

227A (MD) AND 227B KEY TELEPHONE UNITS

AUDIBLE AND VISUAL SIGNALING

IDENTIFICATION AND CONNECTIONS

1. GENERAL

1.01 This section is reissued to:

- Include the 227B KTU.

- Rate the 227A KTU Manufacture Discontinued.

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

2. IDENTIFICATION

**Reprinted to comply with modified final judgment.

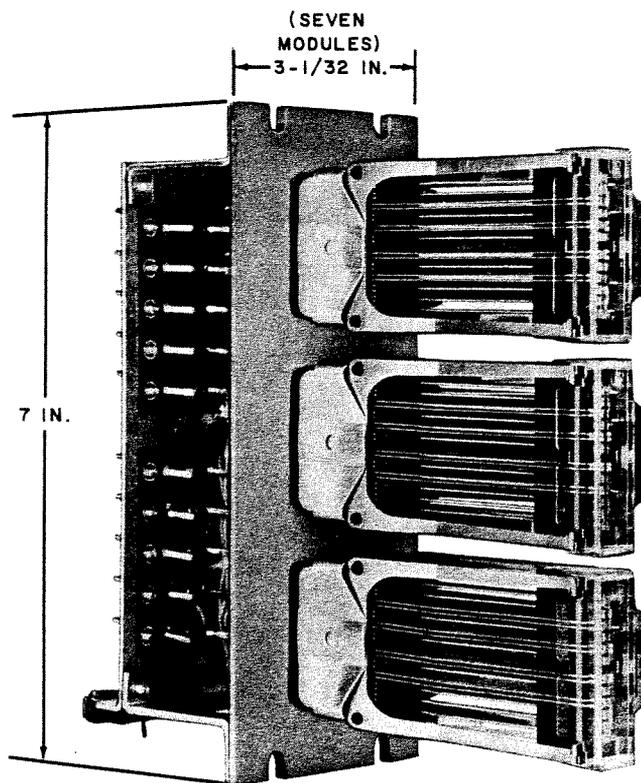


Fig. 1 — 227A (MD) and 227B KTU
(Front View)

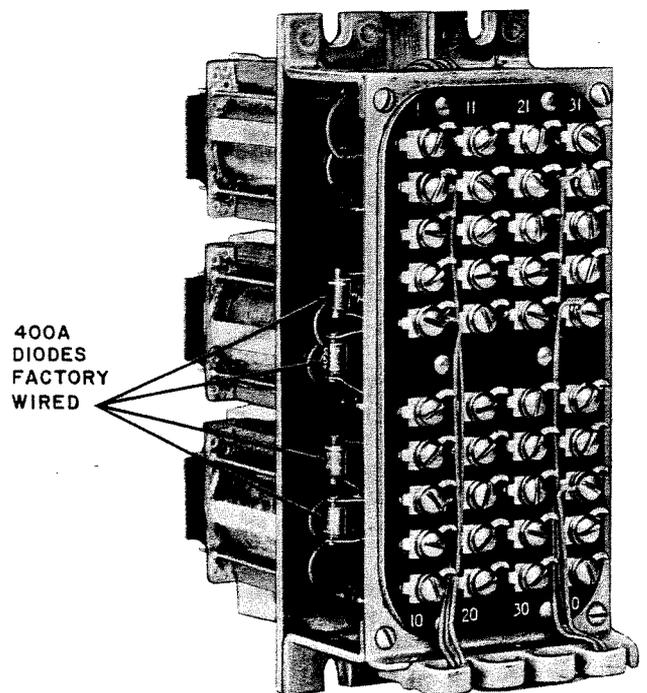


Fig. 2 — 227A (MD) and 227B
KTU (Rear View)

SECTION 518-310-401

3. PURPOSE

3.01 To serve as a visual and audible signaling control, and switching relay for key telephone systems.

4. DESIGN FEATURES

- (a) Operates on 14 to 26 volts dc.
- (b) 227B KTU — all wire spring relay contacts factory-connected to screw terminals on back panel.
- (c) 227B KTU — (CA1) and (CA2) relay windings are not commonly strapped within the unit as in the 227A KTU (MD).
- (d) Four 400A diodes factory-wired to provide four CA1 leads.

5. APPLICATION

- 1A, 1A1, 1A2, and 6A key telephone systems.
- 2A communication system.
- Key equipment No. 101A or 101B.

6. CONNECTION INDEX

Fig. 3 — 227A (MD) or 227B KTU — Auxiliary Lamp Relay Circuit.

- Used when additional lamps over the maximum permitted for a given circuit are required.

Fig. 4 — 227A (MD) or 227B KTU — Multi-signal Control Circuit for Buzzers, Bells, or Ringers.

Provides for:

- Using the same audible signal as a line signal and common signal.
- Associating a common audible signal with one or more groups of line or signal circuits.
- Operating one or more audible signals from one line or signal circuit.

- Operating two or more signals which require different operating voltages.

Fig. 5 — 227A (MD) or 227B KTU — Multi-signal Control for Ringers.

- A power failure feature is provided by having the common or line signals, with capacitors, connected to the tip and ring of CO, PBX or private line while relays are unoperated.

Fig. 6 — 227A (MD) or 227B KTU — Common Audible or Station Audible for 6A Key Telephone System.

Fig. 7 — 227A (MD) or 227B KTU — Multi-signal Control Circuit for Ringers Arranged for Combination of Audible Signal and Visual Signal.

Fig. 8 — 227A (MD) or 227B KTU — Multi-signal Control Circuit for Buzzers or Bells Arranged for Combination of Audible Signal with Visual Signal.

Fig. 7 and 8 provide for:

