

SWITCHING SYSTEM NO. 300

SEQUENCE CHARTS AND OPERATIONAL SKETCHES

LAND LINE OPERATION

1.00 INTRODUCTION

1.01 This section covers a portion of land line operation of Switching System No. 300, using sequence charts and operational sketches. It also contains a description of the symbols used in the charts and sketches. Issue 2 was prepared for limited use at a plant training school.

1.02 Index of sequence charts and operational sketches follows.

1.03 Due to extensive changes marginal arrows have been omitted.

2.00 GENERAL

2.01 Major circuits used in Switching System No. 300 have been reduced to simplified sequence charts and operational sketches. The sequence charts cover the order of operation of relays, keys, and other devices comprising this equipment. The operational sketches are compiled from cable diagrams and schematic drawings and use detached-type contact symbols.

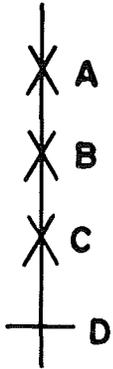
2.02 A sequence chart serves as a guide to understanding the circuit as a whole and as a key to the order of events in the operation of the circuit, although the chart may not show all the related operations taking place. It supplements but does not replace the written circuit description and the schematic drawing. Distinctive symbols, representing the operation and release of each relay or other device, are arranged on the chart in order of operation from the top downward and are connected by appropriate lines to show the interdependence of the successive operations.

2.03 An operational sketch is a circuit diagram representing a portion of a switching system in simplified form, completely disregarding boundaries of conventional schematic drawings. Use is made of the detached-type contact symbols, and operating paths of all relays and other apparatus are shown from battery to ground.

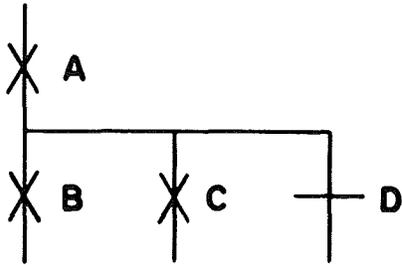
2.04 The following are some of the symbols used in the preparation of the sequence charts and operational sketches contained in this section.

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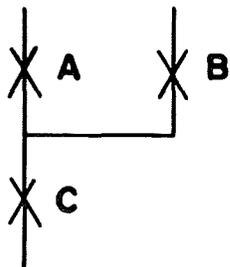
SEQUENCE CHART SYMBOLS



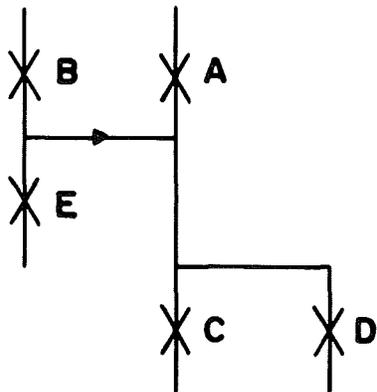
Simple sequential cause and effect relation: Relay A operates and causes the operation of relay B which, in turn, causes the operation of relay C. Relay C then releases relay D.



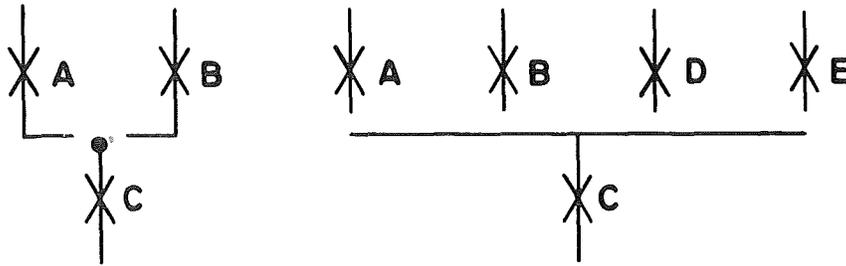
Multiple effects from a single cause: Relay A operates and causes the operation of both relays B and C and release of relay D.



Multiple causes for a single effect: Both relays A and B must operate before relay C operates.



Multiple causes with multiple effects: Both relays A and B must operate before either relay C or D can operate. The arrow is used to indicate one-way action. Relay E operates from relay B.

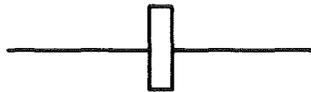


Alternative causes: Operation of either relay A or B will cause operation of relay C.



A relay operates and then releases under control of other relays or apparatus.

OPERATIONAL SKETCH SYMBOLS



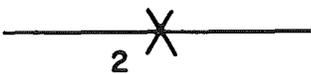
Relay core and winding.



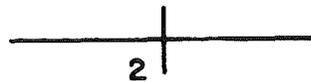
Relay or other apparatus contact operated.



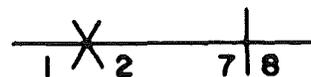
Relay or other apparatus contact unoperated (released).



Make contact of a wire-spring relay. Number indicates fixed spring of the number 2 set of contacts. Circuit open when relay is unoperated; closed when relay is operated.



Break contacts of a wire-spring relay. Circuit closed when relay is unoperated; opened when relay is operated.



Make or break relay or other apparatus contacts other than a wire-spring relay.

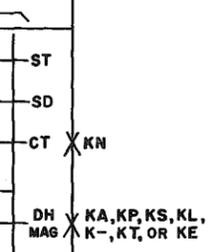
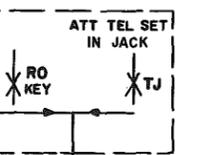


Battery: Negative side of 48-volt positive-grounded battery. The letter designates the fuse through which battery is fed to the apparatus.

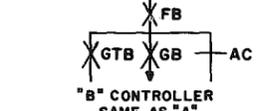


Ground: Letter designates ground bus to which the lead is connected.

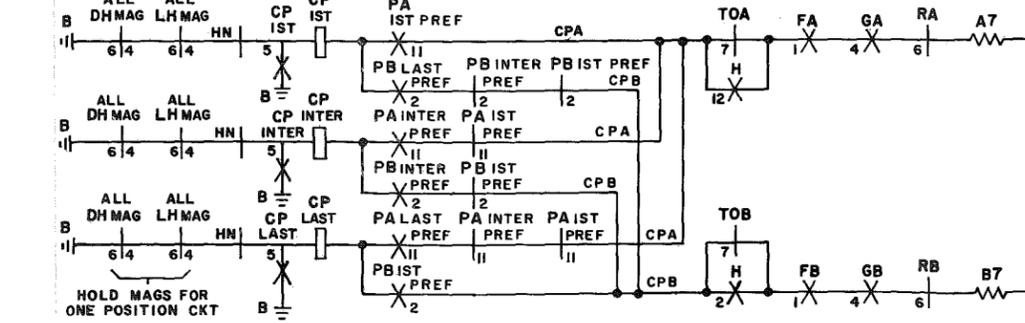
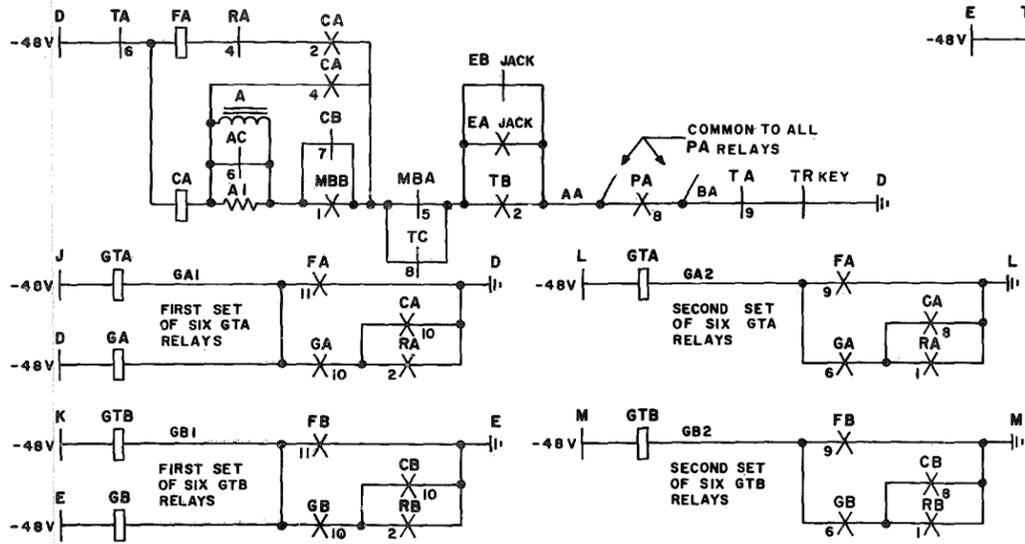
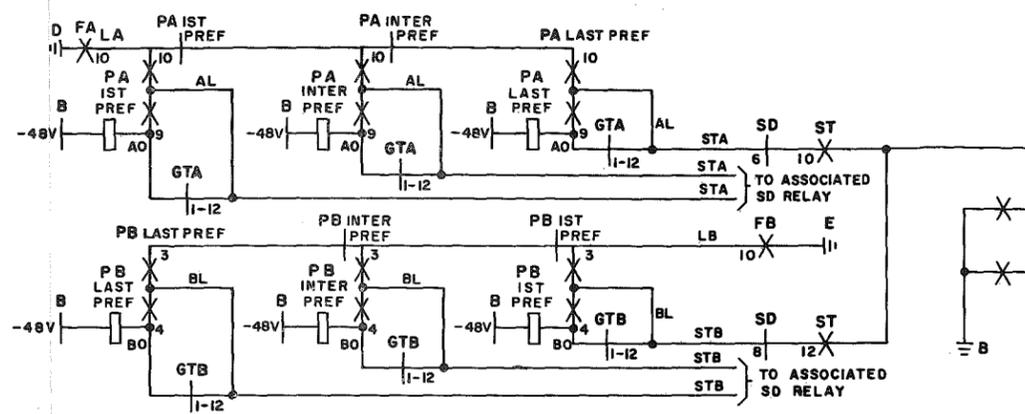
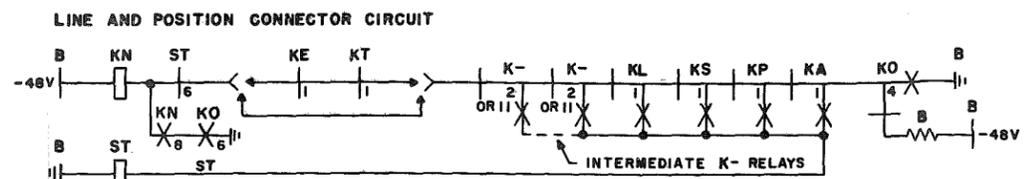
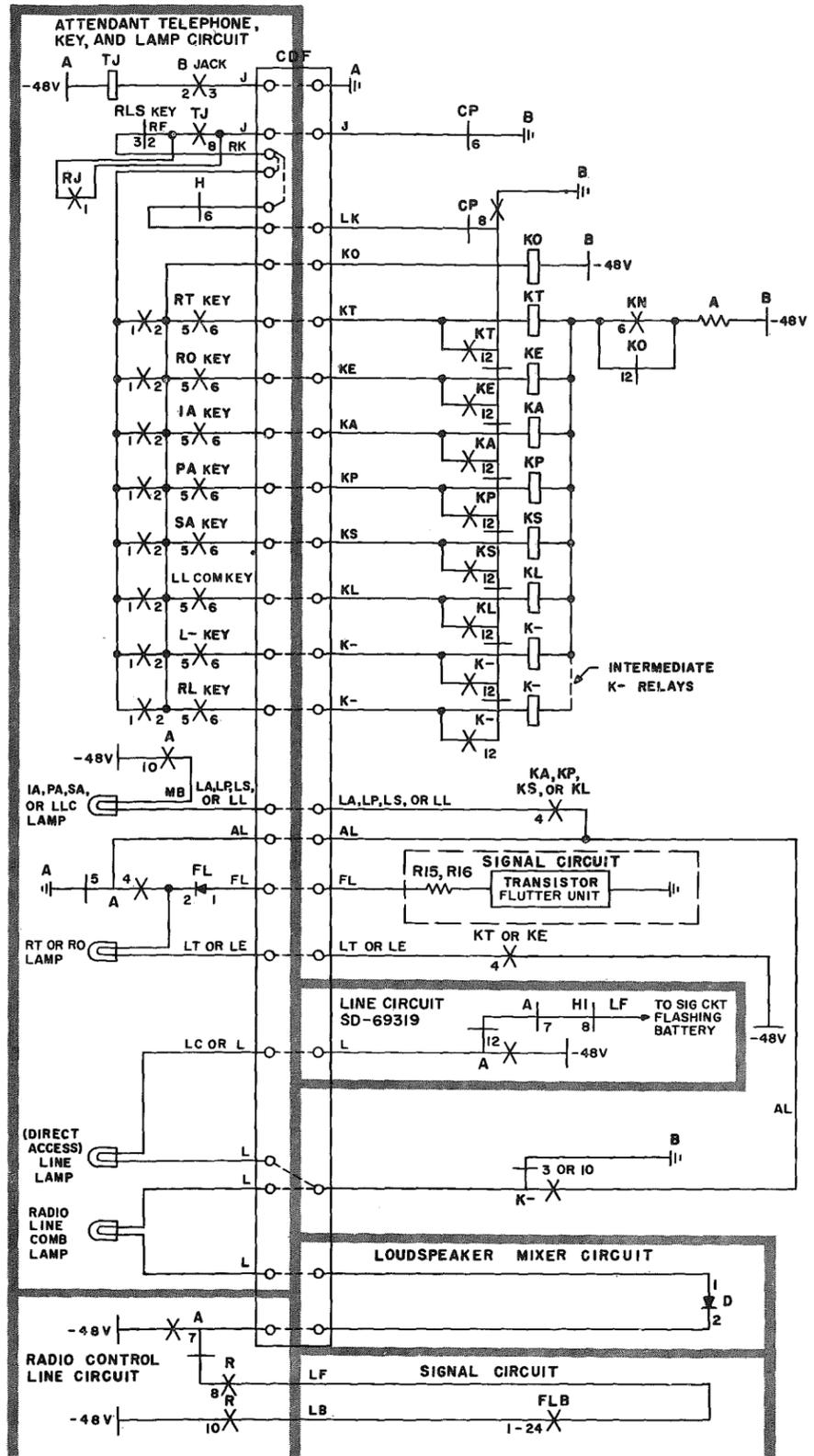
ART  
OR CIRCUIT



