS
W*	AUDIBLE SIGNALS	INTERRUPTED RING 5 TO 8 *
T		STEADY RING 6 TO 8
S*		COMMON WITH DIODE MATRIX CONTROL 5 TO 8 *
Y*	VISUAL HOLD CIRCUIT	LAMP WINK 7 TO 10 *
X		LAMP STEADY 7 TO 9
Z †	TIMEOUT	TIME SHORT (10 SECONDS) 1 TO 2 †
‡		DELAY LONG ‡
ZC (NOTE 3)	RELEASE OF HOLDING BRIDGE FROM CO OR PBX LINE CURRENT OPENS GREATER THAN	500 MILLISECONDS WHEN ASSOCIATED WITH NO. 1 ESS HAVING RESWITCH CAPABILITY 2 TO 3 USING 601A (5 UF) CAPACITOR OR EQUIVALENT
ZD		100 MILLISECONDS WHEN ASSOCIATED WITH 800A PBX AND/OR NO. 5 X-BAR CENTREX NOT HAVING AUTOMATIC PERMANENT SIGNAL RELEASE 2 TO 3 USING 575A (1 UF) CAPACITOR OR EQUIVALENT
ZJ		50 MILLISECONDS WHEN ASSOCIATED WITH NO. 5 X-BAR CENTREX HAVING AUTOMATIC PERMANENT SIGNAL RELEASE 2 TO 3 USING 575B (0.5 UF) CAPACITOR OR EQUIVALENT

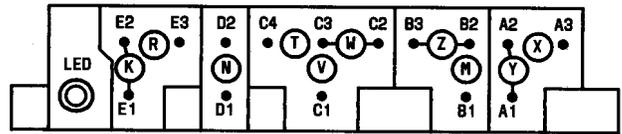
400D (MD) KTU

Fig. 5— Nondedicated Lead Connections for 400D (MD), 400G (MD), and 400H KTUs (CO/PBX) in 110A Apparatus Mounting (Sheet 1 of 2)

OPT	FEATURE			OPTION PLUG TO TERMINALS
M	TIMEOUT	TIME DELAY	LONG APPROXIMATELY 20 SECONDS	B1 - B2
Z*			SHORT APPROXIMATELY 6 SECONDS (±1.5 SEC)	B2 - B3
Y*	VISUAL HOLD CIRCUIT	LAMP WINK		* A1 - A2
X		LAMP STEADY		A2 - A3
W*	AUDIBLE SIGNAL	INTERRUPTED		* C2 - C3
T		STEADY		C3 - C4
S		COMMON	DIODE MATRIX CONTROL	
V	RELAY CONTROL		C1 - C3	
R	DELAYED HOLD RELEASE	RELEASE OF HOLDING BRIDGE FROM CO OR PBX BY LINE CURRENT OPENS	MINIMUM OF 25 MS	E2 - E3
K*			600 MS	* E1 - E2
N	CONNECTS TO 50A CUSTOMER PREMISES SYSTEM (NOTE 4)			D1 - D2

400G (MD) KTU

TOP VIEW OF OPTION BLOCK WITH HANDLE TOWARD USER. OPTION SYMBOLS SHOWN CONNECTED TO TERMINALS INDICATE FACTORY PROVIDED OPTIONS.



OPT	FEATURE			OPTION PLUG TO TERMINALS
T*	CO OR PBX LINE CIRCUIT			(J1 - J3) *
W*	AUDIBLE SIGNAL	INTERRUPTED		* A2 - A3
X		COMMON	DIODE MATRIX CONTROL	
V			RELAY CONTROL	A1 - A3
S*	HOLD CIRCUIT RELEASE	LONG	ESS #1, ESS #2, DIMENSION 812, 770 PBX	* B1 - B2
R		SHORT	ALL OTHERS	B2 - B3

400H KTU

TOP VIEW OF OPTION BLOCK WITH HANDLE TOWARD USER. OPTION SYMBOLS SHOWN CONNECTED TO TERMINALS INDICATE FACTORY PROVIDED OPTIONS.

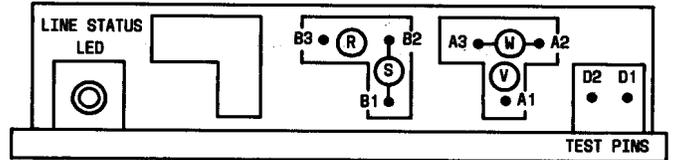
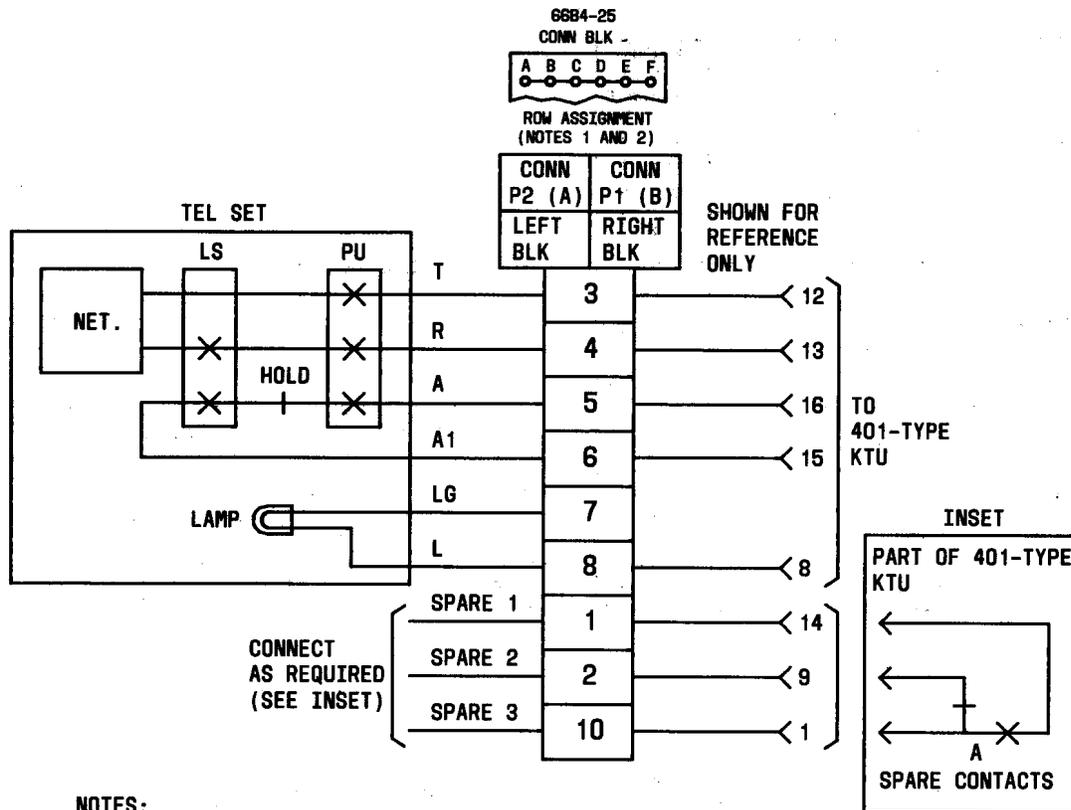


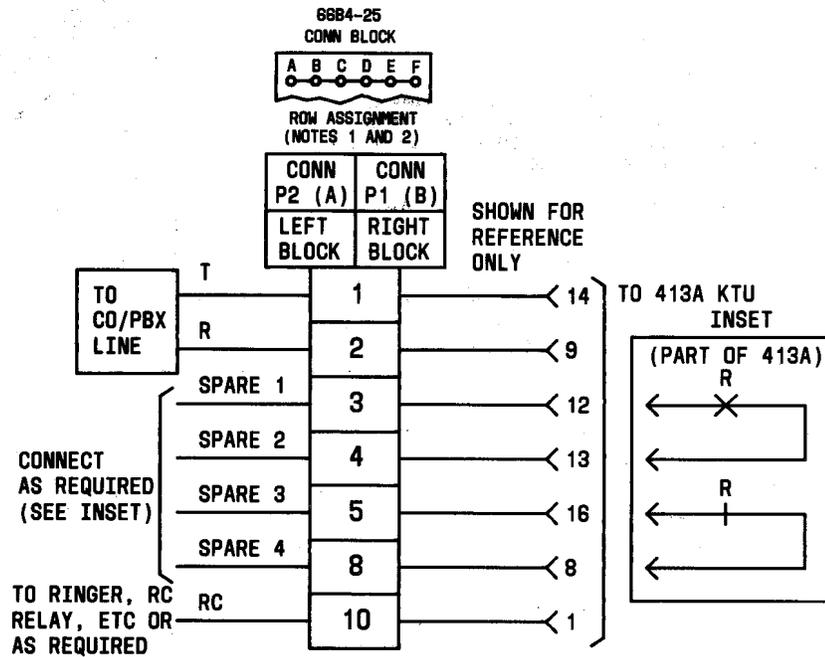
Fig. 5— Nondedicated Lead Connections for 400D (MD), 400G (MD), and 400H KTUs (CO/PBX) in 110A Apparatus Mounting (Sheet 2 of 2)



NOTES:

1. SEE BLOCK DIAGRAM COVERING THE 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.

Fig. 6—Nondedicated Lead Connections for 401-Type KTU (Manual Intercom Line) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING THE 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.

OPTION STRAPPING ON 413A KTU OPTION BLK

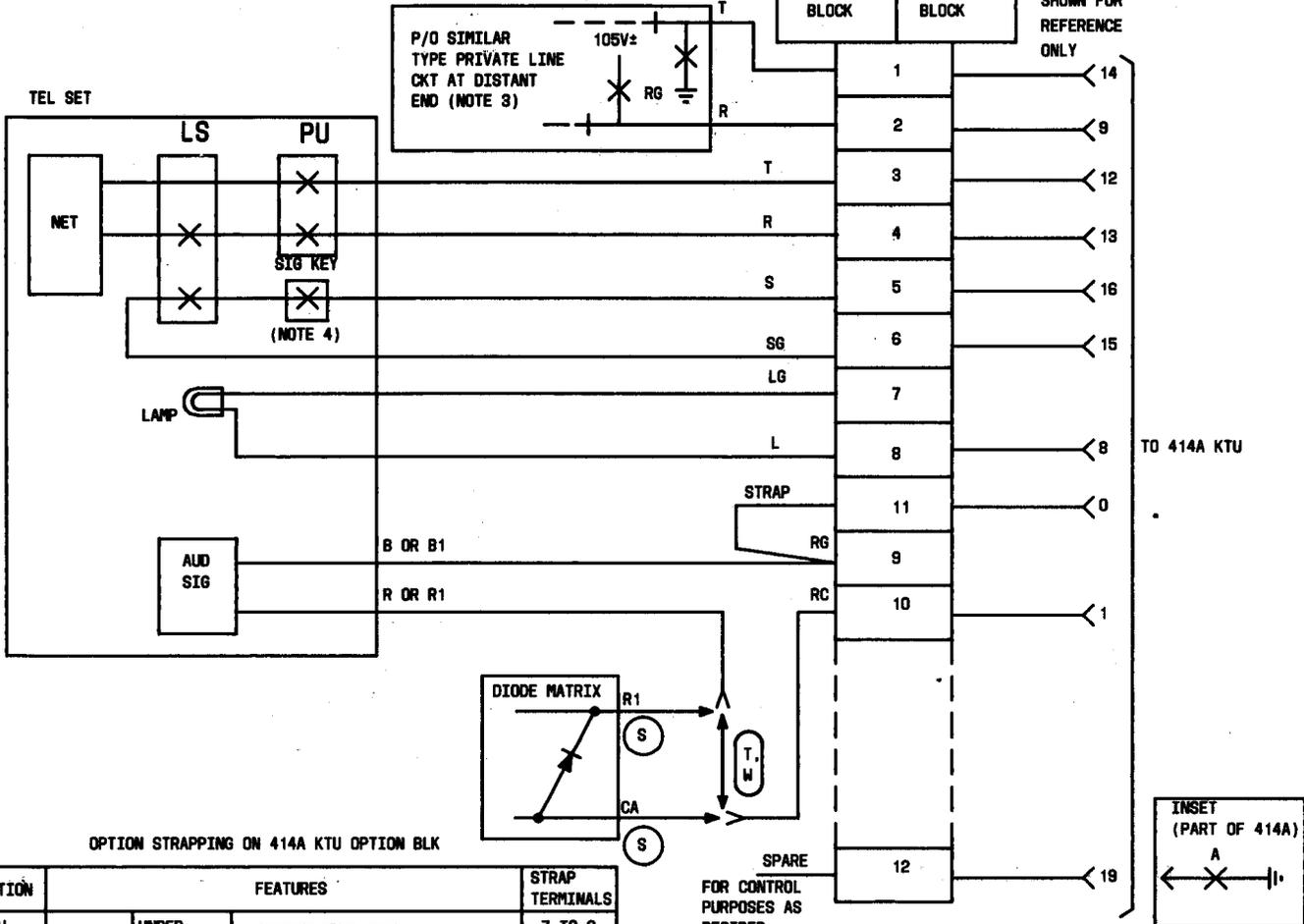
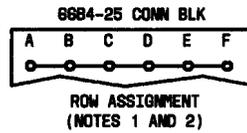
OPTION	FEATURES		STRAP TERMINALS
X	AUDIBLE SIGNALS	STEADY RING	9 TO 10
Z		INTERRUPTED RING	8 TO 10

Fig. 7—Nondedicated Lead Connections for 413A KTU (Auxiliary Ringup) in 110A Apparatus Mounting

SECTION 518-215-422

NOTES:

1. SEE BLOCK DIAGRAM COVERING 6884-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PVT LINE CKT AT DISTANT END MAY BE A 414A KTU, 419A KTU, 204A KTU, OR ANY OTHER TYPE PVT LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RINGUP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CKT.
4. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.
5. FOR SATISFACTORY AUDIBLE RINGBACK TONE, THE RINGING SUPPLY MUST CONTAIN AN AUDIBLE COMPONENT.

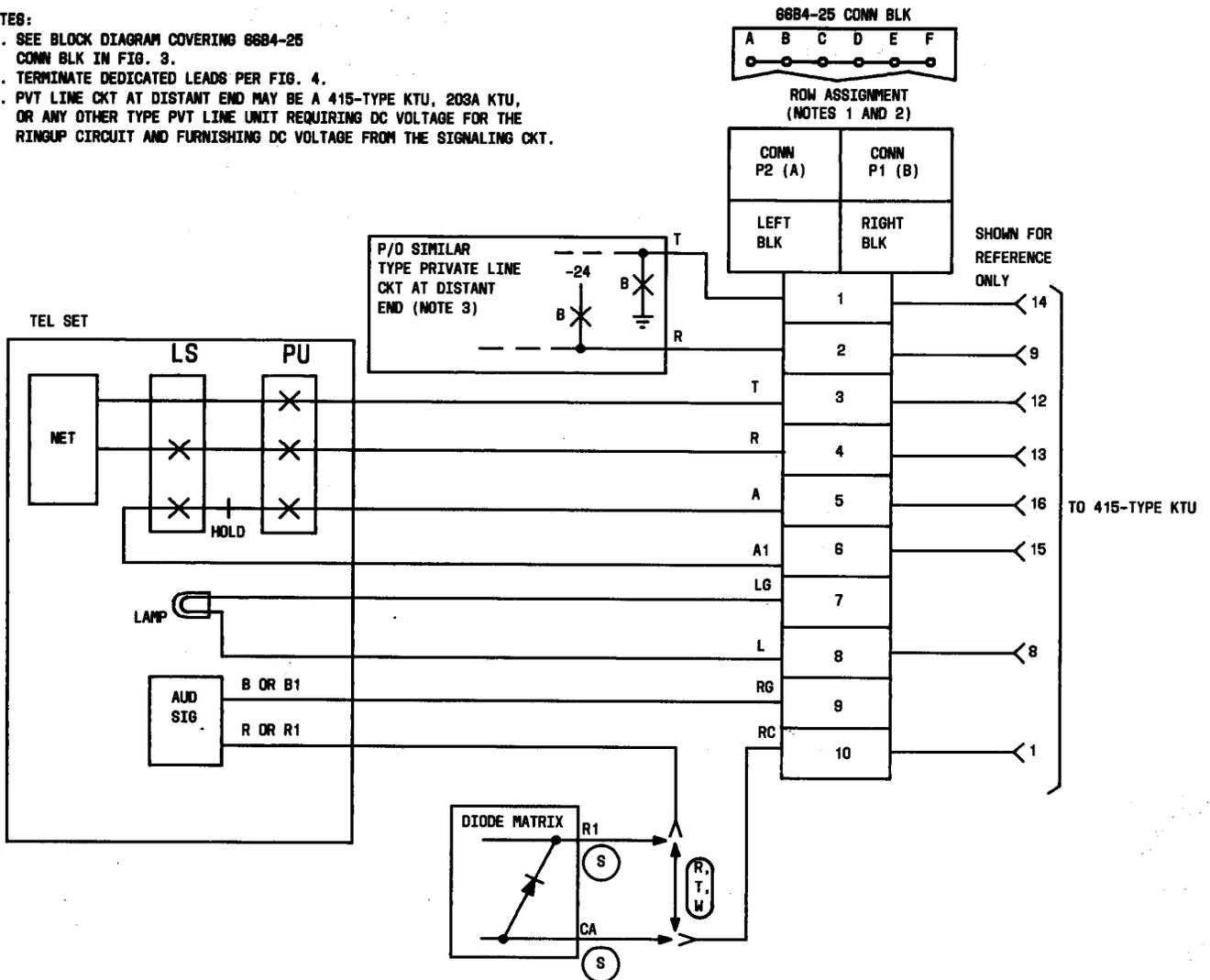


OPTION	FEATURES		STRAP TERMINALS
W	AUDIBLE SIGNALS	UNDER CONTROL OF INTERRUPTED RING	7 TO 8
T		UNDER CONTROL OF STEADY RING	6 TO 7
S		COMMON WITH DIODE MATRIX CONTROL	7 TO 8
R	UNDER CONTROL OF R RELAY	STEADY RING	4 TO 6
N		COMMON WITH DIODE MATRIX CONTROL	
X	TIME-OUT	10 SECONDS	1 TO 2
Z		16 SECONDS	2 TO 3
WITHOUT X OR Z		23 SECONDS	REMOVE X OR Z STRAPS
M	AUDIBLE RINGBACK TONE (NOTE 5)		9 TO 10

Fig. 8— Nondedicated Lead Connections for 414A KTU (Manual Signaling, Ringdown Private Line) in 110A Apparatus Mounting

NOTES:

1. SEE BLOCK DIAGRAM COVERING 6884-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PVT LINE CKT AT DISTANT END MAY BE A 415-TYPE KTU, 203A KTU, OR ANY OTHER TYPE PVT LINE UNIT REQUIRING DC VOLTAGE FOR THE RINGUP CIRCUIT AND FURNISHING DC VOLTAGE FROM THE SIGNALING CKT.



