

KEY TELEPHONE SYSTEMS
STATION ARRANGEMENT FOR 2- AND 4-WIRE
PRIVATE LINE SERVICE
CONNECTIONS

1. GENERAL

1.01 This section is reissued to:

- Show connections for the 500AD telephone set, to be used in single line station arrangements.
- Show connections for the J53041D, L1 speakerphone control unit in place of the 261A KTU, none of which were manufactured and which is rated Manufacture Discontinued (MD).

1.02 Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

2. CONNECTIONS

(a) Connection Index

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Table B — 89-Type Plug-In Resistors for Use With 245A KTU

(b) References

- SD-69449-01
- SD-69542-01
- SD-69422-01

TABLE A
FUSE REQUIREMENTS*

| FUSE AMP | POTENTIAL | ONE PER |
|-------------|-------------|--|
| 2 | -24V Talk | Station line circuit (248-type) |
| 2 | -24V Signal | All pickup relay (229B KTU) and exclusion relay (229B) associated with same station. |
| 2 | -24V Signal | CA, CA1, or MS relay (227-type KTU) |
| 2 | -24V Signal | 240B KTU or 244A KTU and associated 241A KTU |

* Fuse holder may be a 201-type KTU or equivalent.

TABLE B
89-TYPE PLUG-IN RESISTORS
FOR USE WITH 245A KTU*

| RESISTOR CODE | PAD LOSS IN DB |
|------------------|-------------------|
| 89A | 0 |
| 89E | 1 |
| 89J | 2 |
| 89N | 3 |
| 89T | 4 |
| 89AA | 5 |
| 89AE | 6 |
| 89AJ | 7 |
| 89AN | 8 |
| 89AT | 9 |
| 89BA | 10 |
| 89BC | 11 |
| 89BE | 12 |
| 89BG | 13 |
| 89BJ | 14 |
| 89BL | 15 |
| 89BN | 16 |
| 89BR | 17 |
| 89BT | 18 |
| 89BW | 19 |
| 89CA | 20 |

* Resistors must be ordered separately, two per 245A KTU.

