

6A KEY TELEPHONE SYSTEM

TWO-TALKING LINK

CONNECTIONS

1.00 INTRODUCTION

1.01 This section covers the installation of the two-talking link of the 6A key telephone system. It contains wiring charts showing connections necessary to obtain the features desired.

1.02 This section has been reissued to bring the connection data up to date.

1.03 Due to extensive changes marginal arrows have been omitted.

1.04 The 227A key telephone units used in this system have been identified for clarity as follows:

- 227A-1 - Ringing and Tone Control Circuit
- 227A-2 - Single Add-On Transfer Circuit
- 227A-3 - Auxiliary Relay Busy Lamp Circuit
- 227A-4 - Auxiliary Relay Lamp Flash Circuit
- 227A-5 - Auxiliary Relay Station Circuit (Mfr Disc.).

Each of the above circuits utilizes the MS relay of the 227A KTU.

1.05 The visual and audible signal circuit referred to in this practice is the electromechanical flash, wink, ring, and time-out circuit (232-type KTU).

1.06 The installation of apparatus, key telephone units, keys, station sets, and other items common to general station work is covered in the C Section pertaining directly to each item.

1.07 A careful review of the immediate needs of the customer, together with a consideration of his future rearrangements

and requirements, will be beneficial in determining the method of installation. Since each of these installations will vary to a degree because of individual requirements, a fixed schematic layout is not included in this section. Each installation should be arranged in a manner that will permit maximum flexibility under the particular circumstances.

2.00 WIRING AND CABLING

Inside wire and cable are used to install a 6A key telephone system. Information relative to placing wire and cable is contained in other C Sections and will not be covered in this section.

3.00 APPARATUS

Refer to C Section covering identification of the 6A key telephone system for the dimensions of each KTU and for the features each provides.



Handling of key telephone units sometimes results in damage to wire-spring relays. After mounting, visually inspect all wire-spring relays for the following:

- Improper position of contact springs
- Broken actuating cards
- Improper position of actuating cards.

4.00 POWER SUPPLY

4.01 The 6A key telephone system is designed to operate from a 20- to 26-volt dc source. Since associated installations of other key equipments or key systems operate at a somewhat lower value, 14 to 26 volts, it may be necessary to replace the existing power supply or use an independent supply for the 6A system equipment.

4.02 The J86471A, List 1 (101J) power plant has a capacity large enough to be used as a common power plant for combined station systems. When it is used with 6A systems, the leads from the dc unit should be connected to the 24-volt taps on the ac unit. Fuse as follows:

DC Unit

- One 2-amp fuse for battery designated A.
- One 2-amp fuse for battery designated B.

AC Unit

- One 2-amp fuse on 10-volt ac tap for maximum of thirty-six 51A lamps.
- One 2-amp fuse on 18-volt ac tap for maximum current drain of 1.6 amp for buzzers or bells.

If ringers are used, a separate power source supplying 105 volts 20 cycles must be provided.

4.03 The J86731A, List 4 (101G) power plant may be used for any size and arrangement of the 6A key telephone system with the following limitations:

- No load other than the 6A is placed on the power plant.
- 20-volt talk terminals are used only for battery designated A.
- 20-volt signal terminals are used only for battery designated B.
- 18-volt ac terminals, audible and/or visual signals, current drain not to exceed 1.4 amp.
- 10-volt ac terminals operate a maximum of seventy-two 51A lamps, current drain not to exceed 2.8 amp.



When both the 10-volt ac and 18-volt ac taps are used on the power plant, the maximum joint current drain shall not exceed 1.4 amp.

- 105-volt ± terminals operate simultaneously one to eight high-impedance ringers without capacitors or one or

two high-impedance ringers with capacitors (one to three if 70 to 110 volts or one to five if 60 to 110 volts is permitted).

- If circuit failure occurs due to low line voltage, move the primary tap to 111 volts.

4.04 For power supply arrangements, refer to C Section covering station systems power supply.

5.00 FUSING

5.01 When central office, building, or local battery is supplied, fuse as follows:

- One 2-amp fuse for talking battery designated A.
- One 2-amp fuse for signaling battery designated B.
- One 2-amp fuse per maximum of 36 signal lamps.
- One 2-amp fuse for dc audible signal supply.

6.00 CONNECTIONS

6.01 The connection charts serve as a guide in connecting the 6A equipment units to provide the desired features.

6.02 Certain features can be obtained by strapping between individual key units. Other features require such leads as T, R, L, LG, S, S1, A, and A1, normally associated with station apparatus. For ease of wiring both at the time of original installation and at the time of future additions or rearrangements, it is suggested that such leads be brought out and terminated at a common cross-connecting point.

6.03 The following information on the use of the connection charts should be helpful:

- Determine from the service order and work sheet the features required by the customer.
- Consult 7.01 and 7.02 for wiring options needed to obtain the desired features.

- Determine the key telephone units needed by consulting the C Section covering identification of 6A key telephone system.

7.00 WIRING OPTIONS

7.01 Options Associated with System

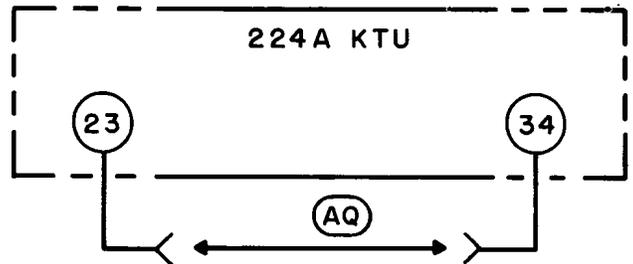
Wiring	Option	
X	Without (max 9 codes)	Transfer Circuit
W	With (over 9 codes)	
K	With	Preset Conference
J	Without	
G	With	Camp-On
N	Without	
H	Without	Aux Rel Busy Lamp Ckt (Note 1)
M	With	
S	Without	Aux Rel Lamp Flash Ckt (Note 2)
V	With	
AK	Interrupted	Audible Signal
AL	Single Spurt	
AJ	Dial, Busy, and Audible Tone (Note 3)	
AQ	Busy Signal and Camp-On Control Ckt When Used with a 207B KTU (Note 4)	

Note 1: Provide M option when system is over 40 busy lamps.

Note 2: Provide V option when system is over 20 simultaneous flashing line lamps.

Note 3: A 207C KTU is required when dial tone is furnished.

Note 4: AQ option is not shown in Fig. 11 of SD-69286-01, Issue 5, but will be shown on subsequent issues as follows:



7.02 Options Associated with Stations

Wiring	Option	
E	With	Automatic Cutoff (Note 1)
F	Without	
Y	Over <u>T</u> & <u>R</u> Leads	
Z	Over Sep Sig Pair	
AA	Sta Assoc with Com Aud Arr	
AB	Sta to Originate Add-On Conf (Mfr Disc.)	
Q	With	Aux Rel Sta Ckt (Mfr Disc.) (Note 2)
AG	Without	
AG	Without	Add-On Transfer Ckt (Note 3)
AO	With	
AE	Local Sta or Off-Prem Sta When <u>AK</u> Opt is Provided	
AF	Off-Prem Sta When <u>AL</u> Opt is Provided	
		Sig Key Selection of Station

Note 1: A station wired for F option cannot camp on the system.

