

6A KEY TELEPHONE SYSTEM
SINGLE-TALKING LINK ARRANGEMENT
MAINTENANCE

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1.00 INTRODUCTION

1.01 This section covers the maintenance of the single-talking link arrangement of the 6A key telephone system, the use of sequence charts and operational sketches, and a description of the symbols used.

1.02 Due to extensive changes marginal arrows have been omitted.

2.00 GENERAL

2.01 The circuits used in the 6A key telephone system have been reduced to simplified sequence charts and operational sketches.

- Sequence charts cover the operation and release of relays, keys, and other apparatus in their relative time order. They are shown from the top downward and are connected by appropriate lines to show the interdependence of the successive operations.
- Operational sketches show complete circuits from battery to ground in simplified form, completely disregarding boundaries of conventional SD drawings. Key telephone unit numbers beneath the complete circuit identify key telephone units in which the individual relays, relay contacts, or other apparatus are located.

USE OF SEQUENCE CHARTS AND OPERATIONAL SKETCHES

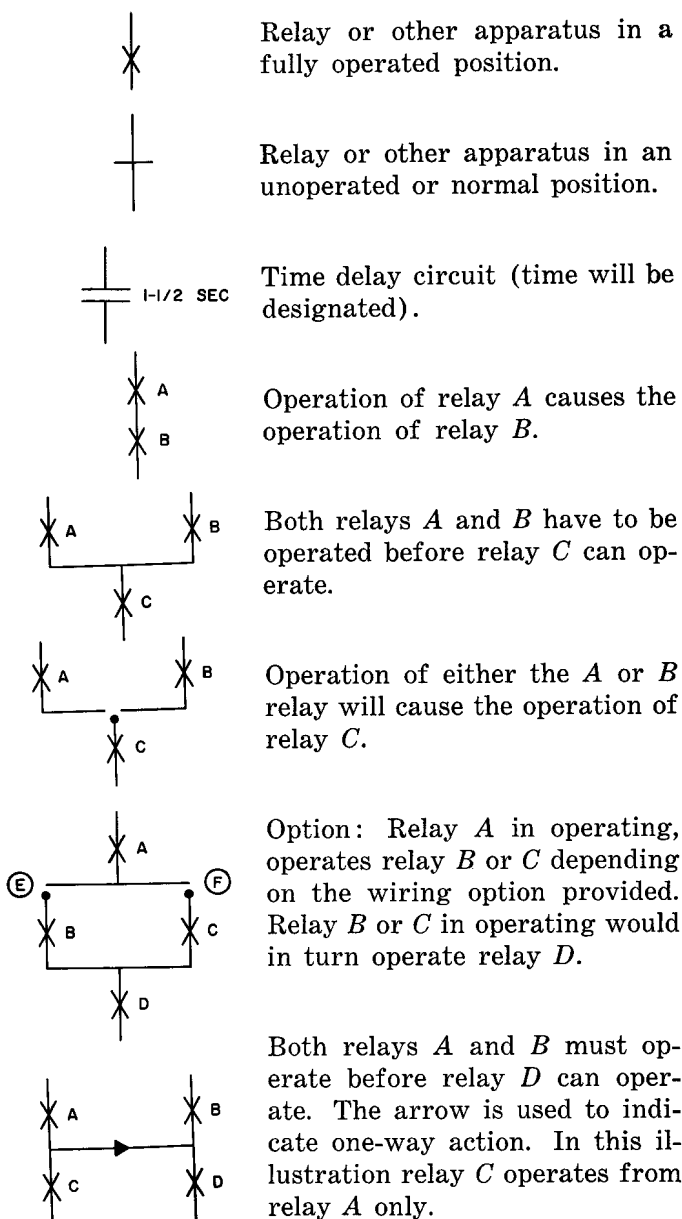
2.02 After it has been determined that the trouble is in the 6A equipment, proceed as follows:

- Watch relay operation of equipment and compare it to that of the sequence charts as shown on the various figures.

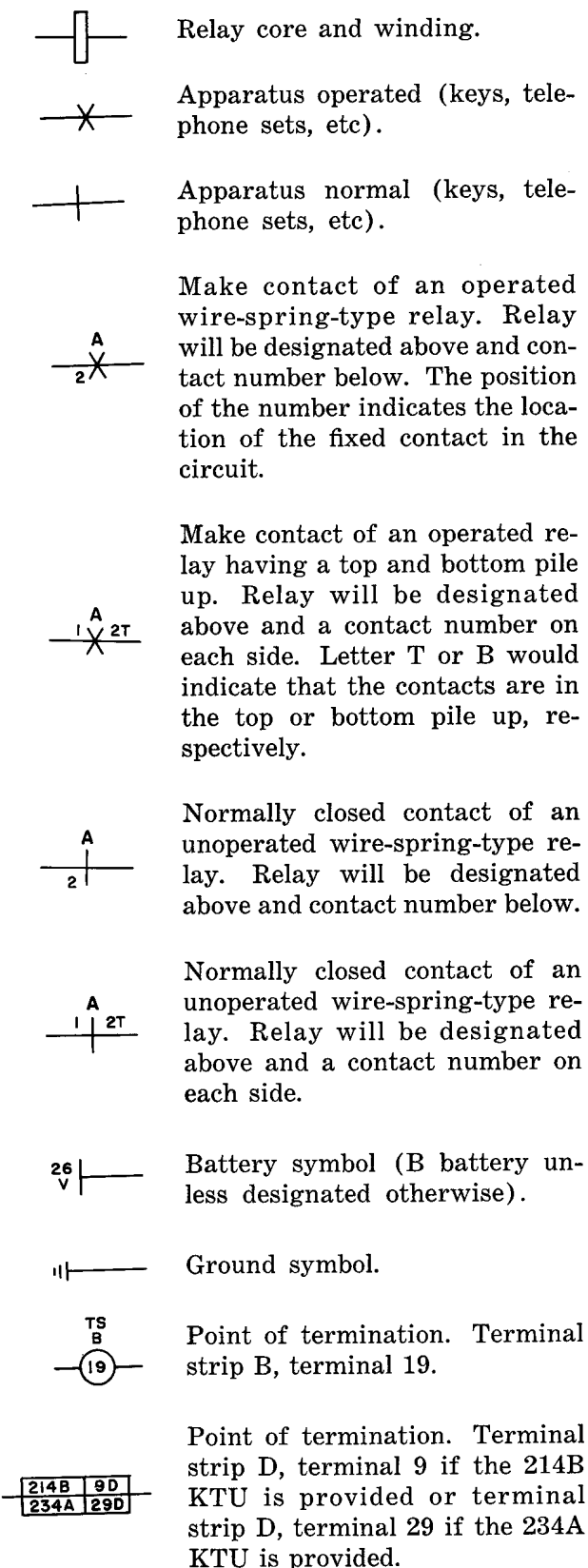
- Where circuit failure occurs, the operational sketch either will show the complete path for the circuit that failed or it will refer to the figure where the complete path may be found.

2.03 The following are samples of some of the symbols used in the preparation of the sequence charts and operational sketches contained in this practice.

SEQUENCE CHART SYMBOLS



OPERATIONAL SKETCH SYMBOLS



2.04 A description of the operation, supplementing the sequence charts, is provided to specify the functions of the equipment.

2.05 The sequence charts and operational sketches in this section supplement, but do not replace, CD and SD-69286-01.

2.06 General maintenance of telephone sets, dials, keys, relays, power plants, etc, used with the 6A key telephone system is not covered in this section. Reference should be made to the C Series pertaining to these specific items.

2.07 The following wiring options are applicable to this section.

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
M	With	
S	Without	Aux Rel Lamp Flash Ckt
V	With	
AK	Interrupted	Audible Signal
AL	Single Spurt	
AJ	Dial, Busy, and Aud Tone	
AQ	Busy Signal and Camp-On Control Ckt When Used With a 207B KTU	

OPTIONS ASSOCIATED WITH STATIONS

Wiring	Option	
E	With	Automatic Cutoff
F	Without	
Y	Over T & R Leads	Sta Aud Sig
Z	Over Sep Sig Pair	
AA	Sta Assoc With Com Aud Arr	
Q	With	Aux Rel Sta Ckt (Mfr Disc.)
AG	Without	
AG	Without	Add-On Transfer Ckt
AO	With	
AE	Local Sta or Off-Prem Sta When AK Opt Is Provided	Sig Key Selection of Station
AF	Off-Prem Sta When AL Option Is Provided	
AB	Sta To Originate Add-On Conference (Mfr Disc.)	

2.08 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.

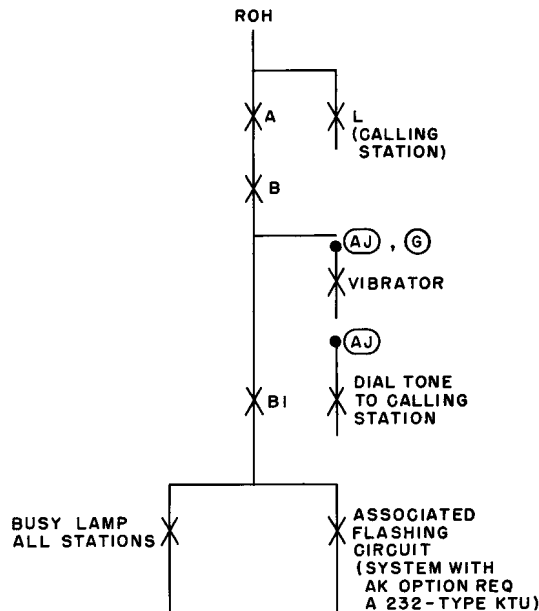
3.00 LINE SEIZURE

3.01 The *T* and *R* leads of a 6A key telephone system station are connected to battery and ground through the windings of the *A* relay. As a station picks up, relay *A* operates. The station's *L* relay in the station line circuit also operates, but performs no useful function at this time. Operation of the *A* relay causes operation of relay *B*. The *B* relay in operating (a) operates the vibrator if provided and (b) operates the *B1* relay under control of the *TB1* relay and the camp-on control circuit if provided. The *B1* relay in operating (a) lights the busy lamp steadily at all stations (as described in 10.00), (b) starts the associated flashing circuit, and (c) operates the time-out control circuit of the associated key telephone system if so connected.

3.02 When dial tone is provided, the output of the network in the vibrator circuit is returned to the tip side of the *A* relay, under control of the *MS* relay in the ringing and tone control circuit.

Reference: SD-69286-01

SEQUENCE CHART



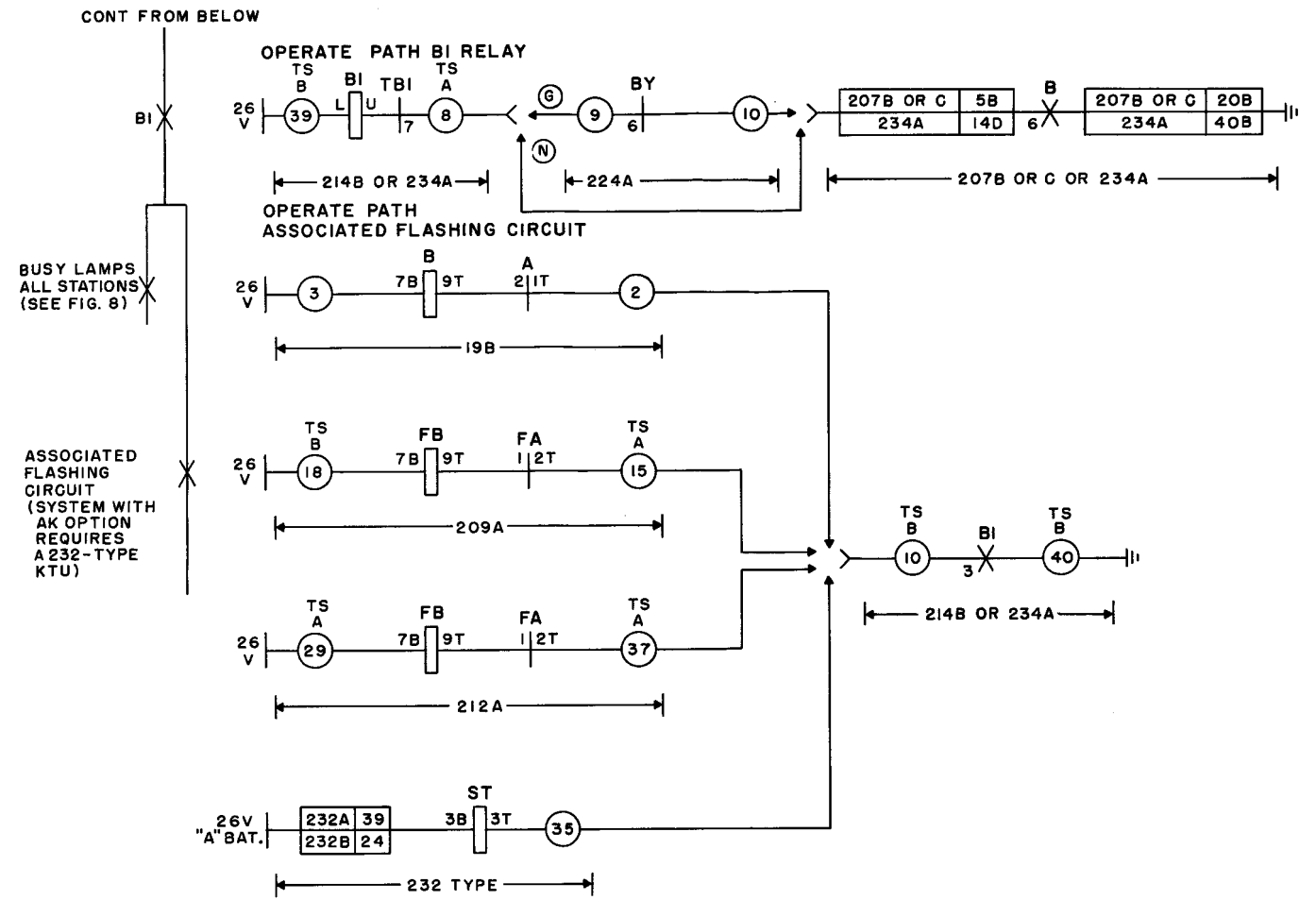
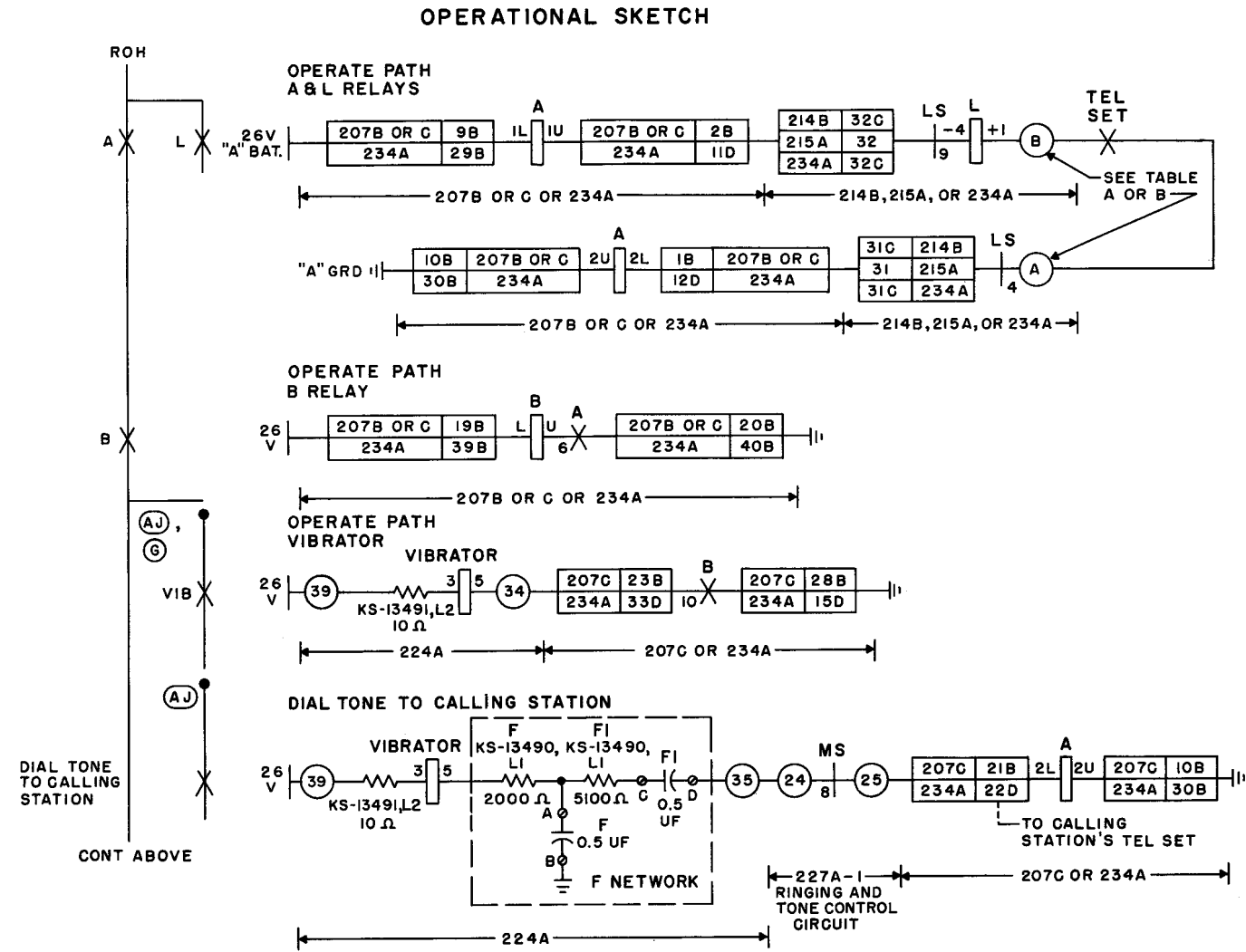