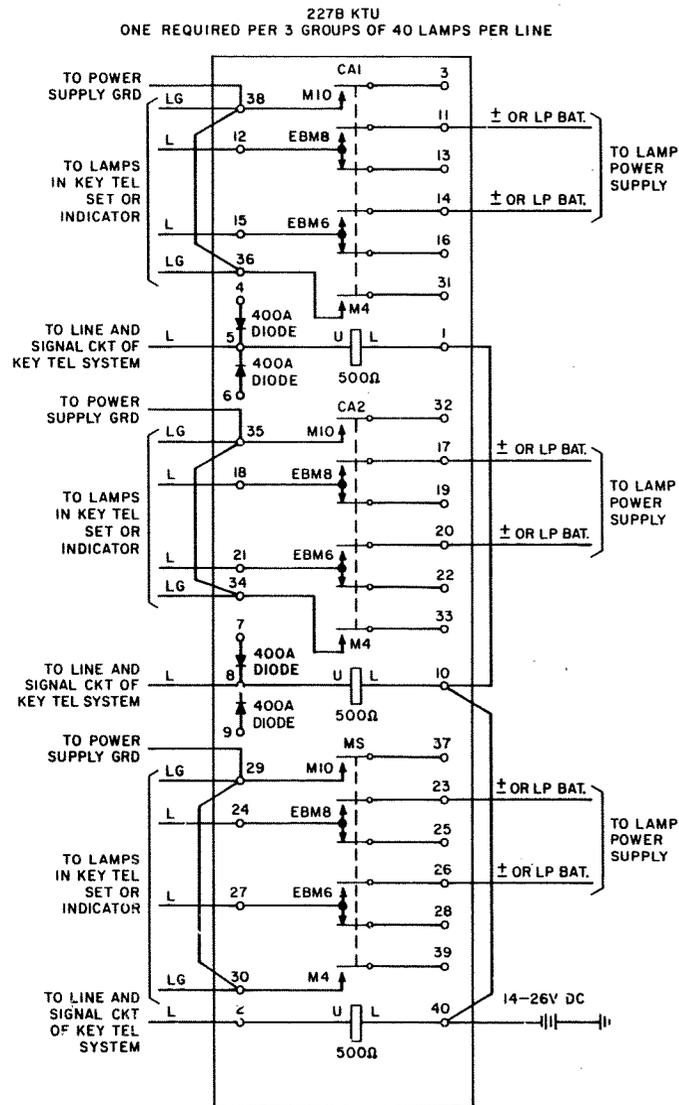
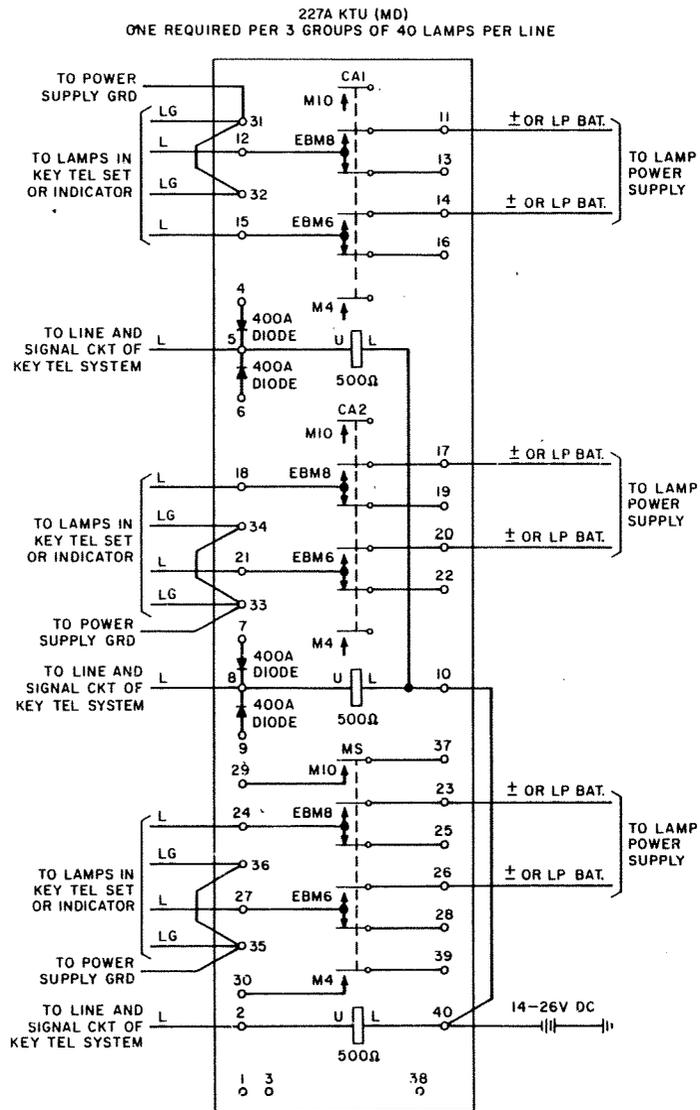
- Audible signal with locked-in visual signal.
- Locked-in visual signal can be released by manual operation of a SHUNT-DOWN key at called station.

Fig. 9 — 227A KTU (MD) or 227B KTU with 228A or 265A KTU — Method of Connecting 400A Diodes for Additional CA1 Leads.

6.01 Connect CA1 leads through 400A diodes when an audible signal is common to more than one group of line or signal circuits. This prevents false operation of audible signals not common to the same group of line or signal circuits.

6.02 CA leads may multiple to other CA leads, and CA1 leads may multiple to other CA1 leads if they are common to the same line or signal circuit.

6.03 For additional information refer to SD-69294-01.



- NOTES:
1. CONNECT ALL LAMPS ASSOCIATED WITH THE LINE TO THIS FIGURE.
 2. CONNECT RELAY GROUND TO TERMINALS DESIGNATED LAMP BATTERY ON LINE AND SIGNAL CIRCUIT.
 3. CONNECT L LEAD OF 227A OR B KTU TO L LEAD OF LINE AND SIGNAL CIRCUIT.
 4. MAXIMUM 20 LAMPS PER L LEAD.