Note 2: Provide Q option when a station that originates add-on conferencing (AB option) is also associated with Z or AA option.

Note 3: Provide AO option for each station that originates the add-on conference circuit.

8.00 INDEX OF FIGURES

Fig. 1 - Wiring of Basic Units (207B or C, 216A, 222A, 224A, and a 19B KTU if provided)

Fig. 2 - Addition of Three Station Line Circuits (223A KTU)

Fig. 3 - Addition of Long Line Circuit (225A KTU)

Fig. 4 - Addition of Preset Conference Circuit (217A KTU)

Fig. 5 - Addition of Camp-On Control Circuit (Additional Wiring on 224A KTU)

Fig. 6 - Addition of Add-On Conference Circuit (226A or B with 227A-2 or 229A KTU)

Fig. 7 - Addition of Add-On Conference Circuit (Mfr Disc.) (226A with or without 227A-5 KTU)

Fig. 8 - Addition of Dial Tone and Interrupted Ringing (227A-1 KTU)

Fig. 9 - Addition of Dial Tone and Interrupted Ringing (Mfr Disc.) (227A-1 KTU)

Fig. 10 - Addition of Auxiliary Relay Busy Lamp Circuit (227A-3 KTU)

Fig. 11 - Addition of Auxiliary Relay Lamp Flash Circuit (227A-4 KTU)

Reference: SD-69286-01.

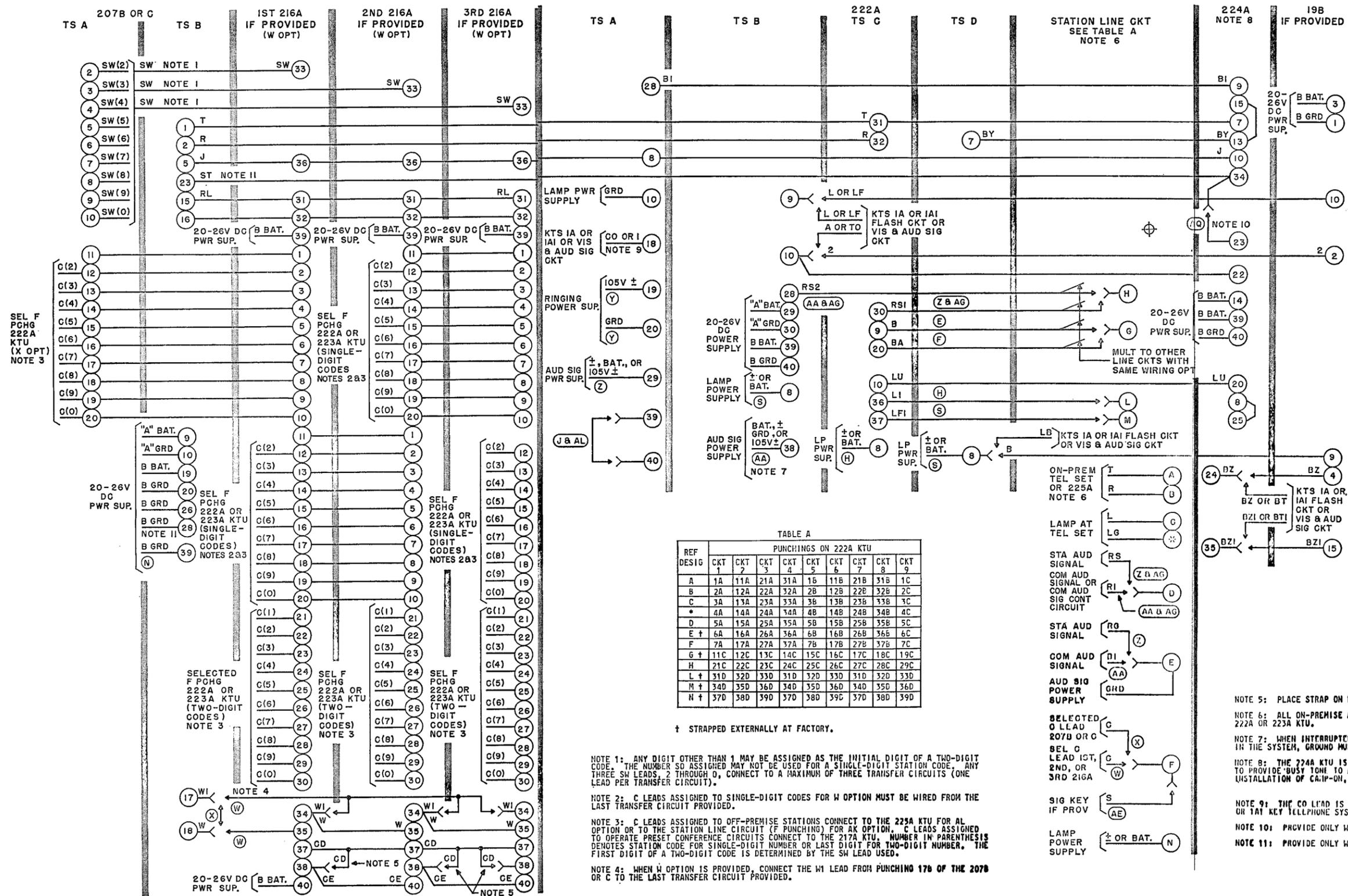
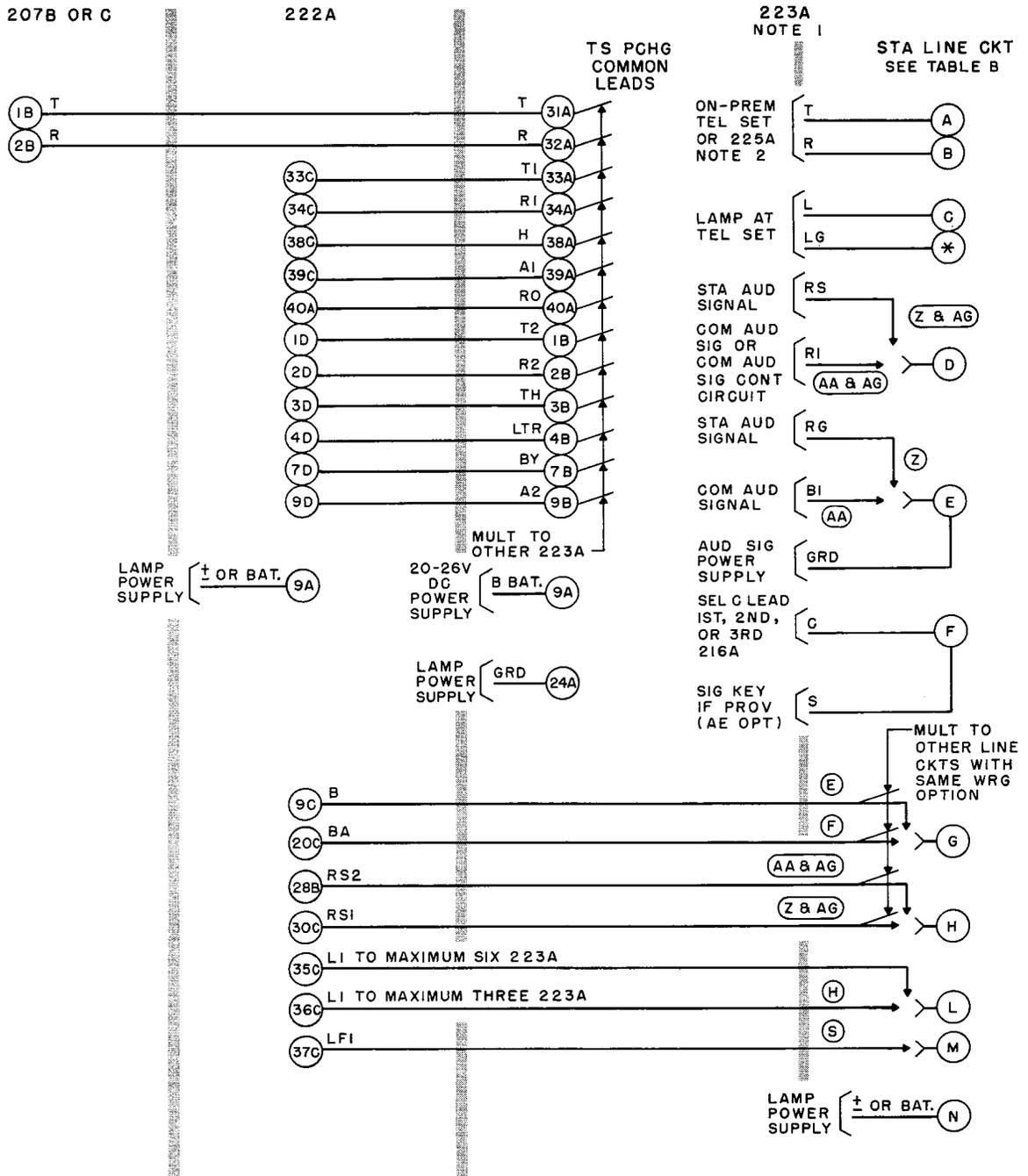