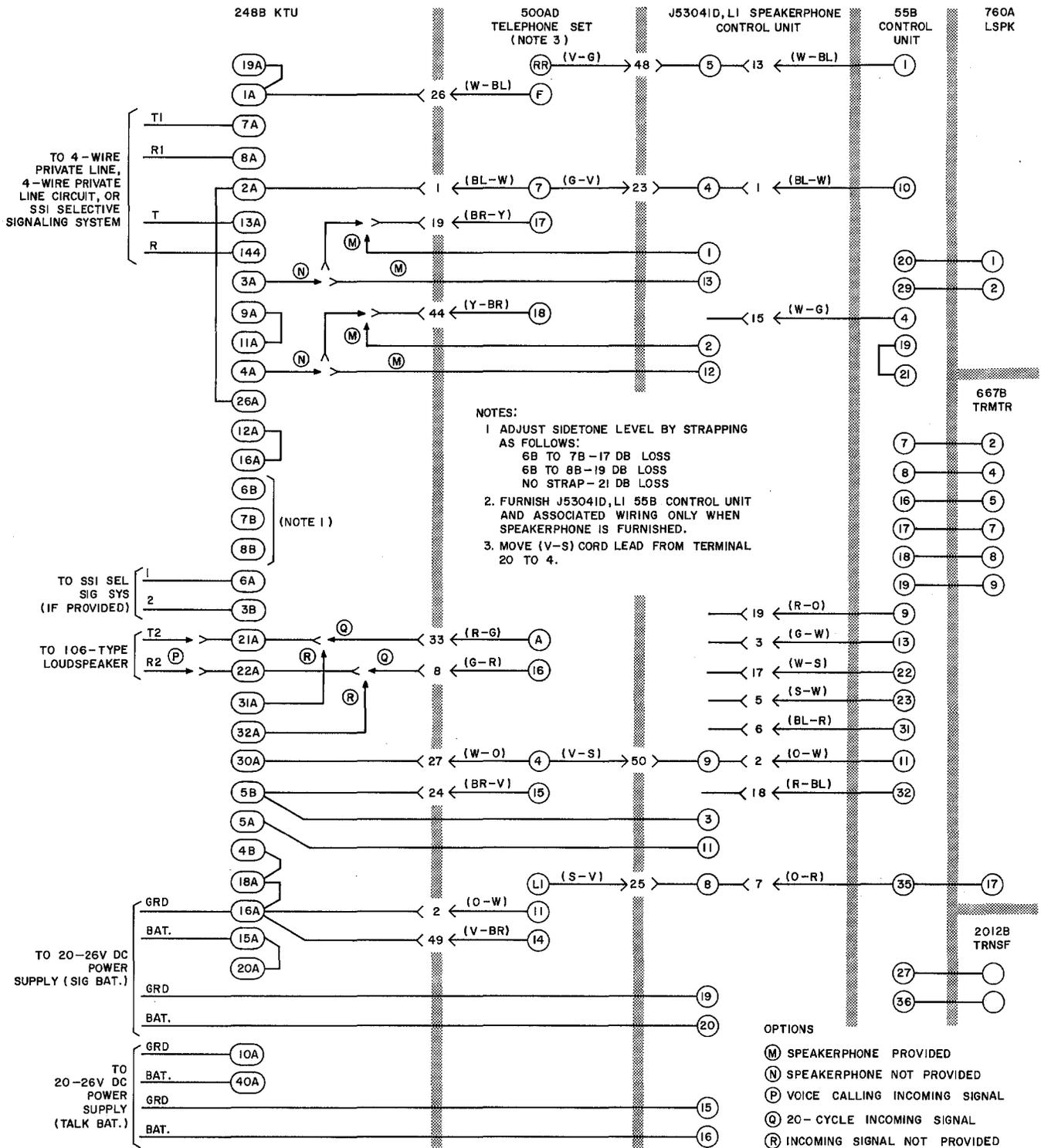


Fig. 1 - Connections for 4-Wire Service - Single Line Telephone Set