Fig. 3 — 227A (MD) or 227B KTU — Auxiliary Lamp Relay Circuit

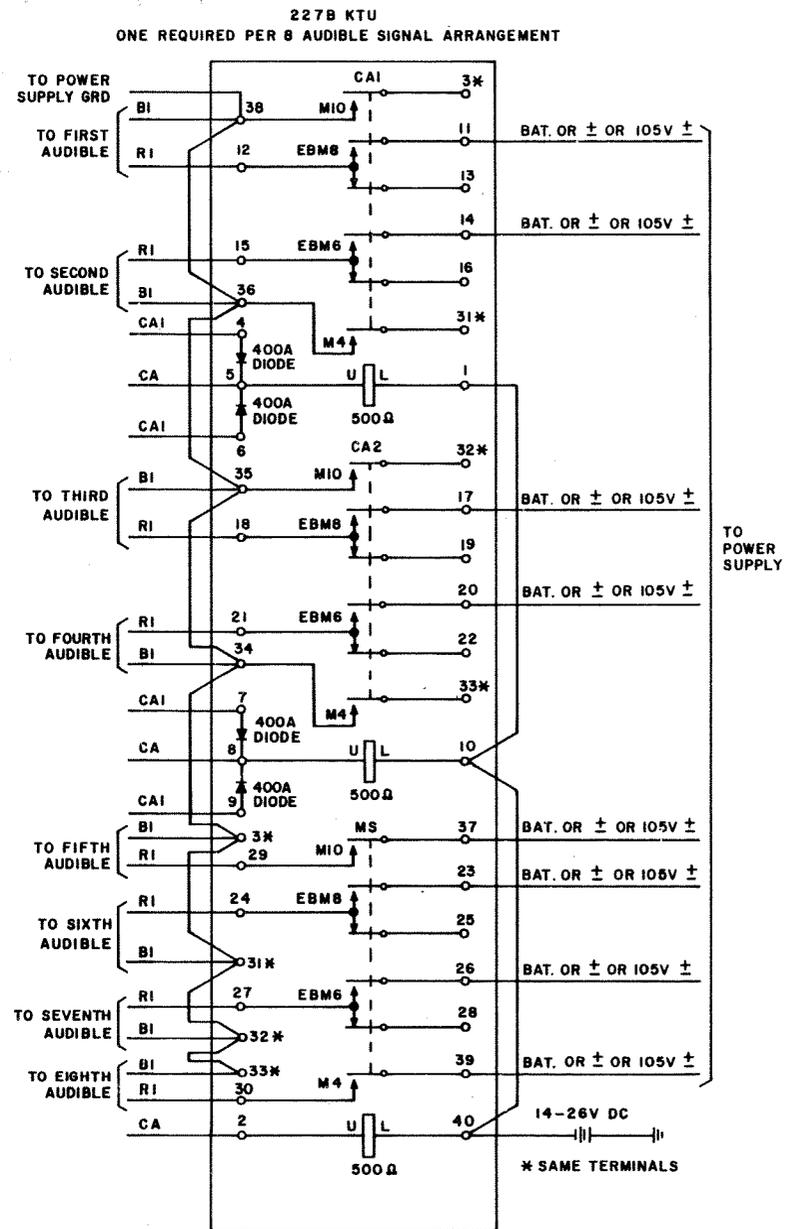
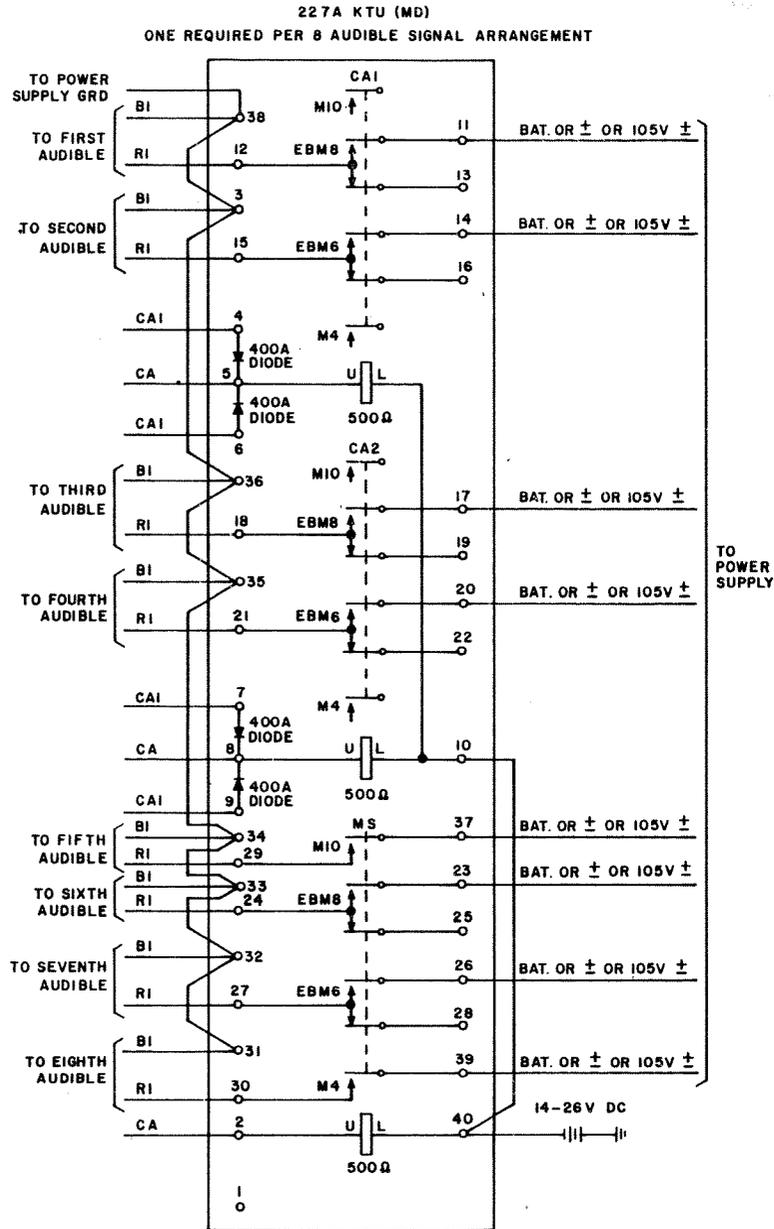