Fig. 1 - Wiring of Basic Units



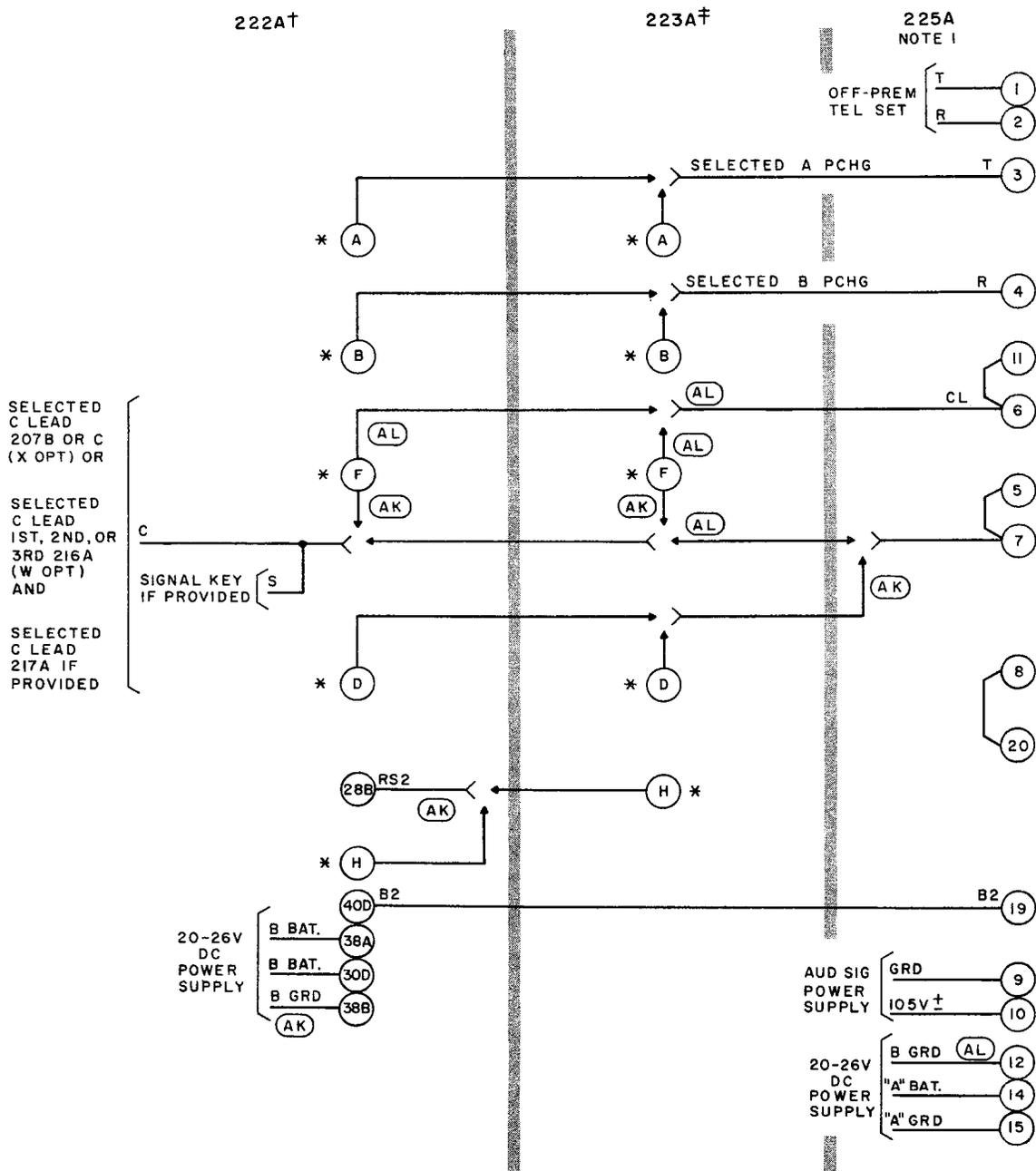
NOTE 1: PROVIDE ONE 223A KTY FOR EACH THREE STATIONS OVER NINE ON THE SYSTEM.