AWAITS RELEASE  
KEY (NONLOCKING)



L  
ALL  
DARY



- DRAWINGS USED**
- SD-69308-01, ISSUE 4A LPC
  - SD-69309-01, ISSUE 4A RATT
  - SD-69310-01, ISSUE 3A IAC
  - SD-69311-01, ISSUE 3A RC
  - SD-69316-01, ISSUE 2A RCLC
  - SD-69327-01, ISSUE 2A SIG
  - SD-69348-01, ISSUE 1 LSMC

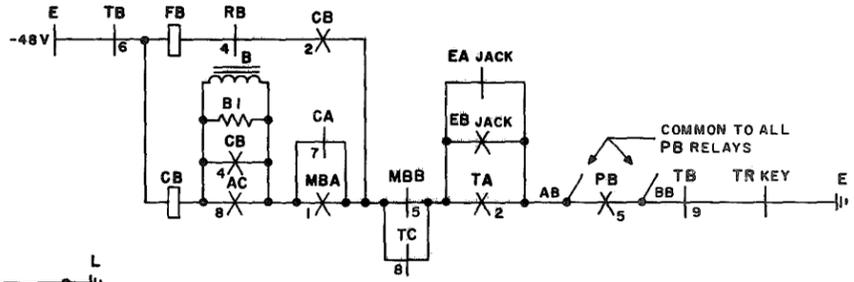
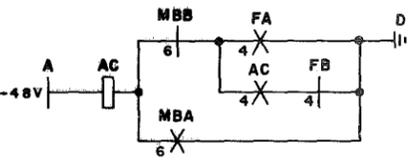
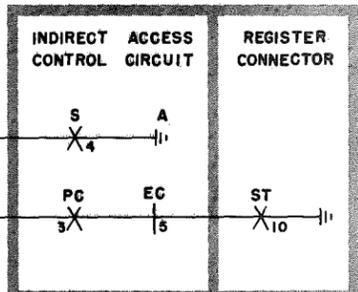


Fig. 1 - Line Position Connector - Seizure Page 4



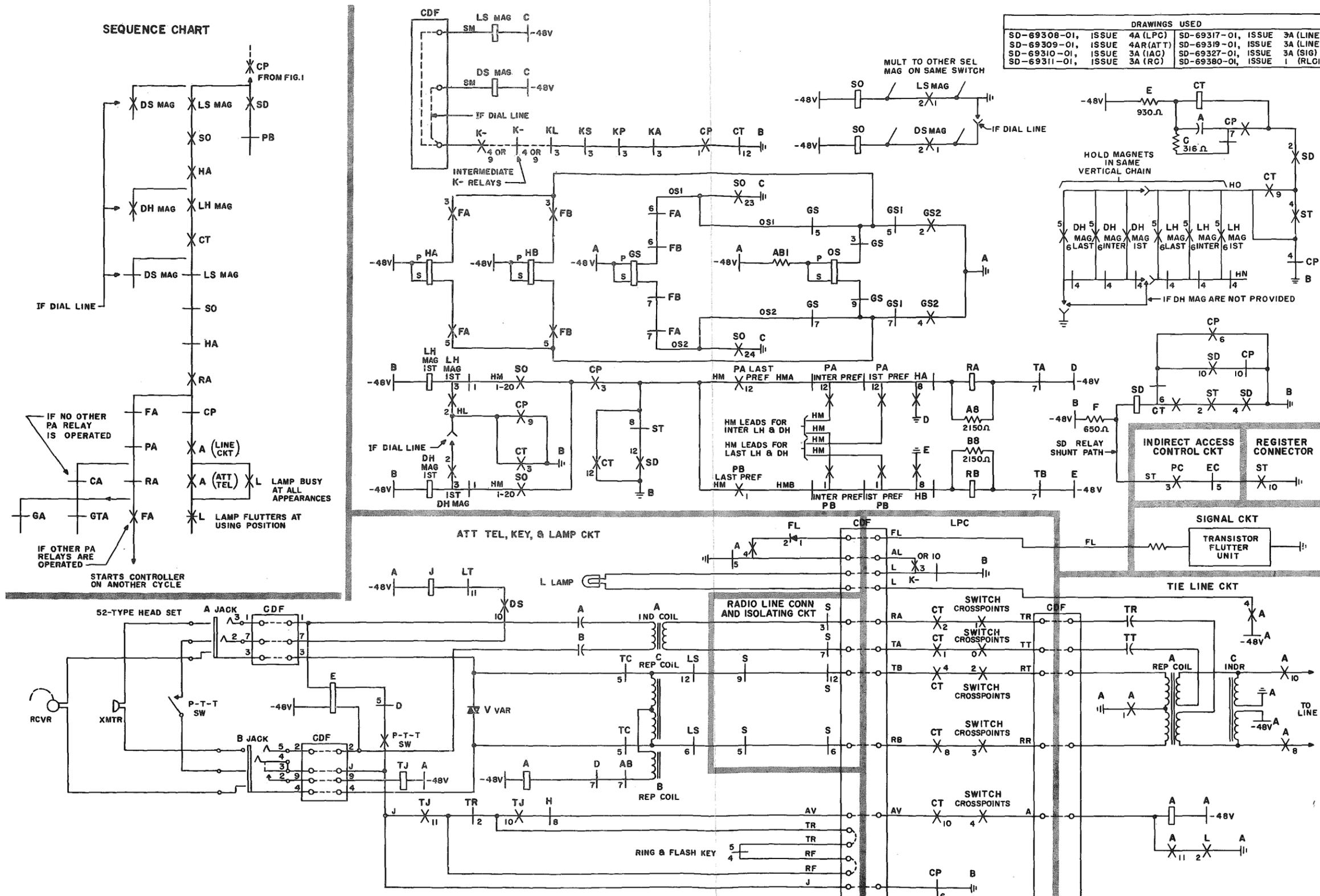
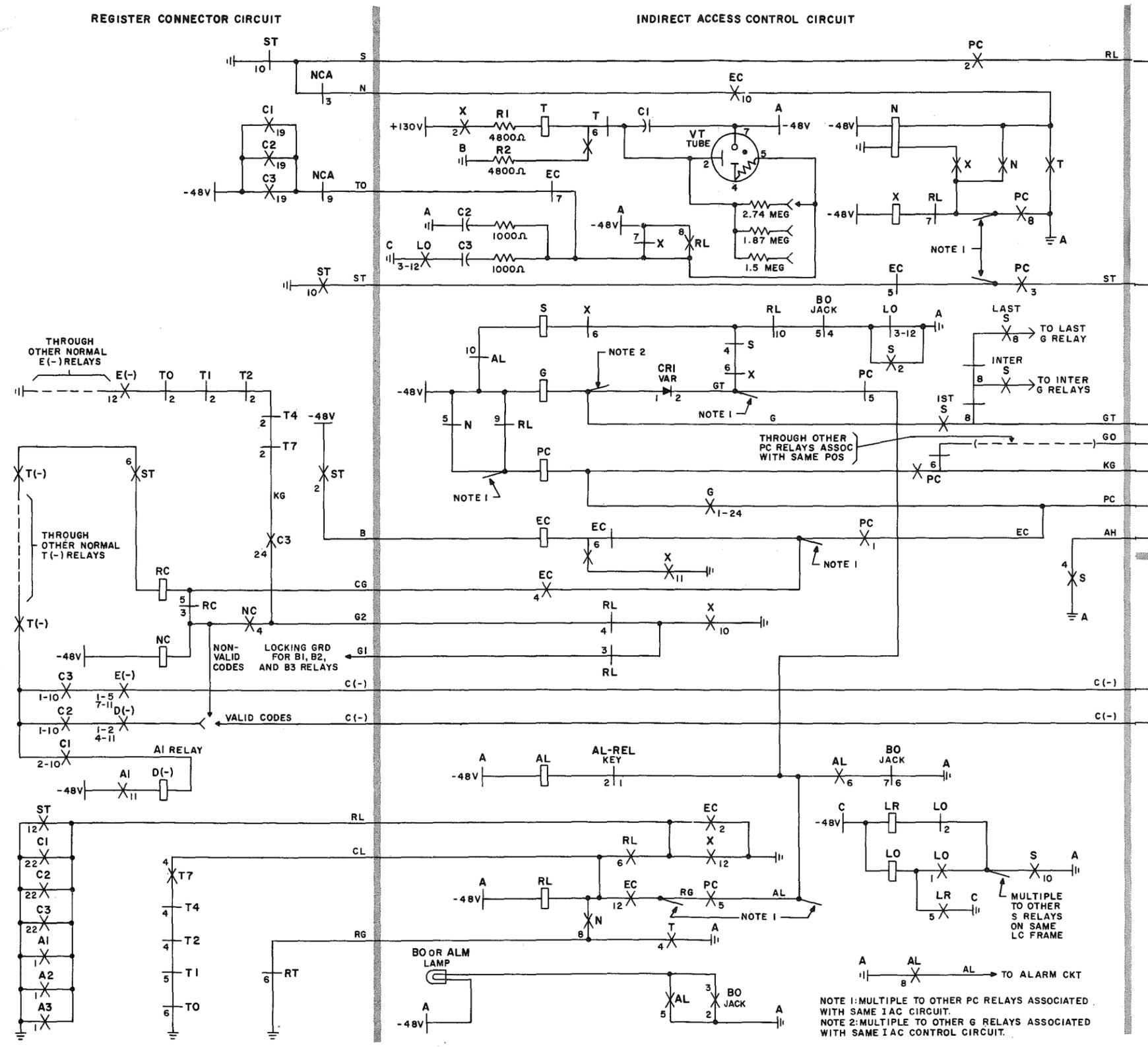
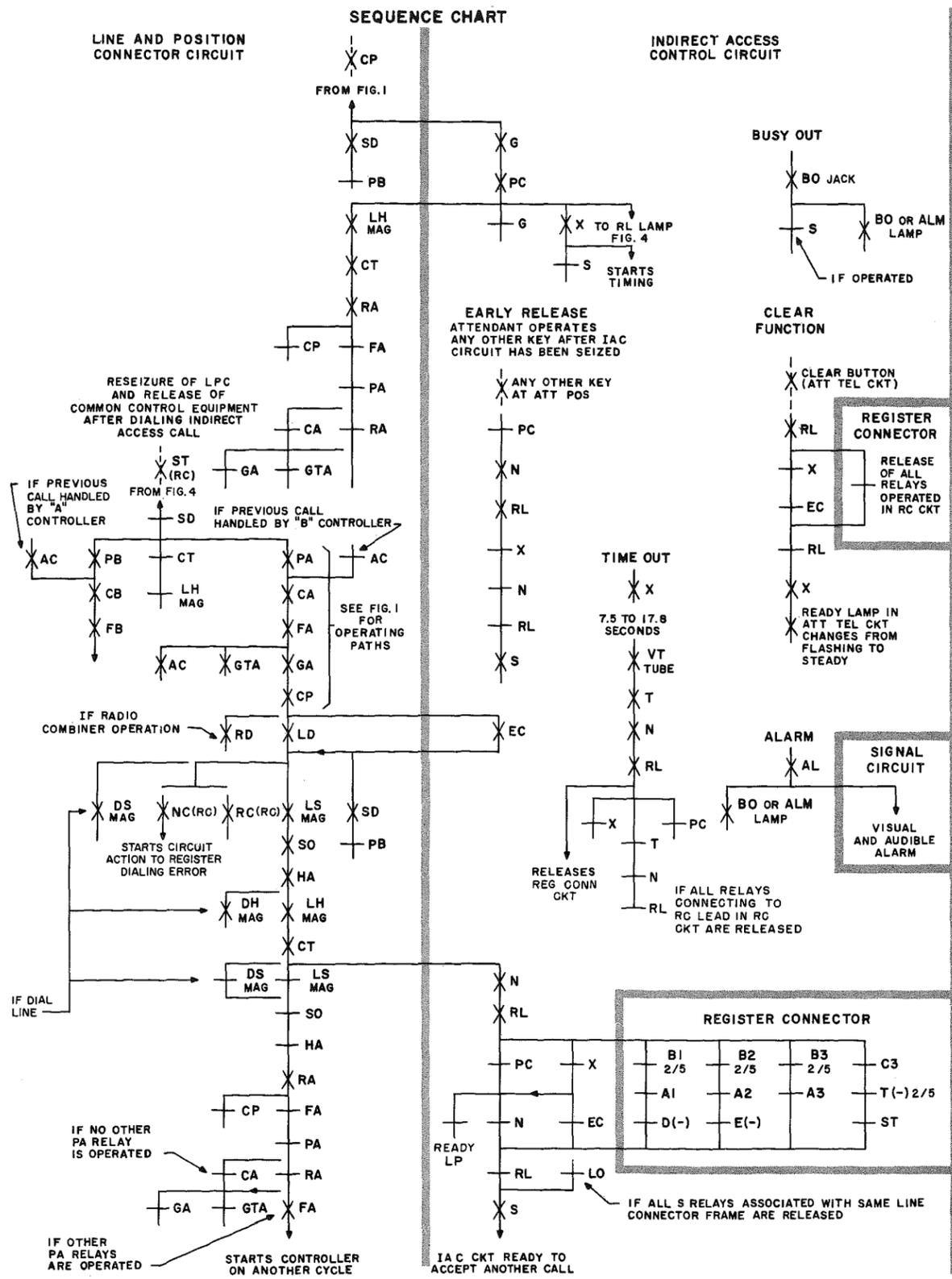


