

**SERVICE**  
**1A1 KEY TELEPHONE SYSTEM**  
**KEY TELEPHONE UNITS**

**1. GENERAL**

**1.01** This section provides connection information for 1A1 Key Telephone System arrangements.

**1.02** This section is reissued to revise Fig. 5, 6, 9, 12, 14, 16, and 17.

**1.03** This issue of the section is based on the following drawings:

SD-69203-01, Issue 7

SD-69270-01, Issue 4

SD-69286-01, Issue 8

SD-69288-01, Issue 17

SD-69294-01, Issue 6

If this section is to be used with equipment or apparatus reflecting later issues of the drawings, reference should be made to the SD's to determine the extent of the changes and the manner in which the section may be affected.

**1.04** Refer to Section 518-114-110 for functional schematics of KTUs covered in this section.

**2. CONNECTION INDEX**

**Connections for CO or PBX Line Circuit**

Fig. 1—202A, B, C, D KTUs with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Metallic or Grounded Ringing, Timeout, Lamp Wink, and Power Failure

Fig. 2—230A or B KTUs with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Metallic or Grounded Ringing, Timeout, and Lamp Wink

Fig. 3—203A B, C or D and 212A KTUs with 210A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signal, Timeout, Lamp Wink, and Power Failure

Fig. 4—238A KTU with 30A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, and Lamp Wink

Fig. 5—202C or D, or 230A or B KTUs with 232-Type, 30A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, Lamp Wink, and Manual Intercom

Fig. 6—239A KTU with 232-Type, 30A, and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, Lamp Wink, and Manual Intercom

Fig. 7—202C or D, or 230A or B KTUs with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signals, Lamp Wink, and Timeout

Fig. 8—202C or D with 210A KTU and only the Common Equipment Part of 212A KTU for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signals, Lamp Wink, and Timeout

Fig. 9—233A KTU with 227B and 232-Type KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Lamp Wink, Manual Intercom, and Timeout

**Miscellaneous Connections**

- Fig. 10—Automatic Tie Line (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 209A and 211A KTUs for Steady Common Audible Signals, Line and Busy Lamps, and Timeout
- Fig. 11—Automatic Tie Line (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 211A KTU and only the Common Equipment Part of 212A KTU for Steady Audible or Common Audible Signals, Line and Busy Lamps, and Timeout
- Fig. 12—Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 227B and 232-Type KTUs for Interrupted Audible or Common Audible Signals, Line and Busy Lamps, Lamp Wink, and Timeout
- Fig. 13—Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with only the Common Equipment Part of 238A KTU and 227B KTU for Interrupted Audible or Common Audible Signals, Line and Busy Lamps, Lamp Wink, and Timeout
- Fig. 14—Dial Selective Intercom Circuit (207A, B, or C KTU) with 208A and 209A KTUs and only the Common Equipment Part of 212A KTU for Flashing Line Lamps, Busy Lamps, Audible Signals, and Timeout
- Fig. 15—Manual Cutoff Circuit (29A KTU) with 202A, B, C, or D, 212A, 230A or B, 233A, 238A, 239A, 203A, 204A, and 205A KTUs
- Fig. 16—Cut-Through and Control Circuit for Automatic Cutoff (26B and 29A KTUs) with 202A, B, C, or D, 212A, 230A or B, 233A, 238A, 239A, 203A, 204A, and 205A KTUs.
- Fig. 17—Dial Selective Intercom Circuit (207A, B, or C KTU) with Busy Lamps and Audible Signals.

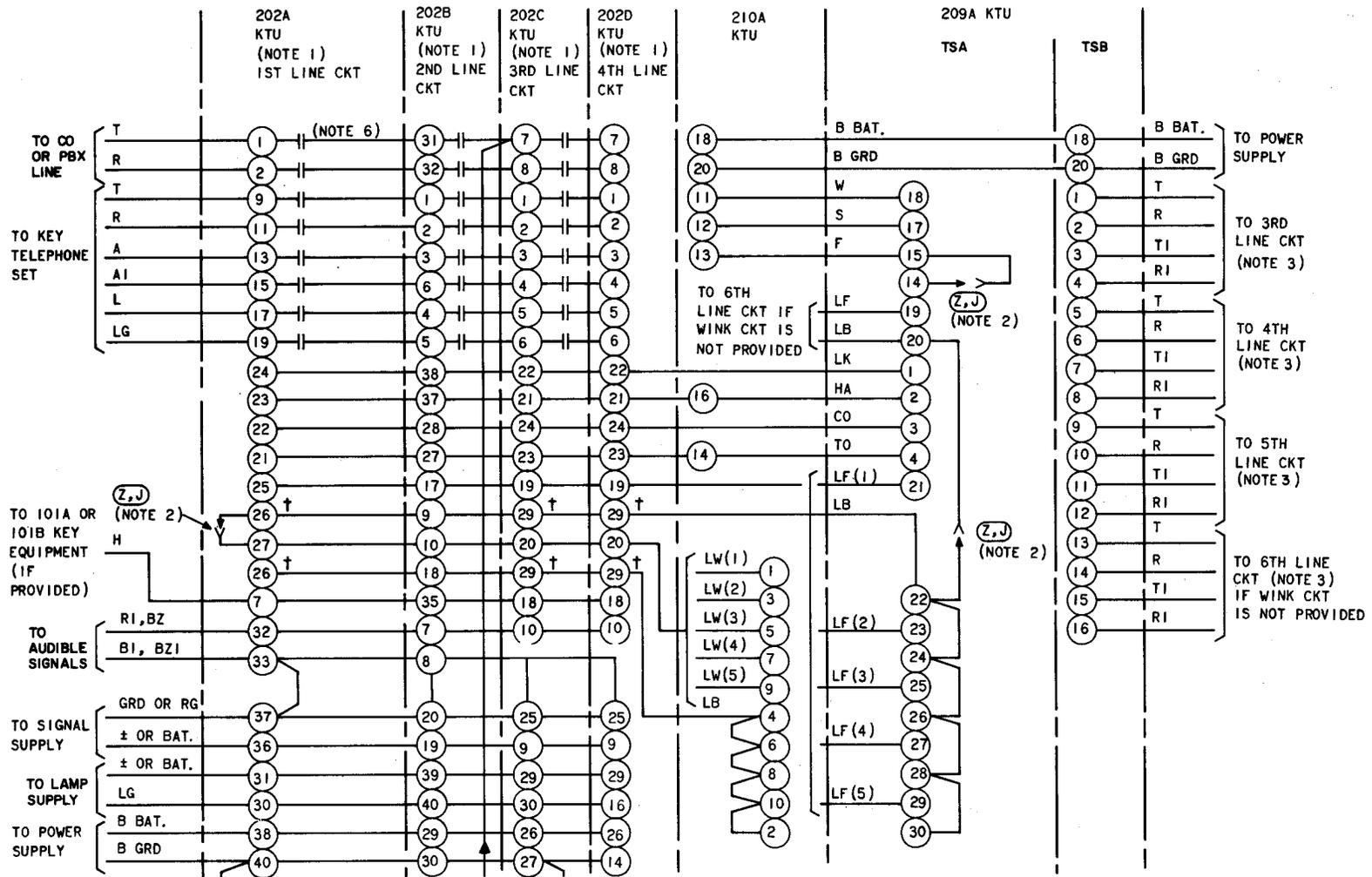
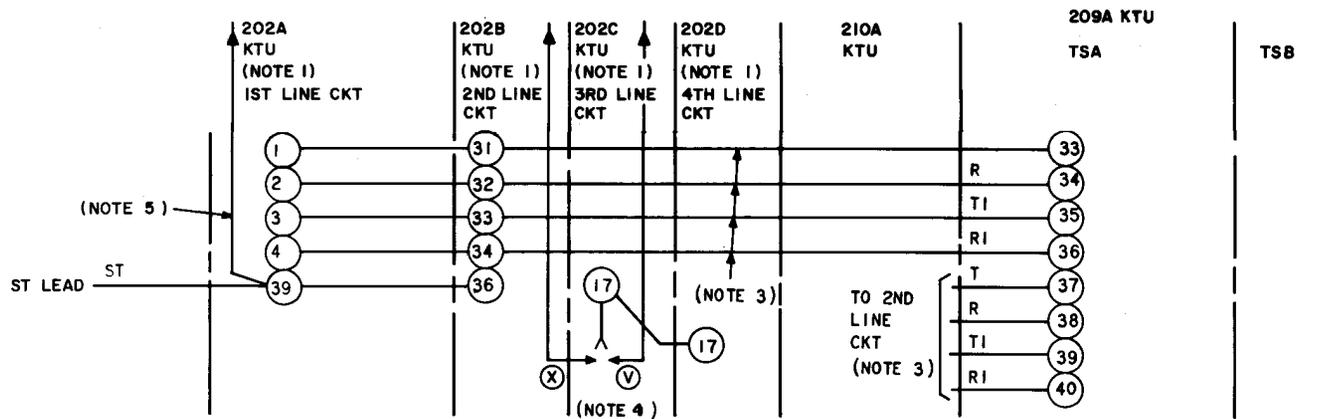


Fig. 1—Connections for CO or PBX Line Circuits (202A, B, C, D KTUs) with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Metallic or Grounded Ringing, Timeout, Lamp Wink, and Power Failure (Sheet 1)



NOTES:

1. CONNECTIONS ARE SHOWN FOR EACH TYPE OF 202 KTU. FOR MORE THAN ONE LINE CIRCUIT, MULTIPLE CONNECTIONS TO THE SUCCEEDING LINE CIRCUITS. THE 209A KTU WILL SERVE FIVE LINE CIRCUITS WITH WINK HOLD AND SIX LINE CIRCUITS WITHOUT WINK HOLD.
2. ADD (Z,J) WIRING WHEN WINK HOLD IS NOT PROVIDED.
3. PROVIDES POWER FAILURE FOR 202A AND 202B KTUS.
4. THE 202C AND 202D KTUS ARE FURNISHED WIRED FOR METALLIC LINE RINGING, (X) OPTION. IF GROUNDED LINE RINGING IS DESIRED, CONNECT (V) OPTION.
5. REMOVE STRAP WHEN ST LEAD IS USED FOR INTERRUPTED AUDIBLE SIGNAL.
6. SYMBOL (-|) MEANS DO NOT STRAP ADJACENT TERMINALS INDICATED BY STRAPS.
- † TERMINAL APPEARS IN OTHER LOCATIONS ON THIS FIGURE.

OPTIONS

FEATURE	WIRING
STEADY HOLD SIGNAL	*J,Z
GROUNDED LINE RINGING	V
METALLIC LINE RINGING (NOTE 4)	X

\* Z IS FOR 202A AND B KTU  
J IS FOR 202C AND D KTU.

Fig. 1—Connections for CO or PBX Line Circuits (202A, B, C, D KTUs) with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Metallic or Grounded Ringing, Timeout, Lamp Wink, and Power Failure (Sheet 2)