Fig. 4 - 227A (MD) or 227B KTU — Multisignal Control Circuit for Buzzers, Bells, or Ringers

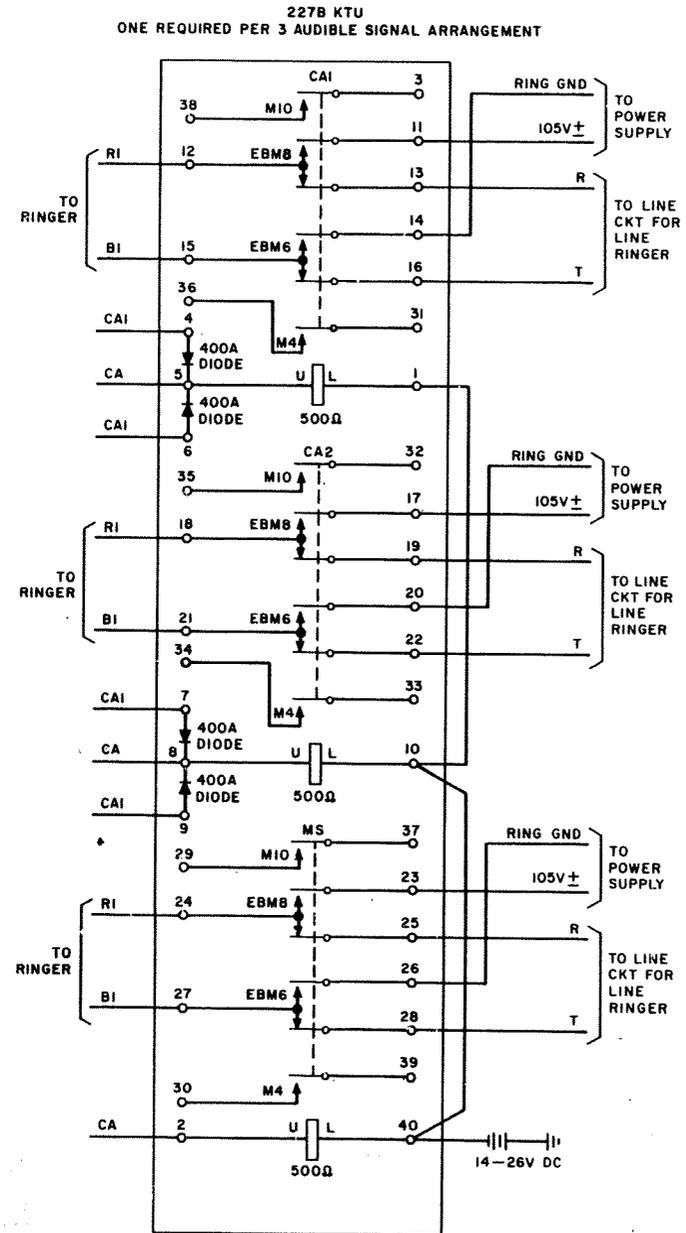
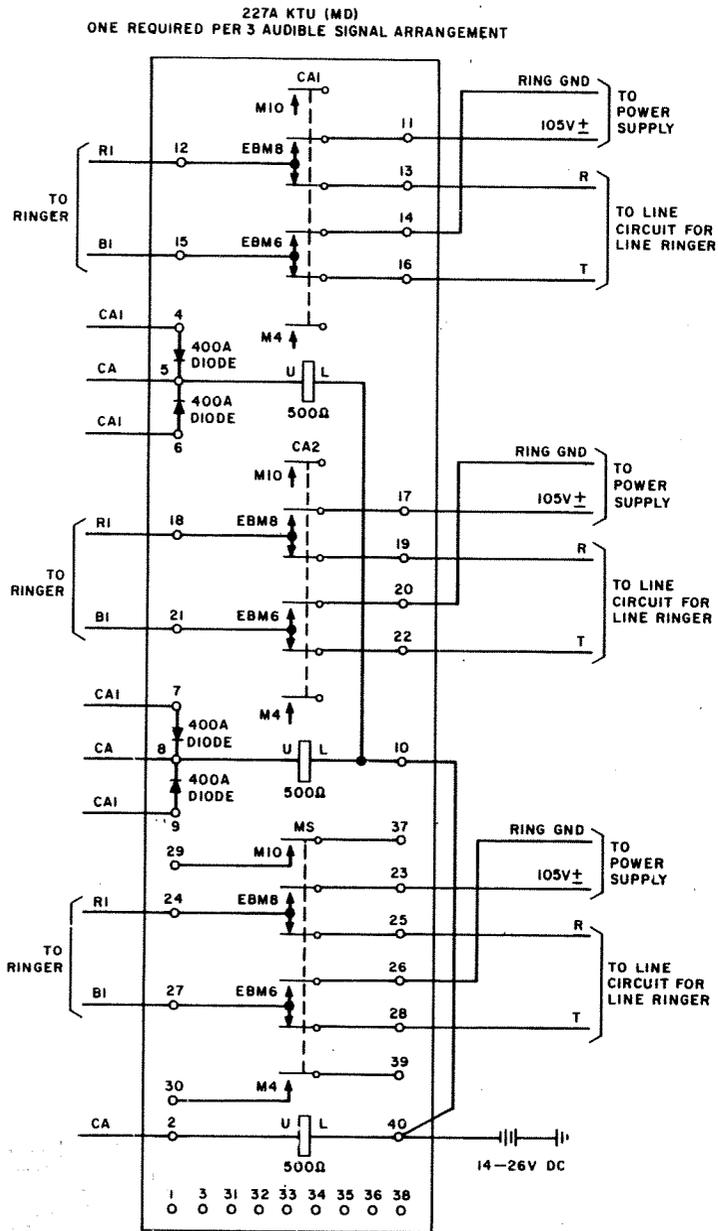


