



IBM Field Engineering Maintenance Diagrams

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2540 Card Read-Punch

Preface

This manual, Form Y31-0168, contains the supplementary diagrams for the IBM 2540 Card Read-Punch (engineering change 811885 and higher). The page numbering and diagram organization are the same as that of the 2540 diagrams previously released in loose-leaf form.

Also included in this manual is information for attaching the 2540 Card Read-Punch directly to the System/360 Model 25. Both the 2025 Integrated Attachment and the 2821 Attachment information are included.

For theory of operation and maintenance of the 2540 Card Read-Punch, refer to the following:

IBM 2540 Card Read-Punch, Field Engineering Theory of Operation, Form Y31-0081.

IBM 2540 Card Read-Punch, Field Engineering Maintenance Manual, Form Y31-0082.

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Second Edition

This is a major revision of, and obsoletes, Y31-0168-0. This revision provides information for attaching the 2540 Card Read-Punch directly to the System/360 Model 25. Changes are continually made to the specifications herein; any such changes will be reported in subsequent revisions or FE Supplements.

A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Corporation, Product Publications, Department 245, Rochester, Minnesota 55901.

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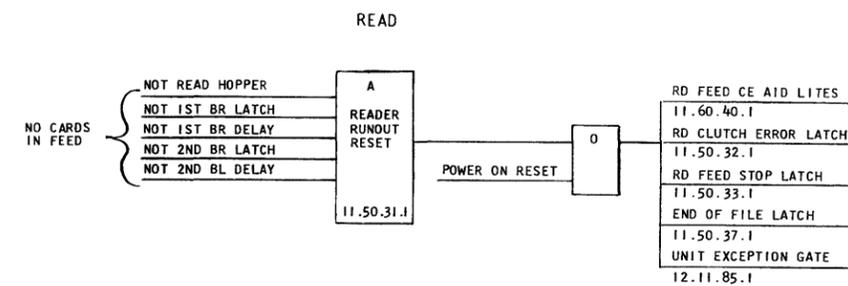
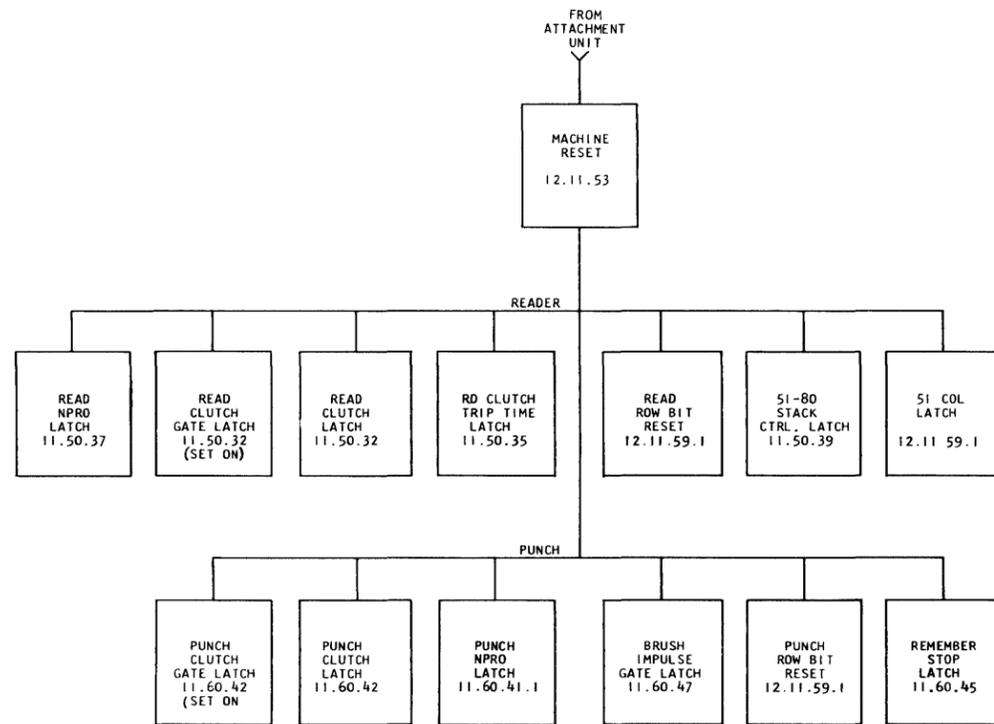
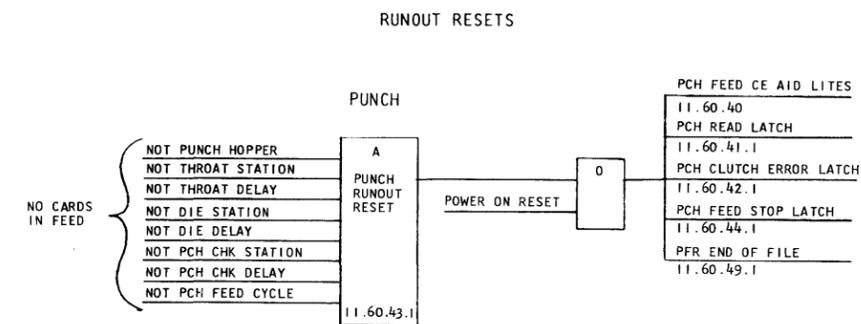
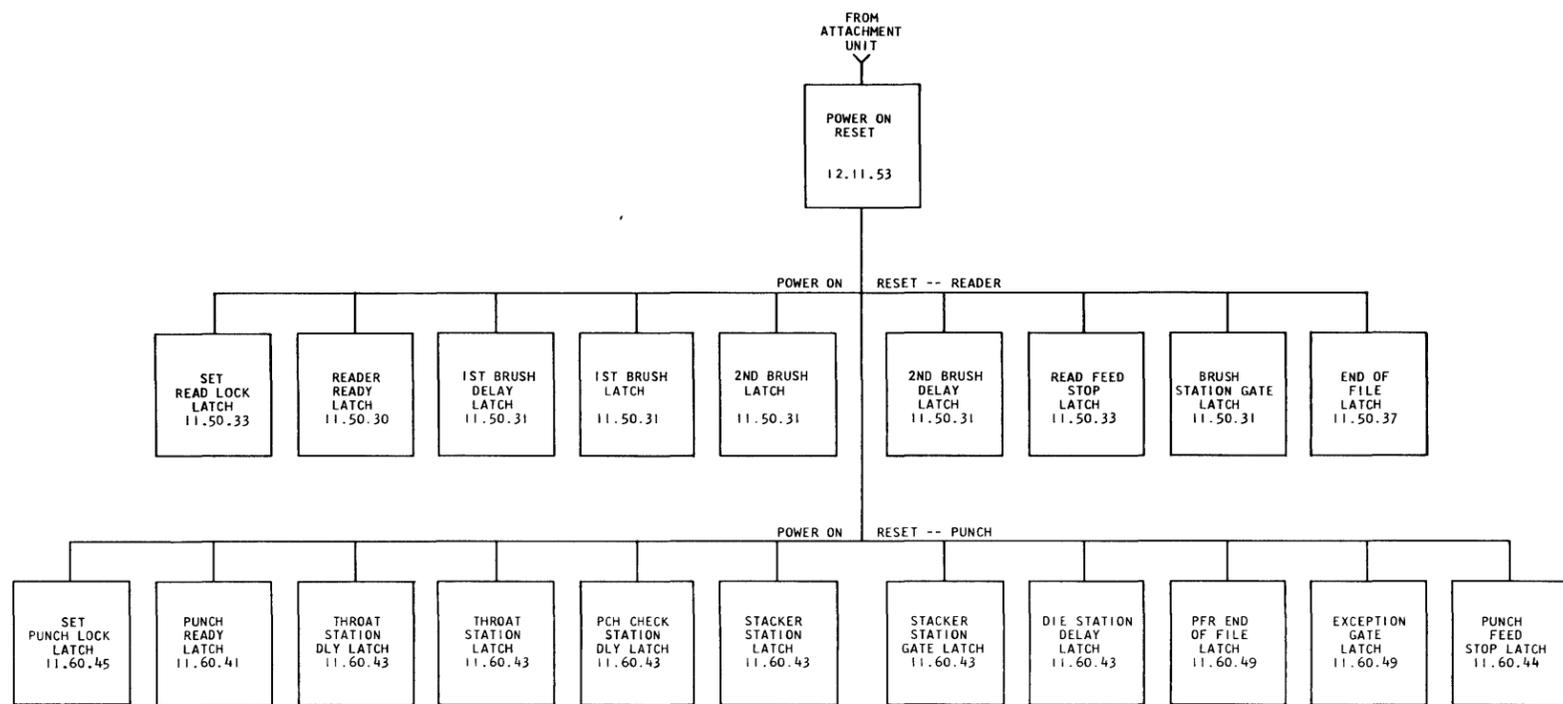