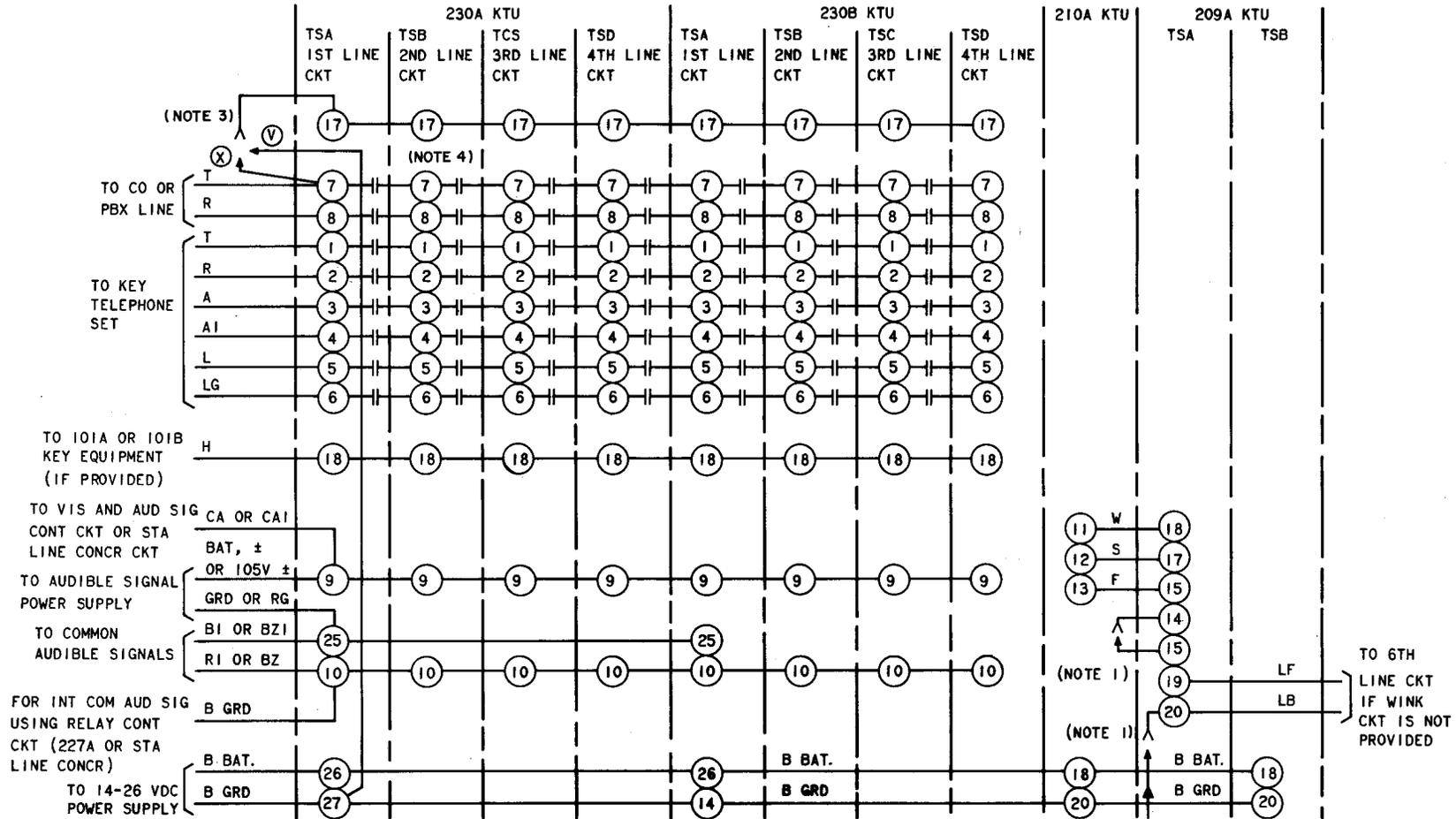
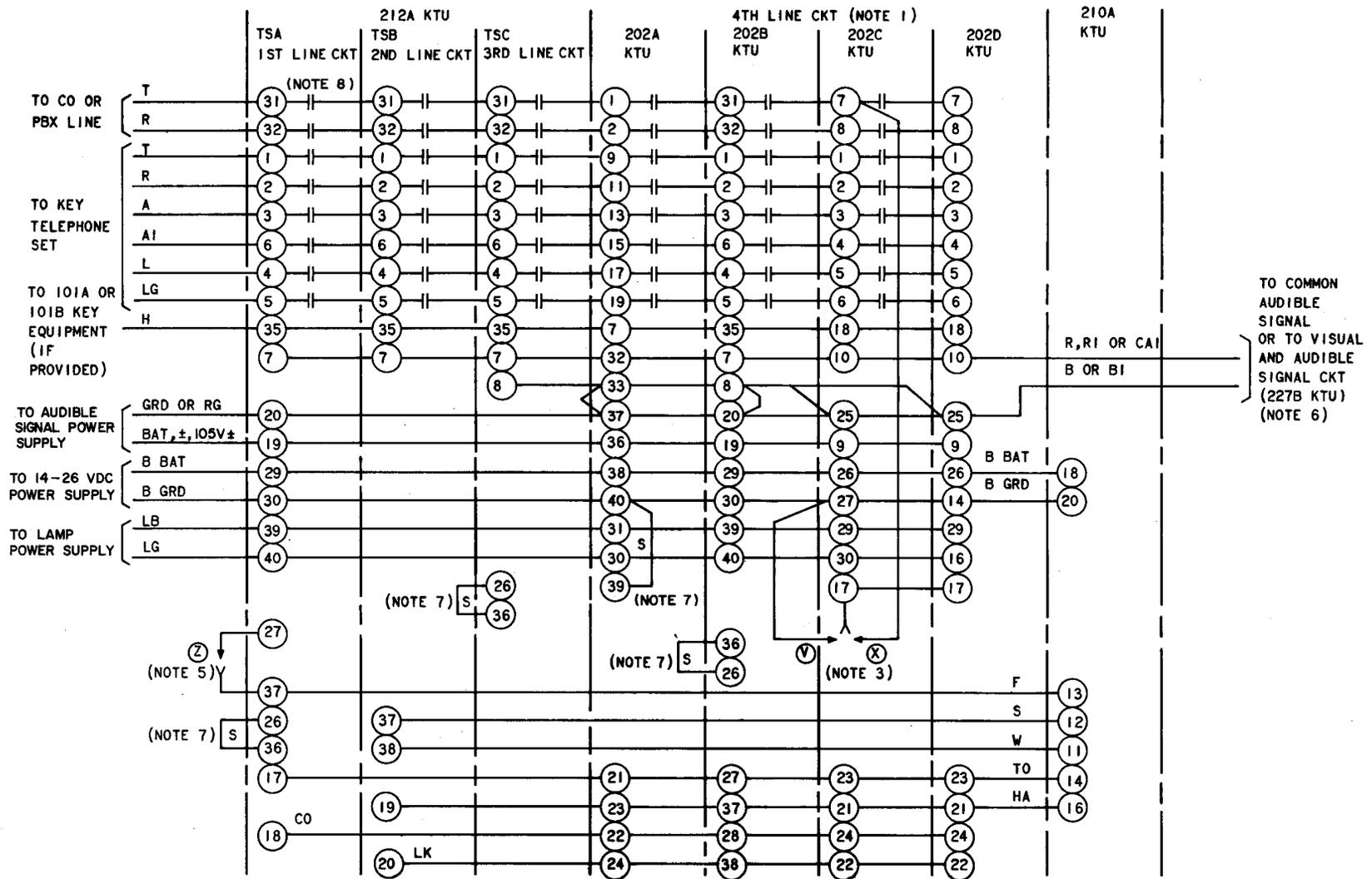
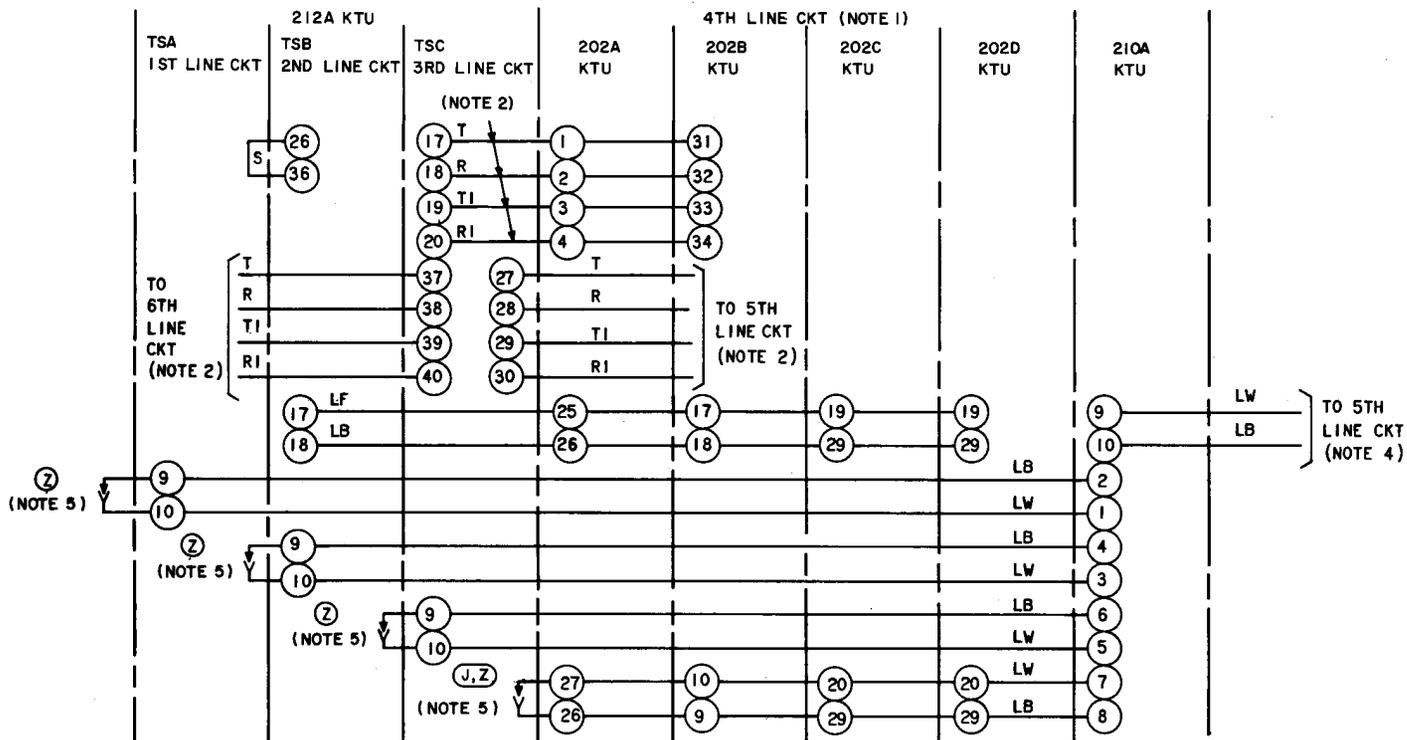


Fig. 2—Connections for CO or PBX Line Circuits (230A or B KTUs) with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Metallic or Grounded Ringing, Timeout, and Lamp Wink (Sheet 1)





**Fig. 3—Connections for CO or PBX Line Circuits (202A, B, C or D and 212A KTUs) with 210A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signal, Timeout, Lamp Wink, and Power Failure (Sheet 1)**



**NOTES:**

1. THE 212A KTU PROVIDES THREE CO OR PBX LINE CIRCUITS WITH COMMON EQUIPMENT FOR SIX LINE CIRCUITS. ONE OF EACH TYPE OF 202 KTU IS SHOWN AS A FOURTH LINE CIRCUIT. WHEN A FIFTH OR SIXTH LINE CIRCUIT IS REQUIRED, MULTIPLE LEADS TO THE SUCCEEDING LINE CIRCUITS.
2. PROVIDES POWER FAILURE CIRCUIT FOR 202A AND 202B KTU.
3. THE 202C AND 202D KTUS ARE FURNISHED WIRED FOR METALLIC

- LINE RINGING (X) OPTION IF GROUNDED LINE RINGING IS DESIRED, CONNECT (V) OPTION.
4. IF WINK CIRCUIT IS REQUIRED FOR THE SIXTH LINE CIRCUIT, A SECOND 210A KTU MUST BE FURNISHED.
  5. ADD STRAP WHEN WINK CIRCUIT IS NOT PROVIDED.
  6. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT (227B

- KTU) REFER TO SECTION 518-310-401.
7. REMOVE S WIRING FROM ALL ASSOCIATED TERMINAL STRIPS WHEN START LEAD IS USED FOR INTERRUPTED SIGNAL.
  8. SYMBOL (-|-) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

**OPTIONS**

FEATURES	WIRING
STEADY HOLD SIG.	J, Z*
GROUNDED LINE RINGING	V
METALLIC LINE RINGING (NOTE 3)	X

\* Z IS FOR 212A AND 202A AND 202B KTUS. J IS FOR 202C AND 202D KTUS.

**Fig. 3—Connections for CO or PBX Line Circuits (202A, B, C or D and 212A KTUs) with 210A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signal, Timeout, Lamp Wink, and Power Failure (Sheet 2)**



NOTES:

1. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT (227B KTU), REFER TO SECTION 518-310-401.
2. PROCURE AND INSTALL LOCALLY.
3. METALLIC LINE RINGING, (X) OPTION, IS FURNISHED ON ALL LINE CIRCUITS, IF GROUNDED LINE RINGING IS DESIRED, CONNECT (V) OPTION.
4. SYMBOL (-|-) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

OPTIONS

FEATURE	WIRING
WINKING HOLD SIGNAL	H
STEADY HOLD SIGNAL	J
WITH AUXILIARY TIMEOUT	K
WITHOUT AUXILIARY TIMEOUT	M
INTERRUPTED COMMON AUDIBLE SIGNAL USING RELAY CONTROL CIRCUIT (227B KTU)	T
GROUNDED LINE RINGING	V
METALLIC LINE RINGING (FURNISHED ON ALL LINE CIRCUITS)	X
INTERRUPTED COMMON AUDIBLE SIGNAL USING INTERRUPTER	Y
STEADY COMMON AUDIBLE SIGNAL	Z

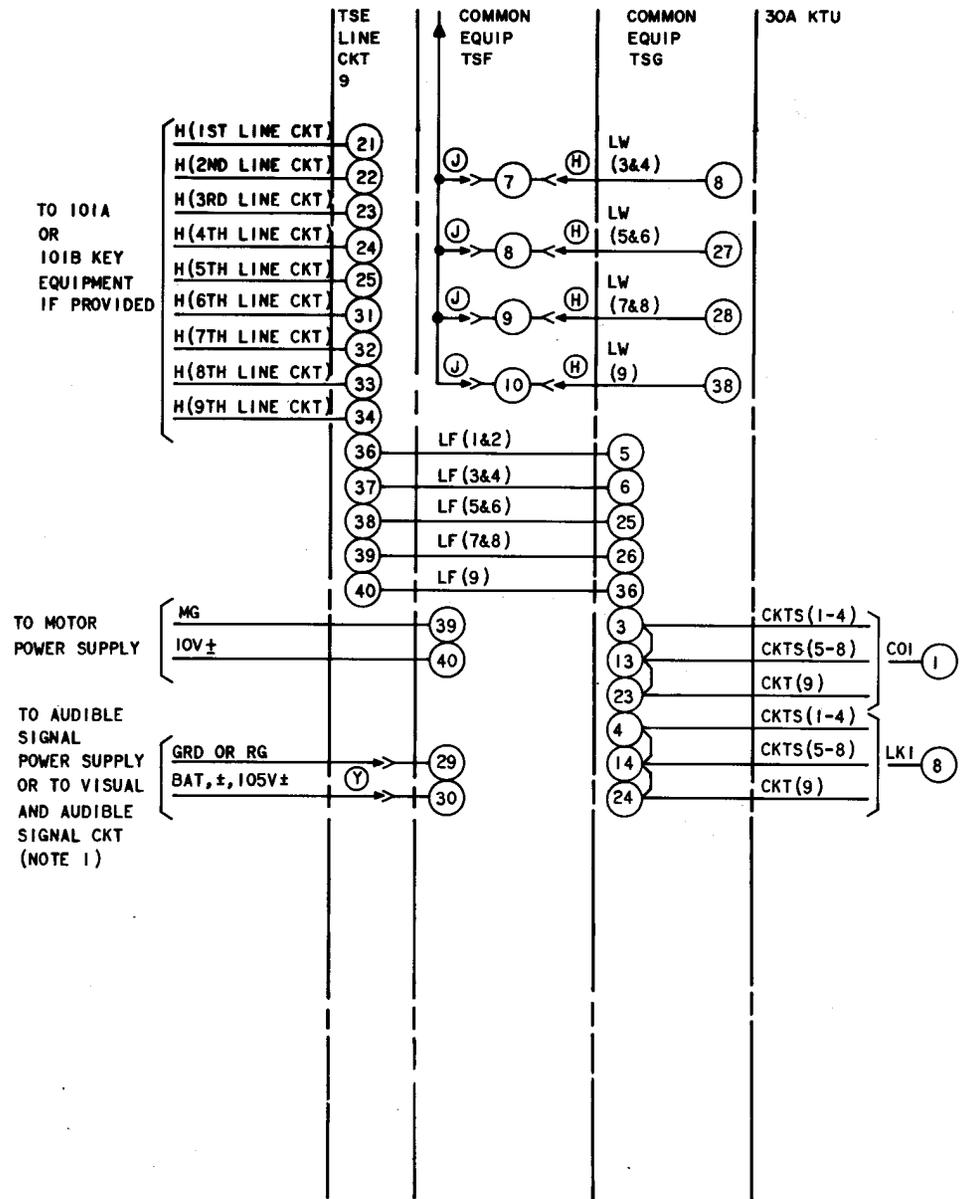


Fig. 4—Connections for CO or PBX Line Circuits (238A KTU) with 30A and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, and Lamp Wink (Sheet 2)

