

SP 69286
6A KEY TELEPHONE SYSTEM
SINGLE-TALKING LINK
CONNECTIONS

234A EC 211
TE 207C + 214B +
216A.

1.00 INTRODUCTION

- 1.01 This section covers the installation of the single-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 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.

- 1.04 The visual and audible signal circuit referred to in this practice is the electromechanical flash, wink, ring, and timeout circuit (232-type KTU).
- 1.05 The installation of apparatus, key telephone units, keys, station sets, and other items common to general station work are covered in the C Section pertaining directly to each item.
- 1.06 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 in-

cluded in this section. Each installation should be arranged in a manner that will permit maximum flexibility under the particular circumstances.

1.07 On SD-69286-01, Issue 5D, the 234A KTU is included. The 234A KTU is a single-link 6A unit furnishing the features obtained with a 207C, 214B, and a 216A KTU.

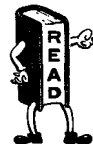
1.08 Due to extensive changes marginal arrows have been omitted.

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 the 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 the power plant is used with 6A systems, it is recommended that the leads from the dc unit connect 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, do not 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 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

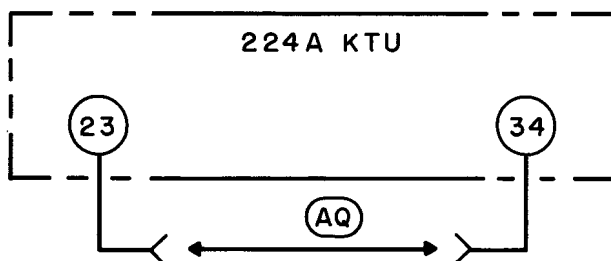
Wiring	Option	
X	Without (Max 9 Codes)	Transfer Ckt
W	With (Over 9 Codes)	
K	With	Preset Conference
J	Without	
G	With	Camp-On
N	Without	
H	Without	Aux Rel Busy Lamp Ckt (Note 1)
M	With	
S	Without	Aux Rel Lamp Flash Ckt (Note 2)
V	With	
AK	Interrupted	Audible Signal
AL	Single Spurt	
AJ	Dial, Busy, & Aud Tone (Note 3)	
AQ	Busy Signal & 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 or 234A 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 Cut-off (Note 1)
F	Without	
Y	Over <u>T</u> & <u>R</u> Leads	Sta Aud Sig
Z	Over Sep Sig Pair	
AA	Sta Assoc with Com Aud Arr	
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	Sig Key Selection of Station
AF	Off Prem Sta When <u>AL</u> Opt is Provided	
AB	Sta to Originate Add-On Conference (Mfr Disc.)	

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, 214B, 216A, 234A, and a 19B KTU if provided)

Fig. 2 - Addition of Three Station Line Circuits (215A 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 (224A KTU)

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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 KTU 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 Inter-