TABLE A
PUNCHING ON 214B OR 234A

REF DESIG	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

TABLE B
PUNCHING ON 215A

REF DESIG	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22

Fig. 1 — Line Seizure

4.00 BASIC OPERATION OF SELECTOR CIRCUIT

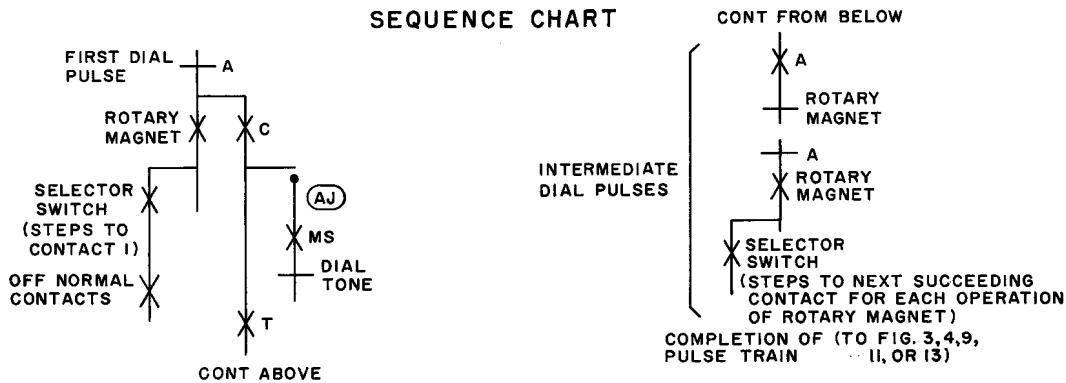
4.01 The relays *A* and *B* have previously been operated as described in 3.00. As each digit is dialed, relay *A* releases and reoperates in unison with the dial pulses. Slow release relay *B* remains operated during dialing. As the *A* relay pulses, a ground is connected to the rotary magnet causing the selector switch to step in unison with the dialed pulses.

4.02 A slow releasing relay *C* operates on the first release of relay *A* and remains operated during the pulse train. This relay causes

operation of the *T* relay which in turn connects a resistor and capacitor across its winding. The capacitor is charged during pulsing, and its discharge after the release of relay *C* holds the *T* relay operated for approximately 1-1/2 seconds.

4.03 When dial tone is provided, relay *C* in operating, operates the *MS* relay in the ringing and tone control circuit. The *MS* relay in operating (a) locks up under control of the *B* relay and (b) opens the path supplying dial tone to the tip side of the line through the winding of the *A* relay.

Reference: SD-69286-01



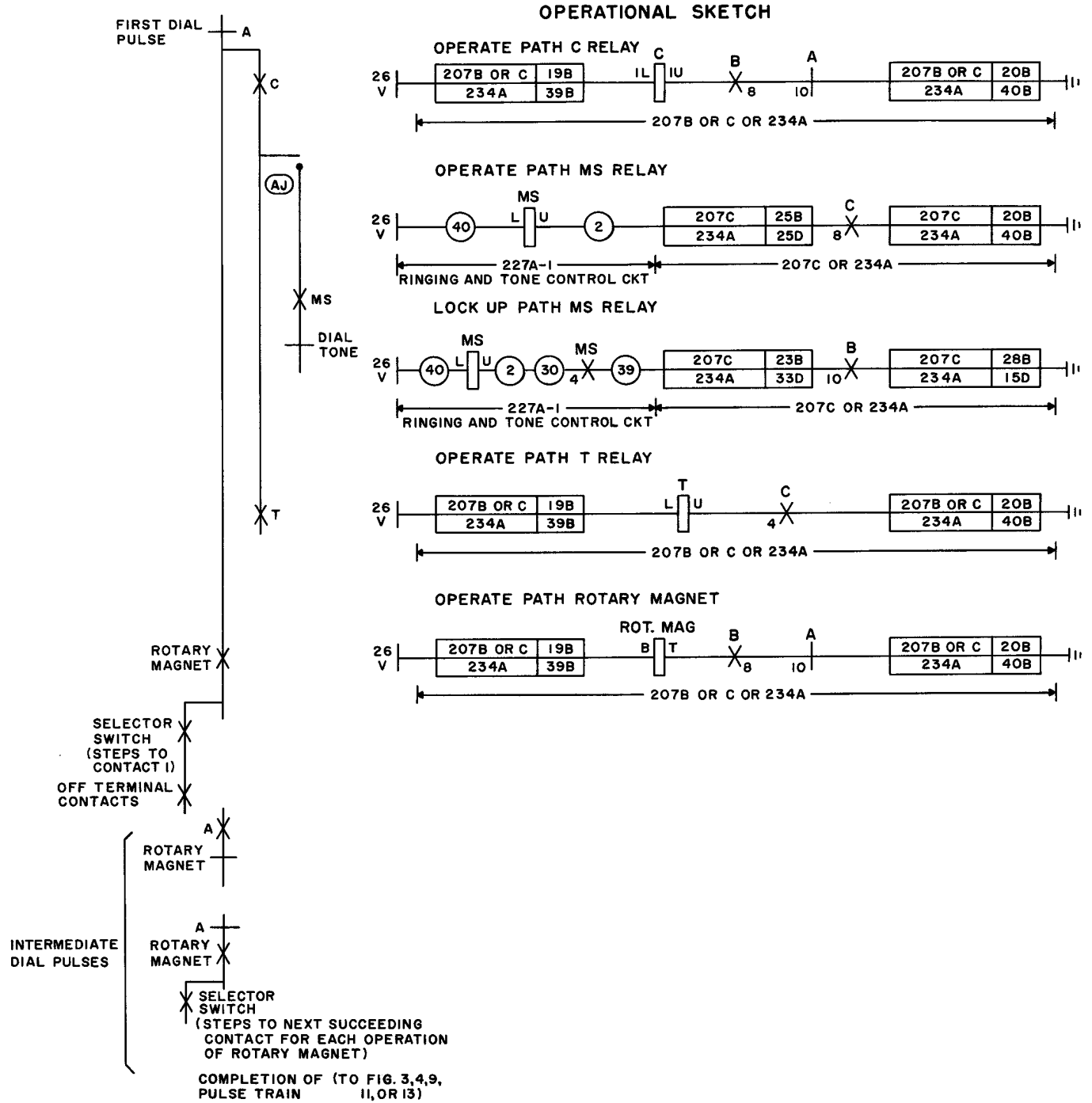


Fig. 2 - Basic Operation of Selector Circuit

SECTION C71.018

5.00 STATION SELECTION, DIALING SINGLE-DIGIT CODE OR SECOND DIGIT OF 2-DIGIT CODE (DIALING FIRST DIGIT OF 2-DIGIT CODE SEE 6.00)

5.01 At the completion of the pulse train, relay *A* reoperates and relay *C* releases. The *C* relay in releasing (a) opens the operate path for relay *T* and (b) connects a ground to the station signaling circuit under control of the second bank of the selector switch and the *TR* relays if provided.

5.02 This ground operates relay *BC*, which in turn operates relay *BC1*. Operation of the *BC1* relay shunts the winding of the *BC* relay, thus allowing the called station's *LS* relay to operate. Relays *BC* and *BC1* return to normal. The *LS* relay in operating (a) locks up and (b) connects the called station's lamp to the associated flashing circuit, as described in 10.00.

5.03 When *AL* option is provided, the operation of the *LS* relay connects the ground from the second bank of the selector switch to the *RO* relay. The *RO* relay in operating, operates the audible signal at the called station, as described in 9.00.

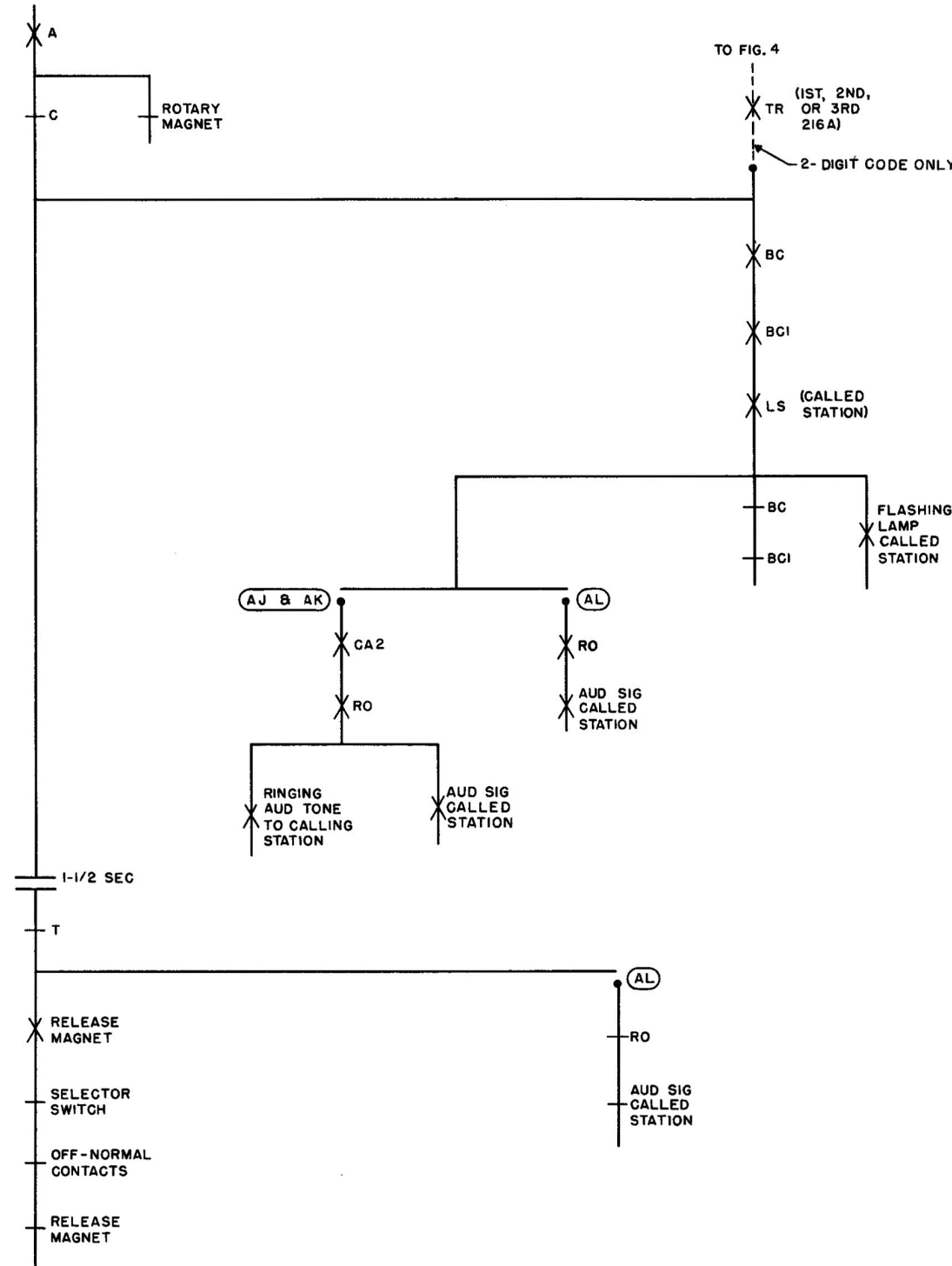
5.04 When *AJ* and *AK* options are provided, the operation of the *LS* relay connects the ground from the second bank of the selector switch to the ringing and tone control circuit to operate the *CA2* relay. The *CA2* relay in operating (a) locks up and (b) connects the *RO* relay to the interrupter in the associated flashing circuit. The interrupter operates and releases the *RO* relay with a 1-second operate and a 3-second release timing cycle. The *RO* relay in operating, operates the audible signal at the called station, as described in 9.00, and completes a path to send ringing audible tone to the calling party.

5.05 After a nominal 1-1/2 second time delay, relay *T* releases. The release of relay *T* (a) opens the operate path of the *RO* relay, when *AL* option is provided and (b) provides an operate path for the release magnet. The release magnet in operating returns the selector switch to normal which in turn restores the off-normal contacts to their original position. This in turn opens the operate path of the release magnet.