SECTION 518-114-425

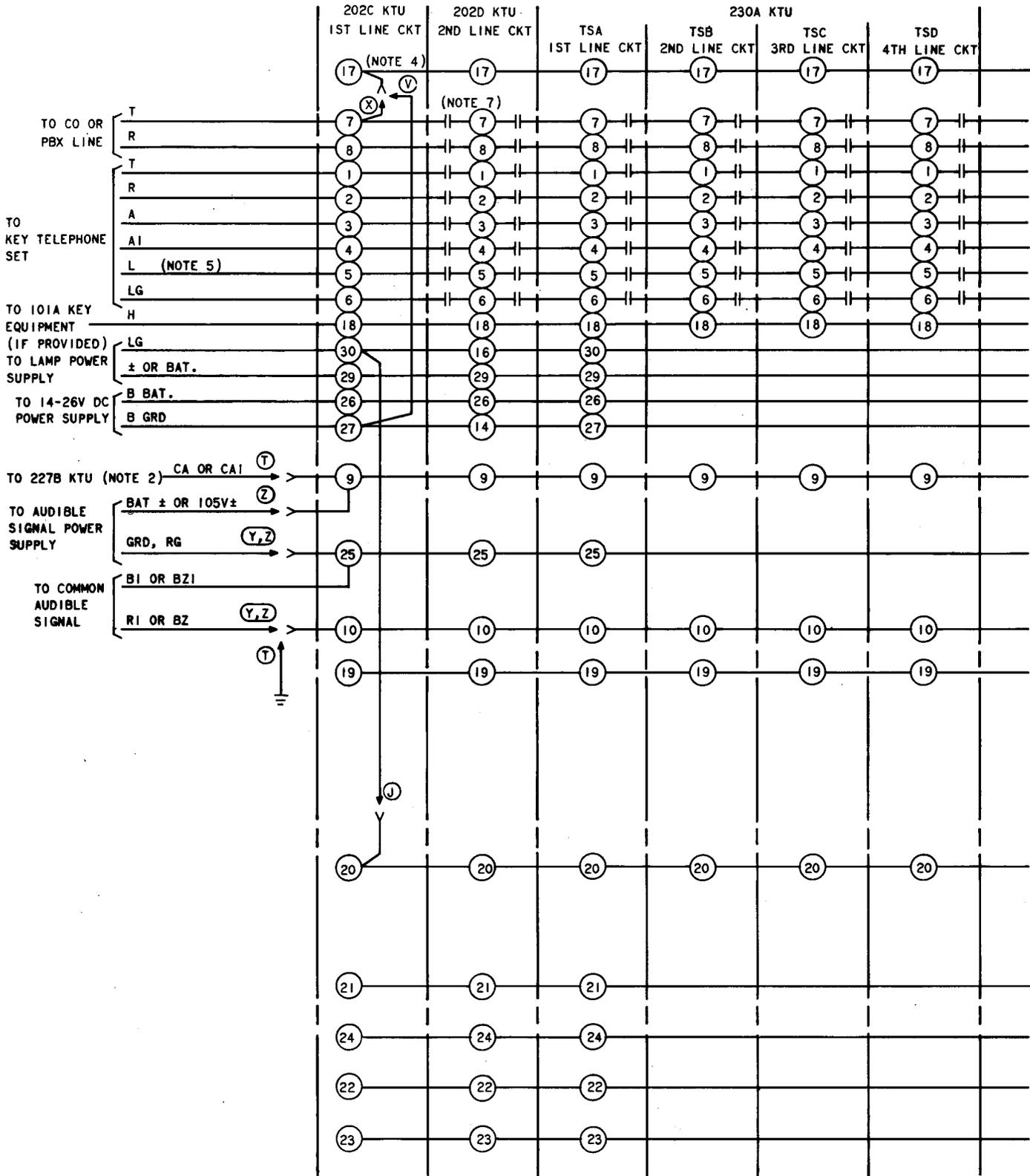


Fig. 5—Connections for CO or PBX Line Circuits (202C or D, or 230A or B KTUs) with 232-Type, 30A, and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, Lamp Wink, and Manual Intercom (Sheet 1)

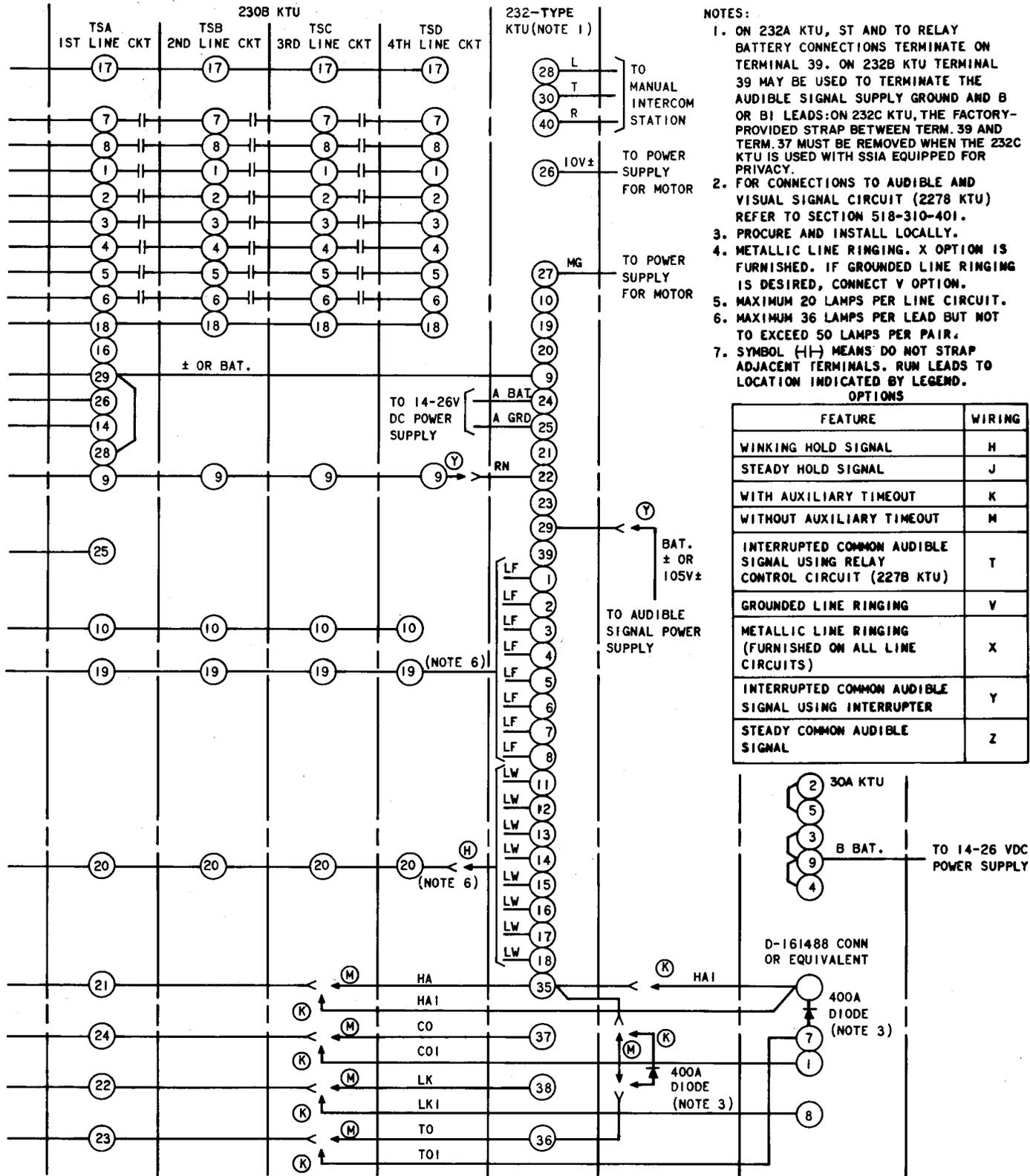


Fig. 5—Connections for CO or PBX Line Circuits (202C or D, or 230A or B KTUs) with 232-Type, 30A, and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, Lamp Wink, and Manual Intercom (Sheet 2)

SECTION 518-114-425

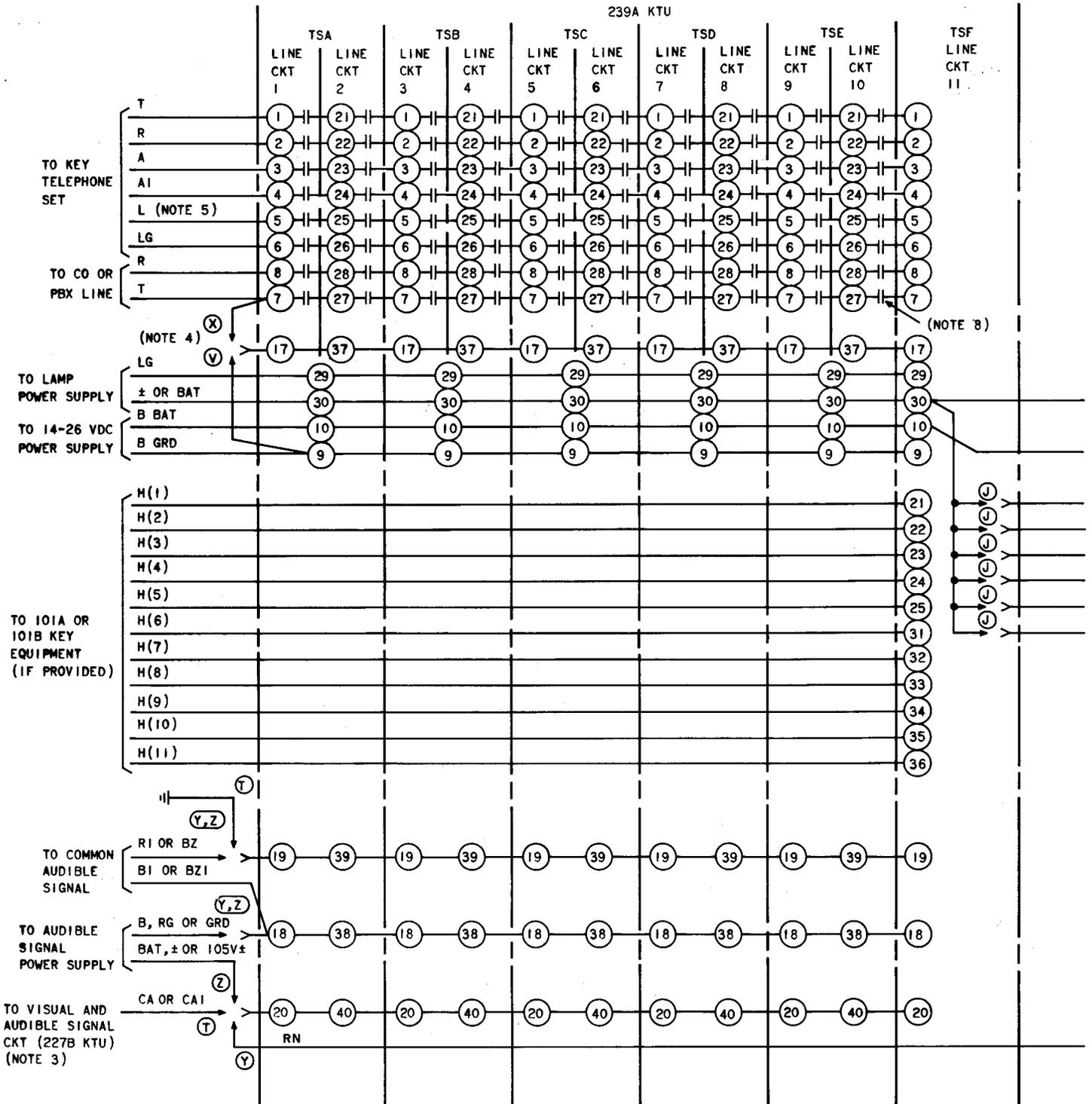


Fig. 6—Connections for CO or PBX Line Circuits (239A KTU) with 232-Type, 30A, and 227B KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Common Audible Signals, Auxiliary Timeout, Lamp Wink, and Manual Intercom (Sheet 1)