Diagram 81. Reset Logic

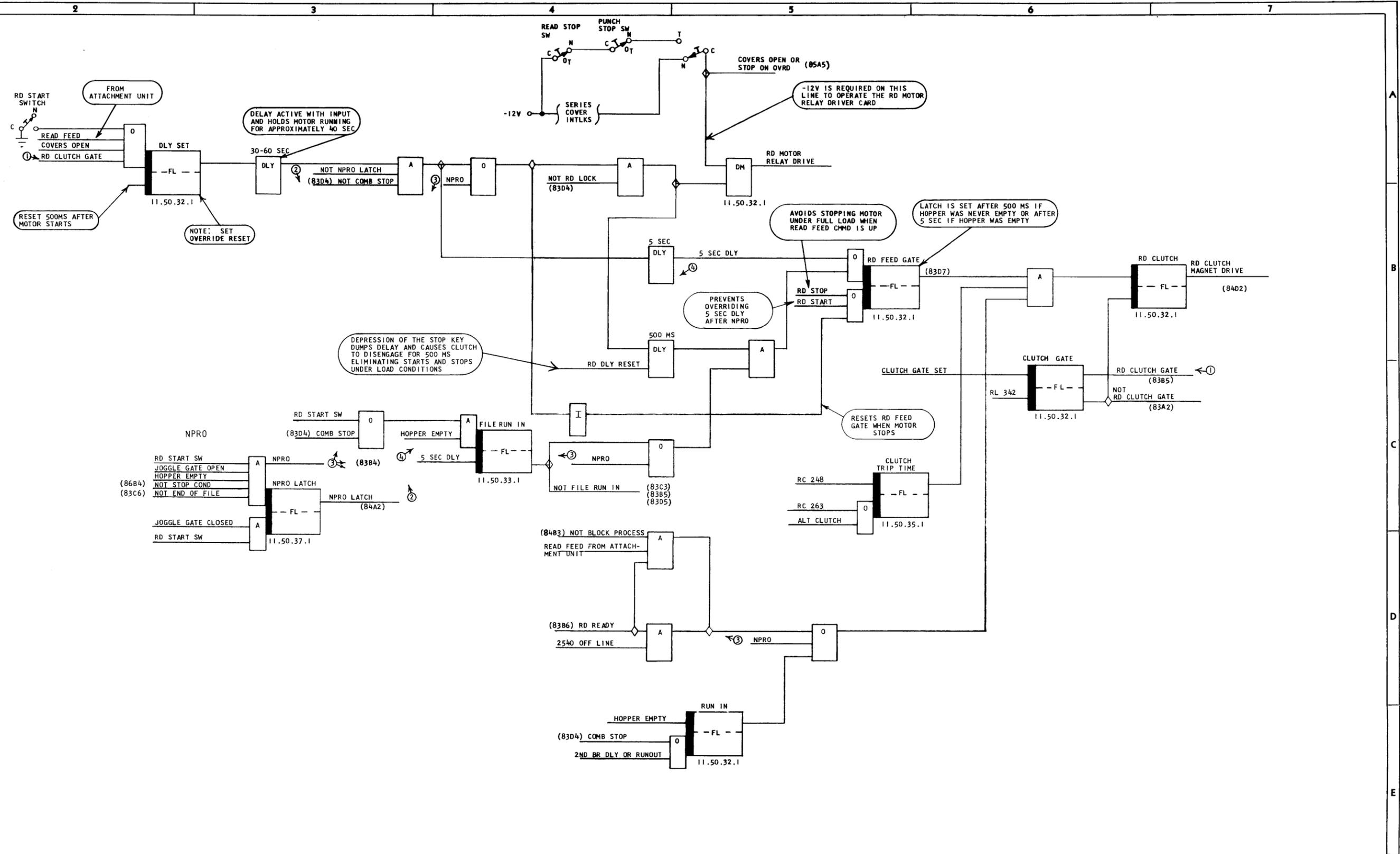


Diagram 82. Start and Run (Read)

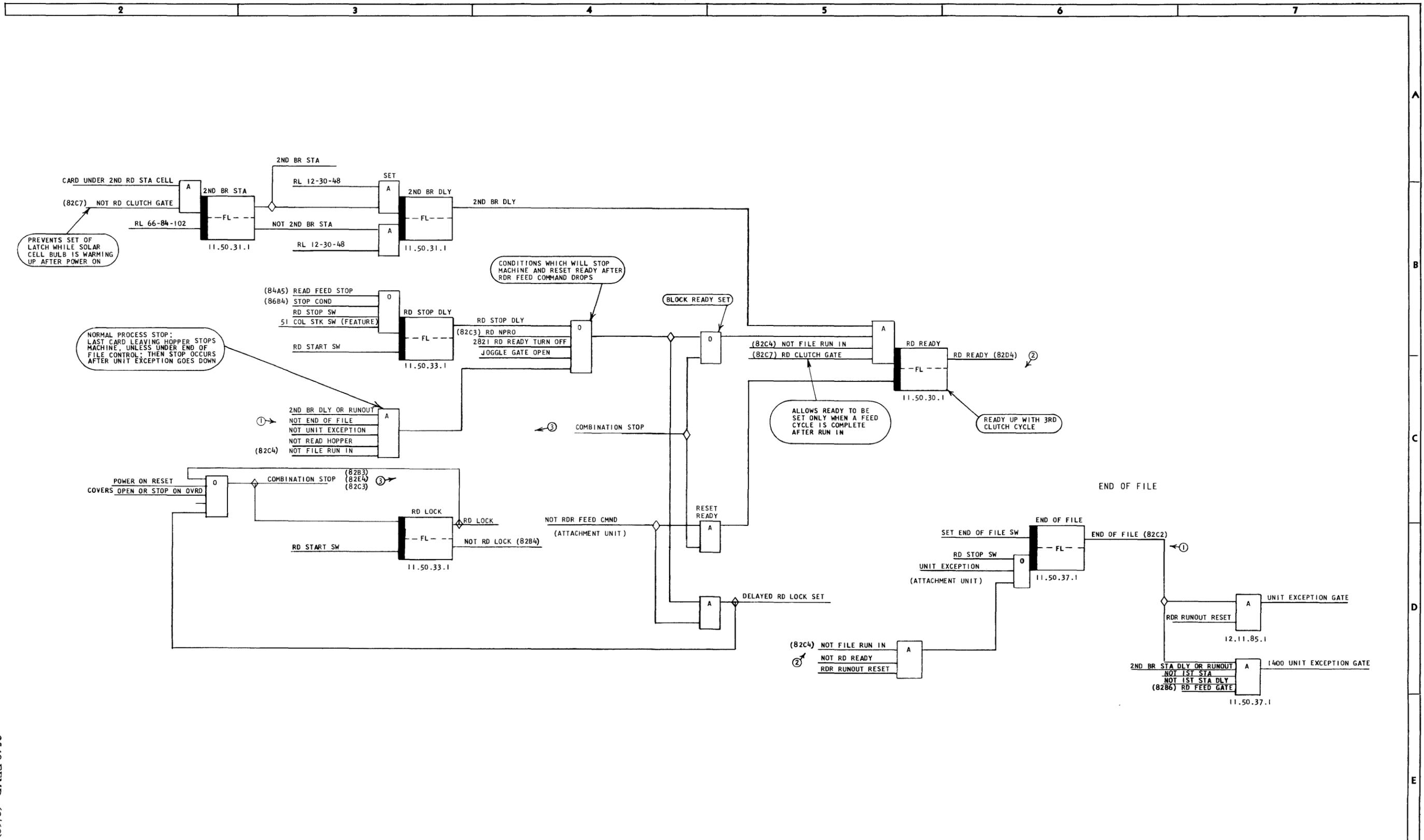


Diagram 83. Ready (Read)