OPTION STRAPPING ON 415-TYPE KTU OPTION BLK*

OPTION	FEATURES		STRAP TERMINALS
W	AUDIBLE SIGNALS	INTERRUPTED RING	4 TO 6
T		STEADY RING	5 TO 6
S		COMMON WITH DIODE MATRIX CONTROL	4 TO 6
M	AUDIBLE RINGBACK TONE		1 TO 2
Y	VISUAL HOLD SIGNAL		7 TO 8

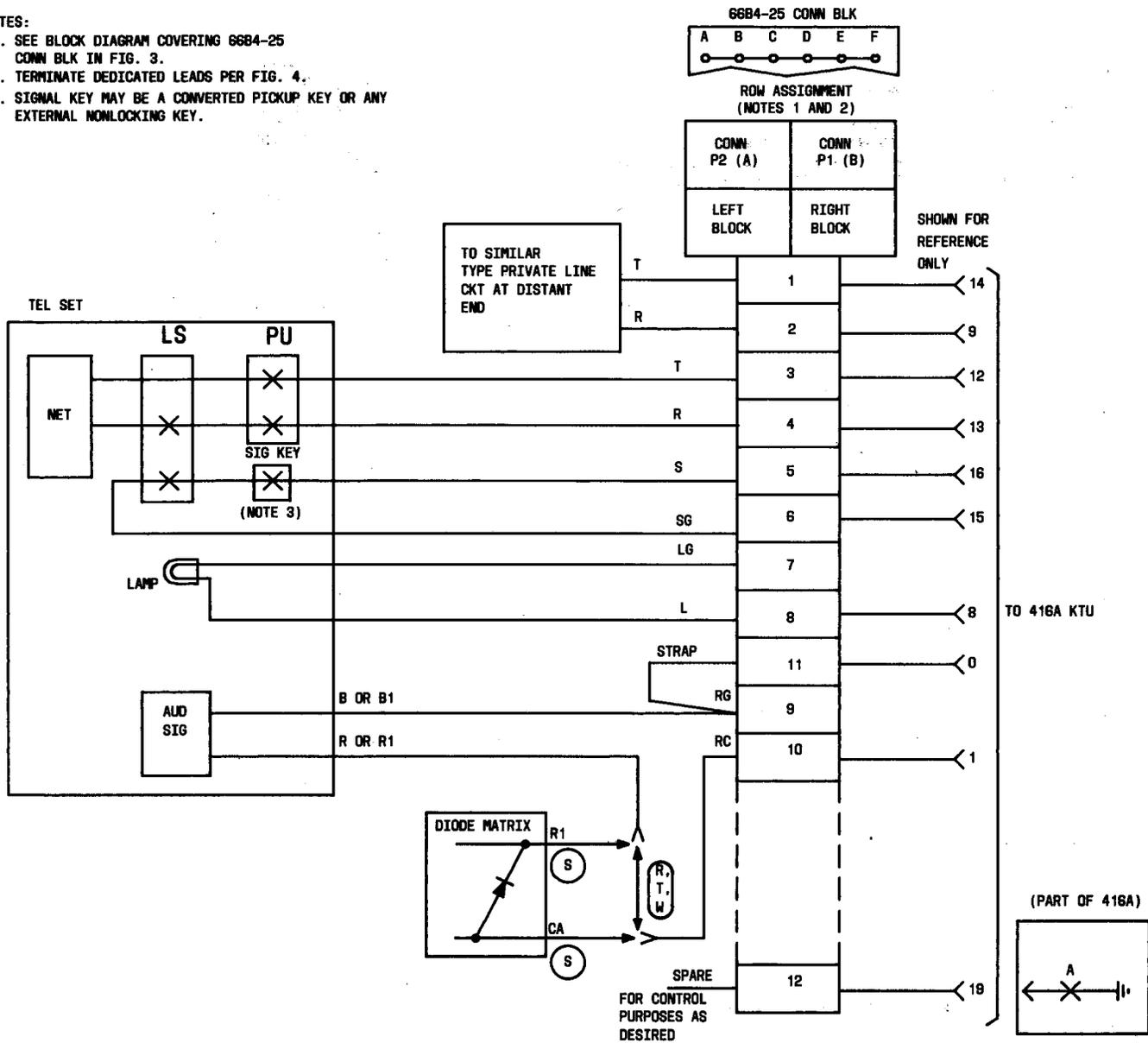
* FOR IDLE LINE TERMINATION, CONNECT A KS-13490, L1 910-OHM RESISTOR IN SERIES WITH A 542F, 2 UF CAPACITOR ACROSS TERMINALS 9 AND 10. ORDER COMPONENTS LOCALLY AND INSTALL.

Fig. 9—Nondedicated Lead Connections for 415-Type KTU (Automatic, DC Signaling Private Line) in 110A Apparatus Mounting

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NOTES:

1. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.



OPTION STRAPPING ON 416A KTU OPTION BLK

OPTION	FEATURES		STRAP TERMINALS
W	AUDIBLE SIGNALS	INTERRUPTED RING	5 TO 8
T		STEADY RING	7 TO 8
S		COMMON WITH DIODE MATRIX CONTROL	5 TO 8
M	AUDIBLE RINGBACK TONE		9 TO 10

Fig. 10—Nondedicated Lead Connections for 416A KTU (Station Line) in 110A Apparatus Mounting

NOTES:

1. SEE BLOCK DIAGRAM COVERING 68B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. ASSOCIATED LAMP AND RINGING CKTS FROM 400-TYPE KTU AND DIAL INTERCOM LINE CONNECT DIRECTLY TO TELEPHONE SETS.
4. STATION LEADS FROM THE TEL SET FOR THE 1ST LINE MUST ALSO BE TERMINATED TO THE STA SIDE OF THE ASSIGNED 400-TYPE KTU.
5. REMOVE AND INSULATE EXCLUSION KEY LEADS FROM IT AND IR IN THE TEL SET IF SO CONNECTED.
6. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR AN EXTERNAL NONLOCKING KEY.
7. A DIODE MUST BE INSTALLED IN THE "A" LEAD OF THE TEL SET WHEN Z OPTION IS PROVIDED. FOR METHOD OF CONNECTION USE STATION BUSY LAMP OPTION AS SHOWN IN CONNECTION SECTION OF TYPE SET USED.
8. LAMP INDICATING CONFERENCE CKT IS ACTIVATED.

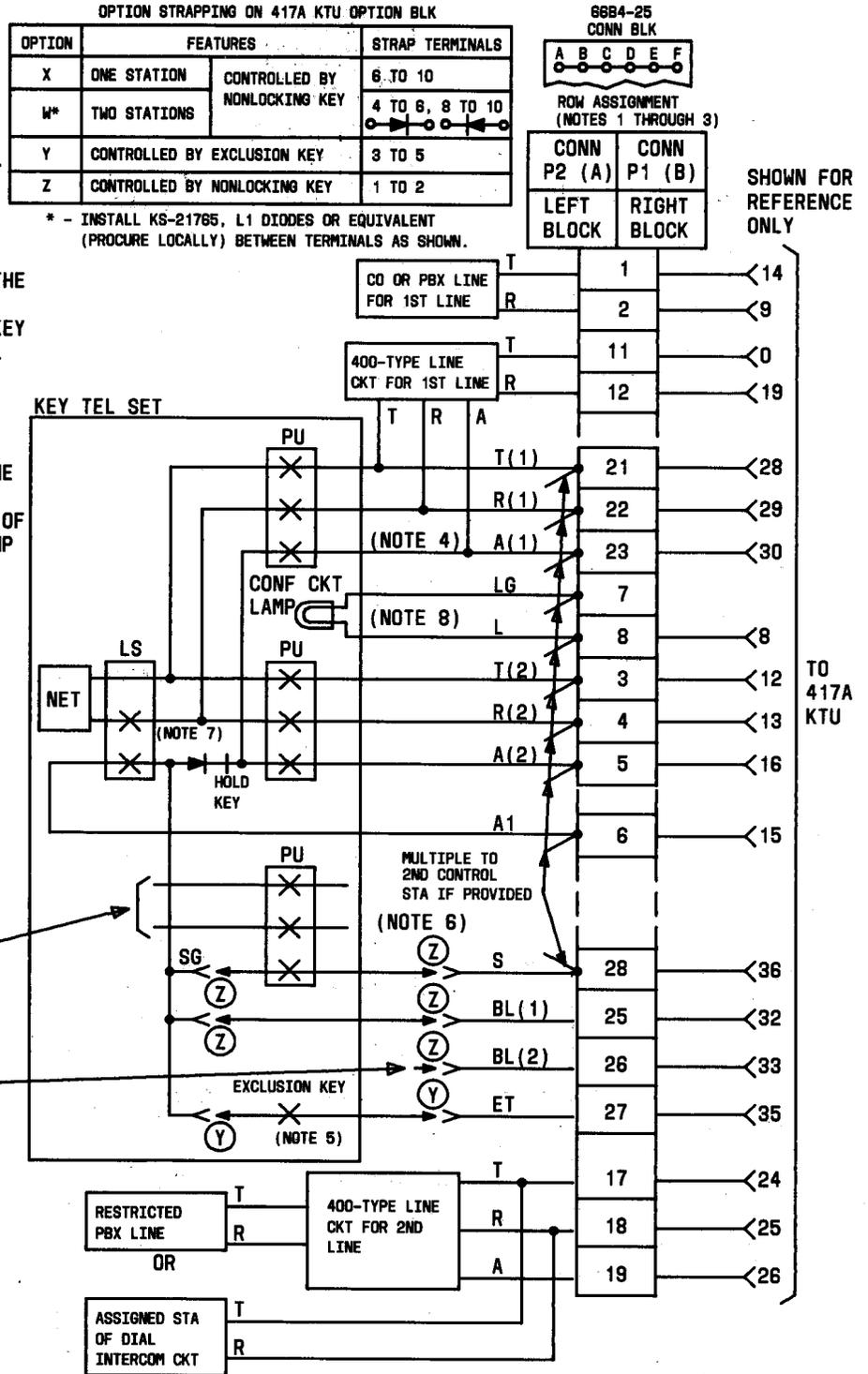
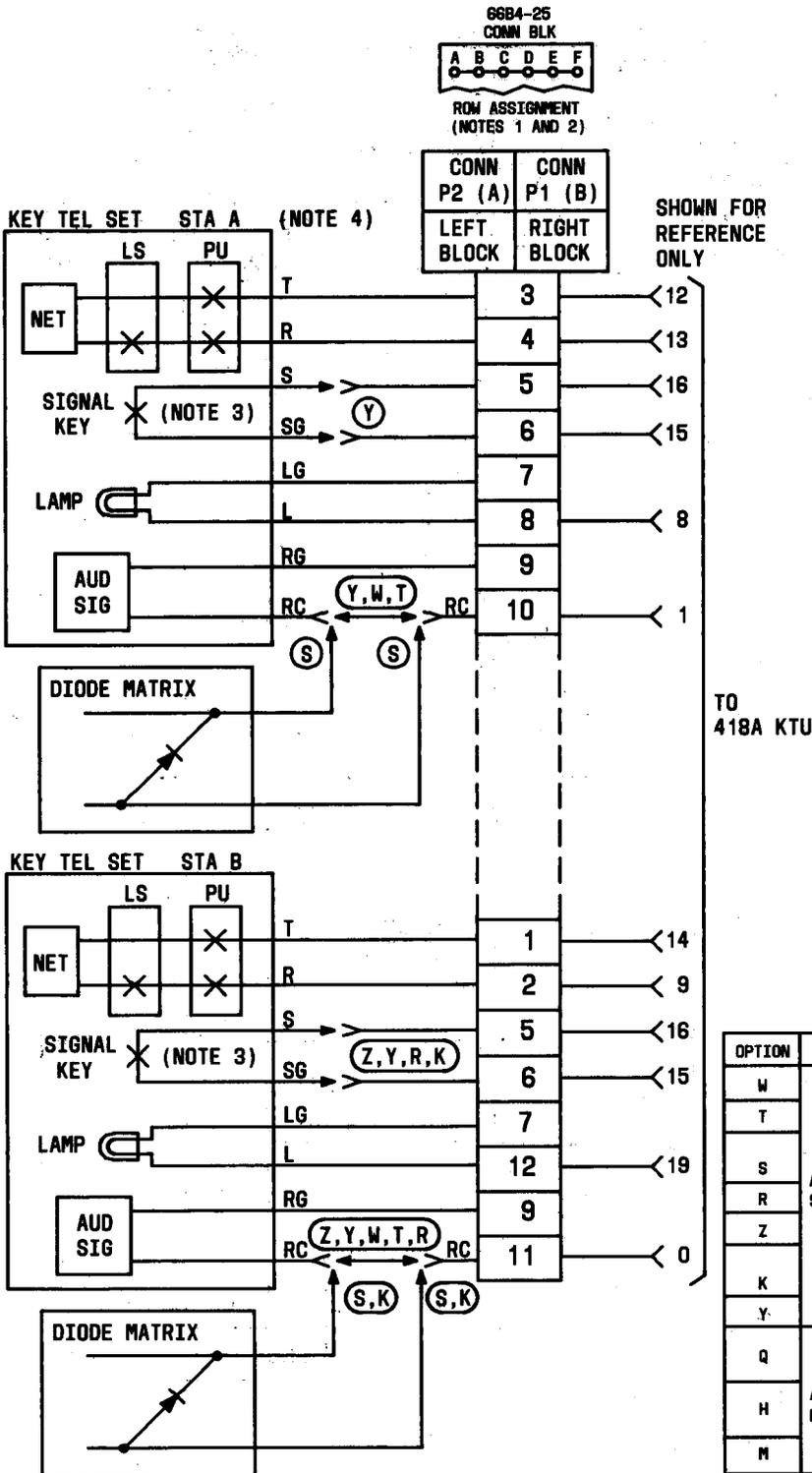


Fig. 11—Nondedicated Lead Connections for 417A KTU (Add-On Conference) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR AN EXTERNAL NONLOCKING KEY.
4. STATION "A" IS ALWAYS ASSIGNED AS THE AUTOMATIC SIGNALING STATION WHENEVER THE ONE-WAY AUTOMATIC, ONE-WAY MANUAL SIGNALING OPTION IS USED.
5. THESE OPTIONS APPLY TO THE SIGNAL KEY AND AUDIBLE SIGNAL AT STA "B" ONLY. THE AUDIBLE SIGNAL AT STA "A" IS UNDER CONTROL OF THE SIGNAL KEY OF STA "B". THE AUDIBLE SIGNAL AT STA "A" MAY BE PART OF A COMMON AUDIBLE ARRANGEMENT PROVIDED THE DIODE MATRIX IS USED FOR CONTROL.
6. THE AUDIBLE SIGNALS AT STAS "A" AND "B" MAY BE PART OF A COMMON AUDIBLE ARRANGEMENT PROVIDED THE DIODE MATRIX IS USED FOR CONTROL.

OPTION STRAPPING ON 418A KTU OPTION BLK

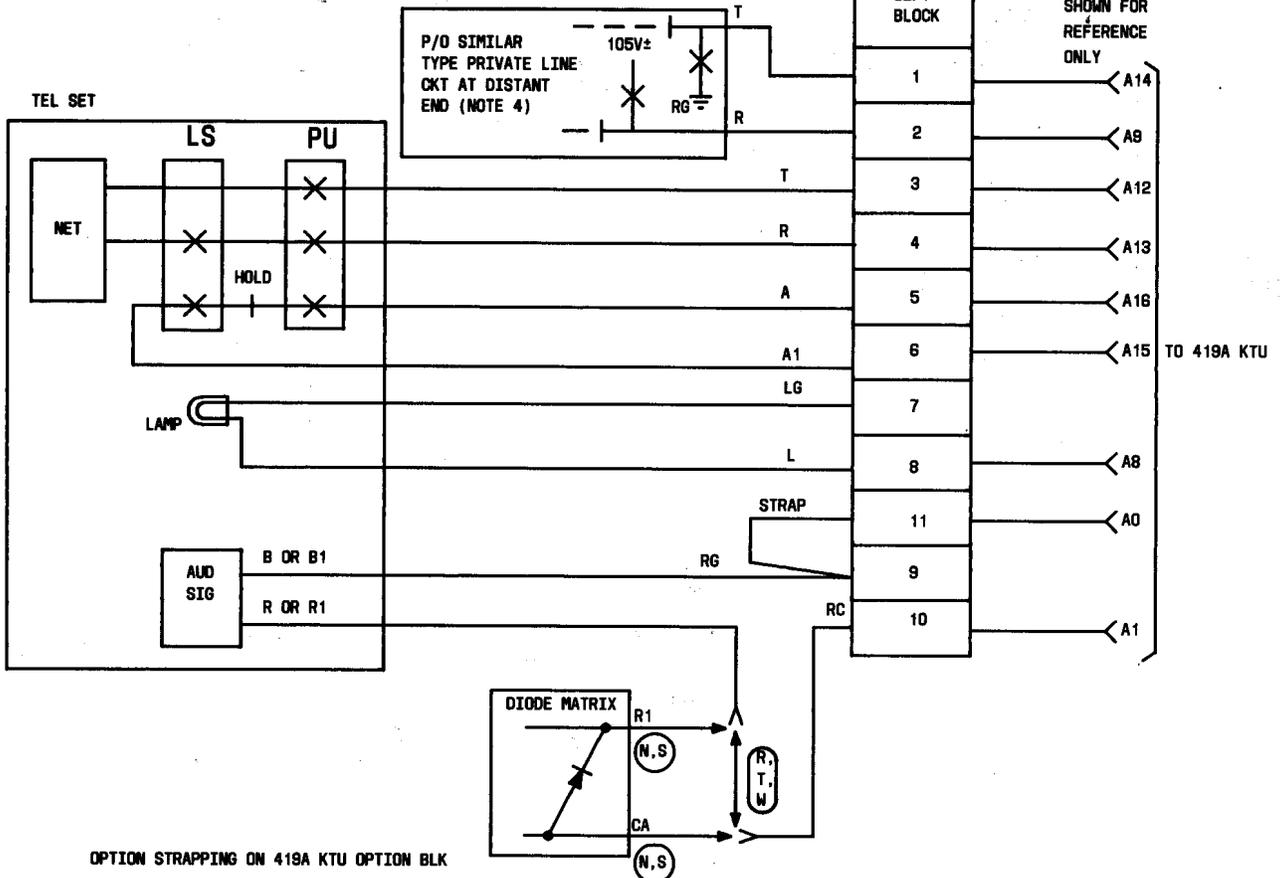
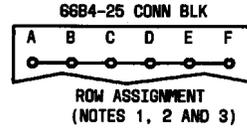
OPTION	FEATURES		STRAP TERMINALS
W	TWO-WAY AUTOMATIC	INTERRUPTED RING	2 TO 3 TO 4 *
T		STEADY RING	1 TO 2 TO 4 *
S		COMMON WITH DIODE MATRIX CONTROL	2 TO 3 TO 4 *
R	ONE-WAY AUTOMATIC, ONE-WAY MANUAL (NOTE 5)	INTERRUPTED RING	3 TO 4
Z		STEADY RING	1 TO 4
K		COMMON WITH DIODE MATRIX CONTROL	3 TO 4
Y	TWO-WAY MANUAL (NOTE 6)		
Q	AUDIBLE RING-BACK	TWO-WAY AUTOMATIC	9 TO 10, 5 TO 7 TO 8 *
H		ONE-WAY AUTOMATIC, ONE-WAY MANUAL	5 TO 7, 9 TO 10
M		TWO-WAY MANUAL	9 TO 10

* - USE CONTINUOUS METHOD OF STRAPPING

Fig. 12—Nondedicated Lead Connections for 418A KTU (Short Range, DC Signaling Private Line) in 110A Apparatus Mounting

NOTES:

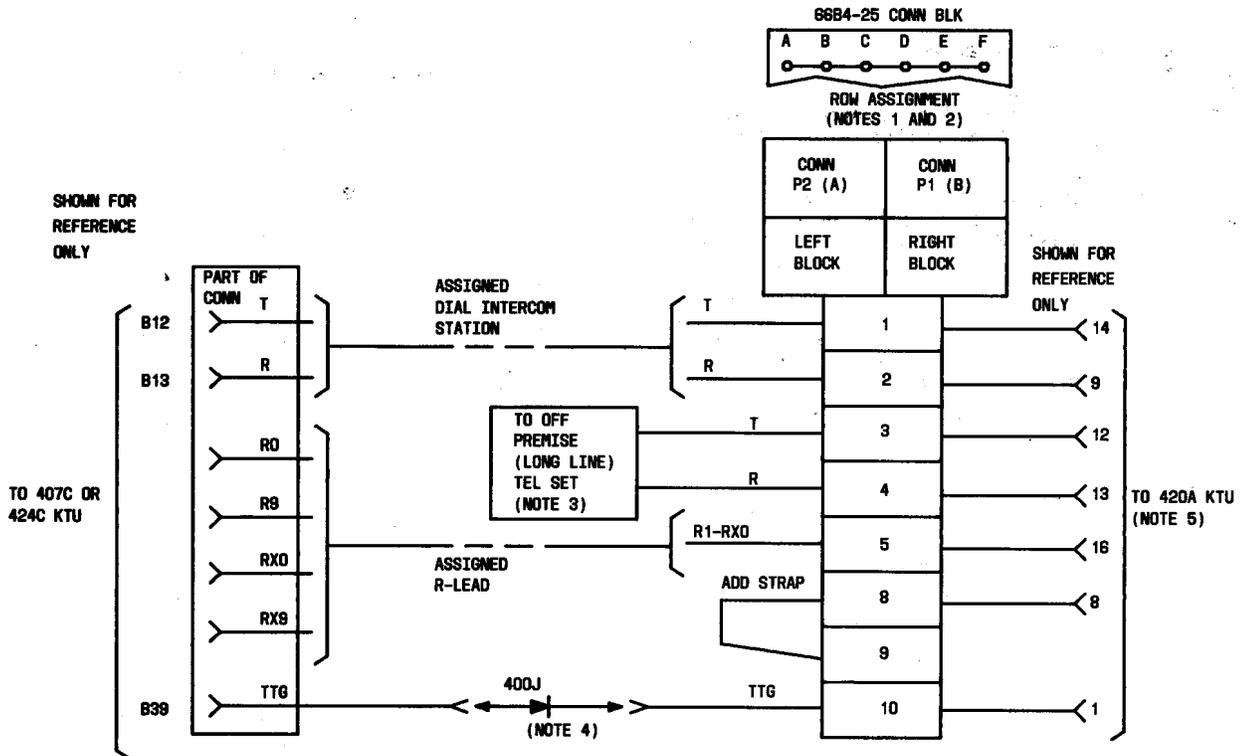
1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. THE 419A KTU REQUIRES THE USE OF BOTH CONNECTORS IN THE APP MTS BUT CONNECTIONS ARE ONLY MADE THROUGH THE "A" CONNECTOR.
4. PVT LINE CKT AT DISTANT END MAY BE A 419A, 414A, OR 204A KTU OR ANY OTHER TYPE PVT LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RINGUP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CKT.



