

SERVICE
1A2 KEY TELEPHONE SYSTEM
597- AND 598-TYPE PANELS

1. GENERAL

1.01 This section provides identification, ordering, installation, and connection information on the 400-series KTUs used in the 597- and 598-type panels.

1.02 This section is reissued to:

- Rate the 400D KTU MD
- Add new illustrations on the 421A KTU (Audible Signal Suppression Circuit) and the 400G and 471A KTUs
- Make minor changes to Table A and existing figures.

1.03 This issue of the section is based on drawing SD-69608-01, Issue 4. If this section is to be used with equipment or apparatus reflecting later issues of the drawing, reference should be made to the SD to determine the extent of the changes and the manner in which the section may be affected.

2. IDENTIFICATION

2.01 **Purpose:** The 597-type (Fig. 1) and 598-type (Fig. 2) panels provide auxiliary mounting facilities for 20- and 40-pin (4-inch) 400-series KTUs, respectively.

2.02 **Application:** Large centralized installations of 1A2 Key Telephone System arrangements.

2.03 **Ordering Guide:**

(a) **Basic Units**

Panel, 597B (Fig. 1)

Panel, 598B (Fig. 2)

(b) **Replaceable Components**

- Fuse 24G (1-1/3 amperes)
- (c) **Associated Apparatus (Order Separately)**
 - Block, Connecting, 66B4-25 (four required for 597-type; ten required for 598-type)
 - Cable, Connector, A25B (four required for 597-type; ten required for 598-type)
 - Unit, Telephone Key (as required, order per Table A).

2.04 **Design Features:** Both panels have essentially the same basic features, differing only in the number of connector pins provided.

- (a) Each panel is 4 inches high and mounts on any frame structure designed for 23-inch wide mounting plates.
- (b) Accepts up to fourteen 400-series KTUs in any combination. KTUs may be intermixed in any connector position. See Table A.
- (c) The 597-type panel accepts only 20-pin KTUs, and the 598-type panel accepts either 20- or 40-pin KTUs.
- (d) Factory wiring is provided from the KTU connectors to the plugs, permitting the use of A25B connector cables for line and station terminations.
- (e) Dedicated leads such as LF, LW, battery, ground, etc. are factory-wired between the connectors and screw terminal field (TSA).

NOTICE

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

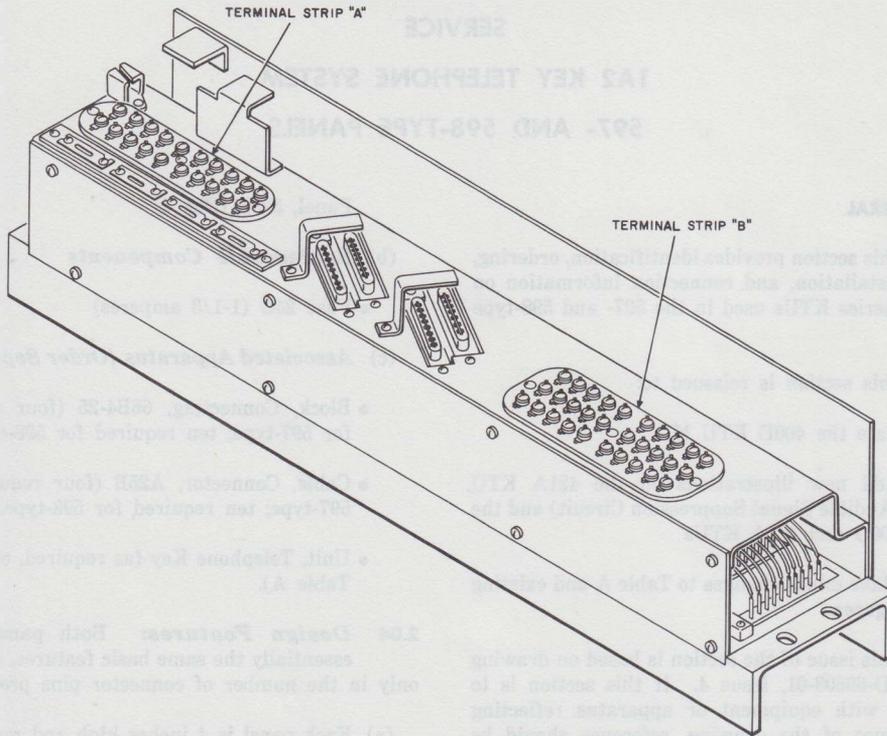


Fig. 1—597-Type Panel

- (f) Screw terminal field (TSA) for power connections and interpanel wiring.
- (g) Screw terminal field (TSB on 597 type) for optional field connections.
- (h) Fuse panel provided with 24G fuses for power distribution (Table B).
- (i) A retainer is provided to lock the KTUs in place in the connectors.

3. INSTALLATION

3.01 For information on apparatus mountings and relay racks on which the 597- and 598-type panels can be mounted, refer to Section 463-140-100.

3.02 Install panel on relay rack or in apparatus cabinet in the usual manner.

3.03 Install 66B4-25 connecting blocks and stencil each block.

3.04 Connect the A25B connector cables to the panel, then route cables to the proper 66B4-25 connecting blocks as shown in Fig. 3 or 4.

3.05 Cut down the A25B connector cables on the 66B4-25 connecting blocks as shown in Fig. 5 and 6 for the 597- and 598-type panels, respectively. Fig. 5 and 6 contain block diagrams showing typical connecting block and panel layouts.

3.06 Dedicated lead connections for both panels are shown in Fig. 7. Fuse functions are shown in Table B. These connections should be made before installing KTUs in the panels. Dedicated

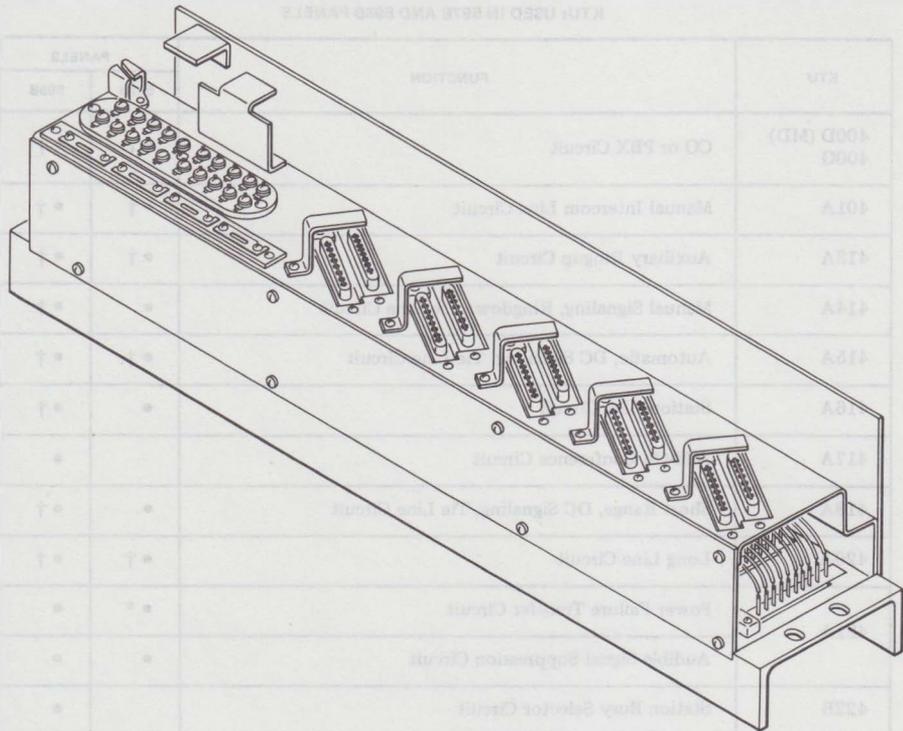


Fig. 2—598-Type Panel

leads are those leads such as BAT, GRD, LF, LW, etc, that appear on the same numbered pin of each KTU. These panels must obtain interrupted lamps and ringing signals from 583- or 584-type panels.

3.07 Install key telephone units as required.

4. CONNECTIONS

4.01 If 414A or 416A KTUs are to be installed in the 597-type panel, wire G option per Fig. 8 to place ring ground on pin 0 of required connector. Fig. 9 through 49 cover the nondedicated lead connections for the 400-series KTUs that can be installed in the 597- and 598-type panels. Field connections are shown on the left, connecting block row assignments in the center, and connector pin numbers on the right. Pin numbers are shown for reference only, so that a complete picture of

the KTU circuitry can be seen when the connection drawing of a KTU is compared with the functional schematic.

4.02 Field connections are made for any KTU by determining which connector on the panel is to be used and its related connecting block (Fig. 3 or 4). For example:

- (a) If a 400-type KTU (Fig. 9 or 10) is installed in connector J1 of a 597-type panel (Fig. 3), field connections are made to terminals 1, 2, 4, and 6 on connecting block 1 and to terminals 1, 2, 3, 4, 5, and 6 on connecting block 2.
- (b) If the 400-type KTU (Fig. 9 or 10) were installed in connector J14 of a 597-type panel (Fig. 3), field connections would be made to terminals 37, 38, 40, and 42 on connecting block

♦ TABLE A ♦

KTUs USED IN 597B AND 598B PANELS

| KTU | FUNCTION | PANELS | |
|-------------------|---------------------------------------------------------|--------|------|
| | | 597B | 598B |
| 400D (MD) 400G | CO or PBX Circuit | • † | • † |
| 401A | Manual Intercom Line Circuit | • † | • † |
| 413A | Auxiliary Ringup Circuit | • † | • † |
| 414A | Manual Signaling, Ringdown Tie Line Circuit | • | • † |
| 415A | Automatic, DC Signaling, Tie Line Circuit | • † | • † |
| 416A | Station Line Circuit | • | • † |
| 417A | Add-On Conference Circuit | | • |
| 418A | Short Range, DC Signaling, Tie Line Circuit | • | • † |
| 420A | Long Line Circuit | • † | • † |
| 421A | Power Failure Transfer Circuit | • * | • |
| | Audible Signal Suppression Circuit | • | • |
| 422B | Station Busy Selector Circuit | | • |
| 423A | Dial Tone, Busy Tone, and Audible Ringback Tone Circuit | • | • † |
| 428A | Multiline Exclusion Circuit | | • |
| 429A (MD) 429B | Supplementary Hold Detector Circuit | | • |
| 430A | Flutter Generator Circuit | • | • † |
| 448A | Variable Delay Timer Control | | • |
| 449A | Immediate Transfer Control Circuit | | • |
| 461A | Manual Signaling, Ringdown Tie Line Circuit | • | • |
| 469A | Lamp Extender Circuit | • | • |
| 471A | Battery Reversal Toll Restriction Circuit | • | • |

* Will transfer only one circuit.

† Not recommended for initial installations; use for growth only when necessary.

• Usable as indicated.

TABLE B
FUSE FUNCTIONS FOR 597- AND
598-TYPE PANELS

| CONN SERVED | A BAT. | B BAT. |
|-------------|--------|--------|
| J1-7 | F1 | F3 |
| J8-14 | F2 | F4 |

3 and to terminals 37, 38, 39, 40, 41, and 42 on connecting block 4.

(c) If the 400-type KTU (Fig. 26 or 27) is installed in connector J8 of a 598-type panel (Fig. 4), field connections are made to terminals 17, 18, 21, and 22 on connecting block 5 and to terminals 17, 18, 19, 20, 21, and 22 on connecting block 6.

CONNECTION INDEX

Connections For:

Fig. 5—A25B Connector Cables to 66B4-25 Connecting Blocks for 597-Type Panel

Fig. 6—A25B Connector Cables to 66B4-25 Connecting Blocks for 598-Type Panel

Fig. 7—Dedicated Leads (Signaling and Power Connections) for 597-Type and 598-Type Panels

Fig. 8—G Option (414A, 416A or 461A KTU) on Terminal Strip B on 597-Type Panel

Nondedicated Lead Connections for 597-Type Panel:

Fig. 9—400D (MD) KTU (CO or PBX Line Circuit)

Fig. 10—400G KTU (CO or PBX Line Circuit)

Fig. 11—401A KTU (Manual Intercom Line Circuit)

Fig. 12—413A KTU (Auxiliary Ringup Circuit)

Fig. 13—414A KTU (Manual Signaling, Ringdown Private Line Circuit)

Fig. 14—415A KTU (Automatic, DC Signaling, Private Line Circuit)

Fig. 15—416A KTU (Station Line Circuit)

Fig. 16—418A KTU (Short Range, DC Signaling, Private Line Circuit)

Fig. 17—420A KTU (Long Line Circuit)

Fig. 18—421A KTU (Power Failure Transfer Circuit)

Fig. 19—421A KTU (Audible Signal Suppression Circuit), Arranged to Suppress Bridged Ringing

Fig. 20—421A KTU (Audible Signal Suppression Circuit), Arranged to Suppress Common Audible Ringing

Fig. 21—423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit)

Fig. 22—430A KTU (Flutter Generator Circuit)

Fig. 23—461A KTU (Manual Signaling, Ringdown Private Line Circuit)

Fig. 24—469A KTU (Lamp Extender Circuit)

Fig. 25—471A KTU (Battery Reversal Toll Restriction Circuit)

Nondedicated Lead Connections for 598-Type Panel:

Fig. 26—400D (MD) KTU (CO or PBX Line Circuit)

Fig. 27—400G KTU (CO or PBX Line Circuit)

Fig. 28—401A KTU (Manual Intercom Line Circuit)

Fig. 29—413A KTU (Auxiliary Ringup Circuit)

Fig. 30—414A KTU (Manual Signaling, Ringdown Private Line Circuit)

Fig. 31—415A KTU (Automatic, DC Signaling, Private Line Circuit)

Fig. 32—416A KTU (Station Line Circuit)

Fig. 33—417A KTU (Add-on Conference Circuit)

Fig. 34—418A KTU (Short Range, DC Signaling, Private Line Circuit)

Fig. 35—420A KTU (Long Line Circuit)

Fig. 36—421A KTU (Power Failure Transfer Circuit)

Fig. 37—421A KTU (Wired for DSS Feature for Dial Intercom Line)

Fig. 38—421A KTU (Audible Signal Suppression Circuit), Arranged to Suppress Bridged Ringing

Fig. 39—421A KTU (Audible Signal Suppression Circuit), Arranged to Suppress Common Audible Ringing

Fig. 40—421A KTU or 413A KTU (Wired for Preset Conference Circuit for Deluxe Dial Intercom Line)

Fig. 41—422B KTU (Station Busy Selector Circuit)

Fig. 42—423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit)

Fig. 43—428A KTU (Multiline Exclusion Circuit)

Fig. 44—429-Type KTU (Supplementary Hold Detector Circuit) and 430A KTU (Flutter Generator Circuit)

Fig. 45—448A KTU (Variable Delay Timer Circuit)

Fig. 46—449A KTU (Immediate Transfer Control Circuit)

Fig. 47—461A KTU (Manual Signaling, Ringdown Private Line Circuit)

Fig. 48—469A KTU (Lamp Extender)

Fig. 49—471A KTU (Battery Reversal Toll Restriction Circuit)

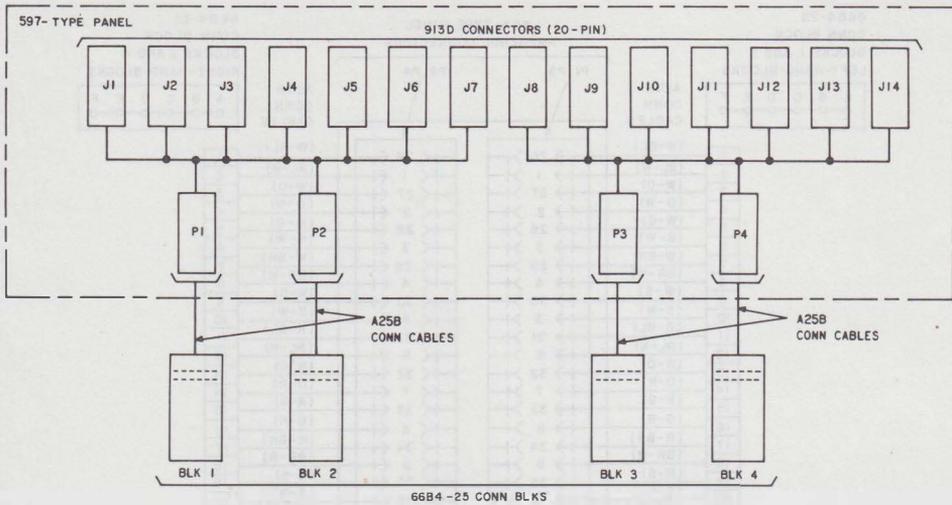


Fig. 3—597-Type Panel With Terminal Layout

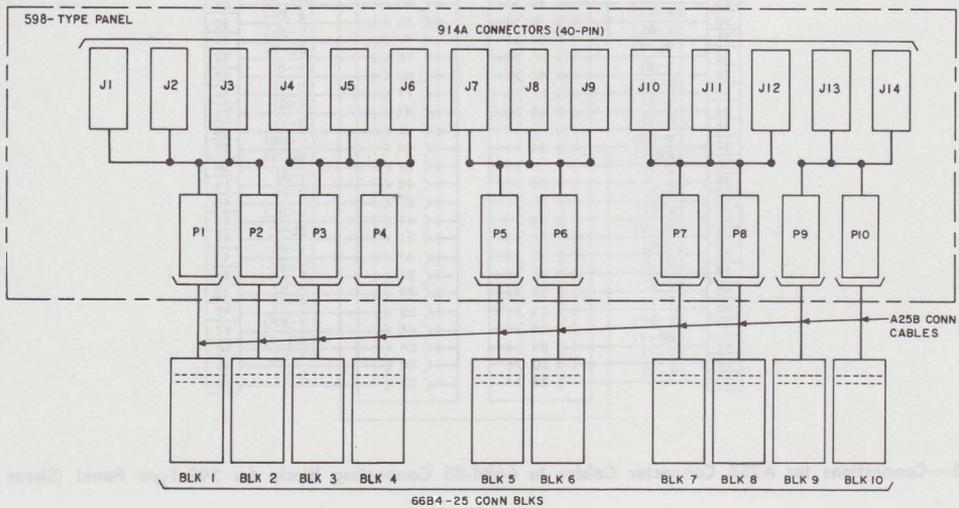


Fig. 4—598-Type Panel With Terminal Layout

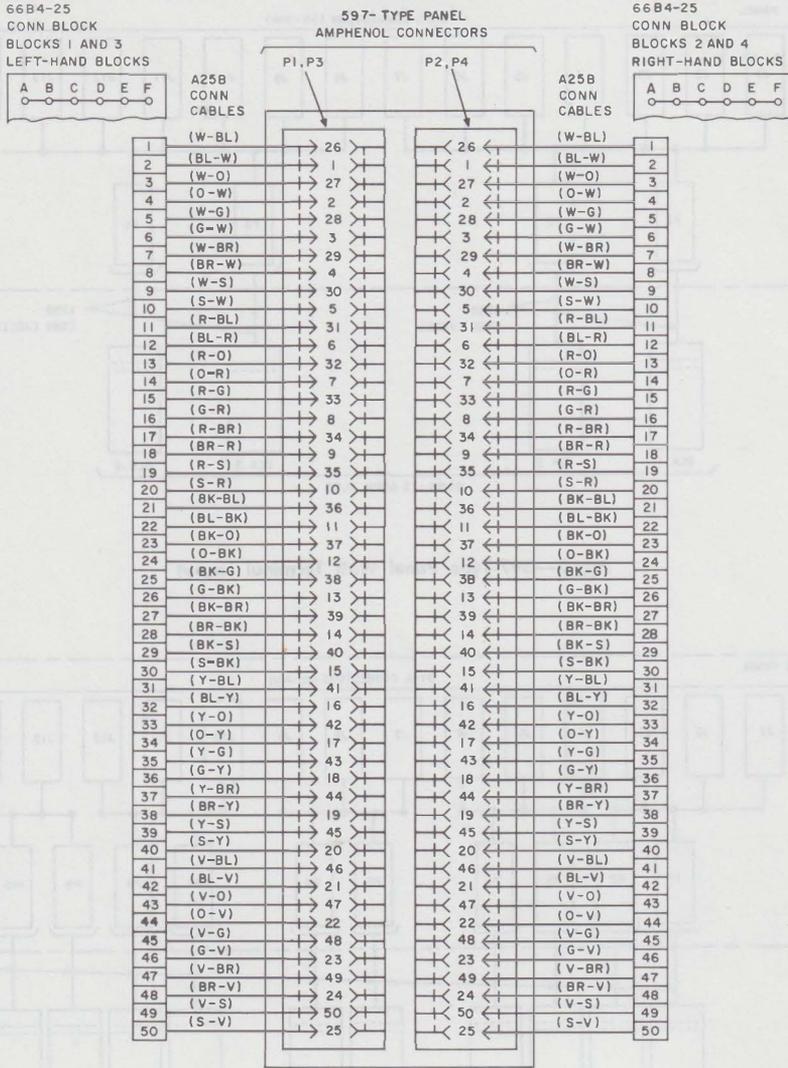


Fig. 5—Connections for A25B Connector Cables to 66B4-25 Connecting Blocks for 597-Type Panel (Sheet 1)