Fig. 5 - 227A (MD) or 227B KTU — Multisignal Control for Ringers

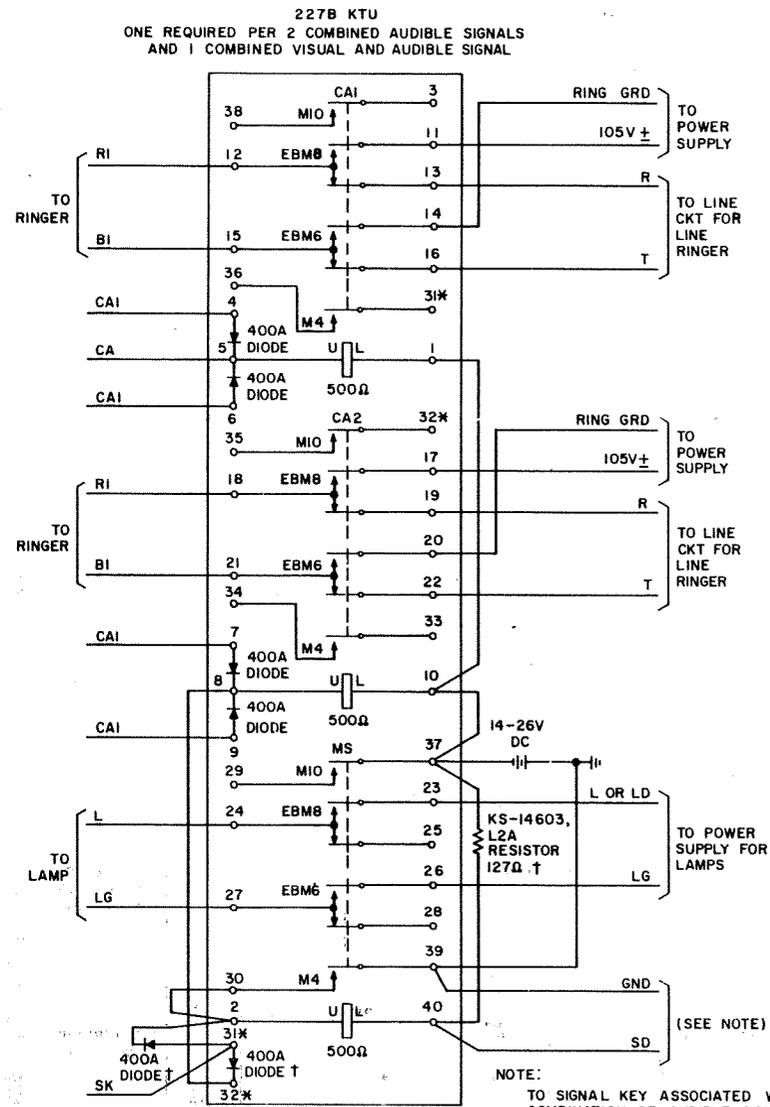
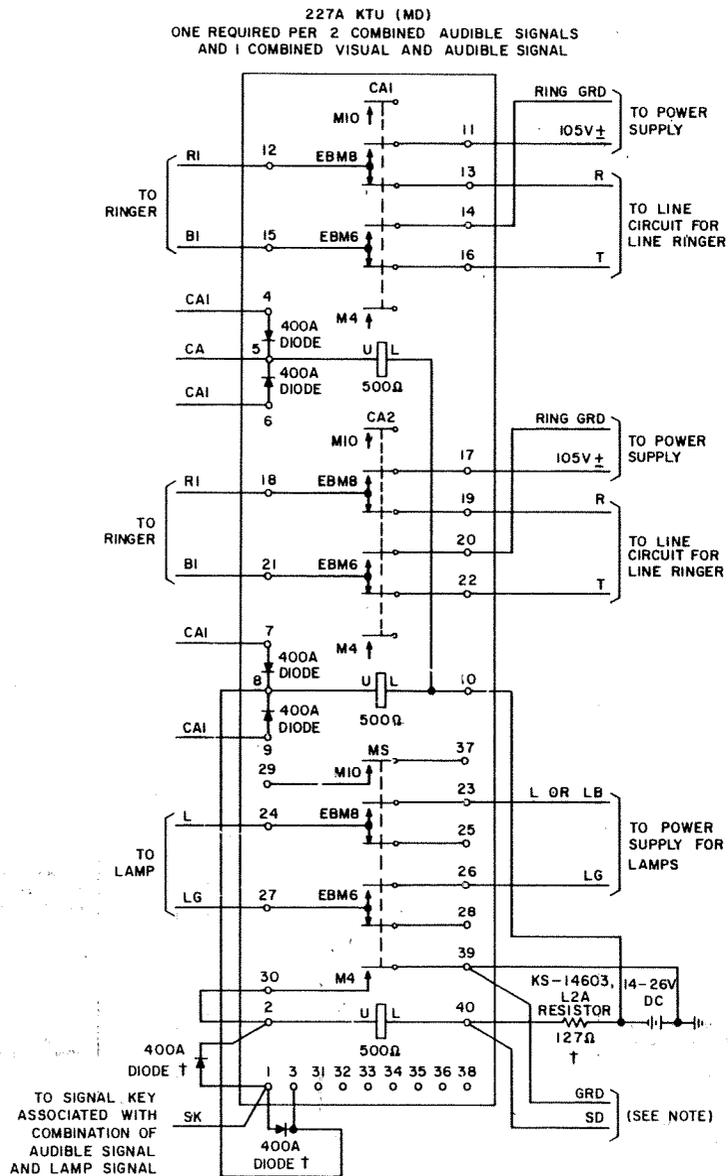
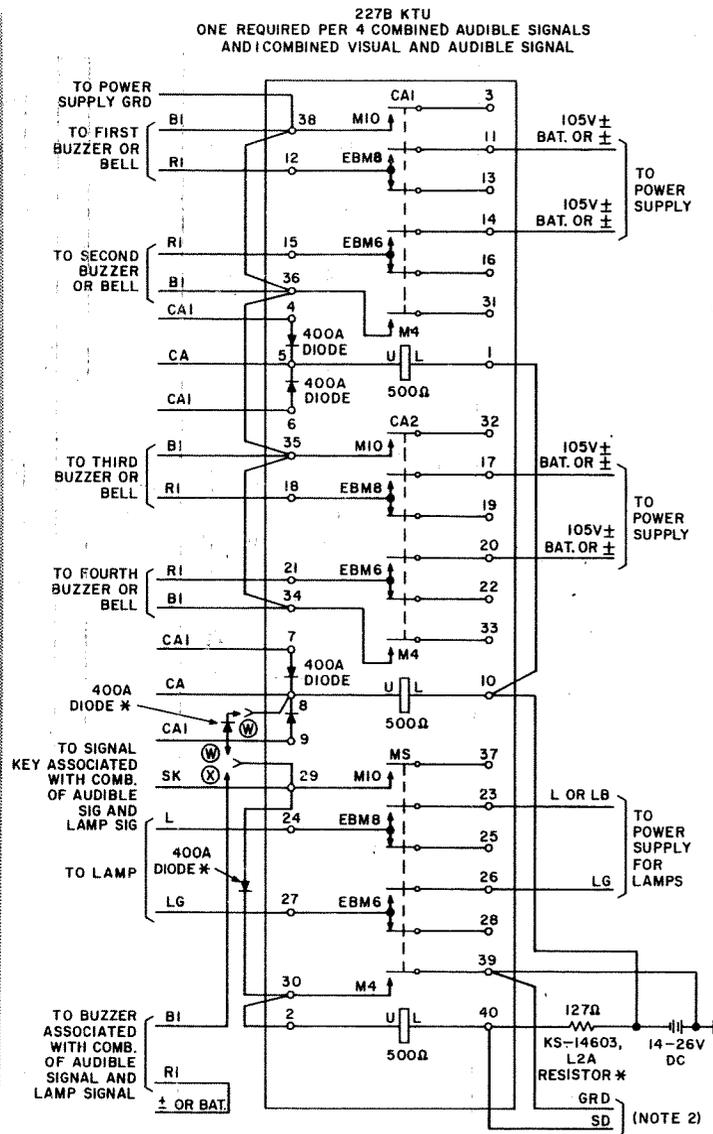
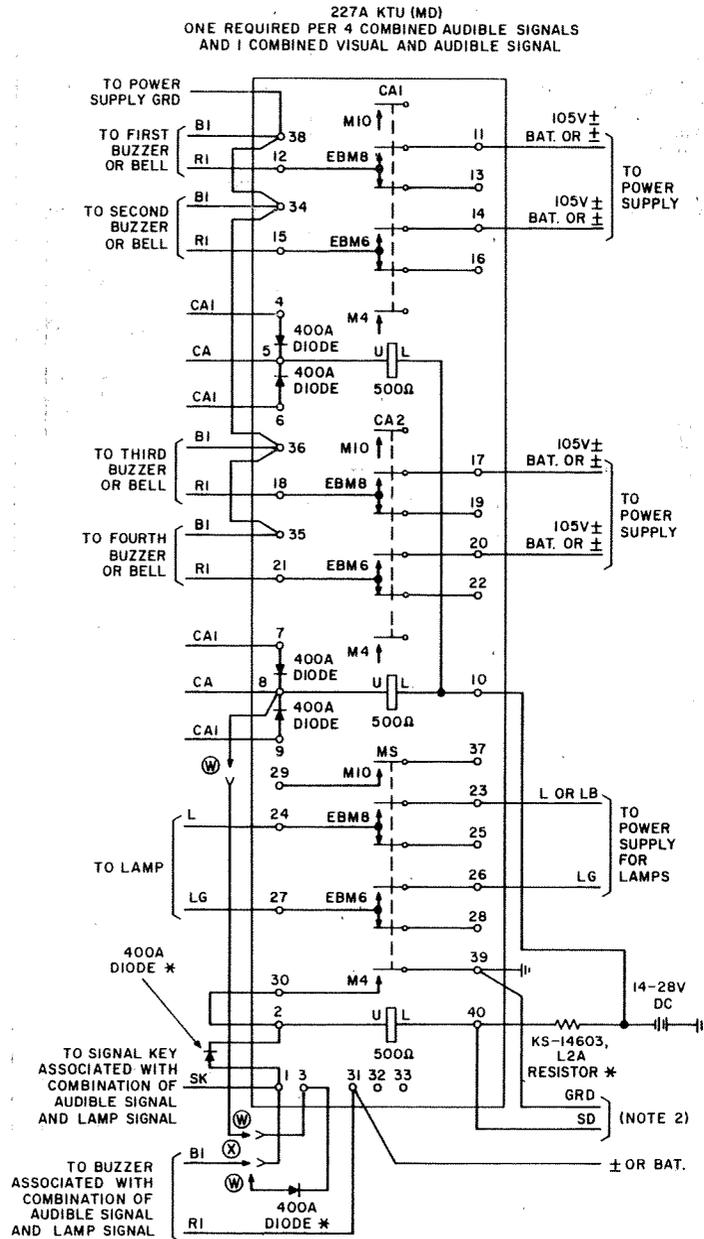


Fig. 7 — 227A (MD) or 227B KTU — Multisignal Control Circuit for Ringers, Arranged for Combination of Audible Signal and Visual Signal