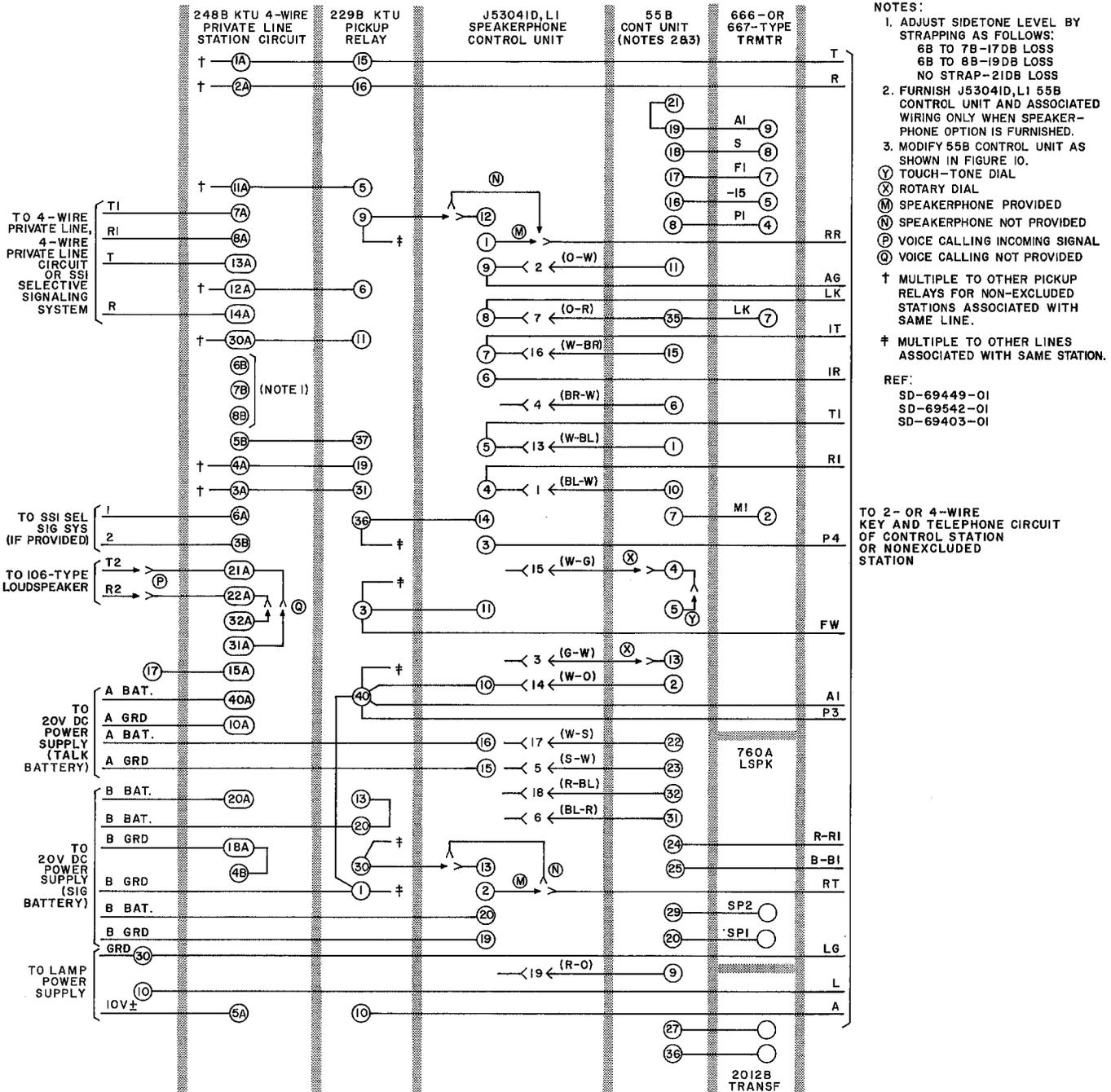
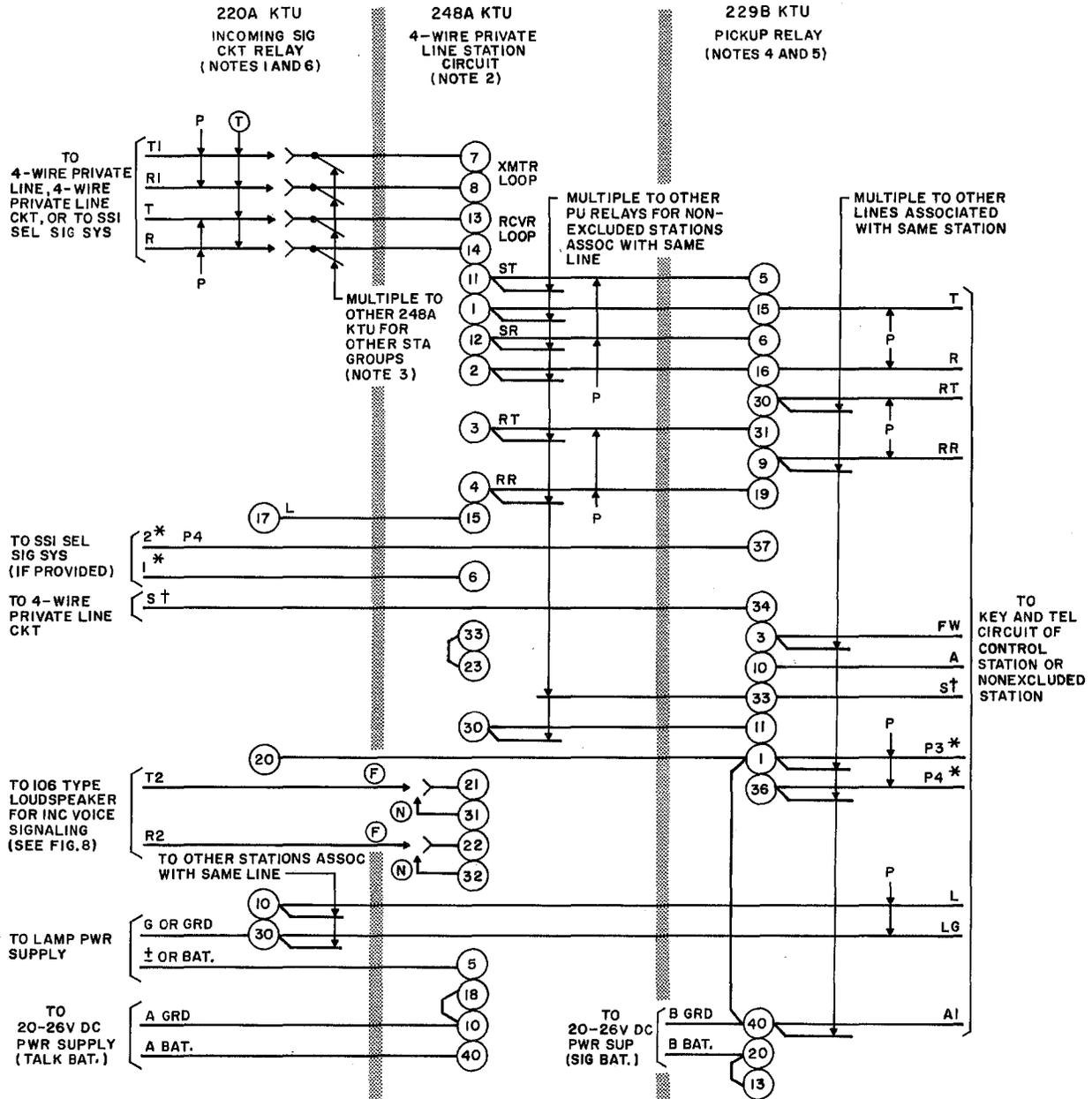