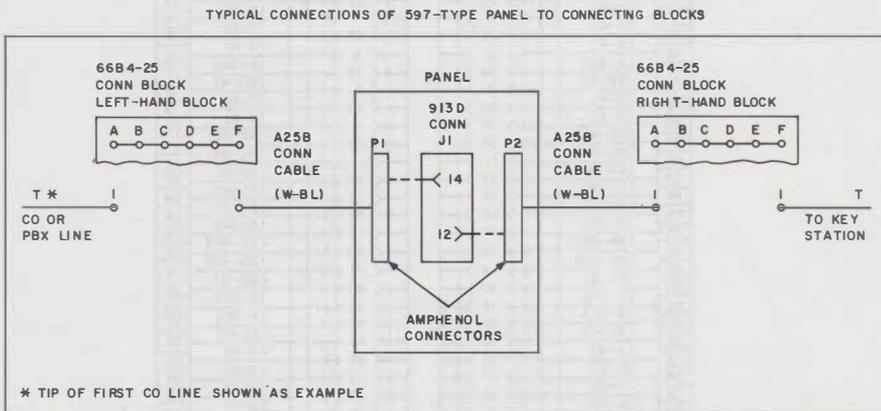
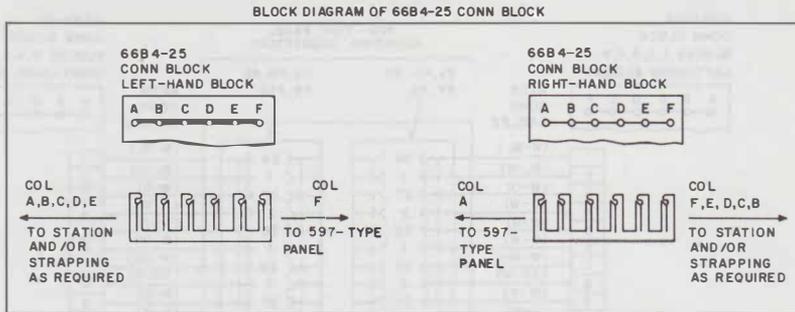


Fig. 5—Connections for A25B Connector Cables to 66B4-25 Connecting Blocks for 597-Type Panel (Sheet 2)

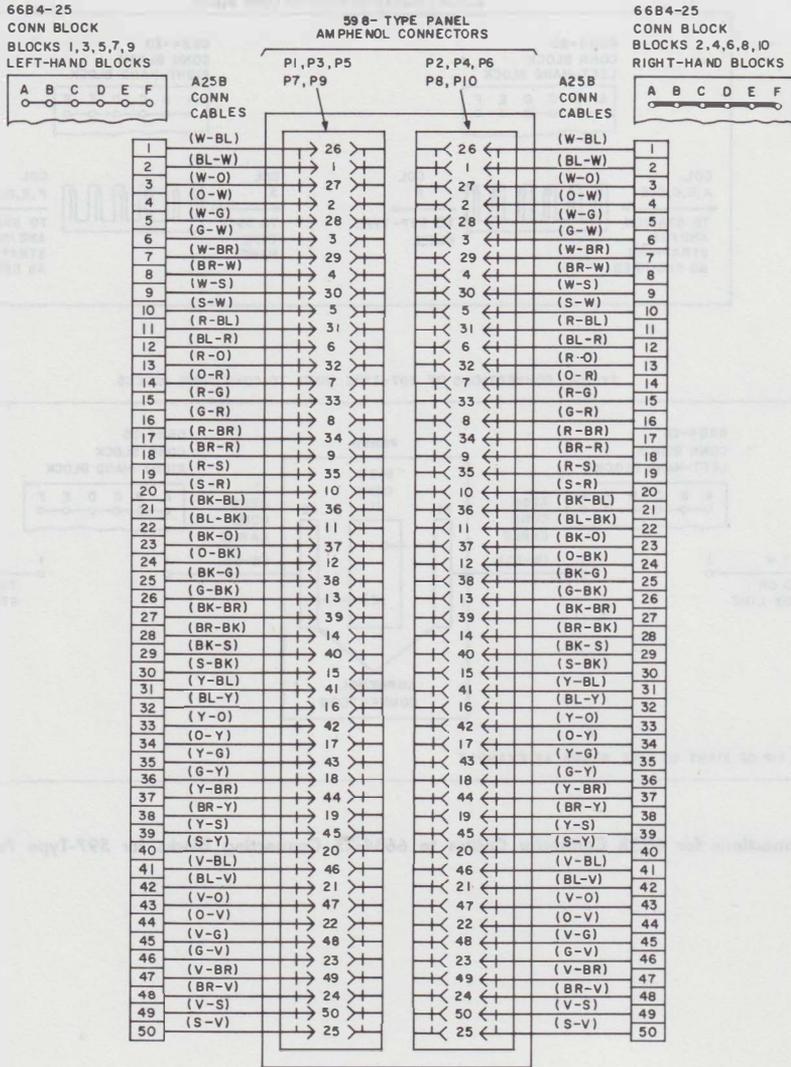
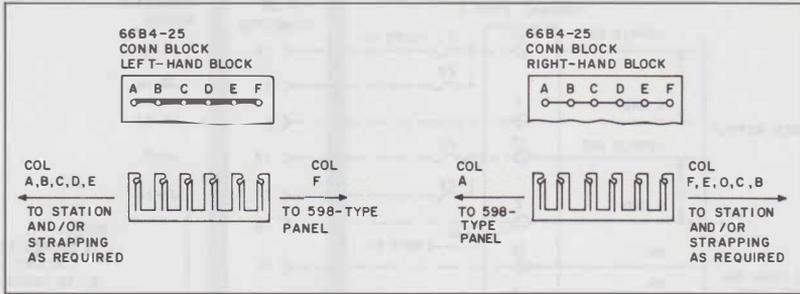
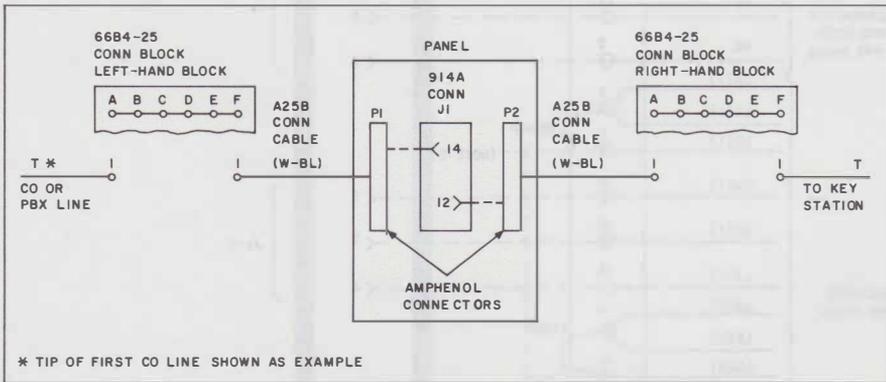


Fig. 6—Connections for A25B Connector Cables to 66B4-25 Connecting Blocks for 598-Type Panel (Sheet 1)

BLOCK DIAGRAM OF 66B4-25 CONN BLOCK



TYPICAL CONNECTIONS OF 598-TYPE PANEL TO CONNECTING BLOCKS



NOTE:
TERMINALS 33 THROUGH 48 ARE SPARES ON CONNECTING BLOCKS 9 AND 10.

Fig. 6—Connections for A25B Connector Cables to 66B4-25 Connecting Blocks for 598-Type Panel (Sheet 2)

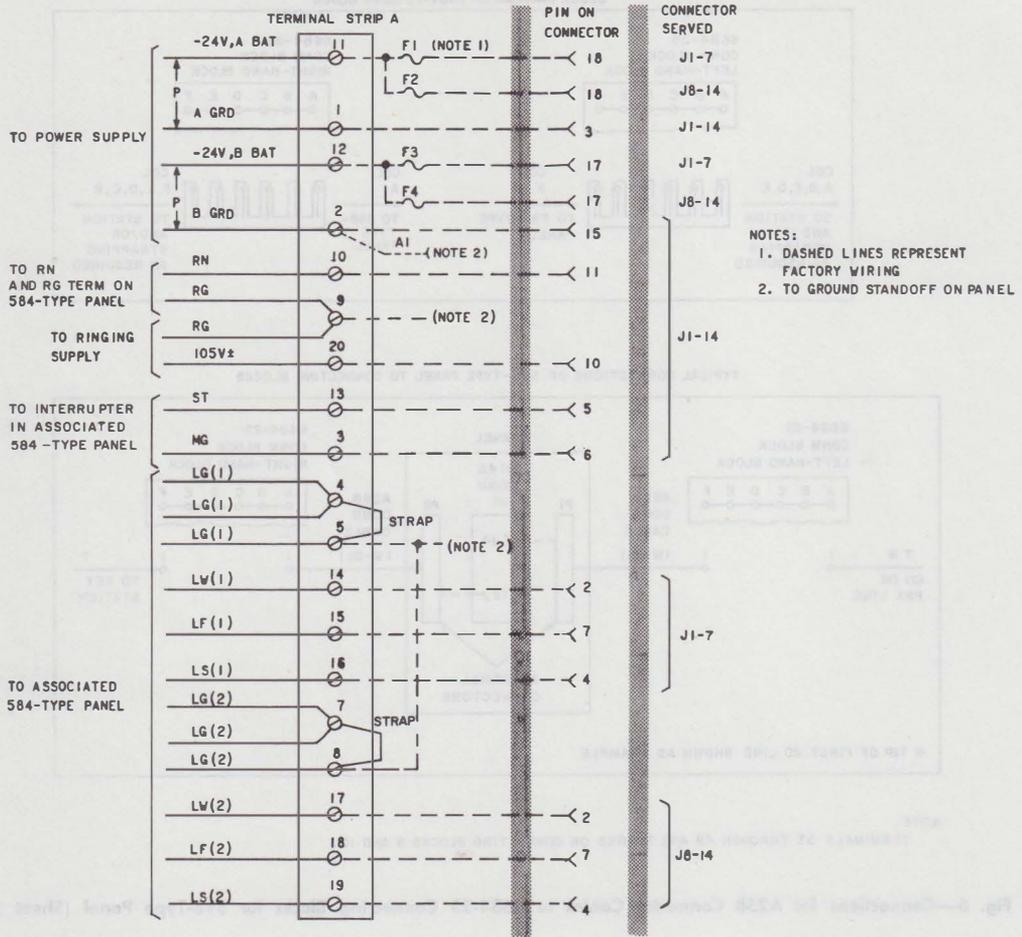
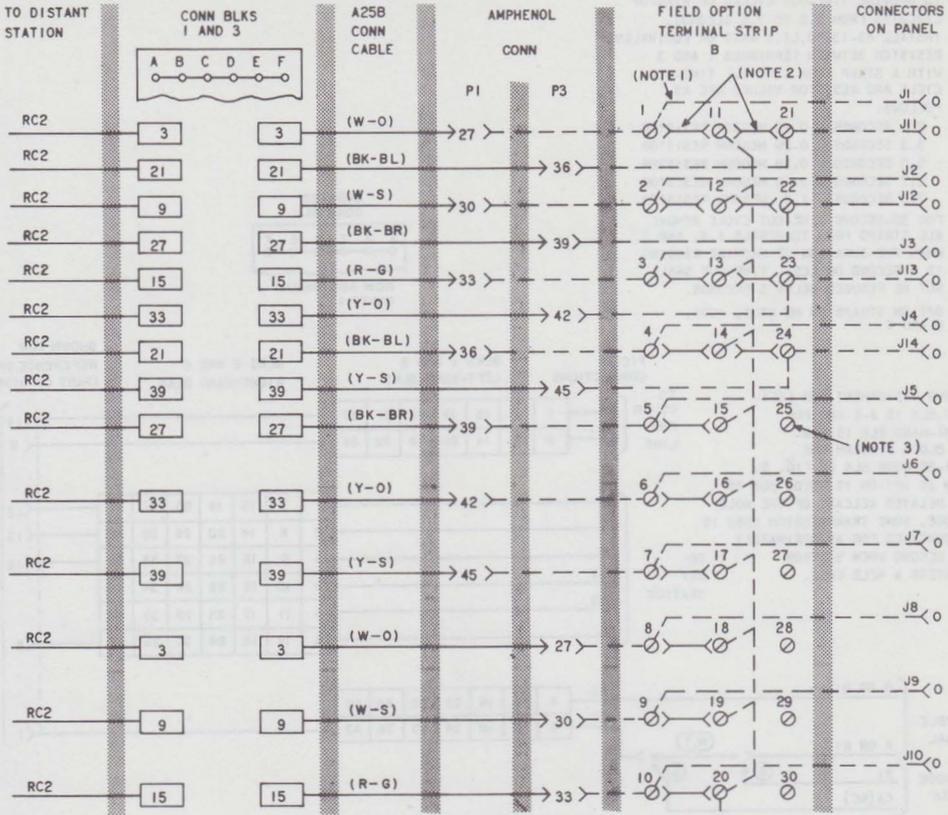


Fig. 7—Connections for Dedicated Leads (Signaling and Power Connections) for 597- and 598-Type Panel



NOTES:
 1. DASHED LINES REPRESENT FACTORY WIRING.
 2. ADD STRAPS AS REQUIRED.
 3. TERMINALS 25 THRU 30 ARE SPARES.

TO RING GROUND
 STANDOFF ON
 PANEL

Fig. 8—Connections for G Option (414A, 416A or 461A KTU) on Terminal Strip B on 597-Type Panel

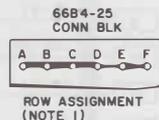
SECTION 518-215-417

* - TO PROVIDE TIME-OUT CYCLES OF RING-UP CIRCUITS FROM 2.5 TO 7.5 SECONDS, INSTALL KS-13490, 1.1 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.

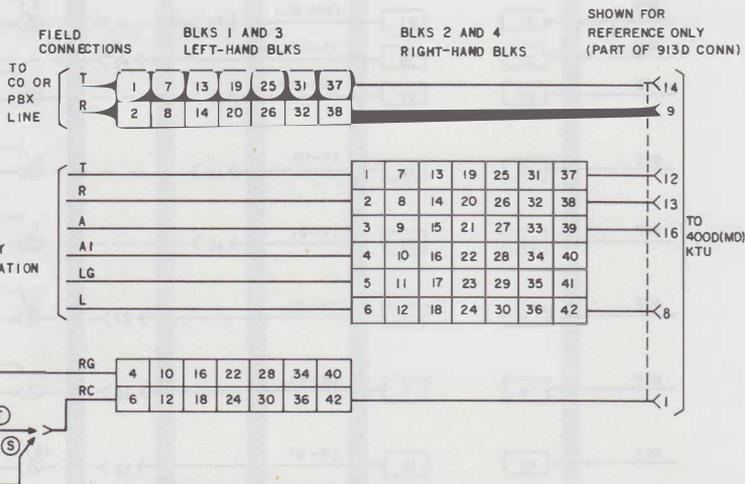
‡ OPTION STRAPS ON MD KTUS, 400A, B AND C



NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM FOR 66B4-25 CONN BLK IN FIG. 5.

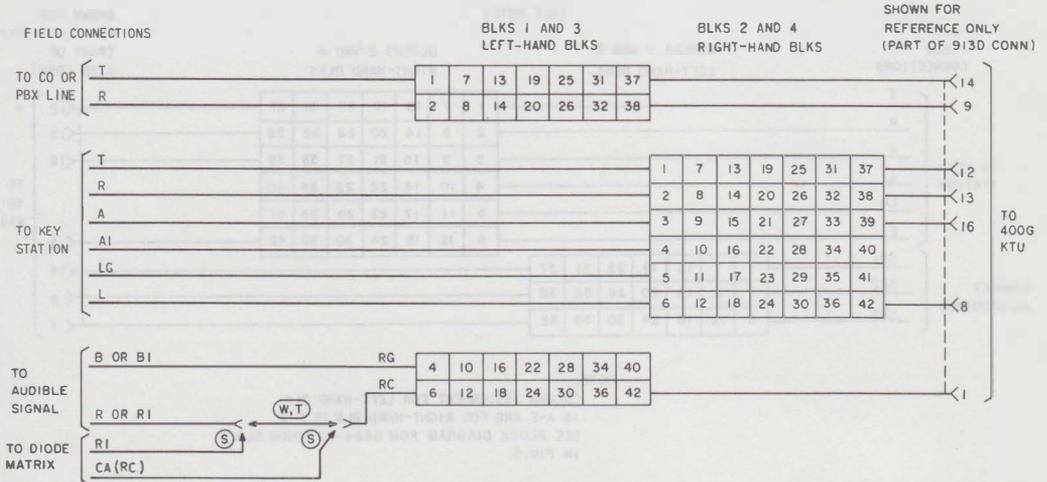
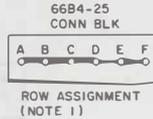
2. WHEN ZC OPTION IS USED, DUE TO THE DELAYED RELEASE OF THE HOLD BRIDGE, SOME TRANSMISSION LOSS IS ENCOUNTERED FOR APPROXIMATELY ONE SECOND WHEN STATION REENTERS A HELD CALL.



| FEATURES | | OPTION | STRAP TERMINALS |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------|
| AUDIBLE SIGNALS | INTERRUPTED RING | W | 5 TO 8, ‡5 TO 6 |
| | STEADY RING | T | 6 TO 8, ‡4 TO 6 |
| | COMMON WITH DIODE MATRIX CONTROL | S | 5 TO 8, ‡5 TO 6 |
| VISUAL HOLD CIRCUIT | LAMP WINK | Y | 7 TO 10, ‡8 TO 9 |
| | LAMP STEADY | X | 7 TO 9, ‡7 TO 9 |
| TIME-OUT CONTROL | SHORT TIME DELAY (10 SECONDS) | Z‡ | 1 TO 2, ‡1 TO 9 |
| | LONG TIME DELAY | † | † |
| RELEASE OF HOLDING BRIDGE FROM CO OR PBX LINE CURRENT OPENS GREATER THAN | 500 MILLISECONDS WHEN ASSOCIATED WITH NO. 1 ESS HAVING RESWITCH CAPABILITY | ZC (NOTE 2) | 2 TO 3 USING 601A (5 UF) CAPACITOR OR EQUIVALENT |
| | 100 MILLISECONDS WHEN ASSOCIATED WITH 800A PBX AND/OR NO. 5 X-BAR CENTREX NOT HAVING AUTOMATIC PERMANENT SIGNAL RELEASE | ZD | 2 TO 3 USING 575C (1 UF) CAPACITOR OR EQUIVALENT |
| | TO MILLISECONDS WHEN ASSOCIATED WITH NO. 5 X-BAR CENTREX HAVING AUTOMATIC PERMANENT SIGNAL RELEASE | ZJ | 2 TO 3 USING 575B (0.5 UF) CAPACITOR OR EQUIVALENT |

Fig. 9—Nondedicated Lead Connections for 400D KTU (CO or PBX Line Circuit) in 597-Type Panel

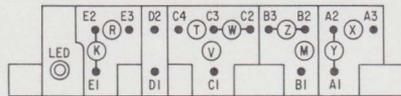
NOTE:
 COLUMN ASSIGNMENT FOR LEFT-HAND
 BLK IS A-E AND FOR RIGHT-HAND
 BLK IS F-B. SEE BLOCK DIAGRAM FOR
 66B4-25 CONN BLK IN FIG. 5.