OPTION STRAPPING ON 419A KTU OPTION BLK

OPTION	FEATURES		STRAP TERMINALS
M	AUDIBLE SIGNALS	UNDER CONTROL OF TIME-OUT CIRCUIT (B RELAY)	INTERRUPTED RING
T			STEADY RING
S			COMMON WITH DIODE MATRIX CONTROL
R	UNDER CONTROL OF R RELAY		STEADY RING
N			COMMON WITH DIODE MATRIX CONTROL
X	TIME-OUT	6 SECONDS	
Z		17 SECONDS	
WITHOUT X OR Z		25 SECONDS	
M	AUDIBLE RINGBACK TONE		REMOVE X OR Z STRAPS
			1 TO 2

Fig. 13—Nondedicated Lead Connections for 419A KTU (Automatic Signaling, Ringdown Private Line) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4
3. MAXIMUM STATION CONDUCTOR LOOP IS 500 OHMS. OFF-PREMISE (LONG LINE) TELEPHONE SET MAY BE EQUIPPED WITH A "TOUCH-TONE" DIAL PROVIDED THE INTERCOM CIRCUIT IS SO EQUIPPED.
4. PROVIDE A 400J DIODE FOR EACH 420A KTU INSTALLED WHEN THE INTERCOM IS EQUIPPED WITH THE "TOUCH-TONE" ADAPTER (440A OR 478B KTU)
5. THE CABLE RUN FROM THE APPARATUS MOUNTING TO THE CONNECTING BLOCK SHOULD BE AS SHORT AS POSSIBLE, PREFERABLY LESS THAN 10 FT.

OPTION STRAPPING ON 420A KTU OPTION BLK

OPTION	FEATURE		STRAP TERMINALS
J,X	AUDIBLE SIGNALS	AC BUZZER, 18V± OR 10V±	1 TO 4, 7 TO 8
K,X		DC BUZZER, 24V DC	
M,X,R		RINGER, 105V± STEADY	2 TO 4, 7 TO 8
X		INTERRUPTED	
R		INTERRUPTED WITH STATION BUSY	

Fig. 14—Nondedicated Lead Connections for 420A KTU (Long Line) in 110A Apparatus Mounting

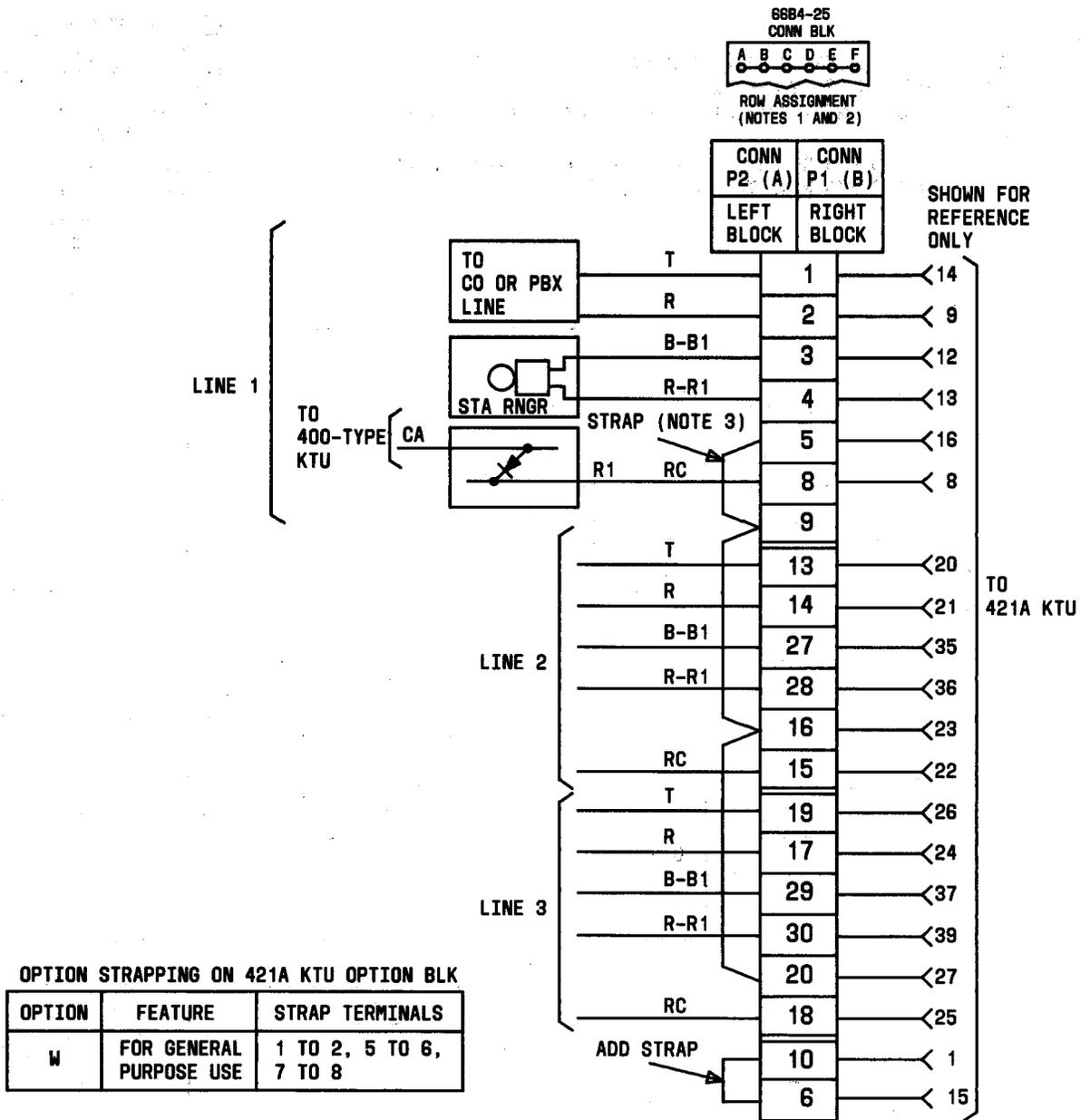
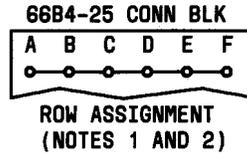


Fig. 15—Nondedicated Lead Connections for 421A KTU (Power Failure Transfer) in 110A Apparatus Mounting

NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. OPTION (N) REQUIRED WHEN 421A KTU IS USED FOR AUDIBLE SIGNAL SUPPRESSION.
4. 400-TYPE KTU WIRED FOR COMMON AUDIBLE WITH DIODE MATRIX OPTION.
5. REFER TO SECTION PERTAINING TO TELEPHONE SET USED.



CONN P2 (A)	CONN P1 (B)
LEFT BLOCK	RIGHT BLOCK

SHOWN FOR REFERENCE ONLY

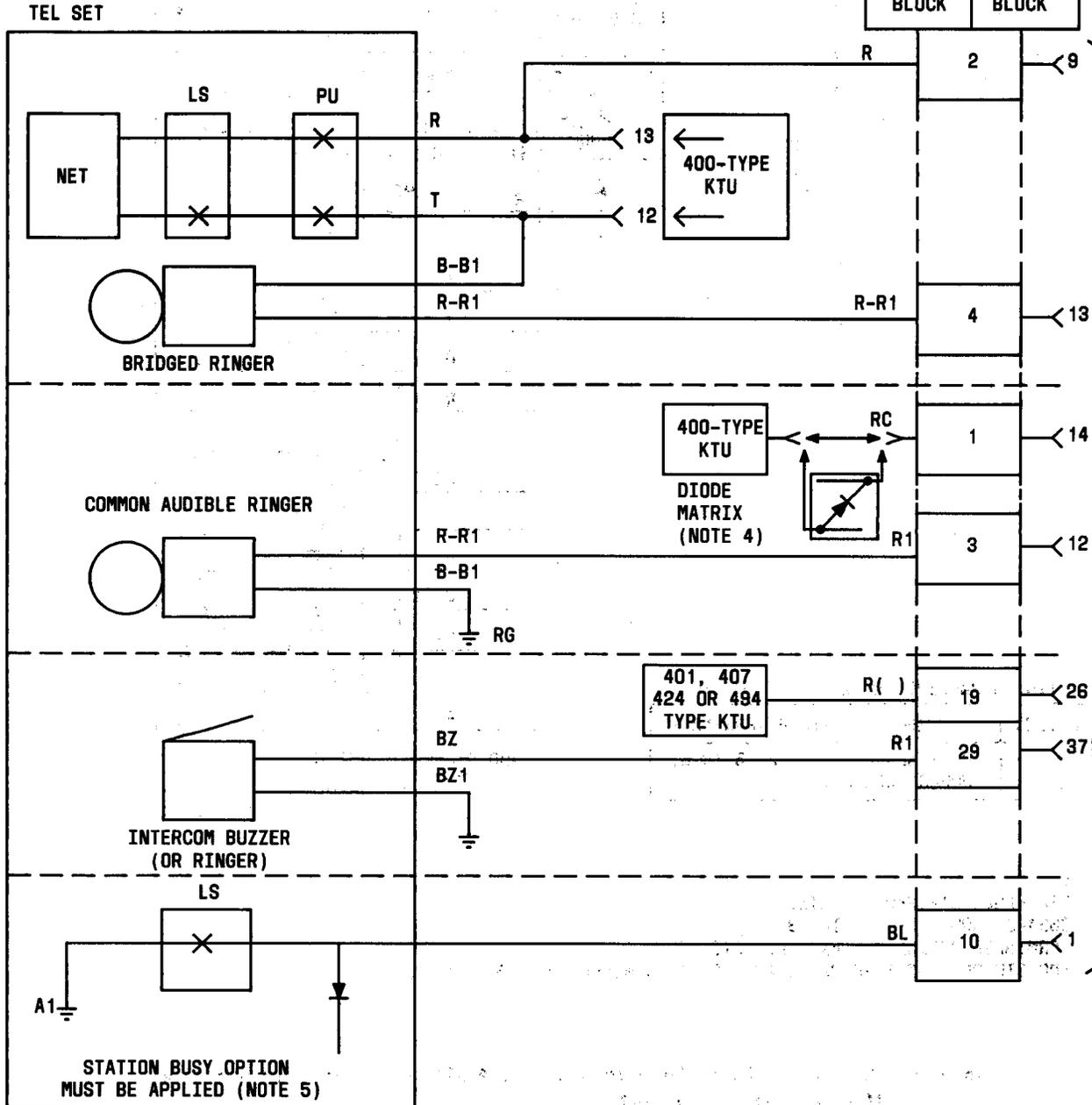
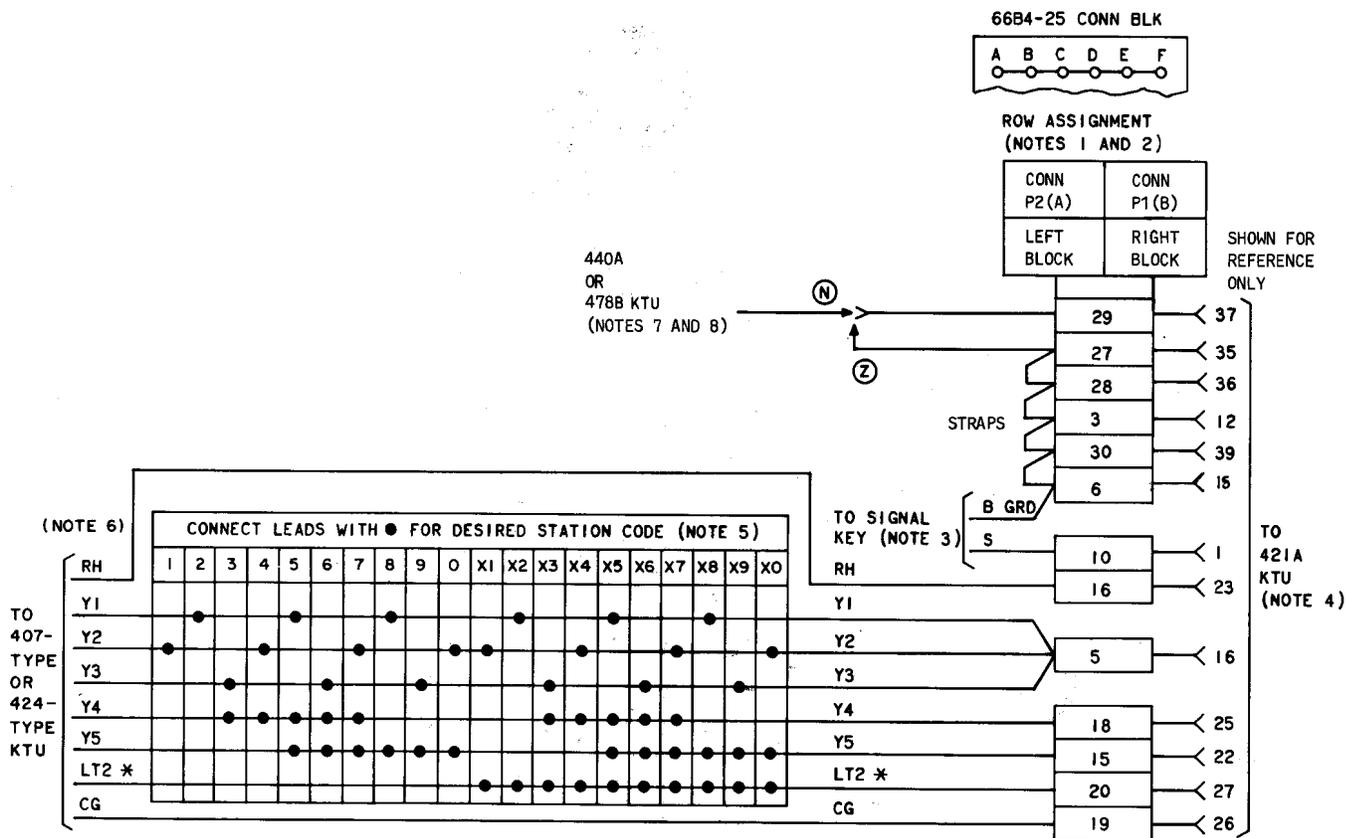
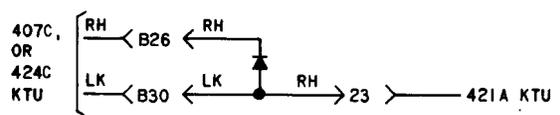


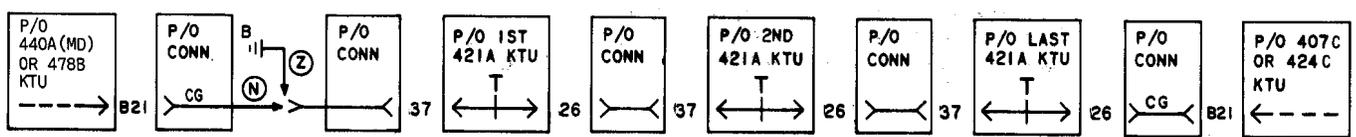
Fig. 16—Nondedicated Lead Connections for 421A KTU (Wired for Audible Signal Suppressor) in 110A Apparatus Mounting



- NOTES:
- SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
 - TERMINATE DEDICATED LEADS PER FIG. 4.
 - PROVIDE SEPARATE SIGNAL KEY FOR EACH STATION CODE TO BE SELECTED.
 - PROVIDE A SEPARATE 421A KTU FOR EACH STATION CODE TO BE SELECTED.
 - SELECT CODE AND CONNECT LEADS FOR SELECTED CODE AS SHOWN IN VERTICAL COLUMN.
 - A 400J DIODE (PROCURE LOCALLY) MUST BE CONNECTED AS SHOWN BELOW WHEN PROVIDING DSS IN A DIAL EQUIPPED SELECTOR ONLY ARRANGEMENT.

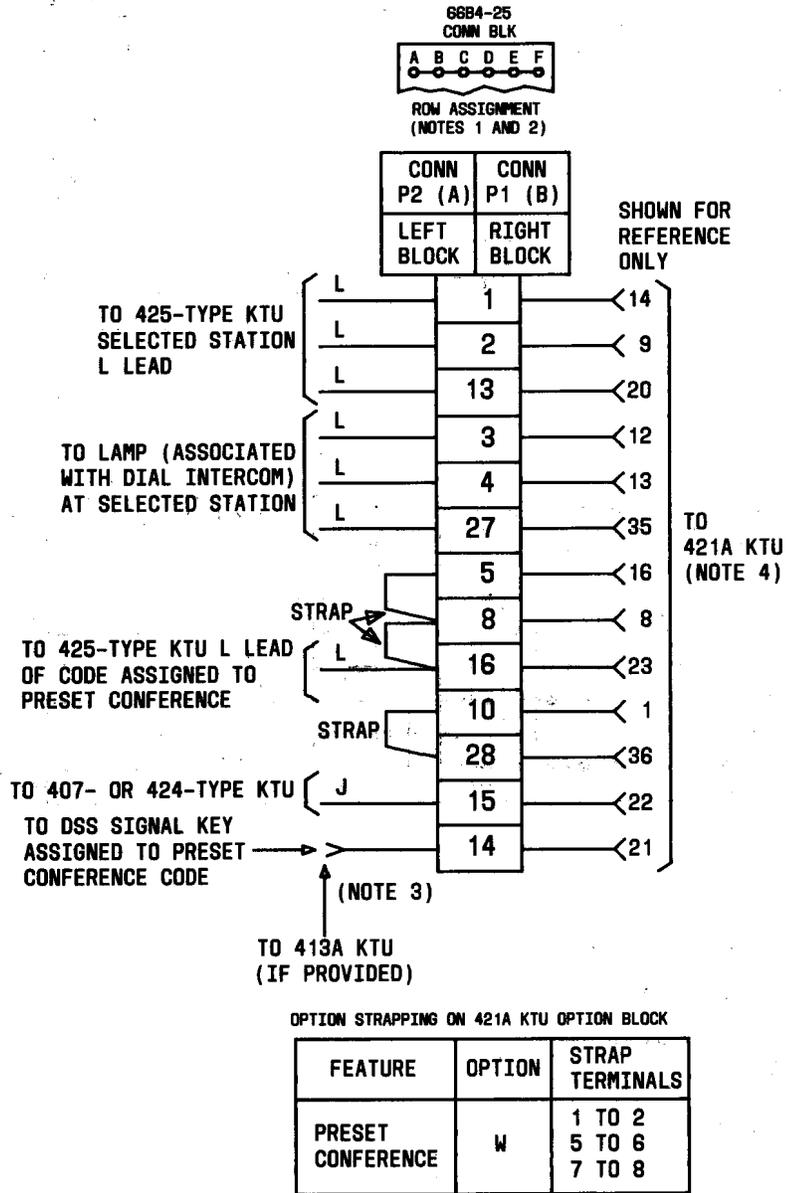


7. IF MORE THAN ONE 421A KTU IS USED FOR DSS, CONNECT AS SHOWN:



18. (N) WITH "TOUCH-TONE".
- (Z) WITHOUT "TOUCH-TONE".
- * USE WITH 424C KTU.