NOTE 2: ALL ON-PREMISE AND OFF-PREMISE STATIONS MUST BE ASSIGNED A STATION LINE CIRCUIT.

TABLE B

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
A	1A	11A	21A
B	2A	12A	22A
C	3A	13A	23A
*	4A	14A	24A
D	5A	15A	25A
E	6A	16A	26A
F	7A	17A	27A
G	18A	19A	20A
H	28A	29A	30A
L	35A		
M	37A		
N	8B		

Fig. 2 - Addition of Three Station Line Circuits



† TABLE C

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
A	1A	11A	21A	31A	1B	11B	21B	31B	1C
B	2A	12A	22A	32A	2B	12B	22B	32B	2C
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
F	7A	17A	27A	37A	7B	17B	27B	37B	7C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

* OF LINE CIRCUIT INVOLVED

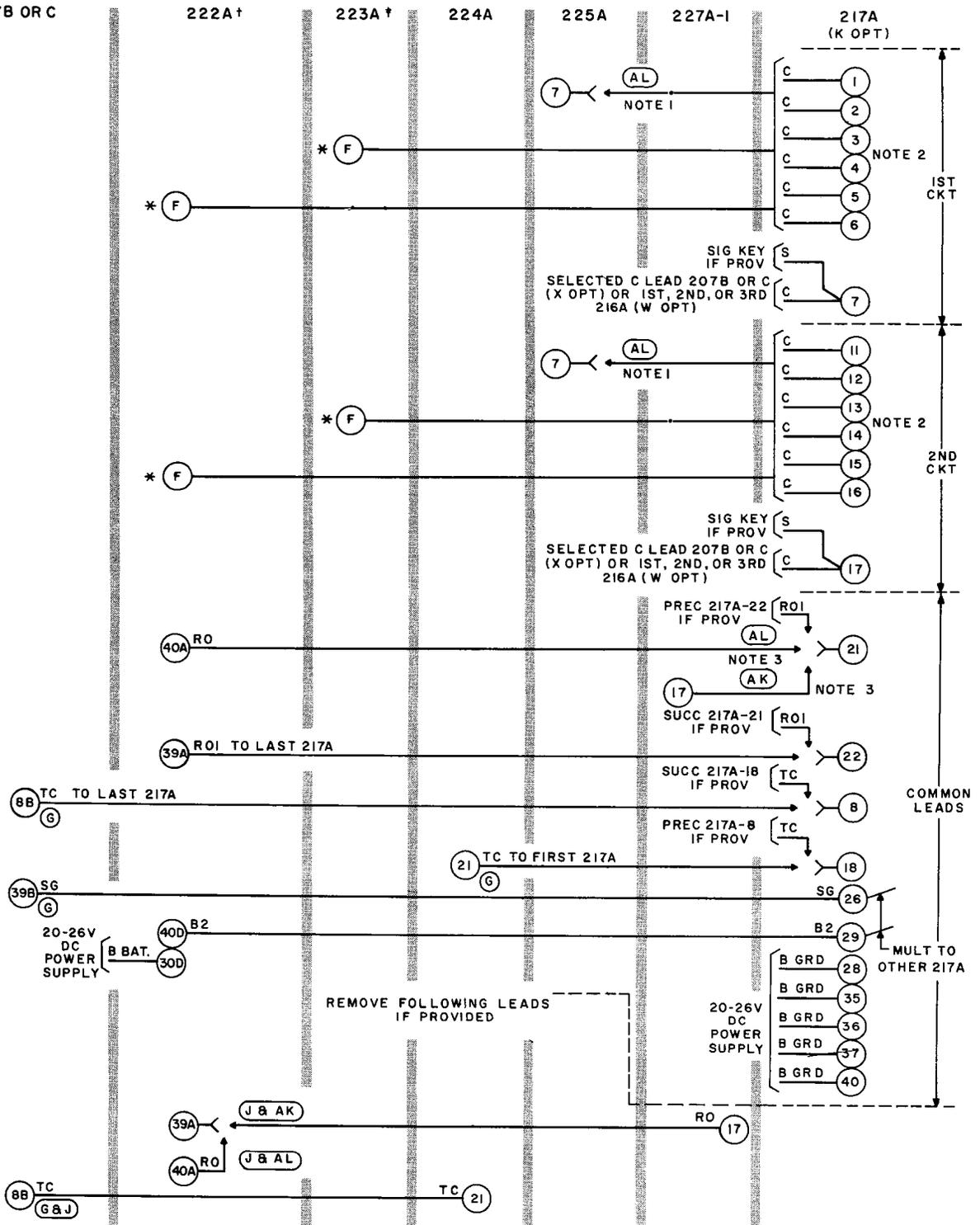
† TABLE D

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
A	1A	11A	21A
B	2A	12A	22A
D	5A	15A	25A
F	7A	17A	27A
H	28A	29A	30A

* OF LINE CIRCUIT INVOLVED

NOTE: EACH OFF-PREMISE STATION MUST BE ASSIGNED A STATION CIRCUIT ON THE 222A OR 223A KTU.

207B OR C



† TABLE E

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
F	7A	17A	27A	37A	7B	17B	27B	37B	7C

