SERVIC
1A2 KEY TELEPHONE SYSTEM
110A APPARATUS MOUNTING

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

1.03 This issue of the section is based on the following drawings:
SD-69513, Issue 15—400D (MD) KTU
SD-69651, Issue 1—400G KTU
SD-69942, Issue 1—400H KTU
SD-69475, Issue 6—401A (MD) and 401B KTUs
SD-69590, Issue 3—413A, 421A, 448A, and 449A KTUs
SD-69561, Issue 2—417A KTU
SD-69489, Issue 5—428A KTU
SD-69530, Issue 6—429B and 430A KTUs
SD-69922, Issue 2—451B, 498A KTU, and 116A1 Circuit Module (CM)
SD-69917, Issue 1—467A KTU
SD-69921, Issue 1—471A and 479A 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 key telephone units (KTUs) as add-on circuits to 1A2 KTS.

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

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

- Block, Connecting, 66B4-25 (2 required)
- Cable, Connector, A25B (2 required)
- Guide, Card, 841059280
Fig. 1—110A Apparatus Mounting (With Cover)
DESIGN FEATURES (See Fig. 2)

2.05 The 110A apparatus mounting 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 (see Table A).

(b) Connectors A and B are wired to two KS-16671, List 23 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. See 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 P1.

(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 key telephone system 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. See 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 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 P2 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, if required, to connecting block P1 (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. RN leads, previously treated as dedicated leads, must be placed separately when required.
4. CONNECTIONS

4.01 Figure 5 through 32 show the nondedicated lead connections of the 400-series KTUs that can be installed in the 110A apparatus mounting. 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 (see 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 Figure 33 and 34 show power connections and strapping required to furnish a basic dial intercom, using a 407- or 424-type KTU. Figure 35 covers dial intercom station connections.
Table C covers necessary connections to optional KTUs.

4.04 Figure 36 and 37 (407- and 424-type KTUs) and Fig. 38 (425B KTU) show power supply connections and strapping required to furnish a deluxe dial intercom. Figure 39 shows dial intercom station connections, 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, and 400H KTU (CO or PBX Line Circuit)
- Fig. 6—401B KTU (Manual Intercom Line Circuit)
- Fig. 7—413A KTU (Auxiliary Ringup Circuit)
- Fig. 8—414A KTU (Manual Signaling, Ringdown Private Line Circuit)
- Fig. 9—415A KTU (Automatic, DC Signaling Private Line Circuit)
- Fig. 10—416A KTU (Station Line Circuit)
- Fig. 11—417A KTU (Add-on Conference Circuit)
- Fig. 12—418A KTU (Short Range, DC Signaling Private Line Circuit)
- Fig. 13—419A KTU (Automatic Signaling, Ringdown Private Line Circuit)
- Fig. 14—420A KTU (Long Line Circuit)
- Fig. 15—421A KTU (Power Failure Transfer Circuit)
- Fig. 16—422A KTU (Wired as Audible Signal Suppressor)
- Fig. 17—421A KTU (Wired for DSS Feature)
- Fig. 18—421A KTU (Wired as Preset Conference Circuit)
- Fig. 19—422B KTU (Station Busy Selector Circuit)
- Fig. 20—423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit)
- Fig. 21—428A KTU (Multiline Exclusion Circuit)
- Fig. 22—429B KTU (Supplementary Hold Detector Circuit) and 430A KTU (Flutter Generator Circuit)
- Fig. 23—448A KTU (Variable Delay Timer Circuit)
- Fig. 24—449A KTU (Immediate Transfer Control Circuit)
- Fig. 25—451B KTU (Music-On-Hold Circuit)
- Fig. 26—461A KTU (Manual Signaling, Ringdown Private Line Circuit)
- Fig. 27—467A KTU (Voltage Monitor Circuit)
- Fig. 28—469A KTU (Lamp Extender Circuit)
- Fig. 29—471A KTU (Battery Reversal Toll Restriction Circuit)
- Fig. 30—478B KTU (TOUCH-TONE® Adapter Circuit)
- Fig. 31—479A KTU (Rotary Dial Toll Restriction Circuit)
- Fig. 32—498A KTU and 116A1 CM (Music-On-Hold Circuits)

**Dial Intercoms**

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

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**Basic Dial Intercom**

- Fig. 33—Strapping and Power Supply Connections for 407C KTU
**Fig. 34—Strapping and Power Supply Connections for 424C KTU**