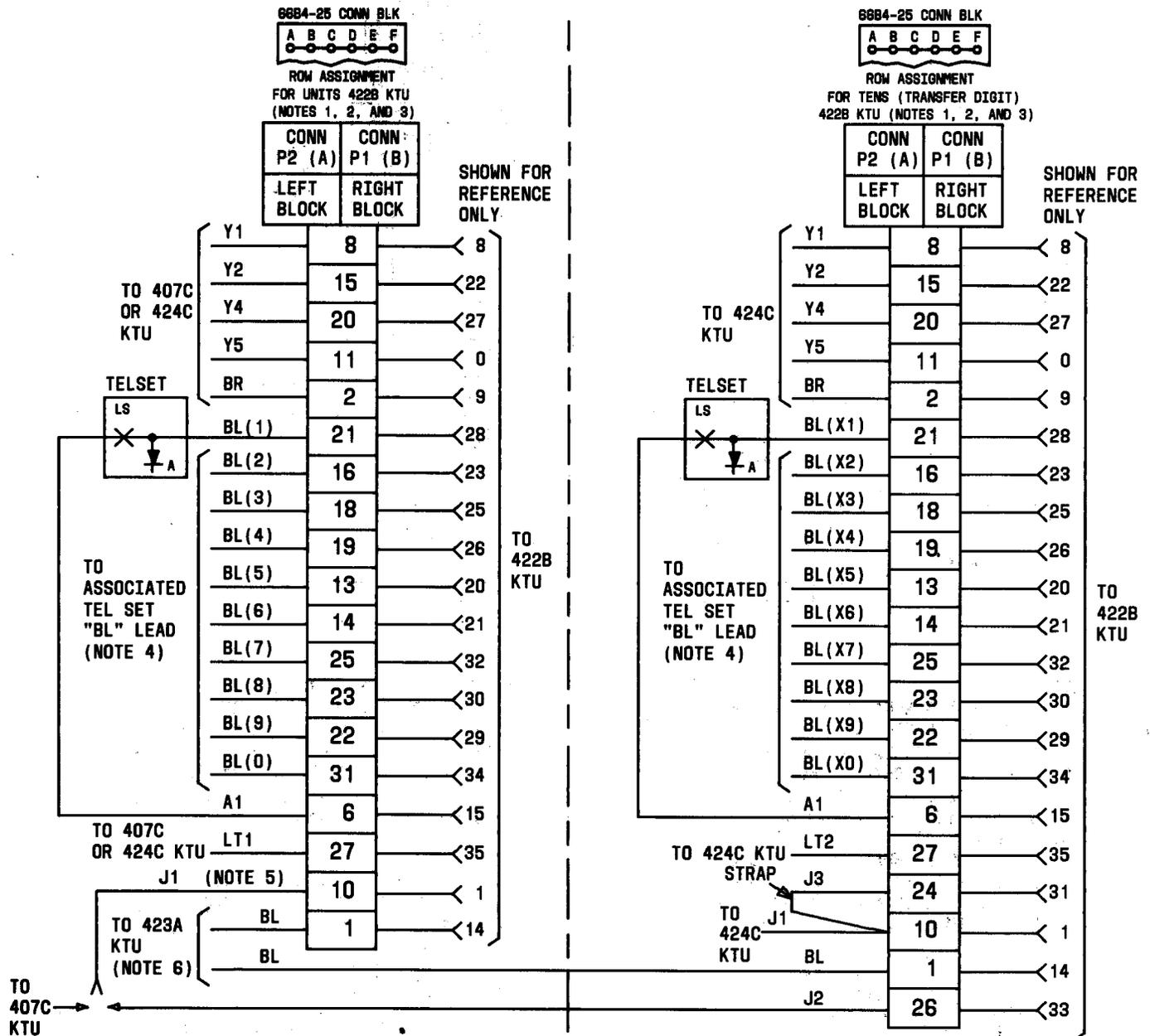
Fig. 17—Nondedicated Lead Connections for 421A KTU (Wired for DSS Feature) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PROVIDE 413A KTU ONLY WHEN ACCESS TO THE PRESET CONFERENCE IS BY DIAL CODE OR BY DIAL CODE AND DSS. DO NOT PROVIDE 413A KTU WHEN ACCESS TO THE PRESET CONFERENCE IS LIMITED TO DSS.
4. PROVIDE (W) OPTION.

Fig. 18—Nondedicated Lead Connections for 421A KTU (Wired for Preset Conference) in 110A Apparatus Mounting



NOTES:

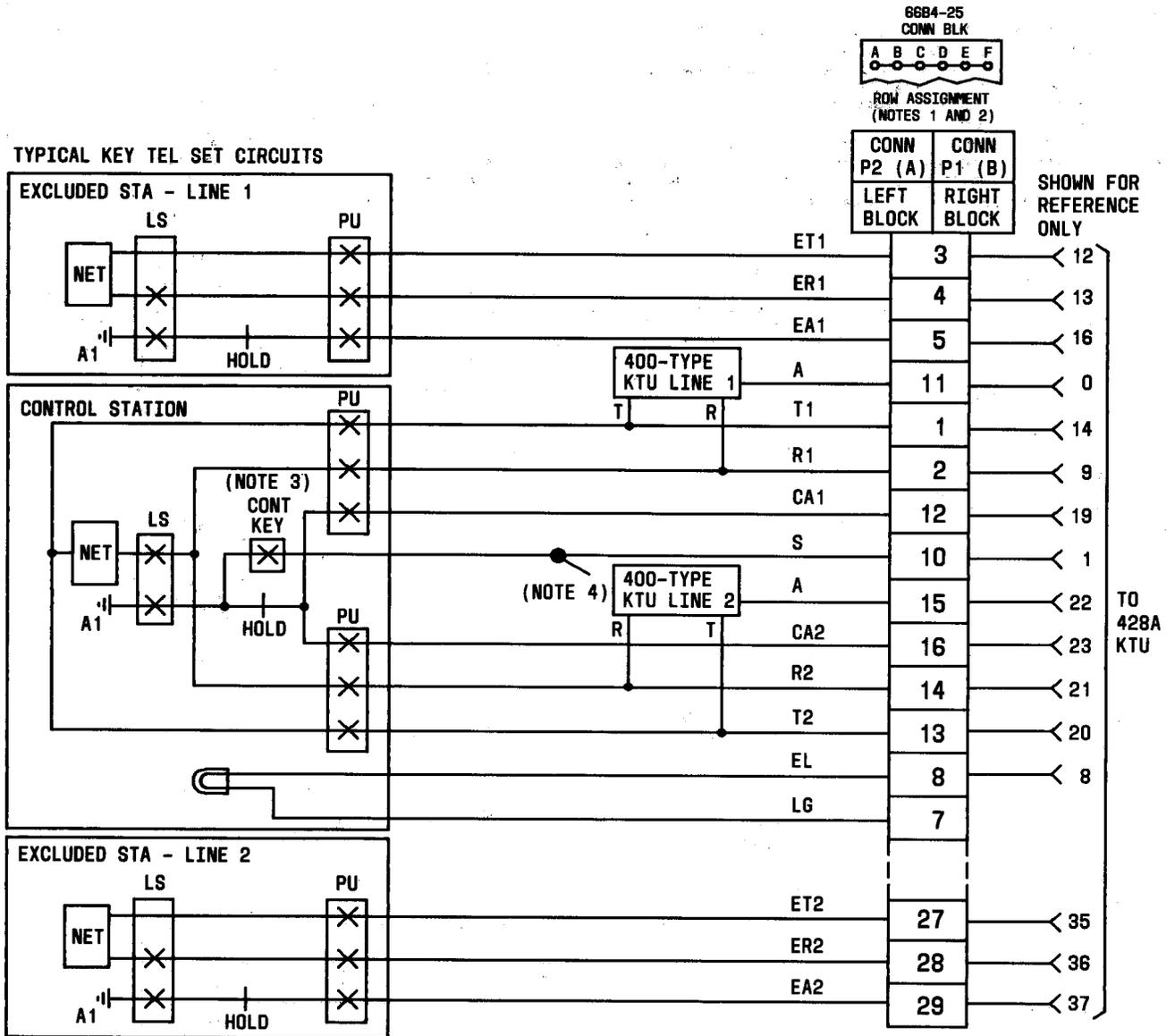
1. SEE BLOCK DIAGRAM COVERING THE 6884-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PROVIDE A SEPARATE 422B KTU FOR THE UNITS GROUP (1-0, SINGLE DIGIT NOS.) AND FOR THE TENS GROUP (X1-X0, TWO DIGIT NOS.)
4. PROVIDE AND INSTALL A DIODE IN THE "A" LEAD OF THE ASSOCIATED TEL SETS AS SHOWN IN TEL SET CONNECTION SECTION. FOR CONNECTION, USE THE STATION BUSY OPTION AS SHOWN IN THE CONNECTION SECTION OF THE TYPE SET USED.
5. CONNECT "J1" LEAD OF UNITS 422B KTU WHEN A 407C KTU IS PROVIDED FOR THE DIAL INTERCOM CIRCUIT. WHEN A 424C KTU IS PROVIDED, STRAP THE "J1" LEAD OF 422B KTU TO "J2" LEAD OF TENS 422B KTU.
6. 423A KTU ASSOCIATED WITH SAME DIAL INTERCOM AS THE 422B KTUS.

OPTION STRAPPINGS ON 422B KTU OPTION BLOCK

OPTION	FEATURE	STRAP TERMINALS
R*	STATION BUSY TONE	6 TO 8

* - INSTALL 441J OR EQUIVALENT DIODE (PROCURE LOCALLY) AS SHOWN.

Fig. 19—Nondedicated Lead Connections for 422B KTU (Station Busy Selector) in 110A Apparatus Mounting



- NOTES:**
1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
 2. TERMINATE DEDICATED LEADS PER FIG. 4.
 3. CONTROL KEY MAY BE LOCKING OR NONLOCKING.
 4. S LEAD CAN ONLY MULTIPLE OTHER 428A KTUS CONTROLLED BY THE SAME STATION.

Fig. 21 — Nondedicated Lead Connections for 428A KTU (Multiline Exclusion) in 110A Apparatus Mounting

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NOTES:

1. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. T AND R LEADS FROM STATION SIDE OF 400-TYPE KTU TERMINATE DIRECTLY TO THE ASSIGNED PICKUP KEY AT TELEPHONE SET.
4. LIMITATIONS OF 430A KTU ARE AS FOLLOWS:
 - (A) FL1 OR FL2 CAN SERVE A MAXIMUM OF 50 LAMPS (51A) EACH. DIVIDE LAMPS AS EVENLY AS POSSIBLE BETWEEN THE TWO LEADS.
 - (B) SP LEAD CAN CONNECT TO A MAXIMUM OF 20 STATIONS.
5. ANY TELEPHONE SET EQUIPPED WITH A HOLD KEY HAVING A SET OF TRANSFER CONTACTS AND SUFFICIENT CORD LEADS CAN INITIATE I HOLD. REWIRE HOLD KEY ACCORDING TO CONNECTION SECTION OF TYPE SET USED.
6. WHEN USED WITH CONCENTRATOR SETS AND THE 657 KEY MODULE, CONNECT AS FOLLOWS:

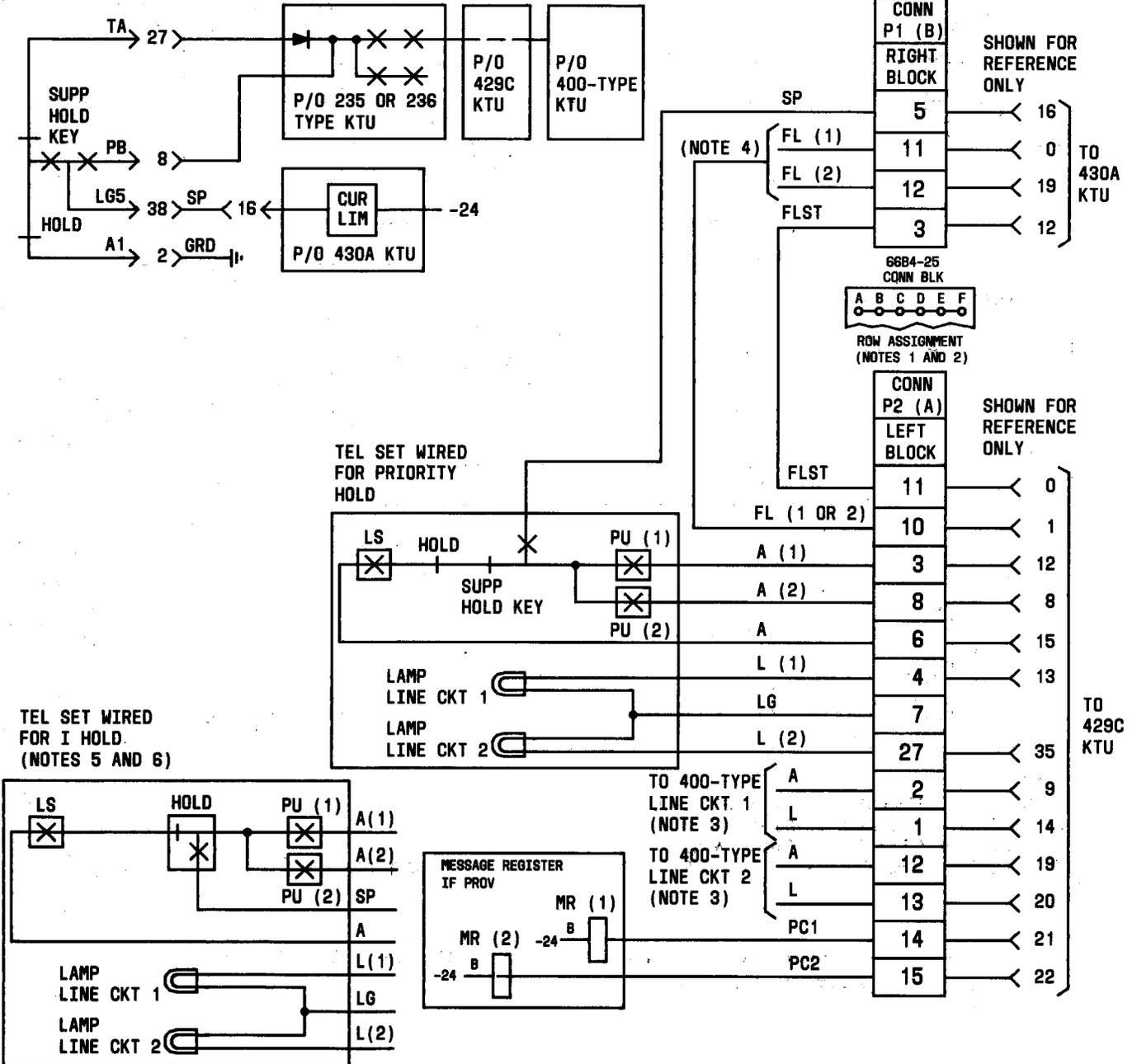


Fig. 22—Nondedicated Lead Connections for 429-Type KTU (Supplementary Hold Detector) and 430A KTU (Flutter Generator) in 110A Apparatus Mounting

NOTES:

1. SEE BLOCK DIAGRAM COVERING THE 6684-25 CONN BLK IN FIG. 3.
 2. TERMINATE DEDICATED LEADS PER FIG. 4.
 3. IF IMMEDIATE RINGER TRANSFER IS REQUIRED, CONNECT TO A TURN KEY OR A 449A KTU.
 4. MULTIPLE RC LEADS FROM BOTH CIRCUITS TO SAME AUDIBLE SIGNAL AT ATTENDANT STATION.
- * FOR LINE RINGING.
 † FOR COMMON AUDIBLE RINGING.
 ‡ CONNECT WHEN COMMON AUDIBLE IS USED AND RINGER IS NOT TO BE CUT OFF.

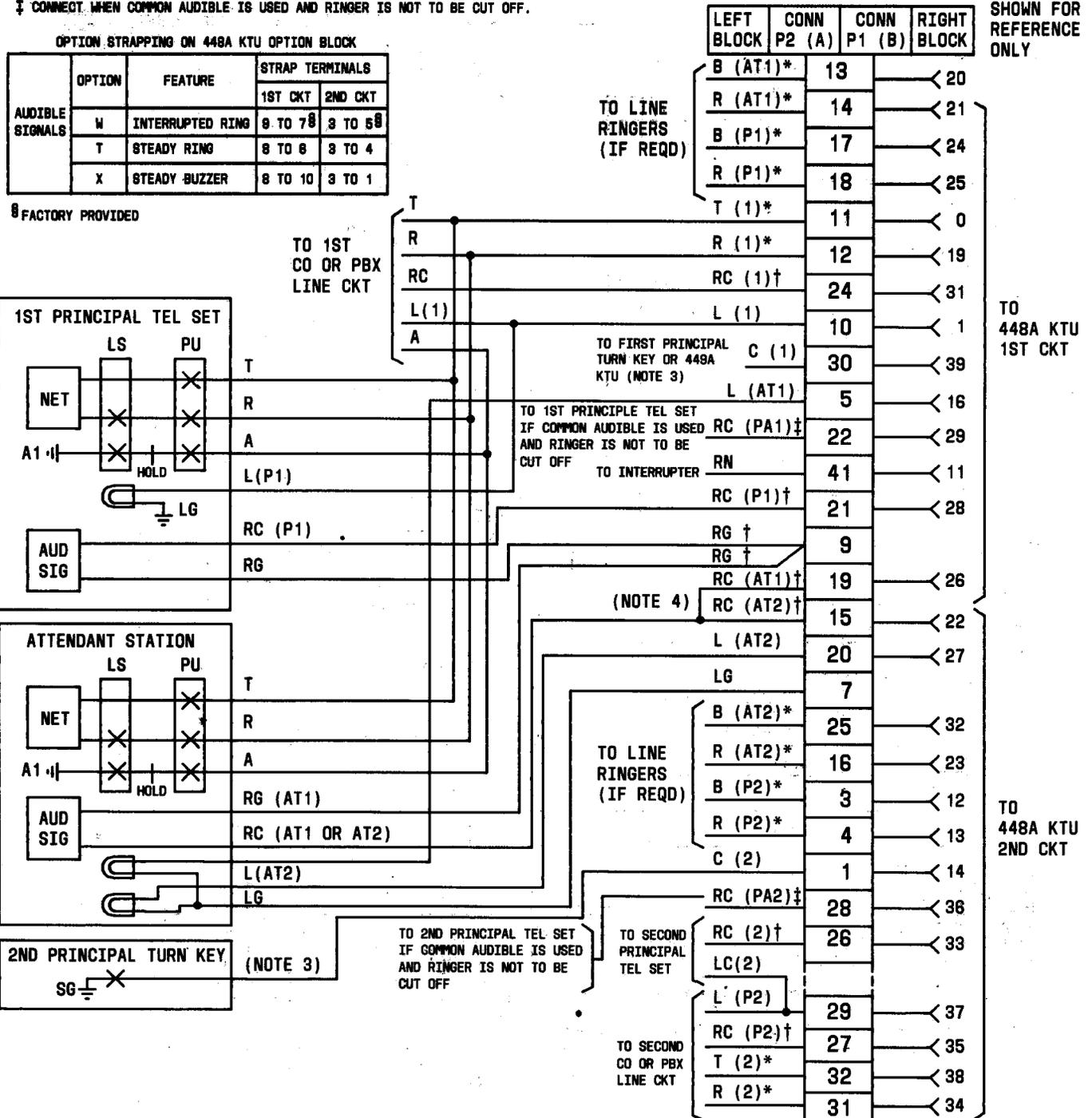
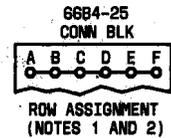


Fig. 23—Nondedicated Lead Connections for 449A KTU (Variable Delay Timer) in 110A Apparatus Mounting