Fig. 2 — Connections for Control Station or Nonexcluded Station Using 248B KTU

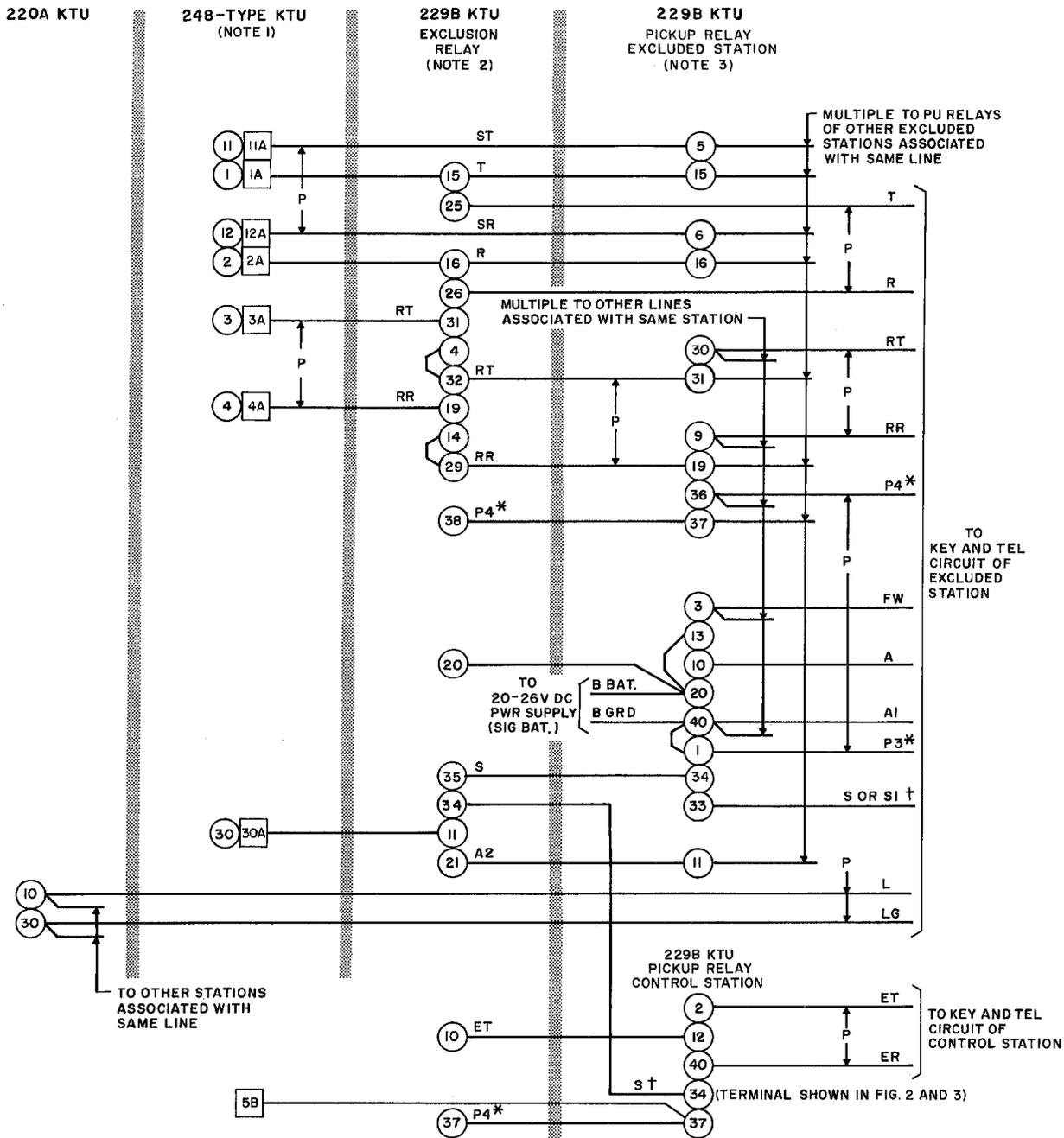


- * PROVIDE THESE LEADS WHEN LINE CONNECTS TO SSI SEL SIG SYSTEM.
 - † PROVIDE THESE LEADS WHEN MANUAL SIGNALING IS REQUIRED. NO LEADS IN THE TELEPHONE SET NEED TO BE CHANGED AS SIGNALING KEY UTILIZES A1 GROUND.
- REF: SD-69449-01
- OPTIONS:
- (T) 4-WIRE PRIVATE LINE USED WITHOUT LINE TRANSFER CIRCUIT.
 - (F) VOICE CALLING PROVIDED.
 - (N) VOICE CALLING NOT PROVIDED.

- NOTES:
1. PROVIDE ONE 220A KTU PER LINE.
 2. PROVIDE ONE 248A KTU PER STATION GROUP.
 3. PROVIDE INDIVIDUAL LEADS FOR EACH STATION GROUP WHEN SSI SEL SIG SYSTEM PRIVACY OR ON-PREMISE DIALING IS REQUIRED. WHEN CONNECTING DIRECTLY TO A 4-WIRE PRIVATE LINE. ONLY ONE STATION GROUP IS PERMITTED.
 4. PROVIDE ONE PICKUP RELAY (229B KTU) PER STATION.
 5. ADDITIONAL CONNECTIONS SHOWN ON FIG. 4 WHEN THIS FIGURE IS USED AS A CONTROL STATION TO EXCLUDE OTHER STATIONS.
 6. REFER TO FIG. 7 FOR INCOMING SIGNAL ARRANGEMENTS.

Fig. 3 — Connections for Control Station or Nonexcluded Station Using 248A KTU

SECTION 518-610-401



○ 248A KTU

□ 248B KTU

* PROVIDE THESE LEADS WHEN LINE CONNECTS TO SSI SEL SIG SYSTEM.

† PROVIDE THESE LEADS WHEN MANUAL SIGNALING IS REQUIRED. NO LEADS IN TELEPHONE SET NEED TO BE CHANGED AS SIGNALING KEY UTILIZES THE AI GROUND.

NOTES:

1. THESE CONNECTIONS ARE IN ADDITION TO THOSE SHOWN IN FIG. 2 AND 3.
2. PROVIDE ONE EXCLUSION RELAY (229B KTU) PER LINE.
3. PROVIDE ONE PICKUP RELAY (229B KTU) PER STATION.