**Fig. 35—Station Connections**

*Deluxe Dial Intercom*

**Fig. 36—Strapping and Power Supply Connections for 407C KTU**

**Fig. 37—Strapping and Power Supply Connections for 424C KTU**

**Fig. 38—Strapping and Power Supply Connections for 425B KTU**

**Fig. 39—Station Connections**

**Fig. 40—Nondedicated Lead Connections for Preset Conference Circuit of a Deluxe Dial Intercom Line (421A KTU and a 413A KTU in 110A Apparatus Mounting).**
## TABLE A

### KTU SELECTION AND CONNECTION FIGURE INDEX

<table>
<thead>
<tr>
<th>KTU</th>
<th>SIZE IN. PINS</th>
<th>CIRCUIT FUNCTION</th>
<th>FIGURE (SEE NOTE)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>400D,G,H</td>
<td>4 18</td>
<td>CO or PBX Line</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>401A,B</td>
<td>4 18</td>
<td>Manual Intercom</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>407B,C</td>
<td>8 80</td>
<td>Dial Intercom 10-Code Selector</td>
<td>33, 36</td>
<td></td>
</tr>
<tr>
<td>413A</td>
<td>4 18</td>
<td>Auxiliary Ringup</td>
<td>7, 40</td>
<td></td>
</tr>
<tr>
<td>414A</td>
<td>4 20</td>
<td>Manual Signaling, Ringdown Private Line</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>415A</td>
<td>4 18</td>
<td>Automatic DC Signaling, Private Line</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>416A</td>
<td>4 20</td>
<td>Station Line</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>417A</td>
<td>4 40</td>
<td>Add-On Conference</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>418A</td>
<td>4 20</td>
<td>Short Range, DC Signaling, Private Line</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>419A</td>
<td>8 80</td>
<td>Automatic Signaling, Ringdown Private Line</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>420A</td>
<td>4 18</td>
<td>Long Line</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>421A</td>
<td>4 18</td>
<td>Power Failure Transfer</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Audible Signal Suppressor</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Direct Station Selection</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preset Conference</td>
<td>18, 40</td>
<td></td>
</tr>
<tr>
<td>422B</td>
<td>4 40</td>
<td>Station Busy Selector</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>423A</td>
<td>4 20</td>
<td>Dial Tone, Busy Tone, and Audible Ringback Tone</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>424A,B,C</td>
<td>4 80</td>
<td>Dial Intercom, 19-Code Selector</td>
<td>34, 37</td>
<td></td>
</tr>
<tr>
<td>425A,B</td>
<td>8 80</td>
<td>Flashing Lamp Circuit</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>428A</td>
<td>4 40</td>
<td>Multiline Exclusion</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>429A,B</td>
<td>4 40</td>
<td>Supplementary Hold Detector</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>430A</td>
<td>4 20</td>
<td>Flutter Generator</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>448A</td>
<td>4 40</td>
<td>Variable Delay Timer</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>449A</td>
<td>4 40</td>
<td>Immediate Transfer Control</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>451A,B</td>
<td>4 40</td>
<td>Music-on-Hold</td>
<td>22</td>
<td></td>
</tr>
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<td>498A</td>
<td>4 40</td>
<td>Manual Signaling, Ringdown Private Line</td>
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<td></td>
</tr>
<tr>
<td>461A</td>
<td>4 20</td>
<td>Voltage Monitor</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>467A</td>
<td>4 18</td>
<td>Lamp Extender</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>469A</td>
<td>4 18</td>
<td>Battery Reversal</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>471A</td>
<td>4 18</td>
<td>Toll Restriction</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>478B</td>
<td>8 80</td>
<td>TOUCH-TONE Adapter</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>479A</td>
<td>8 20</td>
<td>Rotary Dial Toll Restriction</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Connection figures are designated for current model KTUs but are applicable for all codes indicated in this table.

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.

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

**FUSING FOR 110A APPARATUS MOUNTING**

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>FUNCTION</th>
<th>VOLTAGE</th>
<th>TYPE</th>
<th>SIZE (AMP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Lamp Wink</td>
<td>LW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td>Lamp Steady</td>
<td>10Vac</td>
<td>70B</td>
<td>2</td>
</tr>
<tr>
<td>F3</td>
<td>Lamp Flash</td>
<td>LF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td>Ringing</td>
<td>105Vac</td>
<td>70G</td>
<td>1/2</td>
</tr>
<tr>
<td>F5</td>
<td>Signal Battery</td>
<td>B Bat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F6</td>
<td>Talk Battery</td>
<td>A Bat.</td>
<td>24Vdc</td>
<td>70H 3/4</td>
</tr>
</tbody>
</table>
NOTES:

TO INTERRUPTER (NOTE 1)

TO POWER SUPPLY (NOTE 1)

1. CONNECT AS REQUIRED (FUSE WHERE NEEDED) 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 518-215-422 FOR BACKBOARDS TO BE USED IN CENTRALIZED INSTALLATIONS.