OPTION STRAPPING

| OPT | FEATURES | | |
|-----|----------------|-----------------------------------------------|------------------|
| M | TIMEOUT | LONG TIME DELAY (APPROXIMATELY 20 SECONDS) | |
| Z | | SHORT TIME DELAY (APPROXIMATELY 5 SECONDS) | |
| Y | VISUAL | LAMP WINK | |
| X | HOLD CKT | LAMP STEADY | |
| W | AUDIBLE SIGNAL | INTERRUPTED RING | |
| T | | STEADY RING | |
| S | | COMMON WITH DIODE MATRIX CONTROL | |
| V | | COMMON WITH RELAY CONTROL | |
| R | DELAYED HOLD | RELEASE OF HOLDING BRIDGE FROM CO OR PBX | MINIMUM OF 25 MS |
| K | RELEASE | BY LINE CURRENT OPENS | |

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



| OPTION | CONNECT OPTION PLUG TO TERMINALS |
|--------|----------------------------------|
| Z | B2 - B3 |
| Y | A1 - A2 |
| X | A2 - A3 |
| T | C3 - C4 |
| W | C2 - C3 |
| V | C1 - C3 |
| R | E2 - E3 |
| K | E1 - E2 |
| M | B1 - B2 |

Fig. 10—Nondedicated Lead Connections for 400G KTU (CO or PBX Line Circuit) in 597-Type Panel

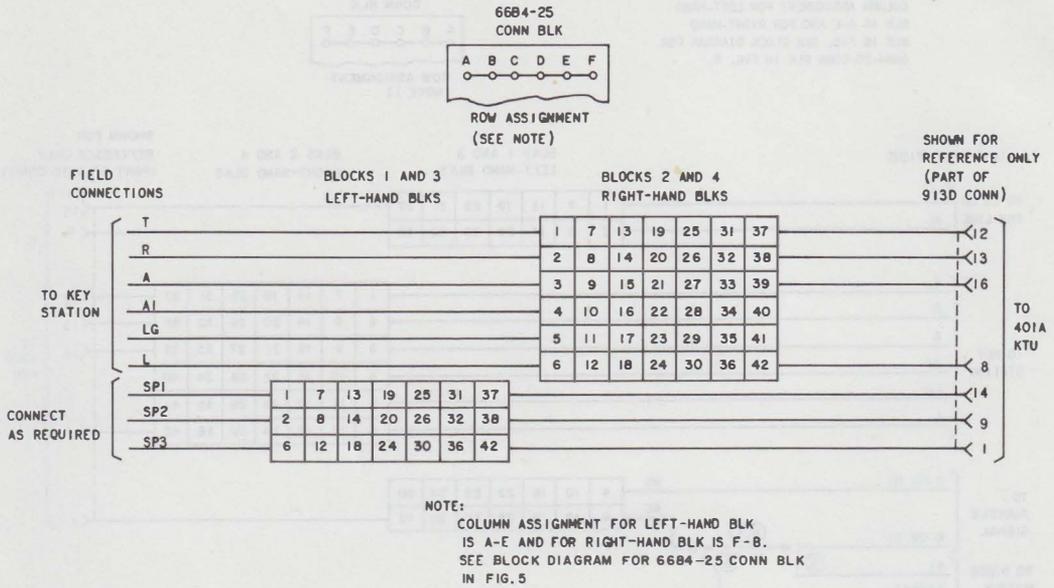
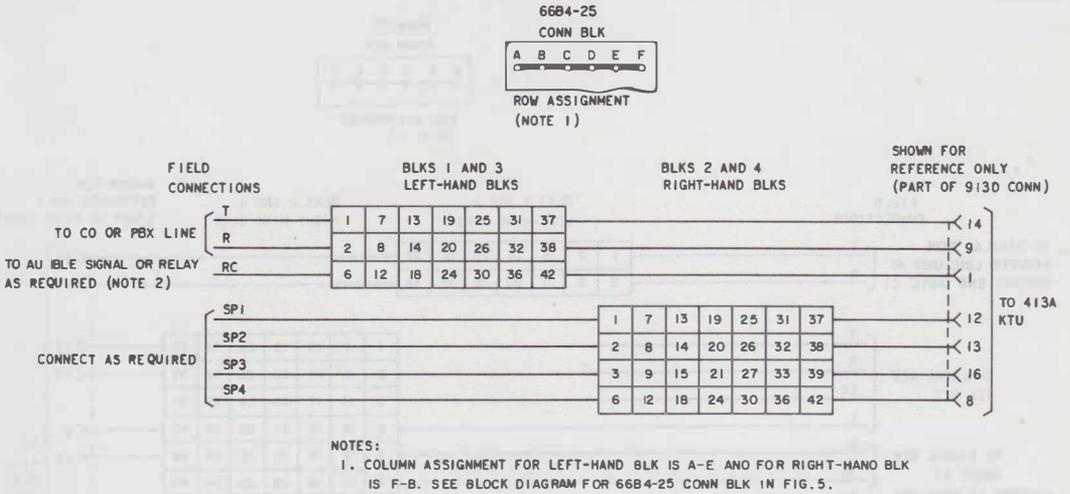


Fig. 11—Nondedicated Lead Connections for 401A KTU (Manual Intercom Line Circuit) in 597-Type Panel

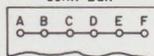


OPTION STRAPPING ON 413A KTU OPTION BLK

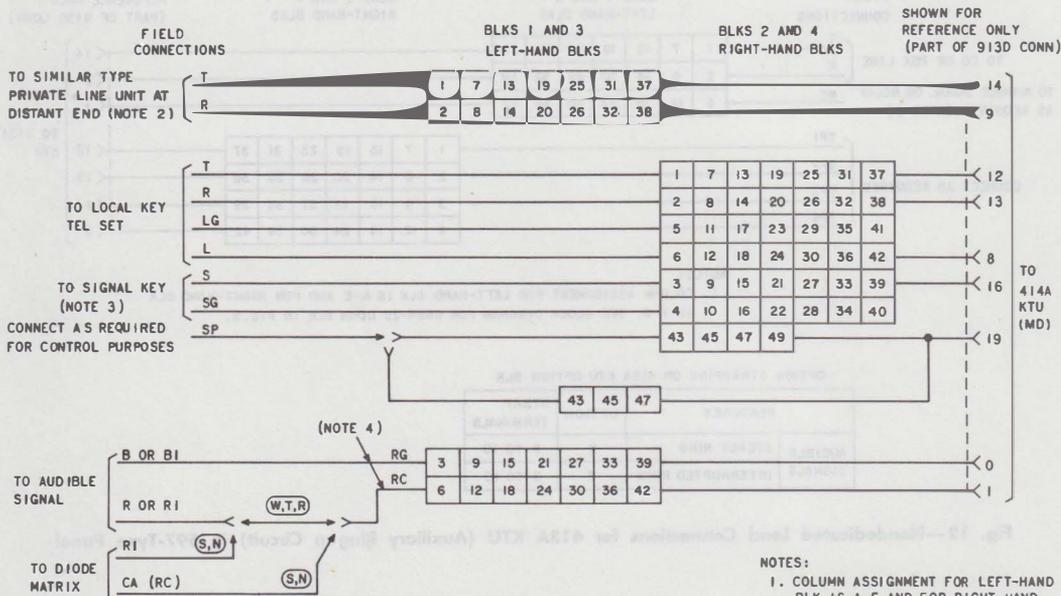
| FEATURES | | OPTION | STRAP TERMINALS |
|-----------------|------------------|--------|-----------------|
| AUDIBLE SIGNALS | STEADY RING | X | 9 TO 10 |
| | INTERRUPTED RING | Z | 8 TO 10 |

Fig. 12—Nondedicated Lead Connections for 413A KTU (Auxiliary Ringup Circuit) in 597-Type Panel

6684-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)



OPTION STRAPPING ON 414A KTU (MD) OPTION BLK

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

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM FOR 6684-25 CONN BLK IN FIG. 5
2. PRIVATE LINE CIRCUIT AT DISTANT END MAY BE A 414A KTU (MD), 419A KTU, 461A KTU, OR ANY OTHER TYPE PRIVATE LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RING UP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CIRCUIT.
3. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.
4. SEE FIG. 8 FOR CONNECTIONS TO BE MADE ON OPTION TERMINAL STRIP B (C OPTION).

Fig. 13—Nondedicated Lead Connections for 414A KTU (Manual Signaling, Ringdown Private Line Circuit) in 597-Type Panel

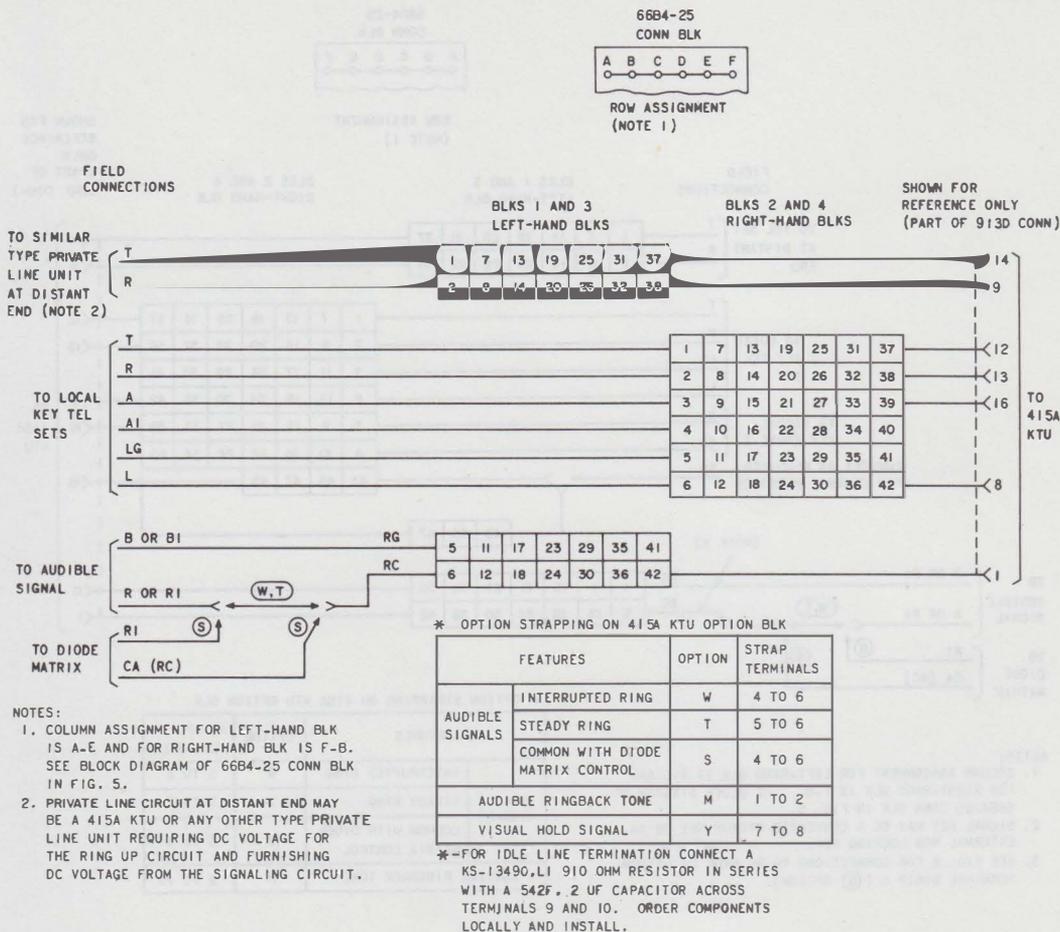
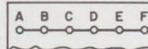


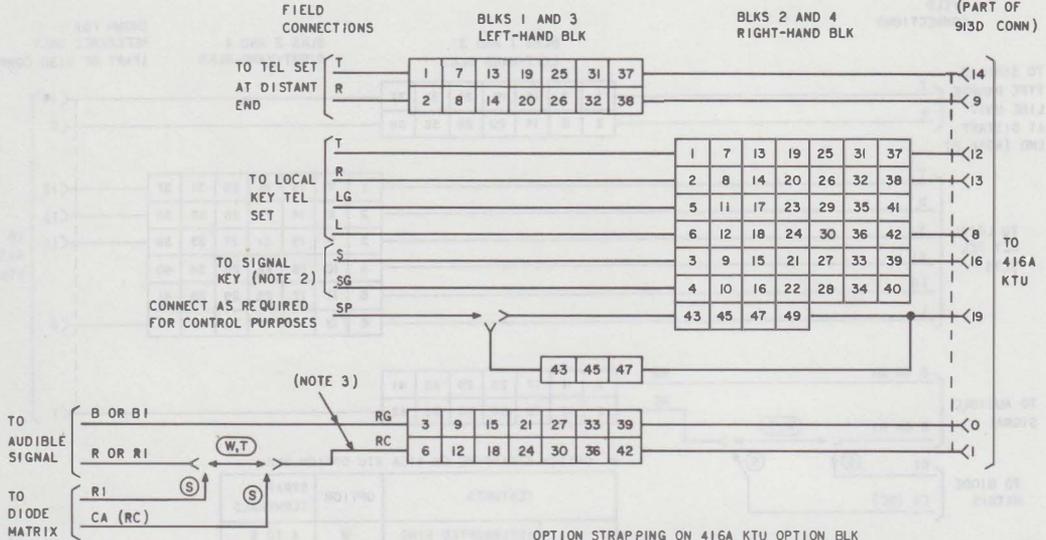
Fig. 14—Nondedicated Lead Connections for 415A KTU (Automatic, DC Signaling, Private Line Circuit) in 597-Type Panel

66B4-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)

SHOWN FOR
REFERENCE
ONLY
(PART OF
913D CONN)



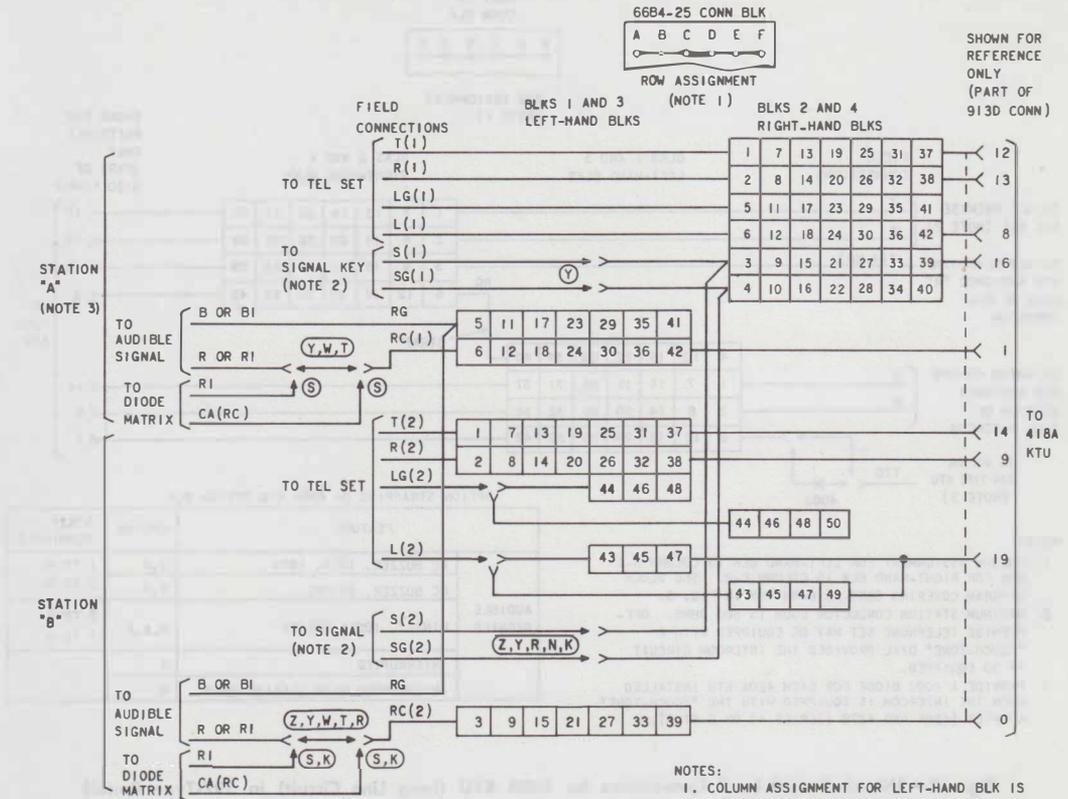
OPTION STRAPPING ON 416A KTU OPTION BLK

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

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM OF 66B4-25 CONN BLK IN FIG. 5.
2. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR AN EXTERNAL NON LOCKING KEY.
3. SEE FIG. 8 FOR CONNECTIONS TO BE MADE ON OPTION TERMINAL STRIP B (C OPTION).