rupted 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

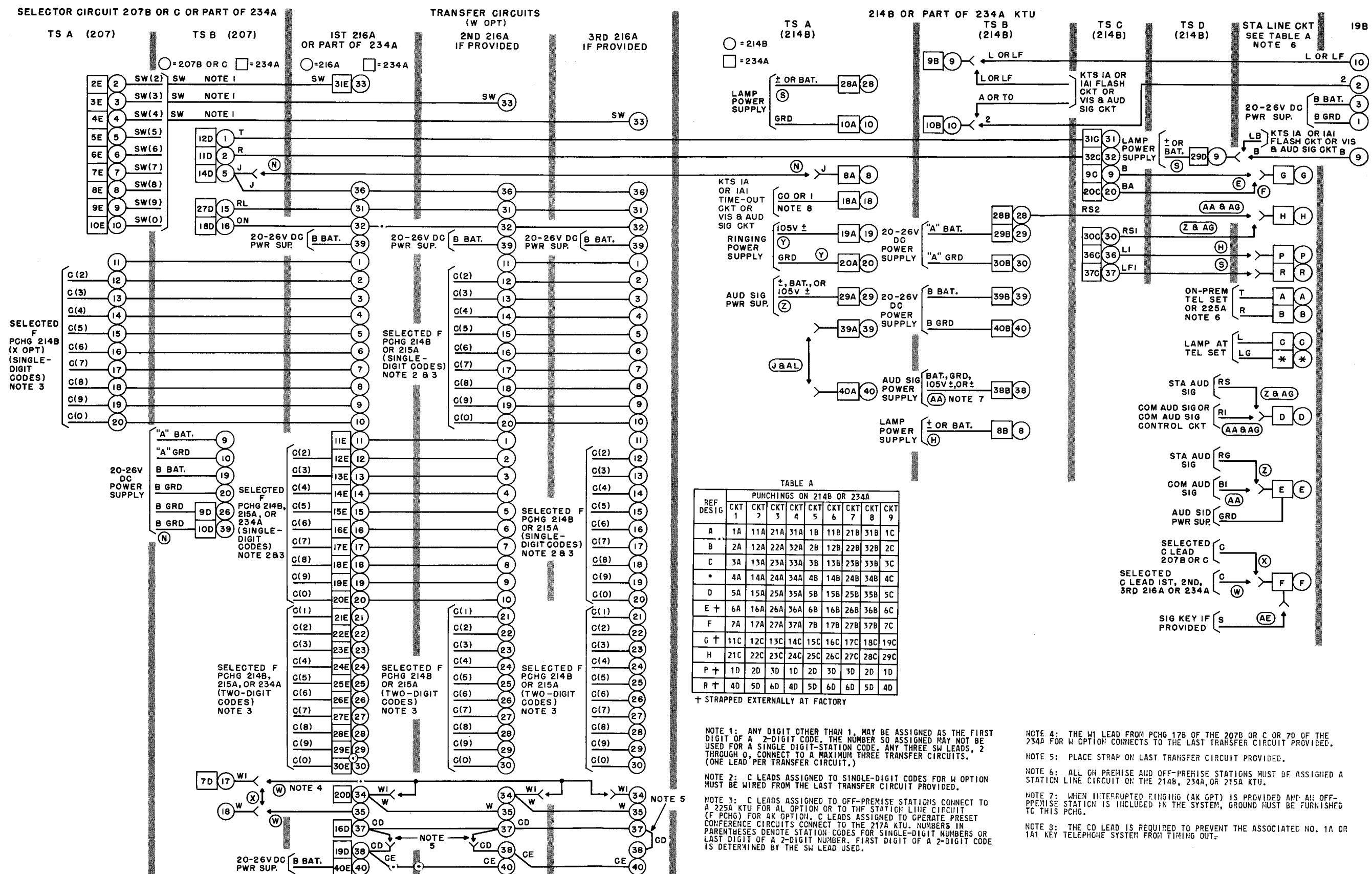


Fig. 1 - Wiring of Basic Units

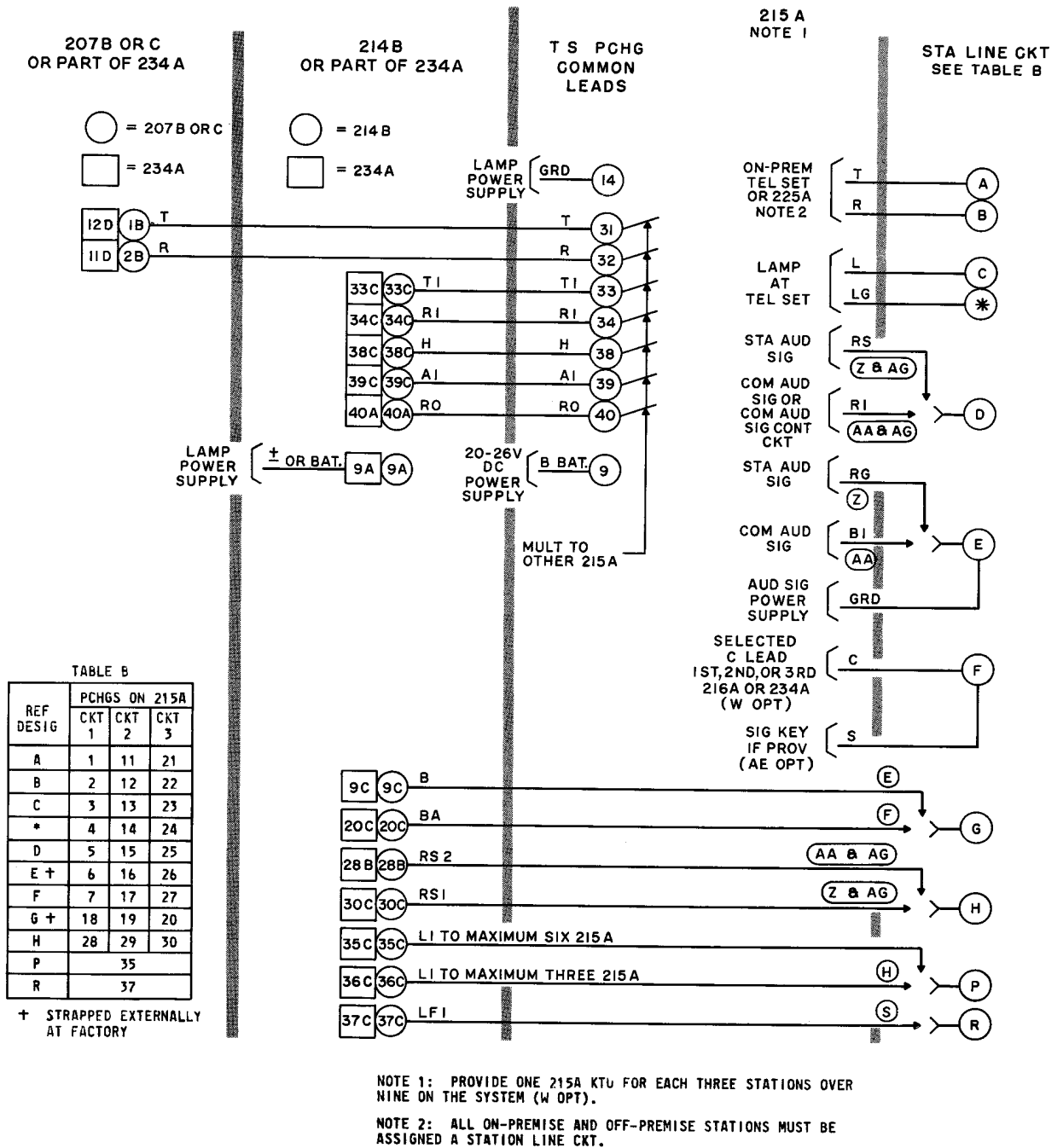
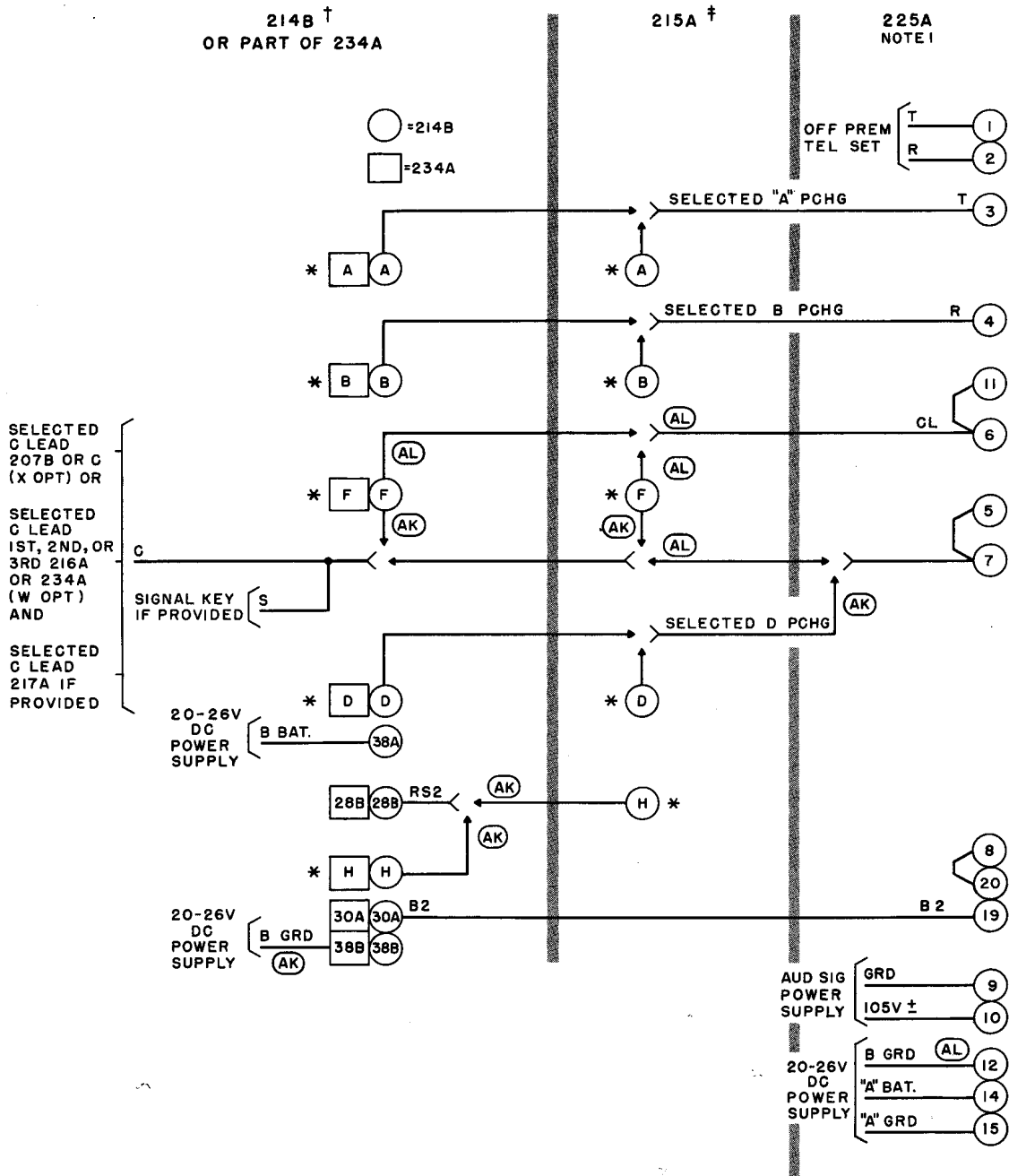