Fig. 2 - Line Position Connector - Controller Operation - Direct Access (DA) to a Tie Line





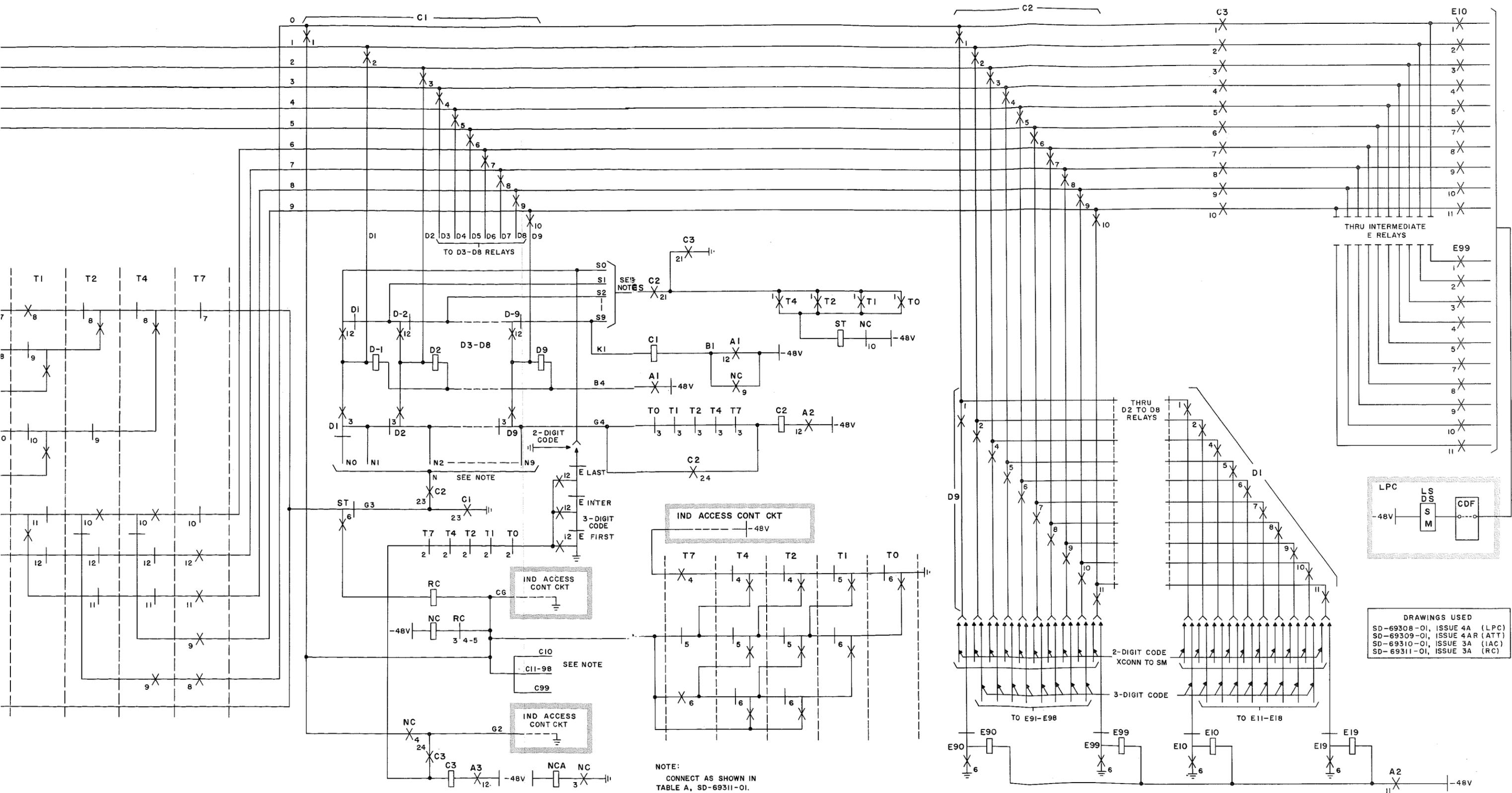
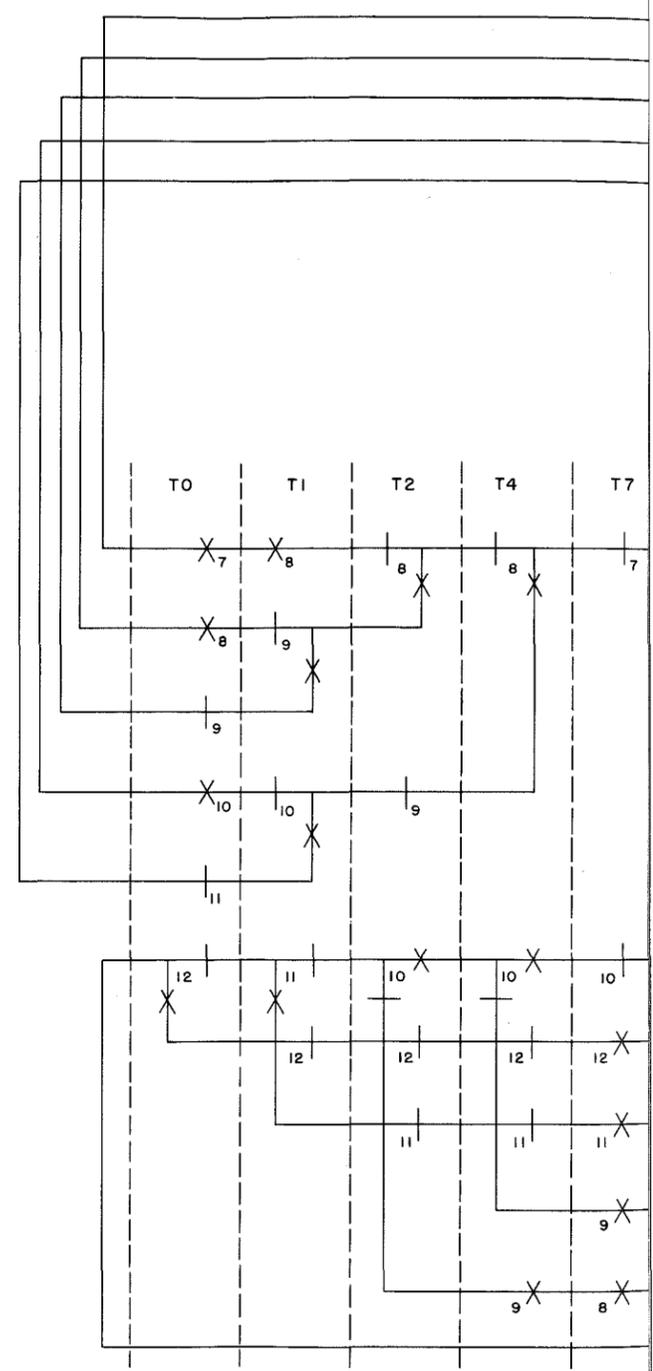