Fig. 15—Nondedicated Lead Connections for 416A KTU (Station Line Circuit) in 597-Type Panel



- NOTES:
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-F. SEE BLOCK DIAGRAM OF 66B4-25 CONN BLK IN FIG. 5.
 2. SIGNAL KEY CAN BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.
 3. STATION "A" IS ALWAYS ASSIGNED AS THE AUTOMATIC SIGNALING STATION WHENEVER THE ONE-WAY AUTOMATIC, ONE-WAY MANUAL SIGNALING OPTION IS USED.
 4. THESE OPTIONS APPLY TO THE SIGNAL KEY AND AUDIBLE SIGNAL AT STATION "B" ONLY. THE AUDIBLE SIGNAL AT STATION "A" IS UNDER CONTROL OF SIGNAL KEY AT STATION "B". THE AUDIBLE SIGNAL AT STATION "A" MAY BE PART OF A COMMON AUDIBLE ARRANGEMENT PROVIDED THE DIODE MATRIX IS USED FOR CONTROL.
 5. THE AUDIBLE SIGNALS AT STATION "A" AND "B" MAY BE PART OF A COMMON AUDIBLE ARRANGEMENT PROVIDED THE DIODE MATRIX IS USED FOR CONTROL.

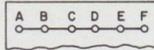
OPTION STRAPPING ON 418A KTU OPTION BLK

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

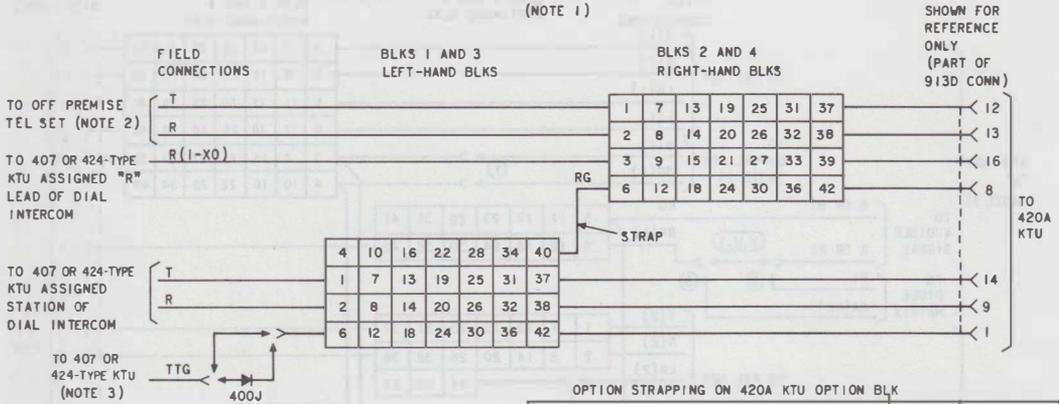
* USE CONTINUOUS METHOD OF STRAPPING

Fig. 16—Nondedicated Lead Connections for 418A KTU (Short Range, DC Signaling, Private Line Circuit) in 597-Type Panel

66B4-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)



OPTION STRAPPING ON 420A KTU OPTION BLK

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

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS COLUMN A-E AND FOR RIGHT-HAND BLK IS COLUMN F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 5.
2. MAXIMUM STATION CONDUCTOR LOOP IS 500 OHMS. OFF-PREMISE TELEPHONE SET MAY BE EQUIPPED WITH A "TOUCH-TONE" DIAL PROVIDED THE INTERCOM CIRCUIT IS SO EQUIPPED.
3. PROVIDE A 400J DIODE FOR EACH 420A KTU INSTALLED WHEN THE INTERCOM IS EQUIPPED WITH THE "TOUCH-TONE" ADAPTER [426A AND 427B (SERIES 4) OR C KTU].

Fig. 17—Nondedicated Lead Connections for 420A KTU (Long Line Circuit) in 597-Type Panel

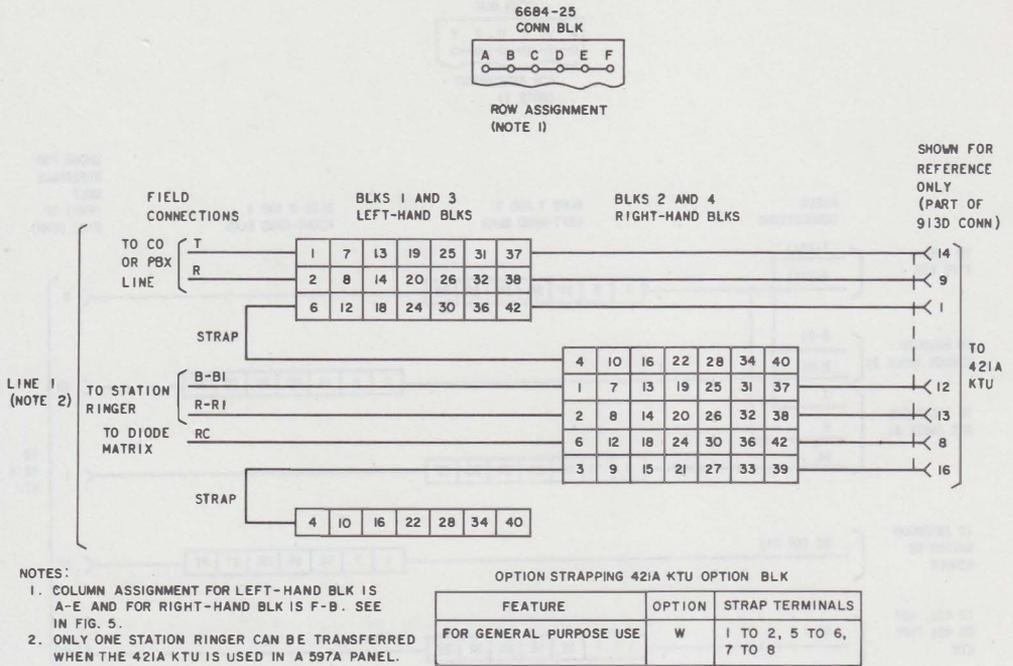
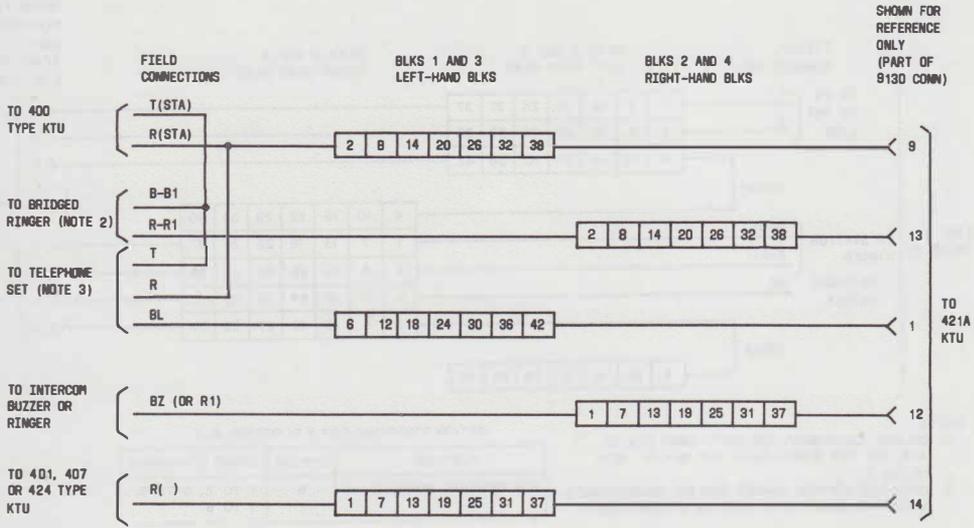


Fig. 18—Nondedicated Lead Connections for 421A KTU (Power Failure Transfer Circuit) in 597-Type Panel

6884-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)



SHOWN FOR
REFERENCE
ONLY
(PART OF
9130 CONN)

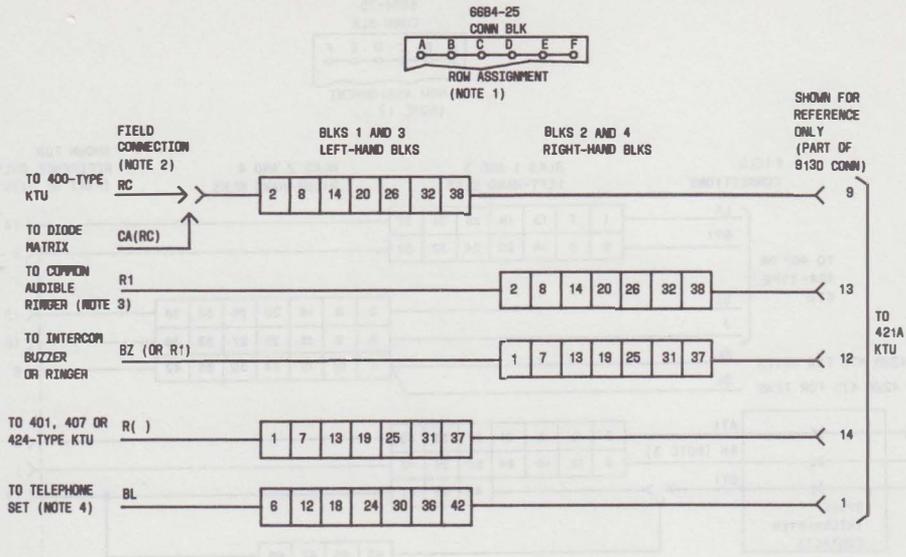
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-8. SEE FIG. 5.
2. ONLY ONE BRIDGED RINGER CAN BE SUPPRESSED WHEN THE 421A KTU IS USED IN A 597A PANEL.
3. TELEPHONE SET MUST BE EQUIPPED WITH STATION BUSY OPTION.

OPTION STRAPPING 421A KTU OPTION BLK

| FEATURE | OPTION | STRAP TERMINALS |
|-------------------------------------------------------|--------|------------------------|
| FOR GENERAL PURPOSE USE OR AUDIBLE SIGNAL SUPPRESSION | W | 1 TO 2, 5 TO 6, 7 TO 8 |

Fig. 19—Nondedicated Lead Connections for 421A KTU (Audible Signal Suppression Circuit) in 597-Type Panel Arranged to Suppress Bridged Ringing



NOTES:

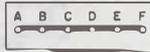
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE FIG. 5.
2. REFER TO 400-TYPE KTU FOR OPTION.
3. ONLY ONECOMMON RINGER CAN BE SUPPRESSED WHEN THE 421A KTU IS USED IN A 587A PANEL.
4. TELEPHONE SET MUST BE EQUIPPED WITH STATION BUSY OPTION.

OPTION STRAPPING 421A KTU OPTION BLK

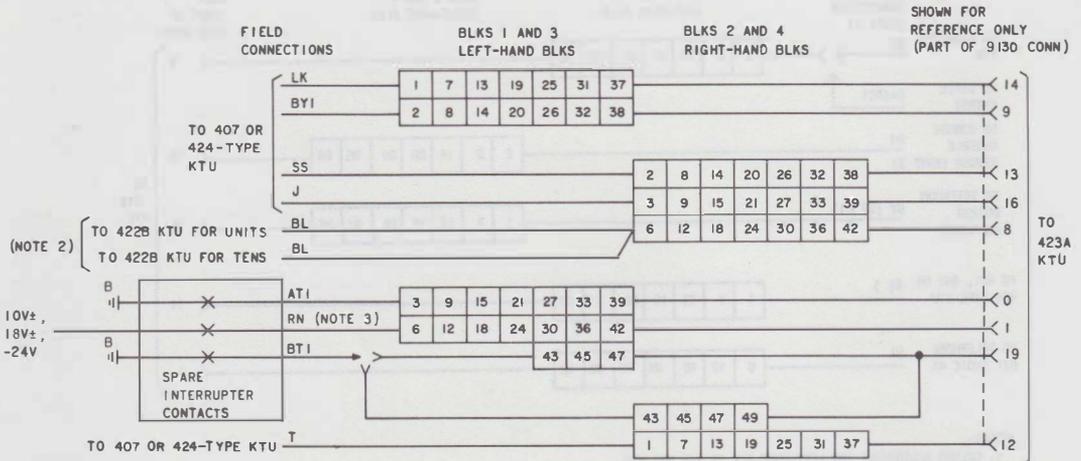
| FEATURE | OPTION | STRAP TERMINALS |
|-------------------------------------------------------|--------|------------------------|
| FOR GENERAL PURPOSE USE OR AUDIBLE SIGNAL SUPPRESSION | W | 1 TO 2, 5 TO S, 7 TO B |

Fig. 20—Nondedicated Lead Connections for 421A KTU (Audible Signal Suppression Circuit) in 597-Type Panel Arranged to Suppress Common Audible Ringing

66B4-25
CONN BLK

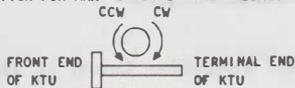


ROW ASSIGNMENT
(NOTE 1)



NOTES:

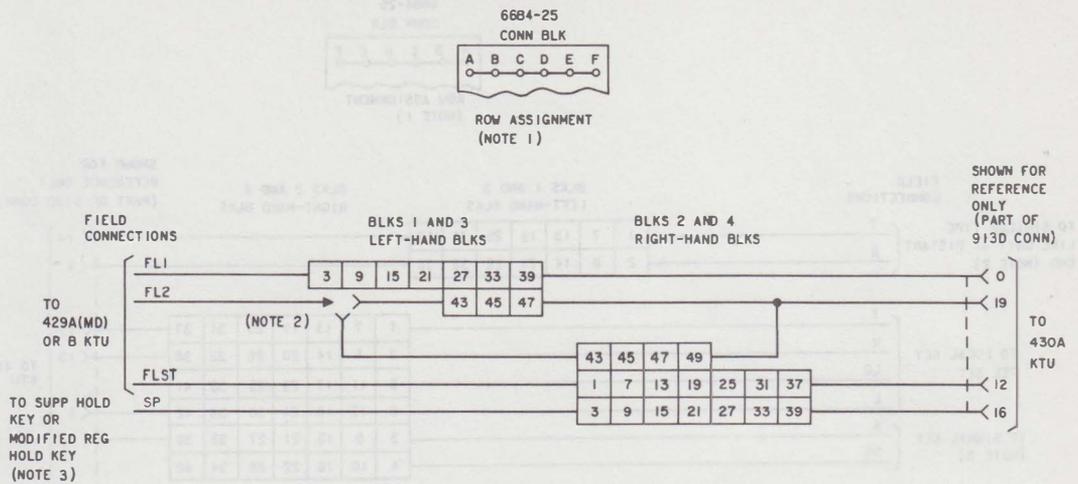
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 5.
2. 422B KTUS ASSOCIATED WITH THE SAME DIAL INTERCOM AS THE 423A KTU.
3. IF INTERRUPTED 105V₂ IS USED FOR DIAL INTERCOM, DO NOT CONNECT THIS LEAD. IF BUZZERS ARE USED FOR DIAL INTERCOM, AUDIBLE SIGNAL IS SUPPLIED ON THIS LEAD VIA SPARE INTERRUPTER CONTACTS TO PIN 1 OF 423A KTU. ON 423A KTU OPTION BLK, STRAP TERMINALS 6 TO 7 AND REMOVE (R) OPTION STRAP BETWEEN TERMINALS 4 AND 6.
4. TURN KNURLED WHEEL TO FULL CLOCKWISE POSITION FOR MINIMUM DIAL TONE VOLUME AND TO FULL COUNTERCLOCKWISE POSITION FOR MAXIMUM DIAL TONE VOLUME.



| FEATURES | 423A | |
|-------------------|--------|-------|
| | OPTION | STRAP |
| DIAL TONE | T | 1-2 |
| STATION BUSY TONE | R | 4-6 |
| AUDIBLE RINGBACK | S | * |

* REQUIRES NO STRAPPING ON KTU

Fig. 21—Nondedicated Lead Connections for 423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit) in 597-Type Panel

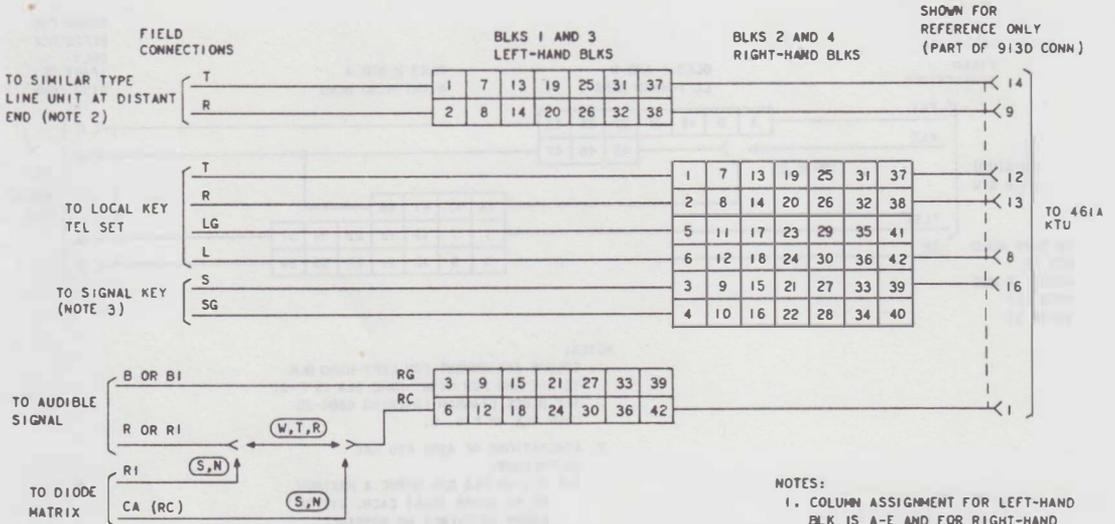
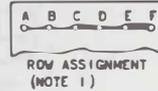


NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 5.
2. 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
3. FOR MODIFICATION OF HOLD KEY, SEE SECTION COVERING TELEPHONE SET IN USE.

Fig. 22—Nondedicated Lead Connections for 430A KTU (Flutter Generator) in 597-Type Panel

66B4-25
CONN BLK



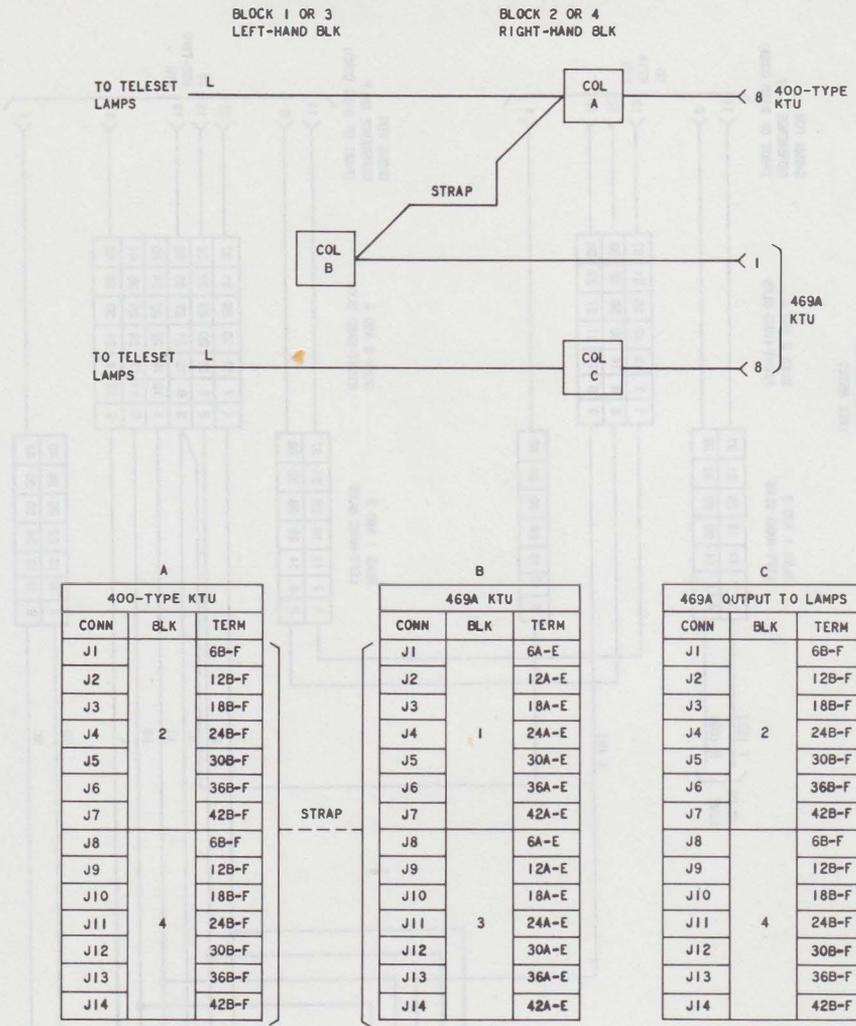
OPTION STRAPPING ON 461A KTU OPTION BLK

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

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM FOR 66B4-25 CONN BLK IN FIG. 5
2. PRIVATE LINE CIRCUIT AT DISTANT END MAY BE A 414A KTU (MD), 419A KTU, 461A KTU, OR ANY OTHER TYPE PRIVATE LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RING UP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CIRCUIT.
3. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.