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

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Fig. 5—Nondedicated Lead Connections for 400D (MD), 400G (MD), and 400H KTU (CO or PBX Line Circuit) in 110A Apparatus Mounting (Sheet 1 of 2)
**OPT** | **FEATURE** | **OPTION PLUG TO TERMINALS**
--- | --- | ---
M | TIMEOUT DELAY | LONG APPROXIMATELY 20 SECONDS B1 - B2
Z* | SHORT APPROXIMATELY 8 SECONDS (±1.5 SEC) B2 - B3
Y* | VISIBLE HOLD CIRCUIT LAMP WINK | A1 - A2
X* | LAMP STEADY | A2 - A3
W* | INTERRUPTED AUDIBLE SIGNAL | C2 - C3
S* | COMMON DIODE MATRIX CONTROL RELAY CONTROL | C1 - C4
R | DELAYED HOLD RELEASE OF HOLDING BRIDGE FROM CO OR PBX MINIMUM OF 25 MS E2 - E3
K* | BY LINE CURRENT OPENS 600 MS E1 - E2
N | CONNECTS TO 50A CUSTOMER PREMISES SYSTEM (NOTE 4) D1 - D2

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**400G KTU**

Top View of Option Block with Handle Toward User. Option Symbols Shown Connected to Terminals Indicate Factory Provided Options.

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**400H KTU**

Top View of Option Block with Handle Toward User. Option Symbols Shown Connected to Terminals Indicate Factory Provided Options.

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**Fig. 5—Nondedicated Lead Connections for 400D (MD), 400G (MD), and 400H KTU (CO or PBX Line Circuit) in 110A Apparatus Mounting (Sheet 2 of 2)**
Fig. 6—Nondedicated Lead Connections for 401B KTU (Manual Intercom Line Circuit) in 110A Apparatus Mounting
Fig. 7—Nondedicated Lead Connections for 413A KTU (Auxiliary Ringup Circuit) 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. 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. 8—Non-dedicated Lead Connections for 414A KTU (Manual Signaling, Ringdown Private Line Circuit) in
110A Apparatus Mounting
NOTES:
1. SEE BLOCK DIAGRAM COVERING 884-25
   CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PVT LINE CKT AT DISTANT END MAY BE A 415A KTU, 202A KTU,
   OR ANY OTHER TYPE PVT LINE UNIT REQUIRING DC VOLTAGE FOR THE
   RINGUP CIRCUIT AND FURNISHING DC VOLTAGE FROM THE SIGNALING CKT.

Fig. 9—Nondedicated Lead Connections for 415A KTU (Automatic, DC Signaling Private Line Circuit) 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 ANY
   EXTERNAL NONLOCKING KEY.

Fig. 10—Nondedicated Lead Connections for 416A KTU (Station Line Circuit) 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. 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 2 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 Circuit) in 110A Apparatus Mounting
Fig. 12—Nondedicated Lead Connections for 418A KTU (Short Range, DC Signaling Private Line Circuit) in 110A Apparatus Mounting
Fig. 13—Nondedicated Lead Connections for 419A KTU (Automatic Signaling, Ringdown Private Line Circuit) in 110A Apparatus Mounting
Fig. 14—Nondedicated Lead Connections for 420A KTU (Long Line Circuit) 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. ADD STRAPS ACCORDING TO NUMBER OF LINES SERVED.

Fig. 15—Nondedicated Lead Connections for 421A KTU (Power Failure Transfer Circuit) 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. OPTION (4) 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.