Fig. 2 - Addition of Three Station Line Circuits



† TABLE C

REF DESIG	PUNCHINGS ON 214B OR 234A								
	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

* LINE CKT INVOLVED

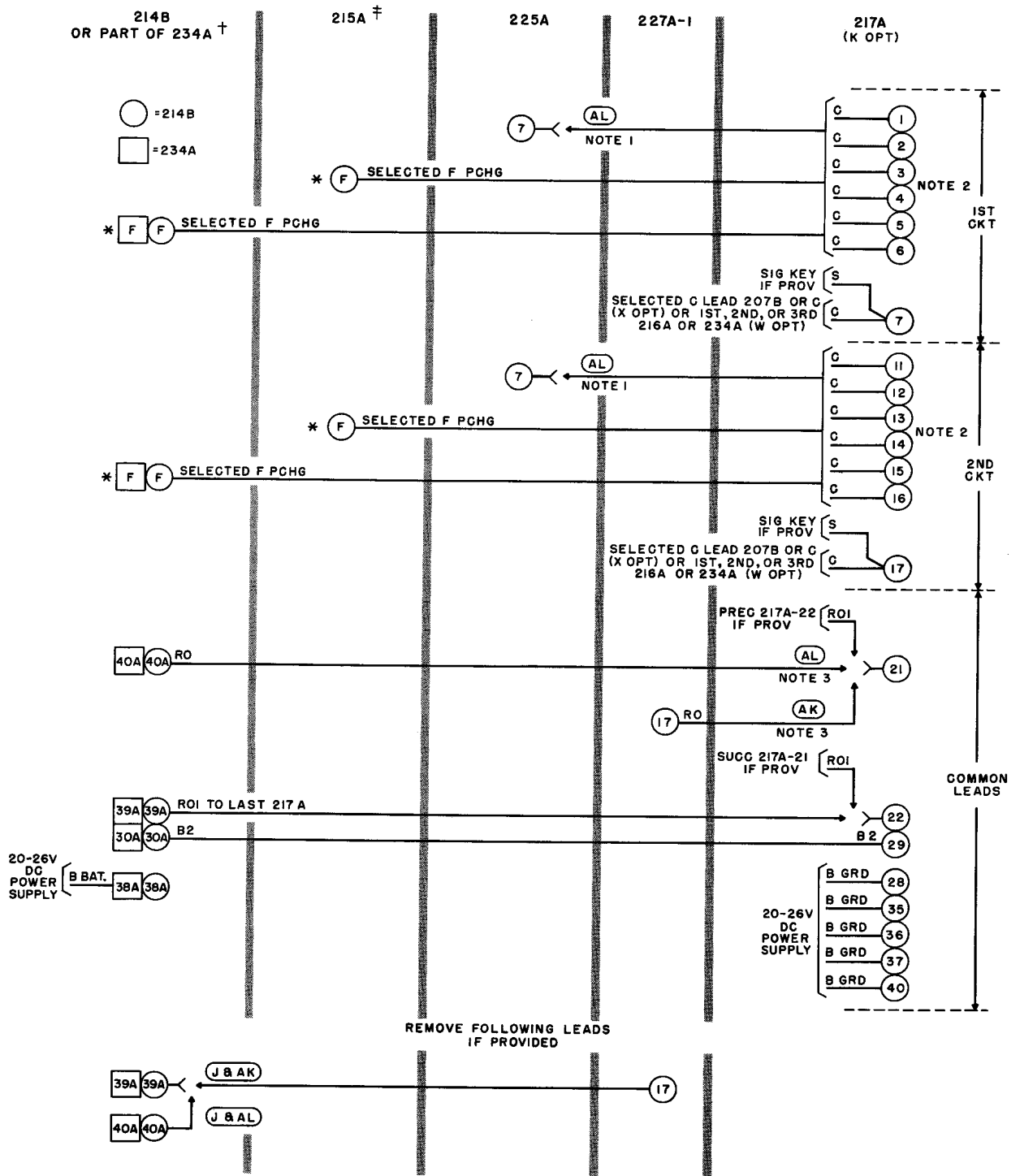
† TABLE D

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
D	5	15	25
F	7	17	27
H	28	29	30

* LINE CKT INVOLVED

NOTE 1: EACH OFF-PREMISE STATION MUST BE ASSIGNED A STATION LINE CKT ON THE 214B, 215A, OR 234A KTU.

Fig. 3 - Addition of Long Line Circuit



† TABLE E

REF DESIG	PUNCHINGS ON 214B OR 234A								
	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	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
F	7	17	27

* LINE CKT INVOLVED

* LINE CKT INVOLVED

NOTE 1: WHEN AK OPT (INTERRUPTED AUD SIG) 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 214B, 215A, OR 234A.

NOTE 2: TO MAXIMUM 6-STATION LINE OR LONG LING 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