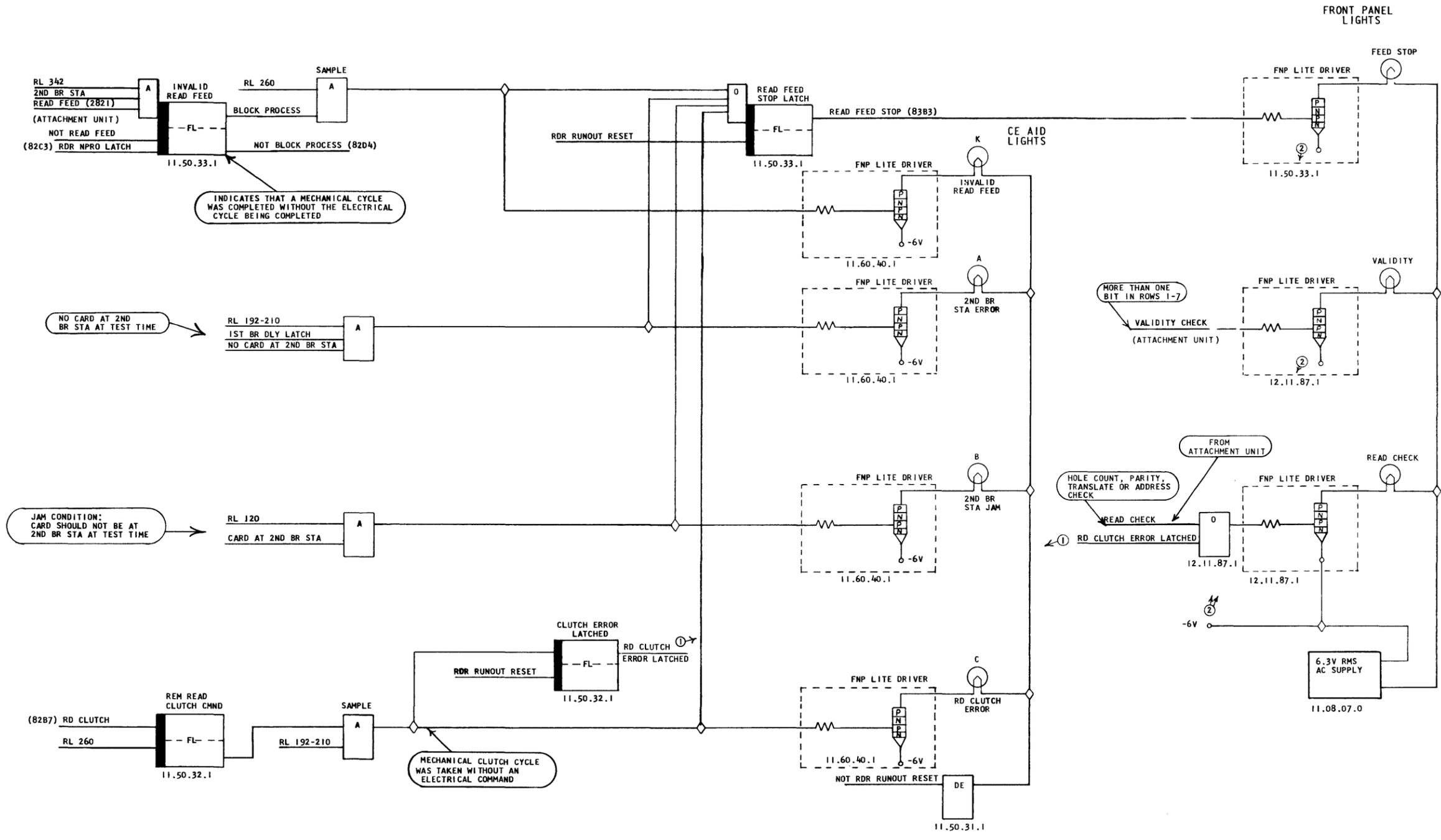


Diagram 84. Error-Check Analysis (Read)

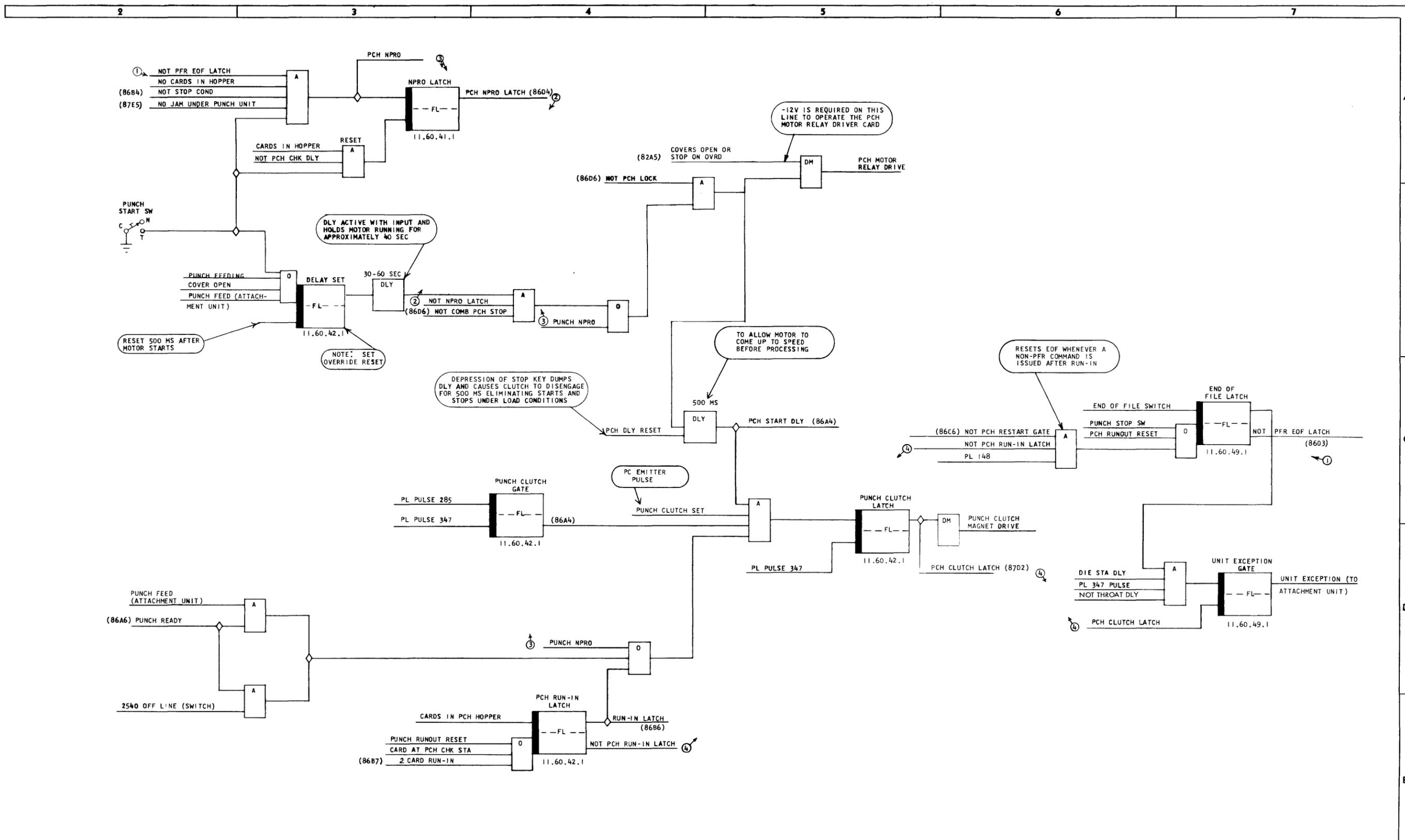


Diagram 85. Start and Run (Punch)