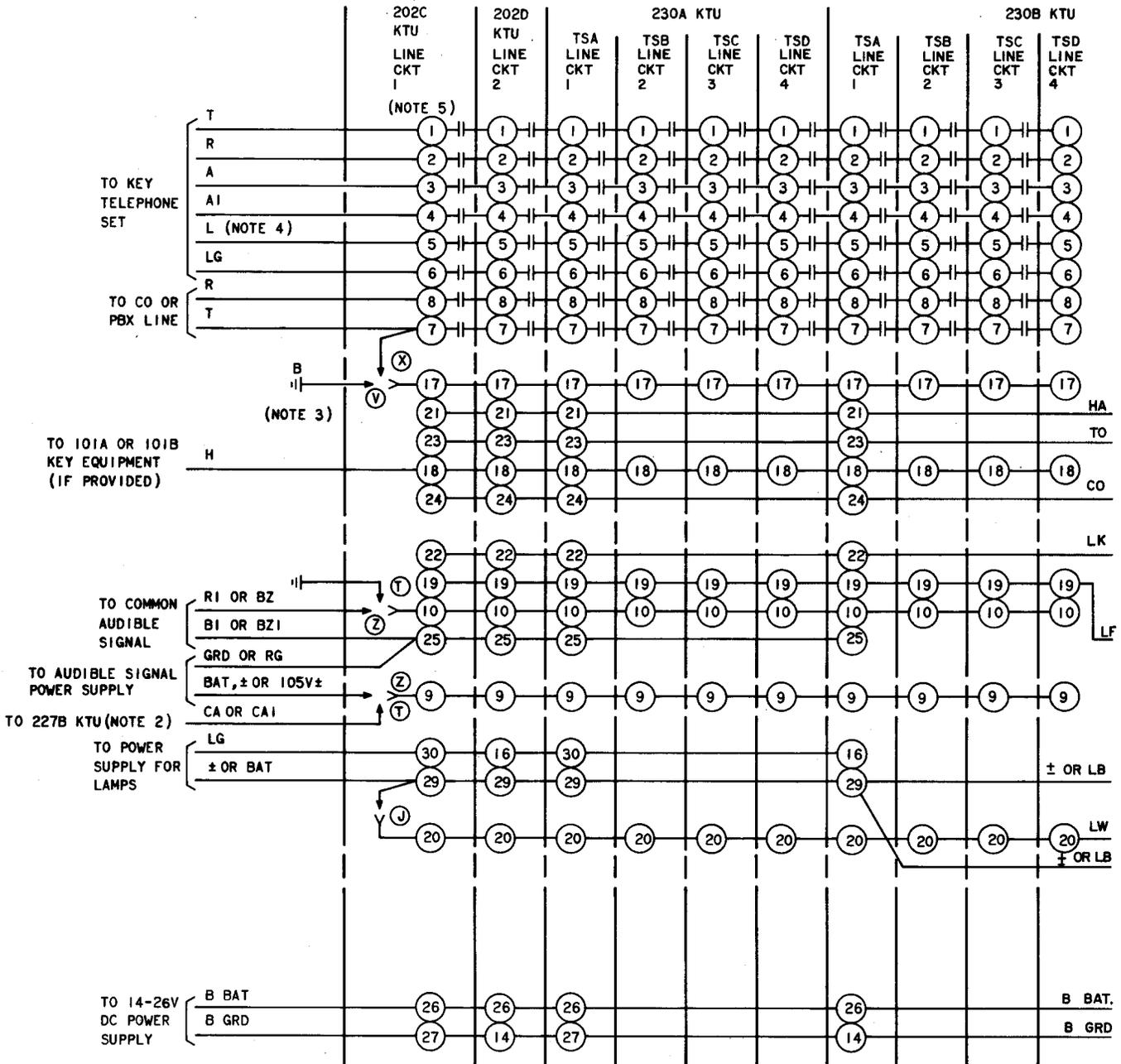
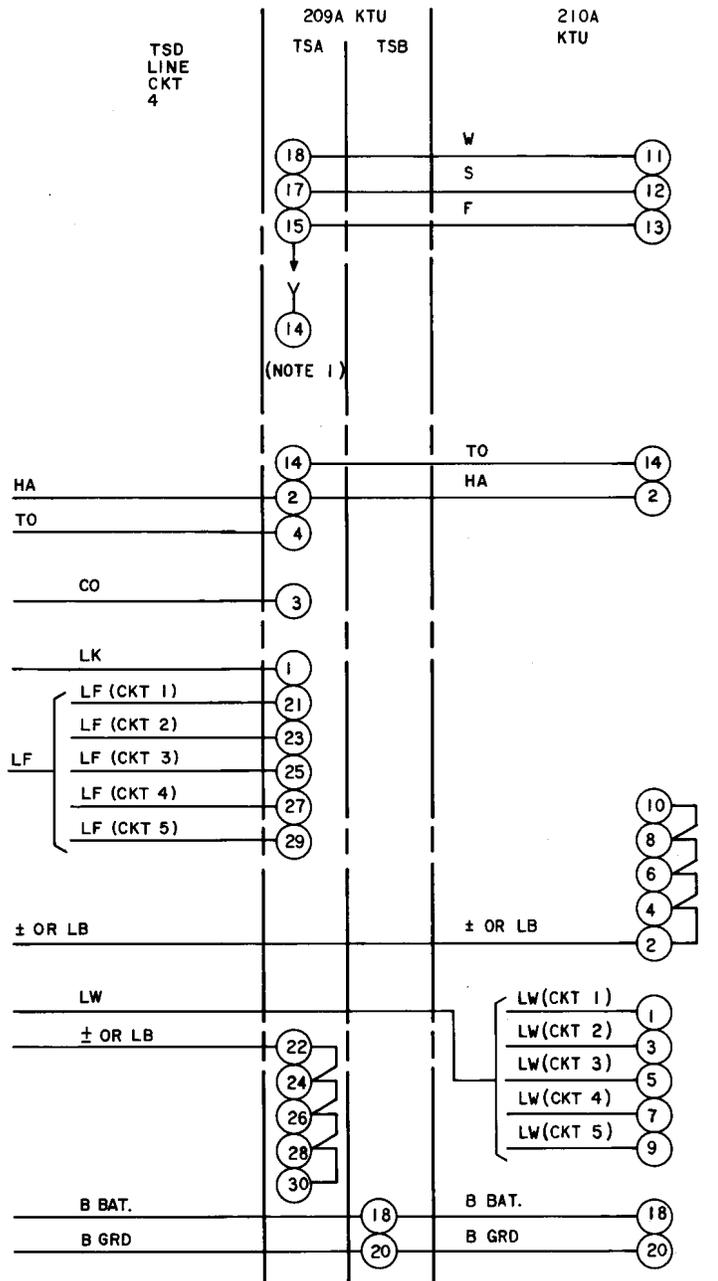


Fig. 7—Connections for CO or PBX Line Circuits (202C or D, or 230A or B KTUs) with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signals, Lamp Wink, and Timeout (Sheet 1)



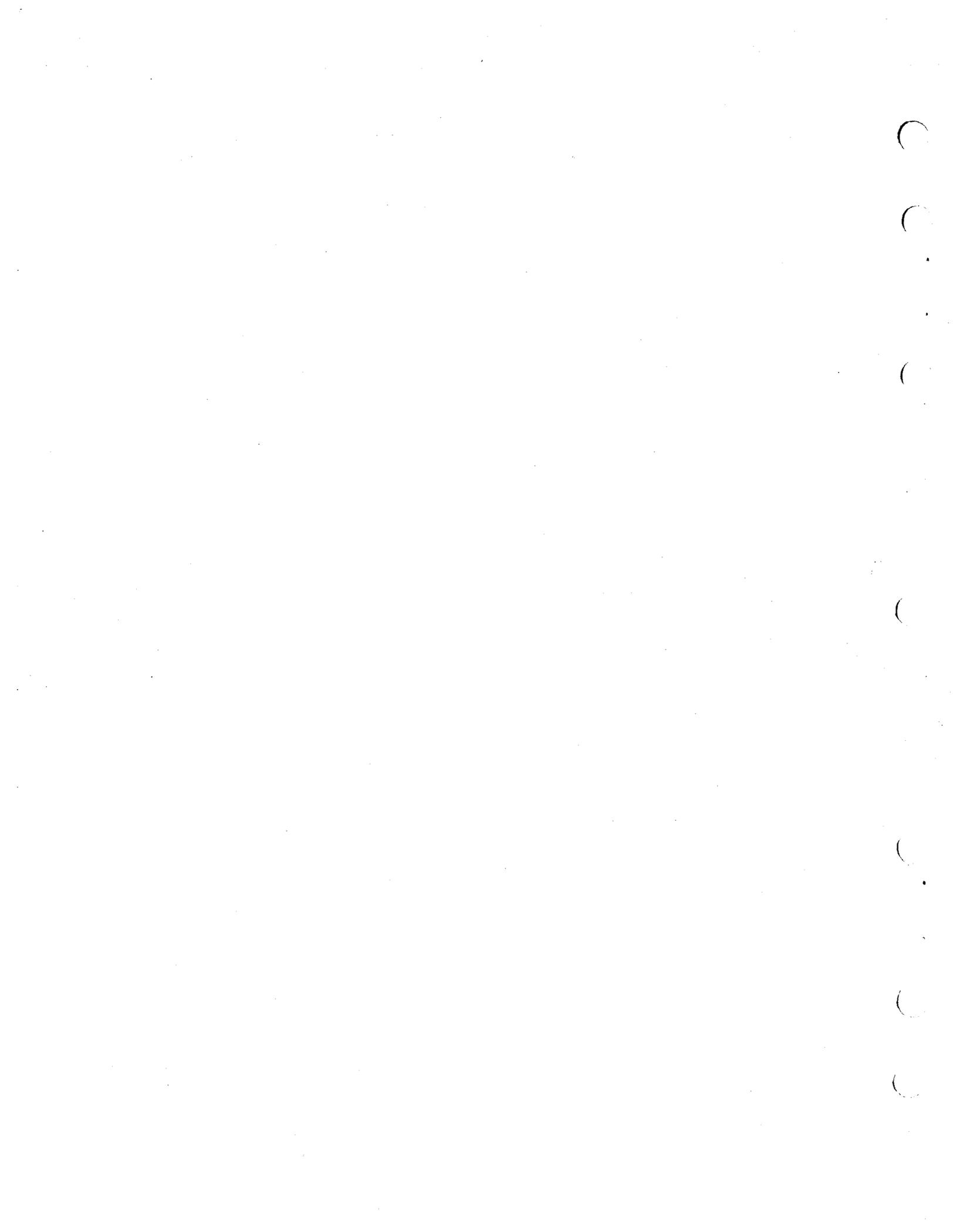
NOTES:

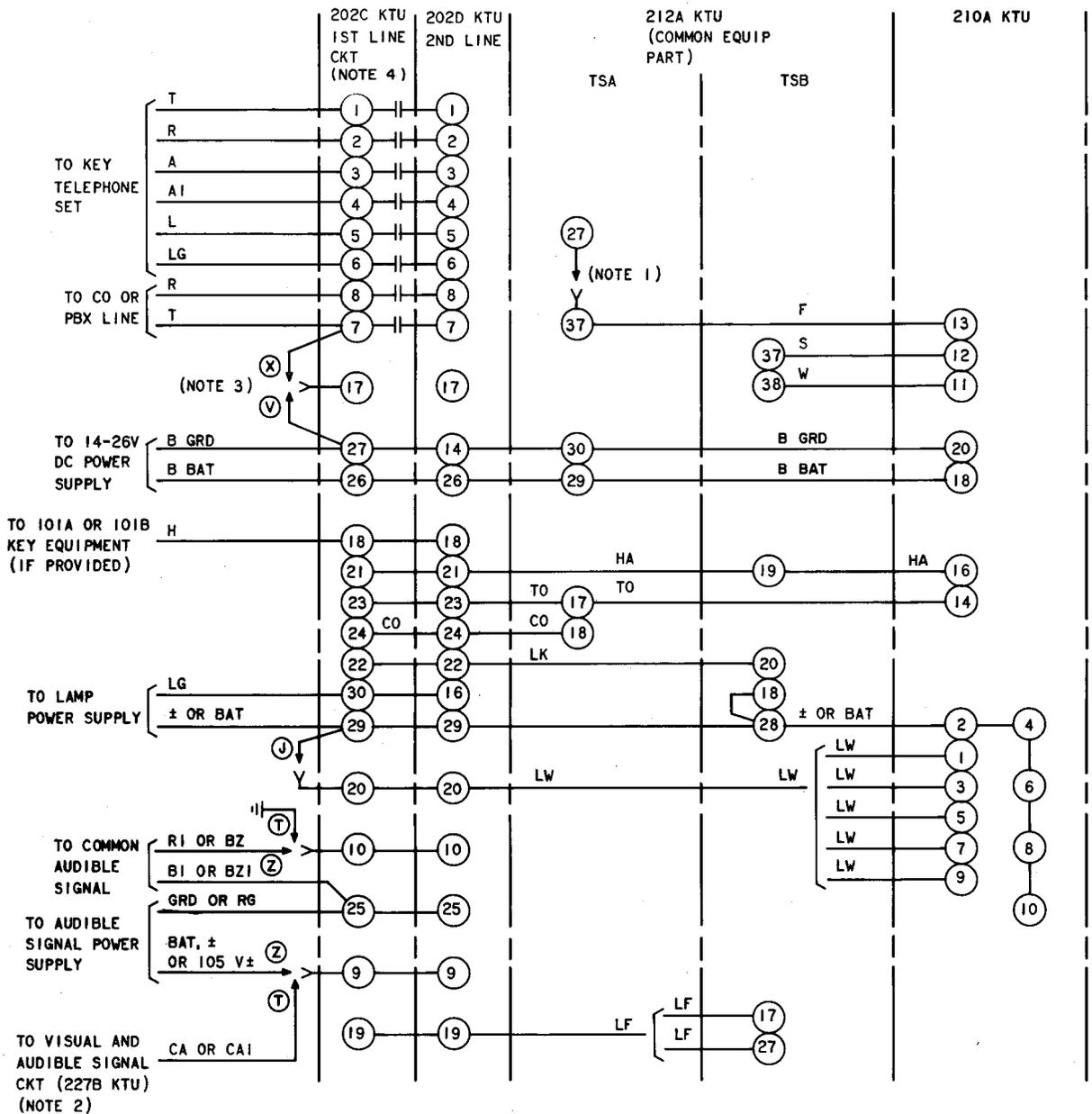
1. ADD STRAP WHEN WINK HOLD IS NOT PROVIDED.
2. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT, REFER TO SECTION 518-310-401.
3. ALL LINE CIRCUITS SHOWN ARE FURNISHED WITH METALLIC LINE RINGING, (X) OPTION. IF GROUNDED LINE RINGING IS DESIRED, CONNECT (V) OPTION.
4. MAX 20 LAMPS PER LINE CKT.
5. SYMBOL (-|) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