† TABLE F

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
F	7A	17A	27A

* OF LINE CIRCUIT INVOLVED

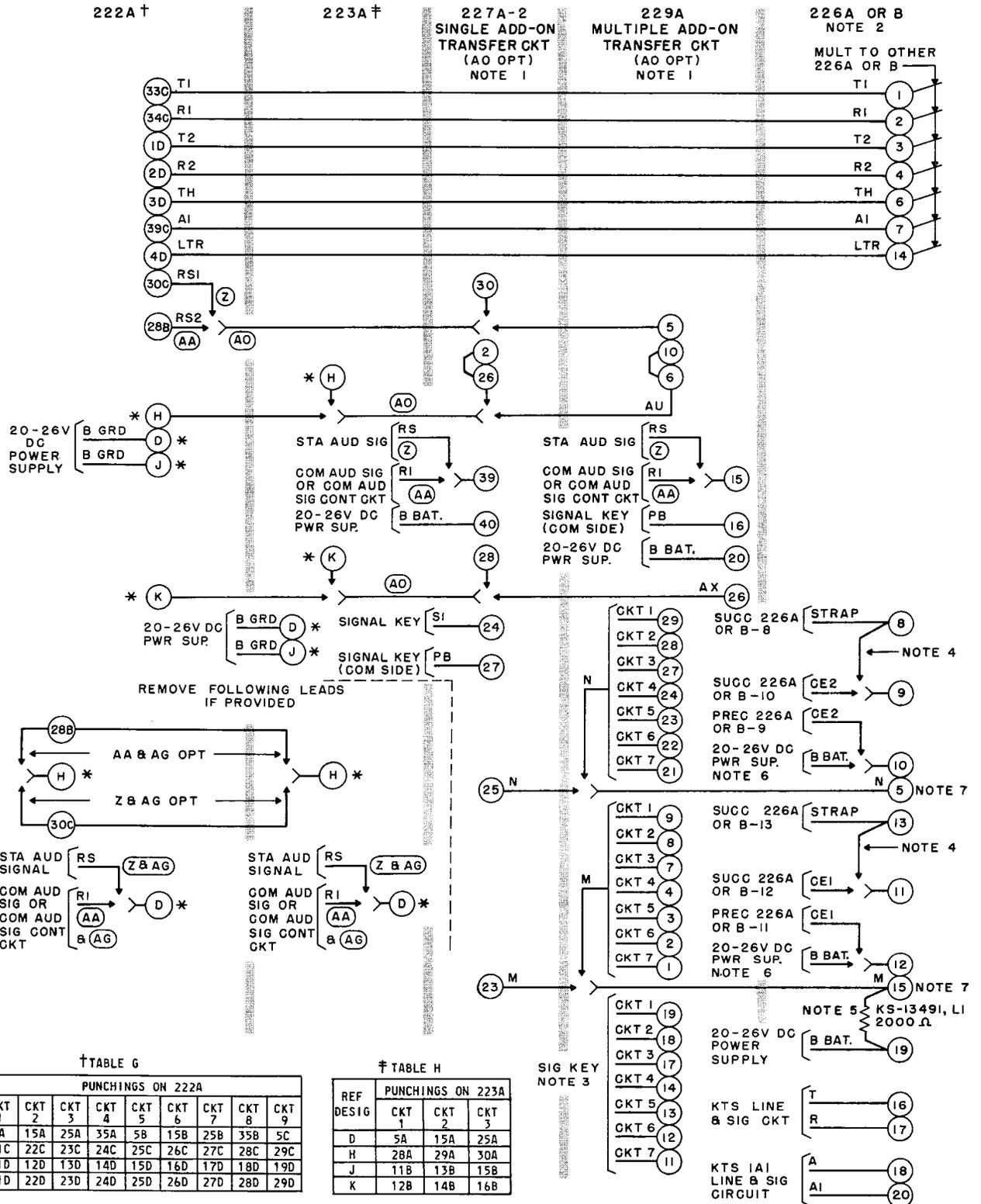
* OF LINE CIRCUIT INVOLVED

NOTE 1: WHEN AK OPTION (INTERRUPTED AUDIBLE SIGNAL) IS FURNISHED, THE C LEAD FOR THE OFF-PREMISE STATION CONNECTS TO THE F PUNCHING OF THE STATION LINE CIRCUIT ASSIGNED TO IT ON THE 222A OR 223A KTU.

NOTE 2: TO MAXIMUM OF SIX STATION LINE OR LONG LINE CIRCUITS (ONE CIRCUIT PER C LEAD). A STATION MAY APPEAR ON MORE THAN ONE CONFERENCE CIRCUIT.

NOTE 3: PROVIDE STRAP TO FIRST 217A ONLY.

Fig. 4 - Addition of Preset Conference Circuit



† TABLE G

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C
J	11D	12D	13D	14D	15D	16D	17D	18D	19D
K	21D	22D	23D	24D	25D	26D	27D	28D	29D

† TABLE H

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
D	5A	15A	25A
H	28A	29A	30A
J	11B	13B	15B
K	12B	14B	16B

SIG KEY NOTE 3

* LINE CIRCUIT ORIGINATING CONFERENCE

* LINE CIRCUIT ORIGINATING CONFERENCE

NOTE 1: AN ADD-ON TRANSFER CIRCUIT IS REQUIRED AT A STATION ORIGINATING ADD-ON CONFERENCE. USE A 227A KTU FOR SINGLE-LINE ADD-ON OR A 229A KTU FOR MULTIPLE LINE ADD-ON.

NOTE 2: PROVIDE ONE 226A OR B FOR EACH CENTRAL OFFICE OR PBX LINE TO BE CONFERENCED.

NOTE 3: PROVIDE ONE NONLOCKING SIGNAL KEY FOR EACH ADD-ON CONFERENCE CIRCUIT.

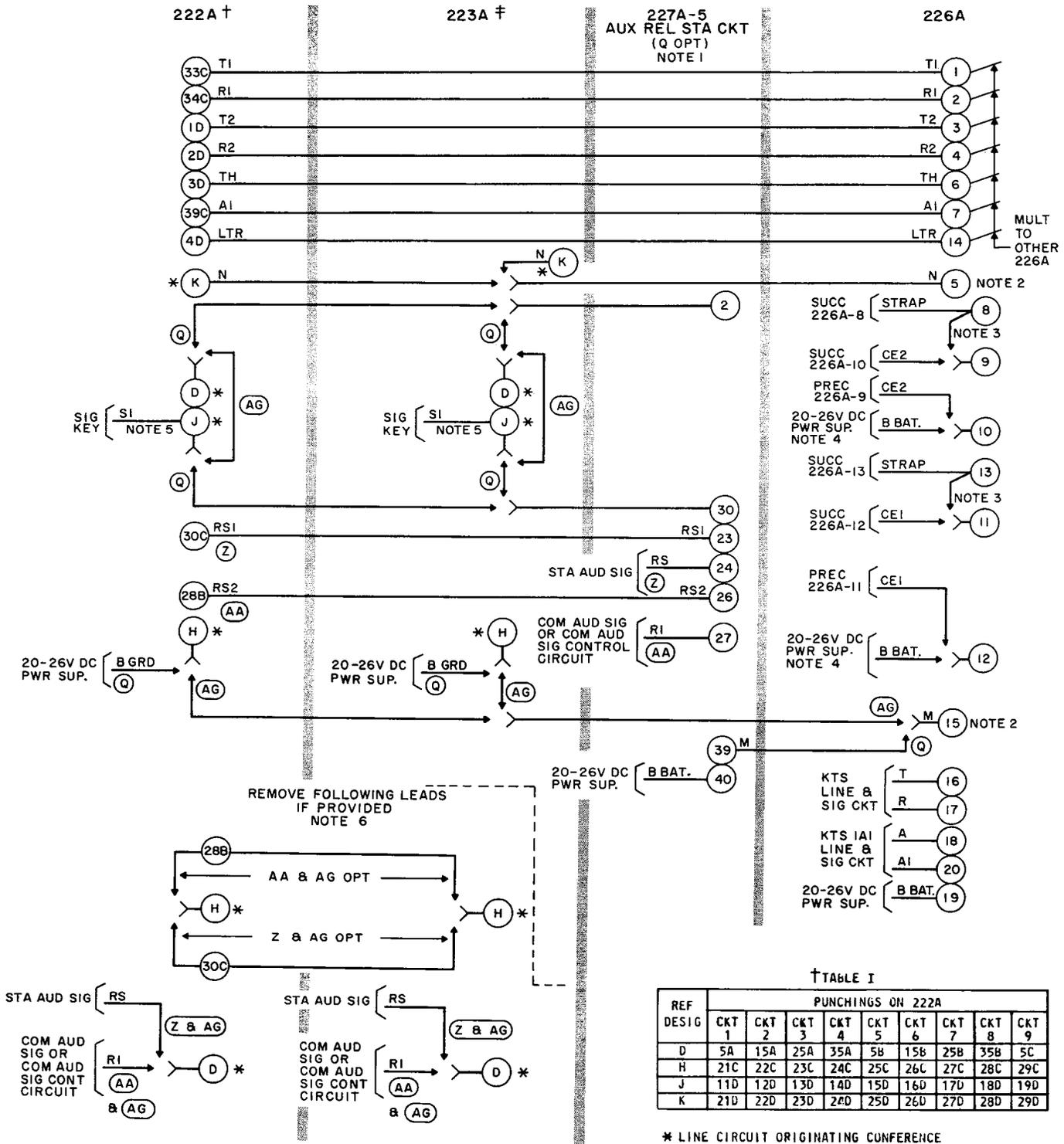
NOTE 4: PLACE STRAP ON LAST 226A OR B ONLY.