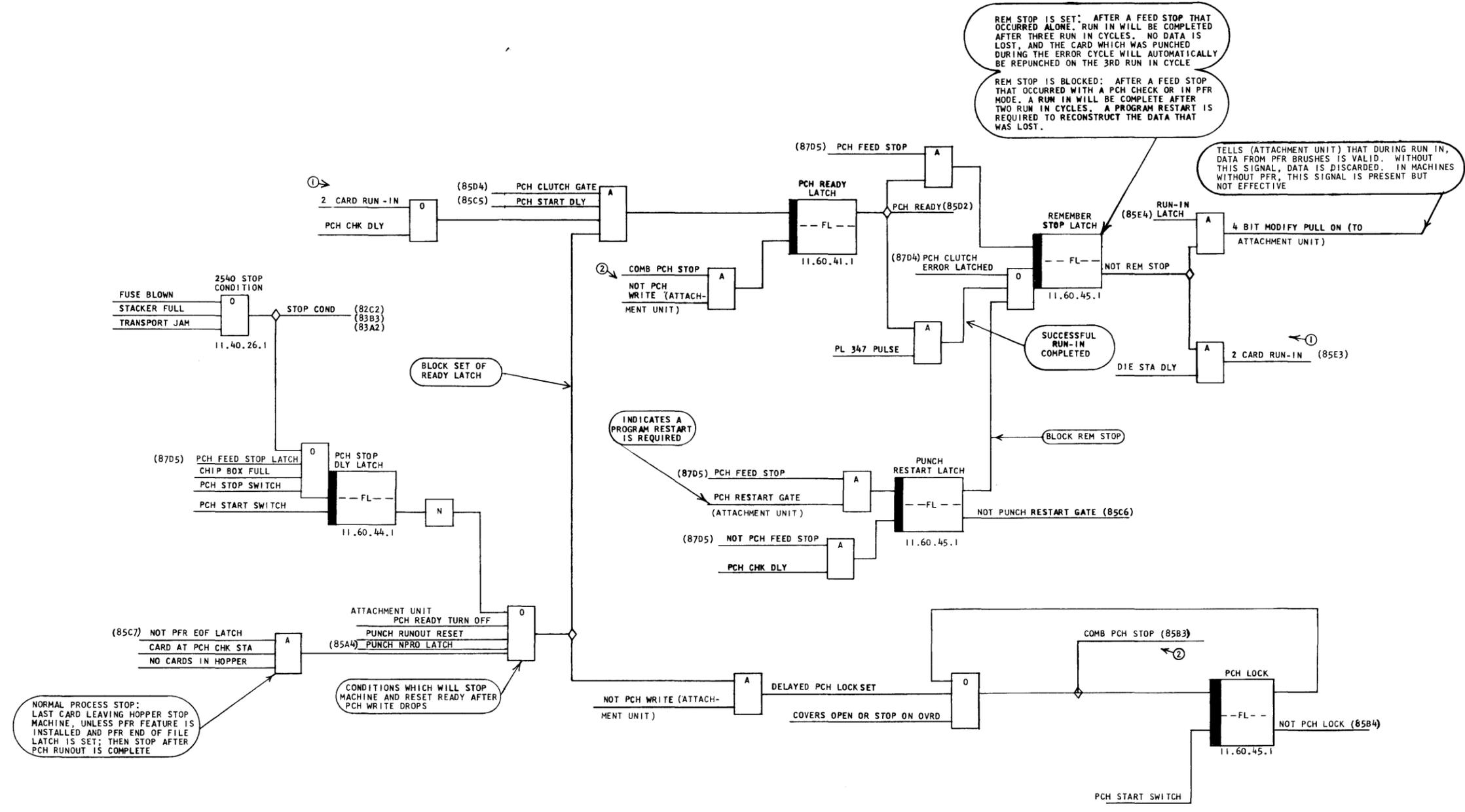


Diagram 86. Ready (Punch); Stop Condition

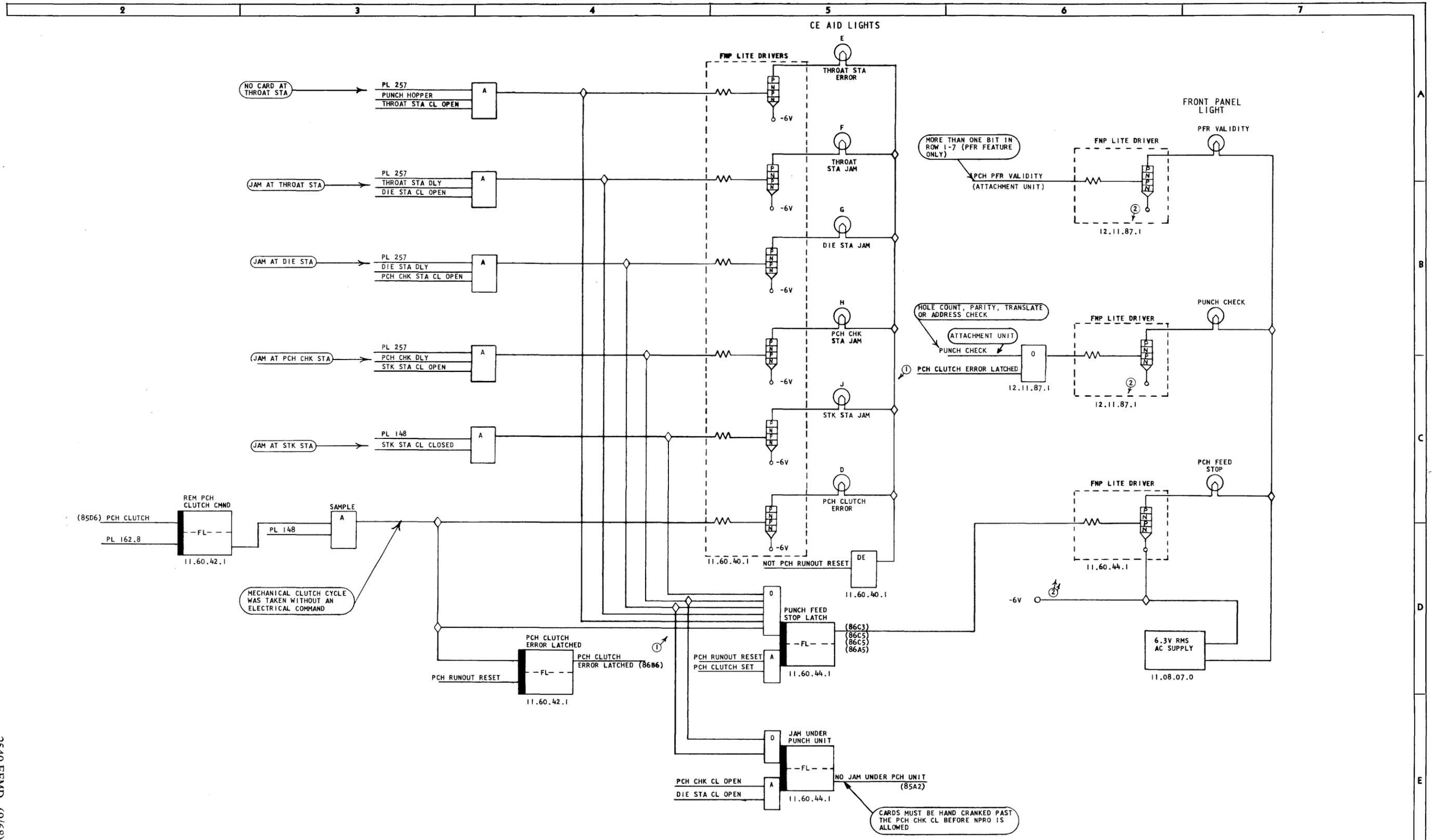


Diagram 87. Error-Check Analysis (Punch)