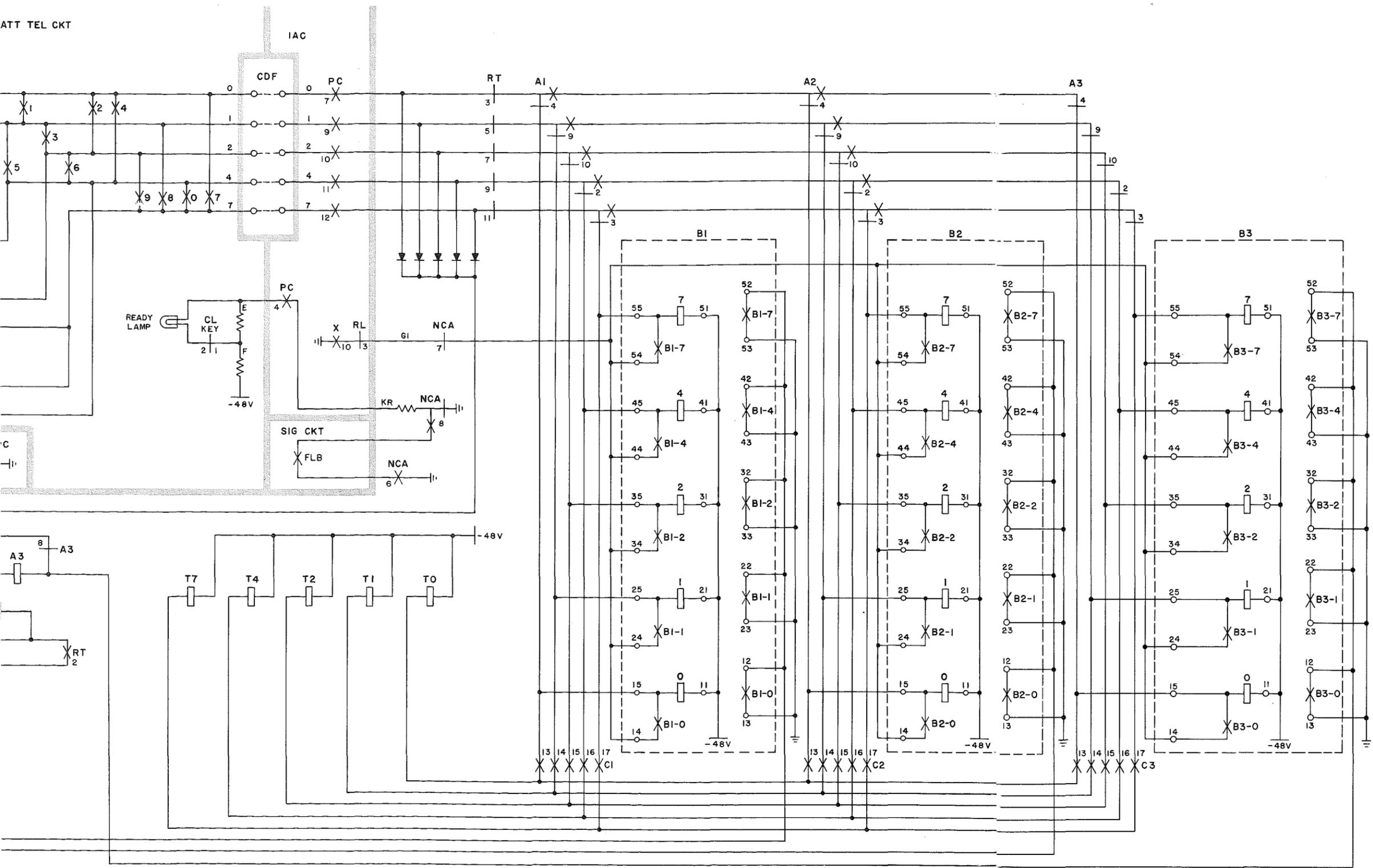
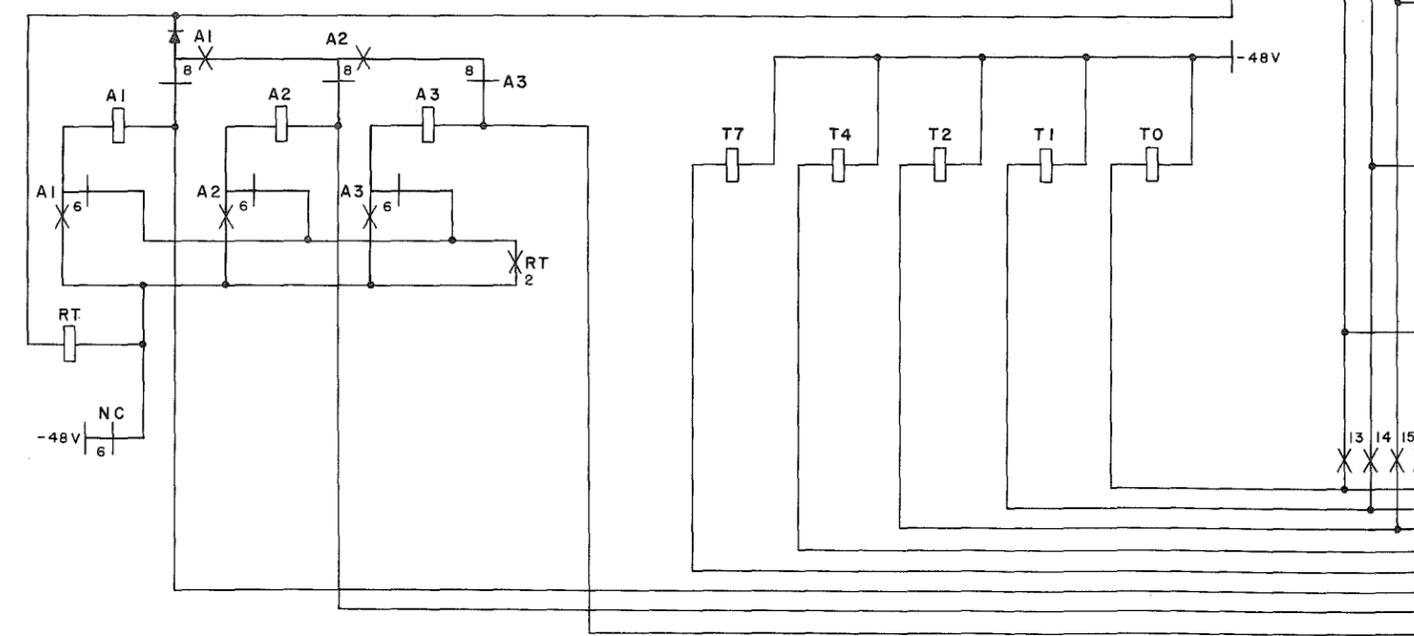
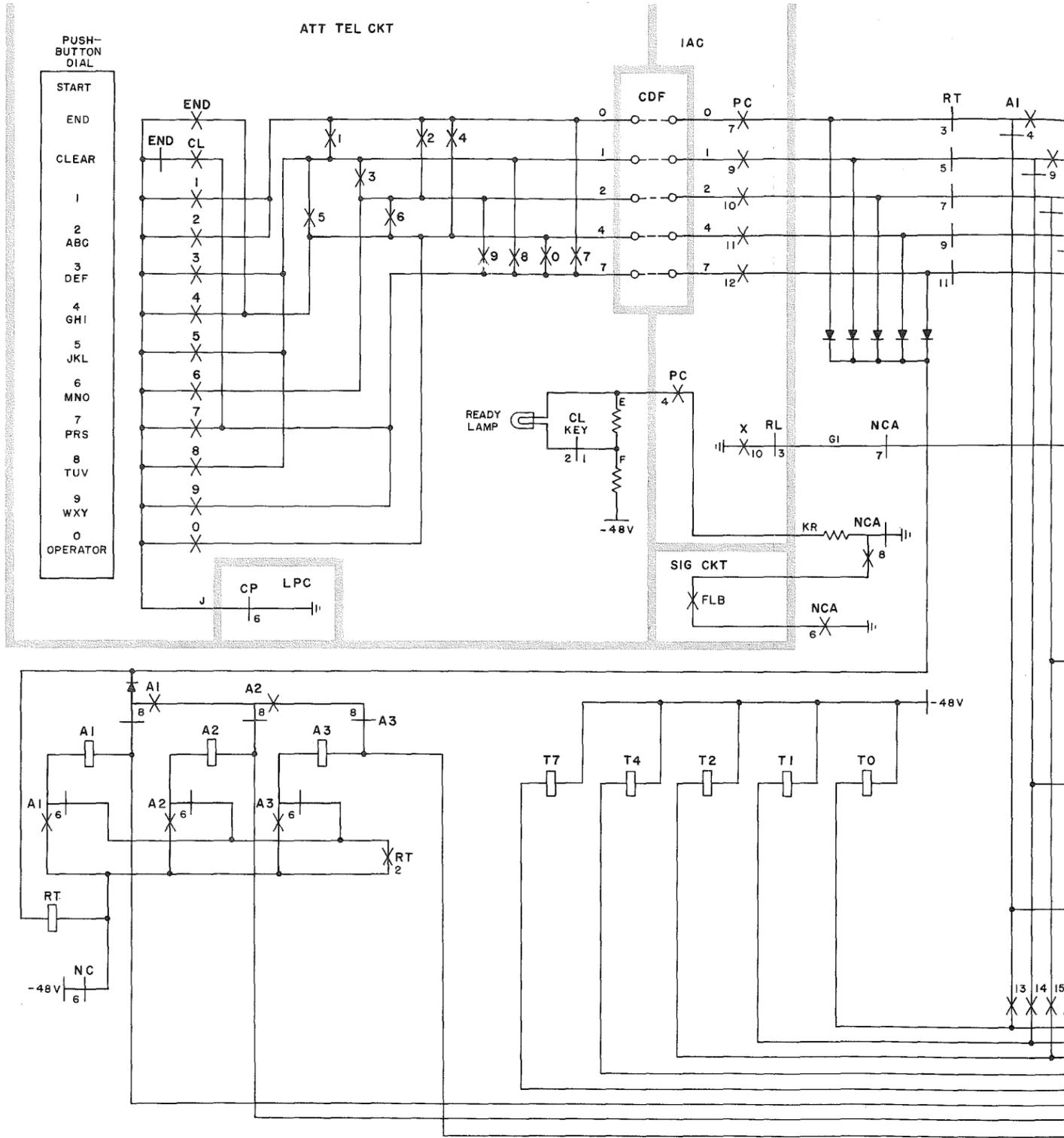
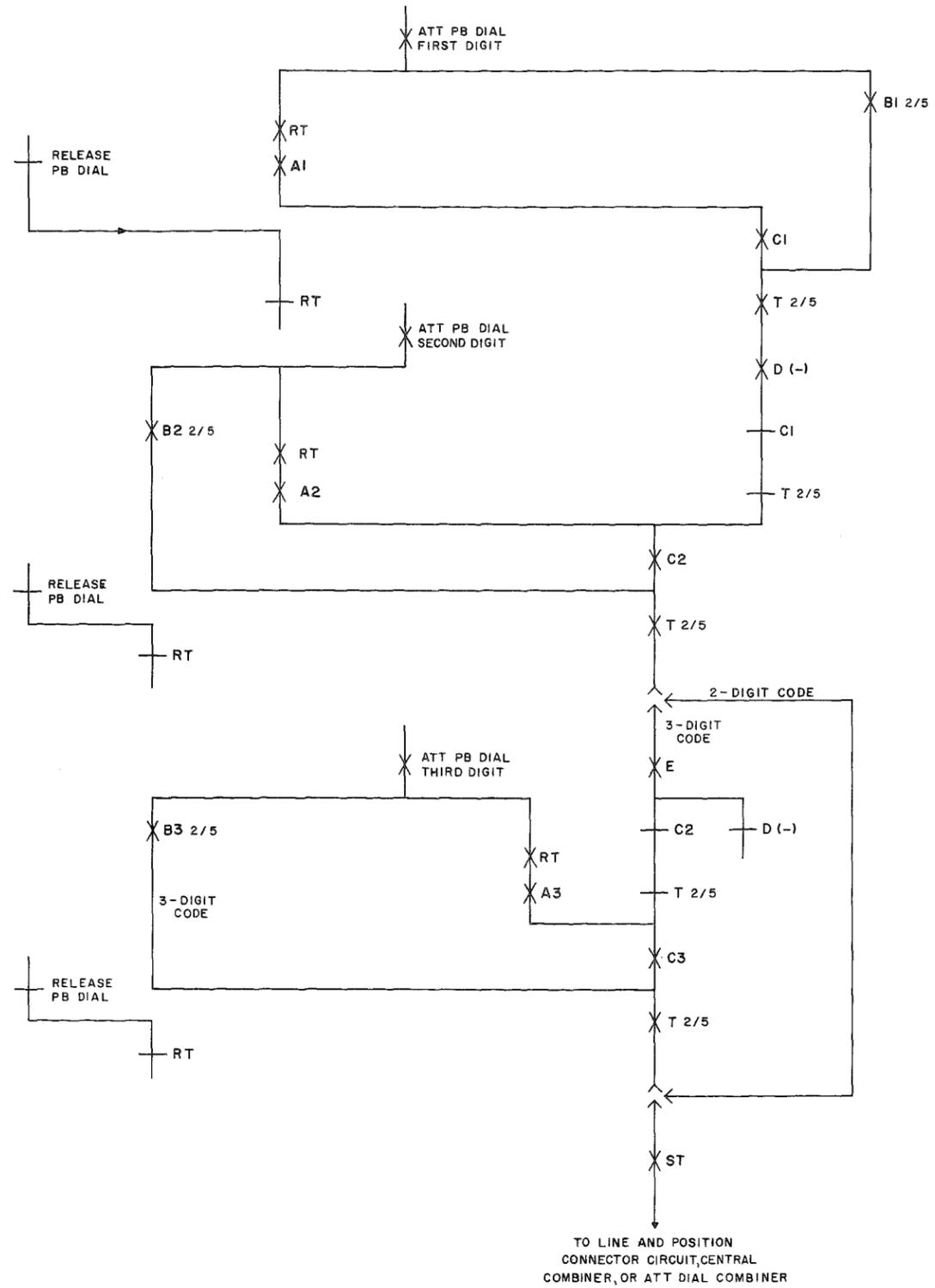