OPTIONS

FEATURE	WIRING
STEADY HOLD SIGNAL	J
INTERRUPTED COMMON AUDIBLE SIGNAL USING RELAY CONTROL CIRCUIT (227B KTU)	T
GROUNDED LINE RINGING	V
METALLIC LINE RINGING (FURNISHED ON ALL LINE CIRCUITS)	X
STEADY COMMON AUDIBLE SIGNAL	Z

Fig. 7—Connections for CO or PBX Line Circuits (202C or D, or 230A or B KTUs) with 209A and 210A KTUs for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signals, Lamp Wink, and Timeout (Sheet 2)





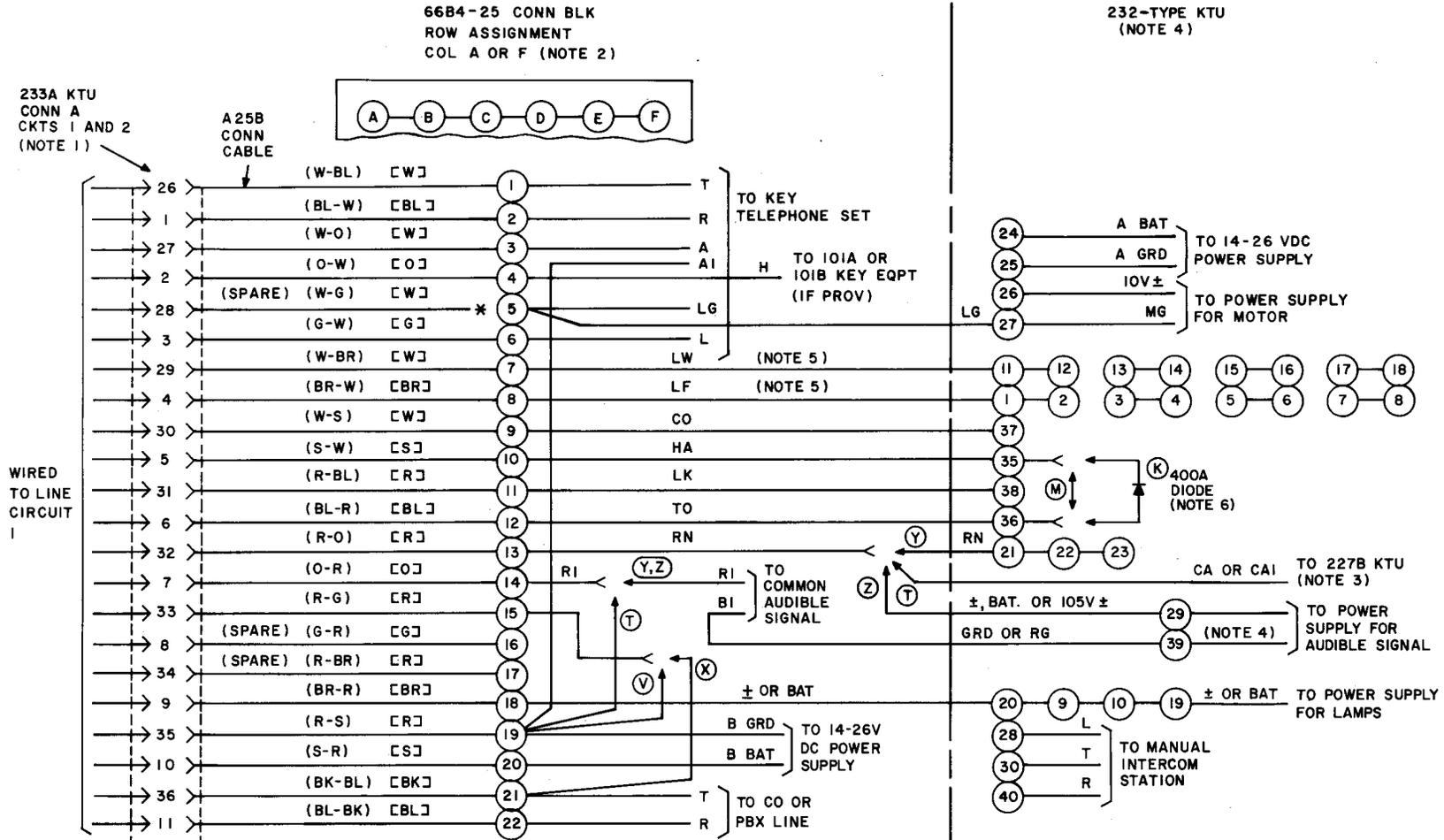
NOTES:

1. ADD STRAP WHEN WINK CIRCUIT IS NOT PROVIDED.
2. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT (227B KTU), REFER TO SECTION 518-310-401.
3. 202C OR 202D LINE CIRCUITS ARE FURNISHED WITH METALLIC LINE RINGING (X) OPTION. IF GROUNDED LINE RINGING IS DESIRED, CONNECT (V) OPTION.
4. SYMBOL (-|) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

OPTIONS

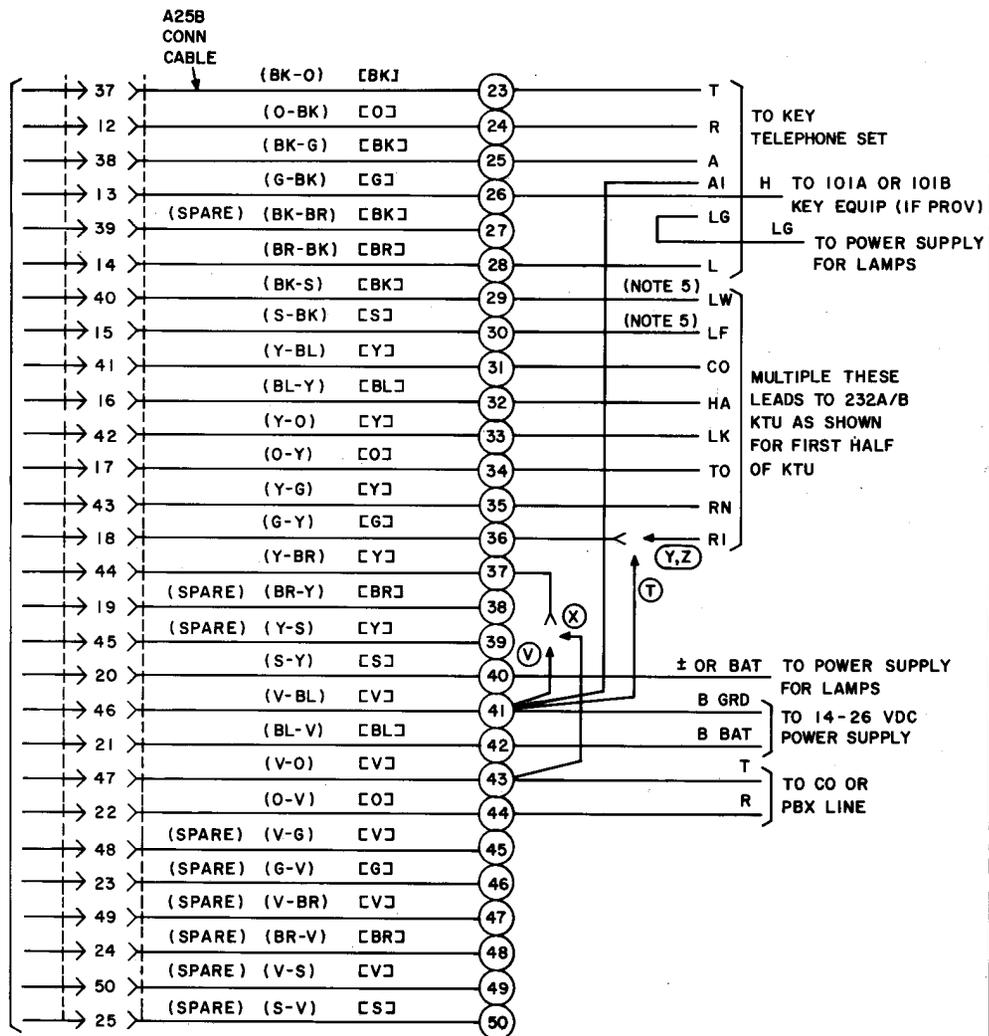
FEATURES	WIRING
STEADY HOLD SIGNAL	J
INTERRUPTED COMMON AUDIBLE SIGNAL USING RELAY CONTROL CKT (227B KTU)	T
GROUNDED LINE RINGING	V
METALLIC LINE RINGING (FURNISHED ON ALL LINE CKTS)	X
STEADY COMMON AUDIBLE SIGNAL	Z

Fig. 8—Connections for CO or PBX Line Circuits (202C or D) with 210A KTU and only the Common Equipment Part of 212A KTU for Line Pickup and Hold, Line and Busy Lamps, Common Audible Signals, Lamp Wink, and Timeout



**Fig. 9—Connections for CO or PBX Line Circuits (233A KTU) with 227B and 232-Type KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Lamp Wink, Manual Intercom, and Timeout (Sheet 1)**

WIRED  
TO LINE  
CIRCUIT  
2



NOTES:

1. TWO LINE CIRCUITS TERMINATE IN EACH CONNECTOR ON THE 233A KTU. THE CONNECTORS AND LINE CIRCUITS ARE ARRANGED AS FOLLOWS:

CONN	A	B	C	D	E
LINE	1	3	5	7	9
CKTS	2	4	6	8	10

THE CONNECTIONS SHOWN ARE FOR CONN A LINE CKTS 1 AND 2. THE LEADS FROM CONNECTORS B THROUGH E ARE TERMINATED IN THE SAME MANNER.

2. TERMINATE CONN CABLE TO COL F IF LEFT HAND BLOCK OR TO COL A IF RIGHT HAND BLOCK.
3. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT (227B KTU) REFER TO SECTION 518-310-401.
4. ON 232A KTU, ST AND TO RELAY BATTERY CONNECTIONS TERMINATE ON TERMINAL 39. ON 232B KTU, TERMINAL 39 MAY BE USED TO TERMINATE THE AUDIBLE SIGNAL SUPPLY GROUND AND B OR B1 LEADS. ON 232C KTU, THE FACTORY-PROVIDED STRAP BETWEEN TERM. 39 AND TERM. 37 MUST BE REMOVED WHEN THE 232C KTU IS USED WITH SSIA EQUIPPED FOR PRIVACY.
5. LF AND LW LEADS SHOULD NOT EXCEED 50 LAMPS PER GROUP.
6. PROCURE AND INSTALL LOCALLY.

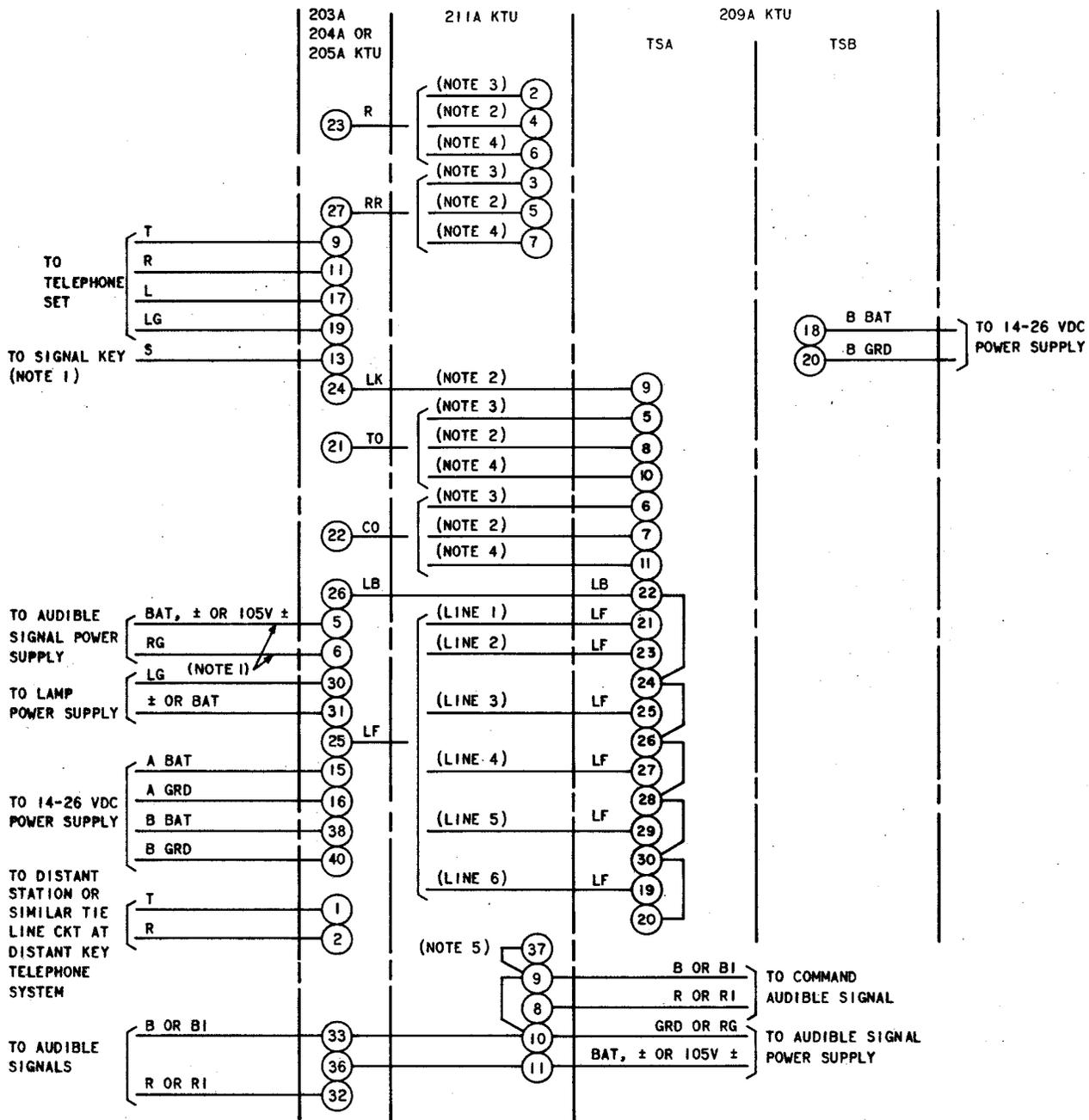
OPTIONS

FEATURES		WIRING
WITH AUX TIME-OUT CKT		K
WITHOUT AUX TIME-OUT CKT		M
LINE RINGING CKT	METALLIC	X
	GROUNDED WITH COM AUD CONT RELAY NOT PROV	V
COMMON AUDIBLE	INTERRUPTED RINGING WITH VISUAL AND AUDIBLE SIGNAL CKT PROVIDED	T OR Y
	STEADY RINGING	