Fig. 16—Nondedicated Lead Connections for 421A KTU (Wired as Audible Signal Suppressor) in 110A Apparatus Mounting
Fig. 17—Nondedicated Lead Connections for 421A KTU (Wired for DSS Feature) in 110A Apparatus Mounting
Fig. 18—Nondedicated Lead Connections for 421A KTU (Wired as Preset Conference Circuit) in 110A Apparatus Mounting
To Asl to "8L" Lead (Note 4) to 407C or 424C KTU

To Associated Tel Set "BL" Lead (Note 4)

To 407C or 424C KTU

J (Note 5)

To 422B KTU

To 424C KTU

LT1

(Notes 1, 2, and 3)

Conn A (P1) B (P2)

Shown for Reference Only

Notes:
1. See Block Diagram Covering the 6684-25 Conn Blk in Fig. 3.
2. Terminate Dedicated Leads per Fig. 4.
3. Provide a Separate 422B KTU for the Units Group (1-D, Single Digit Nos.) and for the Tens Group (X1-X9, 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 4229 KTU When a 407C KTU Is Provided for the Dial Intercom Circuit. When a 424C KTU Is Provided, strap the "J1" Lead of 4229 KTU to "J2" Lead of Tens 4229 KTU.
6. 422B KTU Associated with Same Dial Intercom as the 4229 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 Circuit) in 110A Apparatus Mounting
Fig. 20—Nondedicated Lead Connections for 423B KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit) in 110A Apparatus Mounting
TYPICAL KEY TEL SET CIRCUITS

EXCLUDED STA - LINE 1

CONTROL STATION

EXCLUDED STA - LINE 2

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 Circuit) in 110A Apparatus Mounting
Fig. 22—Non-dedicated Lead Connections for 429B KTU (Supplementary Hold Detector Circuit) and 430A (Flutter Generator Circuit) in 110A Apparatus Mounting
Fig. 23—Nondedicated Lead Connections for 448A KTU (Variable Delay Timer Circuit) 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 STRAP ONLY IF CKT IS USED WITH A 448A KTU. IF USED WITH 448A KTU, NONE OF THE RINGER CONNECTIONS SHOWN FOR THAT CKT ARE REQUIRED.
4. MULTIPLE RINGER LEADS FROM BOTH CIRCUITS TO THE SAME AUDIBLE SIGNAL AT THE ATTENDANT STATION.

5. RINGING OPTIONS, CONNECT AS FOLLOWS:
   - LINE RINGING, 1ST CKT - PLACE STRAPS FROM T AND R (STA SIDE) TO ROWS 11 AND 12 RESPECTIVELY.
   - DO NOT CONNECT RC LEAD.
   - COMMON AUDIBLE RINGING, 1ST CKT - PLACE STRAP FROM ROW B TO ROW 11 AND CONNECT RC LEAD FROM LINE CKT TO ROW 12.
   - LINE RINGING, 2ND CKT - PLACE STRAPS FROM T AND R (STA SIDE) TO ROWS 32 AND 31 RESPECTIVELY. DO NOT CONNECT RC LEAD.
   - COMMON AUDIBLE RINGING, 2ND CKT - PLACE STRAP FROM ROW 40 TO ROW 32 AND CONNECT RC LEAD FROM LINE CKT TO ROW 31.

   B. ATTENDANT LAMP CONTROLLED BY 448A KTU.

Fig. 24—Nondedicated Lead Connections for 449A KTU (Immediate Transfer Control Circuit) in 110A Apparatus Mounting
Fig. 25—Nondedicated Lead Connections for 451B KTU (Music-On-Hold Circuit) in 110A Apparatus Mounting

NOTES:
1. SEE BLOCK DIAGRAM COVERING 6GB4-25 CONN BLK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. 400H NOT COMPATABLE WITH 451B KTU.
4. 7TH CKT T(CO) AND T(STA) MUST BE BRIDGED ON SAME ROW OF CONN BLK.
110A Apparatus Mounting

Fig. 26—Nondedicated lead connections for 861A KTU (Manual Signaling, Ringdown Private Line Circuit) in

COMPONENT.

RINGBACK TONE (NOTE 5) 9 TO 10

NOTES:

1. SEE BLOCK DIAGRAM COVERING 884-25 CONNECTING BLOCK IN FIG. 3.

2. TERMINATE DEDICATED LEADS PER FIG. 4.

3. TERMINATE DEDICATED LEADS PER FIG. 4.

4. TERMINATE DEDICATED LEADS PER FIG. 4.

5. TERMINATE DEDICATED LEADS PER FIG. 4.

OPTIONS:

STRAP TERMINALS
Fig. 27—Nondedicated Lead Connections for 467A KTU (Voltage Monitor Circuit) 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 469A KTU (Lamp Extender Circuit) 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 471A KTU (Battery Reversal Toll Restriction Circuit) in 110A Apparatus Mounting
Fig. 30—Nondedicated Lead Connections for 478B KTU (TOUCH-TONE Adapter Circuit) 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.
OPTIONS:

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<th>OPT</th>
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<td>107B CM (NOTE 7)</td>
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<td>NPA CODE RESTRICTION</td>
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NOTES:

1. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLOCK IN FIG. 3.
2. TERMINATE DEDICATED LEADS PER FIG. 4.
3. PLACE KS-21290, L1 CONNECTOR ON TERMINALS AS INDICATED.
4. 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
5. 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
6. PLACE KS-CONN ACROSS LIKE-NUMBERED TERMINALS AS NPA CODE TO BE RESTRICTED. EACH 107B CIRCUIT MODULE WILL HANDLE TWO NPA CODES.
7. IF 107A IS NOT REQUIRED, TWO 107B MODULES CAN BE MOUNTED ON THE 479A KTU FOR A TOTAL OF FOUR NPA CODES.

Fig. 31—Nondedicated Lead Connections for 479A KTU (Rotary Dial Toll Restriction Circuit) 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 479A KTU REQUIRES BOTH CONNECTORS (A AND B) BUT CONNECTIONS ARE MADE VIA CONNECTOR A (P1) ON LEFT BLOCK ONLY

**Fig. 32—Nondedicated Lead Connections for 498A KTU and 116A1 CM (Music-On-Hold Circuits) in 110A Apparatus Mounting**
### Table C

#### Basic and Deluxe Dial Intercom Connections

<table>
<thead>
<tr>
<th>Lead Designation</th>
<th>407-Type</th>
<th>424-Type</th>
<th>8684-25 Conn Blocks</th>
<th>Associated KTUs to Provide Deluxe Dial Intercom</th>
<th>Optional KTUs</th>
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* To 407-Type KTU Only.
† To 424-Type KTU Only.
Fig. 33—Basic Dial Intercom, Strapping and Power Supply Connections for 407C KTU in 110A Apparatus Mounting
Fig. 34—Basic Dial Intercom, Strapping and Power Supply Connections for 424C KTU in 110A Apparatus Mounting
ROW AND COLUMN ASSIGNMENTS FOR STATIONS 424-TYPE KTU

407-TYPE KTU

| STATION NUMBER | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 | X9 | X10 |
|----------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| R              | 36F | 36E | 36D | 36C | 36B | 36A | 36G | 36H | 36I | 36J | 44F | 44E | 44D | 44C | 44B | 44A | 44G | 44H | 44I |
| L              | 37F | 37E | 37D | 37C | 37B | 37A | 37G | 37H | 37I | 37J | 45F | 45E | 45D | 45C | 45B | 45A | 45G | 45H | 45I |
|               | 38F | 38E | 38D | 38C | 38B | 38A | 38G | 38H | 38I | 38J | 46F | 46E | 46D | 46C | 46B | 46A | 46G | 46H | 46I |

INSET: CONTINUOUS METHOD OF STRAPPING TO PROVIDE FOR STATION MULTIPLES

NOTES:
1. WHEN MAKING STATION CONNECTIONS, RUN STRAPS (T,R,L,G,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.

Fig. 35—Basic Dial Intercom, Station Connections
Fig. 36—Deluxe Dial Intercom, Strapping and Power Supply Connections for 407C KTU in 110A Apparatus Mounting
Fig. 37—Deluxe Dial Intercom, Strapping and Power Supply Connections for 424C KTU in 110A Apparatus Mounting

TO POWER SUPPLY

TO INTERRUPTER

Fig. 38—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

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NOTES:
1. WHEN MAKING STATION CONNECTIONS, RUN STRAPS (T,R,B,LG) ON CONN BLKS 1 AND 2 AS SHOWN IN INSET
2. RESISITOR 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 TIMEDOUT AND TO FULL CW POSITION FOR 2.5 SEC TIMEDOUT

Fig. 39—Deluxe Dial Intercom, Station Connections
## SECTION 518-215-422

### 421A KTU

<table>
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<tr>
<th>SYMBOL</th>
<th>POSITIONS</th>
<th>NOTES</th>
</tr>
</thead>
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### 413A KTU

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---

### 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 OSS.
5. THE "CA" LEAD MUST CONNECT TO THE DIODE MATRIX WHETHER OR NOT THE 413A KTU IS PROVIDED.

---

**Fig. 40—Nondedicated Lead Connections for Preset Conference Circuit of a Deluxe Dial Intercom Line (421A KTU and a 413A KTU) in 110A Apparatus Mounting**

---

### OPTION STRAPPING ON 421A KTU OPTION BLK

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