REF:
SD-69449-01

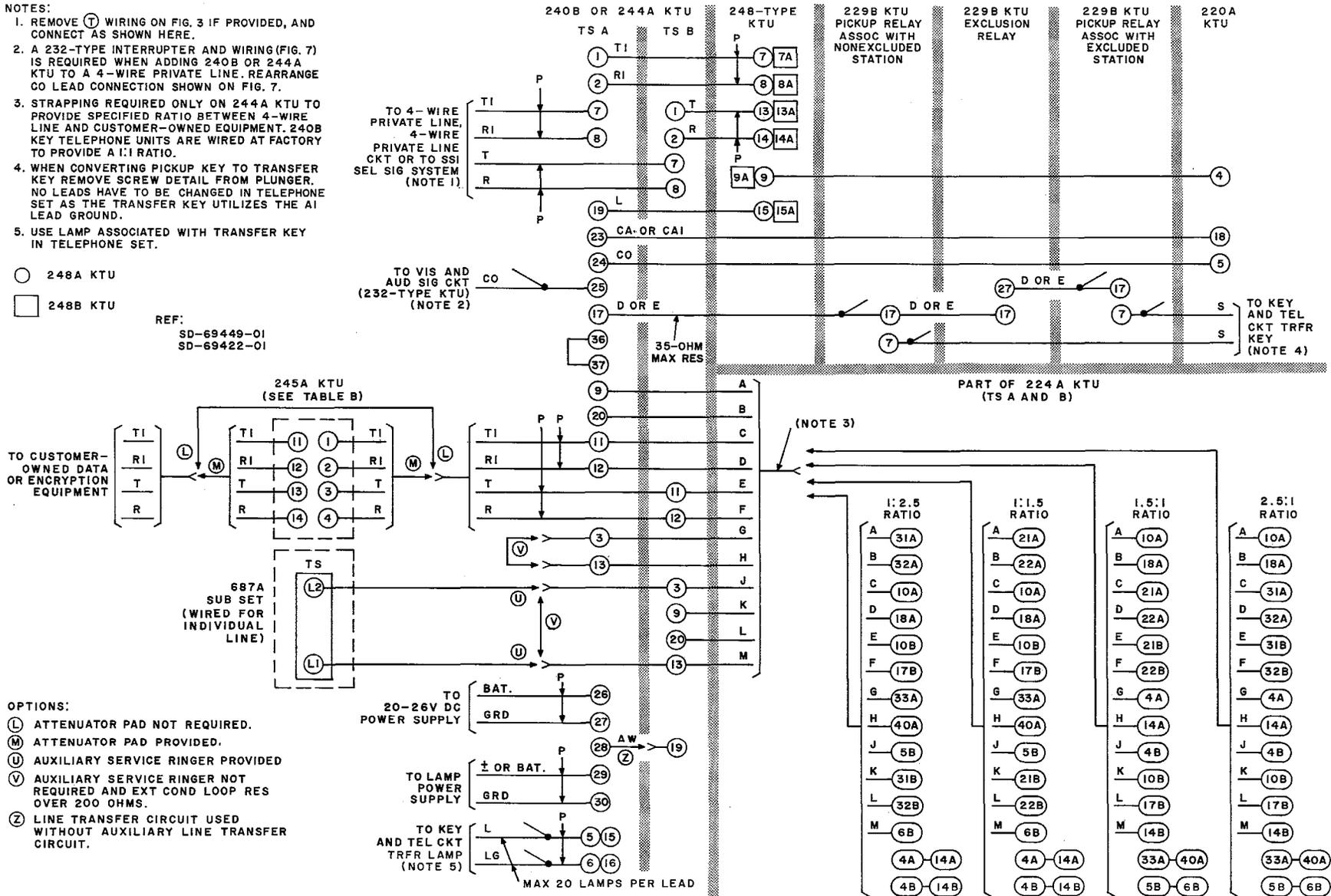
Fig. 4 — Connections for Excluded Stations

NOTES:

1. REMOVE $\text{\textcircled{T}}$ WIRING ON FIG. 3 IF PROVIDED, AND CONNECT AS SHOWN HERE.
2. A 232-TYPE INTERRUPTER AND WIRING (FIG. 7) IS REQUIRED WHEN ADDING 240B OR 244A KTU TO A 4-WIRE PRIVATE LINE. REARRANGE CO LEAD CONNECTION SHOWN ON FIG. 7.
3. STRAPPING REQUIRED ONLY ON 244A KTU TO PROVIDE SPECIFIED RATIO BETWEEN 4-WIRE LINE AND CUSTOMER-OWNED EQUIPMENT. 240B KEY TELEPHONE UNITS ARE WIRED AT FACTORY TO PROVIDE A 1:1 RATIO.
4. WHEN CONVERTING PICKUP KEY TO TRANSFER KEY REMOVE SCREW DETAIL FROM PLUNGER. NO LEADS HAVE TO BE CHANGED IN TELEPHONE SET AS THE TRANSFER KEY UTILIZES THE AI LEAD GROUND.
5. USE LAMP ASSOCIATED WITH TRANSFER KEY IN TELEPHONE SET.