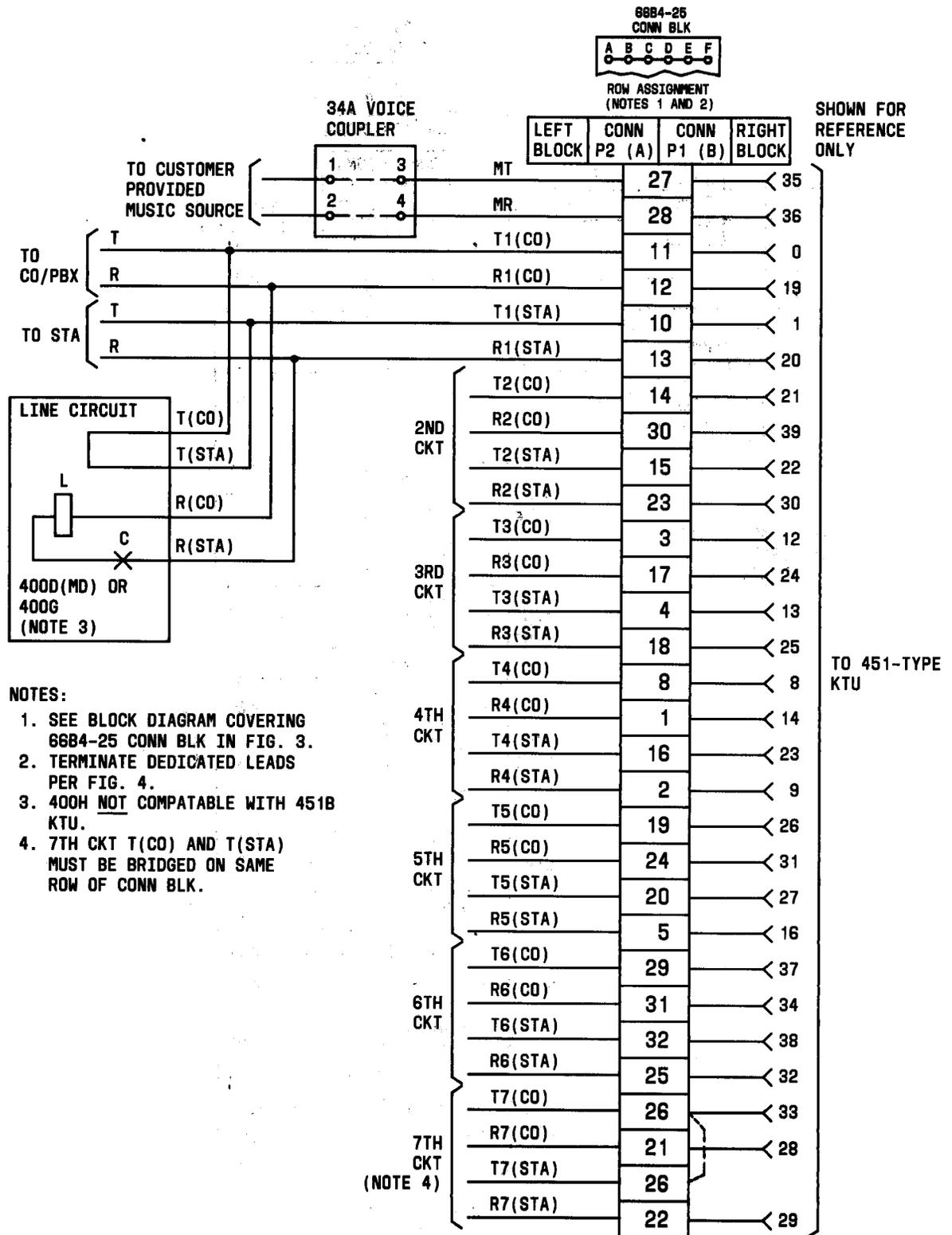


Fig. 25—Nondedicated Lead Connections for 451B KTU (Music-On-Hold) in 110A Apparatus Mounting

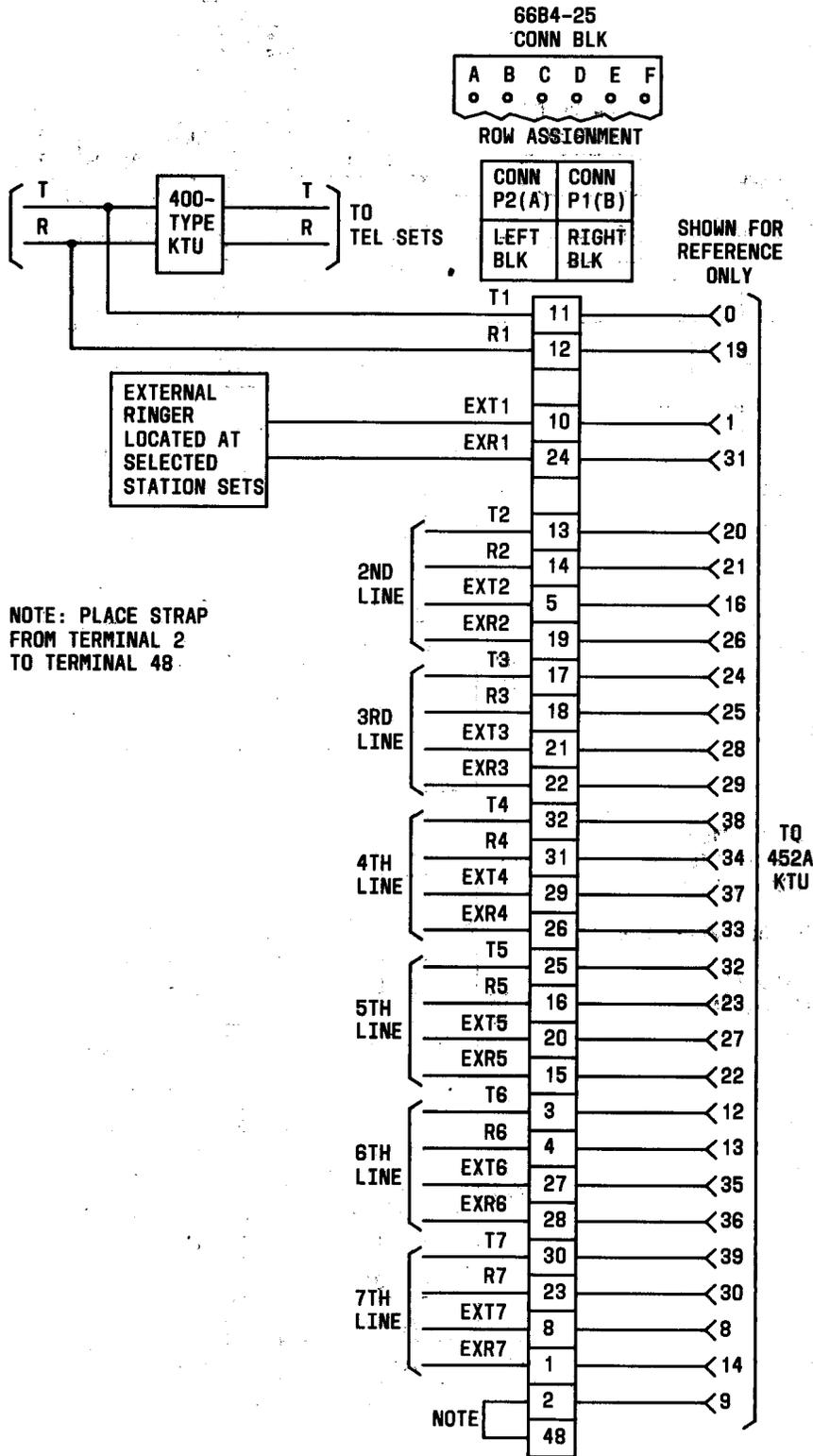
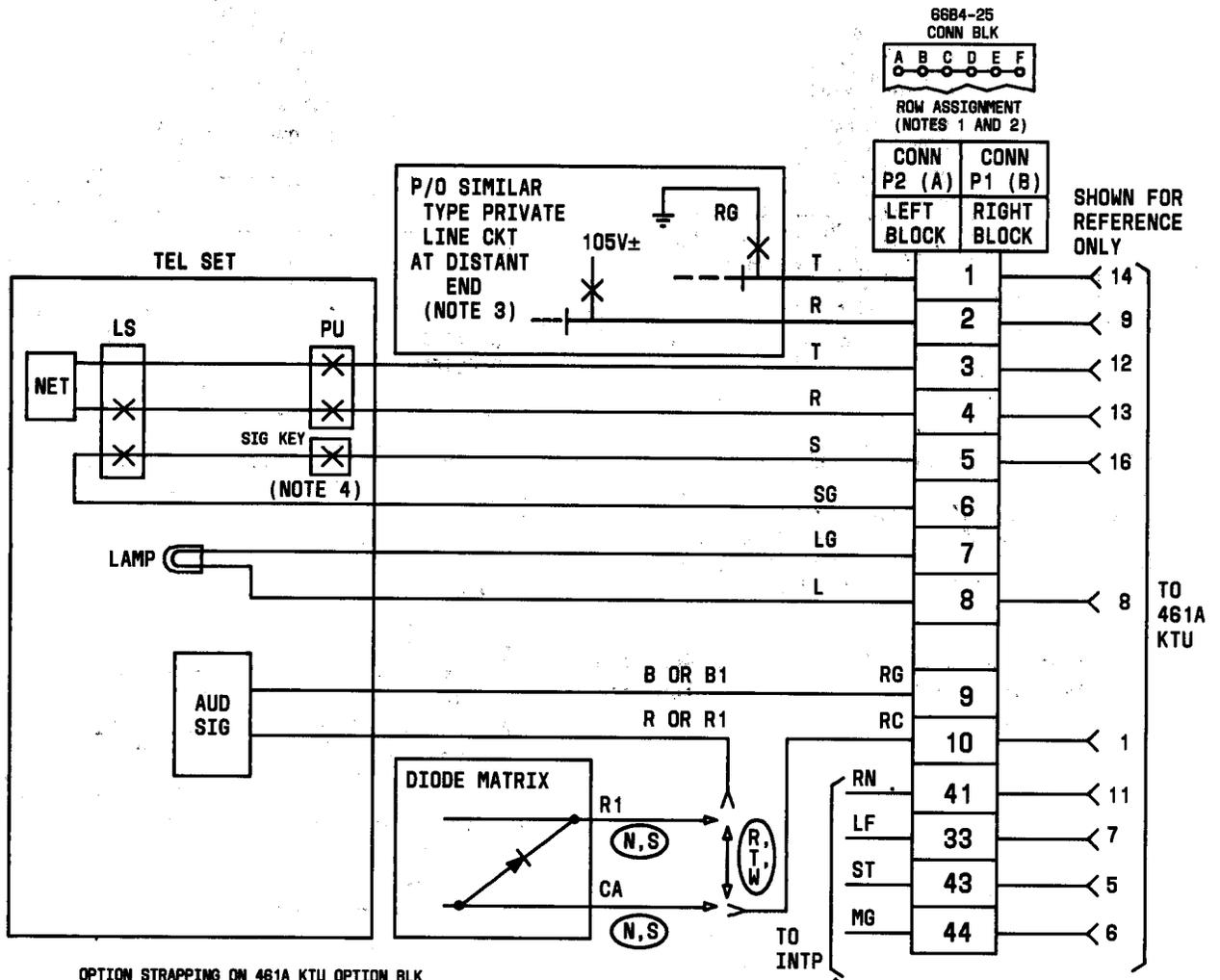


Fig. 26—Nondedicated Lead Connections for 452A KTU (Power Failure Ringing) in 110A Apparatus Mounting



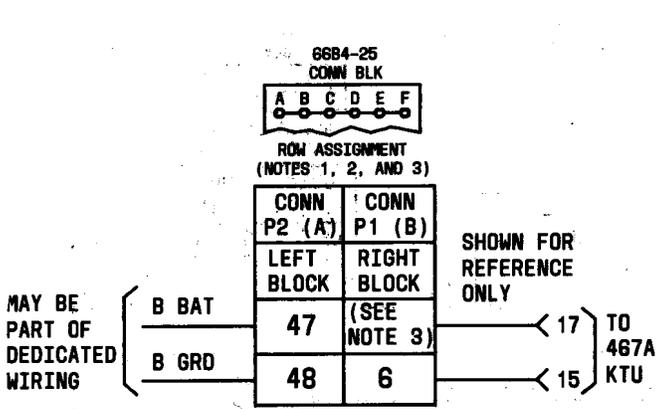
OPTION STRAPPING ON 461A KTU OPTION BLK

OPTION	FEATURES		STRAP TERMINALS
W	AUDIBLE SIGNALS	UNDER CONTROL OF TIME-OUT CIRCUIT (B RELAY)	INTERRUPTED RING 7 TO 8
T			STEADY RING 6 TO 7
S			COMMON WITH DIODE MATRIX CONTROL 7 TO 8
R			STEADY RING
N	UNDER CONTROL OF R RELAY	COMMON WITH DIODE MATRIX CONTROL	
X	TIME-OUT	10 SECONDS	1 TO 2
Z		16 SECONDS	2 TO 3
WITHOUT X OR Z		23 SECONDS	REMOVE X OR Z STRAPS
M	AUDIBLE RINGBACK TONE (NOTE 5)		9 TO 10

NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONNECTING BLOCK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PVT LINE CKT AT DISTANT END MAY BE A 414A KTU, 419A KTU, 204A KTU, OR ANY OTHER TYPE PVT LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RINGUP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CKT.
4. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.
5. FOR SATISFACTORY AUDIBLE RINGBACK TONE, THE RINGING SUPPLY MUST CONTAIN AN AUDIBLE COMPONENT.

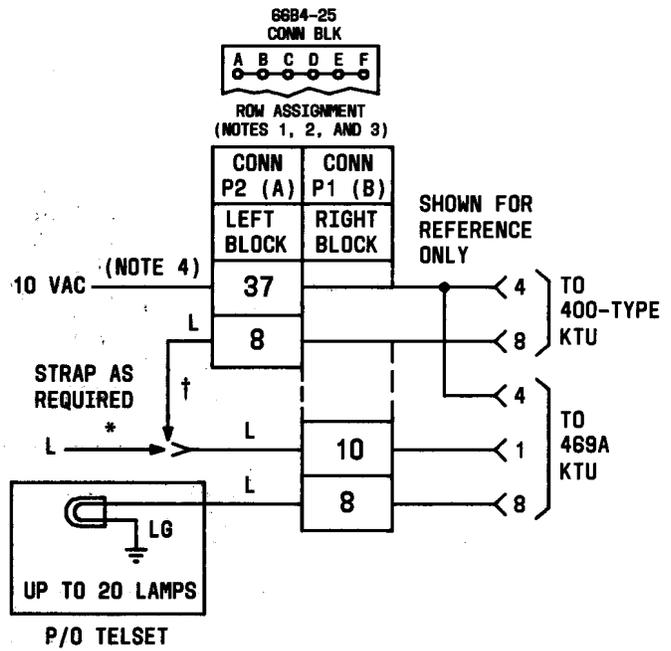
Fig. 27—Nondedicated Lead Connections for 461A KTU (Manual Signaling, Ringdown Private Line) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. KTU MAY BE PLUGGED INTO EITHER CONNECTOR, BUT B BAT IS APPLIED AS A DEDICATED LEAD ON ROW 47 OF THE LEFT BLOCK ONLY.

Fig. 28—Nondedicated Lead Connections for 467A KTU (Voltage Monitor) in 110A Apparatus Mounting

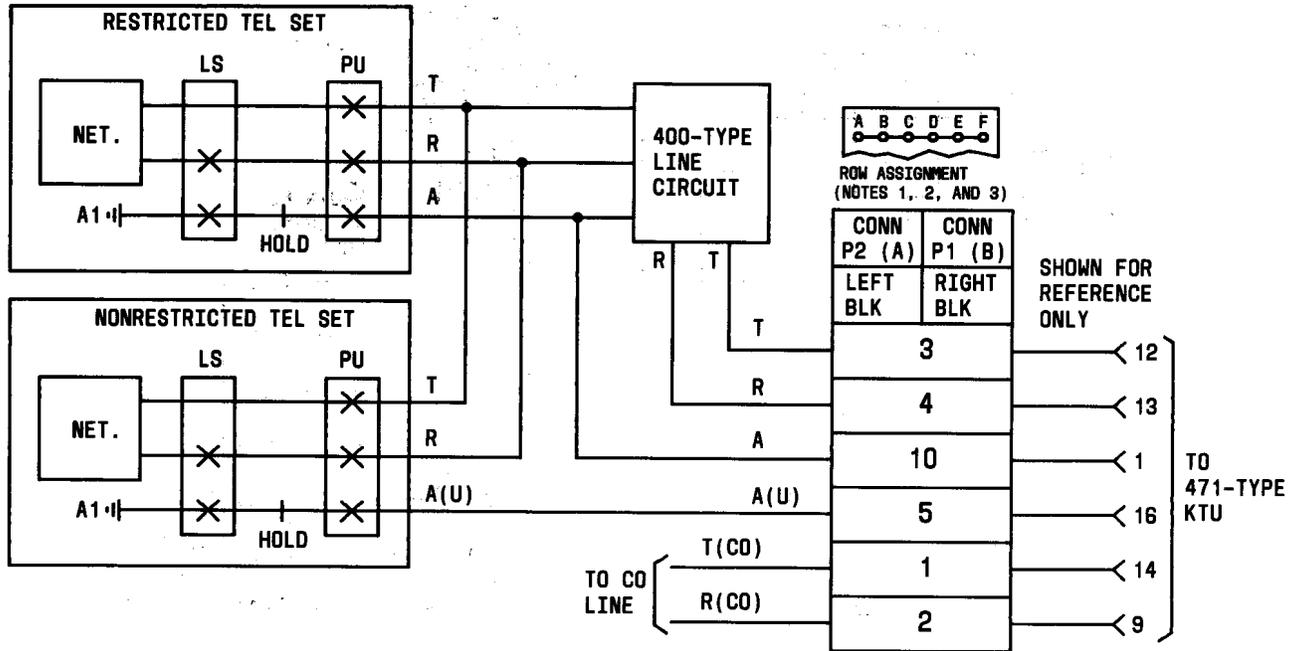


NOTES:

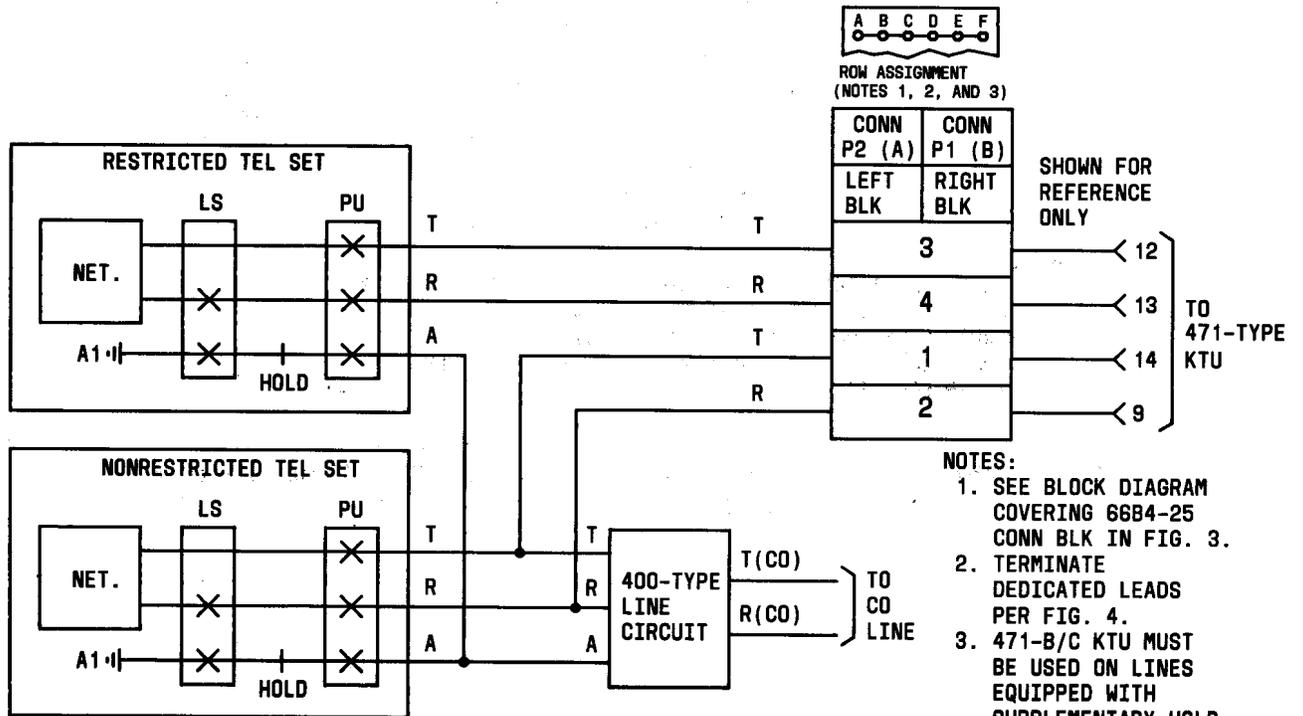
1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. 469A KTU MAY BE PLACED IN CONN A OR B WITH L LEAD EXTENDED FROM AN EXTERNAL LINE CIRCUIT OR PAIRED WITH LINE CIRCUIT AS IN THIS EXAMPLE.
4. 10 VAC IS APPLIED AS DEDICATED LEAD ON ROW 37 OF LEFT BLOCK ONLY.