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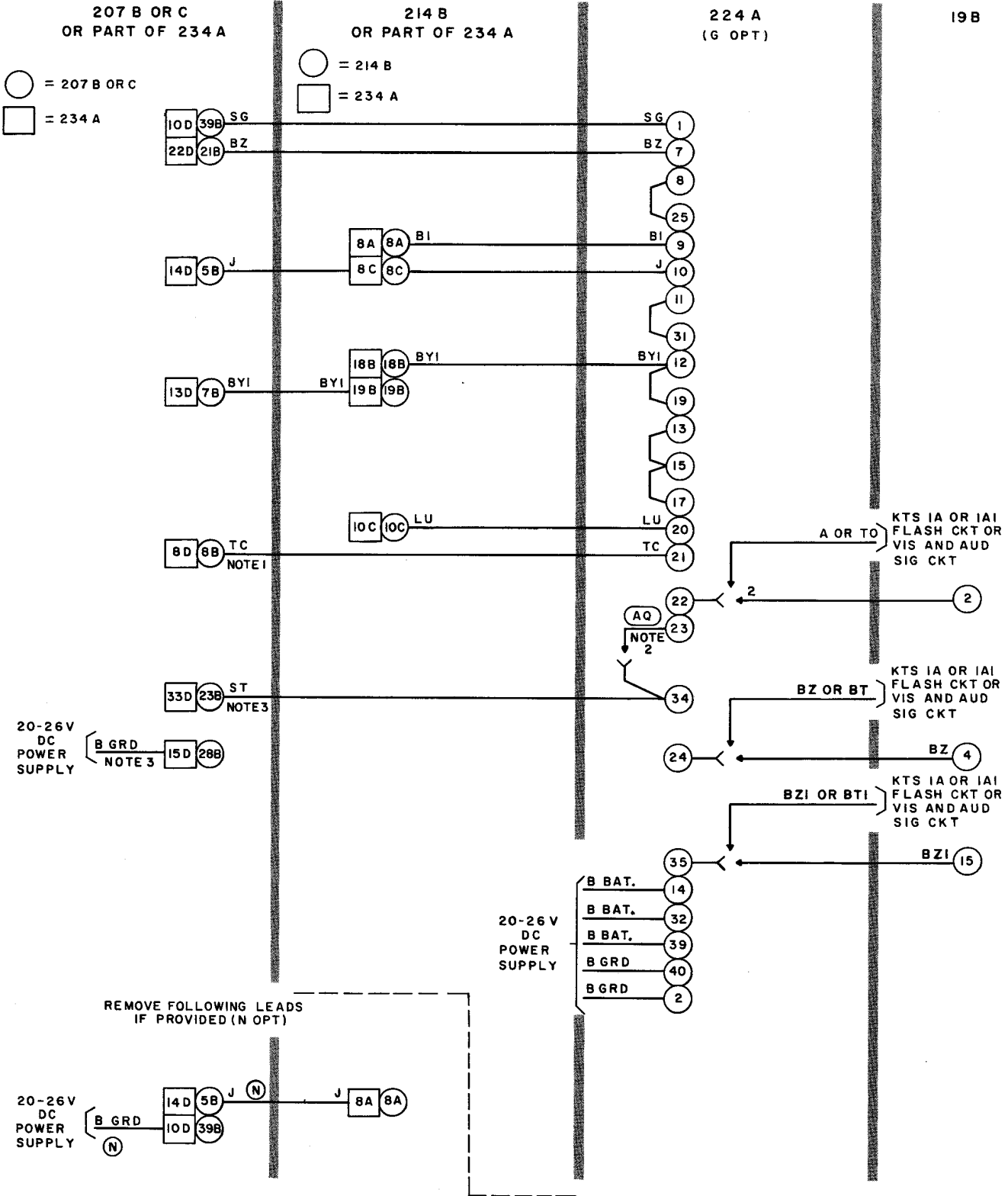
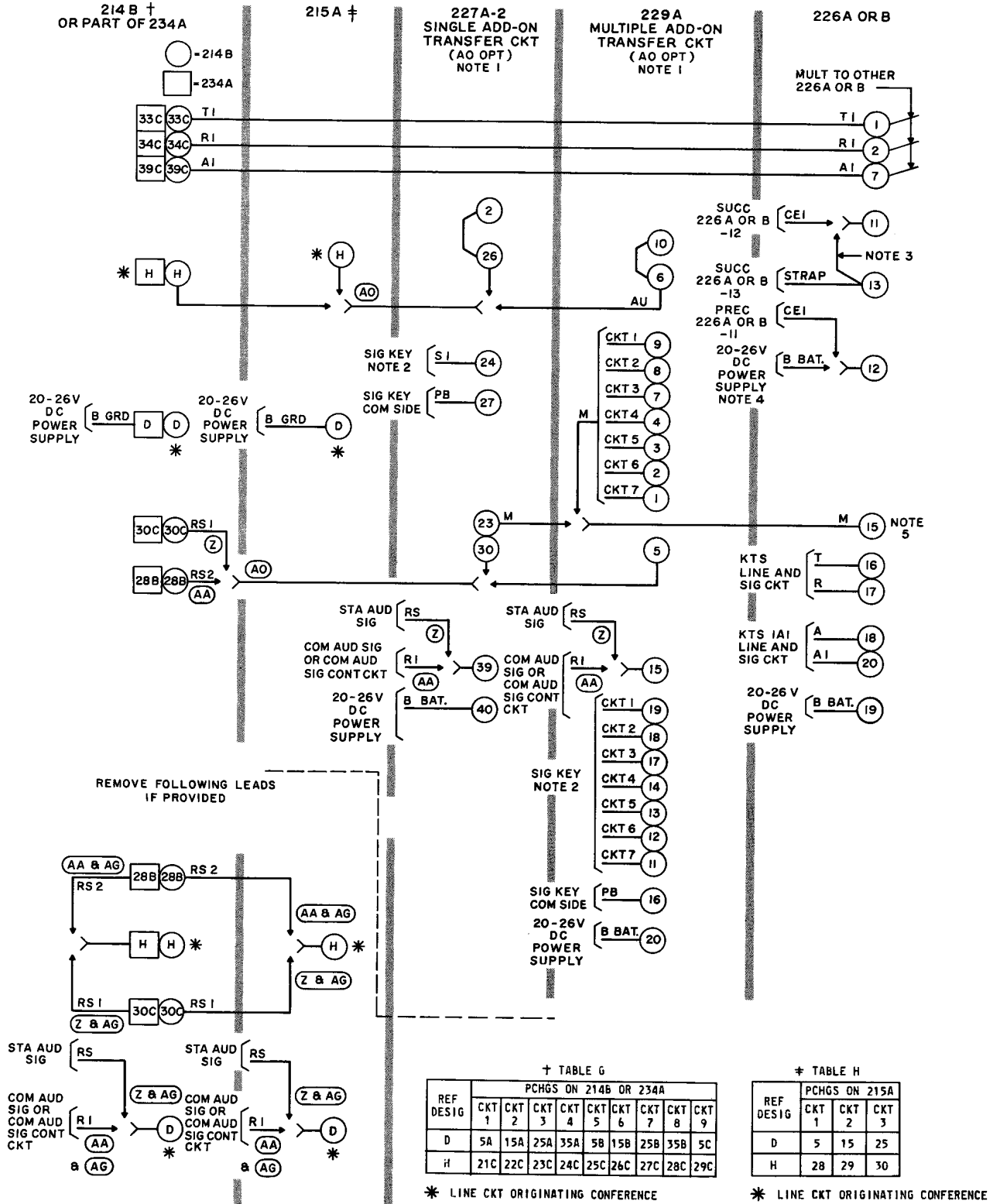


Fig. 5 - Addition of Camp-On Control Circuit



NOTE 1: AN ADD-ON TRANSFER CKT 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.