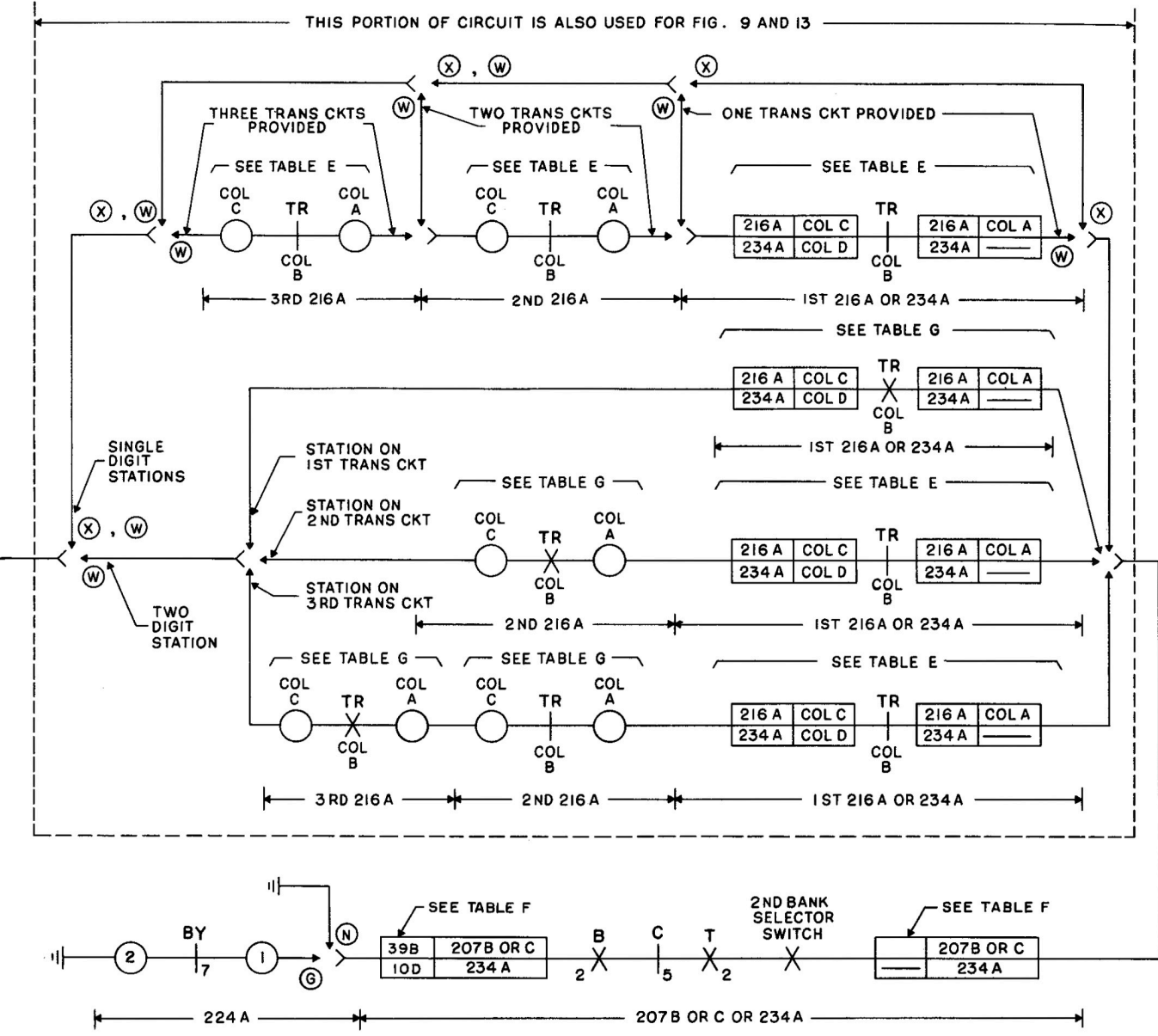
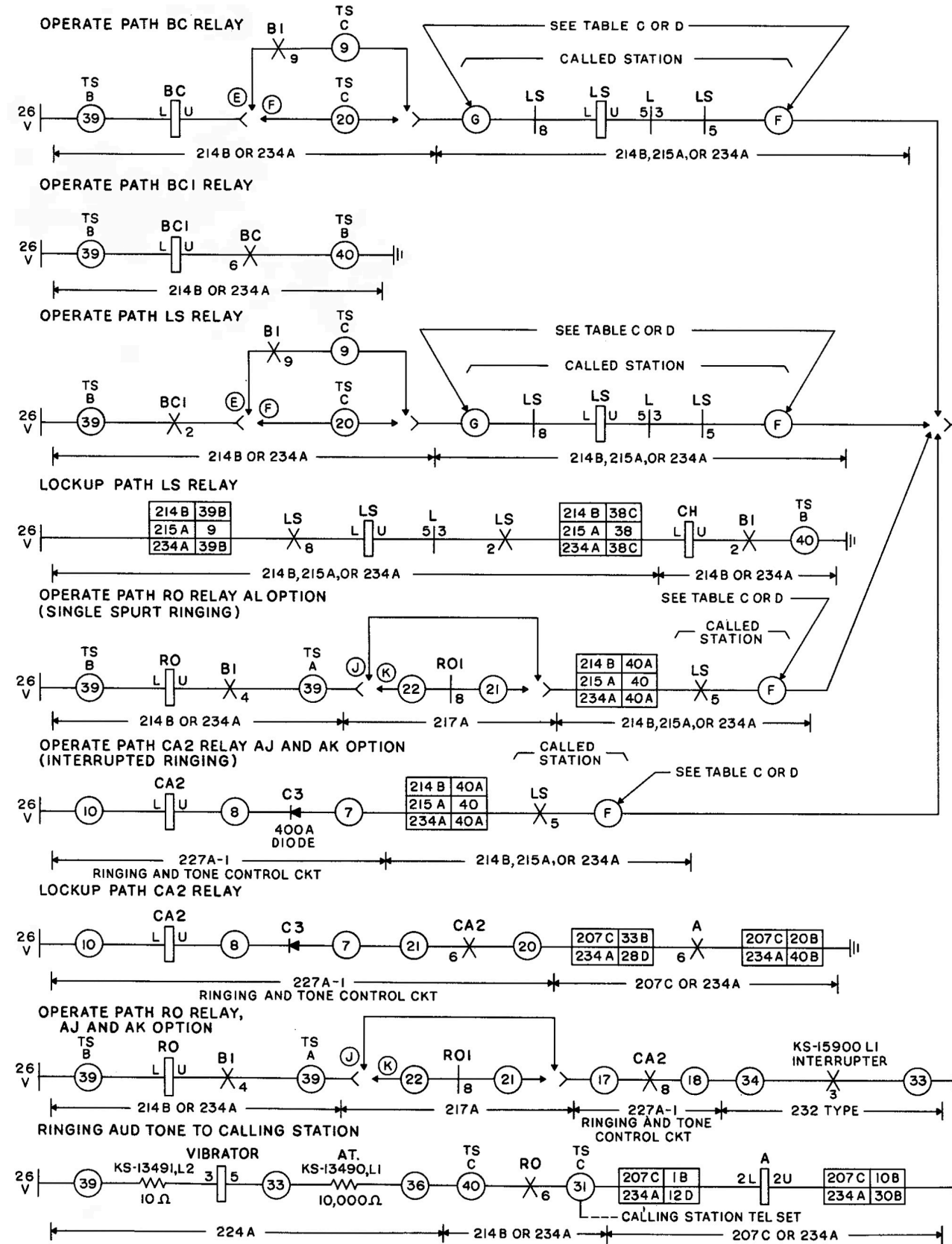
Reference: SD-69286-01

SEQUENCE CHART

COMPLETION OF PULSE TRAIN 1ST OR 2ND DIGIT (SEE FIG. 2)



OPERATIONAL SKETCH



REFERENCE DESIGNATION	CKT1	CKT2	CKT3	CKT4	CKT5	CKT6	CKT7	CKT8	CKT9
F	7A	17A	27A	37A	7B	17B	27B	37B	7C
G	11C	12C	13C	14C	15C	16C	17C	18C	19C

REFERENCE DESIGNATION	CKT 1	CKT 2	CKT 3
F	7	17	27
G	18	19	20

DIGIT DIALED	COL A TERM. 216A	COL B CONTACT	COL C TERM. 216A	COL D TERM. 234A
1*	1	8	11	11E
2	2	1	12	12E
3	3	2	13	13E
4	4	3	14	14E
5	5	4	15	15E
6	6	7	16	16E
7	7	9	17	17E
8	8	10	18	18E
9	9	11	19	19E
0	10	5	20	20E

LEAD	TERMINAL
C	11A
C	12A
C	13A
C	14A
C	15A
C	16A
C	17A
C	18A
C	19A
C	20A

DIGIT DIALED	COL A TERM. 216A	COL B CONTACT	COL C TERM. 216A	COL D TERM. 234A
1	1	8	21	21E
2	2	1	22	22E
3	3	2	23	23E
4	4	3	24	24E
5	5	4	25	25E
6	6	7	26	26E
7	7	9	27	27E
8	8	10	28	28E
9	9	11	29	29E
0	10	5	30	30E

* USED WITH 2-DIGIT CODE ONLY

Fig. 3 - Station Selection, Dialing Single-Digit Code or Second Digit of 2-Digit Code

6.00 STATION SELECTION, DIALING FIRST DIGIT OF A 2-DIGIT CODE (DIALING SECOND DIGIT SEE 5.00)

6.01 The first digit of a 2-digit code is used as a transfer code. After completion of the pulse train, relay *A* reoperates and relay *C* releases. The release of relay *C* operates the *RL* relay under control of all normal *TR* relays and the selected *SW* lead on the first bank of the selector switch.

6.02 The *RL* relay locks to the operated *B* relay and connects an operate path for the re-

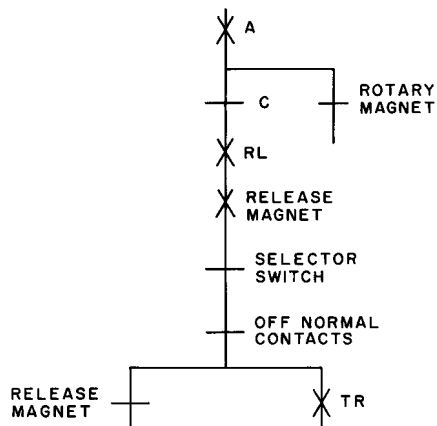
lease magnet of the selector circuit under control of the off-normal contacts and the *TR* relay.

6.03 The release of the selector switch causes the operation of the *TR* relay under control of the *RL* relay, the off-normal contacts, and relays *T* and *C*. The *TR* relay locks to the operated *B* relay and (a) transfers the *C* leads (connected to the second bank of the selector switch) from the single-digit code stations to the selected group of 2-digit code stations, (b) opens the operate path of the selector-release magnet, and (c) opens the operate path of any other *RL* relay which may be provided.

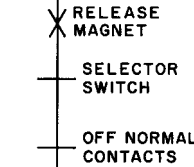
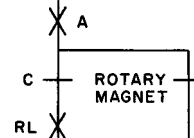
Reference: SD-69286-01

SEQUENCE CHART

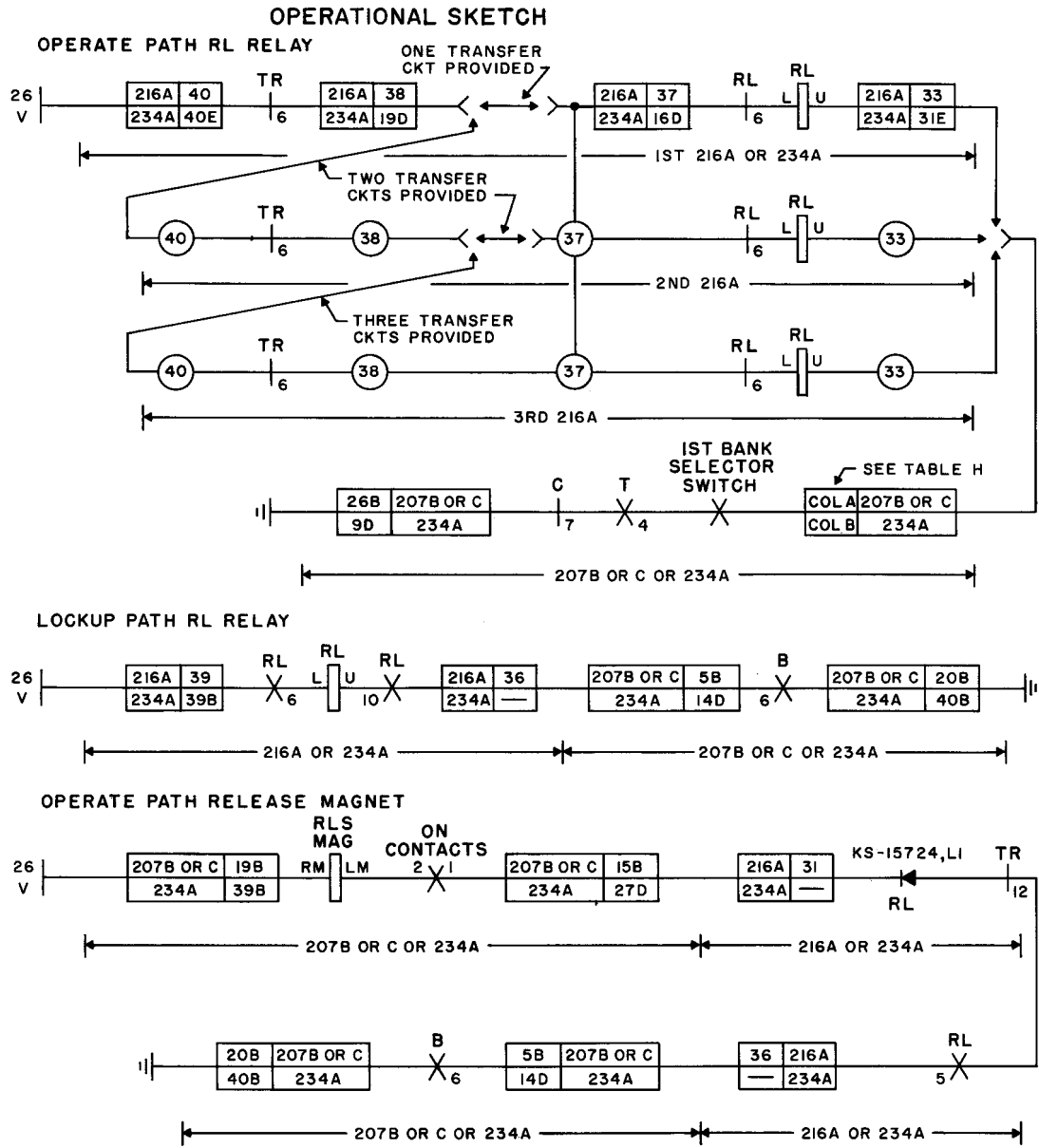
COMPLETION OF PULSE TRAIN (SEE FIG. 2)



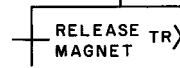
COMPLETION OF PULSE TRAIN (SEE FIG. 2)



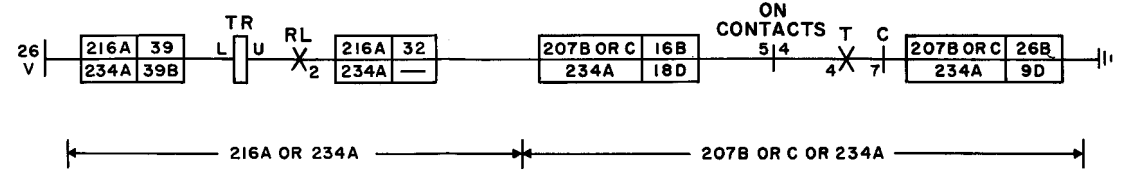
CONT ABOVE



CONT FROM BELOW



OPERATE PATH TR RELAY



LOCKUP PATH TR RELAY

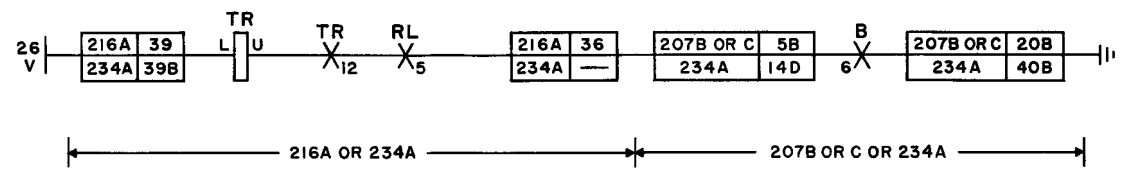


TABLE H

DIGIT DIALED	COL A TERM. ON 207B OR C	COL B TERM. ON 234A
2	2A	2E
3	3A	3E
4	4A	4E
5	5A	5E
6	6A	6E
7	7A	7E
8	8A	8E
9	9A	9E
0	10A	10E

Fig. 4 - Station Selection, Dialing First Digit of a 2-Digit Code

7.00 STATION SELECTION, USING SIGNAL KEY

7.01 After line seizure has been accomplished as described in 3.00, the signal key, furnished on a one-per-called station basis is operated. Operation of the signal key operates relay *BC* which in turn operates relay *BC1*. The *BC1* relay shunts the winding of the *BC* relay, thus allowing the called station's *LS* relay to operate. Relays *BC* and *BC1* return to normal. The *LS* relay in operating (a) locks up and (b) connects the called station's lamp to the associated flashing circuit as described in 10.00.