NOTE 5: RESISTOR REQUIRED ON 226A ONLY. ORDER AND PLACE LOCALLY.

NOTE 6: PLACE B BATTERY ON FIRST 226A OR B ONLY.

NOTE 7: MORE THAN ONE STATION CAN ORIGINATE THE SAME ADD-ON CONFERENCE CIRCUIT BY MULTIPLYING THE CONNECTIONS TO RESPECTIVE PUNCHINGS 5 AND 15 OF THE 226A OR B.

Fig. 6 - Addition of Add-On Conference Circuit



†TABLE I

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C
J	11D	12D	13D	14D	15D	16D	17D	18D	19D
K	21D	22D	23D	24D	25D	26D	27D	28D	29D

* LINE CIRCUIT ORIGINATING CONFERENCE

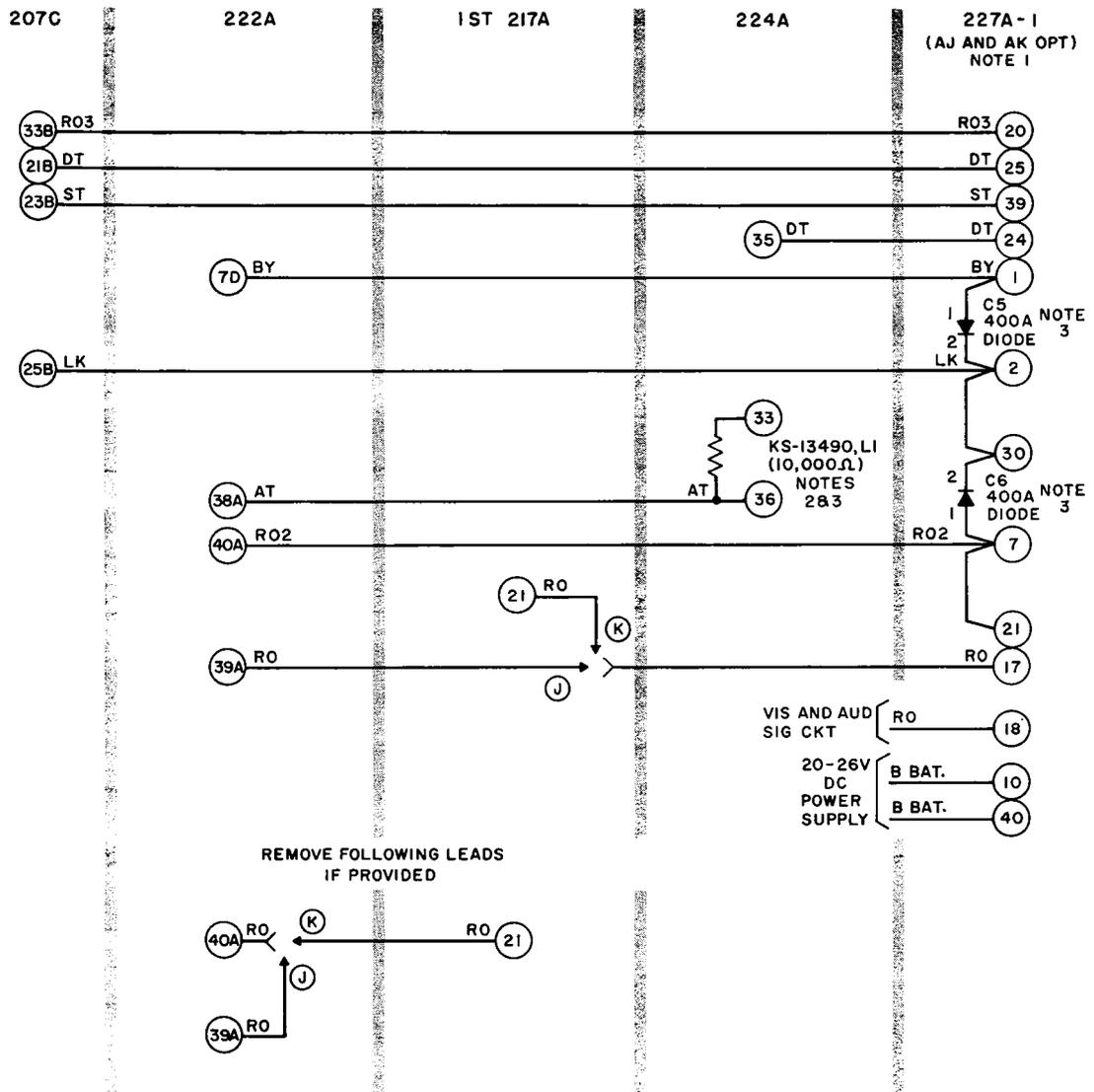
‡TABLE J

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
D	5A	15A	25A
H	28A	29A	30A
J	11B	12B	13B
K	12B	14B	16B

* LINE CIRCUIT ORIGINATING CONFERENCE

- NOTE 1: PROVIDE ONE AUXILIARY RELAY STATION CIRCUIT PER STATION THAT ORIGINATES AN ADD-ON CONFERENCE CIRCUIT AND IS ALSO ASSOCIATED WITH A COMMON AUDIBLE ARRANGEMENT (AA OPTION) OR IS SIGNALLED OVER A SEPARATE PAIR (Z OPTION).
- NOTE 2: MORE THAN ONE STATION CAN ORIGINATE THE SAME ADD-ON CONFERENCE CIRCUIT BY MULTIPLYING THE CONNECTIONS TO RESPECTIVE PUNCHINGS 5 AND 15 OF THE 226A.
- NOTE 3: PLACE STRAP ON LAST 226A ONLY.
- NOTE 4: PROVIDE B BATTERY ON FIRST 226A ONLY.
- NOTE 5: GROUND OTHER SIDE OF SIGNAL KEY TO ANY CONVENIENT B GROUND.
- NOTE 6: REMOVE LEADS ONLY AT STATIONS TO WHICH AN AUXILIARY RELAY STATION CIRCUIT IS ADDED.