Fig. 4 - Register Connector Circuit

ATT TEL CKT



SEQUENCE CHART  
REGISTER CONNECTOR CIRCUIT



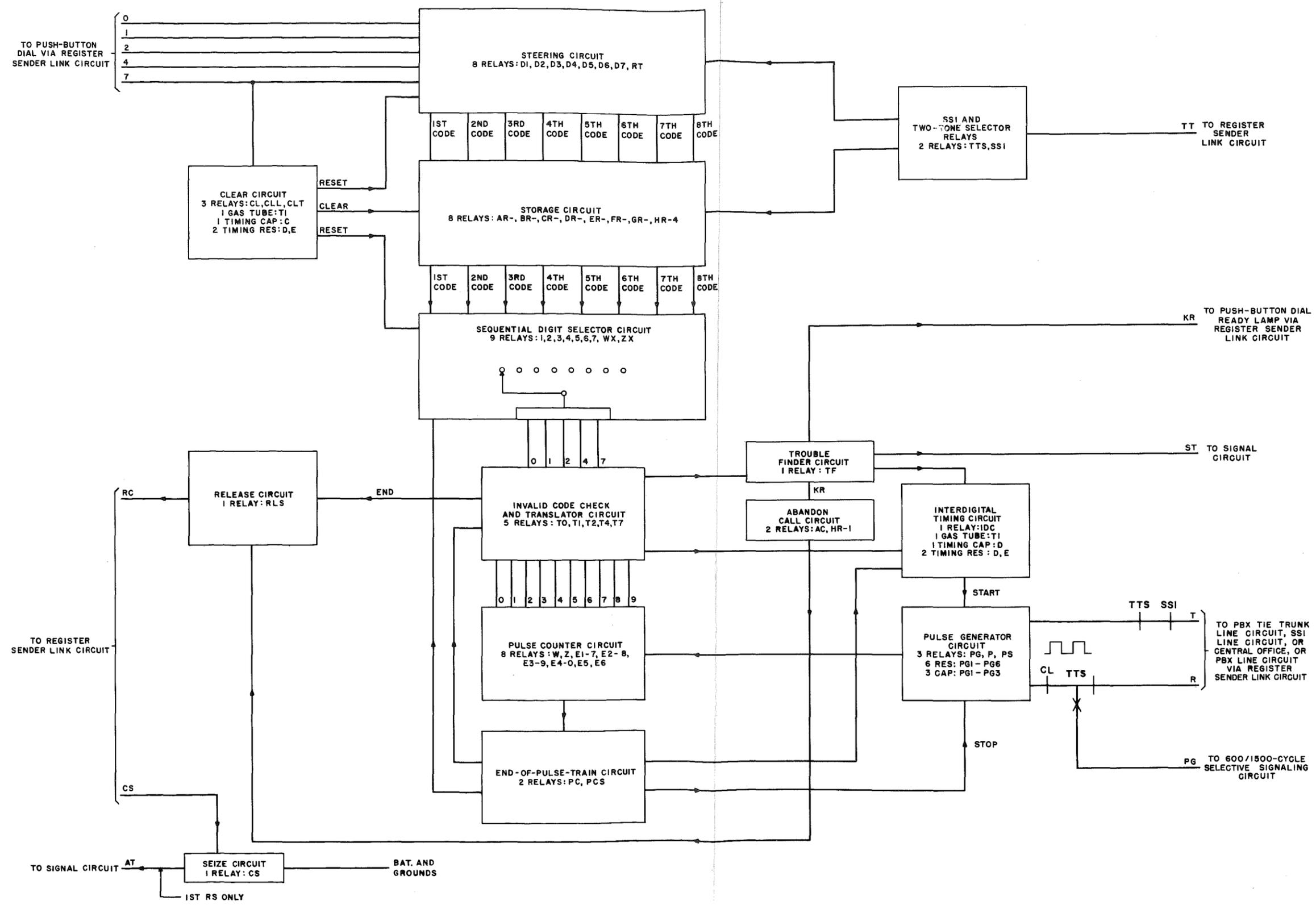
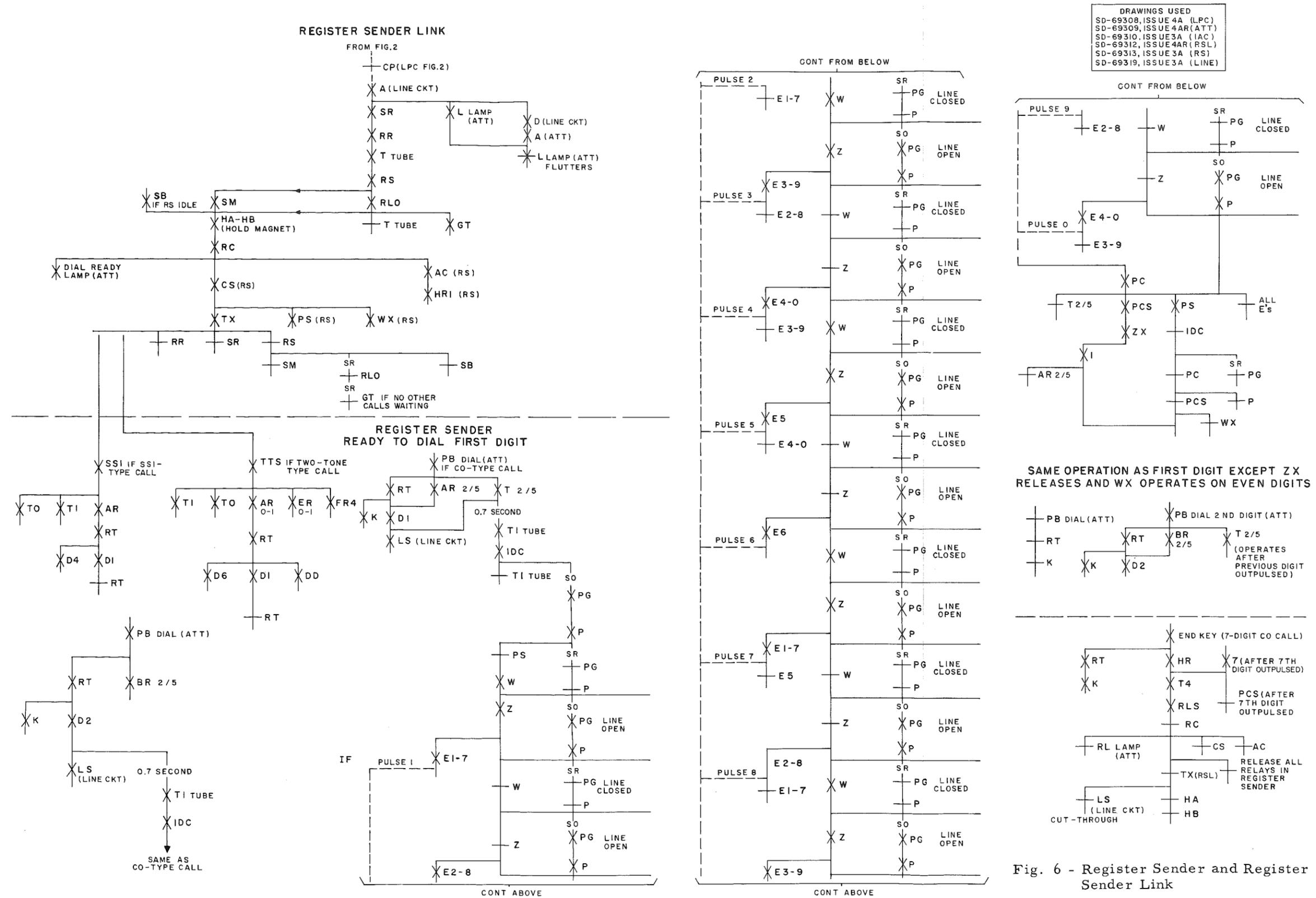
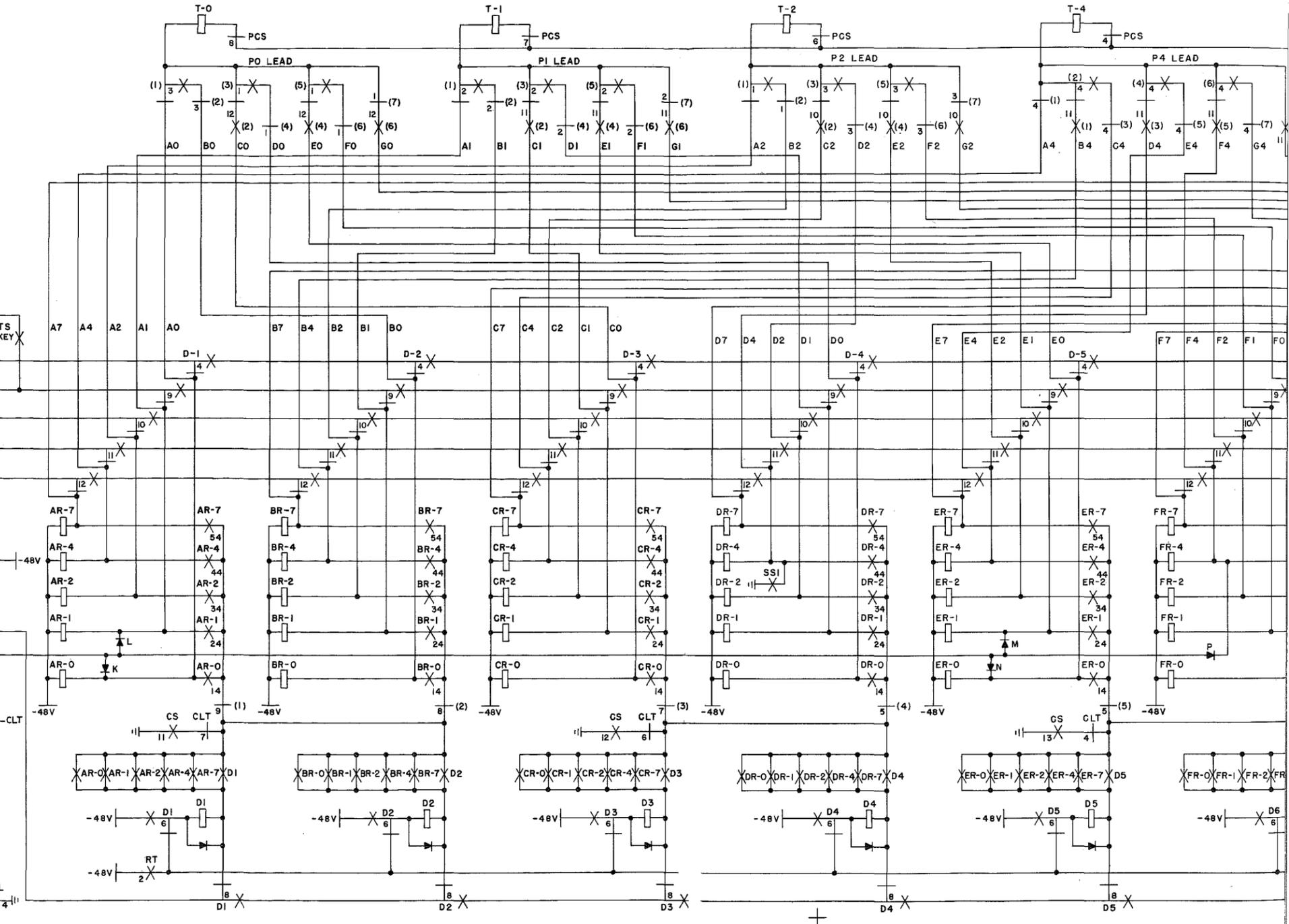
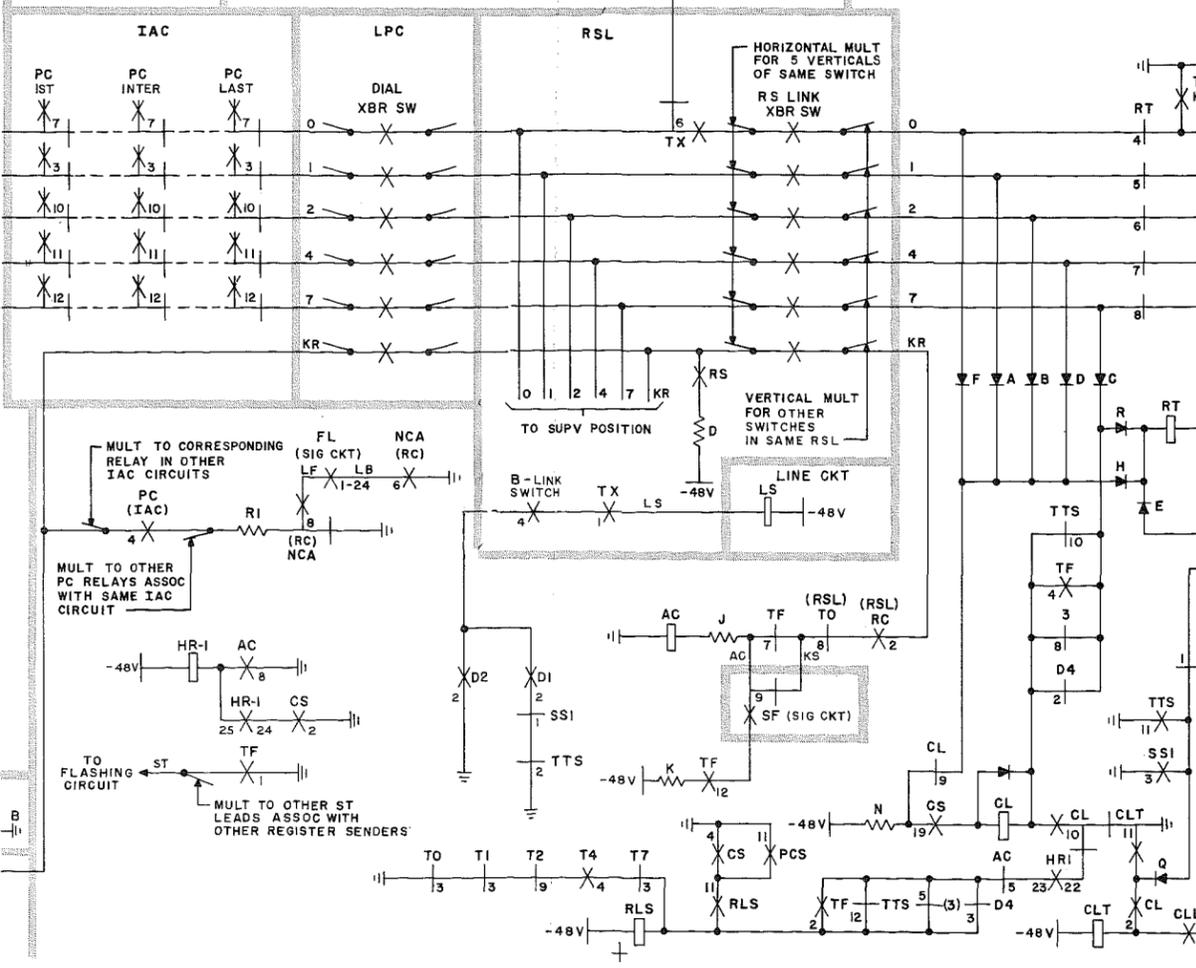
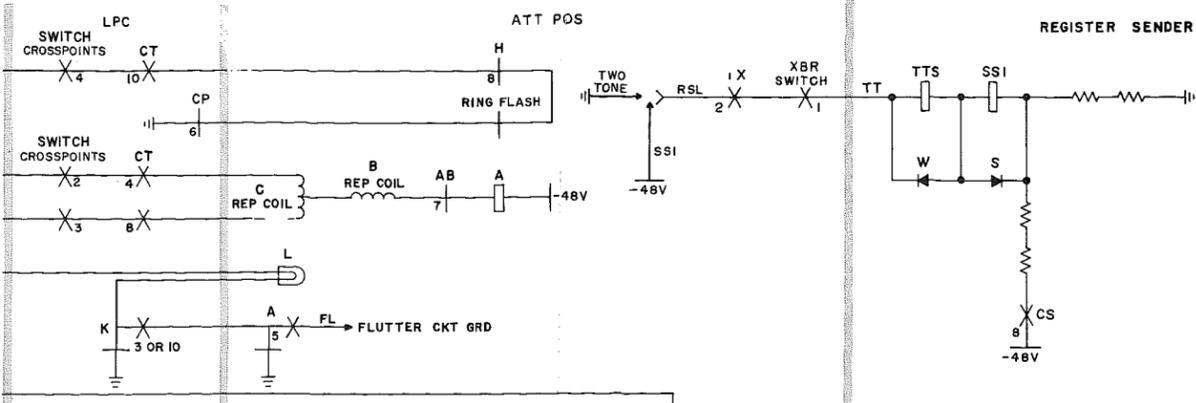