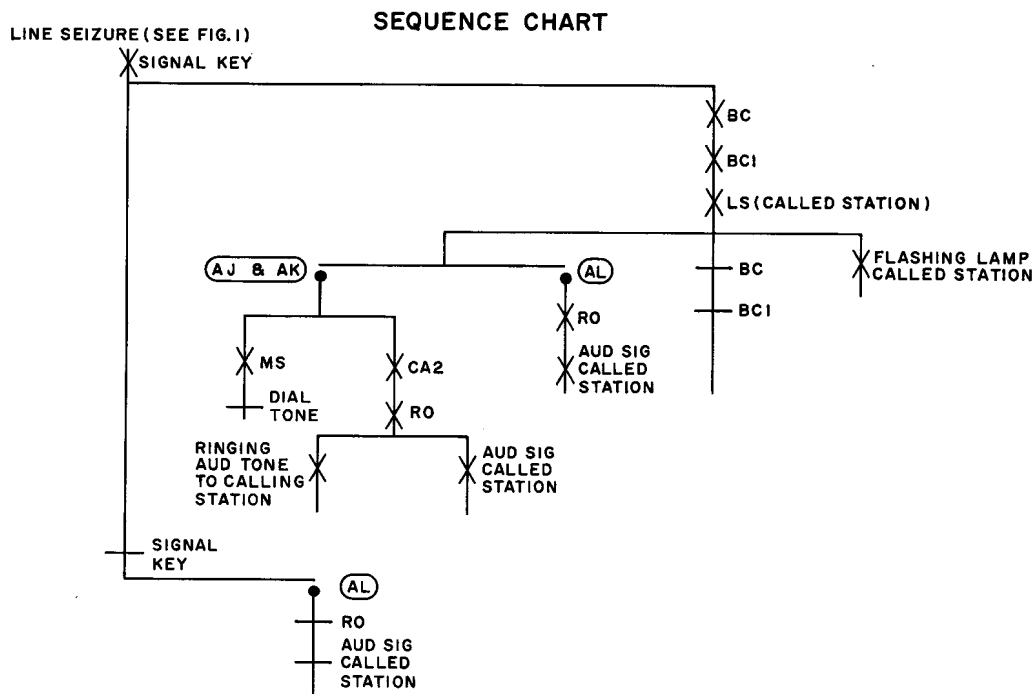
7.02 When *AL* option is provided, the operation of the *LS* relay connects the ground from the signal key to the *RO* relay. The *RO* relay in operating, operates the audible signal at the called station as described in 9.00. The audible signal at the called station will operate as long as the signal key is depressed.

7.03 When *AJ* and *AK* option are provided, the operation of the *LS* relay connects the ground from the signal key to the ringing and

tone control circuit to operate relays *MS* and *CA2*. The *MS* relay in operating (a) locks up and (b) opens the path supplying dial tone to the calling station. The *CA2* relay in operating, (a) locks up and (b) connects the *RO* relay to the interrupter in the associated flashing circuit. The interrupter operates and releases the *RO* relay with a 1-second operate and a 3-second release timing cycle. The *RO* relay in operating, operates the audible signal at the called station as described in 9.00 and completes a path to send ringing audible tone to the calling party. The signal key can be released, as the *RO* relay is now under control of the interrupter.

7.04 A selected conference call can be originated by the simultaneous operation of a number of signal keys (maximum 6). The operation of the signal keys operates the associated station circuits (see 7.01) which in turn control the audible signals at the called stations (see 7.02 or 7.03). For answering the conference call see Preset Conference, 11.08 to 11.10.

Reference: SD-69286-01



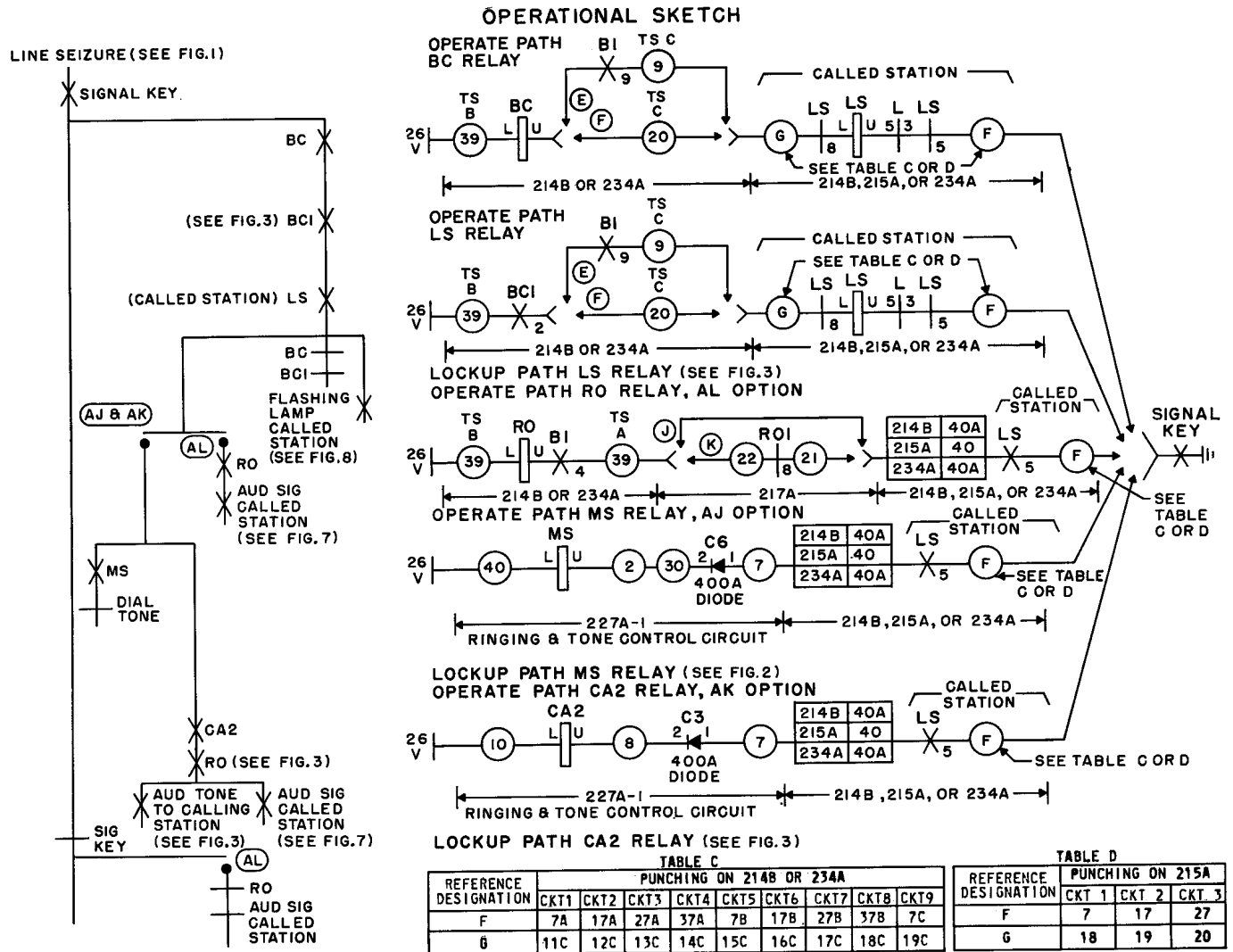


Fig. 5 – Station Selection, Using Signal Key

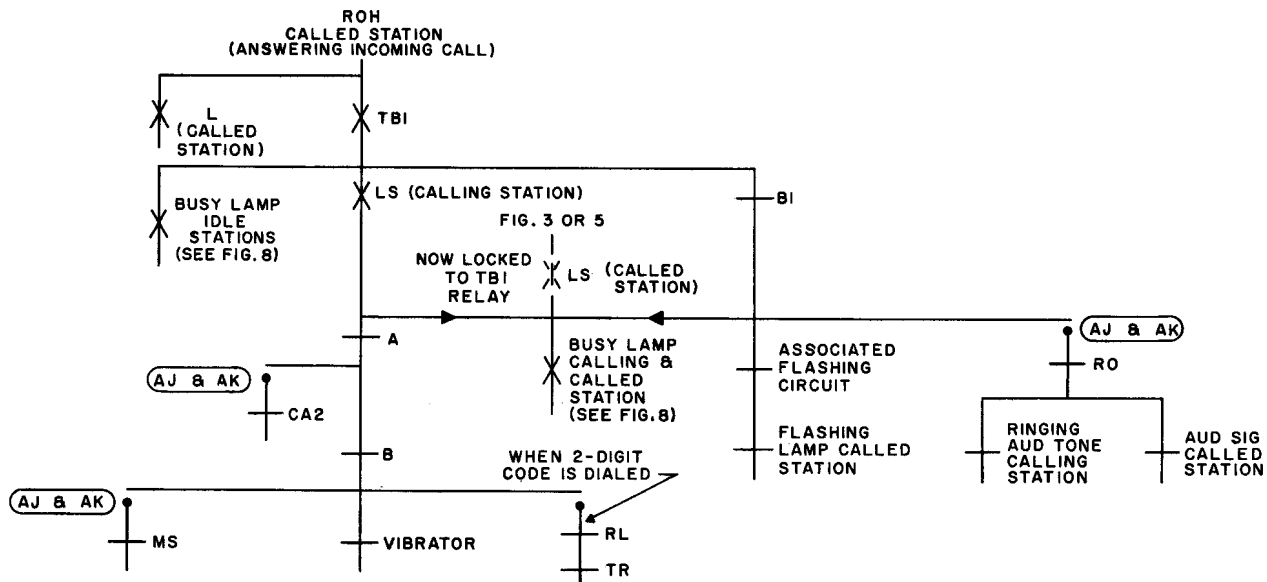
8.00 ANSWERING INCOMING CALL – TALKING PATH

8.01 The called party responds to the audible signal and connects its telephone circuit to the *T* and *R* leads, operating the *TB1* relay (connections can only be made during the silent interval). Operation of the *TB1* relay (a) operates the calling station's *LS* relay and (b) opens the operate path for the *B1* relay. The calling station's *LS* relay in operating (a) locks up to the *TB1* relay, (b) transfers the *T* and *R* leads of the calling station from the *A* relay to the *TB1* relay, and (c) releases the *A* relay. The release of relays *A* and *B1* causes the release of associated relays used in the process of making a call.

8.02 The calling and called stations are now connected to a common *T* and *R* path with talking battery being supplied through the windings of the *TB1* relay.

Reference: SD-69286-01

SEQUENCE CHART



OPERATIONAL SKETCH

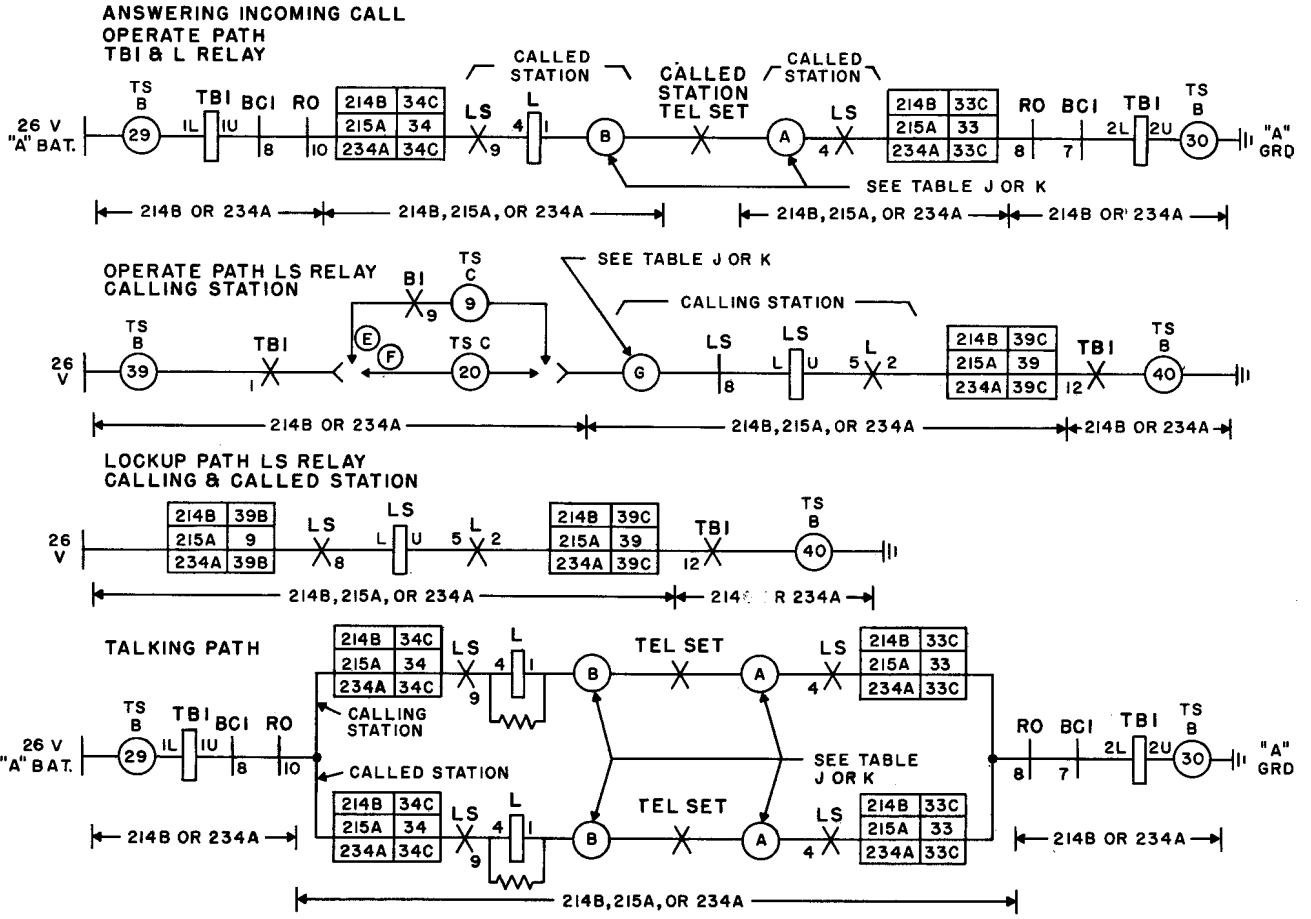


TABLE J

REFERENCE DESIGNATION	PUNCHING 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
G	11C	12C	13C	14C	15C	16C	17C	18C	19C

TABLE K

REFERENCE DESIGNATION	PUNCHING ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
G	18	19	20

Fig. 6 - Answering Incoming Call, Talking Path

SECTION C71.018

9.00 AUDIBLE SIGNALS

9.01 Three methods for operating audible signals are provided:

- Over *T* and *R* leads (*Y* option)
- Over a separate pair (*Z* option)
- Over a common audible circuit (*AA* option)

OVER *T* AND *R* LEADS (*Y* OPTION)

9.02 The operation of the *RO* relay connects ringing voltage to the *T* and *R* leads to operate a bridged ringer at the called station.

OVER A SEPARATE PAIR (*Z* OPTION)

9.03 This can be accomplished three ways.

(a) *Z* and *AG* option (without auxiliary relay): The operation of the *RO* relay connects audible signal voltage to a separate signal pair under control of the called station's line circuit to operate the audible signal.

(b) *Z* and *Q* or *Z* and *AO* option (with auxiliary relay): The called station's *LS* relay in operating operates an auxiliary relay. Op-

eration of the *RO* relay then connects audible signal voltage to a separate signal pair under control of the auxiliary relay to operate the audible signal. *Z* and *Q* option is Mfr Disc.

OVER A COMMON AUDIBLE CIRCUIT (*AA* OPTION)

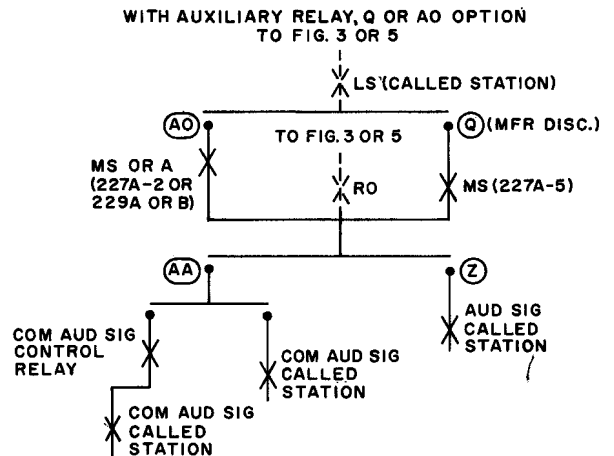
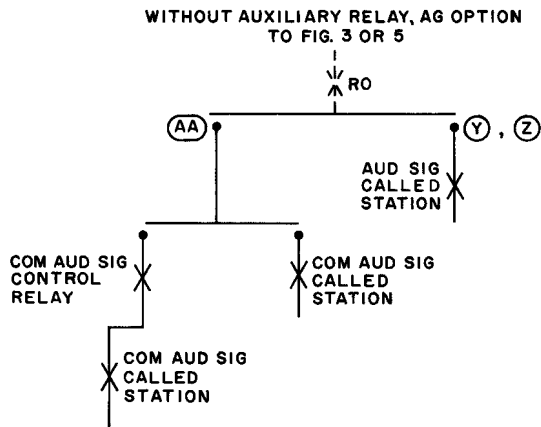
9.04 This can be accomplished three ways.