- * EXTERNAL LINE CKT
- † LINE CKT IN CONN A

Fig. 29—Nondedicated Lead Connections for 469A KTU (Lamp Extender) in 110A Apparatus Mounting

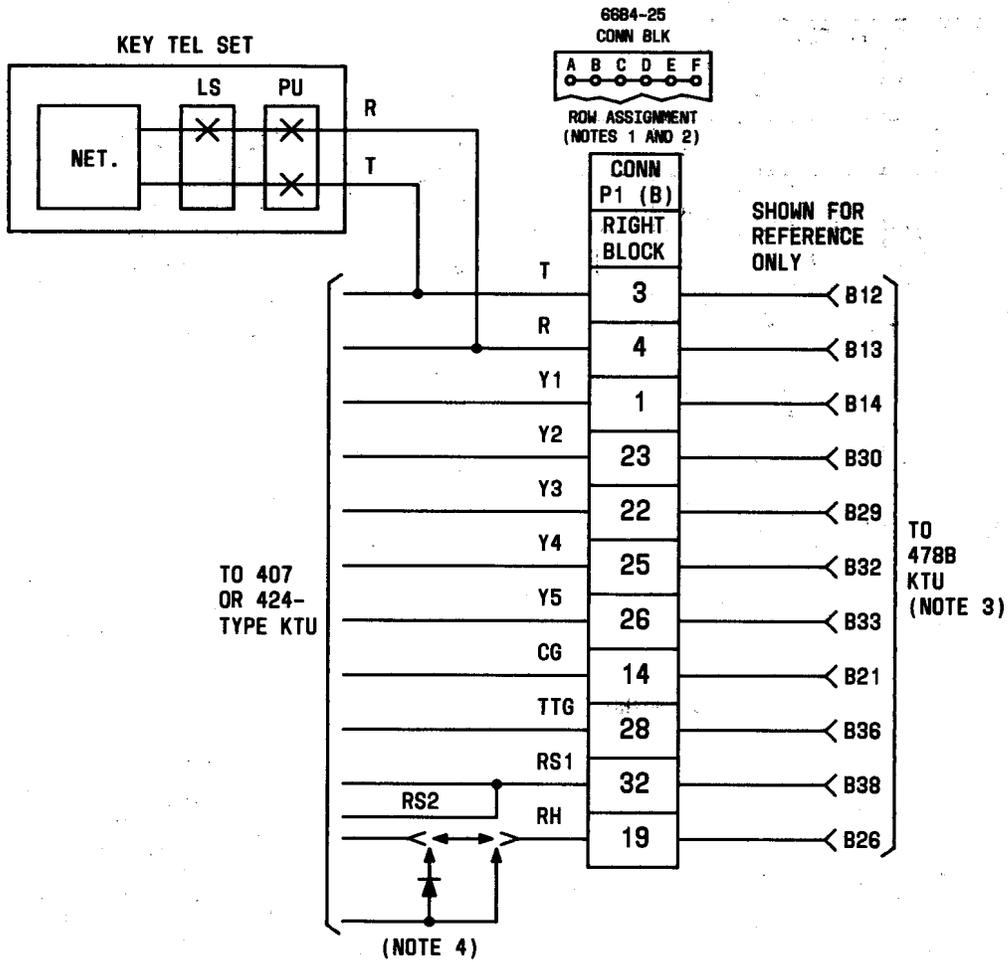


A. STANDARD (PREFERRED) WIRING ARRANGEMENT



B. ALTERNATE WIRING ARRANGEMENT

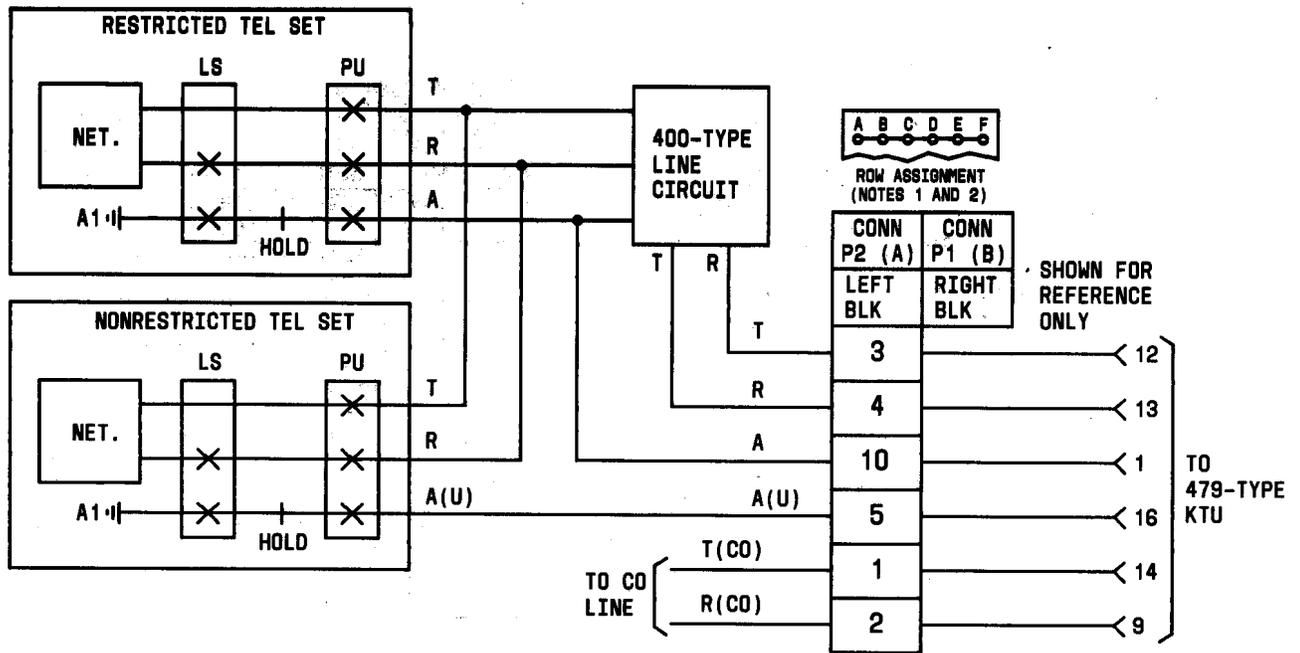
Fig. 30—Nondedicated Lead Connections for 471-Type KTU (Battery Reversal Toll Restriction) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. REQUIRES USE OF BOTH A AND B CONNECTORS.
4. DIODE (400J, LOCALLY PROVIDED) MUST BE FURNISHED IN SYSTEM EQUIPPED WITH DIAL TONE.

Fig. 31 — Nondedicated Lead Connections for 478B KTU (TOUCH-TONE Adapter) in 110A Apparatus Mounting



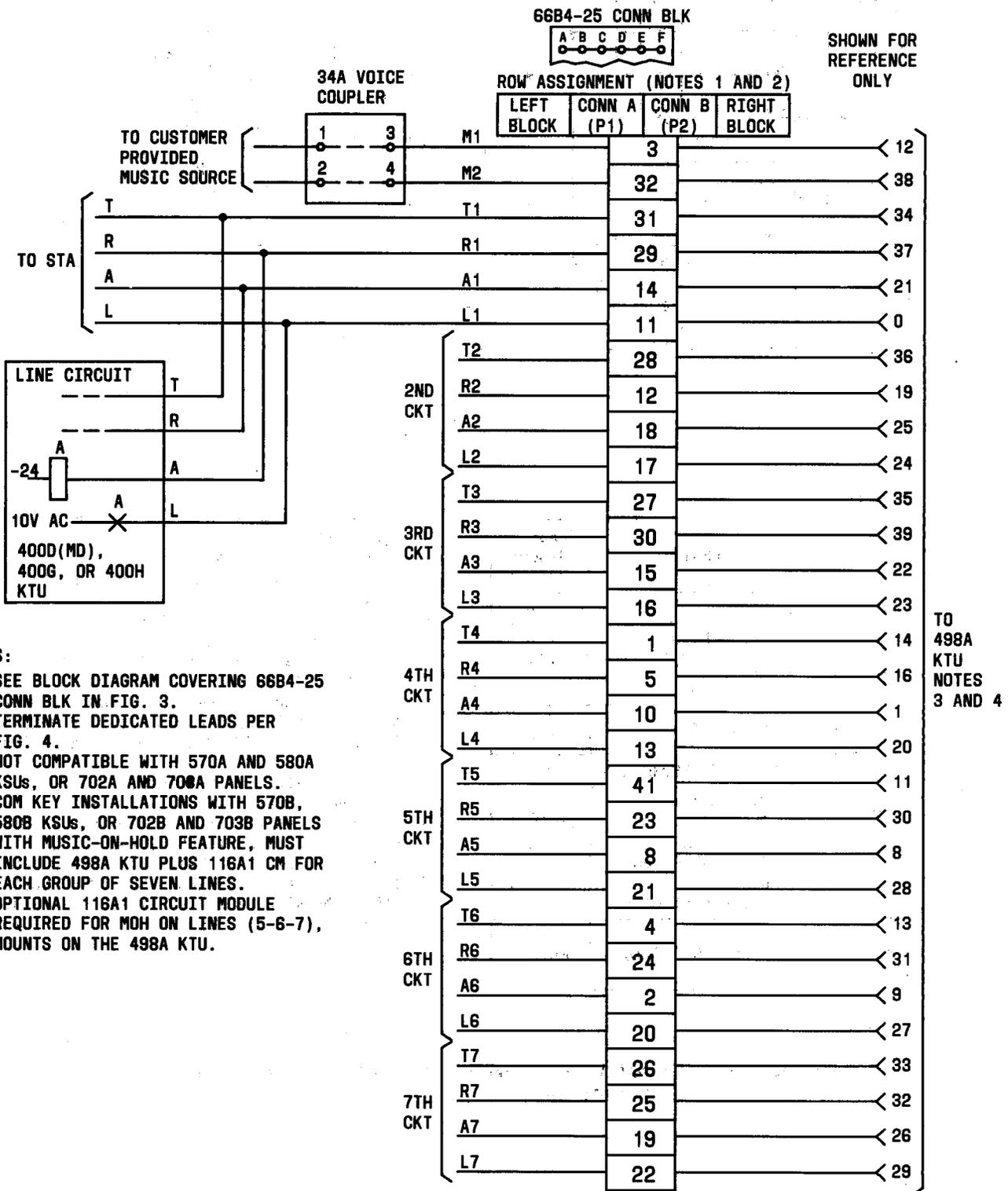
OPTIONS:

UNIT	OPT	FEATURE	PLACE KS-CONN (NOTE 3)
479B KTU	W	TOLL ALLOWED	G-H
	X	TOLL DENIED	H-J
	Y	LOOP START	B-C E-F
	Z	GROUND START	A-B D-E
107A CM	V	2-DIGIT ABSORPTION	A-B
		1ST DIGIT	(NOTE 4)
		2ND DIGIT	
		ABSORB REPEATEDLY AND/OR ABSORB ONLY ONCE	(NOTE 5)
107B CM (NOTE 7)		NPA CODE RESTRICTION	(NOTE 6)

NOTES:

- SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
- TERMINATE DEDICATED LEADS PER FIG. 4.
- PLACE KS-21290 L1 CONNECTOR ON TERMINALS AS INDICATED.
- PLACE KS-CONN ACROSS LIKE-NUMBERED TERMINALS AS NUMBER TO BE ABSORBED:
 - 1ST DIGIT-IN OPTION FIELD AR/1
 - 2ND DIGIT-IN OPTION FIELD A/2
- REMOVE KS-CONN, IF PROVIDED, FROM TERMINALS A-B, AND PLACE KS-CONN ACROSS LIKE NUMBERED TERMINALS AS EACH NUMBER TO BE ABSORBED AS FOLLOWS:
 - REPEATEDLY-IN OPTION FIELD AR/1
 - ONLY ONCE-IN OPTION FIELD A/2
- PLACE KS-CONN ACROSS LIKE-NUMBERED TERMINALS AS NPA CODE TO BE ALLOWED. EACH 107B CIRCUIT MODULE WILL HANDLE TWO NPA CODES.
- IF 107A IS NOT REQUIRED, TWO 107B MODULES CAN BE MOUNTED ON THE 479-TYPE KTU FOR A TOTAL OF FOUR NPA CODES.

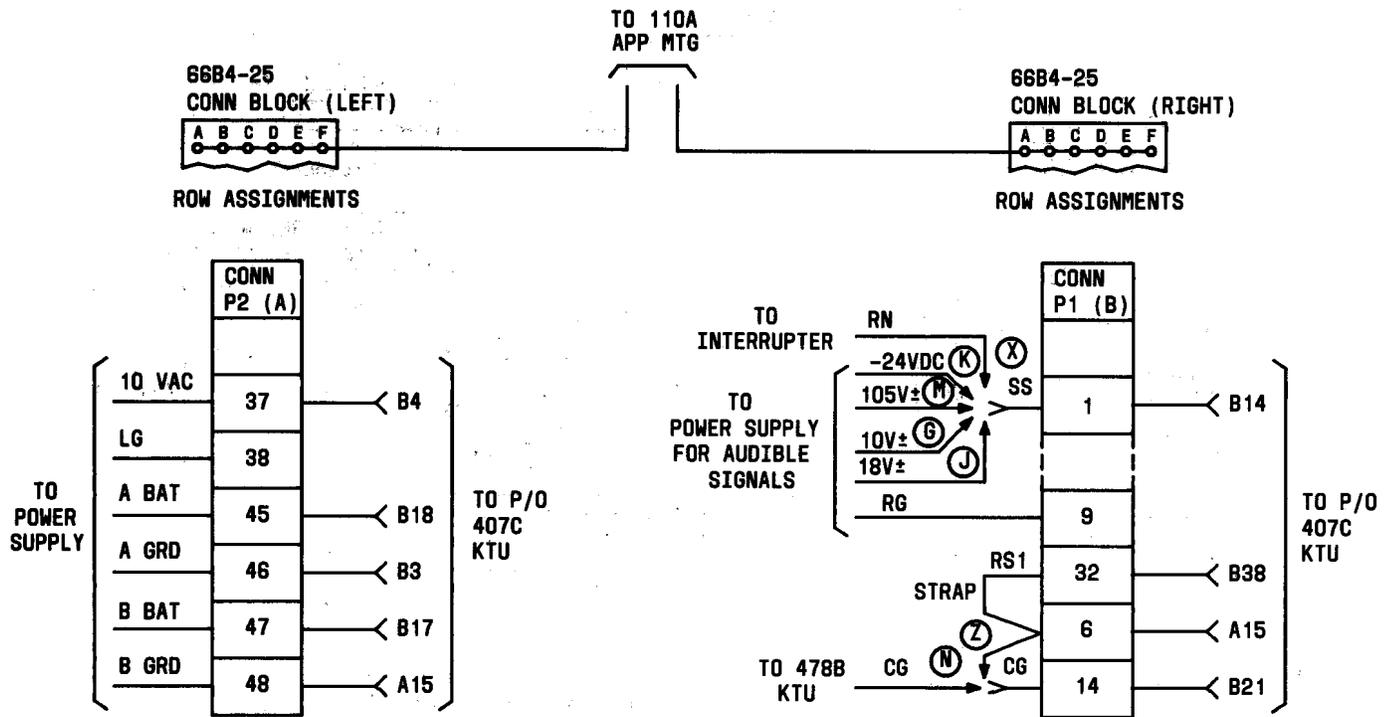
Fig. 32—Nondedicated Lead Connections for 479-Type KTU (Rotary Dial Toll Restriction) in 110A Apparatus Mounting



NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. NOT COMPATIBLE WITH 570A AND 580A KSUs, OR 702A AND 700A PANELS. COM KEY INSTALLATIONS WITH 570B, 580B KSUs, OR 702B AND 703B PANELS WITH MUSIC-ON-HOLD FEATURE, MUST INCLUDE 498A KTU PLUS 116A1 CM FOR EACH GROUP OF SEVEN LINES.
4. OPTIONAL 116A1 CIRCUIT MODULE REQUIRED FOR MOH ON LINES (5-6-7), MOUNTS ON THE 498A KTU.