Fig. 23—Nondedicated Lead Connections for 461A KTU (Manual Signaling, Ringdown Private Line Circuit) in 597-Type Panel



NOTE:
 STRAP L LEAD FROM JACK REQUIRING LAMP MULTIPLE (COL. A) TO CONNECTOR CONTAINING 469A KTU (COL. B). CONNECT LEADS FROM TEL SET TO L LEAD OF SAME CONNECTOR (COL. C).

Fig. 24—Nondedicated Lead Connections for 469A KTU (Lamp Extender) in 597-Type Panel

NOTE:
COLUMN ASSIGNMENT FOR LEFT-HAND
BLK IS A-E AND FOR RIGHT-HAND
BLK IS F-B

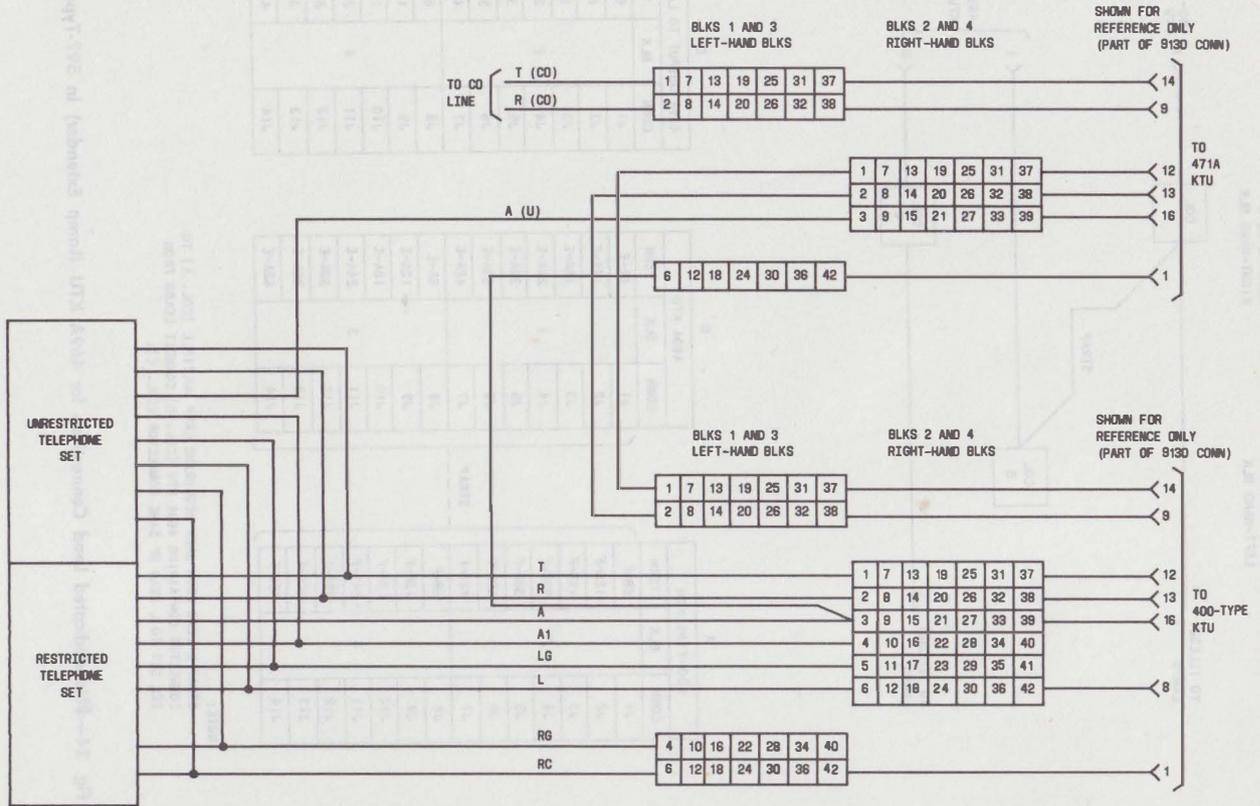
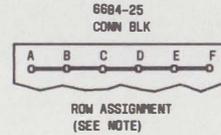
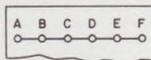


Fig. 25—Nondedicated Lead Connections for 471A KTU (Battery Reversal Toll Restriction Circuit) in 597-Type Panel

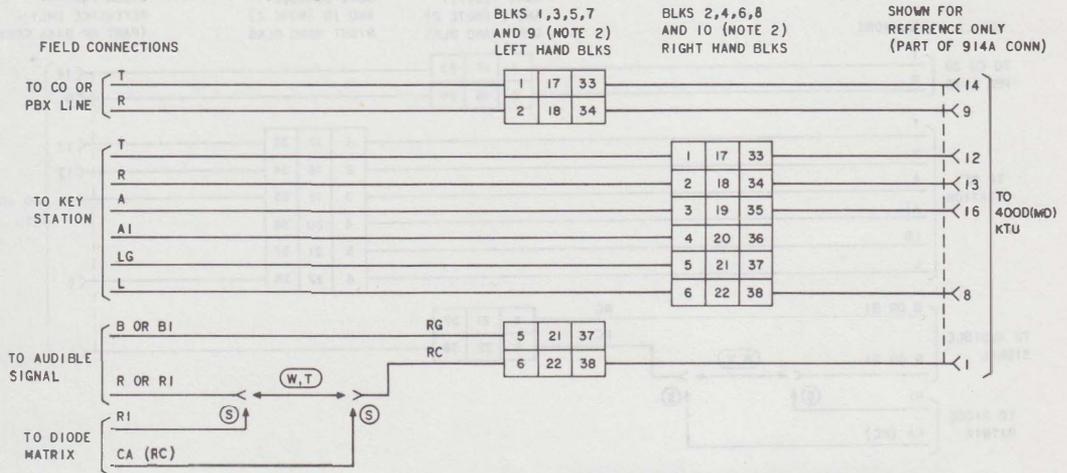
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM FOR 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
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.

66B4-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)



* - 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 STRAPS ON MD KTUS, 400A, B AND C.

OPTION STRAPPING ON 400D(MD) KTU OPTION BLK

| FEATURES | | OPTION | STRAP TERMINALS |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------|
| AUDIBLE SIGNALS | INTERRUPTED RING | W | 5 TO 8, †5 TO 6 |
| | STEADY RING | T | 6 TO 8, †4 TO 6 |
| | COMMON WITH DIODE MATRIX CONTROL | S | 5 TO 8, †5 TO 6 |
| VISUAL HOLD CIRCUIT | LAMP WINK | Y | 7 TO 10, †8 TO 9 |
| | LAMP STEADY | X | 7 TO 9, †7 TO 9 |
| TIME-OUT CONTROL | SHORT TIME DELAY (10 SECONDS) | Z* | 1 TO 2, †1 TO 9 |
| | LONG TIME DELAY | † | † |
| RELEASE OF HOLDING BRIDGE FROM CO OR PBX LINE CURRENT OPENS GREATER THAN | 500 MILLISECONDS WHEN ASSOCIATED WITH NO. 1 ESS HAVING RESWITCH CAPABILITY | ZC (NOTE 3) | 2 TO 3 USING 601A (5 UF) CAPACITOR OR EQUIVALENT |
| | 100 MILLISECONDS WHEN ASSOCIATED WITH 800A PBX AND/OR NO. 5 X-BAR CENTREX NOT HAVING AUTOMATIC PERMANENT SIGNAL RELEASE | ZD | 2 TO 3 USING 575C (1 UF) CAPACITOR OR EQUIVALENT |
| | 50 MILLISECONDS WHEN ASSOCIATED WITH NO. 5 X-BAR CENTREX HAVING AUTOMATIC PERMANENT SIGNAL RELEASE | ZJ | 2 TO 3 USING 575B (0.5 UF) CAPACITOR OR EQUIVALENT |

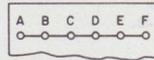
Fig. 26—Nondedicated Lead Connections for 400D (MD) KTU (CO or PBX Line Circuit) in 598-Type Panel

SECTION 518-215-417

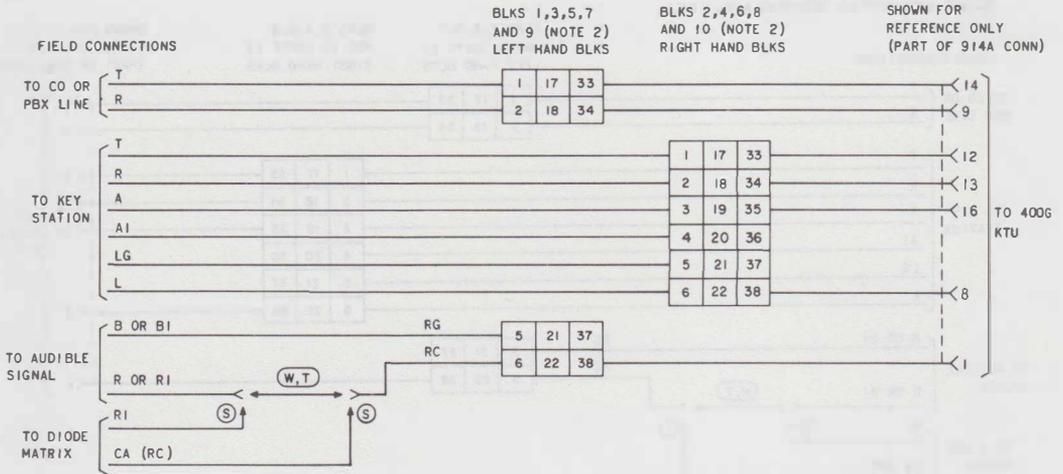
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM FOR 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.

66B4-25
CONN BLK



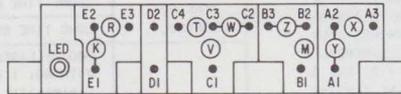
ROW ASSIGNMENT
(NOTE 1)



OPTION STRAPPING

| OPT | FEATURES | | |
|-----|----------------------|----------------------------------------------------------------|------------------|
| M | TIMEOUT | LONG TIME DELAY (APPROXIMATELY 20 SECONDS) | |
| Z | | SHORT TIME DELAY (APPROXIMATELY 5 SECONDS) | |
| Y | VISUAL HOLD CKT | LAMP WINK | |
| X | | LAMP STEADY | |
| W | AUDIBLE SIGNAL | INTERRUPTED RING | |
| T | | STEADY RING | |
| S | | COMMON WITH DIODE MATRIX CONTROL | |
| V | | COMMON WITH RELAY CONTROL | |
| R | DELAYED HOLD RELEASE | RELEASE OF HOLDING BRIDGE FROM CO OR PBX BY LINE CURRENT OPENS | MINIMUM OF 25 MS |
| K | | | 600 MS |

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



| OPTION | CONNECT OPTION PLUG TO TERMINALS |
|--------|----------------------------------|
| Z | B2 - B3 |
| Y | A1 - A2 |
| X | A2 - A3 |
| T | C3 - C4 |
| W | C2 - C3 |
| V | C1 - C3 |
| R | E2 - E3 |
| K | E1 - E2 |
| M | B1 - B2 |

Fig. 27—Nondedicated Lead Connections for 400G KTU (CO or PBX Line Circuit) in 598-Type Panel

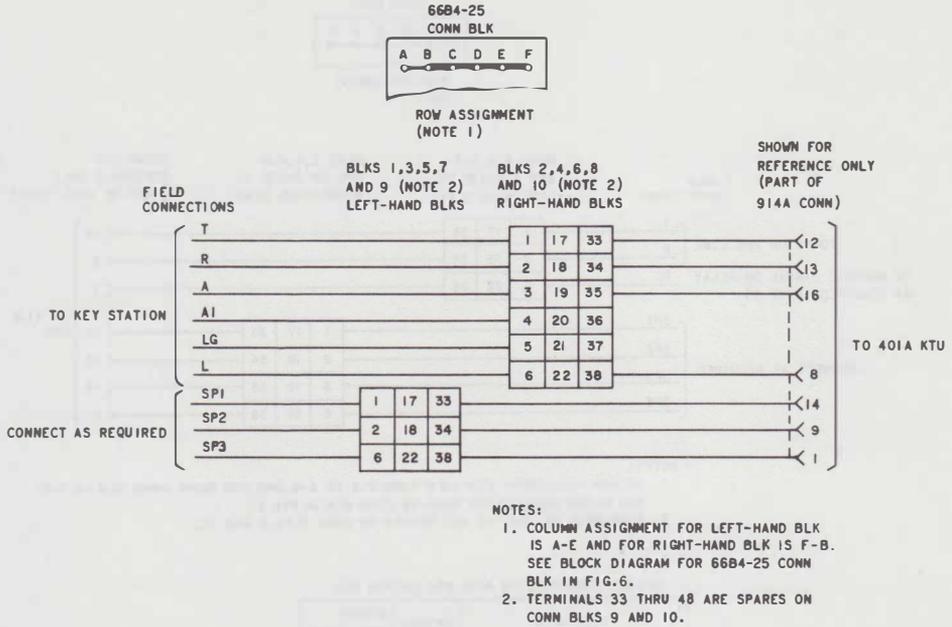


Fig. 28—Nondedicated Lead Connections for 401A KTU (Manual Intercom Line Circuit) in 598-Type Panel

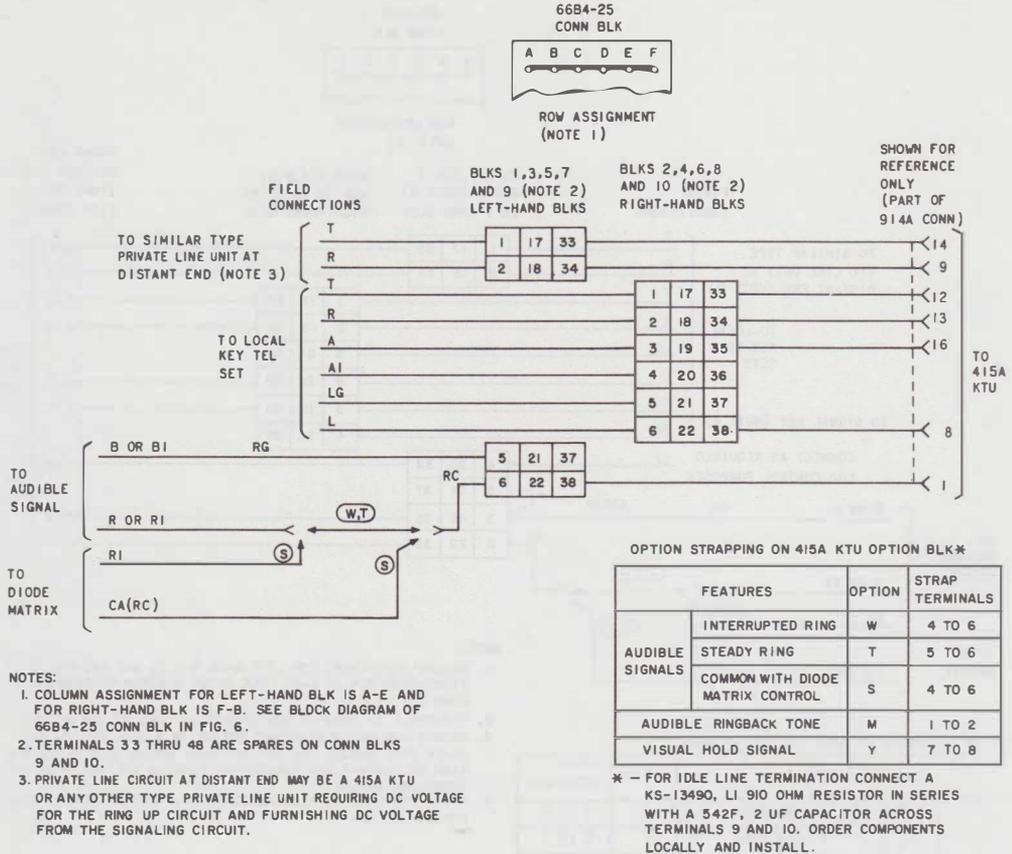
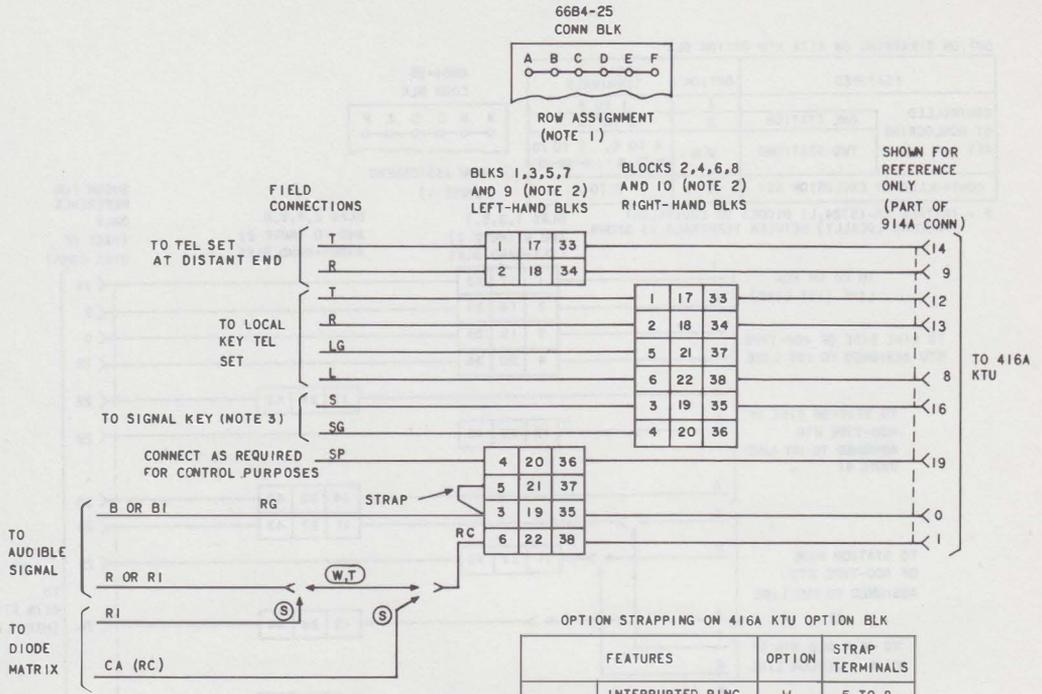


Fig. 31—Nondedicated Lead Connections for 415A KTU (Automatic, DC Signaling, Private Line Circuit) in 598-Type Panel



NOTES:

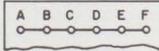
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM OF 6684-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR AN EXTERNAL NONLOCKING KEY.