Fig. 5 - Register Sender Block Diagram









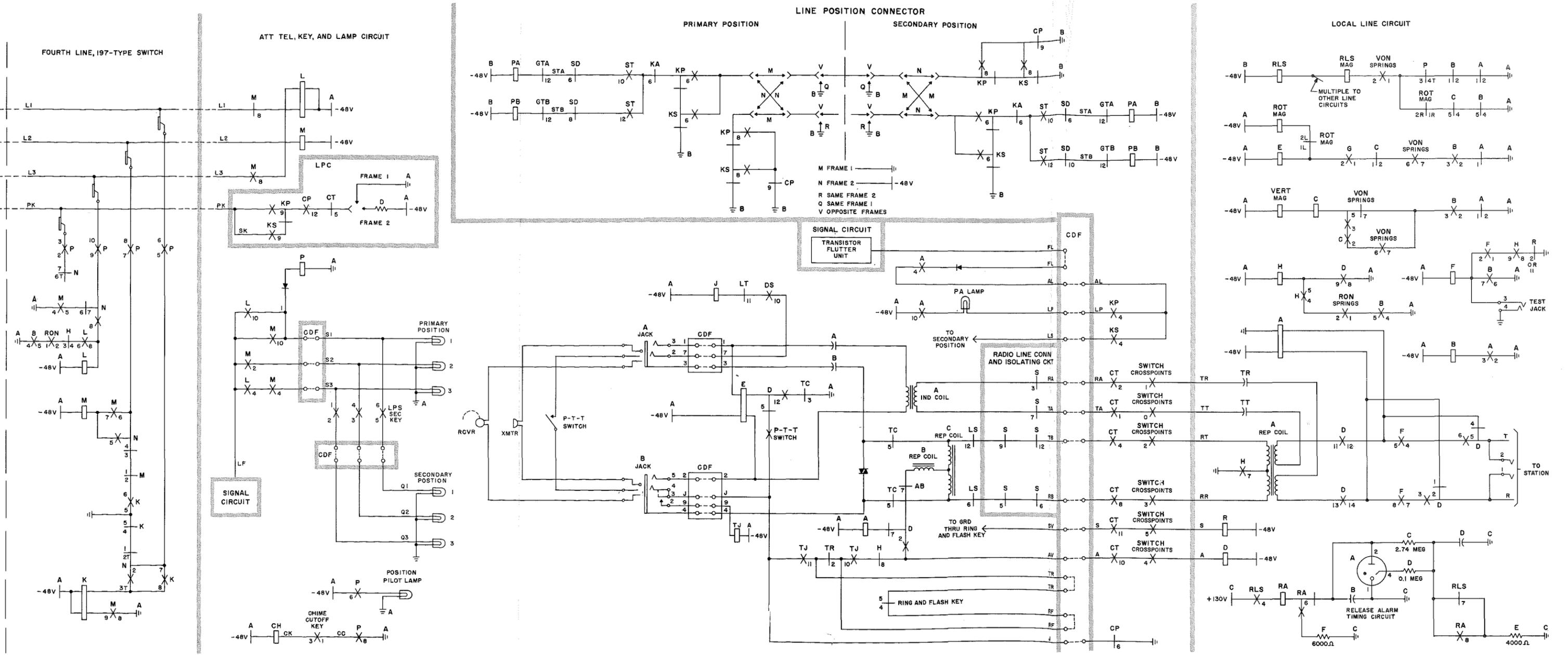
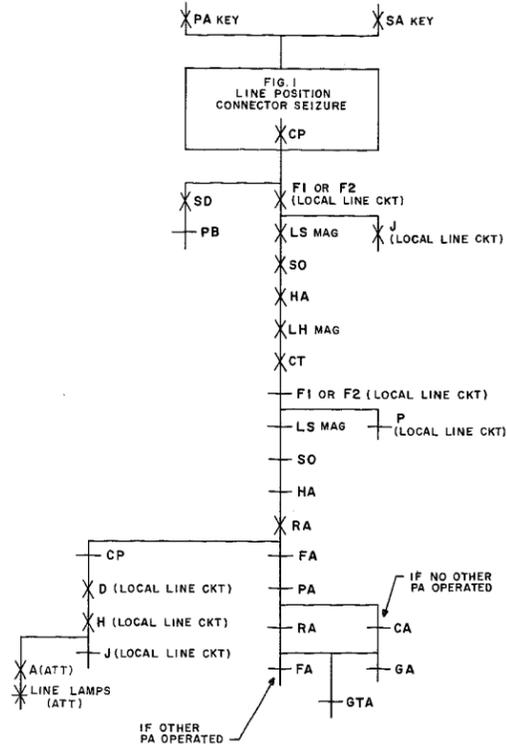


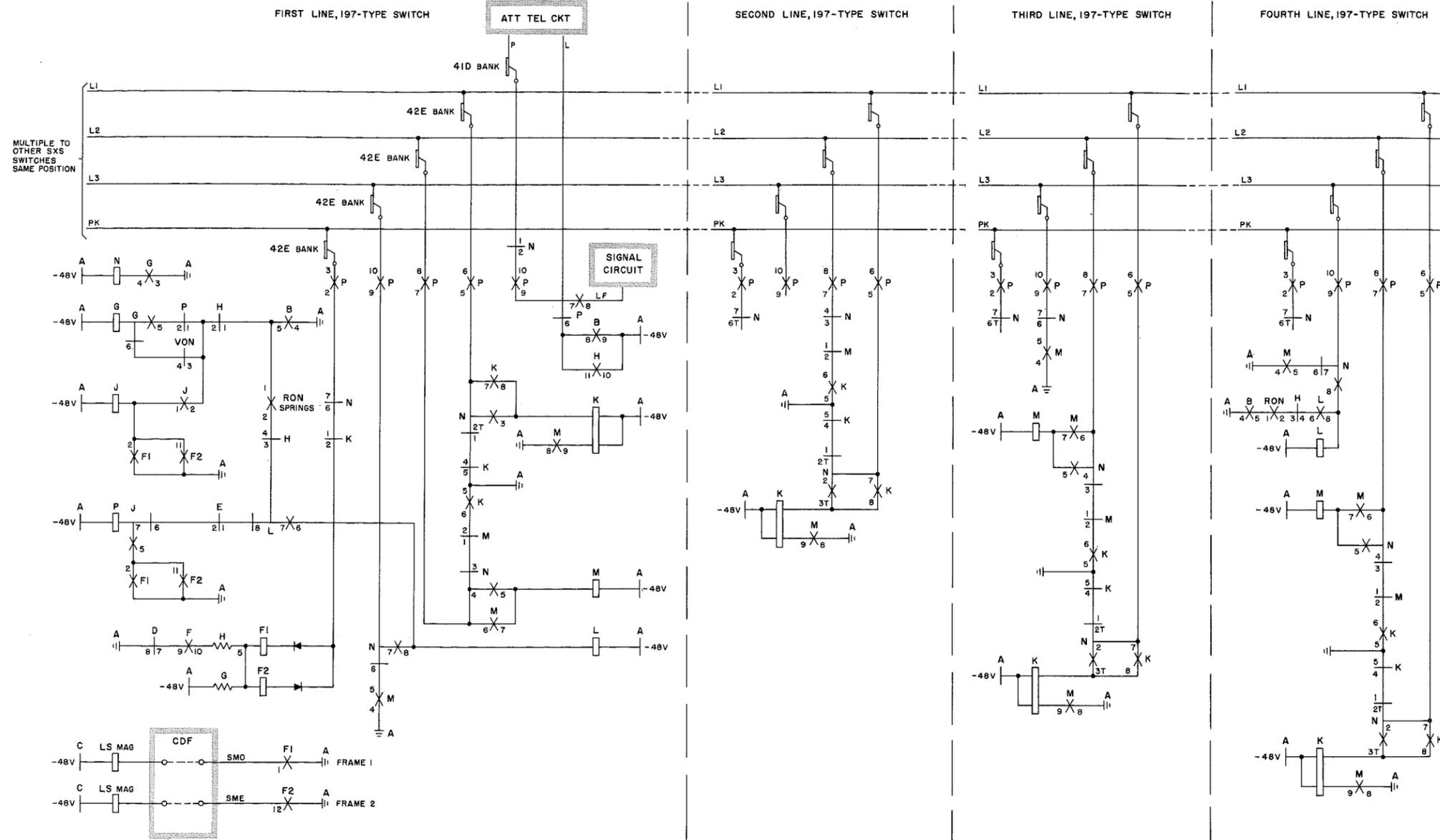
Fig. 7 - Local Line Circuit - Incoming Dial Selection of Attendants - With Call Storage and Sequence Answering - Primary (PA or PCA) and Secondary (SA or SCA) Attendant Positions

SEQUENCE CHART  
PRIMARY OR SECONDARY POSITION  
ANSWERING INCOMING CALL



DRAWINGS USED  
SD-69308, ISSUE 4A (LPC)  
SD-69309, ISSUE 4AR (ATT)  
SD-69363, ISSUE 3A (LLC)