(a) *AA* and *AG* option (without auxiliary relay): The operation of the *RO* relay, connects audible signal voltage to a common audible signal or connects ground to a common audible signal control relay under control of the called station's line circuit.

(b) *AA* and *Q* or *AA* and *AG* option (with auxiliary relay): The called station's *LS* relay in operating, operates an auxiliary relay. Operation of the *RO* relay, connects audible signal voltage to a common audible signal or connects ground to a common audible signal control relay under control of the auxiliary relay. *AA* and *Q* option is Mfr Disc.

Reference: SD-69286-01

SEQUENCE CHART



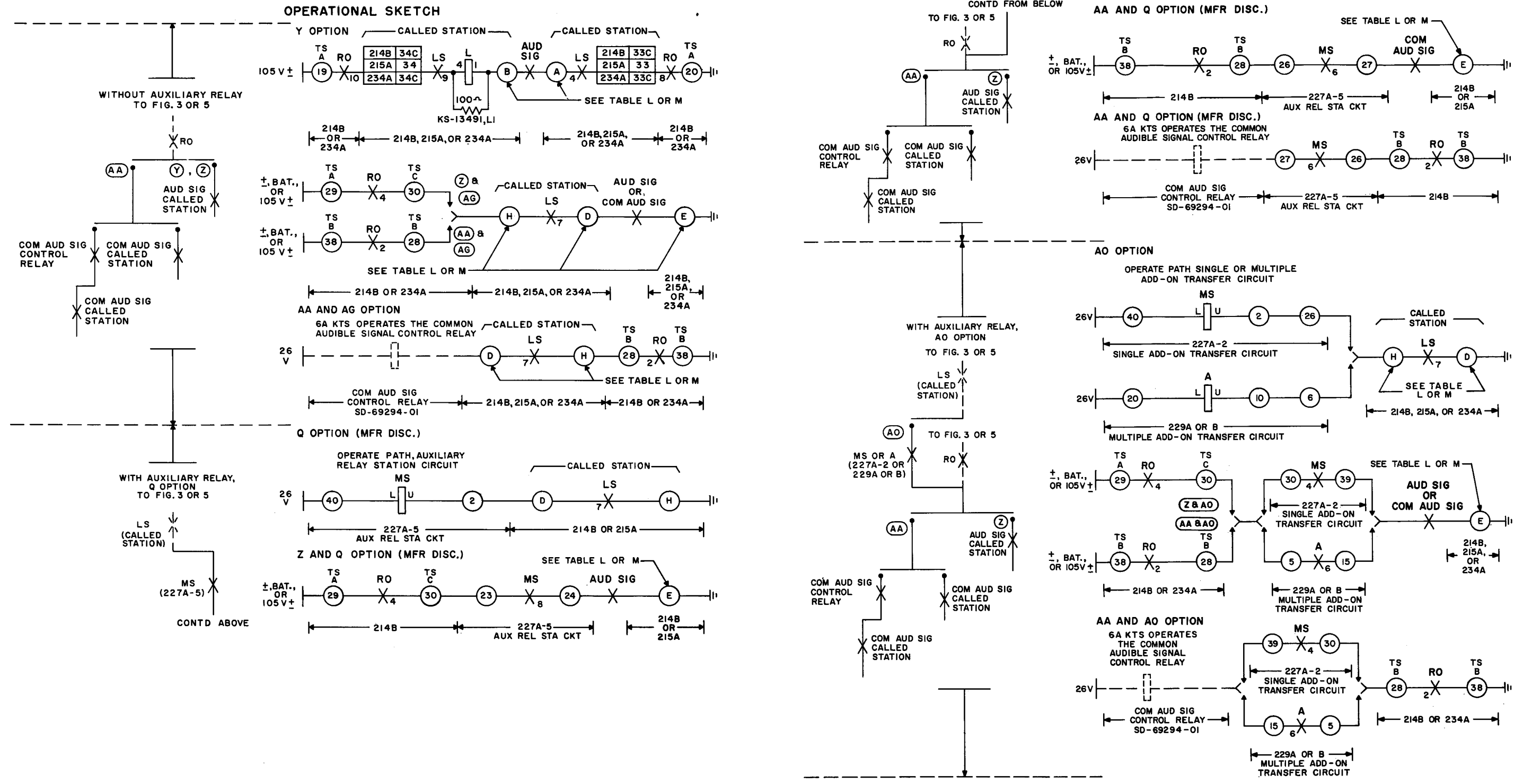


TABLE L

REFERENCE DESIGNATION	PUNCHING 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
E	6A	16A	26A	36A	6B	16B	26B	36B	6C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

TABLE M

REFERENCE DESIGNATION	PUNCHING ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
D	5	15	25
E	6	16	26
H	28	29	30

Fig. 7 - Audible Signals

10.00 VISUAL SIGNALS

BUSY LAMPS ALL STATIONS, LINE SEIZURE

10.01 The *B1* relay operates on pickup. Relay *B1* in operating, lights the busy lamp at all stations (*H* option) or operates an auxiliary relay busy lamp circuit (*M* option). The auxiliary relay in operating lights the busy lamp at all stations.

FLASHING LAMP, CALLED STATION

10.02 When a station is called, its *LS* relay operates. The *LS* relay in operating, connects the called station lamp to the flashing circuit (*S* option) or connects the called station lamp to an auxiliary relay lamp flash circuit (*V* option) which in turn is under control of the flashing circuit.

BUSY LAMP CALLING AND CALLED STATION, PRIMARY LINK

10.03 The called station in answering operates relay *TB1*. The *TB1* relay in operating (a)

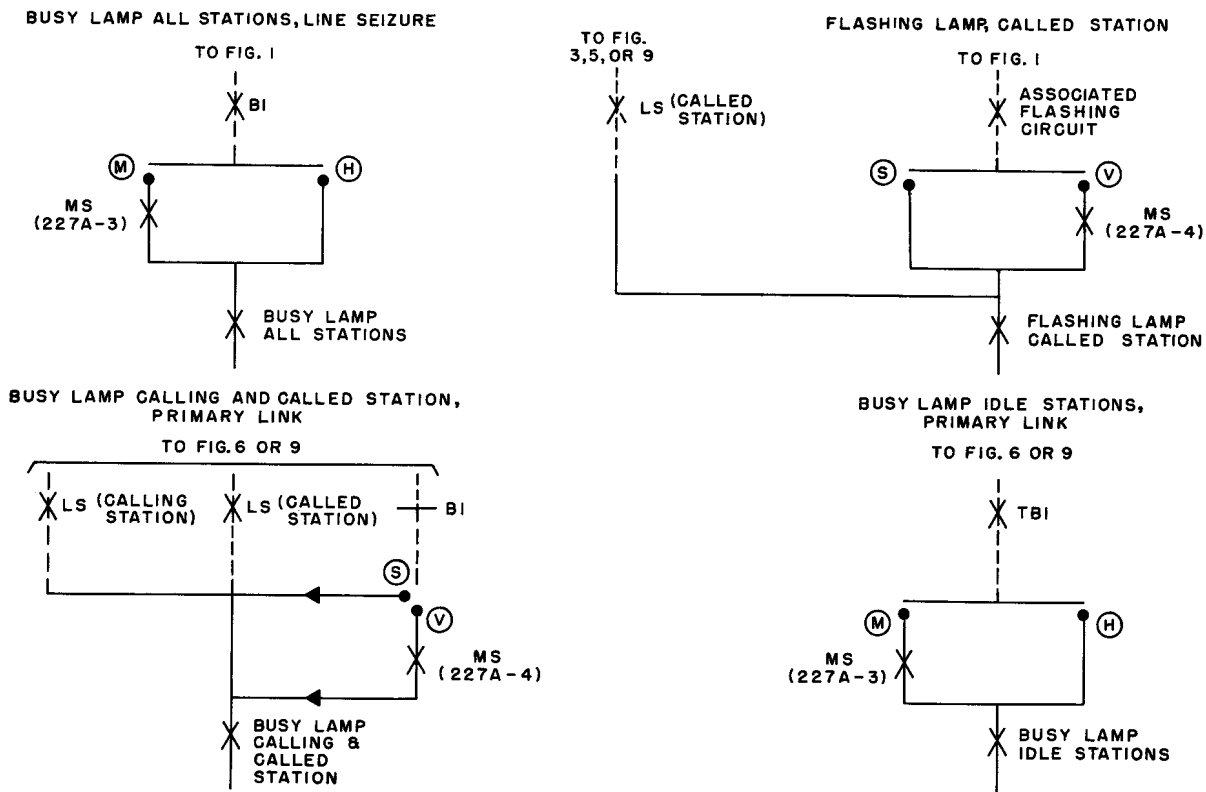
operates the *LS* relay of the calling station, (b) releases the *B1* relay, and (c) operates the auxiliary relay lamp flash circuit steadily, if provided (*V* option). The operated *LS* relays of the calling and called station connect the station lamp to the lamp power supply through a contact of the released *B1* relay (*S* option) or through a contact of the operated auxiliary relay lamp flash circuit (*V* option).

BUSY LAMP IDLE STATIONS, PRIMARY LINK

10.04 The called station in answering operates relay *TB1*. The *TB1* relay in operating takes over control of the busy lamps at the idle stations directly (*H* option) or takes over control of the operated auxiliary relay busy lamp circuit (*M* option). The auxiliary relay then controls the busy lamp at all idle stations.

Reference: SD-69286-01

SEQUENCE CHART



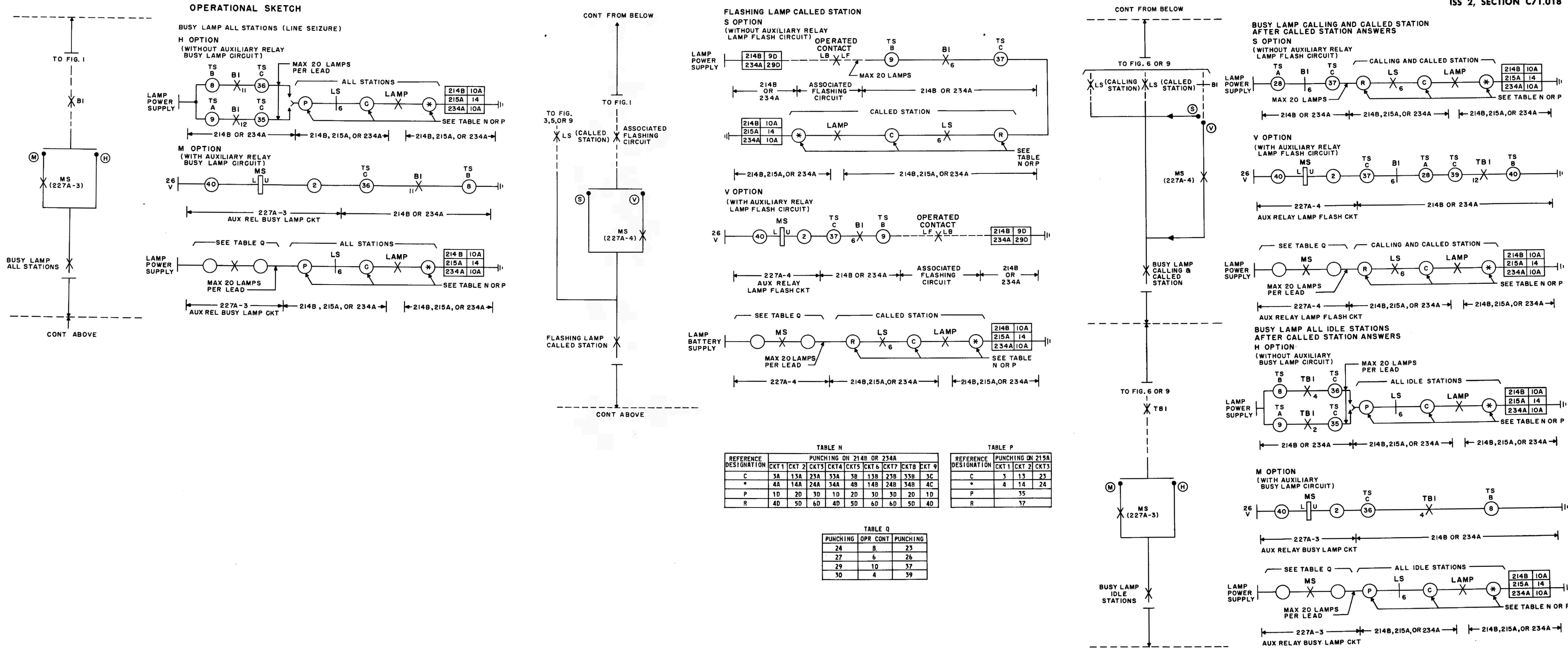


Fig. 8 - Visual Signals

11.00 PRESET CONFERENCE

11.01 A preset conference can be established by dialing an assigned code or by the use of a signal key.

11.02 After line seizure has been accomplished, as described in 3.00, a ground is connected to the preset conference circuit under control of the selector circuit if the dial was used or under control of an operated signal key. This ground will cause the operation of relay *RO1*, under control of either the *PC1* or *PC2* relay. In operating, the *RO1* relay (a) connects battery to the *PC1* and *PC2* relays, (b) locks up under control of the *PC1* and *PC2* relay, and (c) opens the operate path of the *RO* relay to prevent operation of the audible signals until all *LS* relays have operated.

11.03 The *PC1* or *PC2* relay will now operate. The operation of the *PC1* or *PC2* relay will (a) lock up, (b) release the *RO1* relay, and (c) connect ground through a maximum of six station-line circuits to operate the *BC* relay. The *BC* relay operates the *BC1* relay which in turn connects battery ahead of the *BC* relay to operate all called station *LS* relays (maximum 6) associated on the conference.

11.04 The *LS* relays in operating (a) lock up to the operated *B1* relay through the winding of the *CH* relay, causing it to operate, and (b) connect all the called station lamps to the associated flashing circuit.

11.05 When *AL* option is provided, the operation of the *LS* relays connects the ground from the *PC1* or *PC2* relay to the *RO* relay. The *RO* relay in operating operates the audible signals (as described in 9.00).

11.06 When *AJ* and *AK* option is provided, the operation of the *LS* relays connects the ground from the *PC1* or *PC2* relay to the ringing and tone control circuit to operate the *CA2* relay. If a signal key was used to establish a conference, this ground would also operate the *MS* relay of the ringing and tone control circuit. The

MS relay in operating opens the dial tone path to the calling station. The *CA2* relay in operating (a) locks up and (b) connects the *RO* relay to the interrupter in the associated flashing circuit. The *RO* relay in operating operates the audible signals as described in 9.00 and completes a path to send ringing audible tone to the calling party.