- $\text{\textcircled{O}}$ 248A KTU
- $\text{\textcircled{□}}$ 248B KTU

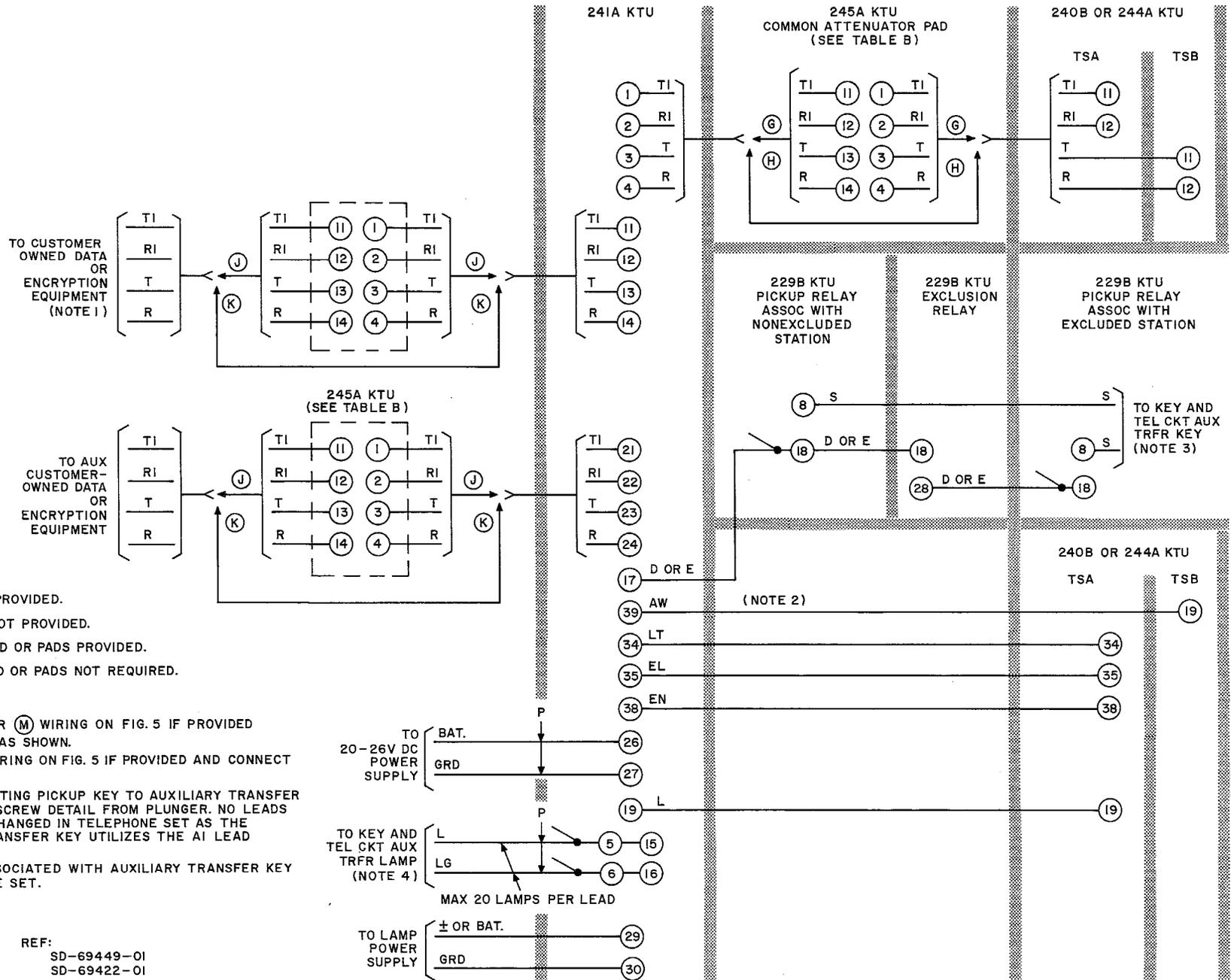
REF:
SD-69449-01
SD-69422-01



OPTIONS:

- $\text{\textcircled{L}}$ ATTENUATOR PAD NOT REQUIRED.
- $\text{\textcircled{M}}$ ATTENUATOR PAD PROVIDED.
- $\text{\textcircled{U}}$ AUXILIARY SERVICE RINGER PROVIDED
- $\text{\textcircled{V}}$ AUXILIARY SERVICE RINGER NOT REQUIRED AND EXT COND LOOP RES OVER 200 OHMS.
- $\text{\textcircled{Z}}$ LINE TRANSFER CIRCUIT USED WITHOUT AUXILIARY LINE TRANSFER CIRCUIT.

Fig. 5 - Connections for Line Transfer Circuit



OPTIONS:

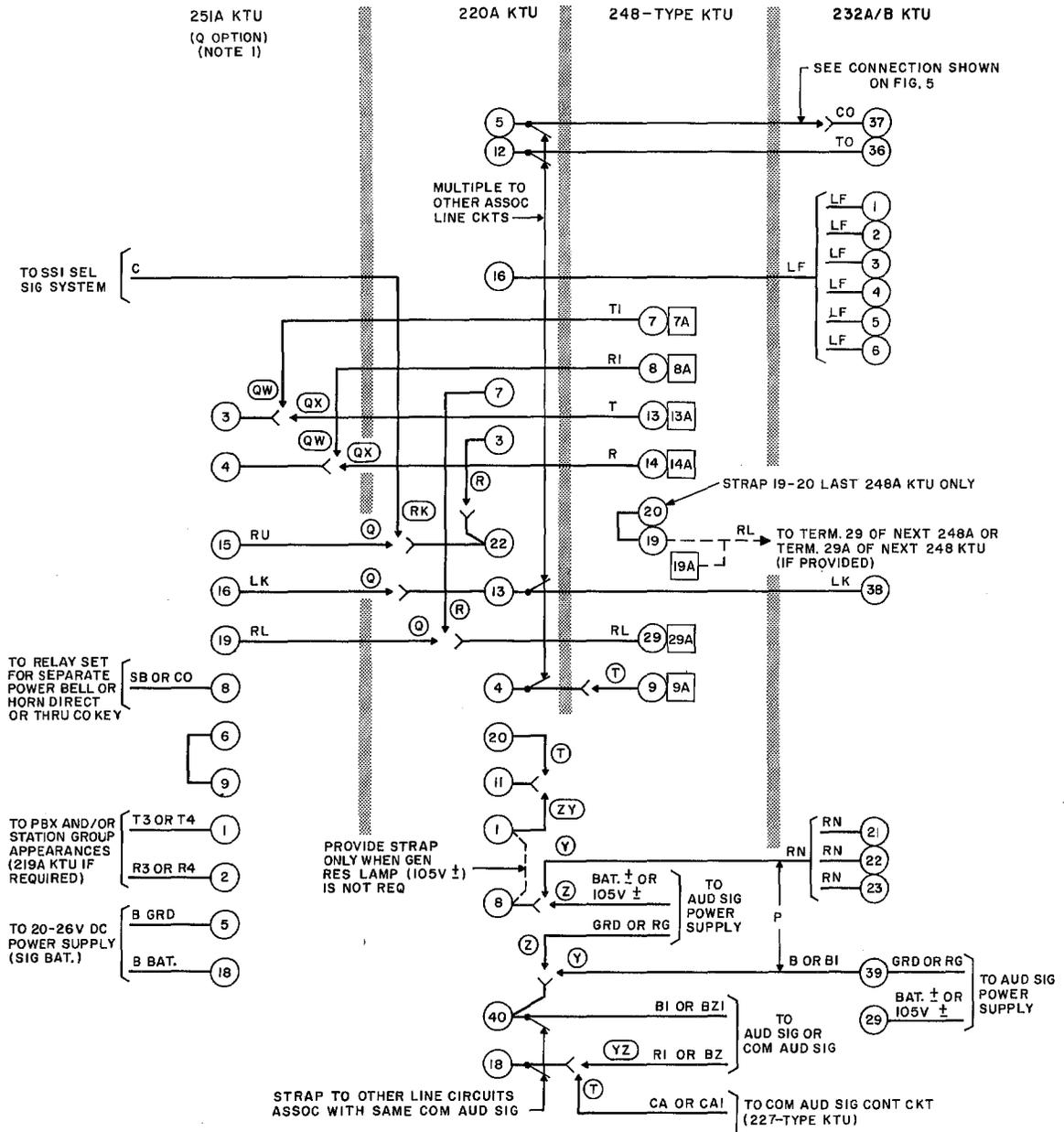
- (G) COMMON PAD PROVIDED.
- (H) COMMON PAD NOT PROVIDED.
- (J) INDIVIDUAL PAD OR PADS PROVIDED.
- (K) INDIVIDUAL PAD OR PADS NOT REQUIRED.

NOTES:

1. REMOVE (L) OR (M) WIRING ON FIG. 5 IF PROVIDED AND CONNECT AS SHOWN.
2. REMOVE (Z) WIRING ON FIG. 5 IF PROVIDED AND CONNECT AS SHOWN.
3. WHEN CONVERTING PICKUP KEY TO AUXILIARY TRANSFER KEY, REMOVE SCREW DETAIL FROM PLUNGER. NO LEADS HAVE TO BE CHANGED IN TELEPHONE SET AS THE AUXILIARY TRANSFER KEY UTILIZES THE AI LEAD GROUND.
4. USE LAMP ASSOCIATED WITH AUXILIARY TRANSFER KEY IN TELEPHONE SET.

REF:
SD-69449-01
SD-69422-01

Fig. 6 - Connections for Auxiliary Line Transfer Circuit



OPTIONS:

- (K) JOINT OPERATION WITH PBX NOT PROVIDED.
- (Q) INCOMING SIGNAL PROVIDED BY 251A KTU (20 CYCLE SIG).
- (R) INCOMING SIGNAL PROVIDED BY SSI SEL SIGNALING SYSTEM.
- (T) INTERRUPTED COM AUD SIG USING RELAY CONTROL CIRCUIT (227A KTU).
- (W) INCOMING SIG VIA XMTR LOOP.
- (X) INCOMING SIG VIA RCVR LOOP.
- (Y) INTERRUPTED AUD SIG USING ELECTROMECHANICAL-INTERRUPTER 232A/B KTU.
- (Z) STEADY AUD SIG.

NOTE:

THESE CONNECTIONS ARE IN ADDITION TO THOSE SHOWN IN FIG. 2 AND FIG. 3.

- 248A KTU
- 248B KTU

REF:

- SD-69410-01
- SD-69449-01

Fig. 7 - Incoming Signal Arrangements

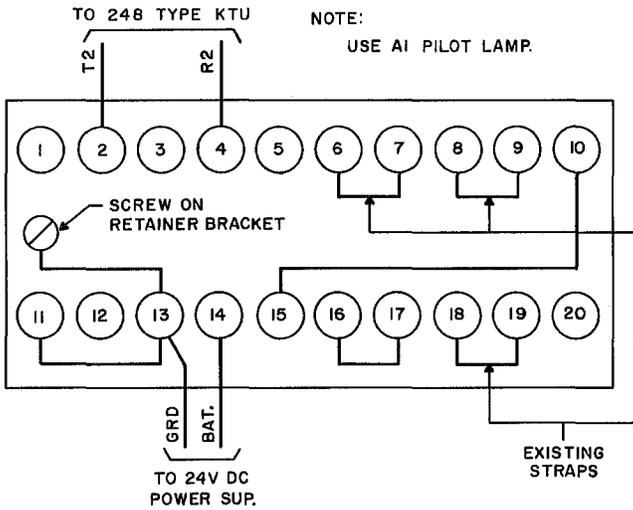
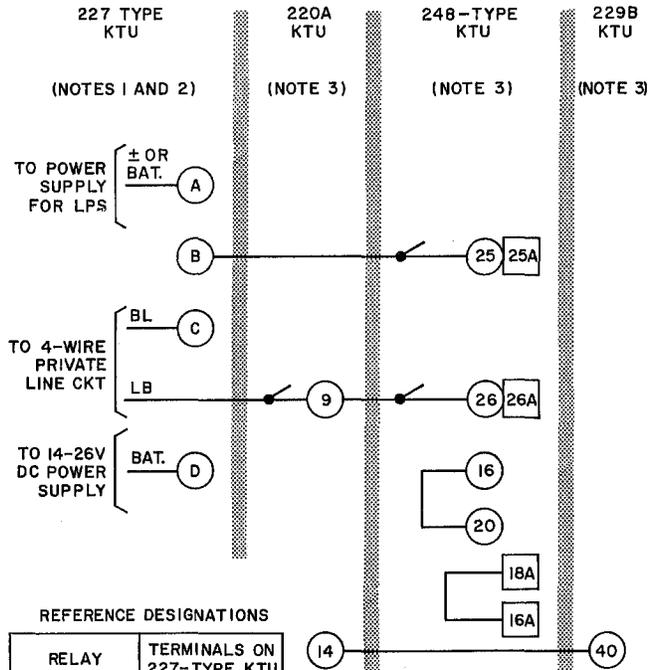


Fig. 8 — Connections for 106B Loudspeaker Set



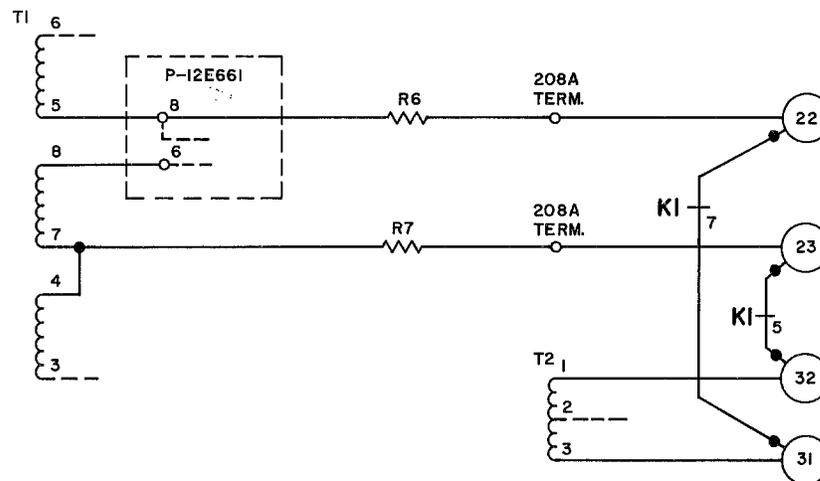
NOTES:

1. THE 227 TYPE KTU MAY BE THE SAME AS THAT INDICATED BY Ⓣ WIRING ON FIG. 7.
2. SEE TABLE FOR REFERENCE DESIGNATIONS.
3. THE 220A, 248-TYPE, AND 229B KTUS ARE THOSE SHOWN IN FIG. 2 AND 3. CONNECTIONS ARE IN ADDITION TO THOSE ON FIG. 2 AND 3.

○ 248A KTU

□ 248B KTU

Fig. 9 — Connections to Provide Interchange of Busy Signals With Other Switching Systems



NOTES:

1. MODIFY CONTROL UNIT AS FOLLOWS:
 1. UNSOLDER R6 FROM TERMINAL 3 OF T2.
 2. UNSOLDER R7 FROM TERMINAL 1 OF T2
 3. INSTALL A 208A TERMINAL OR EQUIVALENT UNDER THE MOUNTING NUT OF TRANSFORMERS T1 AND T2. TERMINALS SHOULD NOT INTERFERE WITH ADJACENT EQUIPMENT.
 4. SOLDER FREE END OF R6 TO ONE 208A TERMINAL AND FREE END OF R7 TO OTHER 208A TERMINAL.
 5. REMOVE FOUR SCREWS HOLDING TERMINAL BOARD TO EXPOSE CONNECTIONS ON REAR OF TERMINAL BOARD.
 6. PLACE AND SOLDER FOUR STRAPS FROM TERMINAL BOARD AS FOLLOWS:
 - (A) TERMINAL 22 TO 208A TERMINAL ASSOCIATED WITH R6.
 - (B) TERMINAL 23 TO 208A TERMINAL ASSOCIATED WITH R7.
 - (C) TERMINAL 31 TO TERMINAL 3 OF T2.
 - (D) TERMINAL 32 TO TERMINAL 1 OF T2.
 7. REPLACE TERMINAL BOARD AND SCREWS.
 8. STENCIL COVER "MODIFIED PER SD-69487-01".
2. CONNECT TO J5304ID, LI SPEAKERPHONE CONTROL UNIT WITH CABLE SUPPLIED WITH J-SPEC. MOUNT UNITS AS CLOSE TOGETHER AS POSSIBLE, NOT EXCEEDING 4 FT., WITH 55B CONTROL UNIT TO RIGHT OF J5304ID, LI UNIT.

Fig. 10 — Modification of 55B Control Unit