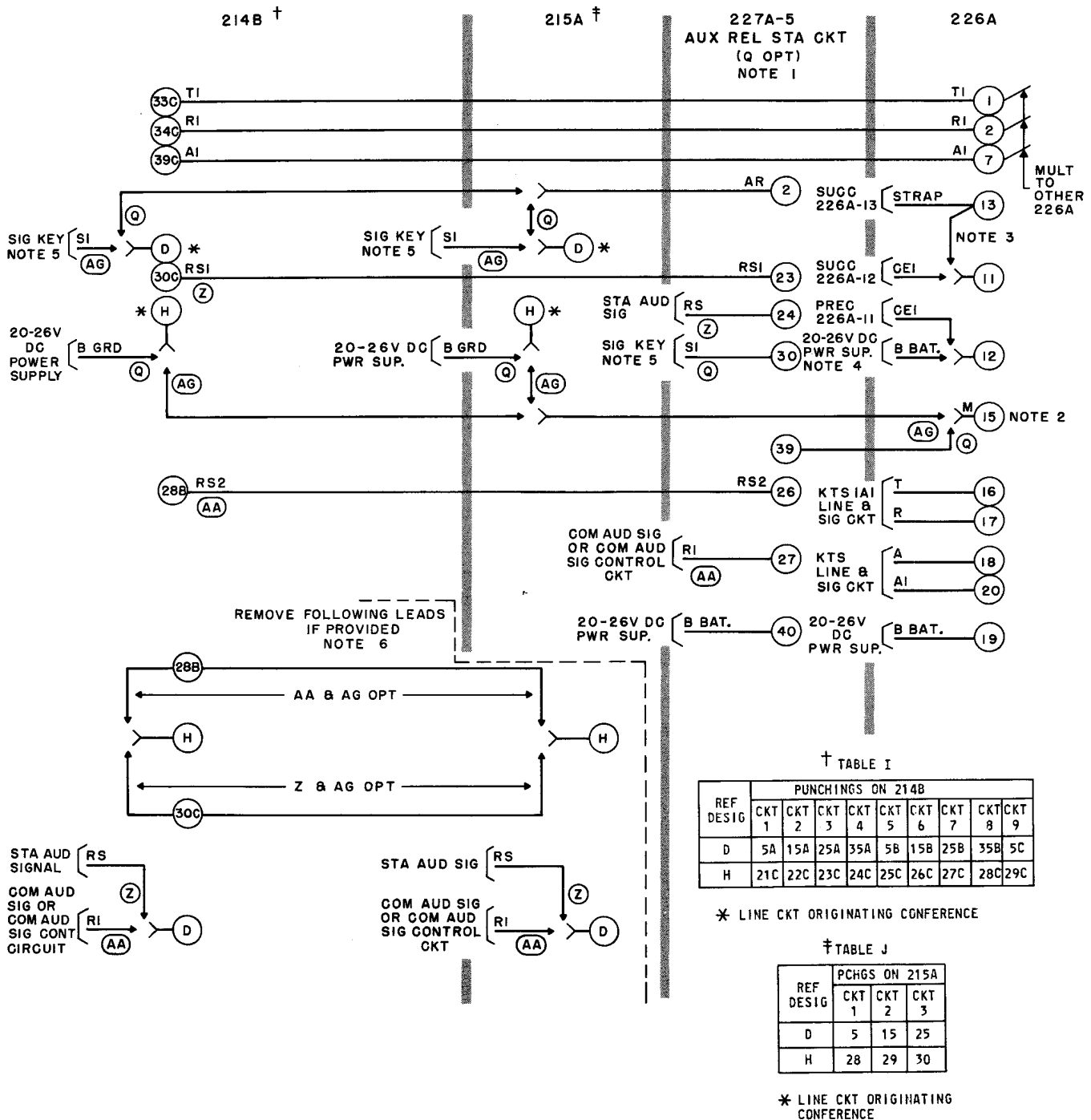
NOTE 2: PROVIDE ONE NONLOCKING SIGNAL KEY FOR EACH ADD-ON CONFERENCE CKT.

NOTE 3: PLACE STRAP ON LAST 226A OR B ONLY.

NOTE 4: PLACE B BAT. ON FIRST 226A OR B ONLY.

NOTE 5: MORE THAN ONE STA CAN ORIGINATE THE SAME ADD-ON CONFERENCE CKT BY MULTIPLYING THE CONNECTIONS TO PCHG 15 OF THE 226A OR B.

Fig. 6 - Addition of Add-On Conference Circuit



NOTE 1: PROVIDE AN AUX REL STA CKT PER STATION THAT ORIGINATES AN ADD-ON CONFERENCE CKT AND IS ALSO ASSOCIATED WITH A COM AUD ARRANGEMENT (AA OPT) OR IS SIGNALLED OVER A SEPARATE PAIR (Z OPT).

NOTE 2: MORE THAN ONE STATION CAN ORIGINATE THE SAME ADD-ON CONFERENCE CKT BY MULTIPLYING THE CONNECTIONS TO PCHG 15 OF THE 226A.