Fig. 33—Nondedicated Lead Connections for 498A KTU and 116A1 CM (Music-On-Hold) in 110A Apparatus Mounting



OPTIONS

Z	WITHOUT	"TOUCH-TONE" DIAL STATION
N	WITH	
J	AC BUZZER OR BELL	TYPE AUDIBLE SIGNAL
K	DC BUZZER OR BELL	
M	RINGER	
X	INTERRUPTED	

Fig. 34—Basic Dial Intercom, Strapping and Power Supply Connections for 407-Type KTU in 110A Apparatus Mounting

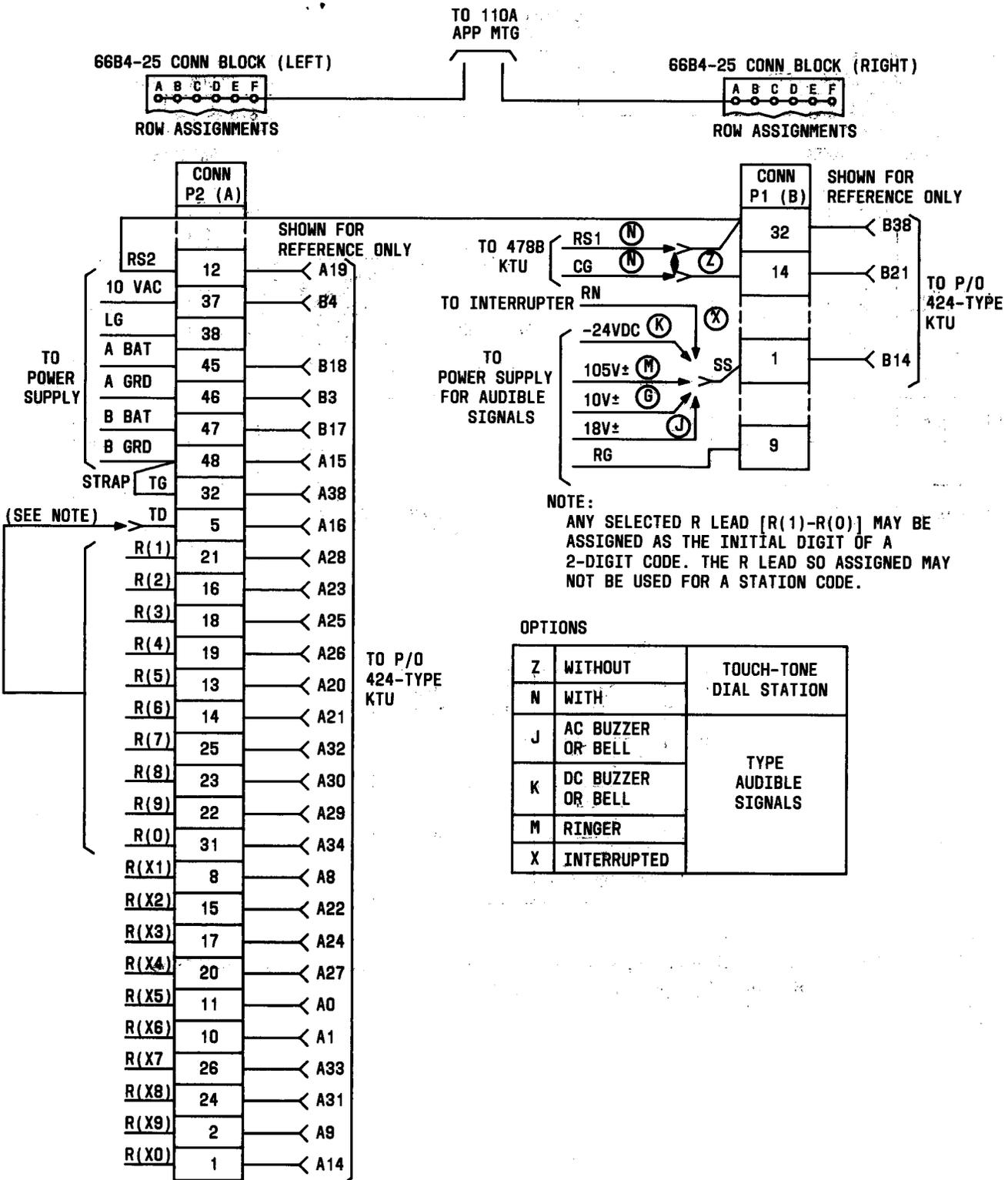


Fig. 35 — Basic Dial Intercom, Strapping and Power Supply Connections for 424-Type KTU in 110A Apparatus Mounting

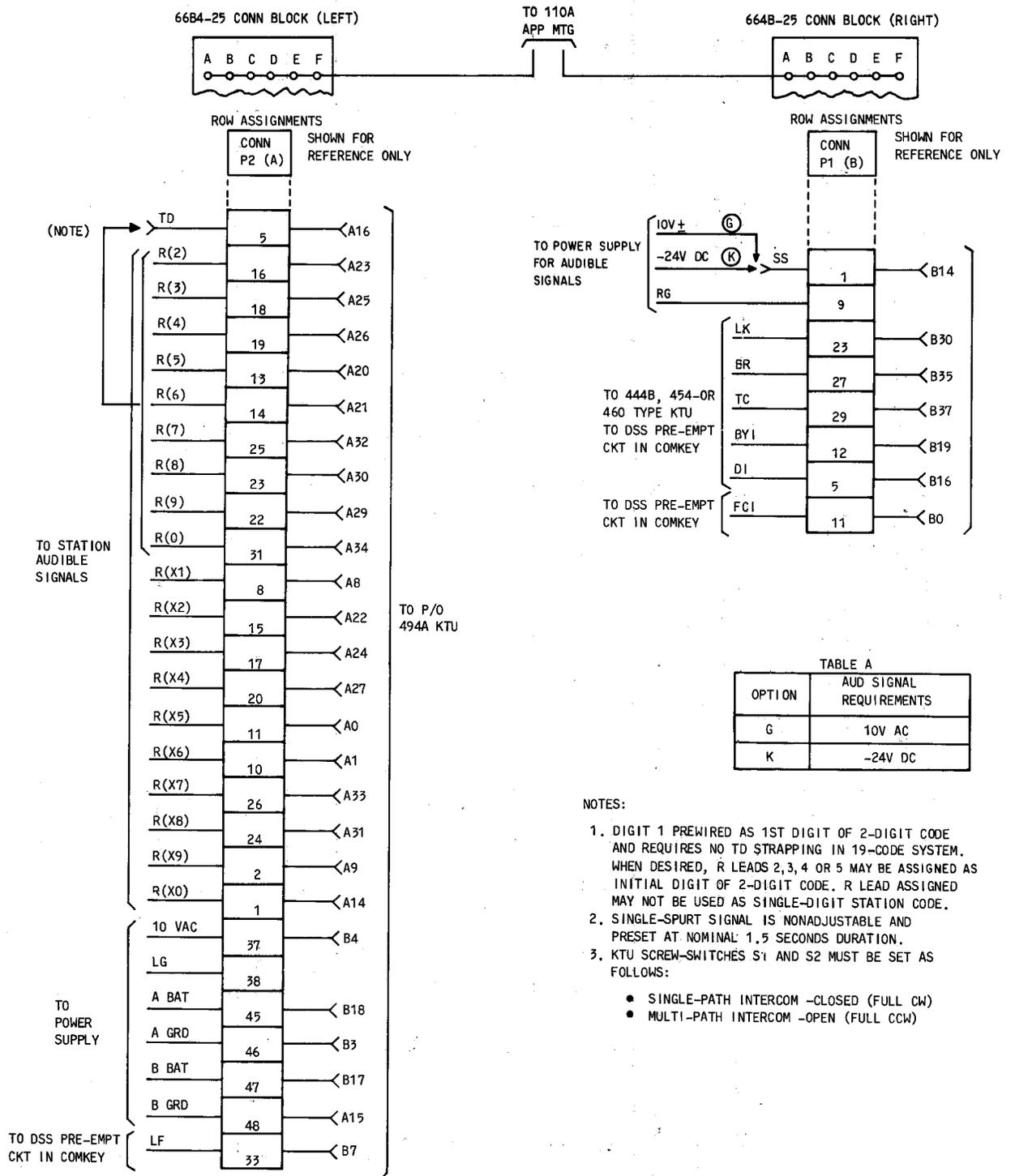


Fig. 36—Basic Dial Intercom With TOUCH-TONE Dialing, Strapping and Power Supply Connections for 494A KTU in 110A Apparatus Mounting

◆ TABLE C ◆

(NOTE)
 BASIC AND DELUXE DIAL INTERCOM CONNECTIONS
 407- AND 424-TYPE KTUs TO ASSOCIATED AND OPTIONAL KTUs

LEAD DESIGNATION KTU		6684-25 CONNECTING BLOCKS ROW AND COLUMN ASSIGNMENTS		ASSOCIATED KTUs TO PROVIDE DEULXE DIAL INTERCOM				OPTIONAL KTUs				
				STATION BUSY SELECTOR		AUDIBLE TONES	FLASHING LAMPS	TOUCH-TONE	PRESET CONFERENCE		DSS	LONG LINE
				UNITS	TENS				413A	421A		
407-TYPE	424-TYPE	(LEFT) 1	(RIGHT) 2	422B	422B	423A	425B	478B	413A	421A	421A	420A
T	T		3F-B			•		•				•
R	R		4F-B					•				•
Y1	Y1		18F-B	•	•			•			•	
Y2	Y2		17F-B	•	•			•			•	
Y3	Y3		15F-B					•			•	
Y4	Y4	28A-E		•	•			•			•	
LR	LR	28A-E					•					
Y5	Y5	29A-E		•	•			•			•	
LA	LA		24F-B				•					
J	J		31F-B	*		•	•			•		
RS1	RS1		32F-B					•				
FC1	FC1		11F-B				•					
FC2	FC2		13F-B				•					
FC3	FC3		10F-B				•					

◆ TABLE C (Contd) ◆

(NOTE)
BASIC AND DELUXE DIAL INTERCOM CONNECTIONS
407- AND 424-TYPE KTUs TO ASSOCIATED AND OPTIONAL KTUs

LEAD DESIGNATION KTU		66B4-25 CONNECTING BLOCKS ROW AND COLUMN ASSIGNMENTS		ASSOCIATED KTUs TO PROVIDE DELUXE DIAL INTERCOM				OPTIONAL KTUs				
				STATION BUSY SELECTOR		AUDIBLE TONES	FLASHING LAMPS	TOUCH-TONE	PRESET CONFERENCE		DSS	LONG LINE
				UNITS	TENS				413A	421A		
407-TYPE	424-TYPE	(LEFT) 1	(RIGHT) 2	422B	422B	423A	425B	478B	413A	421A	421A	420A
AL1	AL1		21F-B				•					
AL2	AL2		20F-B				•					
TC	TC		29F-B				•					
D1	D1		5F-B				•					
TTG	TTG		30F-B					•				•
BR	BR		27F-B	•	•		•					
LK	LK		23F-B			•						
RH	RH		19F-B					•			•	
CG	CG		14F-B					•			•	
BY1	BY1		12F-B			•	•					
SS	SS		1F-B			•						
	LT1	27A-E		†			†					
	LT2	30A-E			†		†				†	
	TG	32A-E										
	TD	5A-E										

◆ TABLE C (Contd) ◆

(NOTE)
BASIC AND DELUXE DIAL INTERCOM CONNECTIONS
407- AND 424-TYPE KTUs TO ASSOCIATED AND OPTIONAL KTUs

LEAD DESIGNATION KTU		66B4-25 CONNECTING BLOCKS ROW AND COLUMN ASSIGNMENTS		ASSOCIATED KTUs TO PROVIDE DELUXE DIAL INTERCOM				OPTIONAL KTUs				
				STATION BUSY SELECTOR		AUDIBLE TONES	FLASHING LAMPS	TOUCH-TONE	PRESET CONFERENCE		DSS	LONG LINE
				UNITS	TENS				413A	421A		
407-TYPE	424-TYPE	(LEFT) 1	(RIGHT) 2	422B	422B	423A	425B	478B	413A	421A	421A	420A
B(1-0)	B(1-X0)	As Assigned for Station Connection										•
R(1-0)	R(1-X0)								•			

Note: Deluxe intercom is not available with the 494-type KTU.

* To 407-type KTU only.

† To 424-type KTU only.

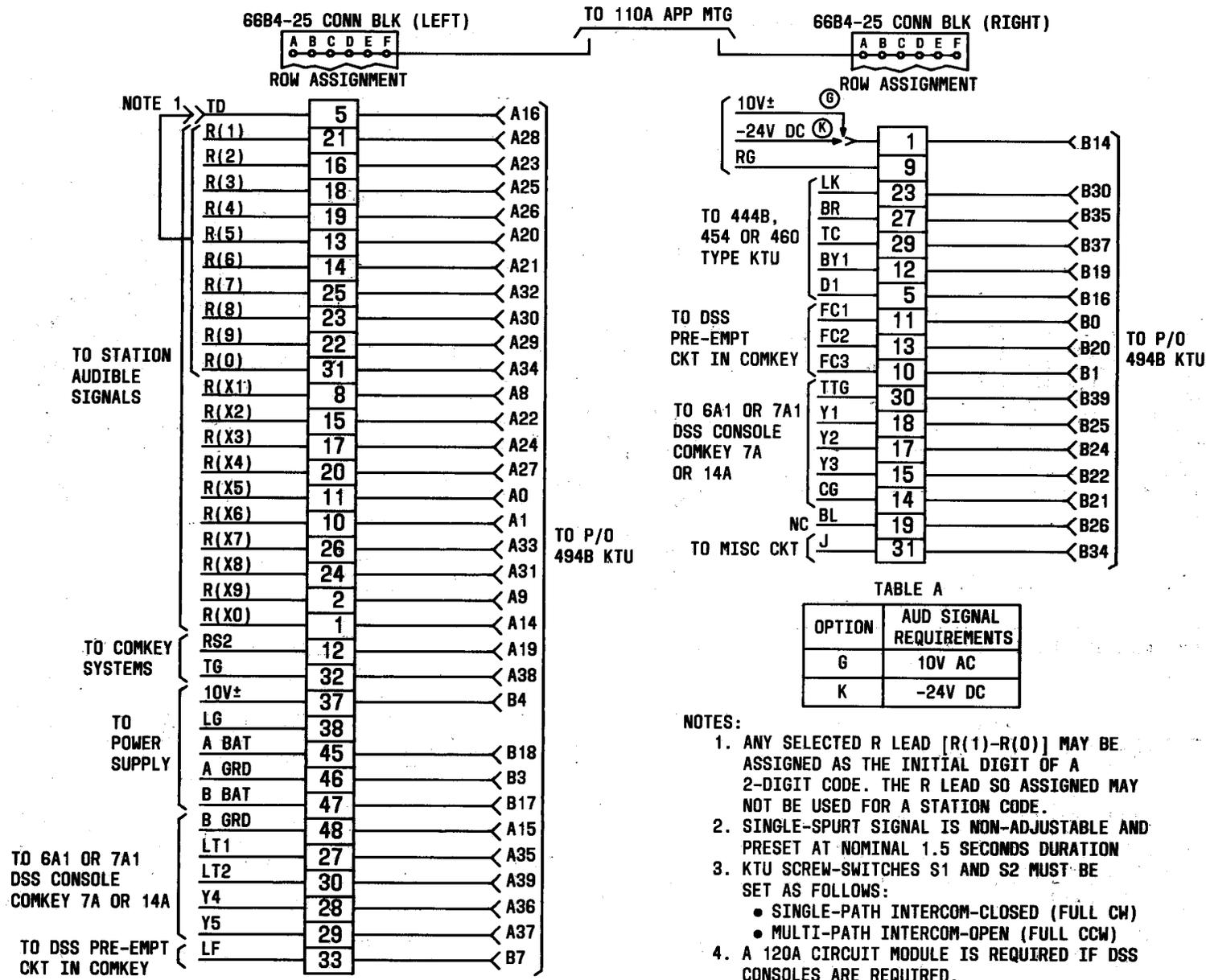
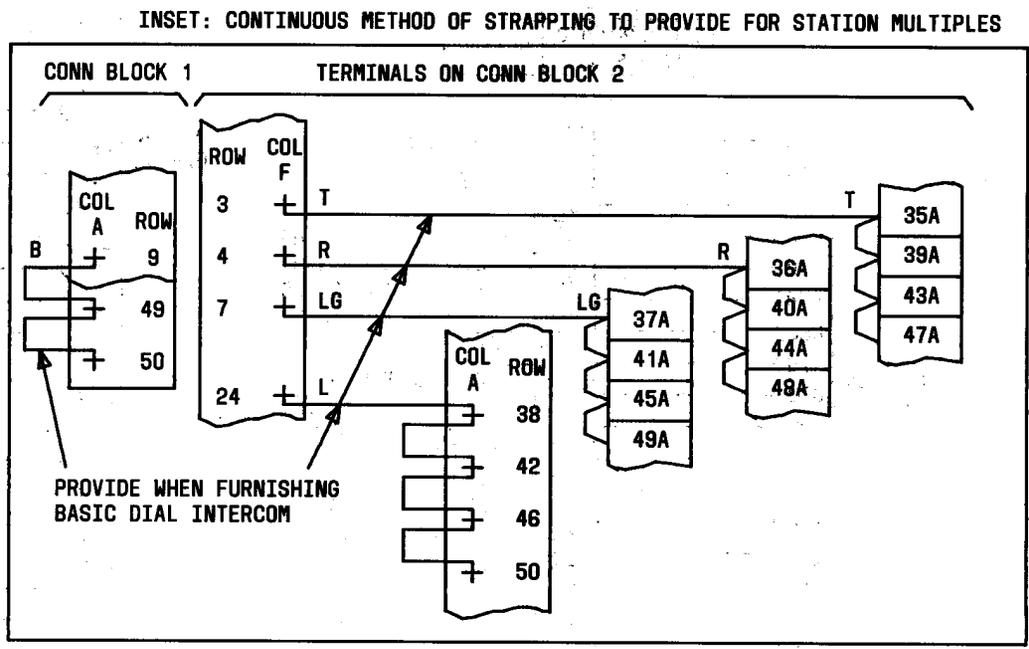
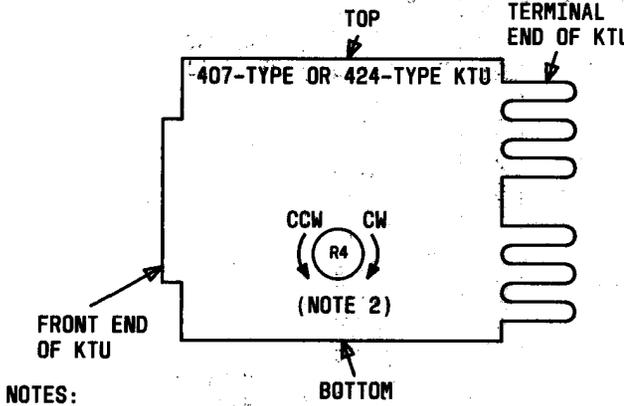


Fig. 37 — Basic Dial Intercom With Rotary and TOUCH-TONE Dialing, Strapping and Power Supply Connections for 494B KTU

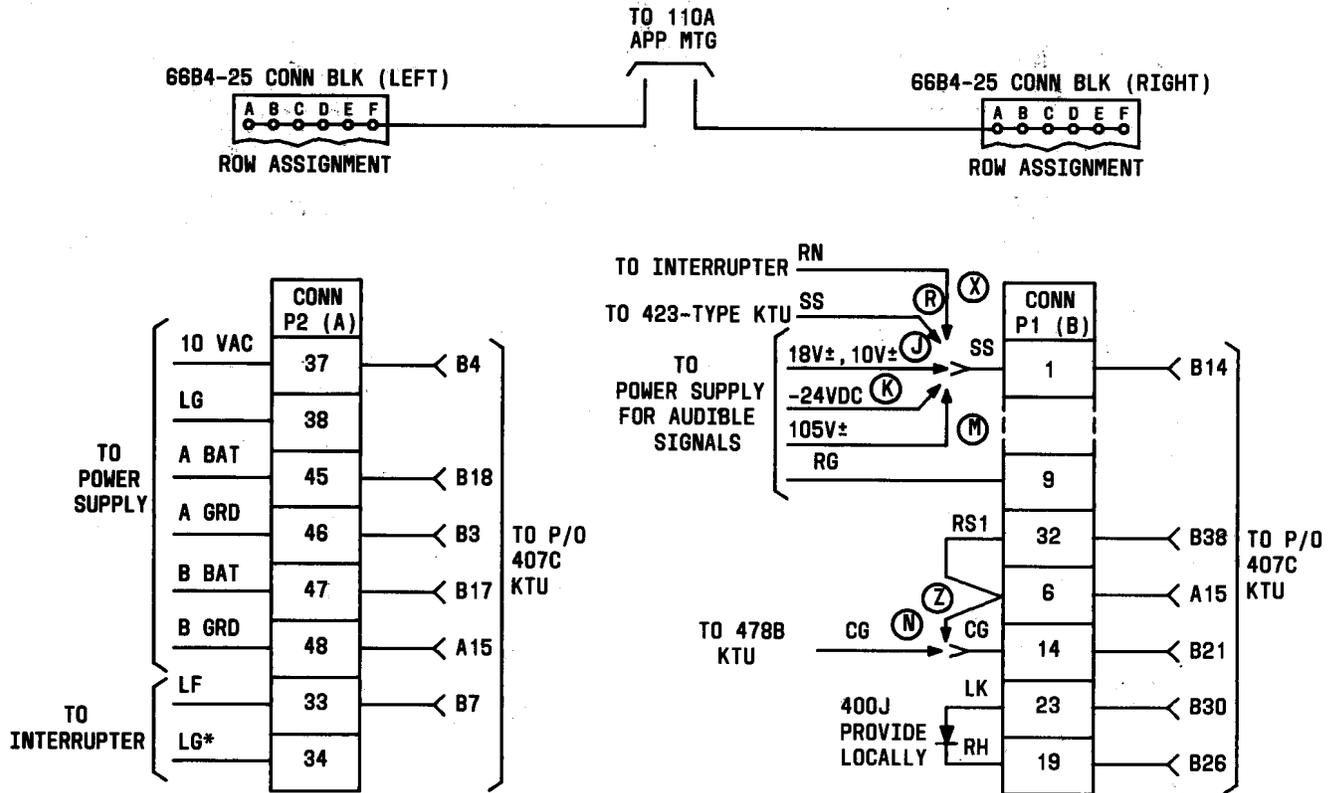
ROW AND COLUMN ASSIGNMENTS FOR STATIONS 424-TYPE KTU

		407-TYPE KTU										494-TYPE KTU (NOTE 3)														
STATION NUMBER		1	2	3	4	5	6	7	8	9	0	X1	X2	X3	X4	X5	X6	X7	X8	X9	X0					
TO TEL SET	T	35F	35E	35D	35C	35B	36F	36E	36D	36C	36B	39F	39E	39D	39C	39B	43F	43E	43D	43C	43B	47F	47E	47D	47C	47B
	R	36F	36E	36D	36C	36B	40F	40E	40D	40C	40B	44F	44E	44D	44C	44B	48F	48E	48D	48C	48B	48F	48E	48D	48C	48B
	LG	37F	37E	37D	37C	37B	41F	41E	41D	41C	41B	45F	45E	45D	45C	45B	49F	49E	49D	49C	49B	49F	49E	49D	49C	49B
	L	38F	38E	38D	38C	38B	42F	42E	42D	42C	42B	46F	46E	46D	46C	46B	50F	50E	50D	50C	50B	50F	50E	50D	50C	50B
TO AUD SIG	B	9B	9C	9D	9E	40A	40B	40C	40D	40E	42A	42B	42C	42D	42E	49B	49C	49D	49E	50B	50C	66B4-25	66B4-25	66B4-25	66B4-25	66B4-25
	R	21A	16A	18A	19A	13A	14A	25A	23A	22A	31A	8A	15A	17A	20A	11A	10A	26A	24A	2A	1A	CONN BLK 2	CONN BLK 2	CONN BLK 2	CONN BLK 2	CONN BLK 1



- NOTES:
1. WHEN MAKING STATION CONNECTIONS, RUN STRAPS (T,R,LG,L,B) ON CONN BLKS 1 AND 2 AS SHOWN IN INSET.
 2. RESISTOR R4 CAN BE ADJUSTED TO PROVIDE A TIMING CYCLE FOR THE RELEASE OF RELAY B FROM 0.5 SEC TO 2.5 SEC. A TIMING CYCLE OF 1.5 SEC IS PROVIDED BY THE FACTORY. TURN KNURLED WHEEL TO FULL CCW POSITION FOR 0.5 SEC TIMEOUT AND TO FULL CW POSITION FOR 2.5 SEC TIMEOUT.
 3. 494-TYPE KTU
 A) NON-ADJUSTABLE SINGLE-SPURT SIGNALING DURATION NOMINAL 1.5 SECONDS
 B) SCREW-SWITCHES S1 & S2 SETTINGS: SINGLE PATH -CLOSED (FULL CW)
 COM KEY 2152- OPEN (CCW)

Fig. 38—Basic Dial Intercom, Station Connections



* PAIRED WITH LF LEAD TO PREVENT NOISE CONDITION.