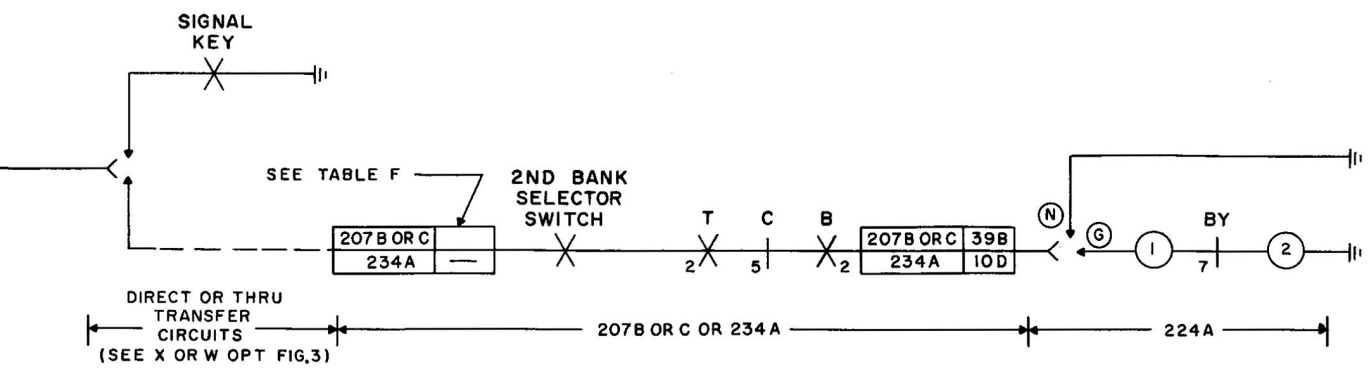
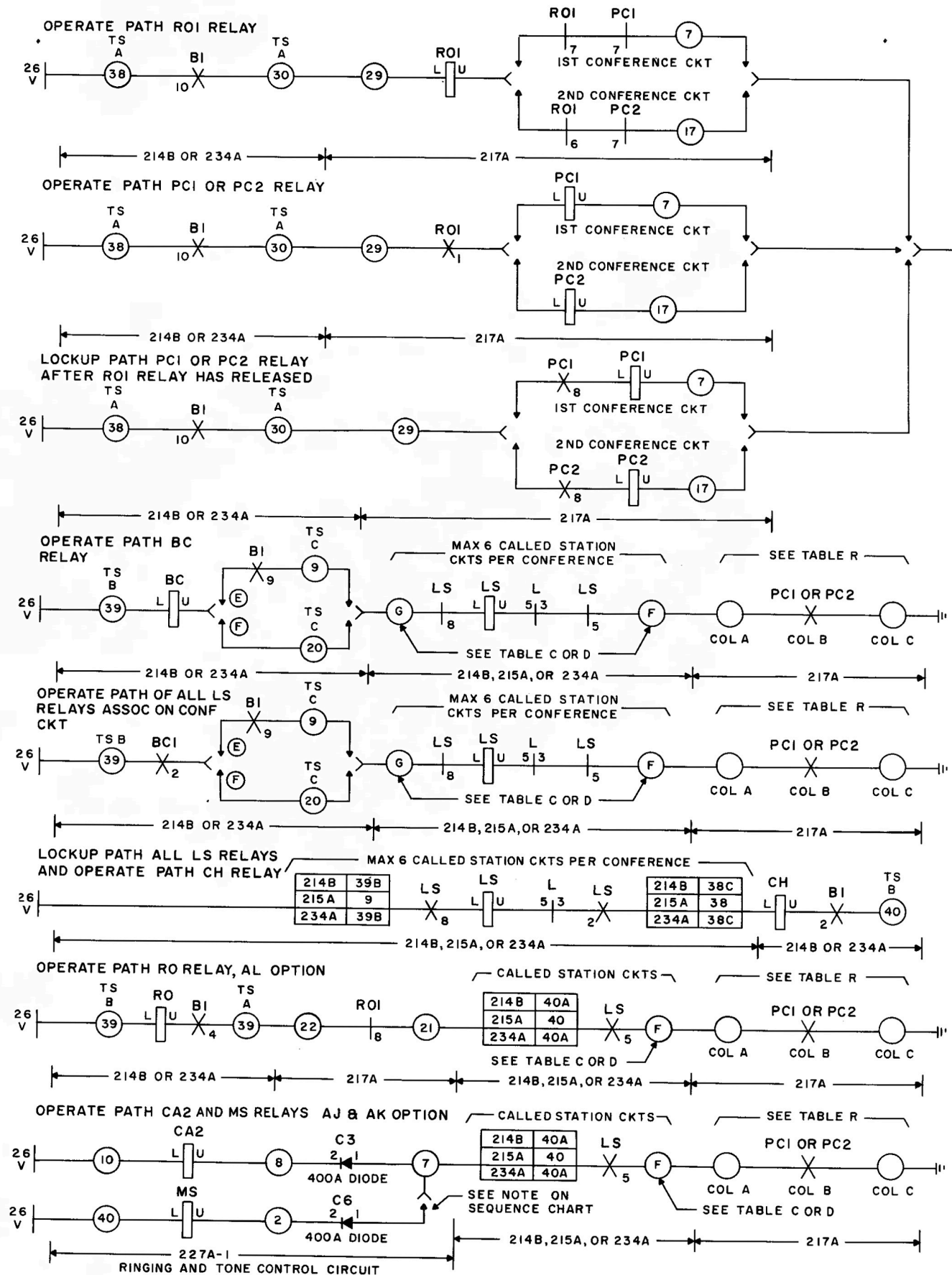
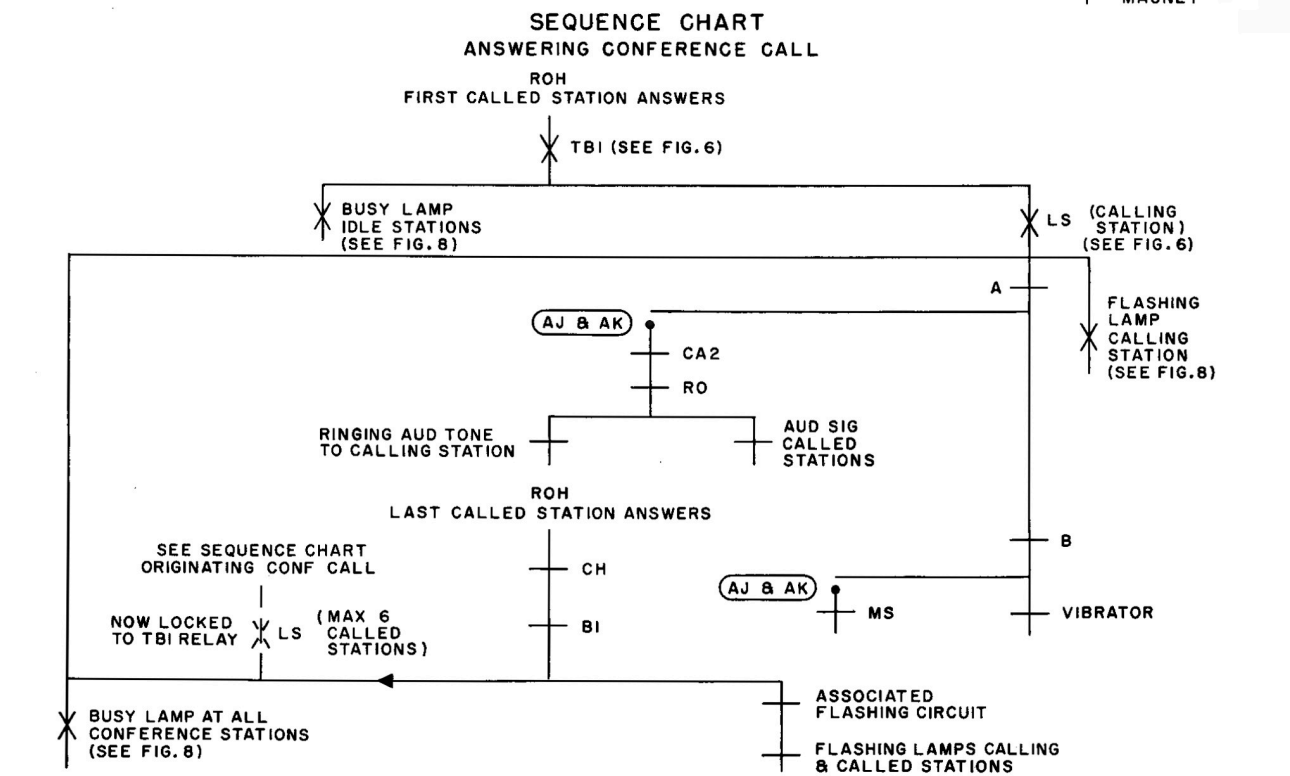
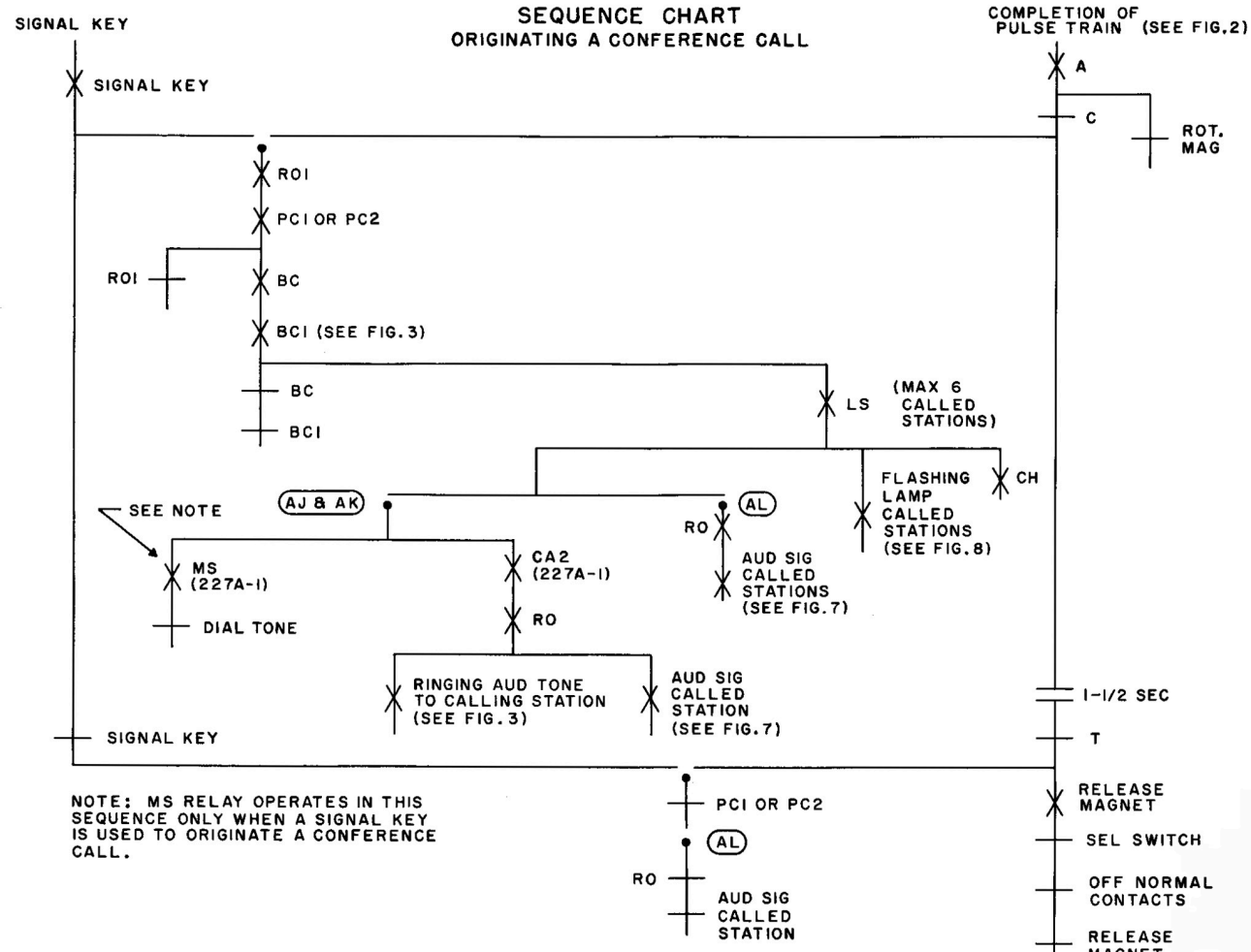
11.07 The release of the selector switch, after a nominal 1-1/2 seconds or the release of the signal key, will release the *PC1* or *PC2* relay. The release of the *PC1* or *PC2* relay will open the operate path of the *RO* relay if *AL* option is provided. The release of the *RO* relay opens the audible signal path to all called stations.

11.08 When the first called station answers, the *TB1* relay will operate. The *TB1* relay in operating (a) provides a holding path for relay *B1* under control of the operated *CH* relay and (b) operates and locks operated the calling station's *LS* relay, thus allowing the calling station to receive a flashing lamp signal. The lamp will continue to flash until the last called station answers. The operation of the calling station's *LS* relay releases the selector circuit. When *AJ* and *AK* option is provided, the release of the selector circuit releases the *MS* and *CA2* relays in the ringing and tone control circuit. The release of the *CA2* relay opens the operate path of the *RO* relay. The release of the *RO* relay opens the audible signal path to all called stations and the ringing audible tone to the calling station.

11.09 As each called station answers, the lockup path for the associated *LS* relay is transferred from the *B1* relay to the *TB1* relay.

11.10 When the last called station answers, the operate path for the *CH* relay is opened and the relay releases. The release of relay *CH* releases the *B1* relay thereby allowing the lamps to light steadily at all stations. When the lamp at the calling station lights steadily it is an indication that all stations on the conference call have answered.

Reference: SD-69286-01



LOCKUP PATH CA2 RELAY (SEE FIG. 3)
LOCKUP PATH MS RELAY (SEE FIG. 2)

TABLE C
PUNCHING ON 214B OR 234A

REFERENCE DESIGNATION	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
F	7A	17A	27A	37A	47A	57A	67A	77A	87A
G	11C	12C	13C	14C	15C	16C	17C	18C	19C

TABLE D
PUNCHING ON 215A

REFERENCE DESIGNATION	CKT 1	CKT 2	CKT 3
F	7	17	27
G	18	19	20

TABLE F
207B OR C

LEAD	TERMINAL
C	11A
C	12A
C	13A
C	14A
C	15A
C	16A
C	17A
C	18A
C	19A
C	20A

TABLE R

RELAY	CKT	COL A TS PCHG	COL B CONTACT NO.	COL C TS PCHG
PC1	1	1	1	35
	2	2	2	36
	3	3	4	37
	4	4	10	28
	5	5	11	28
	6	6	12	28
PC2	1	11	1	28
	2	12	2	28
	3	13	4	28
	4	14	10	28
	5	15	11	28
	6	16	12	28

Fig. 9 - Preset Conference

12.00 ADD-ON CONFERENCING

12.01 The incoming central office or PBX line is picked up under control of an associated key telephone system or key equipment line circuit. When it is ascertained that one of the 6A stations is to be conferenced with this call, a hold is placed on the central office or PBX line.

12.02 The 6A station to be conferenced is selected, signaled, and a talking path established as previously described.

12.03 Originating the conference (AB and AG, AB and Q or AO option)

- AB and AG option: The operation of the add-on signal key at the control station causes the operation of relay M through a contact of the control station's operated LS relay.

- AB and Q or AO option: The operation of the control station's LS relay operates an auxiliary relay. The operation of the add-on signal key at the control station causes the operation of relay M through a contact of the operated auxiliary relay.

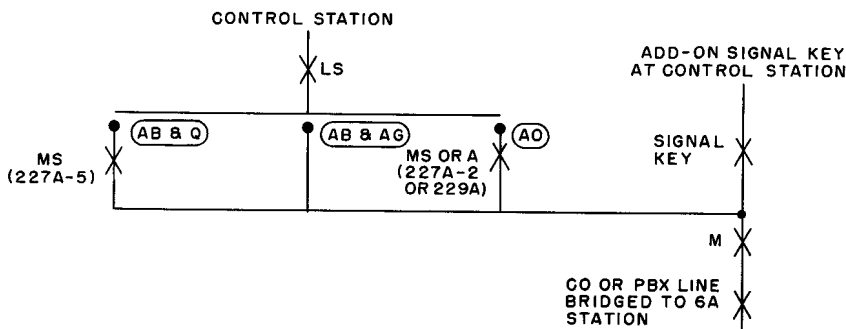
- AB and AG, and AB and Q options are Mfr Disc.

12.04 The M relay in operating (a) locks operated under control of the TB1 relay, (b) opens the operate path of any other M relay, thus preventing the interconnection of two or more outside lines (see inset on operational sketch), and (c) bridges the incoming central office or PBX line and the 6A station through the 120F repeat coil.