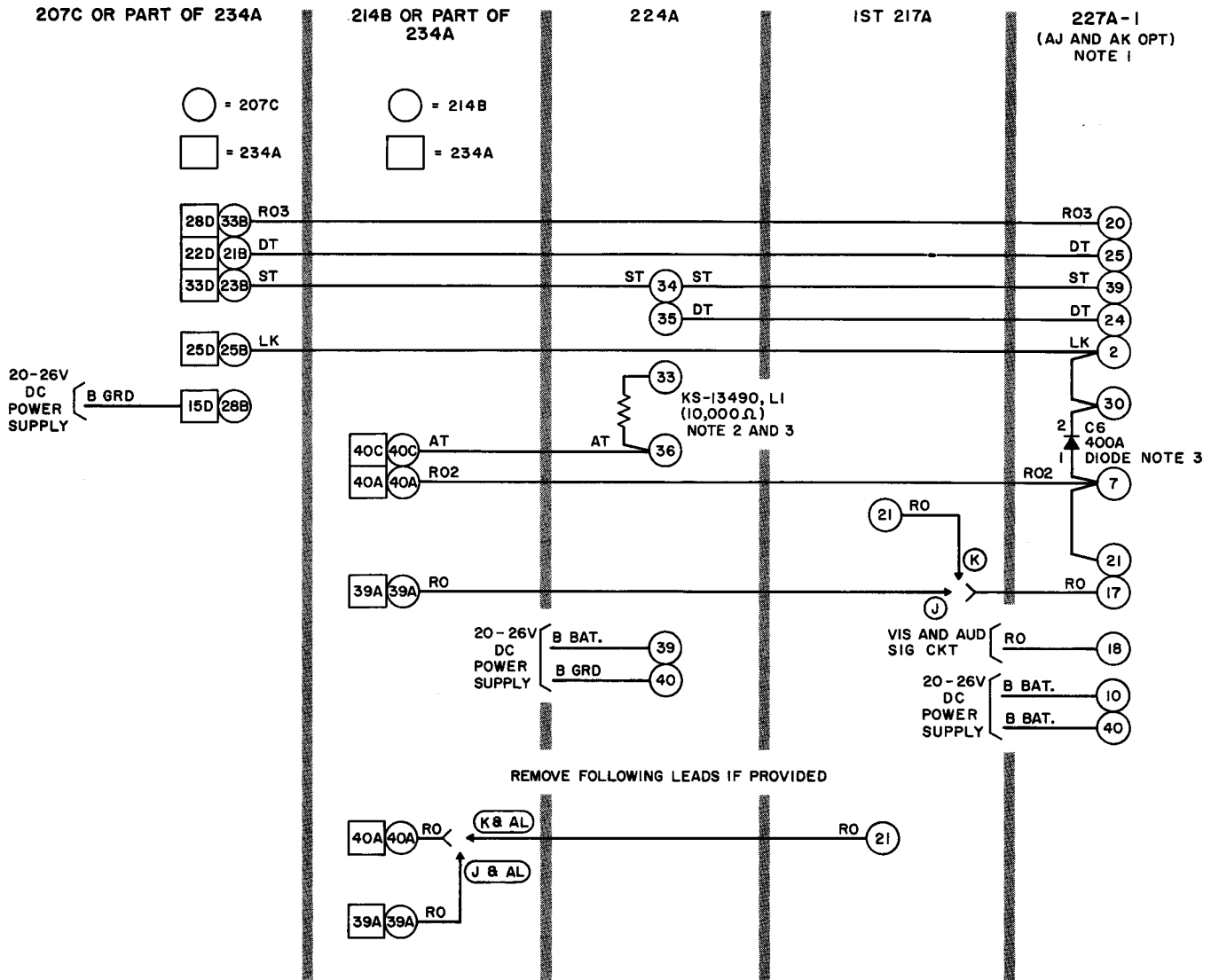
NOTE 3: PLACE STRAP ON LAST 226A ONLY.

NOTE 4: PLACE B BAT. ON FIRST 226A ONLY.

NOTE 5: GRD OTHER SIDE OF SIG KEY TO ANY CONVENIENT B GRD.

NOTE 6: REMOVE LEADS ONLY AT STATIONS TO WHICH AN AUX REL STA CKT IS ADDED.

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



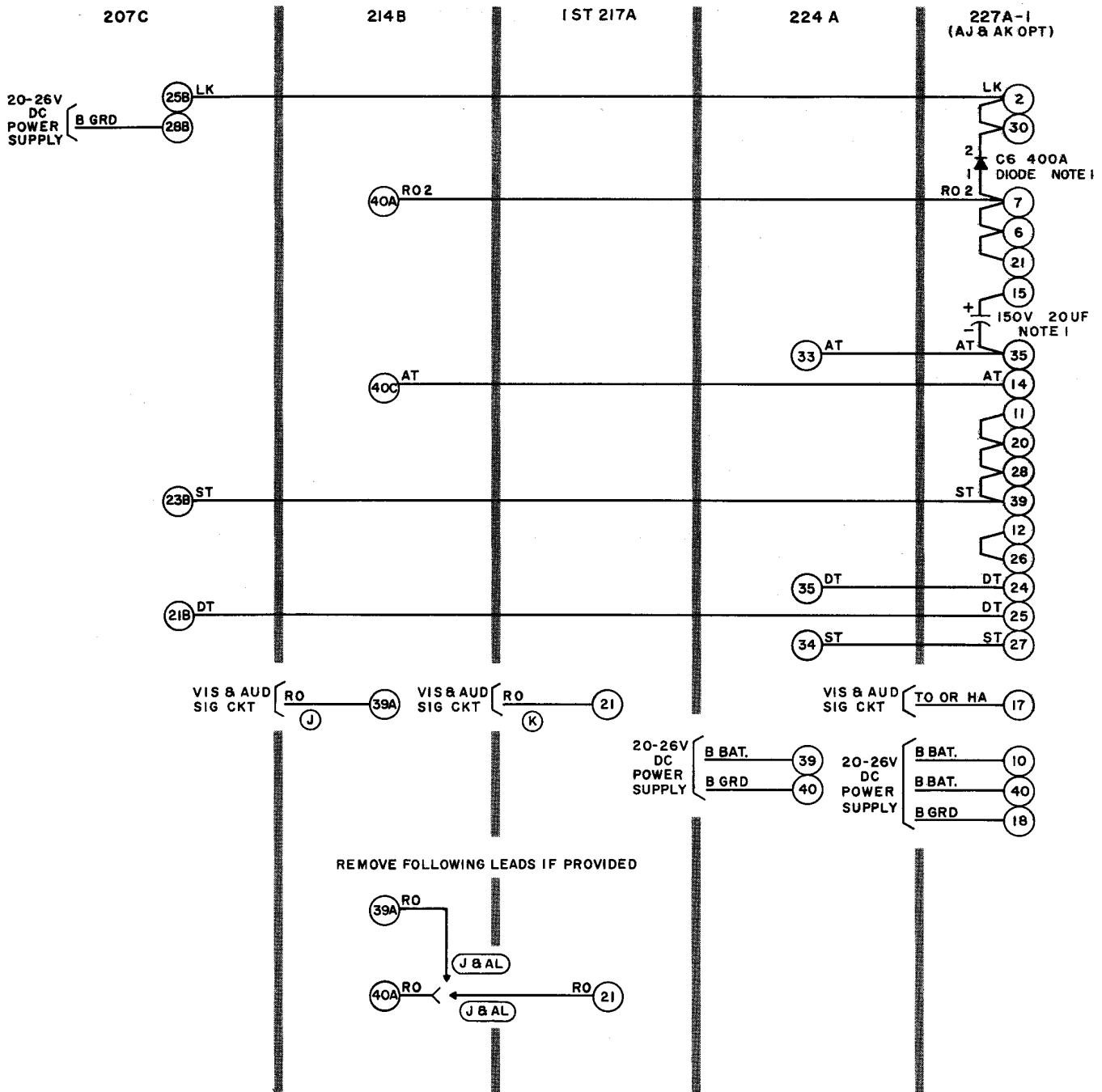
NOTE 1: WHEN INTERRUPTED RINGING (AK OPT) IS ADDED TO AN EXISTING SYSTEM CHANGES ARE REQUIRED ON LONG LINE CKTS IF PROVIDED. (SEE FIGURE ENTITLED ADDITION OF LONG LINE CIRCUIT.)