- \* INSULATE AND STORE
- ( ) CURRENT COLOR CODE
- [ ] MD COLOR CODE

Fig. 9—Connections for CO or PBX Line Circuits (233A KTU) with 227B and 232-Type KTUs for Line Pickup and Hold, Line and Busy Lamps, Interrupted Audible Signals, Lamp Wink, Manual Intercom, and Timeout (Sheet 2)

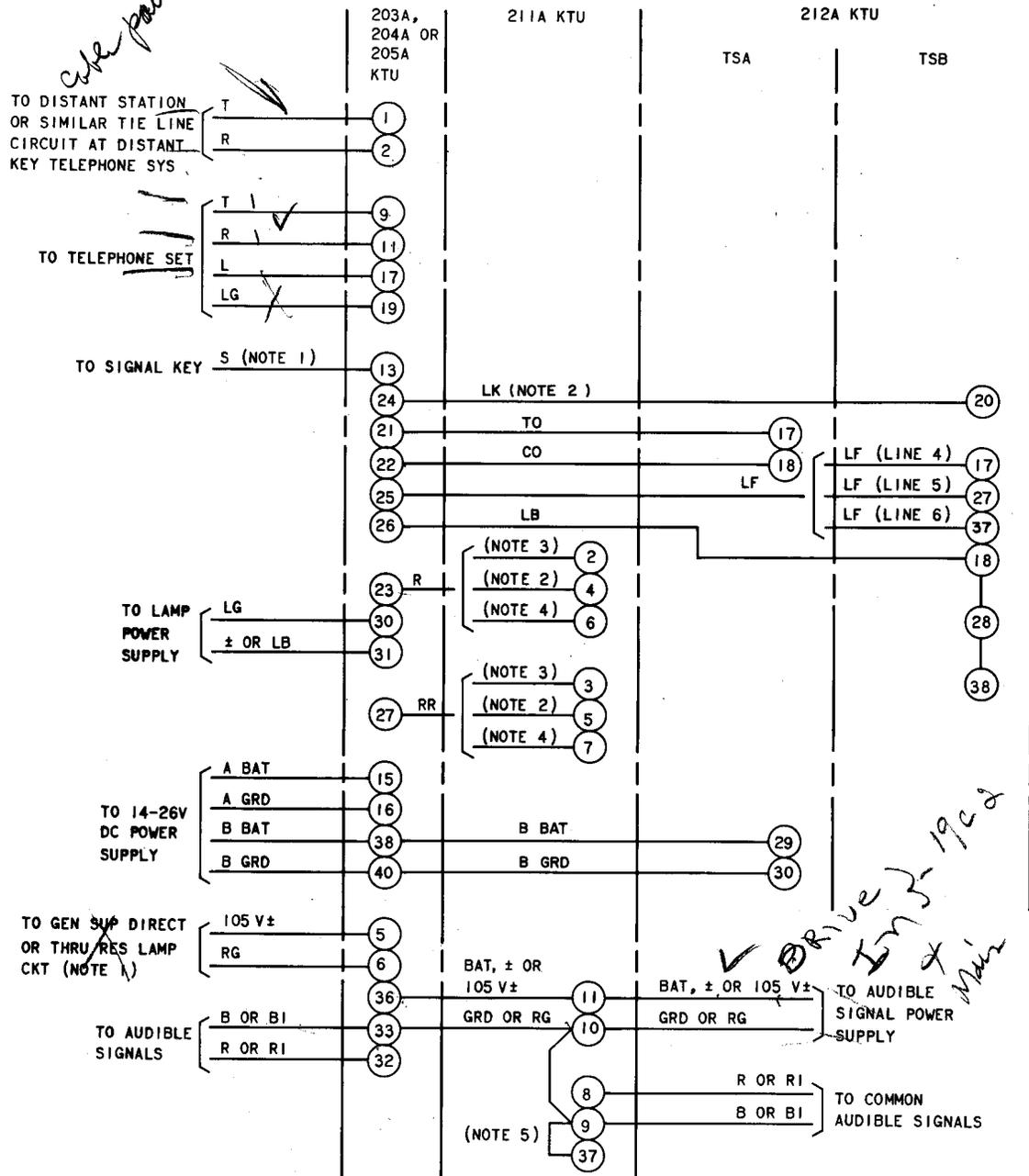
SECTION 518-114-425



NOTES:

1. FOR 204A AND 205A KTU ONLY.
2. FOR 204A KTU ONLY.
3. FOR 203A KTU ONLY.
4. FOR 205A KTU ONLY.
5. CONNECT AS SHOWN WHEN BAT OR 18V ± IS USED. WHEN 105V ± IS USED CONNECT TO LOCAL GROUND IF CENTRAL OFFICE GENERATOR IS USED, OTHERWISE IT MAY BE STRAPPED TO THE POWER SUPPLY GROUND.

Fig. 10—Connections for Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 209A and 211A KTUs for Steady Common Audible Signals, Line and Busy Lamps, and Timeout



- NOTES:
1. FOR 204A AND 205A KTU ONLY.
  2. FOR 204A KTU ONLY.
  3. FOR 203A KTU ONLY.
  4. FOR 205A KTU ONLY.
  5. CONNECT AS SHOWN WHEN BAT OR 18V± IS USED. WHEN 105 V± IS USED, CONNECT TO LOCAL GROUND IF CENTRAL OFFICE GENERATOR IS USED, OTHERWISE IT MAY BE STRAPPED TO THE POWER SUPPLY GROUND.

**Fig. 11—Connections for Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 211A KTU and only the Common Equipment Part of 212A KTU for Steady Audible or Common Audible Signals, Line and Busy Lamps, and Timeout**

SECTION 518-114-425

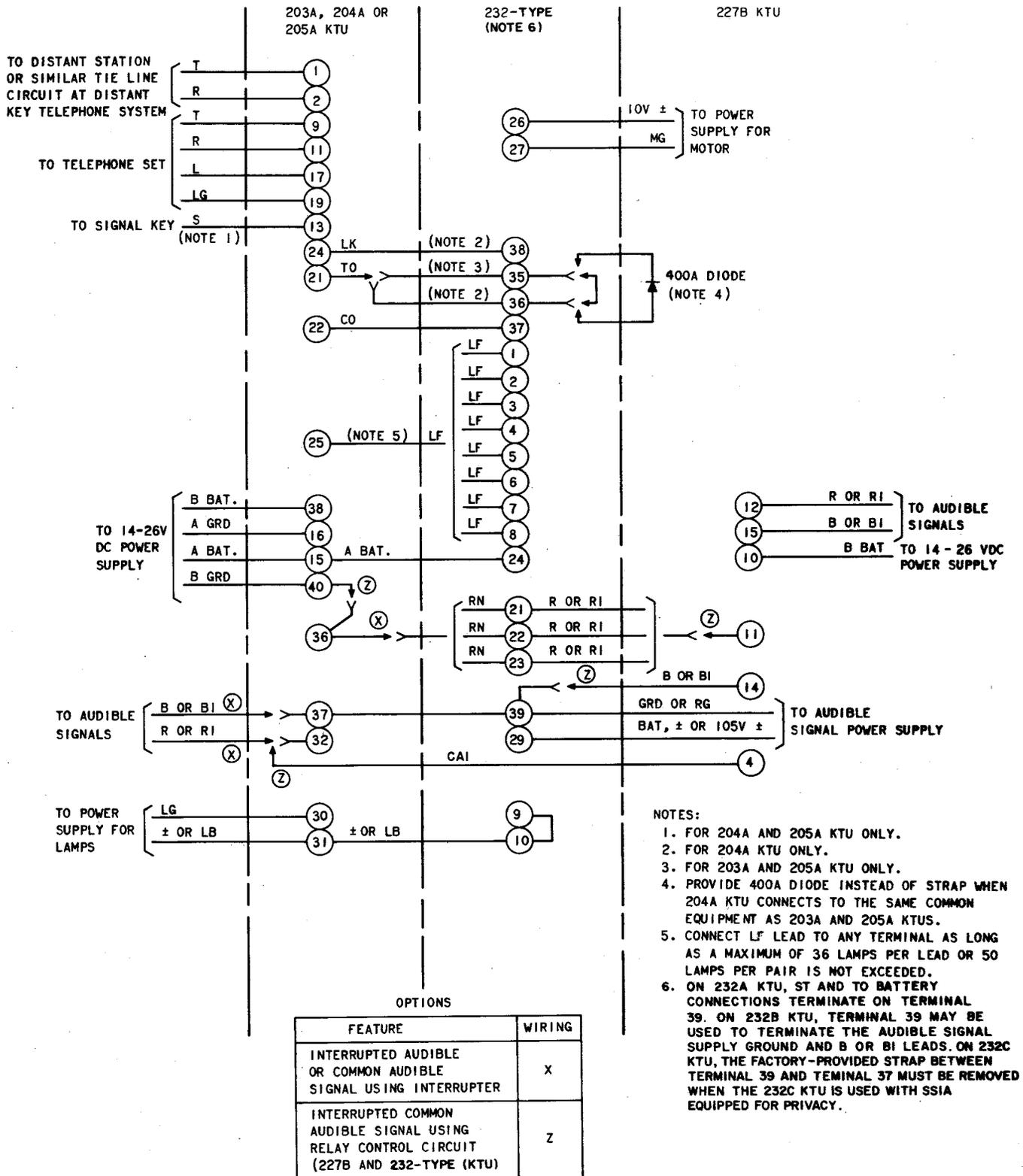
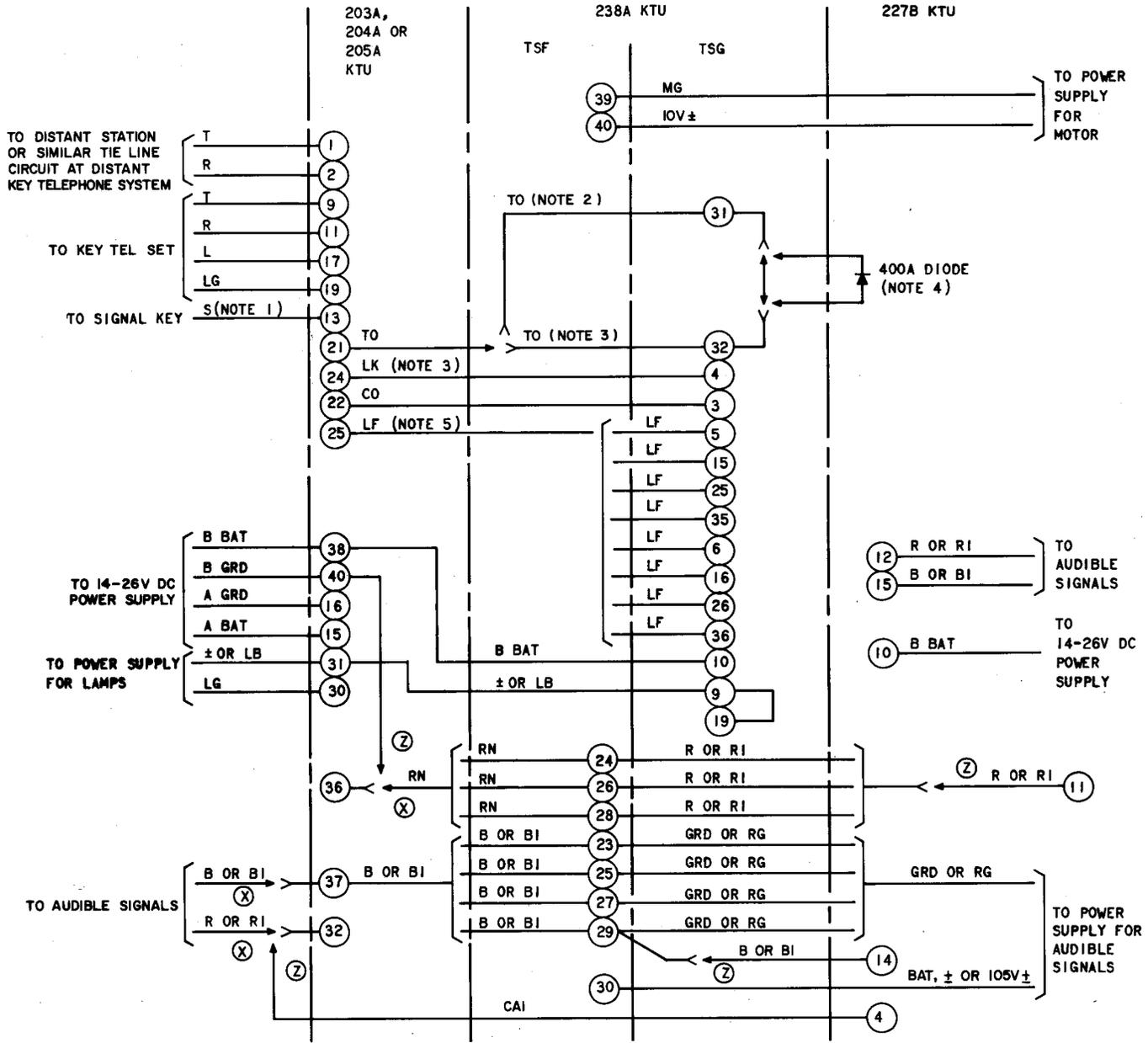


Fig. 12—Connections for Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with 227B and 232-Type KTUs for Interrupted Audible or Common Audible Signals, Line and Busy Lamps, Lamp Wink, and Timeout



NOTES:

1. FOR 204A AND 205A KTU ONLY.
2. FOR 203A AND 205A KTU ONLY.
3. FOR 204A KTU ONLY.
4. PROVIDE 400A DIODE INSTEAD OF STRAP WHEN 204A KTU CONNECTS TO THE SAME COMMON EQUIPMENT AS 203A AND 205A KTUS.
5. CONNECT LF LEAD TO ANY TERMINAL AS LONG AS A MAXIMUM OF 36 LAMPS PER LEAD OR 50 LAMPS PER PAIR IS NOT EXCEEDED.