2 3 4 5 6 7

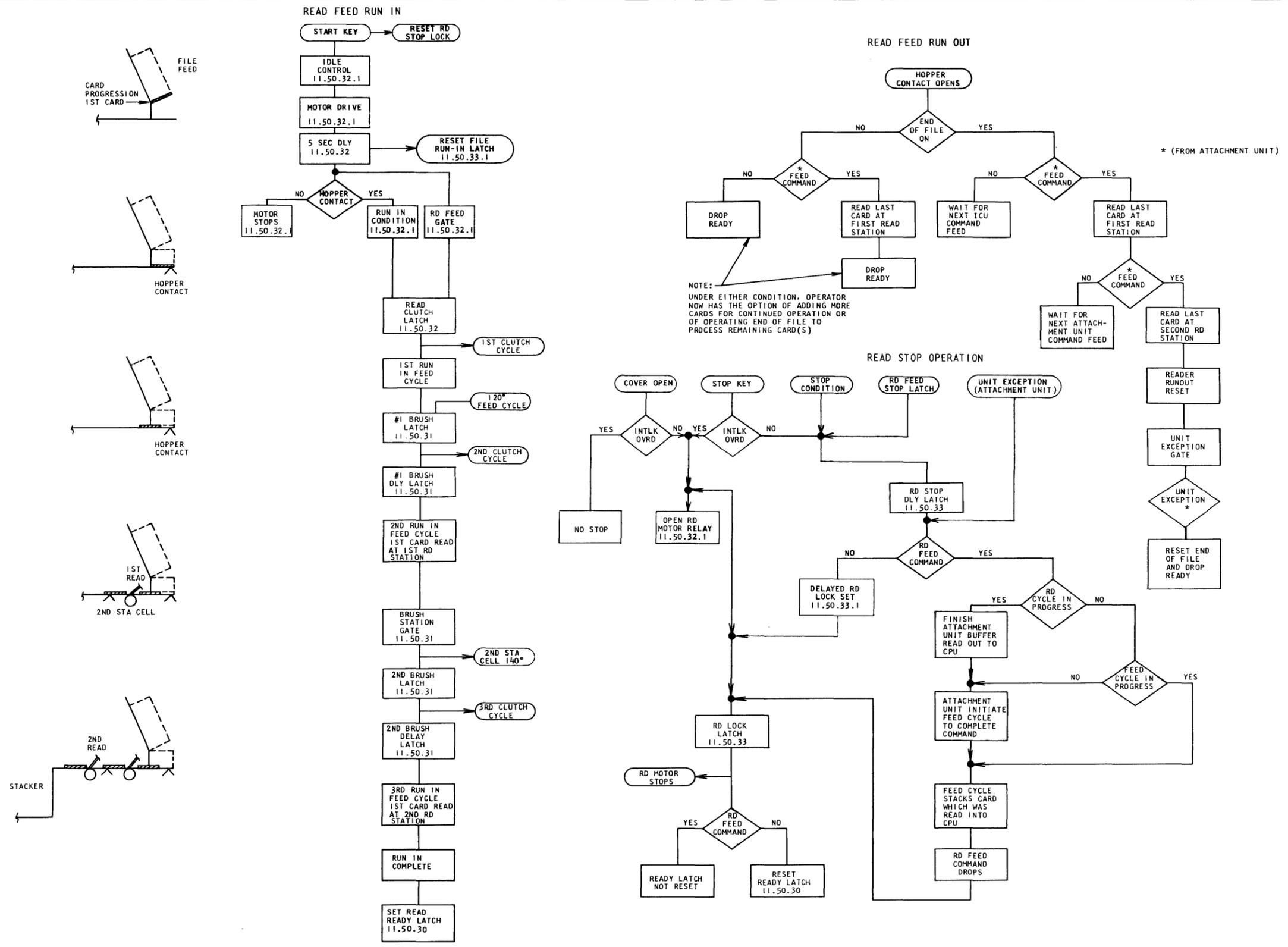
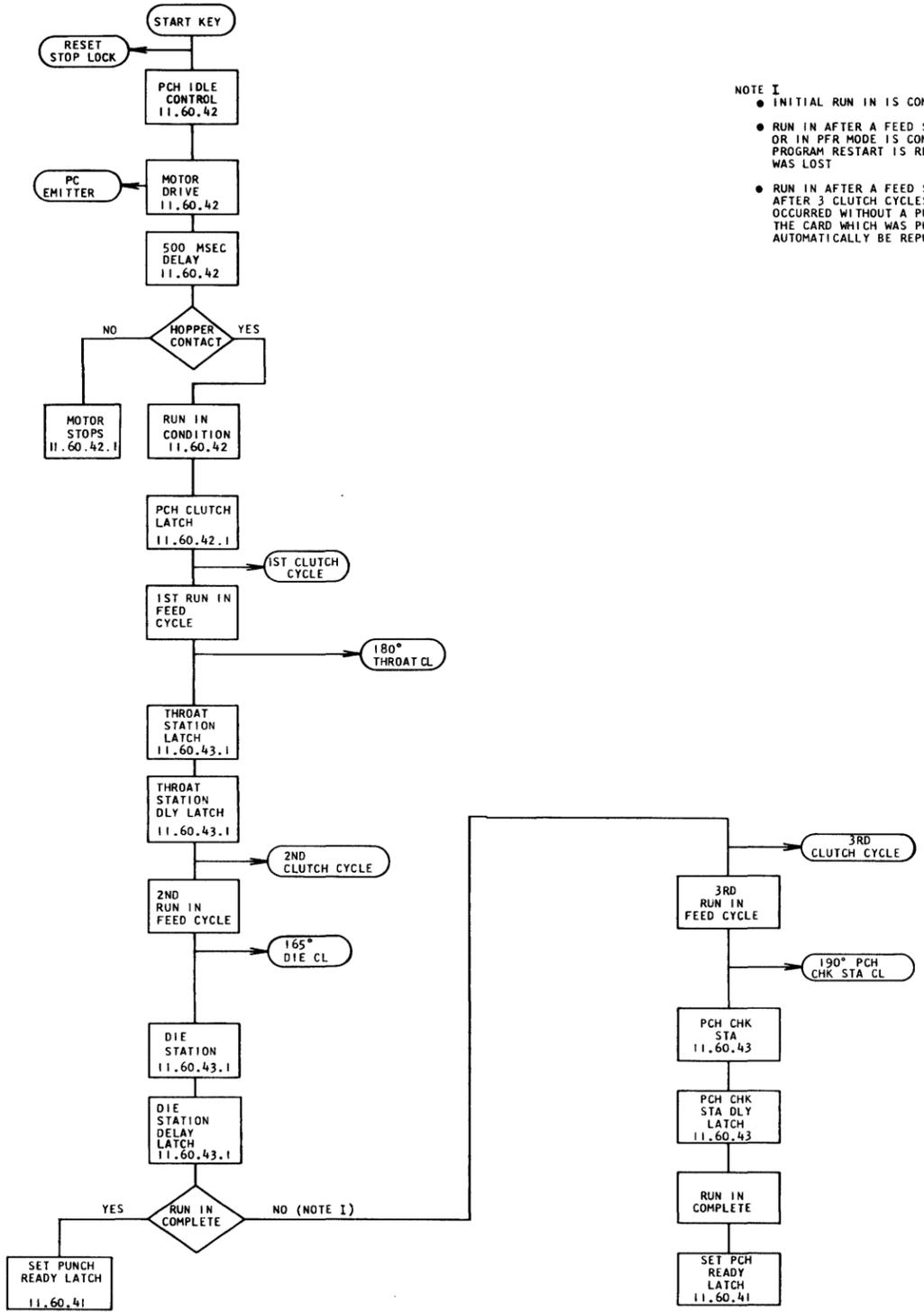
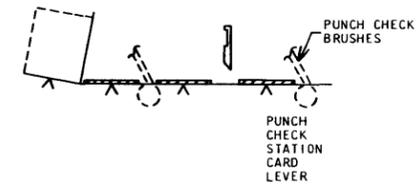
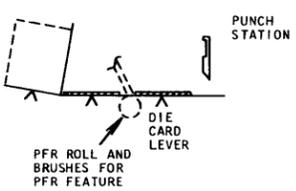
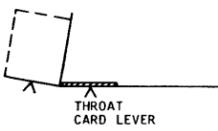
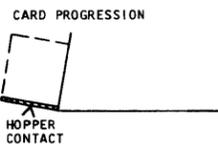