OPTIONS

Z	WITHOUT	TOUCH-TONE DIAL STATION
N	WITH	
J	AC BUZZER OR BELL	TYPE AUDIBLE SIGNALS
K	DC BUZZER OR BELL	
M	RINGER	
X	INTERRUPTED	
R	INTERRUPTED WITH STATION BUSY TONE	

Fig. 39—Deluxe Dial Intercom, Strapping and Power Supply Connections for 407-Type KTU in 110A Apparatus Mounting

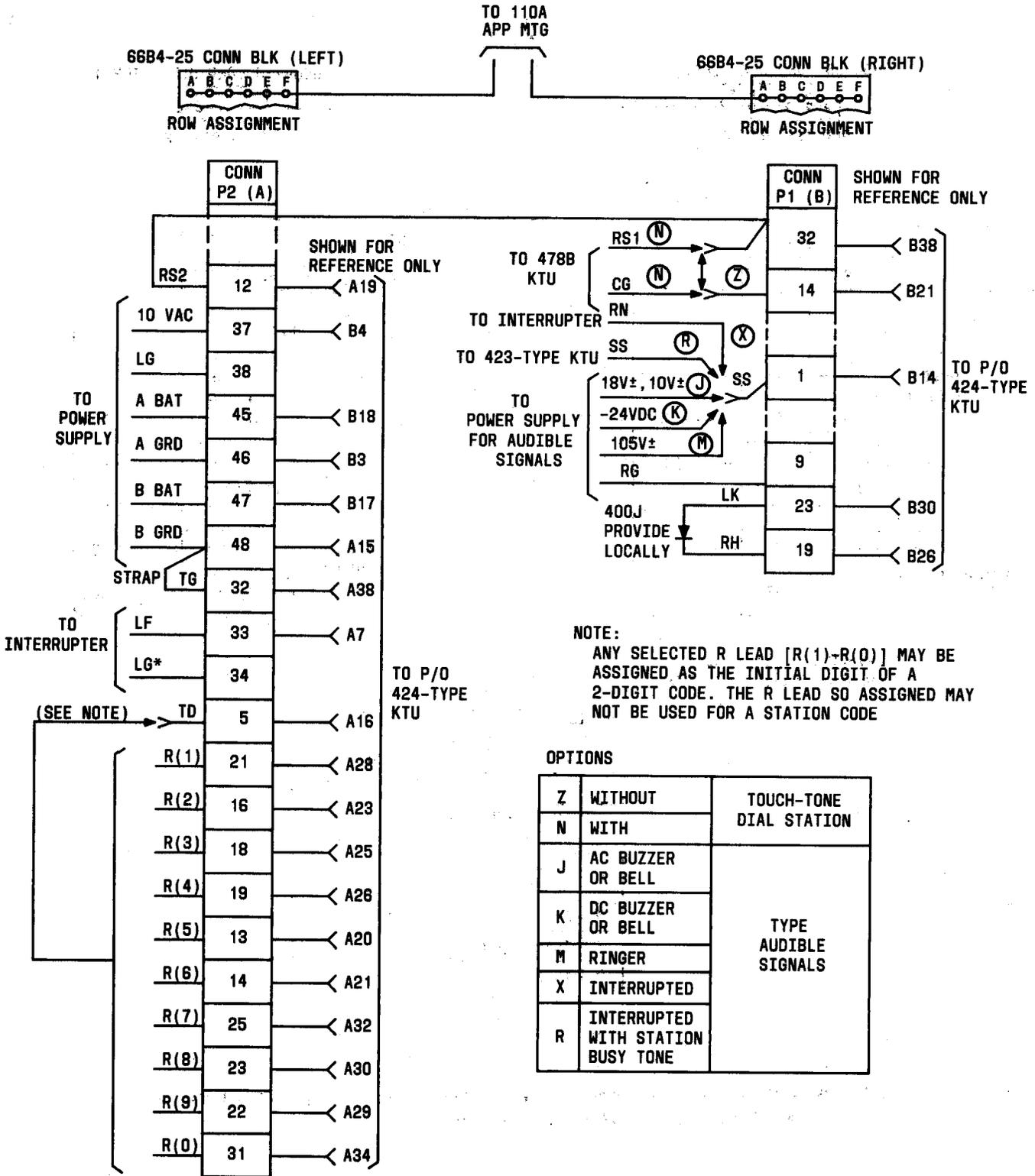


Fig. 40—Deluxe Dial Intercom, Strapping and Power Supply Connections for 424-Type KTU in 110A Apparatus Mounting

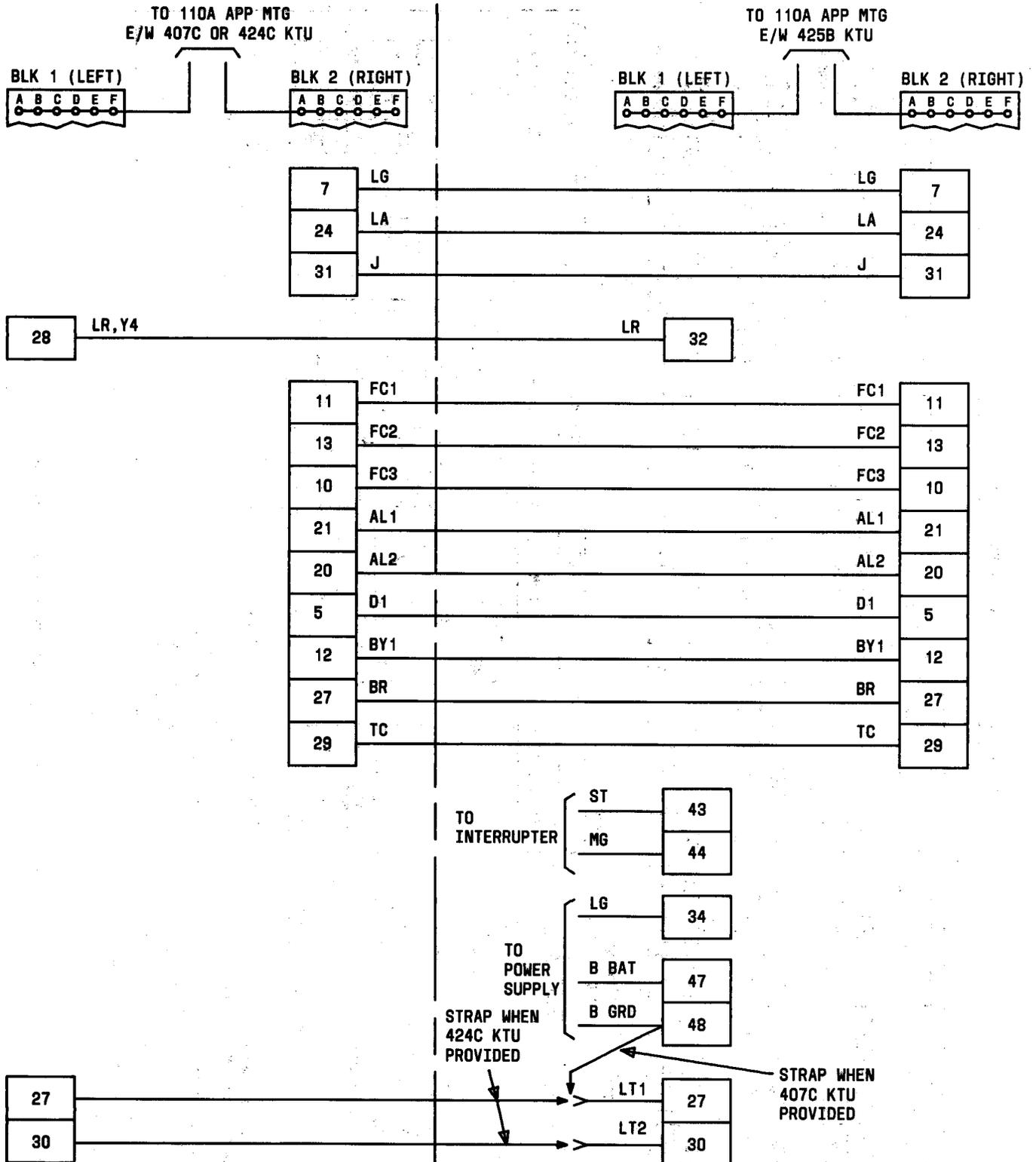
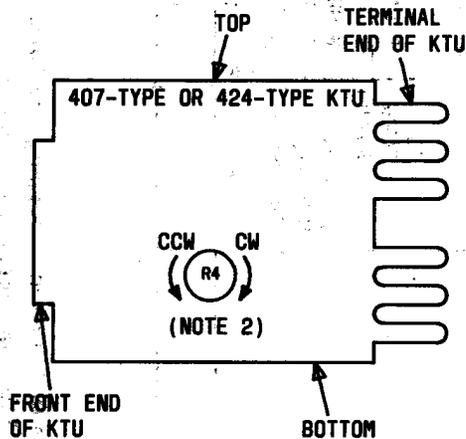


Fig. 41—Deluxe Dial Intercom, Strapping and Power Supply Connections for 425B KTU in 110A Apparatus Mounting

424-TYPE KTU ROW AND COLUMN ASSIGNMENTS FOR STATIONS

		407-TYPE KTU																				
STATION NUMBER		1	2	3	4	5	6	7	8	9	0	X1	X2	X3	X4	X5	X6	X7	X8	X9	X0	
TO TEL SET	T	35F	35E	35D	35C	35B	39F	39E	39D	39C	39B	43F	43E	43D	43C	43B	47F	47E	47D	47C	47B	6684-25 CONN BLK BLK 2. (NOTE 1) 407C/424C KTU
	R	36F	36E	36D	36C	36B	40F	40E	40D	40C	40B	44F	44E	44D	44C	44B	48F	48E	48D	48C	48B	
TO TEL SET	LG	34A	34B	34C	34D	34E	36A	36B	36C	36D	36E	38A	38B	38C	38D	38E	49B	49C	49D	49E	50B	6684-25 CONN BLK BLK 1 425B KTU
	L	21A	16A	18A	19A	13A	14A	25A	23A	22A	31A	8A	15A	17A	20A	11A	10A	26A	24A	2A	1A	
TO AUD SIG	B	9B	9C	9D	9E	40A	40B	40C	40D	40E	42A	42B	42C	42D	42E	49B	49C	49D	49E	50B	50C	6684-25 CONN BLK BLK 1 407C/424C KTU
	R	21A	16A	18A	19A	13A	14A	25A	23A	22A	31A	8A	15A	17A	20A	11A	10A	26A	24A	2A	1A	



NOTES:

1. WHEN MAKING STATION CONNECTIONS, RUN STRAPS (T,R,B,LG) ON CONN BLKS 1 AND 2 AS SHOWN IN INSET
2. RESISTOR R4 CAN BE ADJUSTED TO PROVIDE A TIMING CYCLE FOR THE RELEASE OF RELAY B FROM 0.5 SEC TO 2.5 SEC. A TIMING CYCLE OF 1.5 SEC IS PROVIDED BY THE FACTORY. TURN KNURLED WHEEL TO FULL CCW POSITION FOR 0.5 SEC TIMEOUT AND TO FULL CW POSITION FOR 2.5 SEC TIMEOUT

INSET

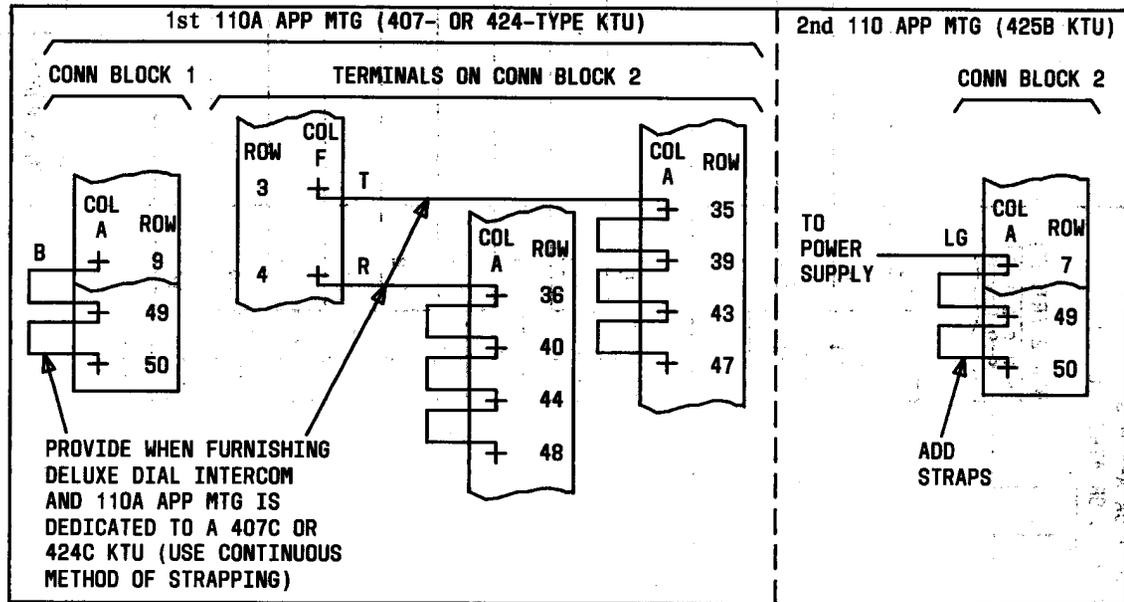
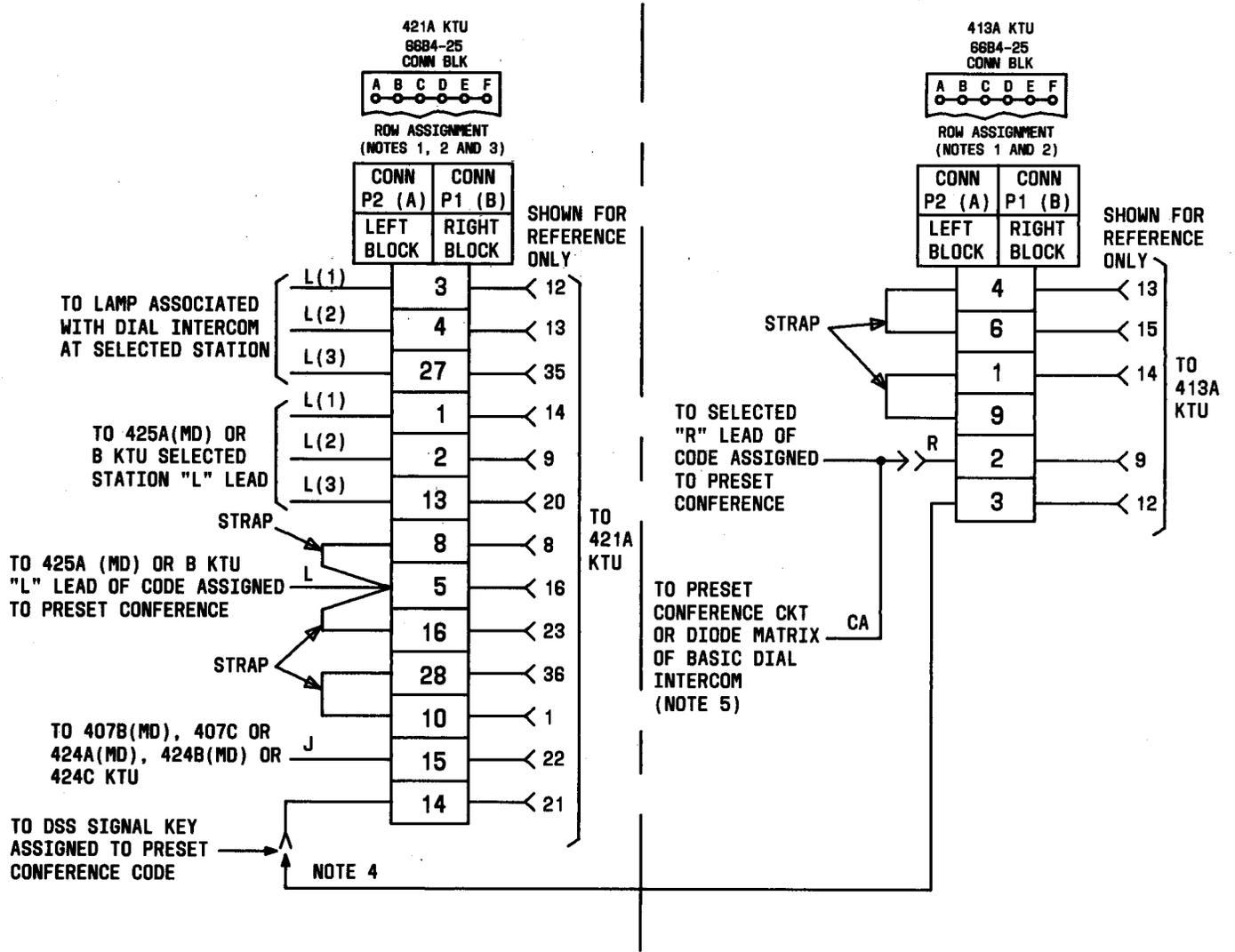


Fig. 42—Deluxe Dial Intercom, Station Connections



OPTION STRAPPING ON 421A KTU OPTION BLK

OPTION	FEATURE	STRAP TERMINALS
W	PRESET CONFERENCE	1 TO 2, 7 TO 8

NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. WHEN THIS CIRCUIT IS PROVIDED, RING VOLTAGE (105V±) MUST BE USED TO OPERATE THE AUDIBLE SIGNALS CONNECTED TO THE DIAL INTERCOM LINE.
4. PROVIDE THE 413A KTU ONLY WHEN ACCESS TO THE PRESET CONFERENCE IS BY DIAL CODE OR BY DIAL CODE AND DSS. DO NOT PROVIDE THE 413A KTU WHEN ACCESS TO THE PRESET CONFERENCE IS LIMITED TO DSS.
5. THE "CA" LEAD MUST CONNECT TO THE DIODE MATRIX WHETHER OR NOT THE 413A KTU IS PROVIDED.

Fig. 43—Nondedicated Lead Connections for Preset Conference Circuit of a Deluxe Dial Intercom Line (421A and 413A KTUs) in 110A Apparatus Mounting