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, or 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, Lamp Wink, Manual Intercom, and Timeout

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 209A and 211A KTUs for Steady Common Audible Signals, Line and Busy Lamps, 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)
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)

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) 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, (OPTION. IF GROUNDED LINE RINGING IS DESIRED, CONNECT (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

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* Z IS FOR 202A AND B KTU.
J IS FOR 202C AND D KTU.
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. 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 2)
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)
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. 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 FOLLOWING CIRCUITS.

2. PROVIDES POWER FAILURE CIRCUIT FOR 202A AND 202B KTU.

3. THE 202C AND 202D KTUS ARE FURNISHED WIRED FOR METALLIC LINE RINGING.

4. LINE RINGING OPTION IF GROUNDED LINE RINGING IS DESIRED, CONNECT OPTION.

5. ADD STRAP WHEN WINK CIRCUIT IS NOT PROVIDED.

6. FOR CONNECTIONS TO VISUAL AND AUDIBLE SIGNAL CIRCUIT (227B KTUs REFER TO SECTION 518-310-40).

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

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* J IS FOR 212A AND 202A AND 202B KTUS, J IS FOR 202C AND 202D KTUS.
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 1)
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, option, IS FURNISHED ON ALL LINE CIRCUITS, IF GROUNDED LINE RINGING IS DESIRED, CONNECT option.
4. SYMBOL (-{-}) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

OPTIONS

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**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)
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)
NOTES:
1. 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 BI leads. On 232C KTU, the factory-provided strap between Term 39 and Term 37 must be removed when the 232C KTU is used with SSA equipped for privacy.
2. For connections to audible and visual signal circuit (2278 KTU) refer to Section 518-310-401.
3. Procure and install locally.
4. Metallic line ringing. X option is furnished. If grounded line ringing is desired, connect Y option.
5. Maximum 20 lamps per line circuit.
6. Maximum 36 lamps per lead but not to exceed 50 lamps per pair.
7. Symbol (+/-) means do not strap adjacent terminals. Run leads to location indicated by legend.

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 (2278 KTU) | T
Grounded line ringing | V
Metallurgical line ringing (furnished on all line circuits) | X
Interrupted common audible signal using interrupter | Y
Steady common audible signal | Z

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)
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. 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 2)
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 518-310-40I.
3. ALL LINE CIRCUITS SHOWN ARE FURNISHED WITH METALLIC LINE RINGING, 2 OPTION. IF GROUNDED LINE RINGING IS DESIRED, CONNECT 3 OPTION.
4. MAX 20 LAMPS PER LINE CTK.
5. SYMBOL (½) MEANS DO NOT STRAP ADJACENT TERMINALS. RUN LEADS TO LOCATION INDICATED BY LEGEND.

OPTIONS

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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)
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)
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)
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
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

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 18 V 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. 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

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NOTES:
1. FOR 204A AND 205A KTU ONLY.
2. FOR 204A KTU ONLY.
3. FOR 203A AND 205A 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.
6. ON 232A KTU, ST AND TO BATTERY CONNECTIONS TERMINATE ON TERMINAL 39. ON 232B KTU, TERMINAL 39 MAY BE USED TO TERMINATE THE AUDIBLE SIGNAL SUPPLY GROUND AND B OR BI LEADS. ON 232C KTU, THE FACTORY-PROVIDED STRAP BETWEEN TERMINAL 39 AND TERMINAL 37 MUST BE REMOVED WHEN THE 232C KTU IS USED WITH SSIA EQUIPPED FOR PRIVACY.
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. 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 2)†
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)
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.

APPEARS MORE THAN ONE TIME ON THIS FIGURE.
† 400A DIODE, PRODUCE AND INSTALL LOCALLY.

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

Notes:
1. Symbol □ 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.