Diagram 89. Feed (Read)

PUNCH FEED RUN IN



NOTE I
 • INITIAL RUN IN IS COMPLETE AFTER TWO CLUTCH CYCLES
 • RUN IN AFTER A FEED STOP THAT OCCURRED WITH A PUNCH CHECK OR IN PFR MODE IS COMPLETE AFTER TWO CLUTCH CYCLES. A PROGRAM RESTART IS REQUIRED TO RECONSTRUCT THE DATA THAT WAS LOST
 • RUN IN AFTER A FEED STOP THAT OCCURRED ALONE IS COMPLETE AFTER 3 CLUTCH CYCLES. NO DATA IS LOST IF THE FEED STOP OCCURRED WITHOUT A PUNCH CHECK AND PFR IS NOT BEING USED. THE CARD WHICH WAS PUNCHED DURING THE ERROR CYCLE WILL AUTOMATICALLY BE REPUNCHED ON THE 3RD RUN IN CYCLE



A
B
C
D
E

Diagram 90. Feed Run-In (Punch)

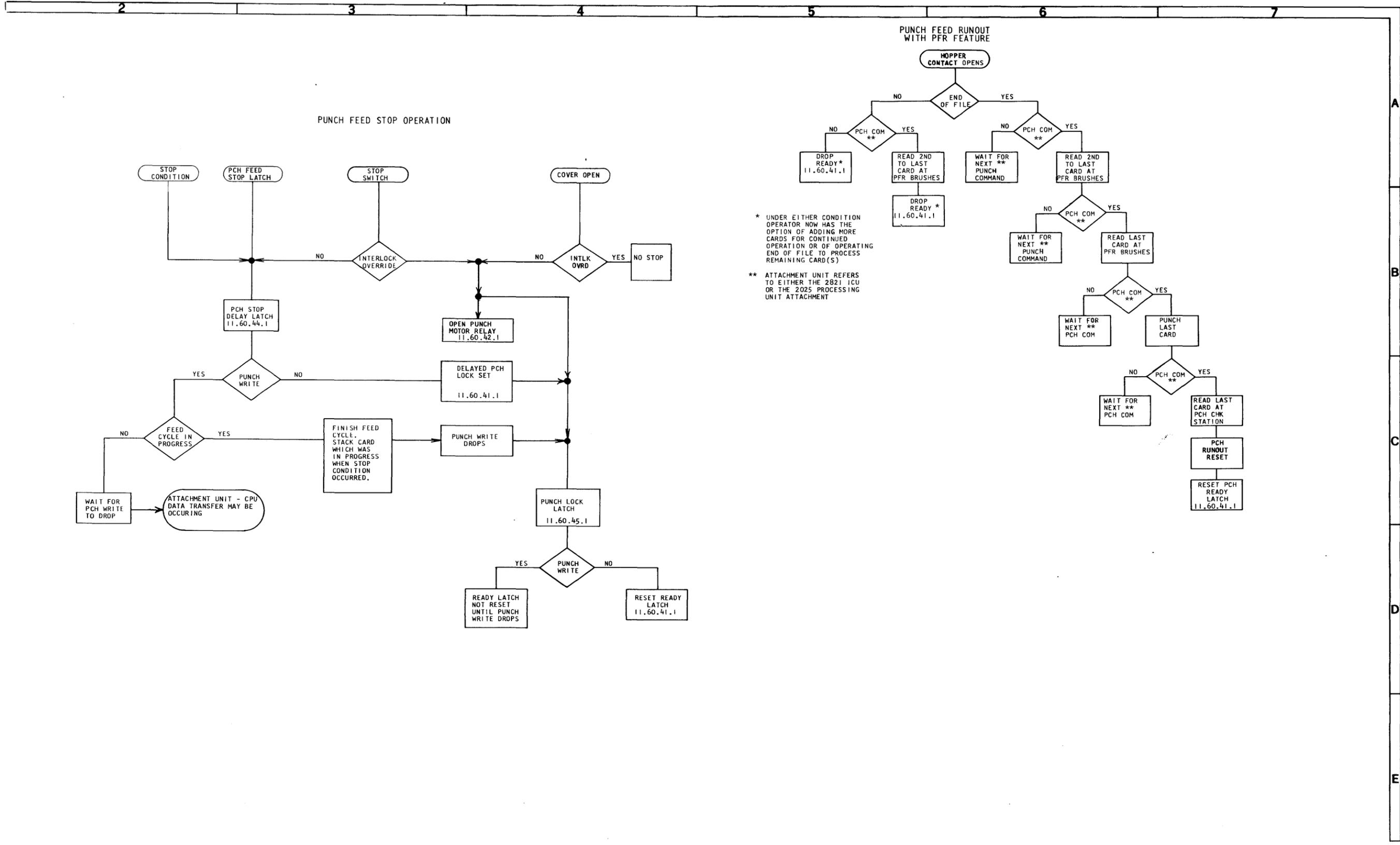


Diagram 91. Feed Stop (Punch); Feed Runout (Punch with PFR Feature)