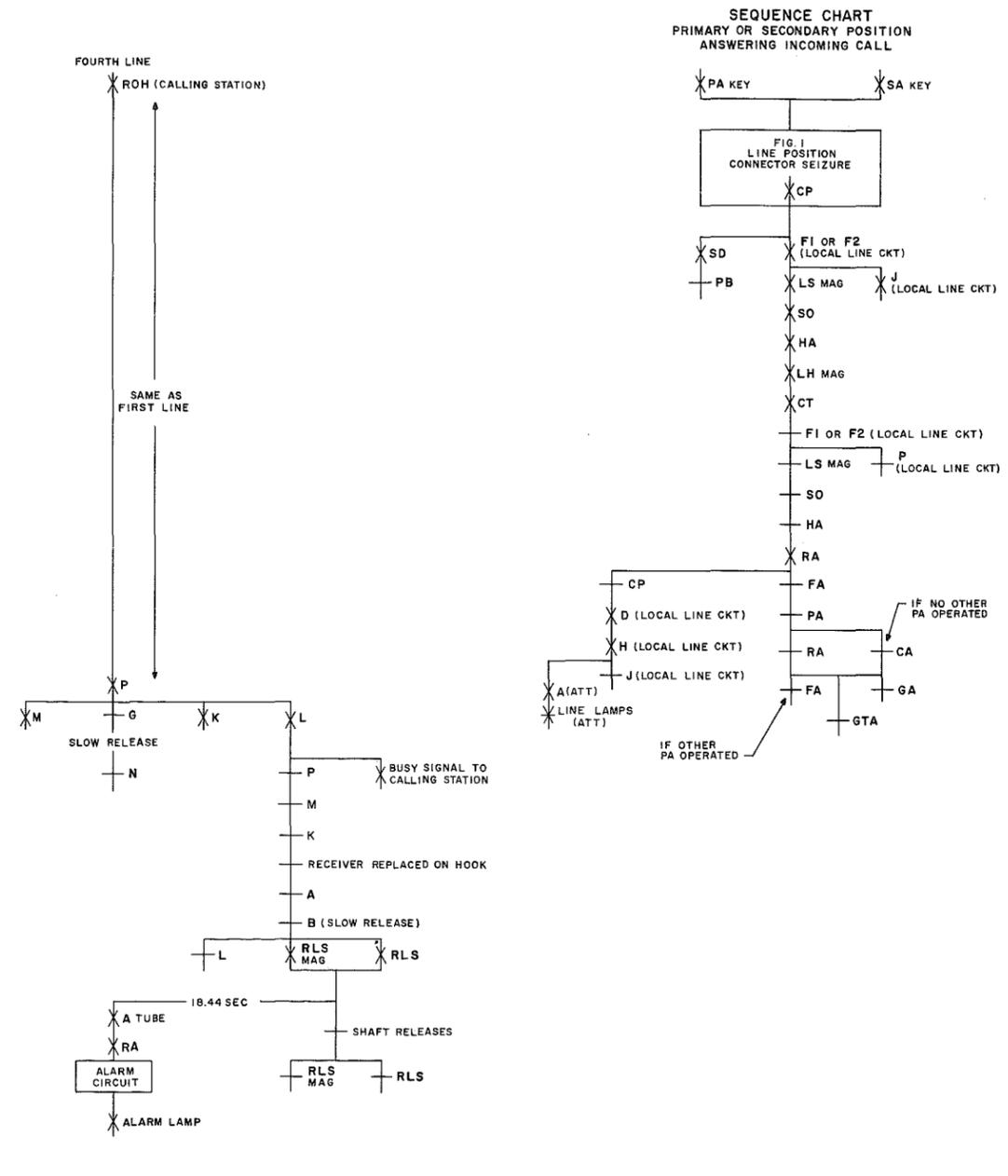
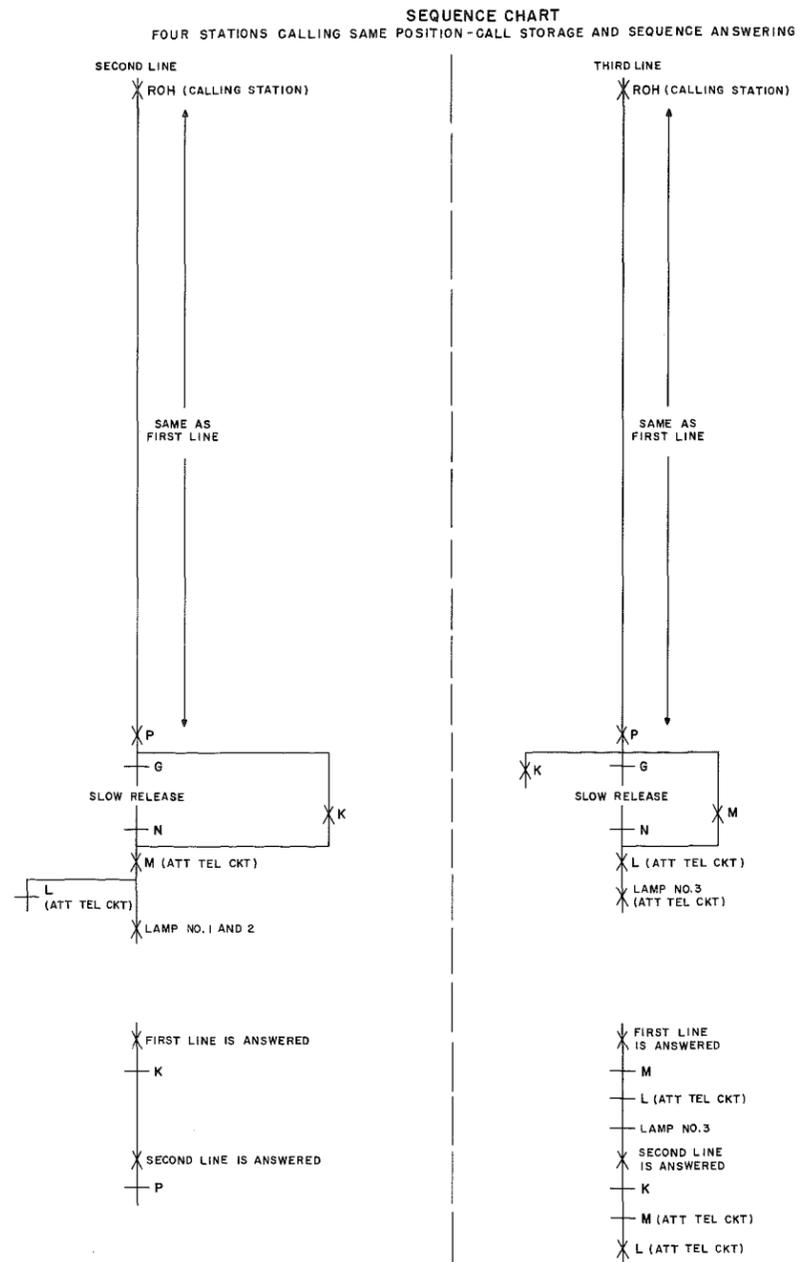
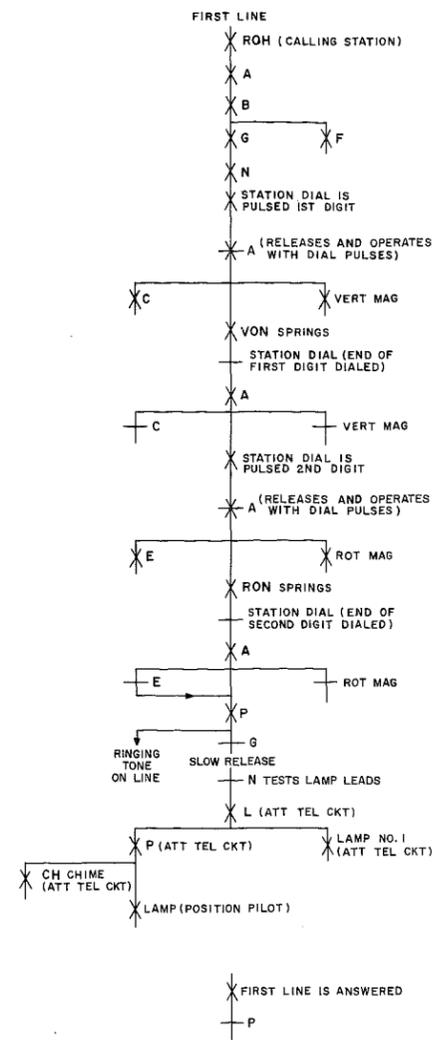
OPERATIONAL SKETCH



LOCAL LINE CIRCUIT

BUSY SIGNAL TO CALLING STATION  
REPLACED ON HOOK  
RELEASE)  
HAFT RELEASES

FIRST LINE, 197-TYPE SWITCH  
SECOND LINE, 197-TYPE SWITCH  
THIRD LINE, 197-TYPE SWITCH  
FOURTH LINE, 197-TYPE SWITCH



DRAWINGS USED  
SD-69308, ISSUE 4A (LPC)  
SD-69309, ISSUE 4AR (ATT)  
SD-69363, ISSUE 3A (LLC)