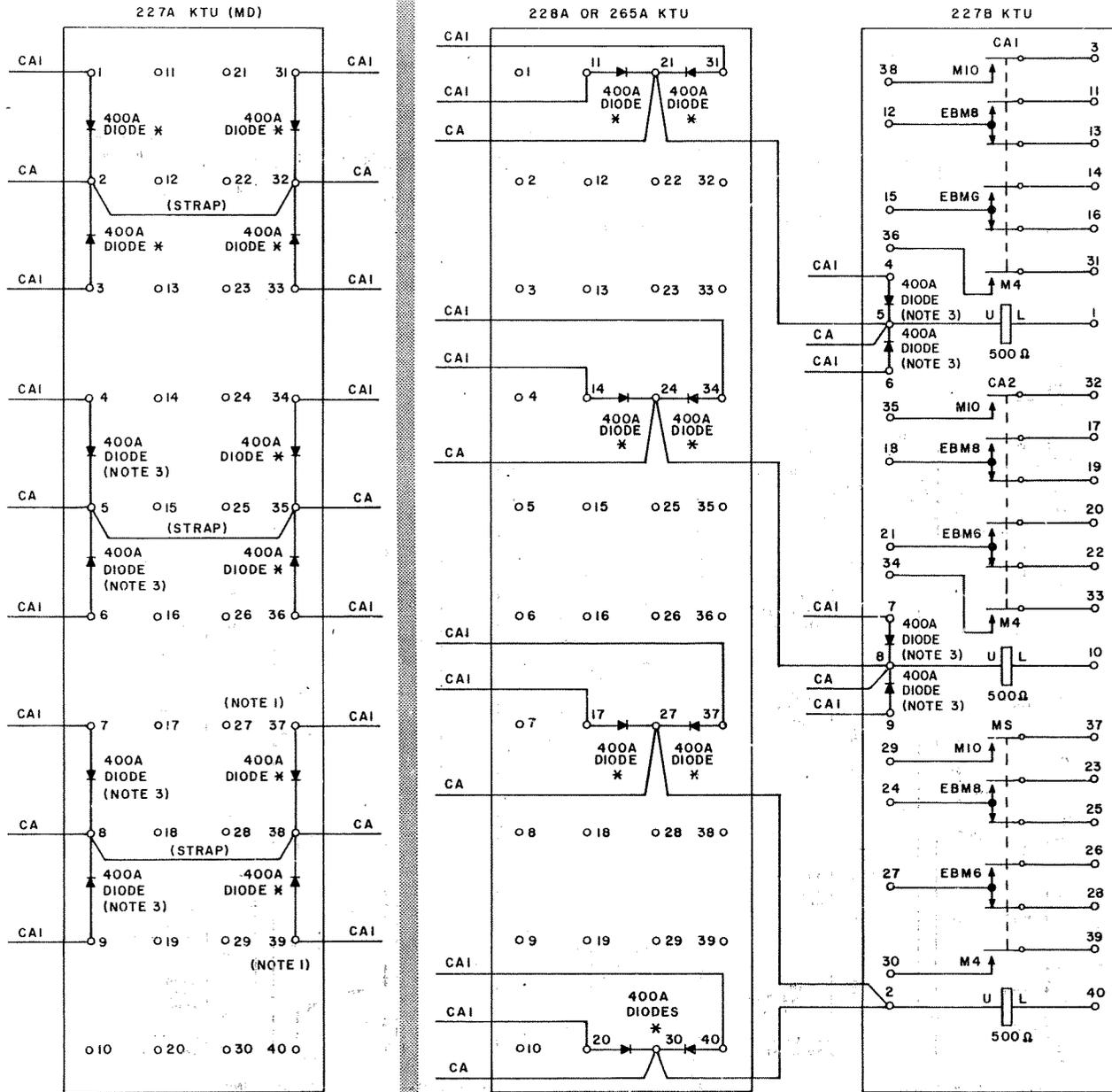


OPTION TABLE

| OPTION | FEATURE |
|--------|---|
| W | INDIRECT OPERATION OF BUZZER OF COMB. SIG |
| X | DIRECT OPERATION OF BUZZER OF COMB. SIG |

- NOTES:
1. W OPTION USE THIRD AND/OR FOURTH AUDIBLE CIRCUIT.
 2. TO SIGNAL KEY ASSOCIATED WITH COMBINATION OF AUDIBLE SIGNAL ARRANGED TO SHUNT DOWN LOCKED IN LAMP SIGNAL MANUALLY WHEN CALL IS ANSWERED. LOOP RESISTANCE SHALL NOT EXCEED 6.5 OHMS.
- * FURNISHED LOCALLY

Fig. 8 — 227A (MD) or 227B KTU — Multisignal Control Circuit for Buzzers or Bells Arranged for Combination of Audible Signal with Visual Signal



NOTES:

1. DO NOT USE TERMINALS 29 AND 30 FOR ANY CONNECTIONS.
2. STRAP NEGATIVE END OF 400A DIODE TO OPERATING LEAD OF RELAY.
3. 400A DIODE FURNISHED WIRED AS SHOWN.

* PROVIDE LOCALLY.

Fig. 9 — 227A KTU (MD) or 227B KTU with 228A or 265A KTU — Method of Connecting 400A Diodes for Additional CA1 Leads