Fig. 7 - Addition of Add-On Conference Circuit (Mfr Disc.)

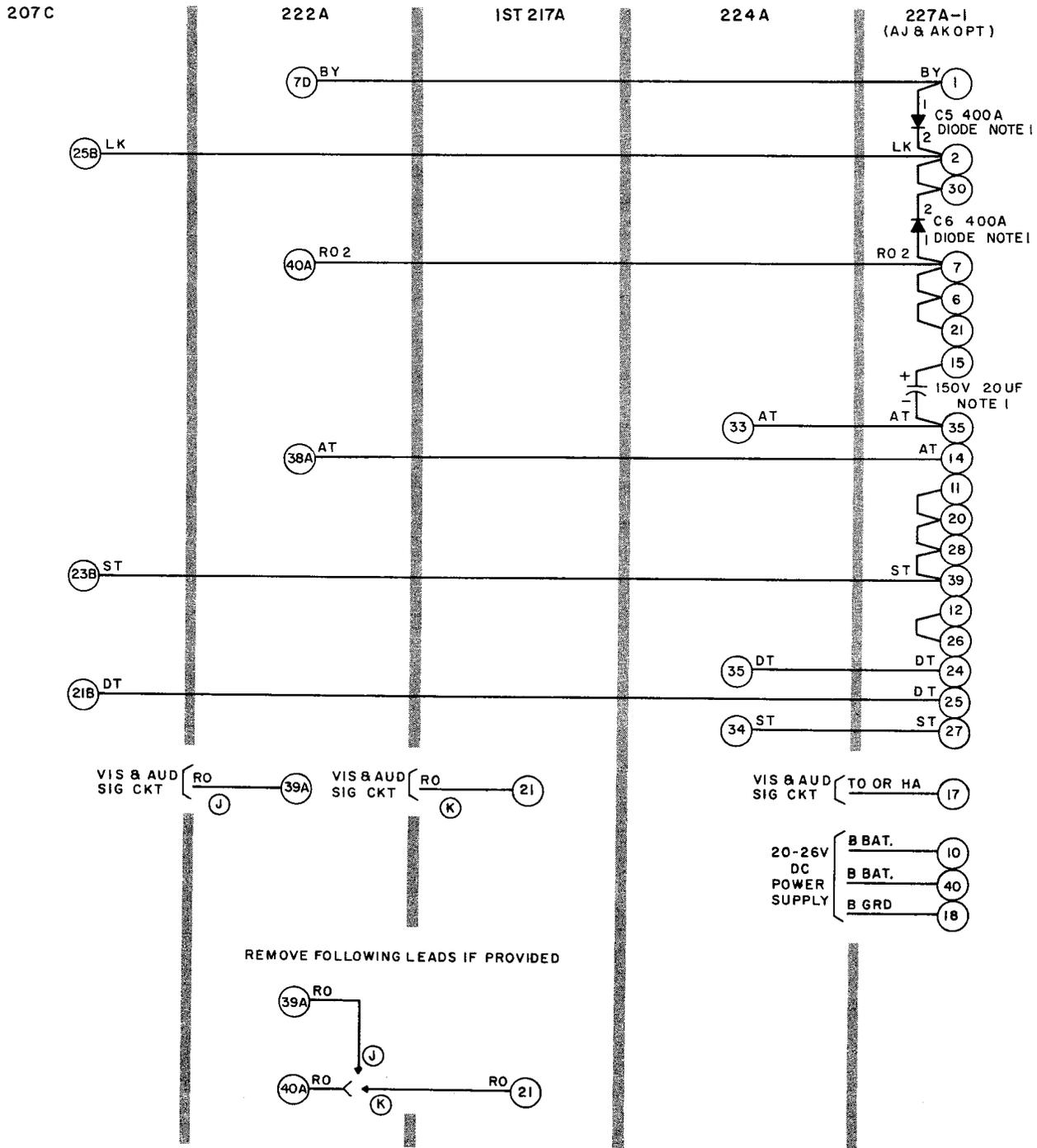


NOTE 1: WHEN INTERRUPTED RINGING (AK OPTION) IS ADDED TO AN EXISTING SYSTEM, CHANGES ARE REQUIRED ON LONG LINE CIRCUITS, IF PROVIDED. (SEE FIGURE ENTITLED ADDITION OF LONG LINE CIRCUIT.)

NOTE 2: RESISTOR LISTED AS KS-13690, L1 ON SD-69286-01, ISSUE 5D, SHOULD BE AS LISTED ABOVE.