Fig. 32—Nondedicated Lead Connections for 416A KTU (Station Line Circuit) in 598-Type Panel

OPTION STRAPPING ON 417A KTU OPTION BLK

| FEATURES | OPTION | STRAP TERMINALS |
|------------------------------|--------------|------------------------|
| CONTROLLED BY NONLOCKING KEY | ONE STATION | Z 1 TO 2 6 TO 10 |
| | TWO STATIONS | W* 4 TO 6, 8 TO 10 |
| CONTROLLED BY EXCLUSION KEY | Y | 3 TO 5 |

6684-25
CONN BLK



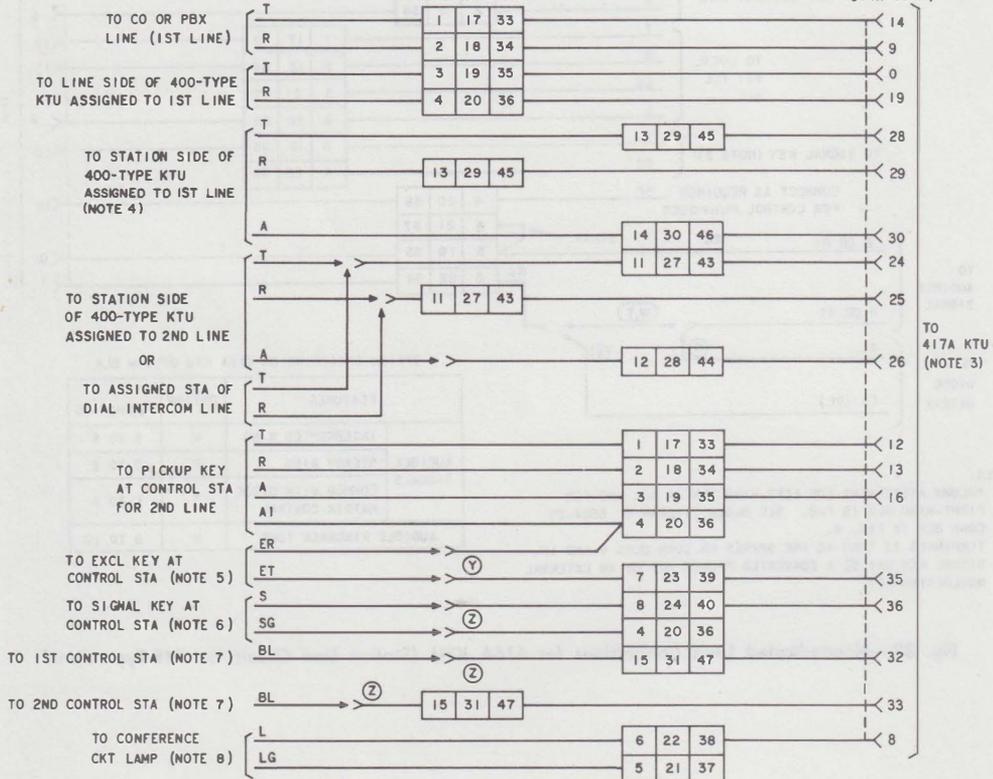
ROW ASSIGNMENT
(NOTE 1)

* - INSTALL KS-15724, 1I DIODES OR EQUIVALENT (PROCURE LOCALLY) BETWEEN TERMINALS AS SHOWN.

BLKS 1,3,5,7
AND 9 (NOTE 2)
LEFT-HAND BLKS

BLKS 2,4,6,8
AND 10 (NOTE 2)
RIGHT-HAND BLKS

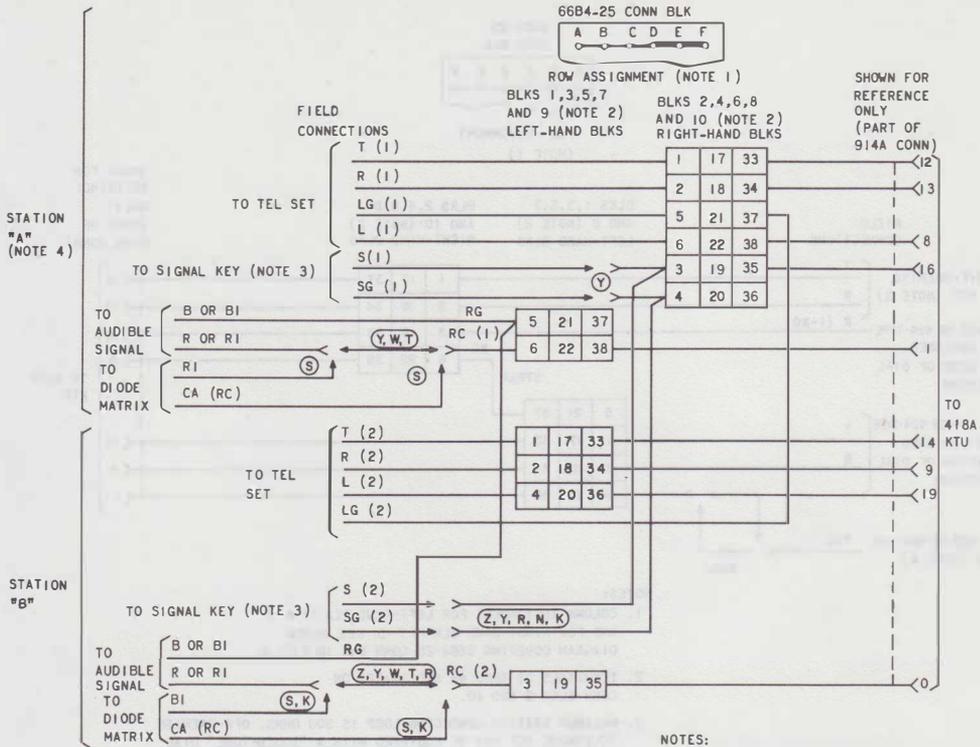
SHOWN FOR REFERENCE ONLY
(PART OF
914A CONN)



NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS COLUMN A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THROUGH 48 ARE SPARES ON CONN BLKS 9 AND 10. ASSOCIATED LAMP AND RINGING CKTS FROM 400-TYPE KTUS AND DIAL INTERCOM LINE CONNECT DIRECTLY TO TELEPHONE SETS.
3. STATION LEADS FROM THE TEL SET FOR THE 1ST LINE MUST ALSO BE TERMINATED TO THE STA SIDE OF THE ASSIGNED 400-TYPE KTU.
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. 33—Nondedicated Lead Connections for 417A KTU (Add-On Conference Circuit) in 598-Type Panel



NOTES:

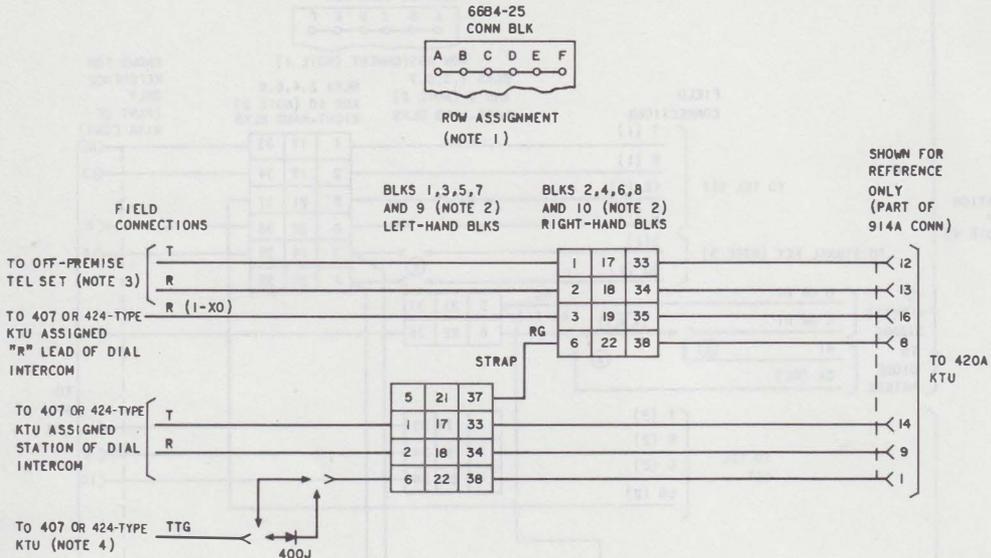
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM OF 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. SIGNAL KEY CAN BE A CONVERTED PICKUP OR ANY EXTERNAL NONLOCKING KEY.
4. STATION "A" IS ALWAYS ASSIGNED AS THE AUTOMATIC 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 STATION "B" ONLY. THE AUDIBLE SIGNAL AT STATION "A" IS UNDER CONTROL OF SIGNAL KEY AT STATION "B". THE AUDIBLE SIGNAL AT STATION "A" MAY BE PART OF A COMMON AUDIBLE ARRANGEMENT PROVIDED THE DIODE MATRIX IS USED FOR CONTROL.
6. THE AUDIBLE SIGNALS AT STATION "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

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

* - USE CONTINUOUS METHOD OF STRAPPING

Fig. 34—Nondedicated Lead Connections for 418A KTU (Short Range, DC Signaling, Private Line Circuit) in 598-Type Panel



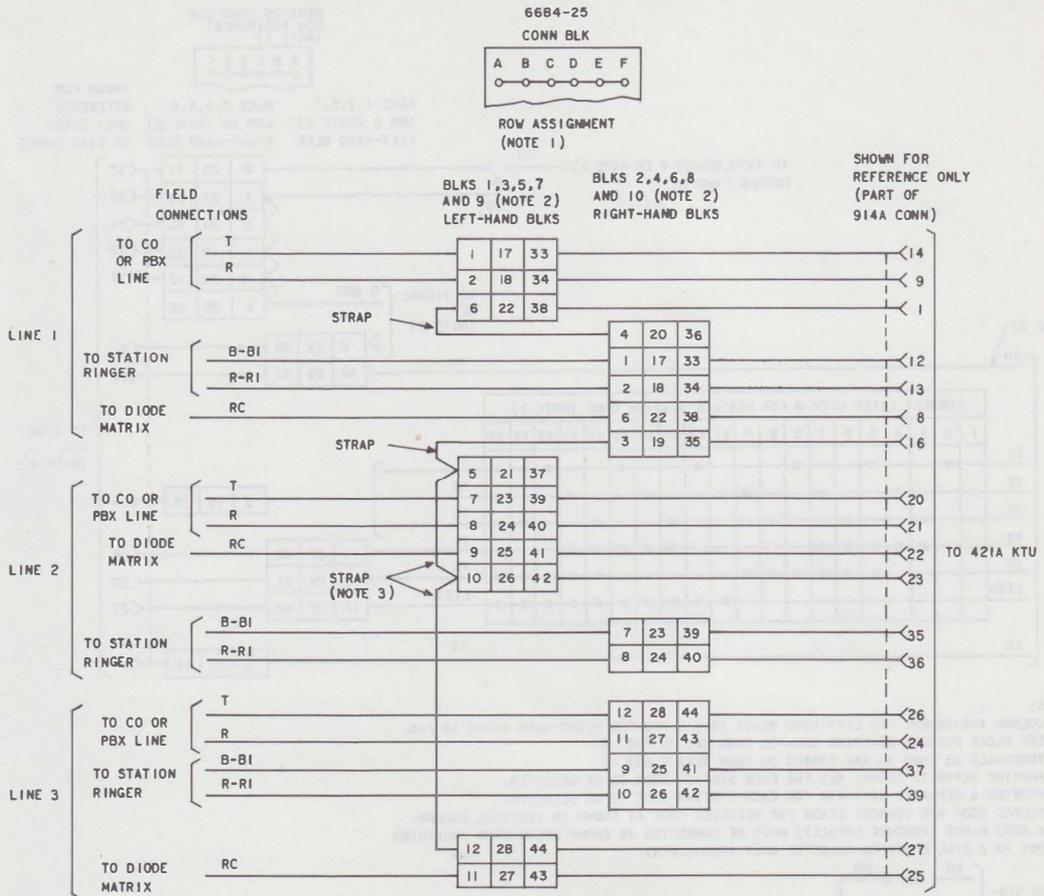
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. MAXIMUM STATION CONDUCTOR LOOP IS 500 OHMS. OFF-PREMISE 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 [426A AND 427B (SERIES 4) OR C KTUS].

OPTION STRAPPING TO OPTION BLK

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

Fig. 35—Nondedicated Lead Connections for 420A KTU (Long Line Circuit) in 598-Type Panel



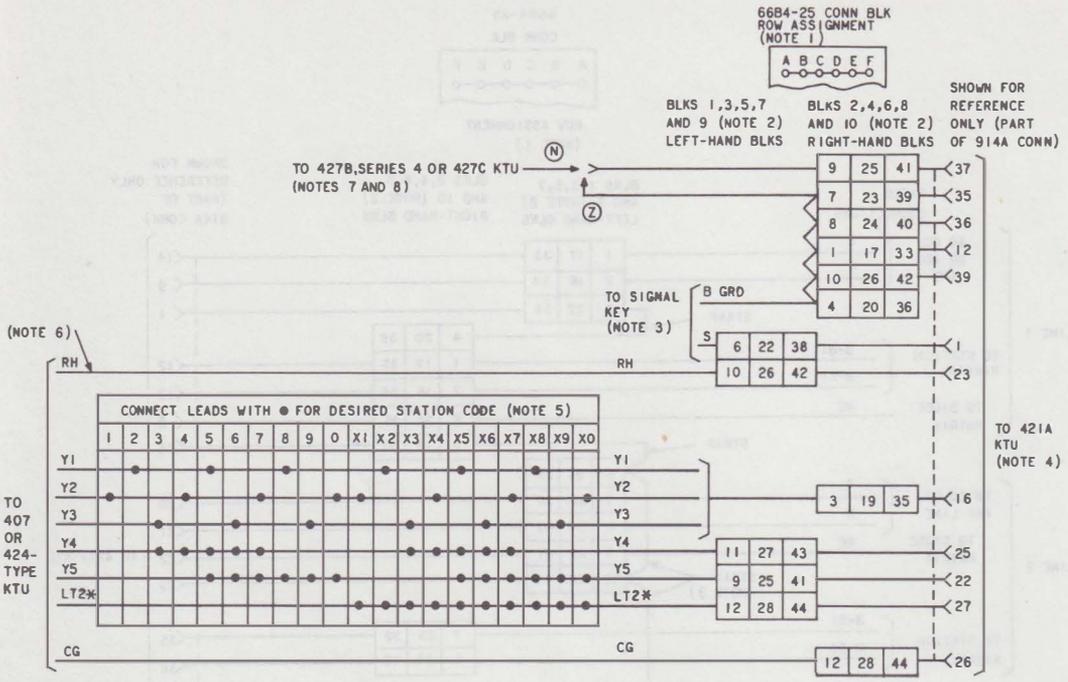
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS COLUMN A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. ADD STRAPS ACCORDING TO NUMBER OF LINES SERVED.

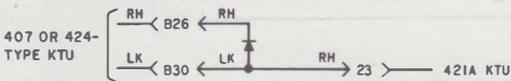
OPTION STRAPPING ON 421A KTU OPTION BLK

| FEATURE | OPTION | STRAP TERMINALS |
|-------------------------|--------|---------------------------|
| FOR GENERAL PURPOSE USE | W | 1 TO 2, 5 TO 6, 7 TO 8 |

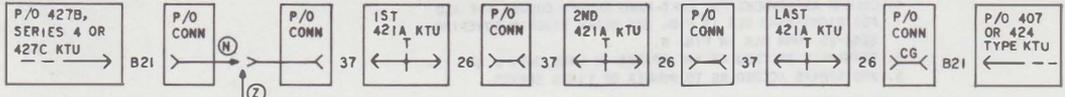
Fig. 36—Nondedicated Lead Connections for 421A KTU (Power Failure Transfer Circuit) in 598-Type Panel



- NOTES:
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLOCK IS A-E AND FOR RIGHT-HAND BLOCK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 6.
 2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
 3. PROVIDE SEPARATE SIGNAL KEY FOR EACH STATION CODE TO BE SELECTED.
 4. PROVIDE A SEPARATE 421A KTU FOR EACH STATION CODE TO BE SELECTED.
 5. SELECT CODE AND CONNECT LEADS FOR SELECTED CODE AS SHOWN IN VERTICAL COLUMN.
 6. A 400J DIODE (PROCURE LOCALLY) MUST BE CONNECTED AS SHOWN BELOW WHEN PROVIDING DSS IN A DIAL EQUIPPED SELECTOR ONLY ARRANGEMENT.