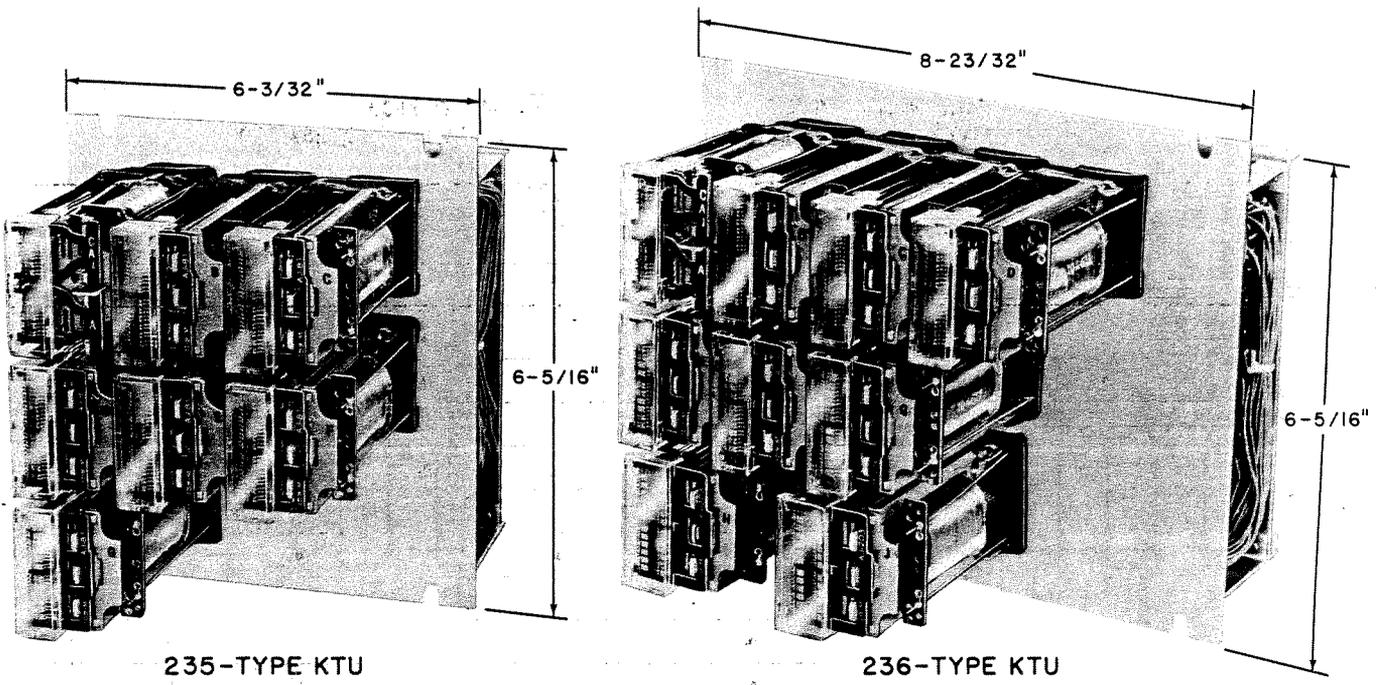


Fig. 1—Station Line Concentrator KTUs, Front View

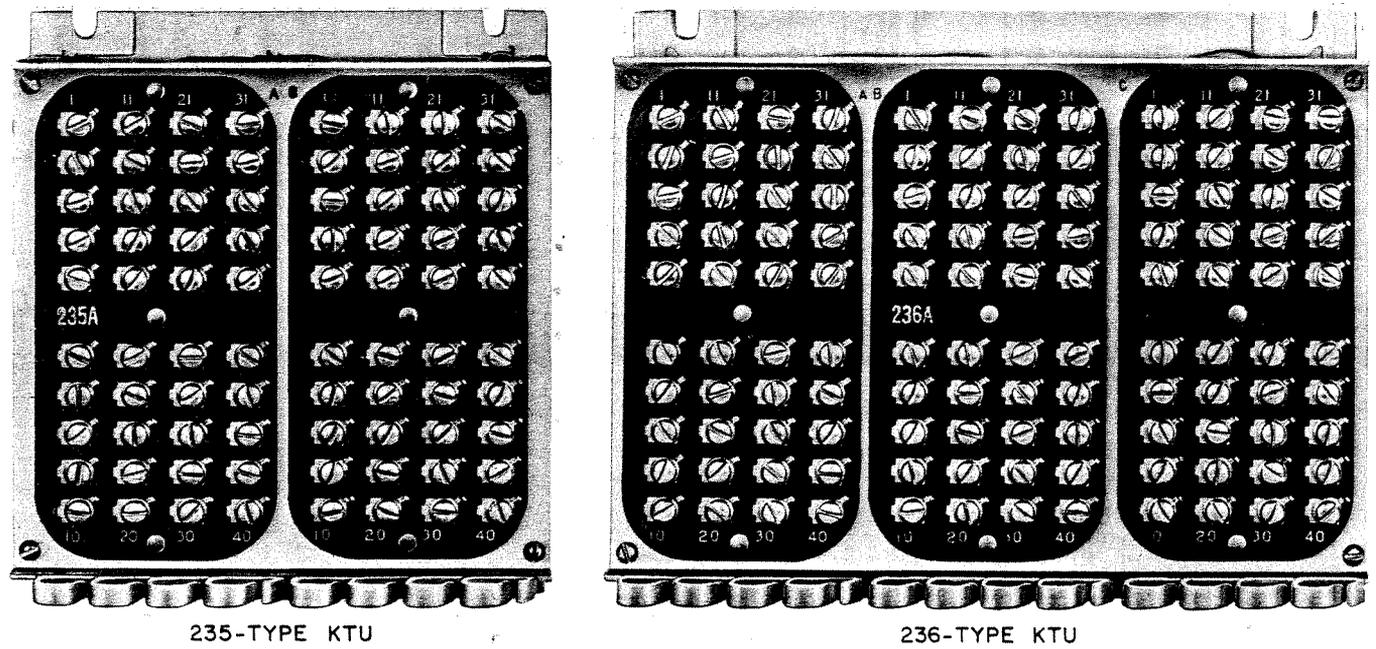


Fig. 2—Station Line Concentrator KTUs Rear View

TABLE A

COMBINATIONS OF RELAYS OPERATED IN STATION
LINE CONCENTRATOR WHEN ASSOCIATED KEY POSITION IS OPERATED

| KEY POS (NOTE) | RELAYS | | | | | | | | | | | | | | | |
|----------------------|---------------|---|---|-----|---|---|---|---|---|---|---------------|---|---|---|---|---|
| | 236A OR B KTU | | | | | | | | | | 235A OR B KTU | | | | | |
| | A | B | C | CA1 | D | E | F | G | H | J | A | B | C | D | E | F |
| 1 | • | • | | | | | | | | | • | • | | | | |
| 2 | • | | • | | | | | | | | • | | • | | | |
| 3 | | • | • | | | | | | | | | • | • | | | |
| 4 | • | | | | • | | | | | | • | | • | | | |
| 5 | | • | | | • | | | | | | | • | • | | | |
| 6 | | | | • | | | | | • | | | • | • | | | |
| 7 | | | • | | • | | | | | | • | | | • | | |
| 8 | | • | | | | • | | | | | | • | | • | | |
| 9 | | | • | | | • | | | | | | • | | • | | |
| 10 | | | | | • | • | | | | | | | • | • | | |
| 11 | | | • | | | • | | | | | • | | | | | • |
| 12 | | | | | • | | • | | | | | • | | | | • |
| 13 | | | | | | • | • | | | | | • | | | | • |
| 14 | | | | | • | | | • | | | | | • | | | • |
| 15 | | | | | | • | | • | | | • | | | | | • |
| 16 | | | | | | | • | • | | | | • | | | | • |
| 17 | • | | | | | | | | • | | | • | | | | • |
| 18 | | • | | | | | | | • | | | | • | | | • |
| 19 | | | • | | | | | | • | | | | | | | |
| 20 | | | | | • | | | | • | | | | | | | |
| 21 | | | | | | • | | | • | | | | | | | |
| 22 | | | | | | | • | | • | | | | | | | |
| 23 | | | | | | | | • | • | | | | | | | |
| 24 | • | | | | | | | | | • | | | | | | |
| 25 | | • | | | | | | | | • | | | | | | |
| 26 | | | • | | | | | | | • | | | | | | |
| 27 | | | | | • | | | | | • | | | | | | |
| 28 | | | | | | • | | | | • | | | | | | |
| 29 | | | | | | | • | | | • | | | | | | |
| 30 | | | | | | | | • | | • | | | | | | |

Note: Key Mountings with more than 30 pick-up key positions would require additional 236-type KTUs and relay combinations would be identical for each 30 succeeding key positions.

SECTION 518-310-405

3.02 When the busy lamp feature is furnished in CALL DIRECTOR telephone sets equipped with headset jacks (638-, 639-, and equivalent TOUCH-TONE types), a P-90D033 Printed Wiring Board Assembly must be added to the 235- or 236-type KTU as shown in Fig. 4 or 6.