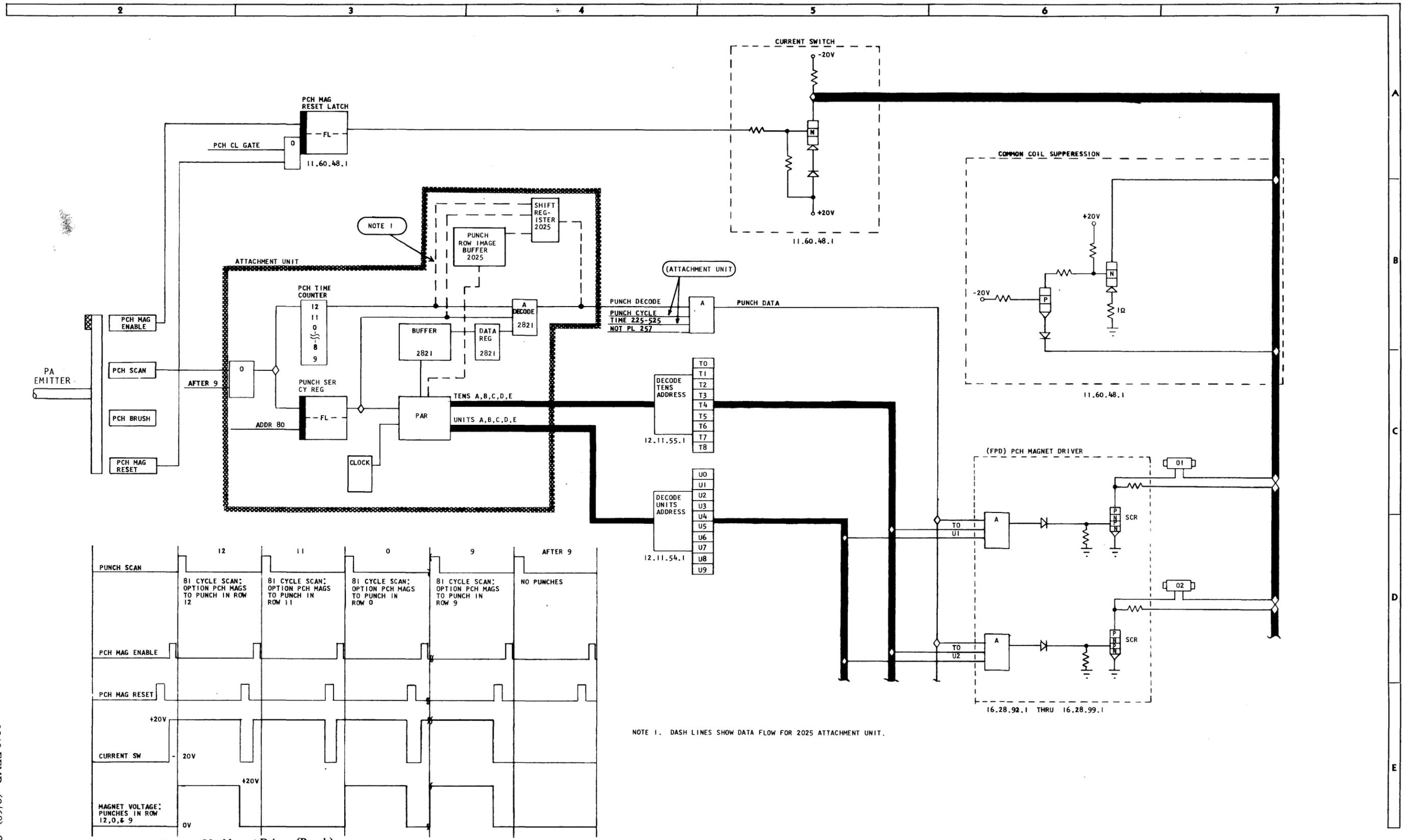
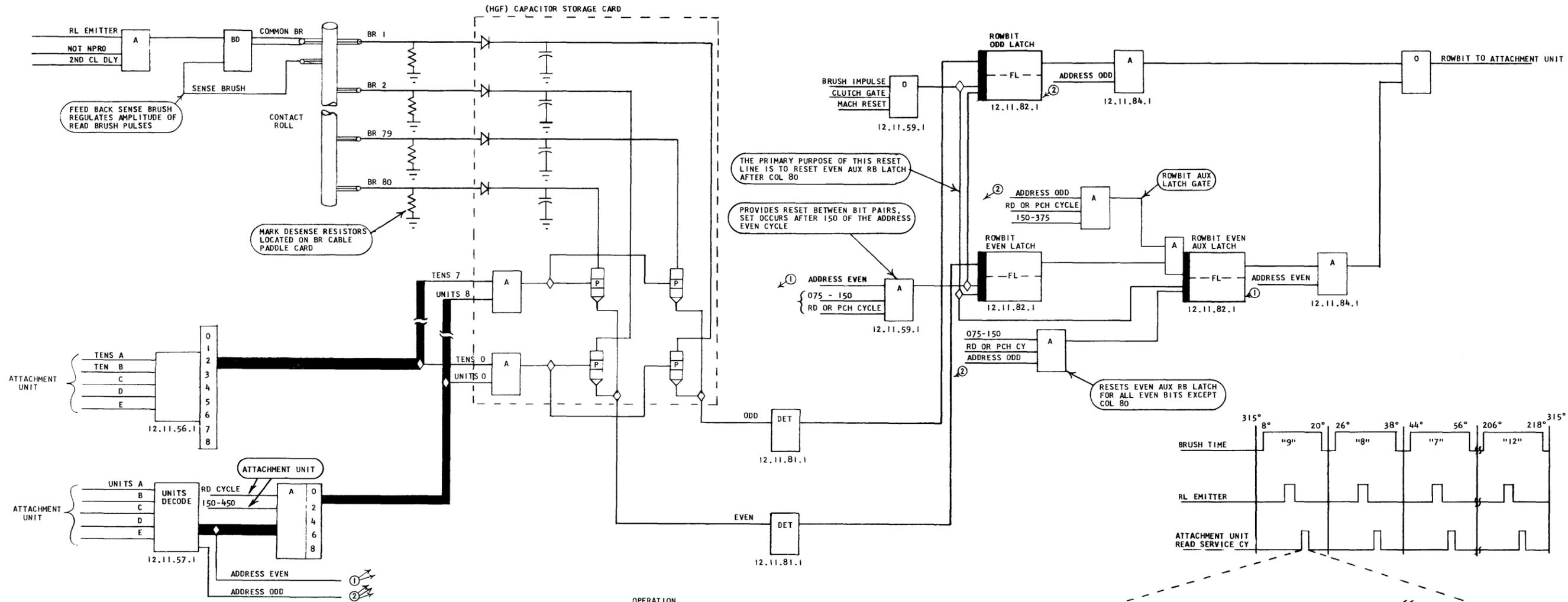


Diagram 93. Magnet Drivers (Punch)

NOTE: LOGIC TYPICAL FOR ALL READ STATIONS



OPERATION

1. RL EMITTER PULSES CAUSES CURRENT TO FLOW THRU HOLES IN CARD CHARGING CAPACITORS. THERE ARE 80 ROWBIT CAPACITORS FOR EACH STATION
2. READ SERVICE CYCLE REQUIRED LATCH IN THE ATTACHMENT UNIT IS SET BY FALL OF THE RL EMITTER PULSES AFTER A 150 USEC DELAY
3. READ SERVICE CYCLE REQUIRED CAUSES THE ATTACHMENT UNIT TO GO THRU AN 81 CYCLE SCAN SEQUENCE
4. ALONG WITH EACH CYCLE, AN ADDRESS IS DEVELOPED SEQUENTIALLY IN THE 2540 FROM 00 TO 80
5. DURING EACH EVEN CYCLE WITH AN ADDRESS "N" --- READ OUT "N"+1 AND "N"+2 CAPACITORS INTO EVEN AND ODD ROWBIT LATCHES. GATE "N" BIT FROM EVEN AUX ROW BIT LATCH TO THE ATTACHMENT UNIT
6. DURING EACH ODD CYCLE WITH AN ADDRESS "M" -- GATE "M" BIT TO THE ATTACHMENT UNIT. TRANSFER "M" +1 BIT FROM EVEN TO EVEN AUX ROWBIT LATCH

CYCLE 00	CYCLE 01	CYCLE 02	CYCLE 79	CYCLE 80
READ ROWBIT CAPACITORS 1 AND 2 INTO ODD AND EVEN LATCHES	SEND ODD LATCH TO ATTACHMENT UNIT (COL 1) SEND EVEN ROWBIT LATCH TO EVEN AUX ROWBIT LATCH	READ ROWBIT CAPACITORS 3 AND 4 INTO ODD AND EVEN LATCHES. SEND EVEN AUX ROWBIT TO ATTACHMENT UNIT (COL 2)	SEND ODD LATCH TO ATTACHMENT UNIT (COL 79) SEND EVEN BIT LATCH TO EVEN AUX ROWBIT LATCH	SEND EVEN AUX (COL 80) TO ATTACHMENT UNIT. END SCA SCAN