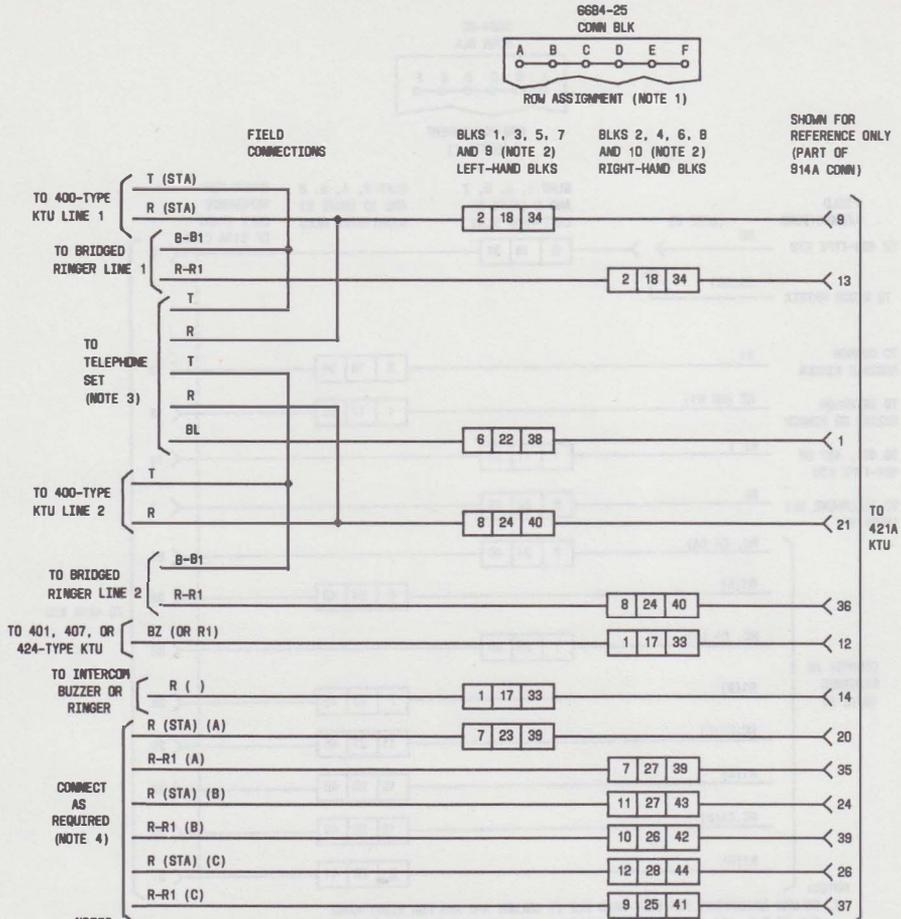


7. IF MORE THAN ONE 421A KTU IS USED FOR DSS, CONNECT AS SHOWN:



8. (N) WITH "TOUCH-TONE"
 - (Z) WITHOUT "TOUCH-TONE"
- * USE WITH 424-TYPE KTU ONLY

Fig. 37—Nondedicated Lead Connections for 421A KTU (Wired for DSS Feature for Dial Intercom Line) in 598-Type Panel



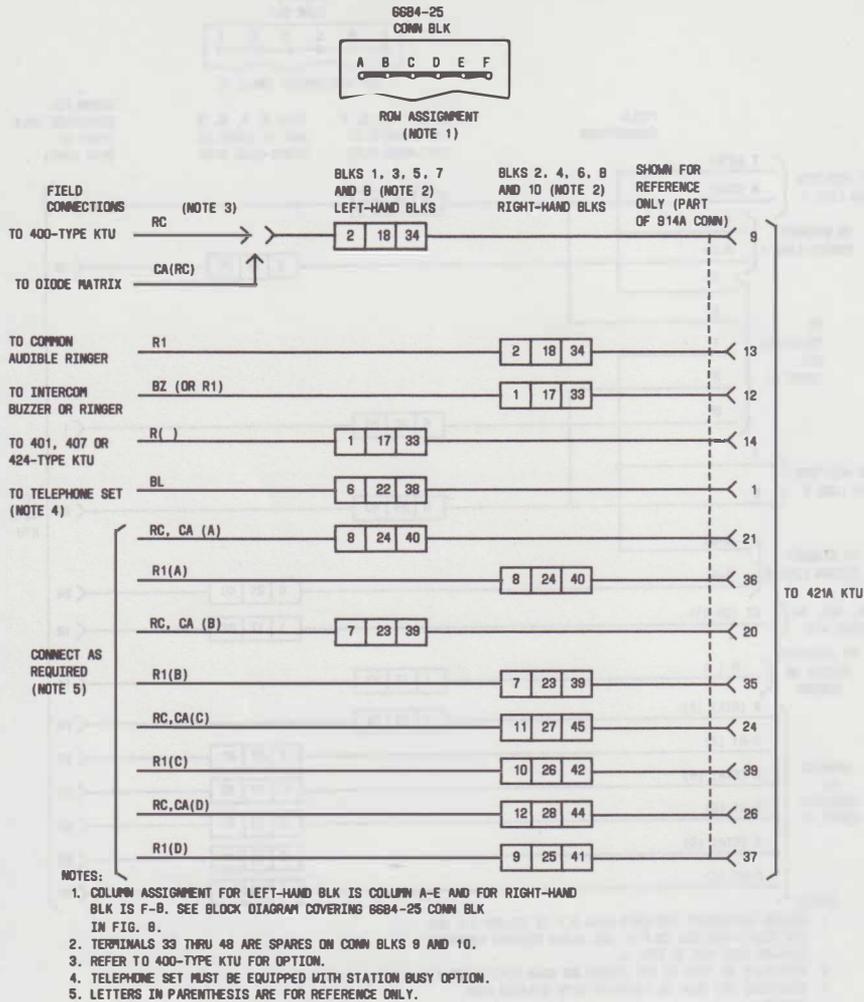
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS COLUMN A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6884-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. TELEPHONE SET MUST BE EQUIPPED WITH STATION BUSY OPTION.
4. LETTERS IN PARENTHESES ARE FOR REFERENCE ONLY. CONNECT AS REQUIRED TO SUPPRESS BRIDGED RINGERS ON ADDITIONAL LINES.

OPTION STRAPPING ON 421A KTU OPTION BLK

| FEATURE | OPTION | STRAP TERMINALS |
|-------------------------------------------------------|--------|------------------------|
| FOR GENERAL PURPOSE USE OR AUDIBLE SIGNAL SUPPRESSION | W | 1 TO 2, 5 TO 6, 7 TO 8 |

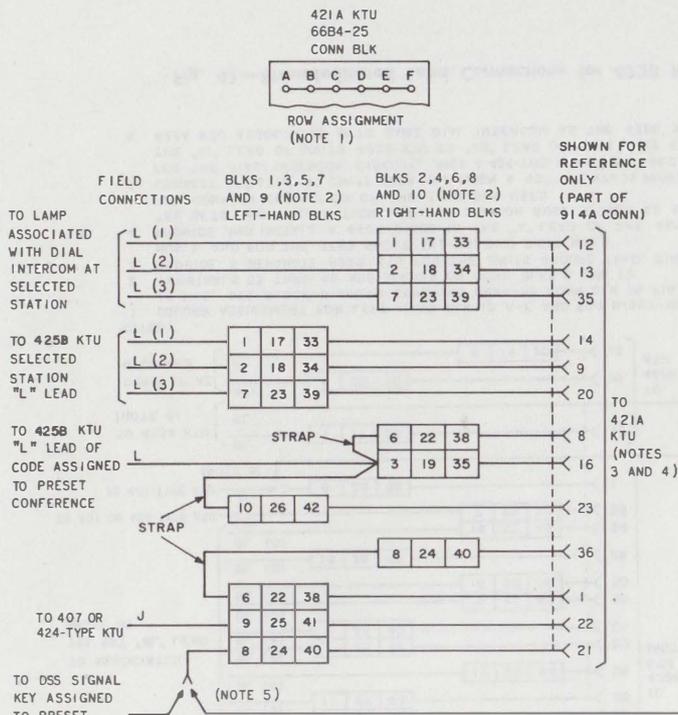
Fig. 38—Nondedicated Lead Connections for 421A KTU (Audible Signal Suppression Circuit) in 598-Type Panel Arranged to Suppress Bridged Ringing



OPTION STRAPPING ON 421A KTU OPTION BLK

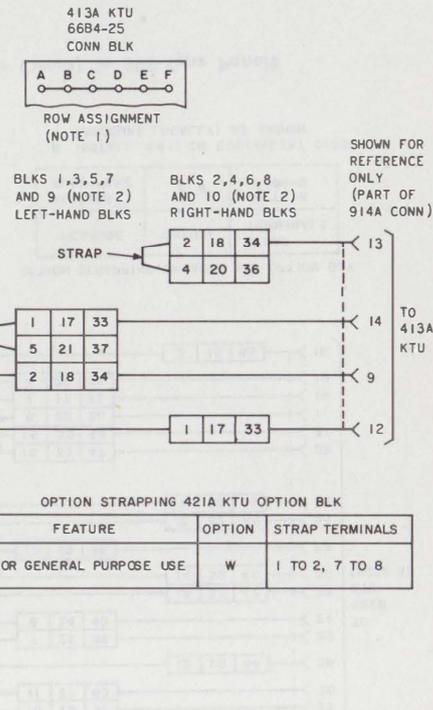
| FEATURE | OPTION | STRAP TERMINALS |
|-------------------------------------------------------|--------|---------------------------|
| FOR GENERAL PURPOSE USE OR AUDIBLE SIGNAL SUPPRESSION | W | 1 TO 2, 5 TO 6, 7 TO 8 |

Fig. 39—Nondedicated Lead Connections for 421A KTU (Audible Signal Suppression Circuit) in 598-Type Panel Arranged to Suppress Common Audible Ringing



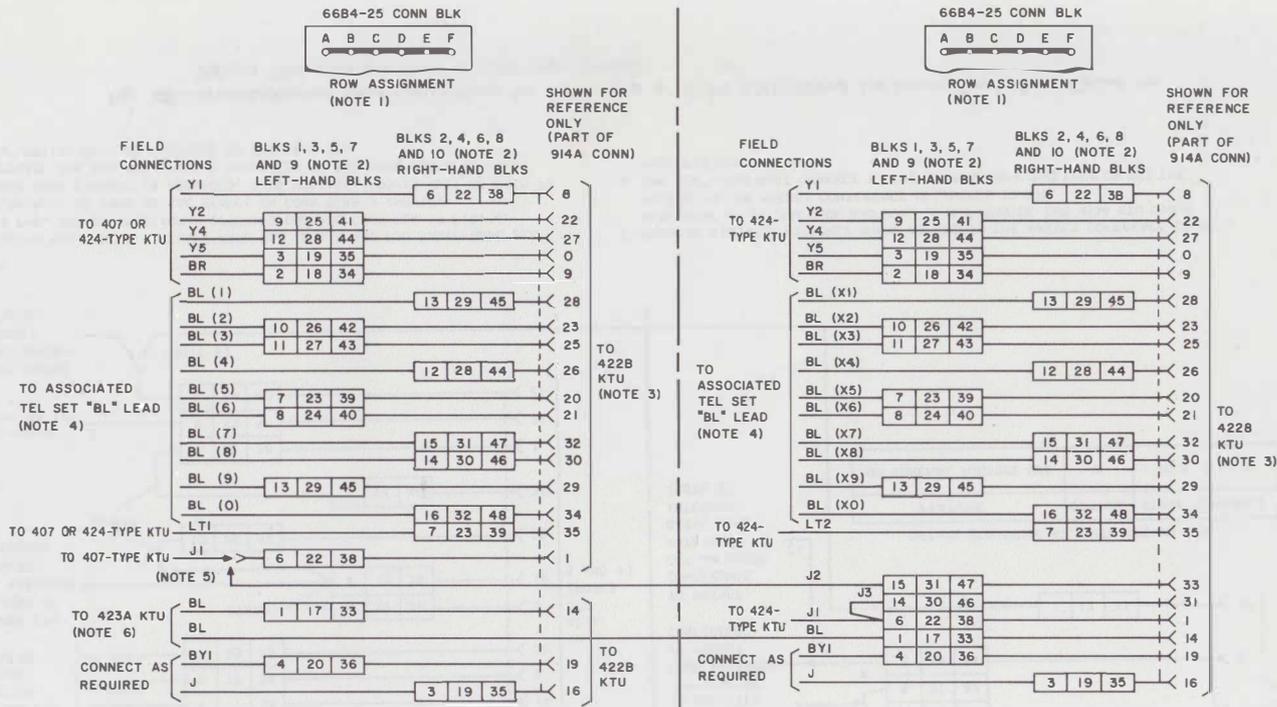
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. WHEN THIS CIRCUIT IS PROVIDED, RING VOLTAGE (105V±) MUST BE USED TO OPERATE THE AUDIBLE SIGNALS CONNECTED TO THE DIAL INTERCOM LINE.
4. "W" OPTION MUST BE PROVIDED ON THE 421A KTU.



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

Fig. 40—Nondedicated Lead Connections for 421A KTU or 413A KTU (Wired for Preset Conference Circuit for Deluxe Dial Intercom Line) in 598-Type Panel



NOTES:

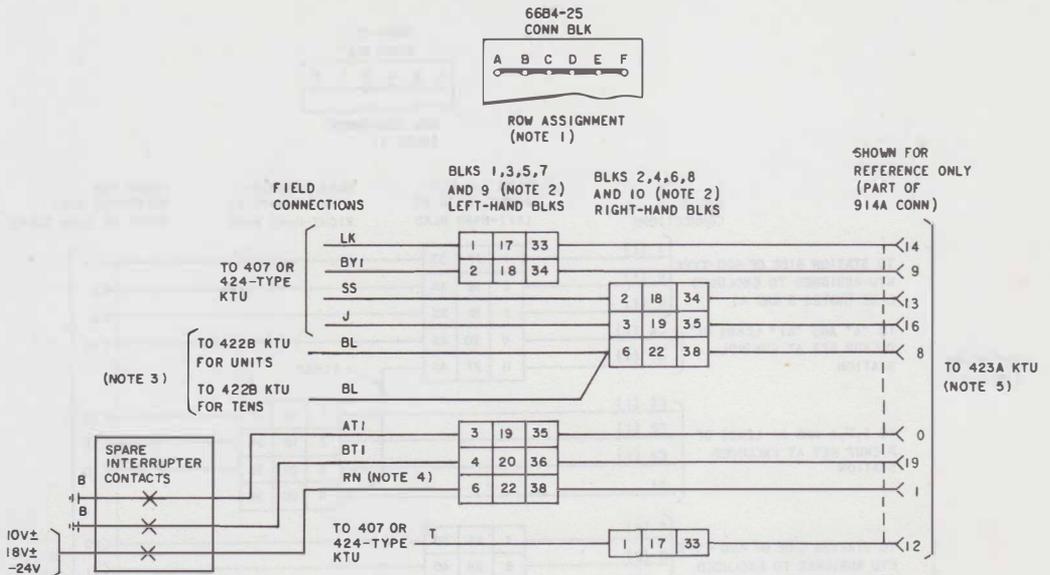
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. PROVIDE A SEPARATE 422B KTU FOR THE UNITS GROUPS (1-0, SINGLE DIGIT NOS.) AND FOR THE TENS GROUP (X1-X0, TWO DIGIT NOS.)
4. PROVIDE AND INSTALL A 440F DIODE IN THE "A" LEAD OF THE ASSOCIATED TEL SETS. 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 407-TYPE KTU IS PROVIDED FOR THE DIAL INTERCOM CIRCUIT. WHEN A 424-TYPE KTU IS PROVIDED, STRAP THE "J1" LEAD OF UNITS 422B KTU TO "J2" LEAD OF TENS 422B KTU.
6. 423A KTU ASSOCIATED WITH SAME DIAL INTERCOM AS THE 422B KTU.

OPTION STRAPPING ON 422B KTU OPTION BLK

| FEATURE | OPTION | STRAP TERMINALS |
|-------------------|--------|-----------------|
| STATION BUSY TONE | R * | 6 TO 8 ○—○ |

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

Fig. 41—Nondedicated Lead Connections for 422B KTU (Station Busy Selector Circuit) in 598-Type Panel



NOTES:

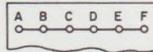
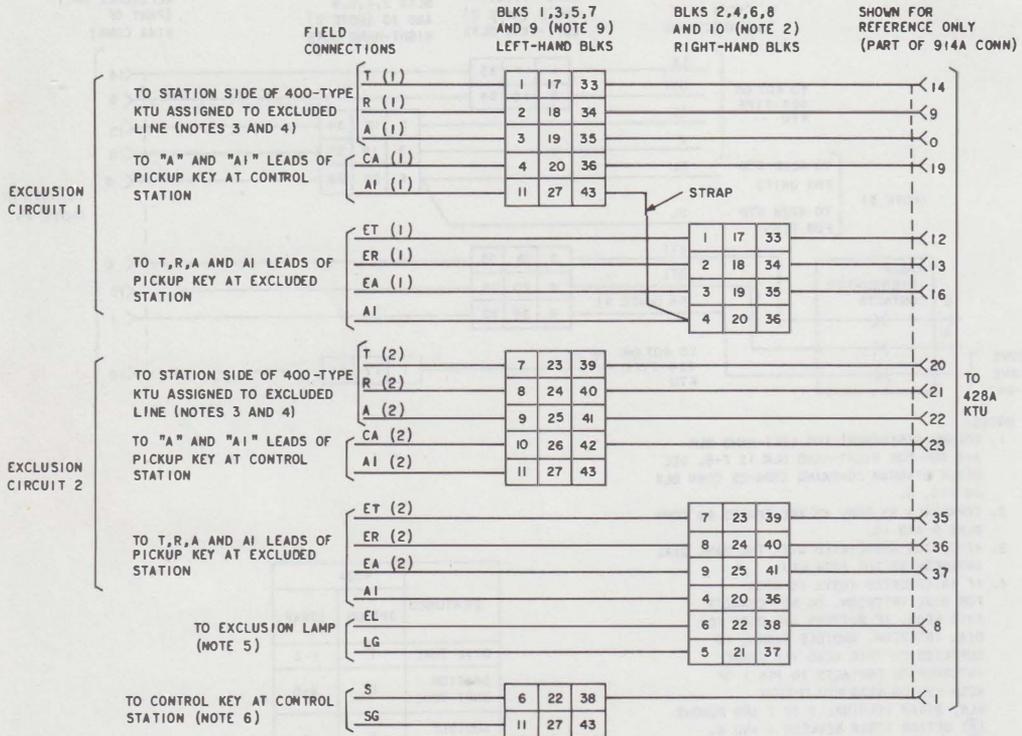
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. 422B KTUS ASSOCIATED WITH THE SAME DIAL INTERCOM AS THE 423A KTU.
4. IF INTERRUPTED 105V± IS USED FOR DIAL INTERCOM, DO NOT CONNECT THIS LEAD, IF BUZZERS ARE USED FOR DIAL INTERCOM, AUDIBLE SIGNAL IS SUPPLIED ON THIS LEAD VIA SPARE INTERRUPTER CONTACTS TO PIN 1 OF 423A KTU. ON 423A KTU OPTION BLK, STRAP TERMINAL 6 TO 7 AND REMOVE Ⓡ OPTION STRAP BETWEEN 4 AND 6.
5. TURN KNURLED WHEEL TO FULL CLOCKWISE POSITION FOR MINIMUM DIAL TONE VOLUME AND TO FULL COUNTERCLOCKWISE POSITION FOR MAXIMUM DIAL TONE VOLUME.

| FEATURES | 423A | |
|-------------------|--------|-------|
| | OPTION | STRAP |
| DIAL TONE | T | 1-2 |
| STATION BUSY TONE | R | 4-6 |
| AUDIBLE RINGBACK | S | * |

* REQUIRES NO STRAPPING ON KTU



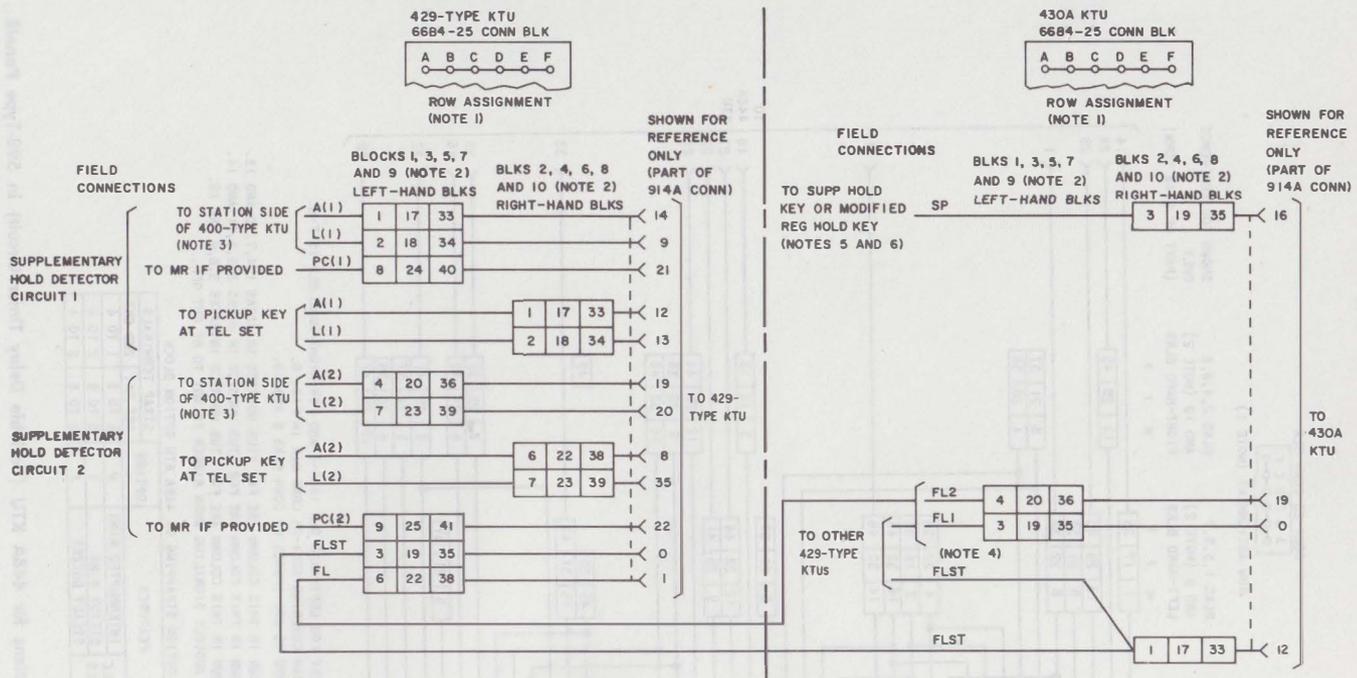
Fig. 42—Nondedicated Lead Connections for 423A KTU (Dial Tone, Busy Tone, and Audible Ringback Tone Circuit) in 598-Type Panel

66B4-25
CONN BLKROW ASSIGNMENT
(NOTE 1)

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. ASSOCIATED LAMP LEADS FROM THE 400-TYPE KTU TERMINATE DIRECTLY TO TEL SETS.
4. T AND R LEAD FROM STATION SIDE OF 400-TYPE KTU ALSO TERMINATES TO TEL SET OF CONTROL STATION. "A" LEAD FROM STATION SIDE OF 400-TYPE KTU MUST CONNECT THROUGH 428A KTU BEFORE CONNECTING TO TEL SET (CA(1) OR CA(2) LEAD).
5. LAMP INDICATING AN EXCLUSION CIRCUIT IS ACTIVATED.
6. CONTROL KEY MAY BE A LOCKING OR NONLOCKING TYPE.