12.05 The add-on conference circuit is equipped with A lead control.

Reference: SD-69286-01

SEQUENCE CHART



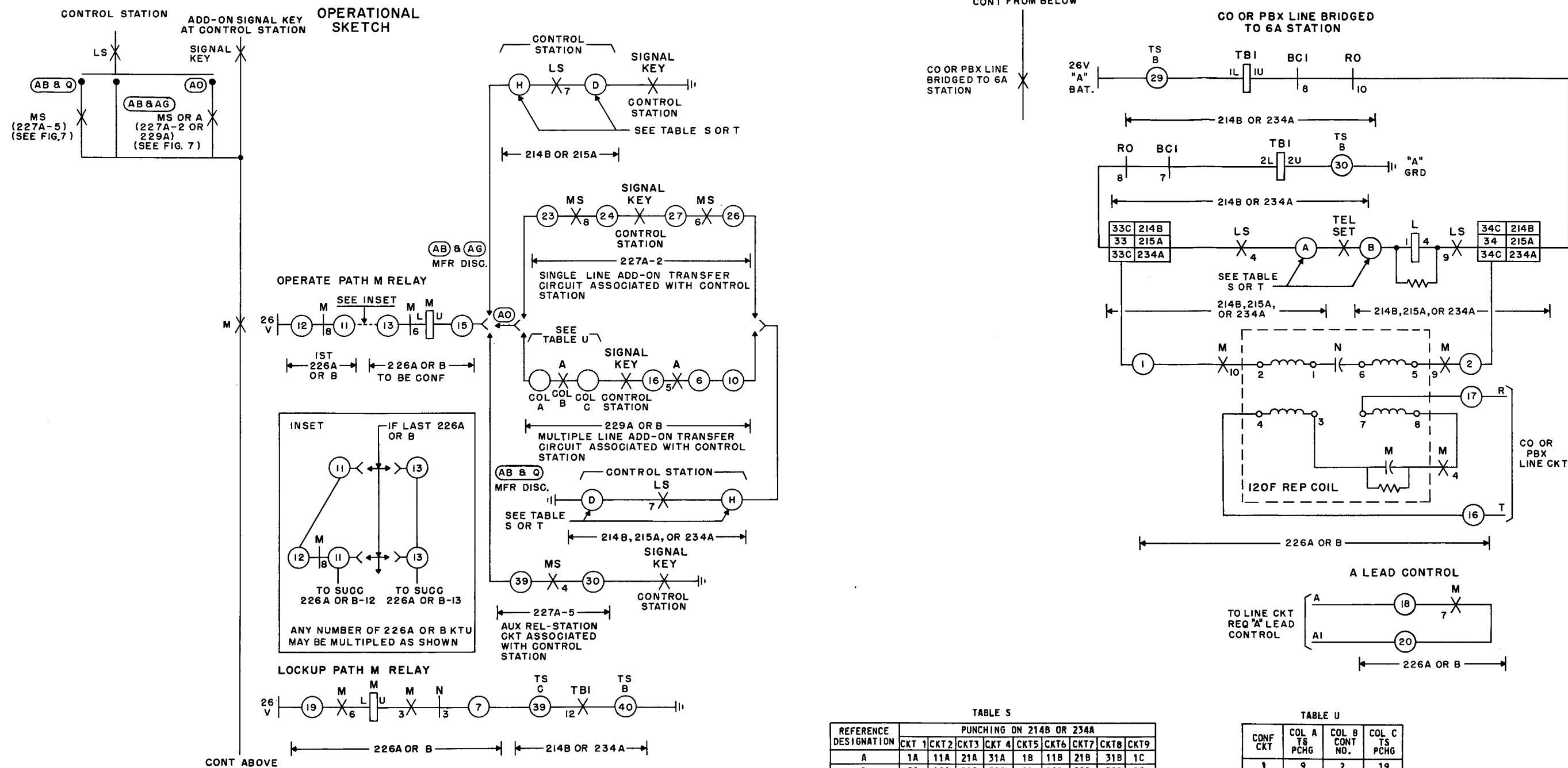


TABLE S

REFERENCE DESIGNATION	PUNCHING 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
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

TABLE U

CONF CKT	COL A TS PCHG	COL B CONT NO.	COL C TS PCHG
1	9	2	19
2	8	3	18
3	7	4	17
4	4	7	14
5	3	8	13
6	2	9	12
7	1	10	11

TABLE T

REFERENCE DESIGNATION	PCHG ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
D	5	15	25
H	28	29	30

Fig. 10 - Add-On Conferencing

13.00 CAMP-ON

13.01 When the 6A system is equipped with camp-on, an idle station may go in over the busy lamp (indicating a system busy) and dial a code to select another station.

13.02 Line seizure is accomplished as described in 3.00 with the exception of the operation of the *B1* relay and its functions. At the completion of the pulse train at the end of the first digit, a ground from the selector circuit operates the *BY1* relay under control of the normal *B1* relay.

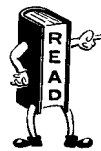
13.03 The *BY1* relay in operating (a) operates the *BY* relay (b) opens the lockup path for the *BY* relay, and (c) opens the various control paths which are used in the process of camp-on. The *BY1* is a slow-release relay and it will remain operated over the interval needed to operate the transfer circuit when a 2-digit code is dialed.

13.04 The *BY* relay in operating (a) opens the operate path of the *BY1* relay, (b) after the *BY1* relay releases, the *BY* relay locks up to the *B* relay under control of the *TB1* relay, (c) opens its own operate path, (d) holds the *T* relay operated, preventing the release of the selector switch, thus registering the dialed code, (e) oper-

ates the associated flashing circuit, (f) operates the vibrator if *AQ* option is provided, and (g) connects busy tone to the winding of the *A* relay to which the calling party is also connected. This indicates the calling party and any other idle station that may pick up that the system is being camped-on.

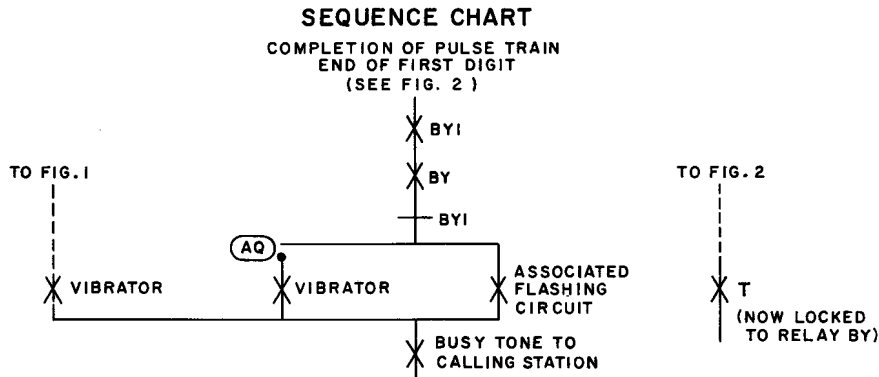
13.05 When the last station associated with the talking link hangs up, the *TB1* relay will release. The release of relay *TB1* releases the *BY* relay. The release of relay *BY* (a) allows relay *B1* to operate and (b) removes the holding circuit from the *T* relay, starting its timing cycle.

13.06 The *B1* relay in operating allows the called station's signaling circuit to operate as described in 5.02 through 5.05.



Stations which are connected so that they are not automatically cut off (F option) cannot camp-on since on pickup they are transferred onto the talking link. Signal key selection cannot be used to operate the camp-on feature.

Reference: SD-69286-01



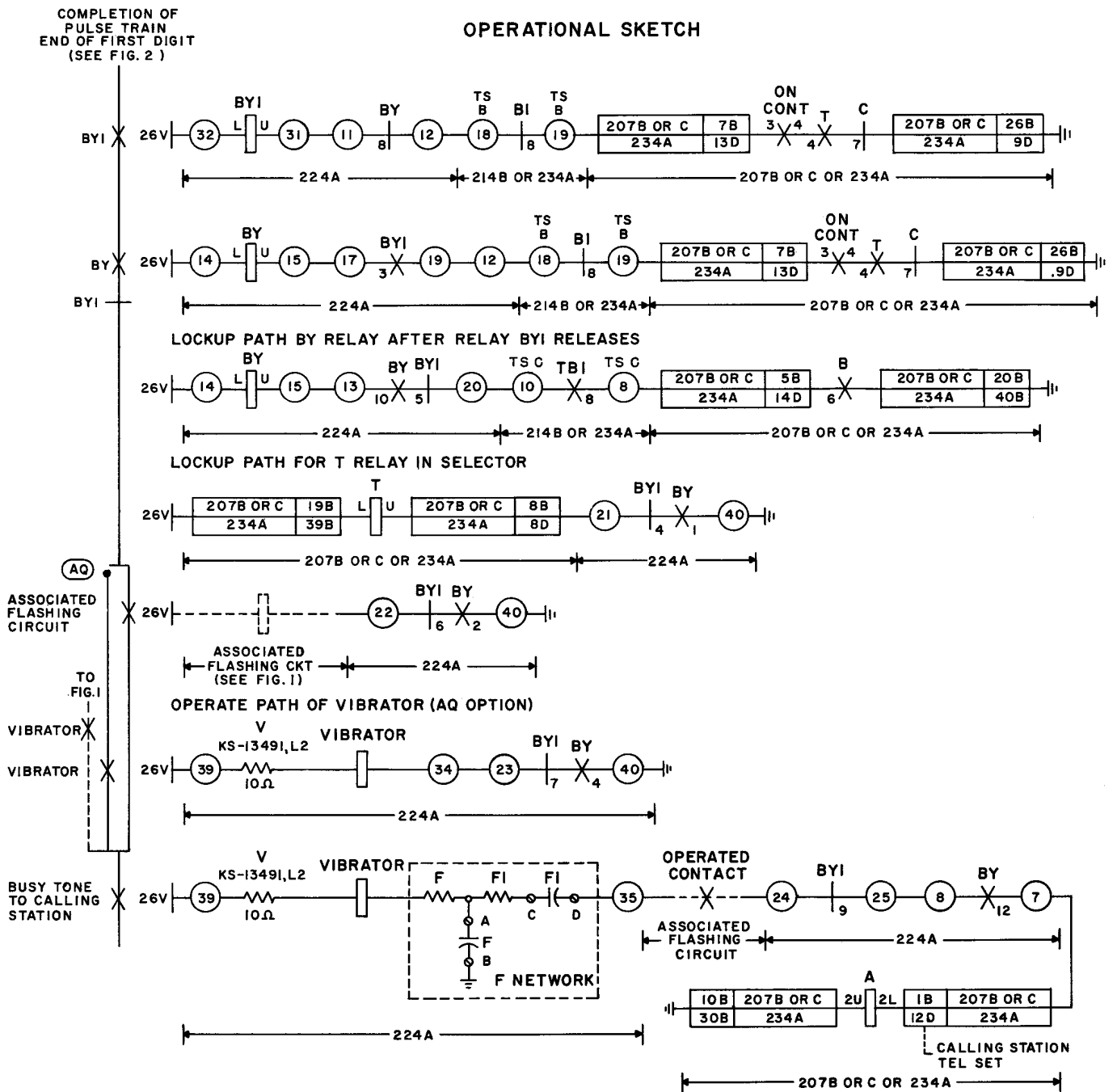


Fig. 11 - Camp-On

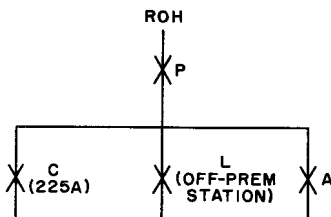
14.00 OFF-PREMISE STATION, LINE SEIZURE

When an off-premise station initiates a call, it is connected to the selector circuit under control of the *P* relay in the long line circuit and the *LS* relay in its associated line and signaling circuit. As the station picks up, the *P* relay operates and closes a path through the windings of the *C* relay

in the long line circuit to operate relay *A* in the selector circuit. Upon dialing, the *P* relay repeats dial pulses causing relay *A* to release and re-operate in unison with the dial pulses. This action causes the selector circuit to operate as described in 4.01 through 4.03.

Reference: SD-69286-01

SEQUENCE CHART



TO FIG. 1
LINE SEIZURE

OPERATIONAL SKETCH

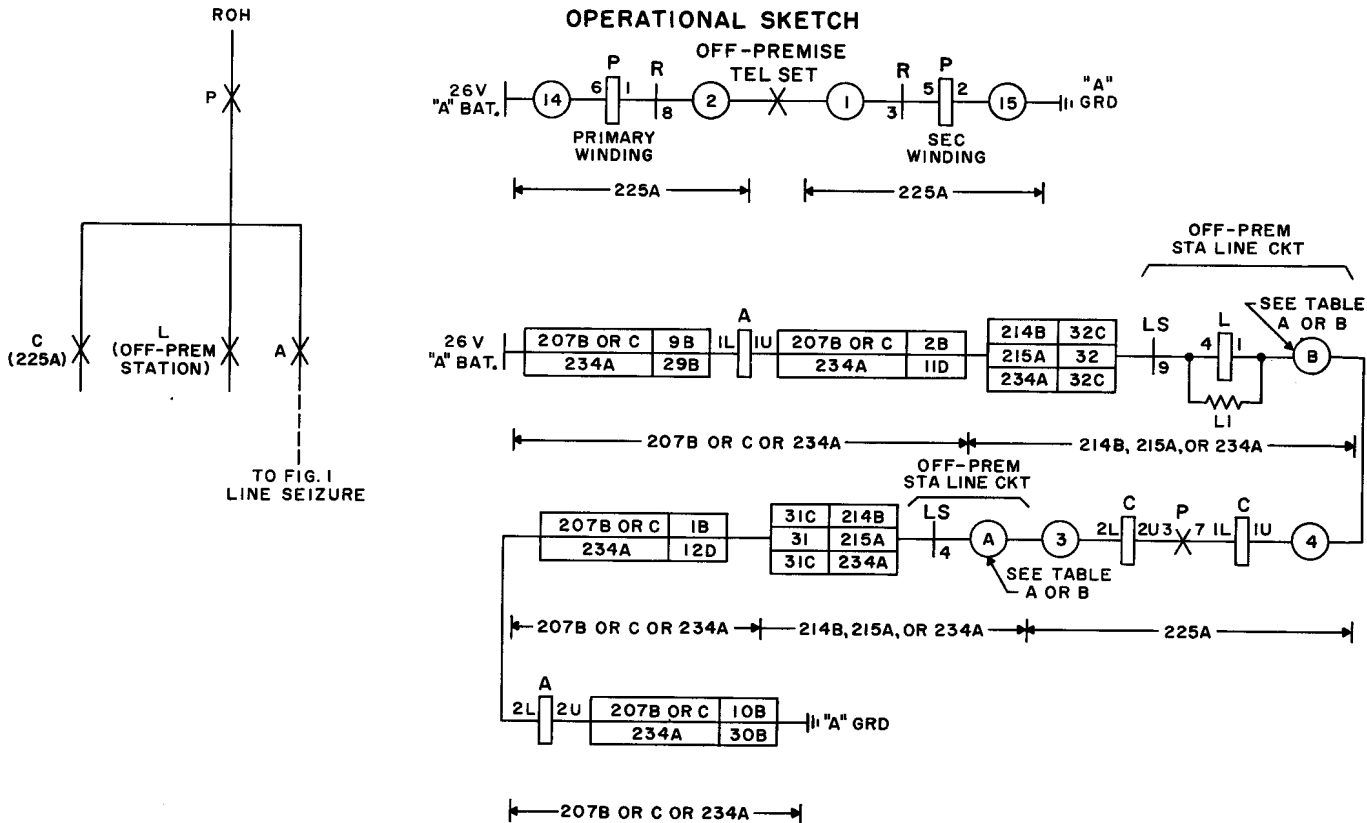


TABLE A

REFERENCE DESIGNATION	PUNCHING 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

TABLE B

REFERENCE DESIGNATION	PUNCHING ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22

Fig. 12 — Off-Premise Station, Line Seizure

15.00 OFF-PREMISE STATION, INCOMING CALL

15.01 An off-premise station is selected by dialing a station code or by the use of a signal key.

AL OPTION

15.02 Ground from the operated selector circuit or the operated signal key operates the *R* relay in the long line circuit. The *R* relay in operating (a) opens the transmission path between the off-premise station and local stations, (b) connects generator to the off-premise station's *T* and *R* leads operating the audible signal, and (c) operates the *BC* relay. The functions of the *BC*, *BC1*, and *LS* relays are as described in 5.02 or 7.01.