OPTIONS

FEATURE	WIRING
INTERRUPTED AUDIBLE OR COMMON AUDIBLE SIGNAL USING INTERRUPTER	X
INTERRUPTED COMMON AUDIBLE SIGNAL USING RELAY CONTROL CIRCUIT (227B KTU)	Z

Fig. 13—Connections for Automatic Tie Line Circuit (203A KTU) or Ringdown Tie Line Circuit (204A KTU) or Station Line Circuit (205A KTU) with only the Common Equipment Part of 238A KTU and 227B KTU for Interrupted Audible or Common Audible Signals, Line and Busy Lamps, Lamp Wink, and Timeout

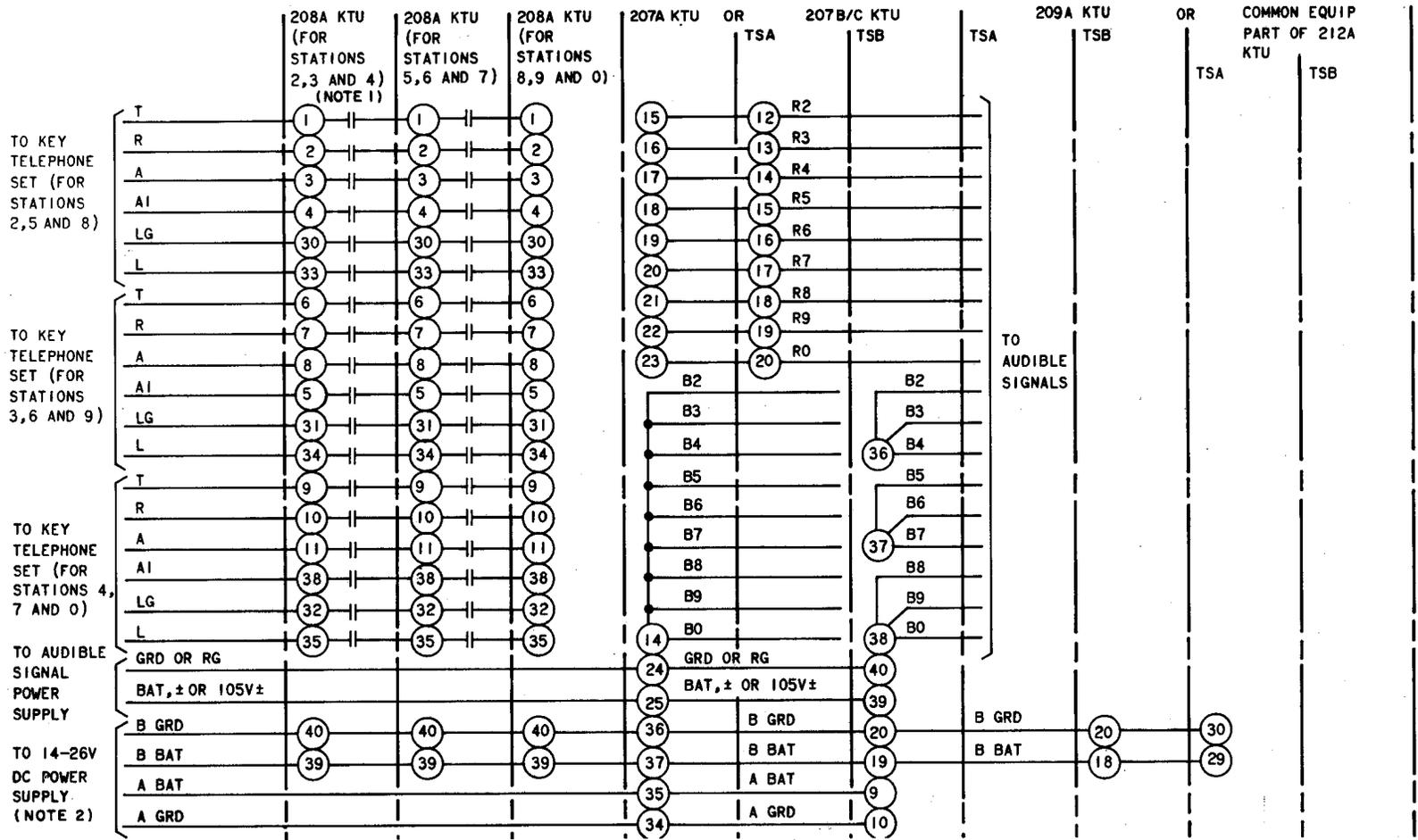
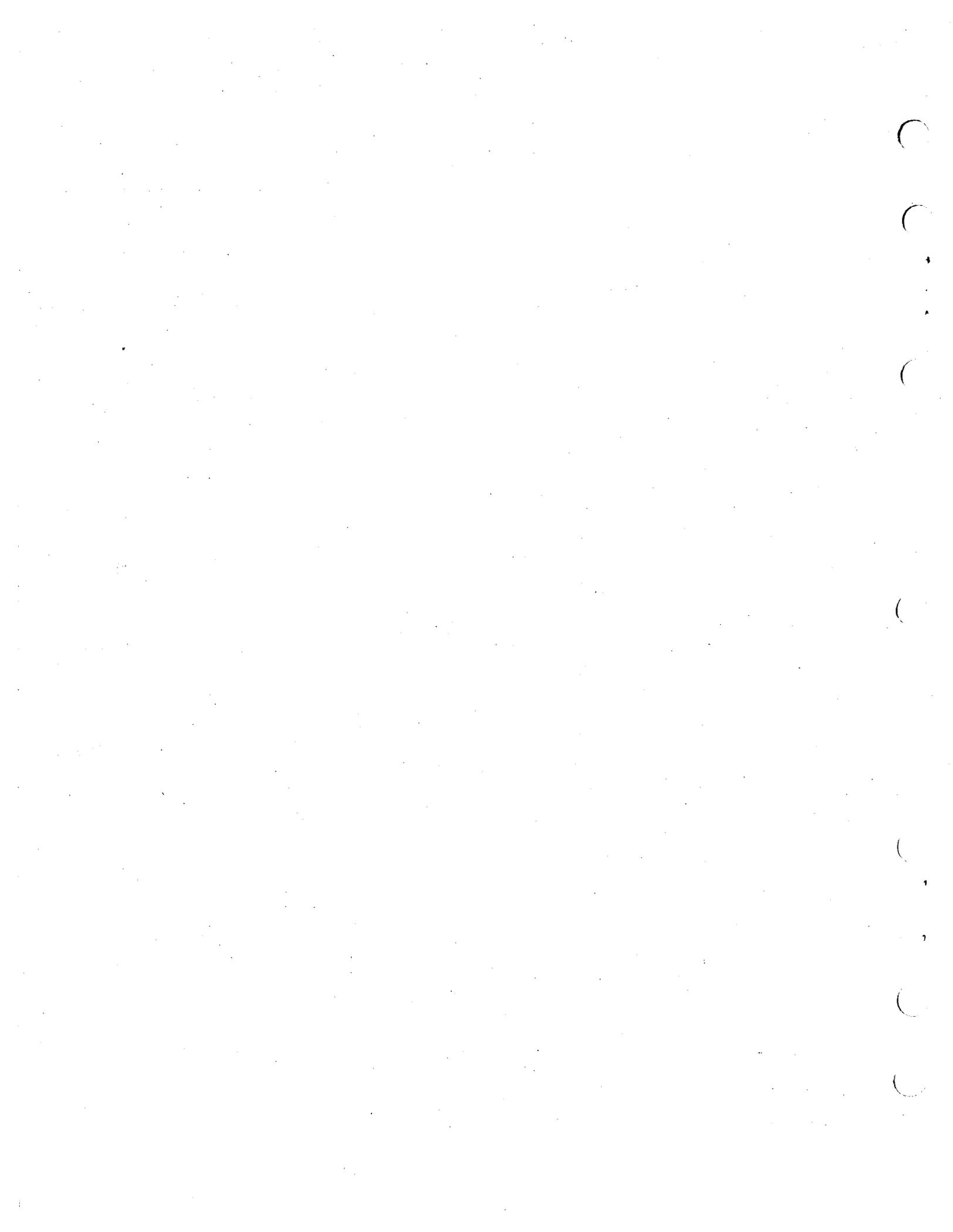


Fig. 14—Connections for Dial Selective Intercom Circuit (207A, B, or C KTU) with 208A and 209A KTUs and only the Common Equipment Part of 212A KTU for Flashing Line Lamps, Busy Lamps, Audible Signals, and Timeout (Sheet 1)





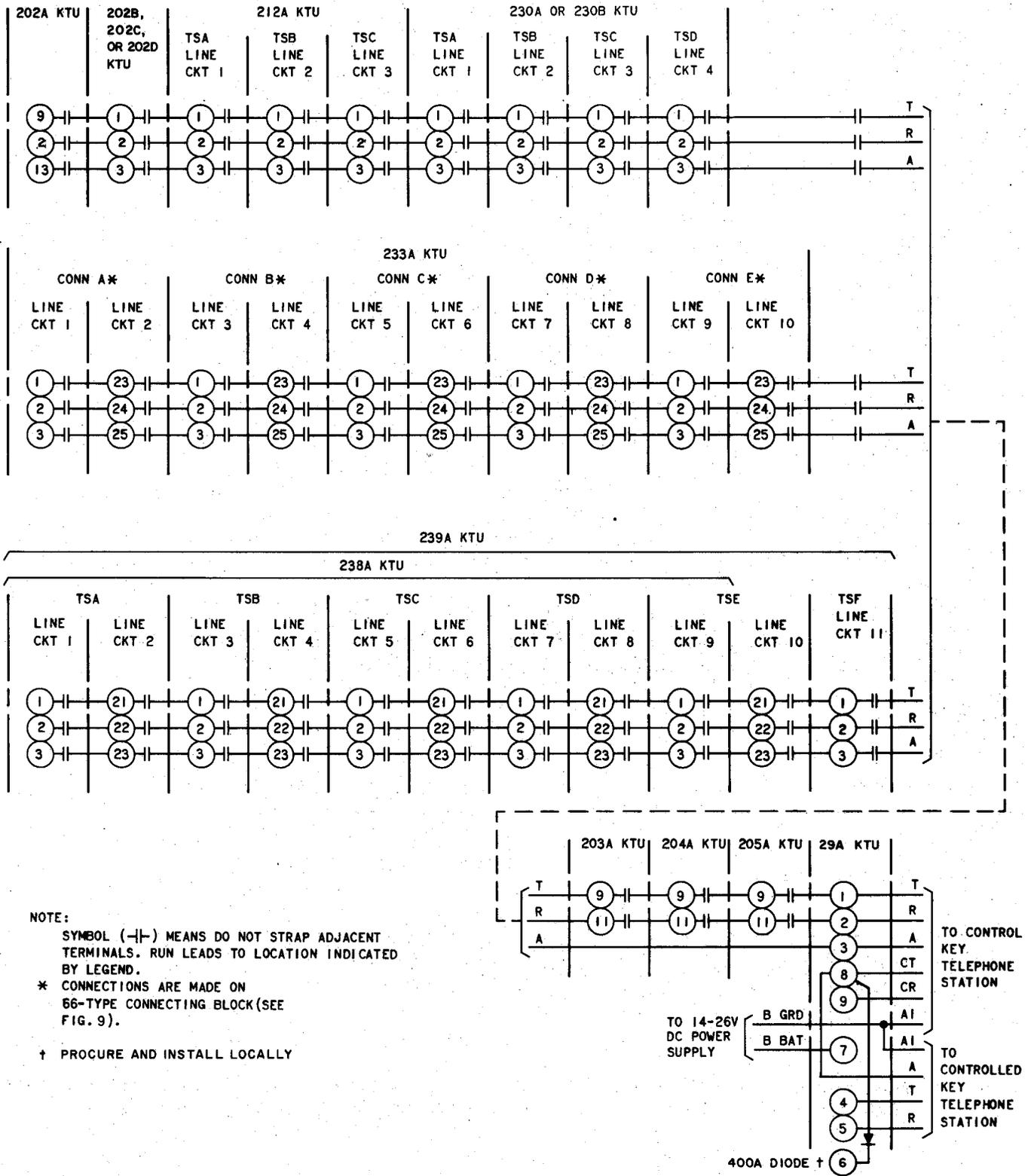


Fig. 15—Connections for Manual Cutoff Circuit (29A KTU) with 202A, B, C, or D, 212A, 230A or B, 233A, 238A, 239A, 203A, 204A, and 205A KTUs