3.03 Modification of 235A and 236A KTUs are required when used with 400D KTUs. The modification prevents a false-hold condition or damage to the Q3 transistor in the 400D KTU caused by large transient voltages occurring when the associated concentrator type CALL DIRECTOR set goes on-hook. Modification of concentrator units is not required when used with 1A1 KTS, or 400B or C KTUs in 1A2 KTS.

CONNECTION INDEX

Table B—Options

Fig. 3—Connections for 235-Type KTU When Used With 634-, 635-, and Their Equivalent TOUCH-TONE Telephone Sets

Fig. 4—Connections for 235-Type KTU When Used With 638-, 639-, and Their Equivalent TOUCH-TONE Telephone Sets and P-90D033 Printed Wiring Board Assembly.

Fig. 5—Connections for 236-Type KTU When Used With 634-, 635-, and Their Equivalent TOUCH-TONE Telephone Sets

Fig. 6—Connections for 236-Type KTU When Used With 638-, 639-, and Their Equivalent TOUCH-TONE Telephone Sets

For other information, refer to:

| DRAWING | TITLE |
|--------------------|--|
| SD and CD-69498-01 | (Key Telephone System No. 6A, 1A1, and 1A2, Station Line Concentrator, 634-, 635-, 1634-, and 1635-Type Telephone Set Circuits) |
| SD and CD-69499-01 | (Key Telephone System No. 1A1, 1A2, and 6A Station Line Concentrator Key and Telephone Circuit, 638-, 1638-, 639-, and 1639-Type Telephone Sets) |
| SD and CD-69513-01 | (Key Telephone System No. 1A2, CO, or PBX Line Circuits) |
| SD and CD-69580-01 | (Key Telephone System No. 1A1 or 1A2, Station Busy Lamp Circuit) |

TABLE B
OPTIONS

| FEATURE | KTU | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| | 235 | | | | 236 | | | |
| | A | | B | | A | | B | |
| | 634-, 635-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 638-, 639-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 634-, 635-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 638-, 639-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 634-, 635-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 638-, 639-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 634-, 635-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET | 638-, 639-, AND TOUCH-TONE EQUIVALENT TYPE TELEPHONE SET |
| Common Audible | X | X | X | X | Y | Y | Y | Y |
| Power Failure | W | W | W | W | Z | Z | Z | Z |
| Common Audible With Power Failure | J | H | J | H | K | J | K | J |
| With Station Busy Lamp Circuit | M | G | M | G | M | G | M | G |
| Without Station Busy Lamp Circuit | E | F | - | - | E | F | - | - |
| Individual Line Signaling | V | V | V | V | T | T | T | T |
| Not Associated With 400D KTU | F | B | - | - | F | B | - | - |
| Associated With 400D KTU in No. 1A2 KTS | G | E | - | - | G | E | - | - |
| 29 Lines With Hold | - | - | - | - | R | K | R | K |
| 30 Lines Without Hold | - | - | - | - | N | M | N | M |

235 A (MD) KTU

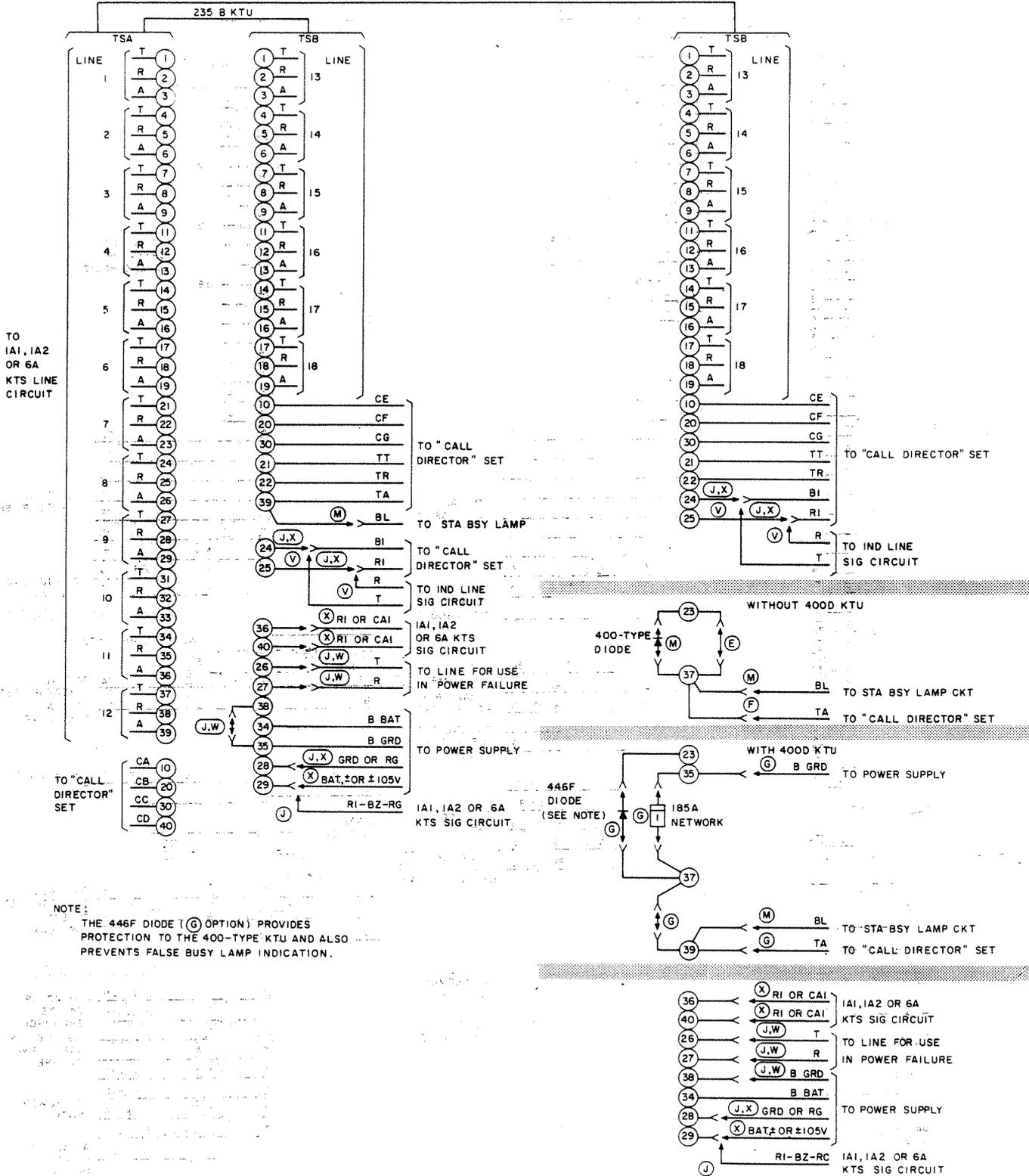


Fig. 3—Connections For 235-Type KTU When Used With 634-, 635- and Their Equivalent TOUCH-TONE Telephone Sets