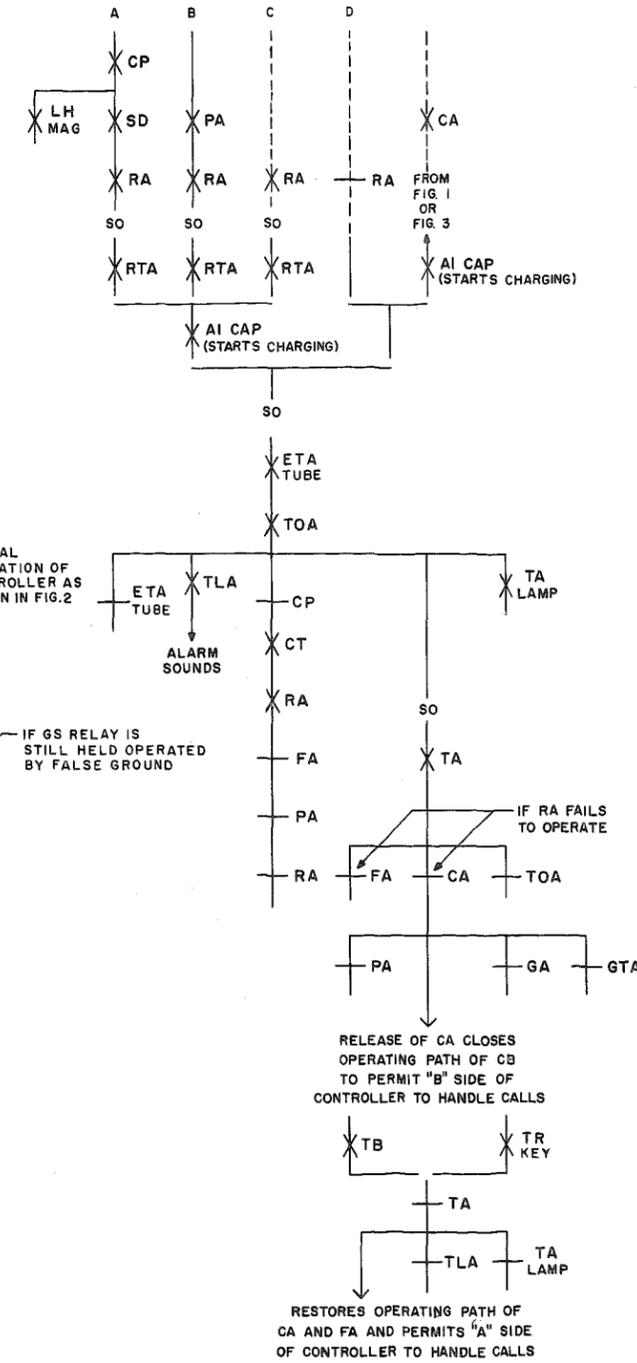
MULTIPLE OTHER SWITCHES SAME POSITION



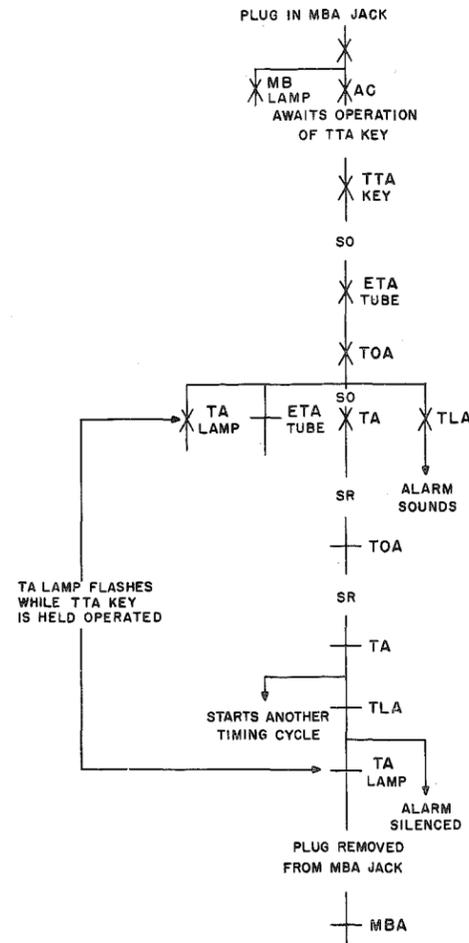
**SEQUENCE CHART**

**TROUBLE TIME-OUT**

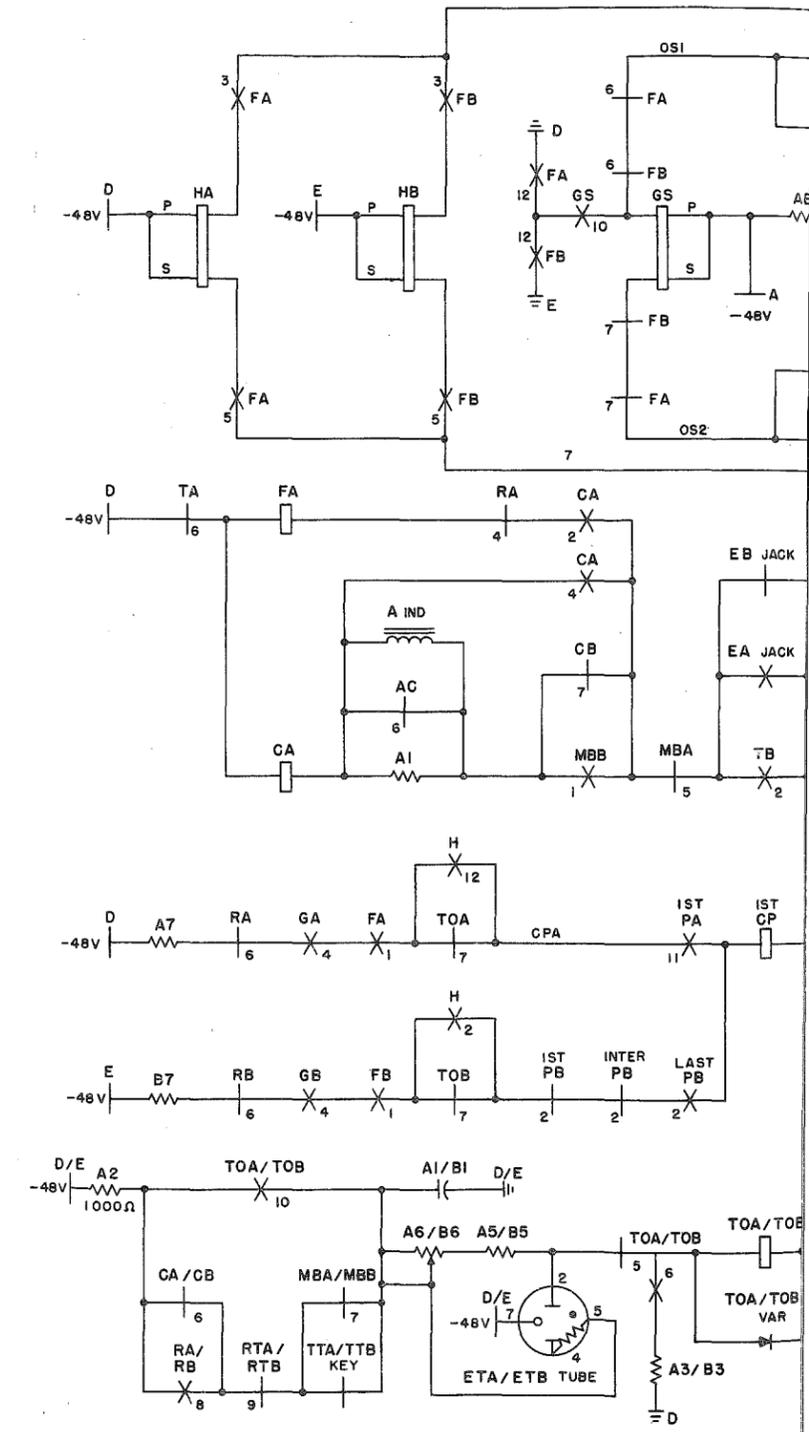
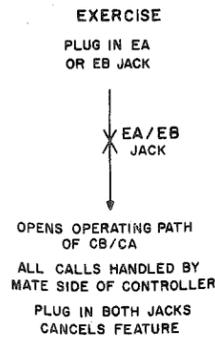
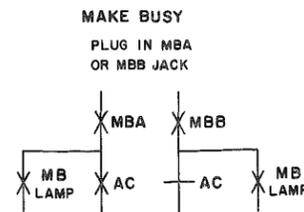
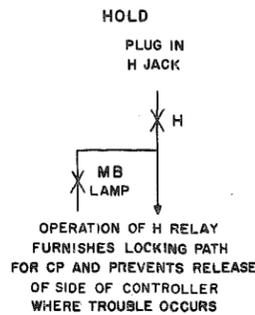
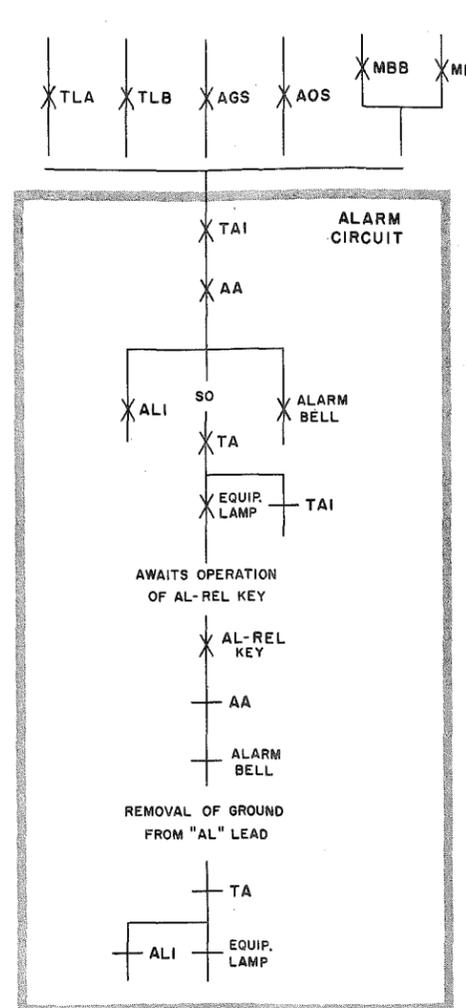
- A. GROUNDED STA OR STB LEAD, POSITION NOT CONNECTED TO A LINE
- B. GROUNDED STA OR STB LEAD, POSITION CONNECTED TO A LINE
- C. RA FAILS TO RELEASE DUE TO TROUBLE
- D. RA FAILS TO OPERATE DUE TO TROUBLE



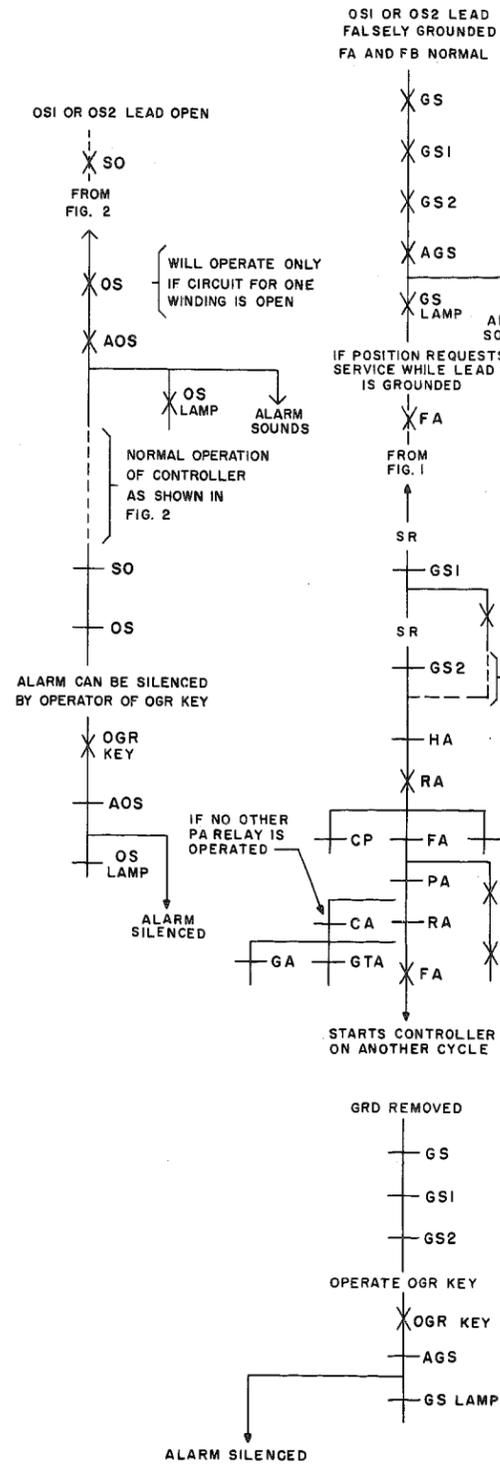
**TIME-OUT TEST**



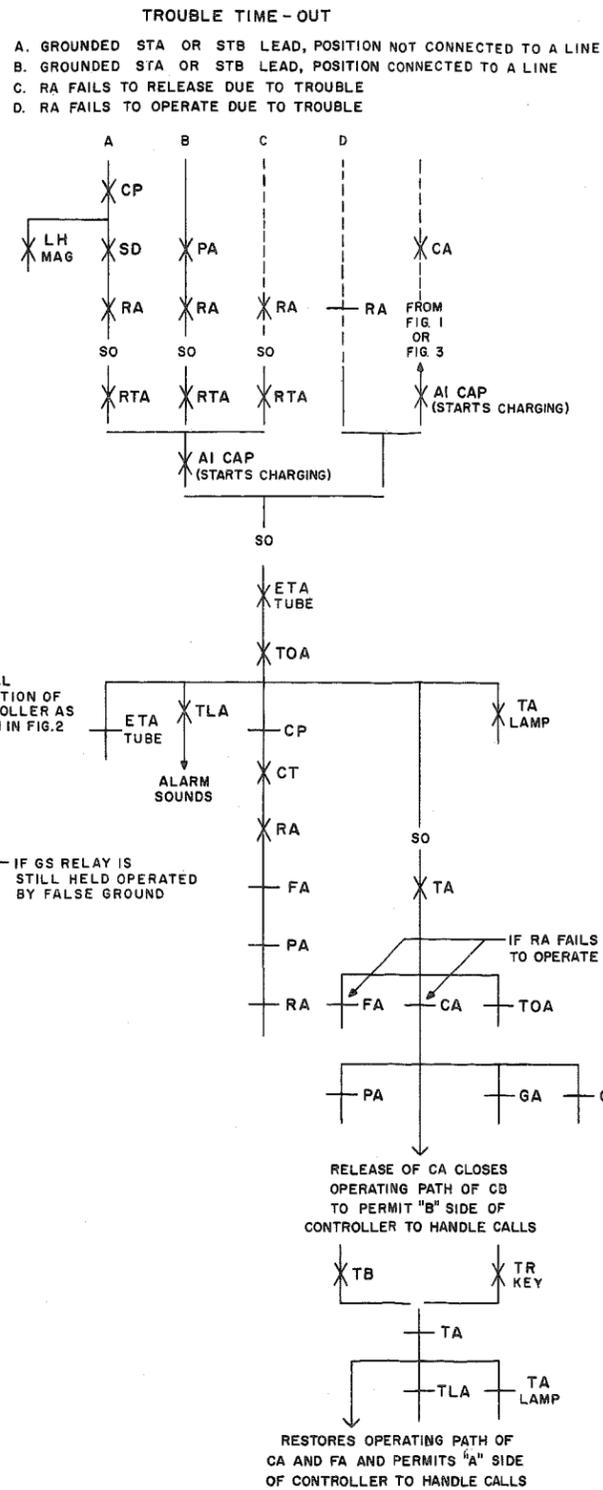
**CONNECTION TO ALARM CIRCUIT**



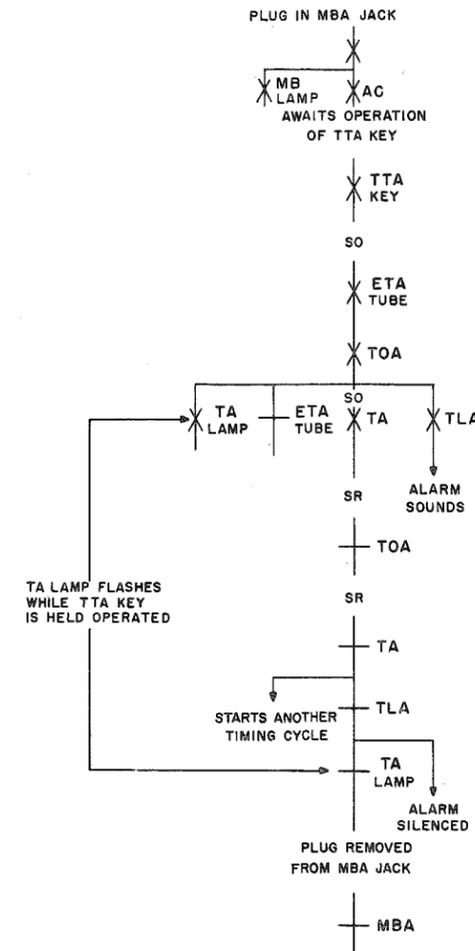
**SELECT MAGNET SIGNAL LEAD TROUBLE**



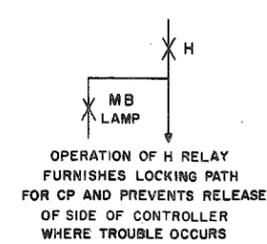
**SEQUENCE CHART**



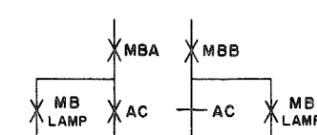
**TIME-OUT TEST**



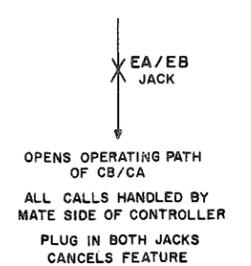
**HOLD**



**MAKE BUSY**



**EXERCISE**



**CONNECTION TO ALARM CIRCUIT**