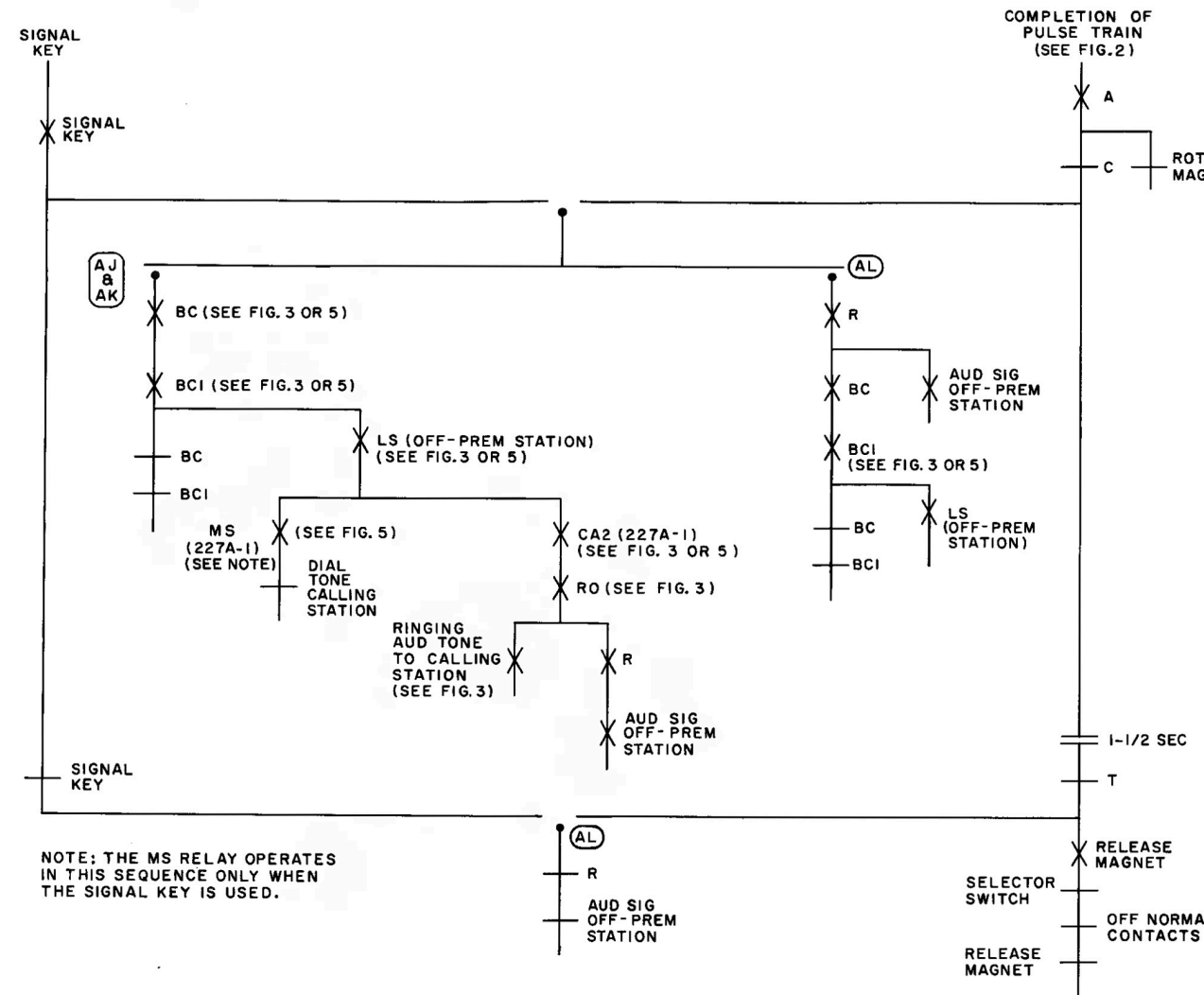
AK OPTION

15.03 Same as described in 5.01, 5.02, and 5.04 when the dial is used, or 7.01 and 7.03 when the signal key is used, with the exception that the *RO* relay operates the *R* relay. The *R* relay in turn operates the audible signal at the off-premise station.

15.04 No provision is made to supply the off-premise station with illumination from the 6A key telephone system.

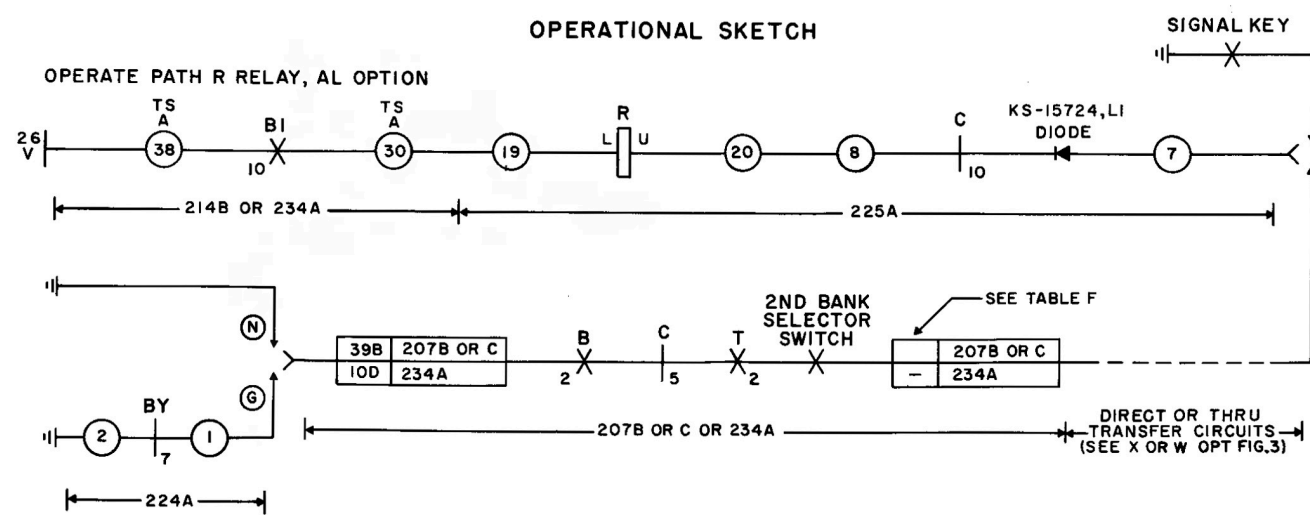
Reference: SD-69286-01

SEQUENCE CHART

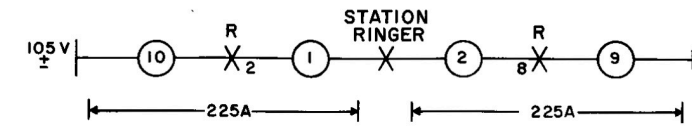


NOTE: THE MS RELAY OPERATES IN THIS SEQUENCE ONLY WHEN THE SIGNAL KEY IS USED.

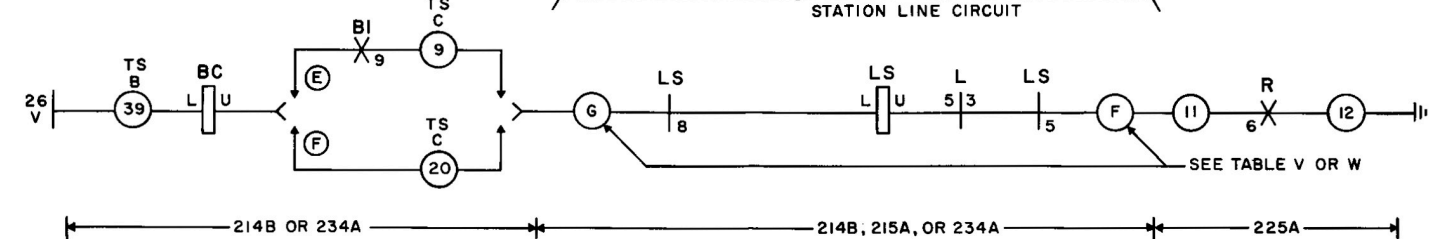
OPERATIONAL SKETCH



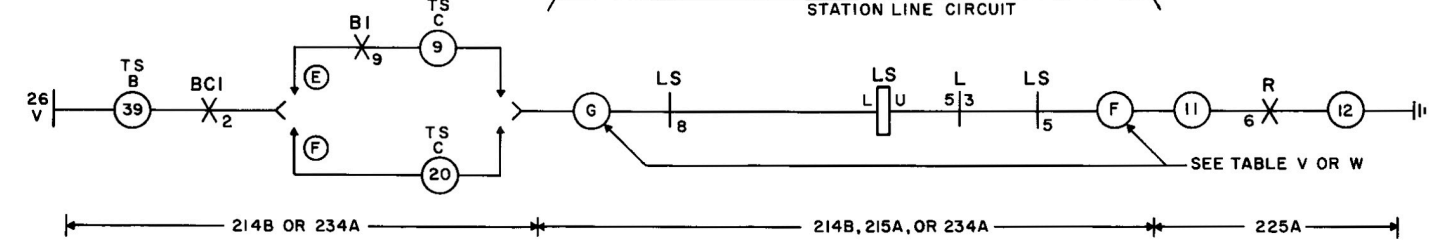
OPERATE PATH AUDIBLE SIGNAL, AL OR AK OPTION



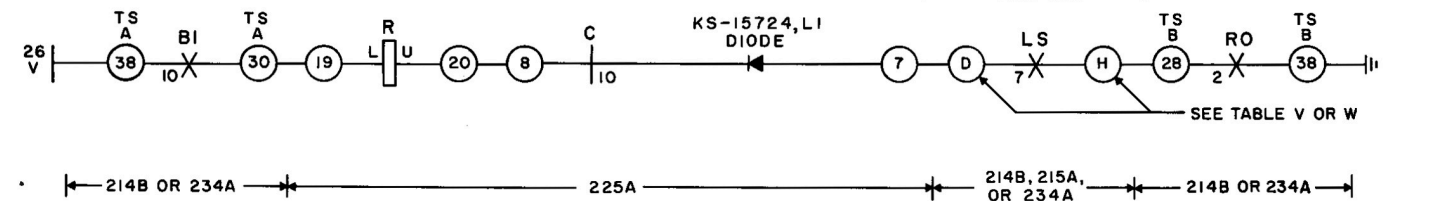
OPERATE PATH BC RELAY, AL OPTION



OPERATE PATH LS RELAY, AL OPTION



OPERATE PATH R RELAY, AK OPTION



REF DESIG	PUNCHING ON 214B OR 234A								
	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
F	7A	17A	27A	37A	7B	17B	27B	37B	7C
G	11C	12C	13C	14C	15C	16C	17C	18C	19C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

REF DESIG	PUNCHING ON 215A		
	CKT 1	CKT 2	CKT 3
D	5	15	25
F	7	17	27
G	18	19	20
H	28	29	30

207B OR C	
LEAD	TERMINAL
C	11A
C	12A
C	13A
C	14A
C	15A
C	16A
C	17A
C	18A
C	19A
C	20A

Fig. 13 - Off-Premise Station, Incoming Call

16.00 OFF-PREMISE STATION, ANSWERING INCOMING CALL – TALKING PATH

ANSWERING INCOMING CALL

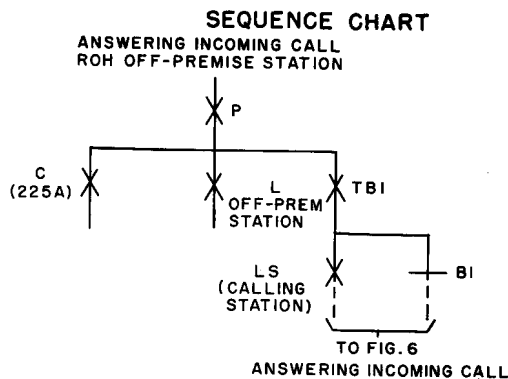
16.01 When an off-premise station picks up in response to the audible signal, the *P* relay will operate. The operation of the *P* relay operates the *C* relay in the long line circuit, the *L* relay in the station line circuit, and the *TB1* relay in the battery supply and signaling circuit. The func-

tions of the *TB1* and related relays are as described in 8.01.

TALKING PATH

16.02 Talking battery for the local station is supplied from the *TB1* relay, and for the off-premise station it is supplied from the *P* relay. The two circuits are bridged together through the *P1* and *D* capacitors.

Reference: SD-69286-01



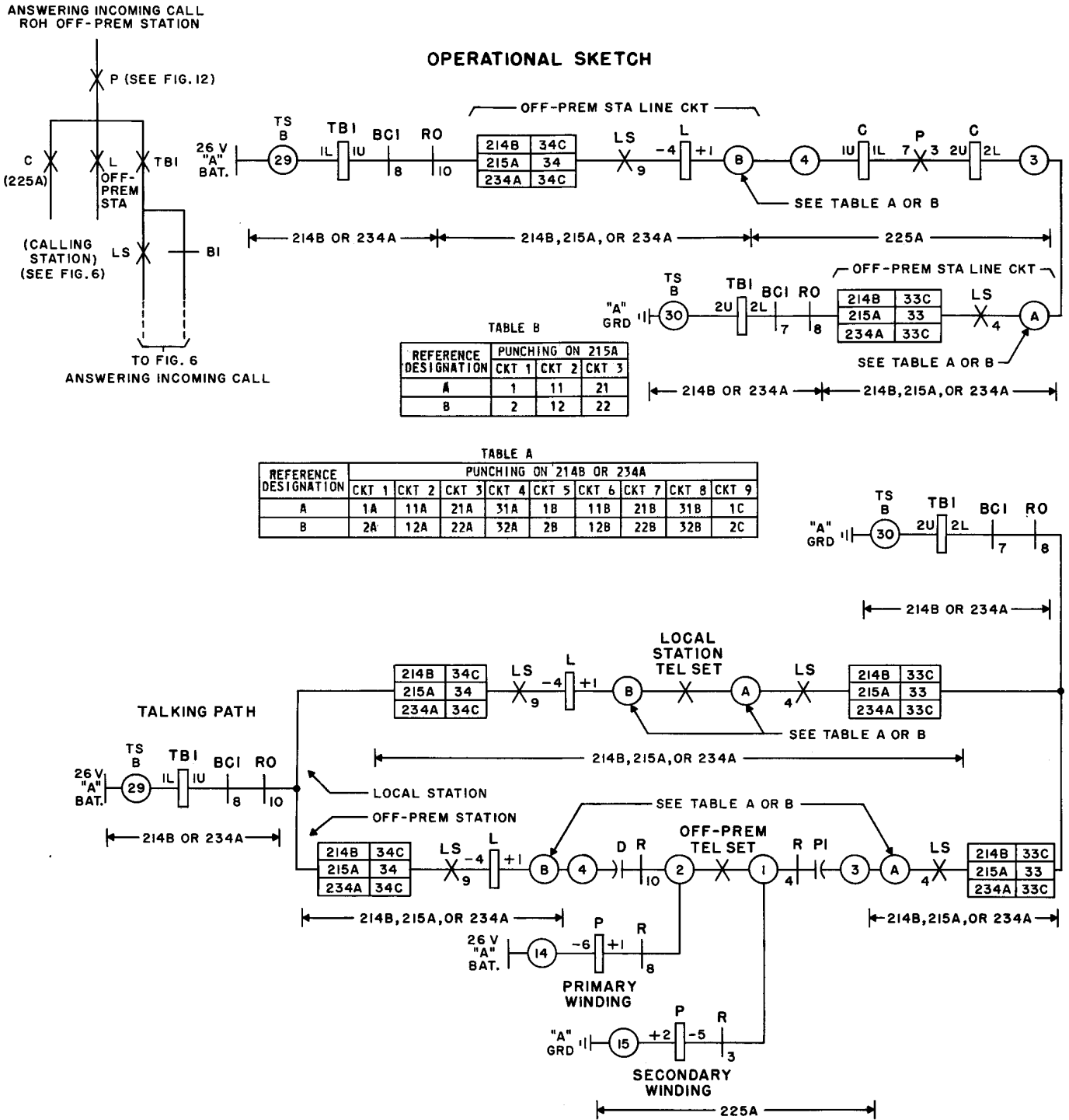


Fig. 14 — Off-Premise Station, Answering Incoming Call, Talking Path