NOTE 2: RESISTOR LISTED AS KS-13490, LIST 1 ON SD-69286-01, ISSUE 5D, SHOULD BE AS LISTED ABOVE.

NOTE 3: ORDER AND PLACE LOCALLY.

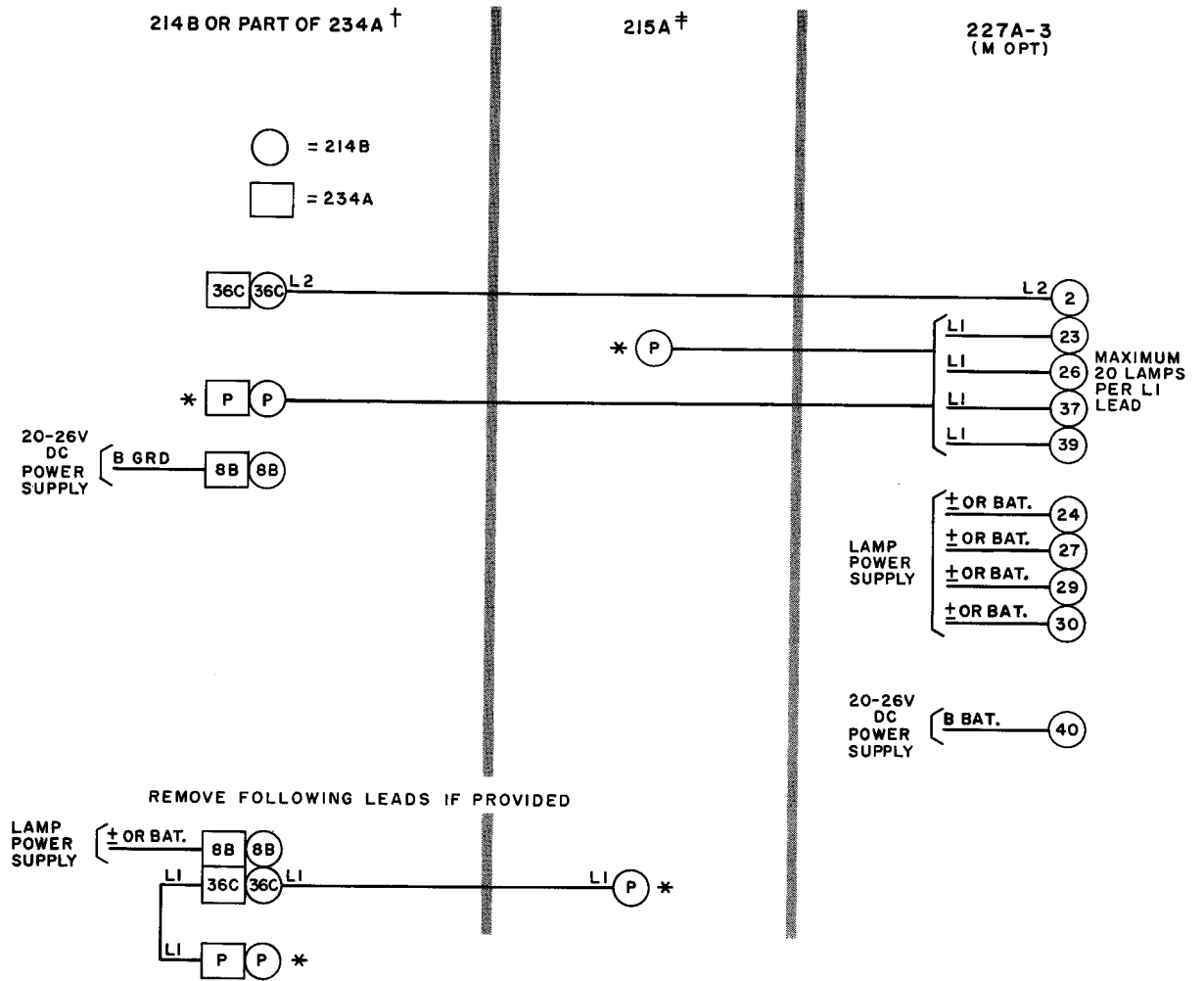
Fig. 8 - Addition of Dial Tone and Interrupted Ringing

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NOTE 1: ORDER AND PLACE LOCALLY.

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



† TABLE K

REF DESIG	PUNCHINGS ON 214B OR 234A									
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9	
P	1D	2D	3D	1D	2D	3D	3D	2D	1D	