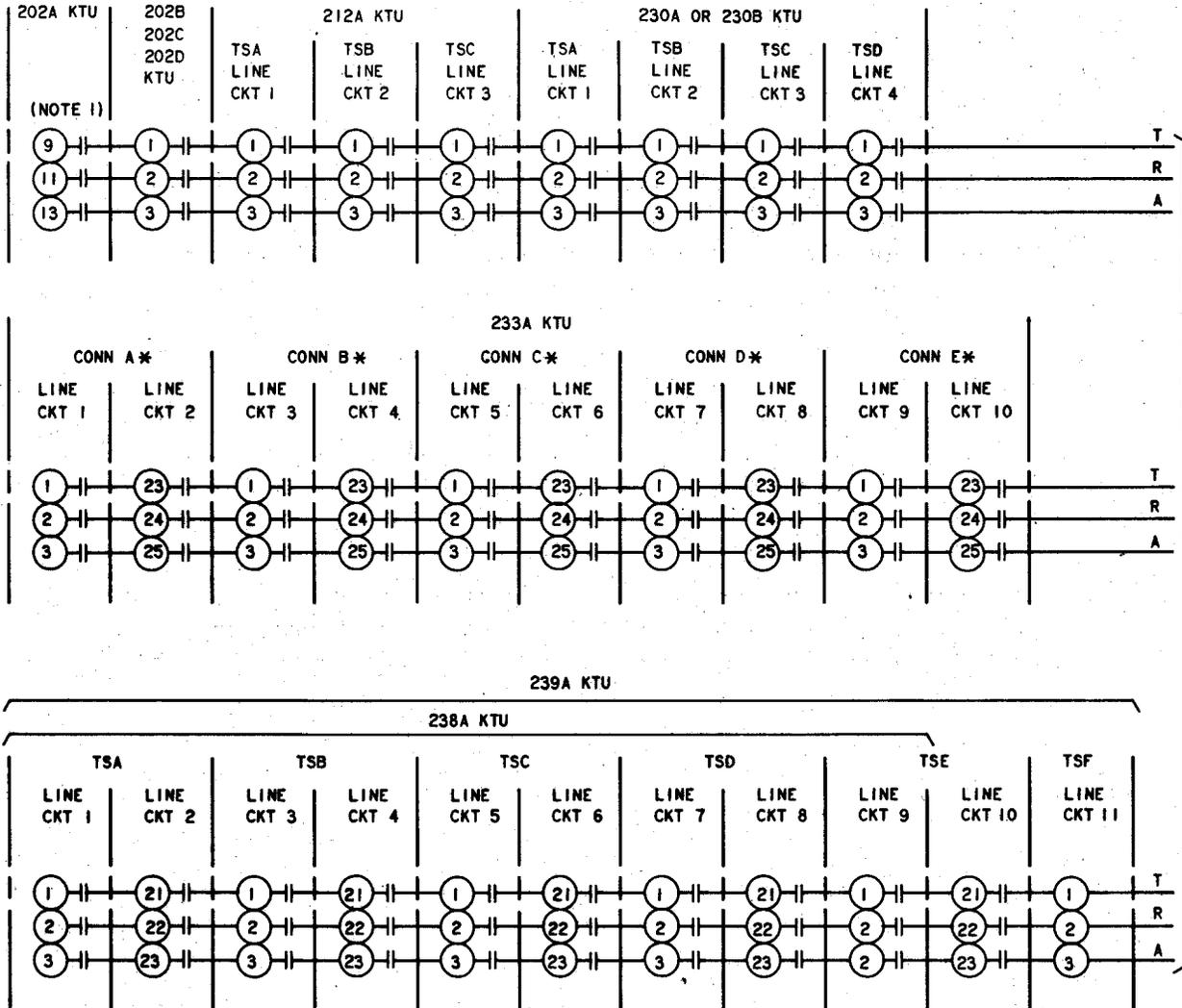


Fig. 16—Connections for Cut-Through and Control Circuit for Automatic Cutoff (26B and 29A KTUs) with 202A, B, C, or D, 212A, 230A or B, 233A, 238A, 239A, 203A, 204A, and 205A KTUs (Sheet 1)4

NOTES:

1. SYMBOL (-|-) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.
  2. ONE 26B KTU WILL SERVE UP TO FIVE 29A KTUS. CONNECTIONS ARE SHOWN FOR TWO 29A KTUS. SEE INSET FOR CONNECTIONS TO 3RD, 4TH AND 5TH 29A KTU.
- \* CONNECTIONS ARE MADE ON 66-TYPE CONNECTING BLOCK (SEE FIG.9).  
 † APPEARS MORE THAN ONE TIME ON THIS FIGURE.  
 ‡ 400A DIODE, PROCURE AND INSTALL LOCALLY.

OPTIONS		WIRING
CUT THROUGH AND CONTROL CIRCUIT FOR AUTOMATIC CUTOFF CIRCUIT	STATION CAN CUT OFF OTHER STATIONS BUT CANNOT BE CUT OFF	H, J
	STATION CAN CUT OFF OTHER STATIONS AND CAN BE CUT OFF, EXCEPT DURING A CALL.	H, K
	STATION CANNOT CUT OFF OTHER STATIONS AND CAN BE CUT OFF, EXCEPT DURING A CALL	K

INSET

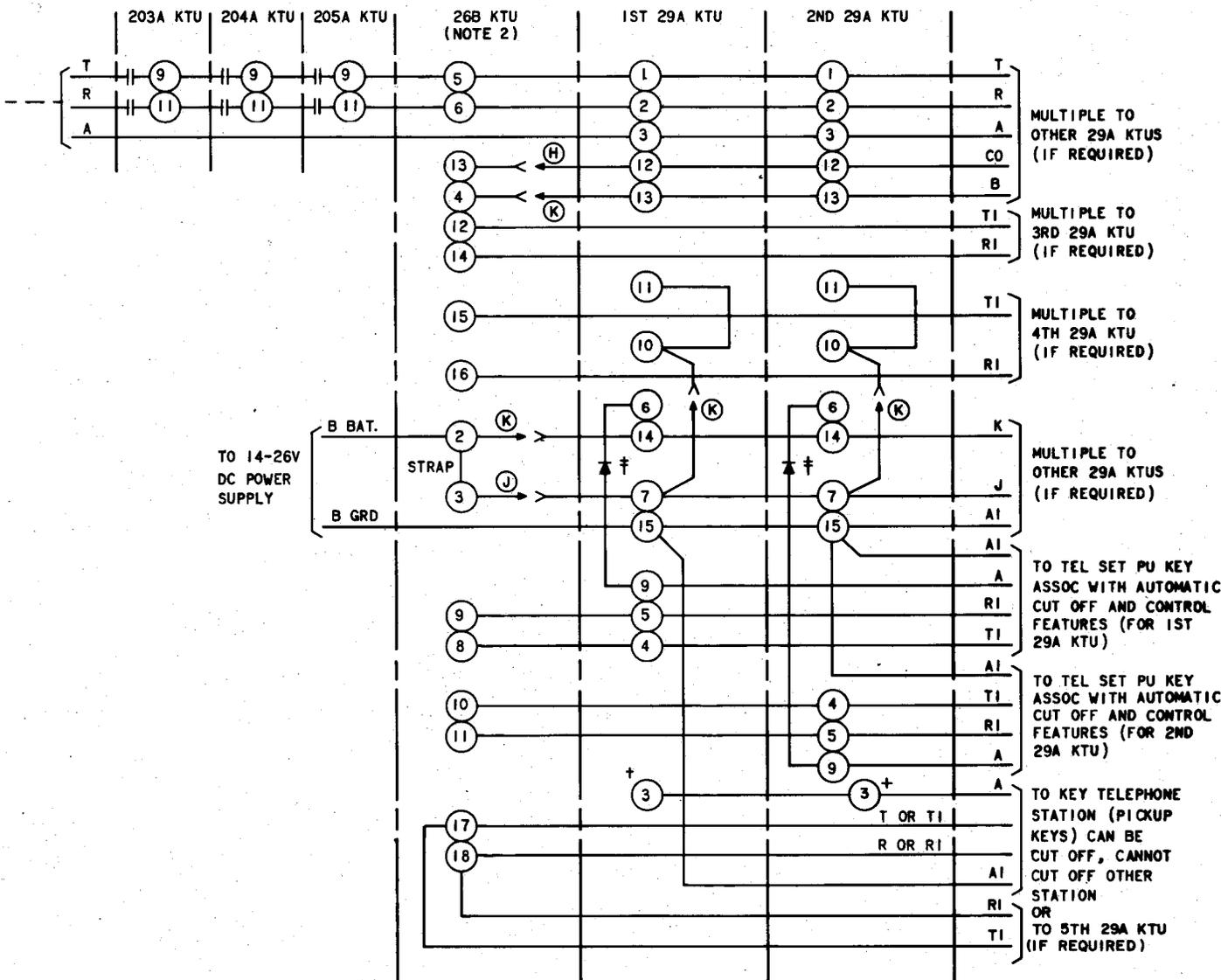
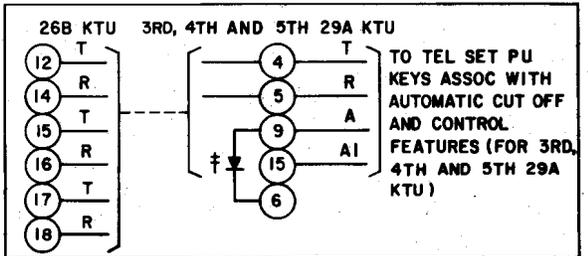
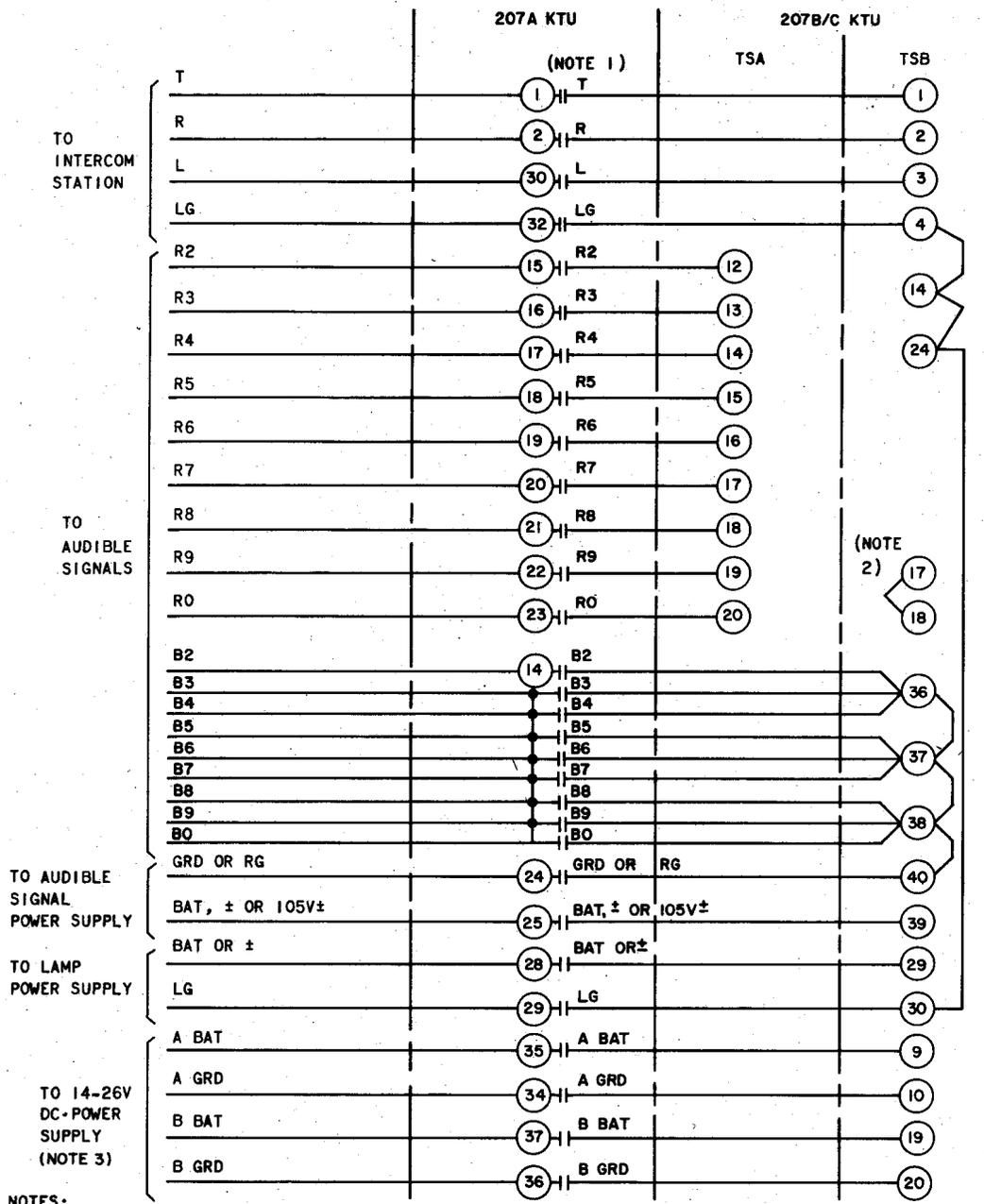


Fig. 16—Connections for Cut-Through and Control Circuit for Automatic Cutoff (26B and 29A KTUs) with 202A, B, C, or D, 212A, 230A or B, 233A, 238A, 239A, 203A, 204A, and 205A KTUs (Sheet 2)†



- NOTES:
1. SYMBOL  $\perp$  MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.
  2. REMOVE STRAP IF MORE THAN 9 STATIONS ARE SERVED.
  3. PROPER POLARITY MUST BE OBSERVED WHEN MAKING POWER CONNECTIONS TO THE 207-TYPE KTU. REVERSED POLARITY MAY CAUSE THE ELECTROLYTIC CAPACITOR TO EXPLODE.

Fig. 17—Connections for Dial Selective Intercom Circuit (207A, B or C KTU) with Busy Lamps and Audible Signals