* 4.8 USEC FOR THE 2025 INTEGRATED 2540 ATTACHMENT FEATURE

Diagram 94. Capacitor Storage Logic

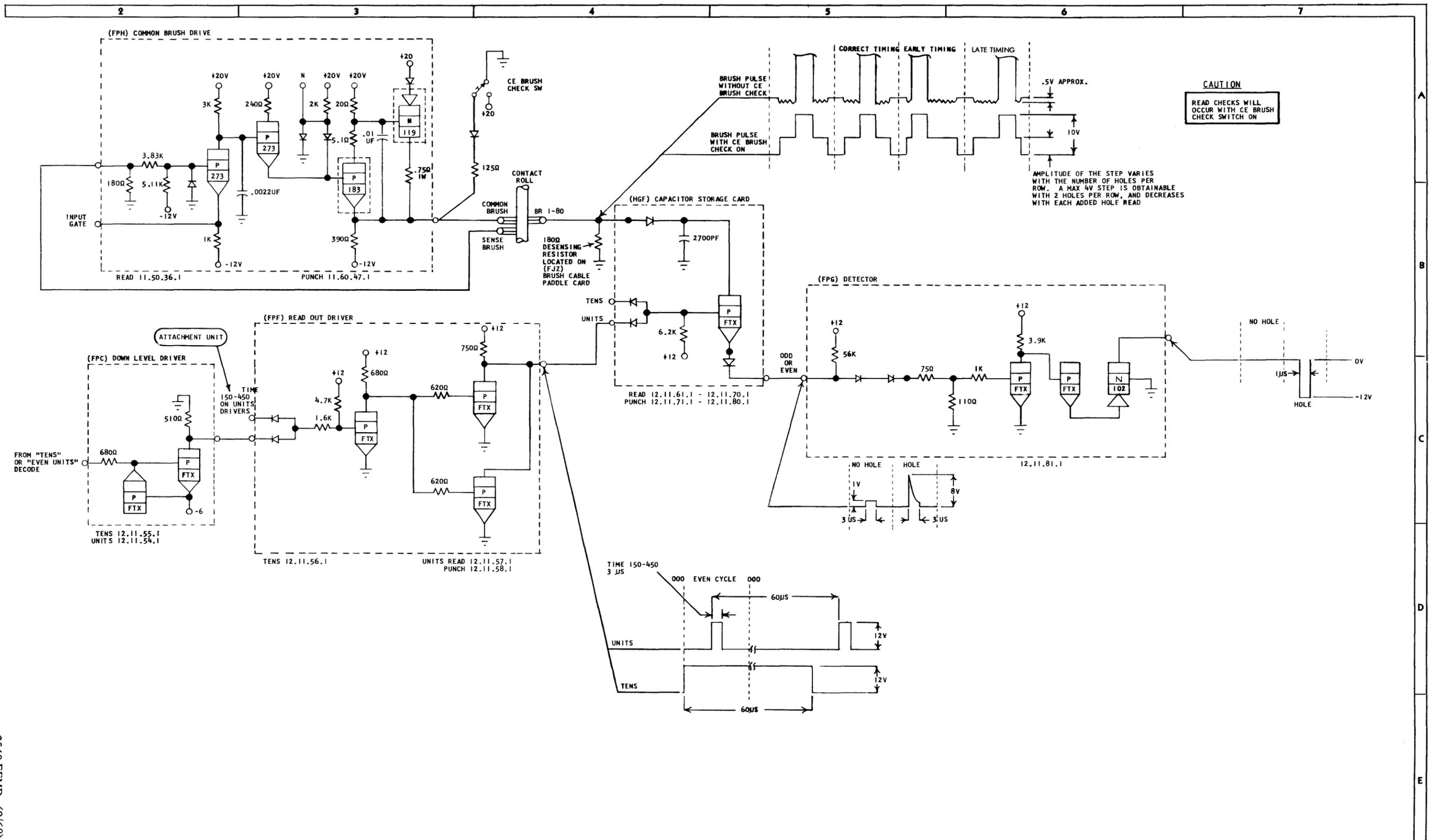


Diagram 95. Capacitor Storage Circuits

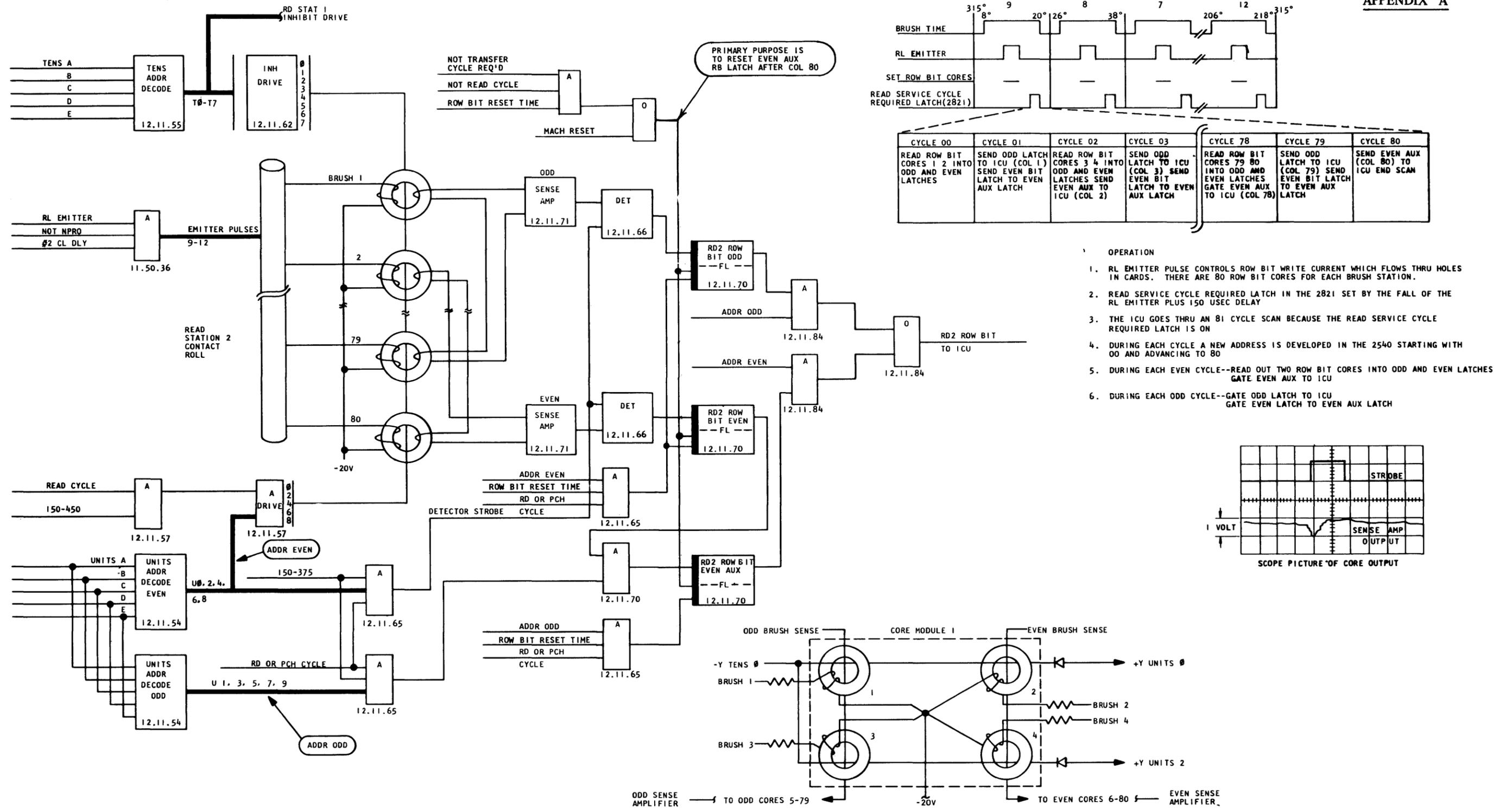


Diagram A-94 Rowbit Core Operation

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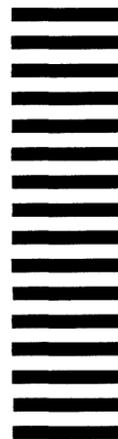
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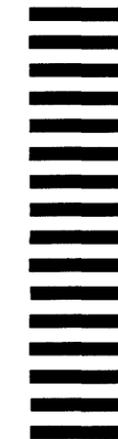
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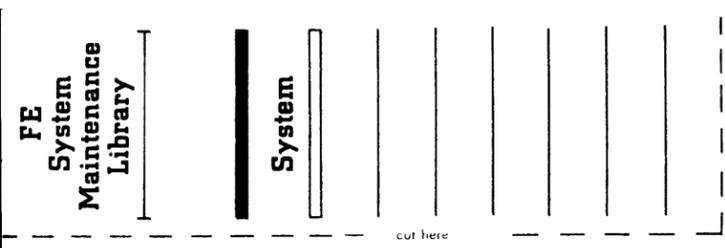
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