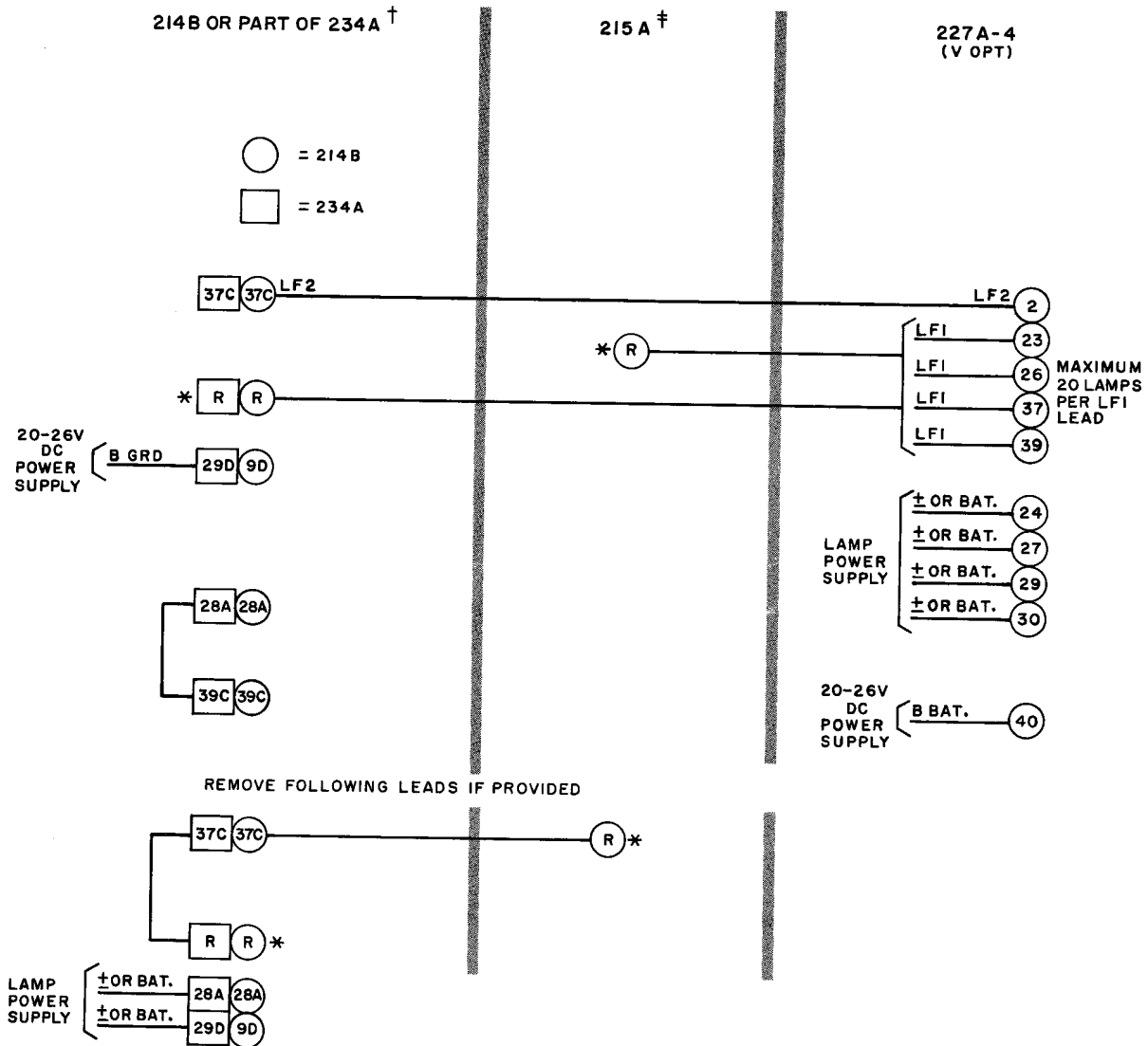
* LINE CKT INVOLVED

‡ TABLE L

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
P	35		

* LINE CKT INVOLVED

Fig. 10 - Addition of Auxiliary Relay Busy Lamp Circuit



† TABLE M

REF DESIG	PUNCHINGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
R	4D	5D	6D	4D	5D	6D	6D	5D	4D

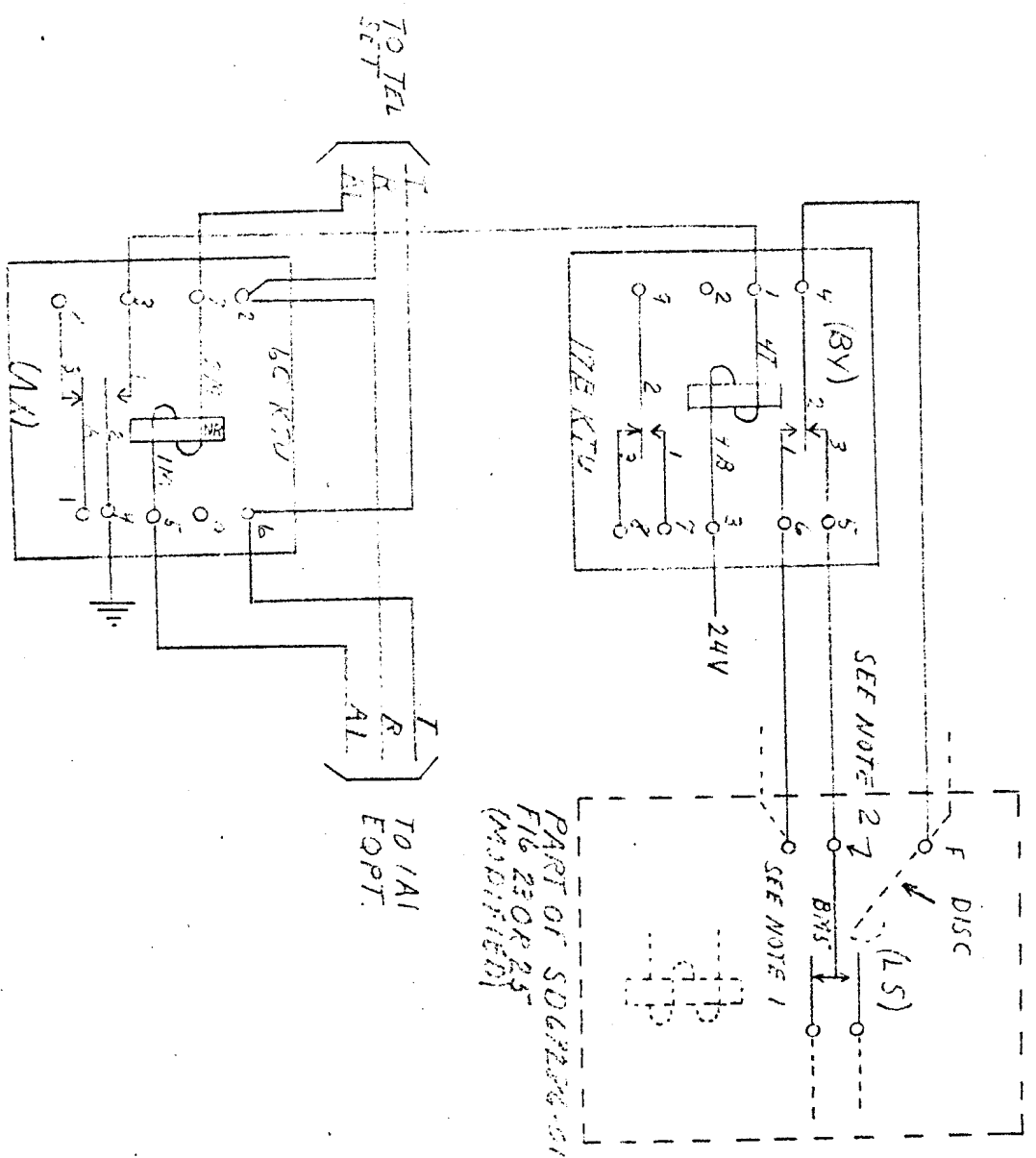
* LINE CKT INVOLVED

‡ TABLE N

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
R	37		

* LINE CKT INVOLVED

Fig. 11 - Addition of Auxiliary Relay Lamp Flash Circuit



- 2 USE ANY SPARE TERMINAL
3. LA INTER ONLY. MUST BE EQUIPPED WITH A 224A KTY. (EASY SIGNAL AND CALLED IN (SIGNAL CHANNEL))

- MATERIAL
- 1 17B KTY PER TEL SET
 - 1 6C KTY " " "
 - 1 224A KTY PER SYSTEM (IF NOT EQUIPPED)

FORM 2000 # 62-89
 PHOENIX, ARIZONA
 KEY TEL SYSTEM & A STATION
 CIRCUIT MODIFICATION TO PROVIDE
 BUSY SIGNAL WHEN RECEIVER
 IS OFF HOOK
 SINGLE LINK & TWO

PLC

SK5-2162