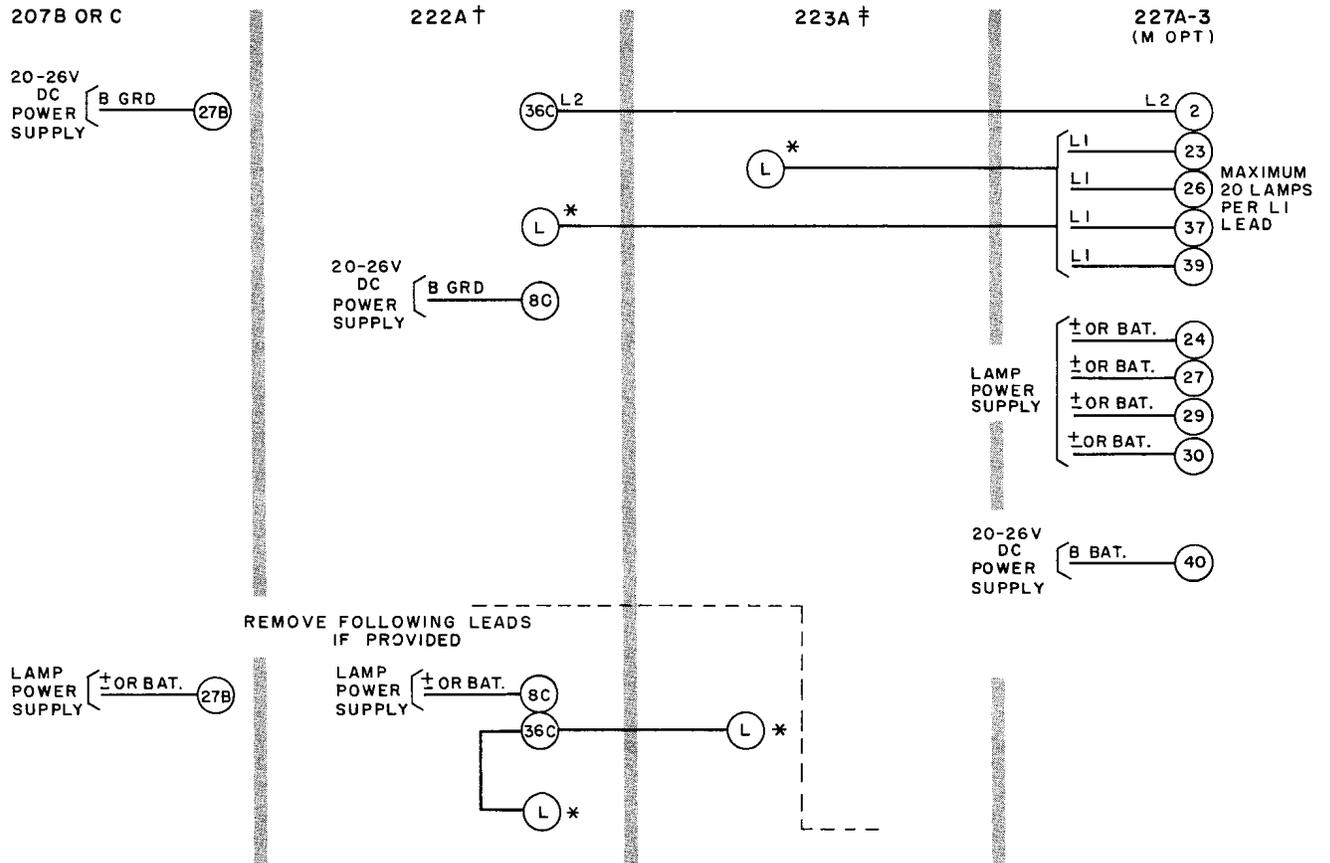
NOTE 3: ORDER AND PLACE LOCALLY.

Fig. 8 - Addition of Dial Tone and Interrupted Ringing



NOTE 1: ORDER AND PLACE LOCALLY.

Fig. 9 - Addition of Dial Tone and Interrupted Ringing (Mfr Disc.)



† TABLE K

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
L	31D	32D	33D	31D	32D	33D	31D	32D	33D

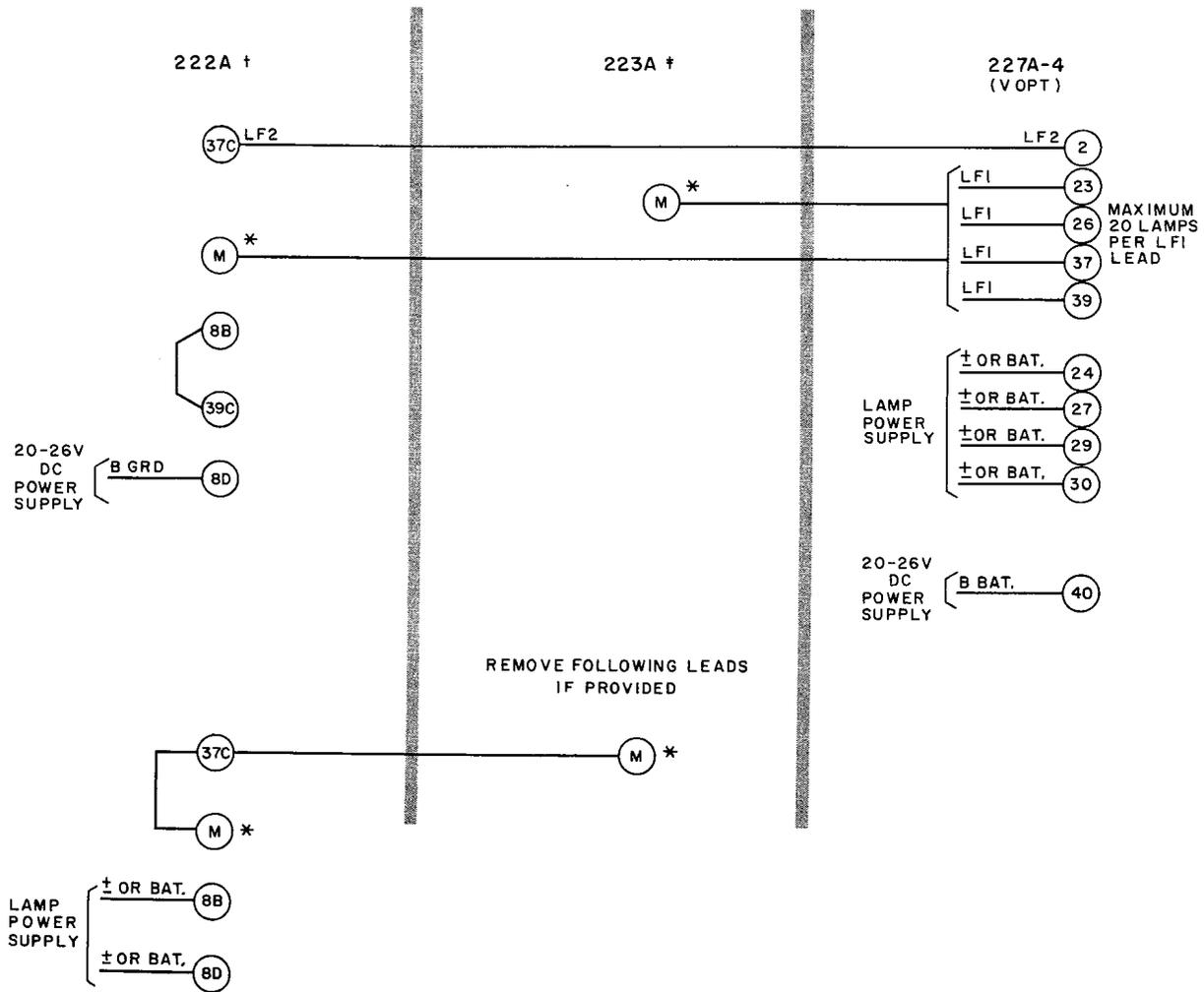
* OF LINE CIRCUIT INVOLVED

‡ TABLE L

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
L	35A		

* OF LINE CIRCUIT INVOLVED

Fig. 10 - Addition of Auxiliary Relay Busy Lamp Circuit



† TABLE M

REF DESIG	PUNCHINGS ON 222A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
M	34D	35D	36D	34D	35D	36D	34D	35D	36D

*OF LINE CIRCUIT INVOLVED

† TABLE N

REF DESIG	PUNCHINGS ON 223A		
	CKT 1	CKT 2	CKT 3
M	37A		

*OF LINE CIRCUIT INVOLVED

Fig. 11 - Addition of Auxiliary Relay Lamp Flash Circuit