Fig. 43—Nondedicated Lead Connections for 428A KTU (Multiline Exclusion Circuit) in 598-Type Panel



NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
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:

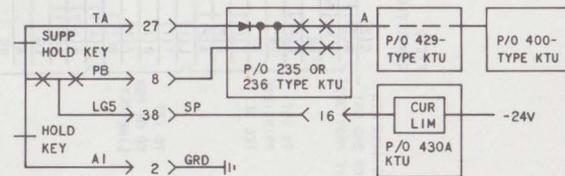
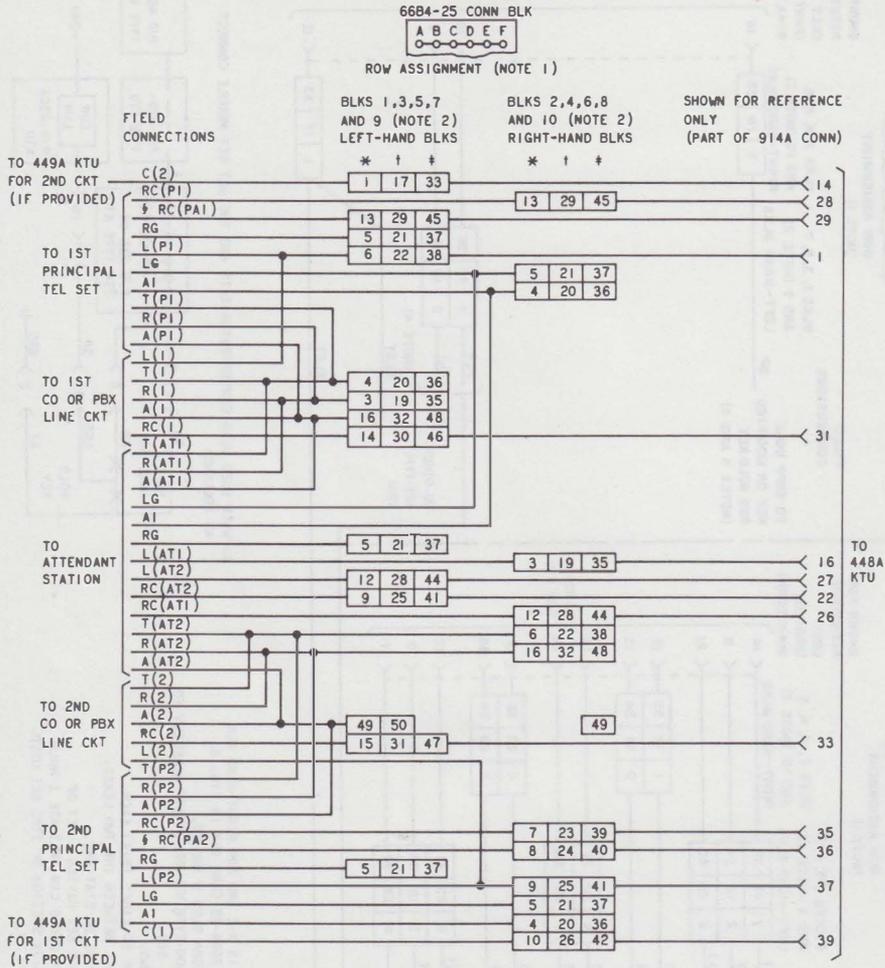


Fig. 44—Nondedicated Lead Connections for 429-Type KTU (Supplementary Hold Detector Circuit) and 430A KTU (Flutter Generator Circuit) in 598-Type Panel

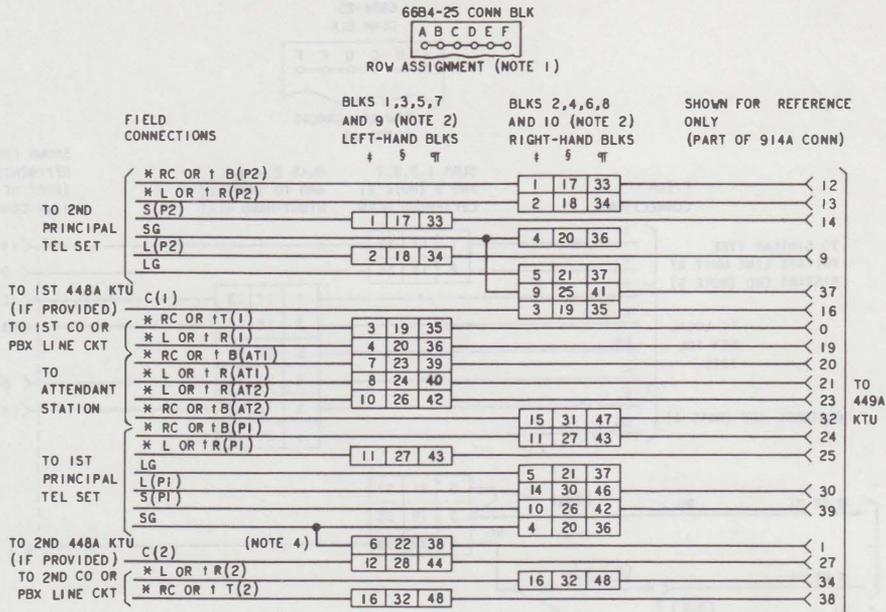


- NOTES:
1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
 2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
- * CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 1,4,7,10 AND 13.
 † CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 2,5,8,11 AND 14.
 ‡ CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 3,6,9 AND 12.
 § USE FOR COMMON AUDIBLE SIGNALING WHEN RINGER IS NOT TO BE CUT OFF.

OPTION STRAPPING ON 448A KTU OPTION BLOCK

| | FEATURES | OPTION | STRAP TERMINALS | |
|-----------------|------------------|--------|-----------------|---------|
| | | | 1ST CKT | 2ND CKT |
| AUDIBLE SIGNALS | INTERRUPTED RING | W | 5 TO 8 | 1 TO 4 |
| | STEADY RING | T | 6 TO 8 | 2 TO 4 |
| | STEADY BUZZER | X | 9 TO 8 | 3 TO 4 |

Fig. 45—Nondedicated Lead Connections for 448A KTU (Variable Delay Timer Circuit) in 598-Type Panel



NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM COVERING 6684-25 CONN BLK IN FIG. 6.
 2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
 3. ADD STRAP IF 448A KTU IS USED WITH 2ND CKT OF 449A KTU. NONE OF THE RINGER CONNECTIONS SHOWN ARE REQUIRED IF 448A KTU IS PROVIDED.
 4. ADD STRAP IF 448A KTU IS USED WITH 1ST CKT OF 449A KTU. IF 448A KTU IS PROVIDED, NONE OF THE RINGER CONNECTIONS SHOWN ARE REQUIRED.
- * FOR COMMON AUDIBLE RINGING
 † FOR LINE RINGING
 ‡ CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 1,4,7,10 AND 13.
 § CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 2,5,8,11 AND 14.
 ¶ CONNECTIONS SHOWN IN THIS COLUMN ARE FOR KTUS MOUNTED IN JACKS 3,6,9 AND 12.

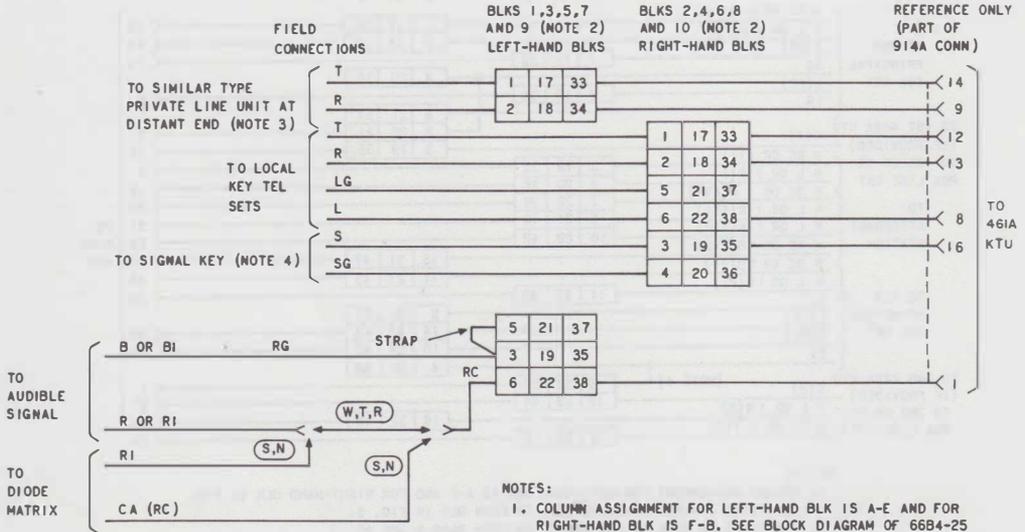
Fig. 46—Nondedicated Lead Connections for 449A KTU (Immediate Transfer Control Circuit) in 598-Type Panel

66B4-25
CONN BLK



ROW ASSIGNMENT
(NOTE 1)

SHOWN FOR
REFERENCE ONLY
(PART OF
914A CONN)



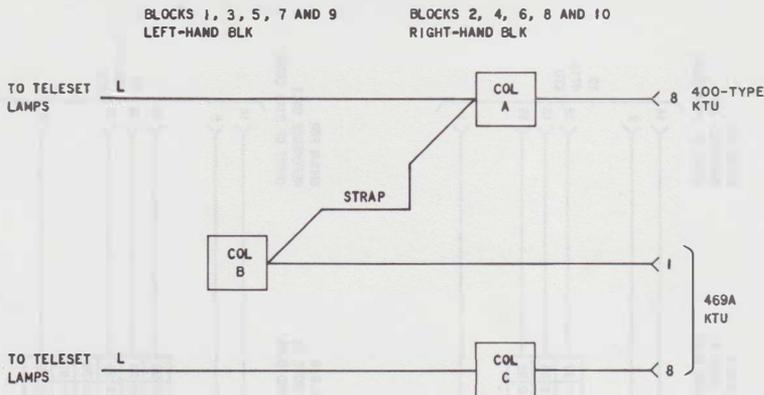
NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B. SEE BLOCK DIAGRAM OF 66B4-25 CONN BLK IN FIG. 6.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.
3. PRIVATE LINE CIRCUIT AT DISTANT END MAY BE A 414A KTU (MD), 461A KTU, OR ANY OTHER TYPE PRIVATE LINE UNIT REQUIRING RINGING VOLTAGE FOR THE RING UP CIRCUIT AND FURNISHING RINGING VOLTAGE FROM THE SIGNALING CIRCUIT.
4. SIGNAL KEY MAY BE A CONVERTED PICKUP KEY OR ANY EXTERNAL NONLOCKING KEY.

OPTION STRAPPING ON 461A KTU OPTION BLK

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

Fig. 47—Nondedicated Lead Connections for 461A KTU (Manual Signaling, Ringdown Private Line Circuit) in 598-Type Panel

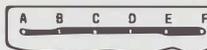


| A | | | B | | | C | | |
|--------------|-----|-------|----------|-----|-------|----------------------|-----|-------|
| 400-TYPE KTU | | | 469A KTU | | | 469A OUTPUT TO LAMPS | | |
| CONN | BLK | TERM | CONN | BLK | TERM | CONN | BLK | TERM |
| J1 | 2 | 6B-F | J1 | 1 | 6A-E | J1 | 2 | 6B-F |
| J2 | | 22B-F | J2 | | 22A-E | J2 | | 22B-F |
| J3 | | 38B-F | J3 | | 38A-E | J3 | | 38B-F |
| J4 | 4 | 6B-F | J4 | 3 | 6A-E | J4 | 4 | 6B-F |
| J5 | | 22B-F | J5 | | 22A-E | J5 | | 22B-F |
| J6 | | 38B-F | J6 | | 38A-E | J6 | | 38B-F |
| J7 | 6 | 6B-F | J7 | 5 | 6A-E | J7 | 6 | 6B-F |
| J8 | | 22B-F | J8 | | 22A-E | J8 | | 22B-F |
| J9 | | 38B-F | J9 | | 38A-E | J9 | | 38B-F |
| J10 | 8 | 6B-F | J10 | 7 | 6A-E | J10 | 8 | 6B-F |
| J11 | | 22B-F | J11 | | 22A-E | J11 | | 22B-F |
| J12 | | 38B-F | J12 | | 38A-E | J12 | | 38B-F |
| J13 | 10 | 6B-F | J13 | 9 | 6A-E | J13 | 10 | 6B-F |
| J14 | | 22B-F | J14 | | 22A-E | J14 | | 22B-F |

STRAP

NOTE:
 STRAP L LEAD FROM JACK REQUIRING LAMP MULTIPLE (COL. A) TO CONNECTOR CONTAINING 469A KTU (COL. B). CONNECT LEADS FROM TEL SET TO L LEAD OF SAME CONNECTOR (COL. C).

Fig. 48—Nondedicated Lead Connections for 469A KTU (Lamp Extender) in 598-Type Panel

6684-25
CONN BLKROW ASSIGNMENT
(NOTE 1)

NOTES:

1. COLUMN ASSIGNMENT FOR LEFT-HAND BLK IS A-E AND FOR RIGHT-HAND BLK IS F-B.
2. TERMINALS 33 THRU 48 ARE SPARES ON CONN BLKS 9 AND 10.

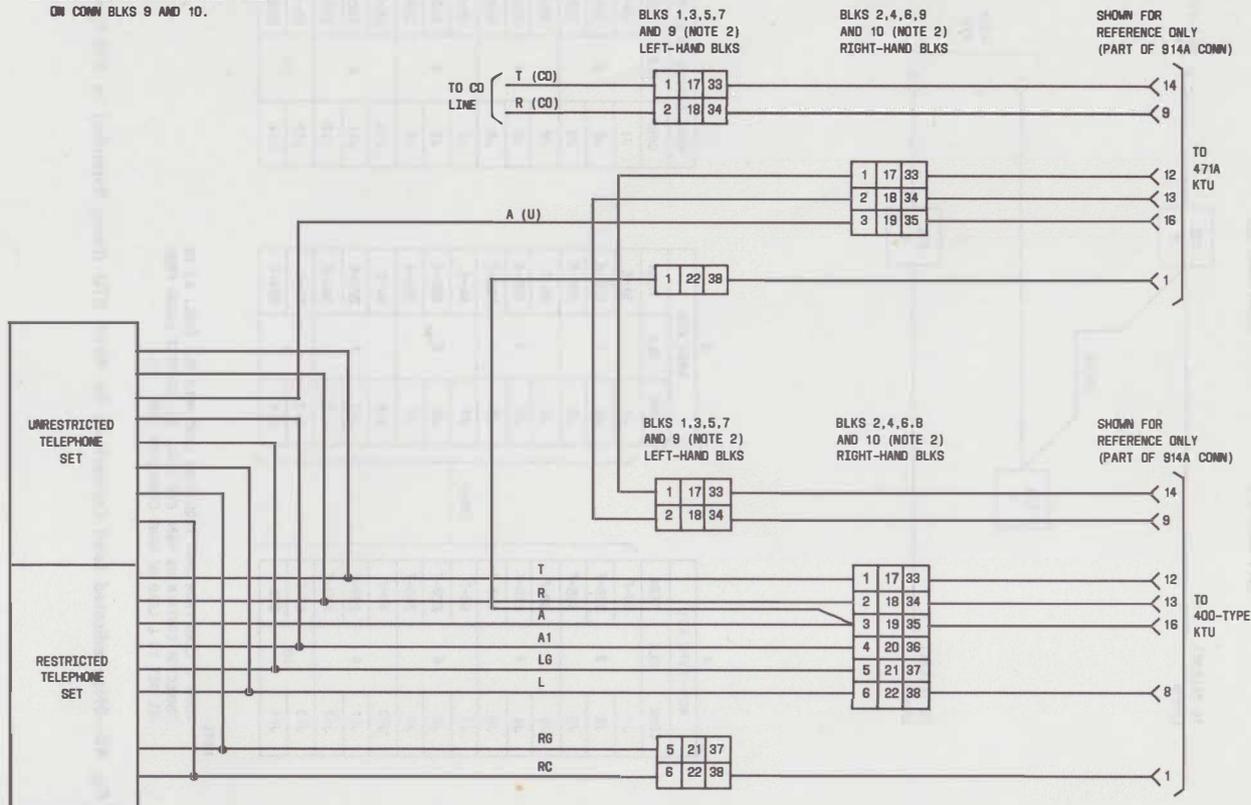


Fig. 49—Nondedicated Lead Connections for 471A KTU (Battery Reversal Toll Restriction Circuit) in 598-Type Panel