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SERIES E-2000™

Manual FO-650-25
Revised-Issue 2

Slot Simulator Operating and Test/Troubleshooting Guide

(FOR USE WITH K-661)

Bally®

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Check the handle position cam switches (non-motorized mechanism) by executing the Test Station Test #3 (input port test) by:

Pressing the test button three times for about 1 second each.

The Test Station display should display .0.0.0.0.0.1, .0.0.0.0.0.2 and .0.0.0.0.0.3 respectively with each test button closure. This puts the Test Station into the input port test. The display will change to a .3. . . .0.1.0.

Activate the reel mechanism Kick cam micro-switch on the left side of the reel mechanism.

Note: A switch in it's rest position, when closed, must be activated (opened) and then returned to it's rest position (closed) to be tested.

When the Kick cam microswitch is activated the Test Station display should display .3. . . .0.1.0.

Activate the arm cam micro-switch also located on the left side of the reel mechanism. When this switch is activated, the Test Station display should display a .3. . . .0.2.0.

If either of the switches do not operate correctly, proceed to the Reel Mechanism Input Troubleshooting Guide, section 4.7.

Note: Reel tests described are performed using a known good MPU and I/O with the Test EPROMs provided installed. These devices must be installed to conduct these tests as the game software does not provide for all of them.

4.3 TROUBLESHOOTING GUIDE

4.4 TROUBLESHOOTING GUIDE AS-2977-1 (LAMP SOURCE)

This section deals with the reel reader circuitry on the reel mechanism, its operation and troubleshooting. This circuitry is contained on the reader control board and the reel position assemblies. The reel reader circuitry is illustrated in Figure 4.1A.

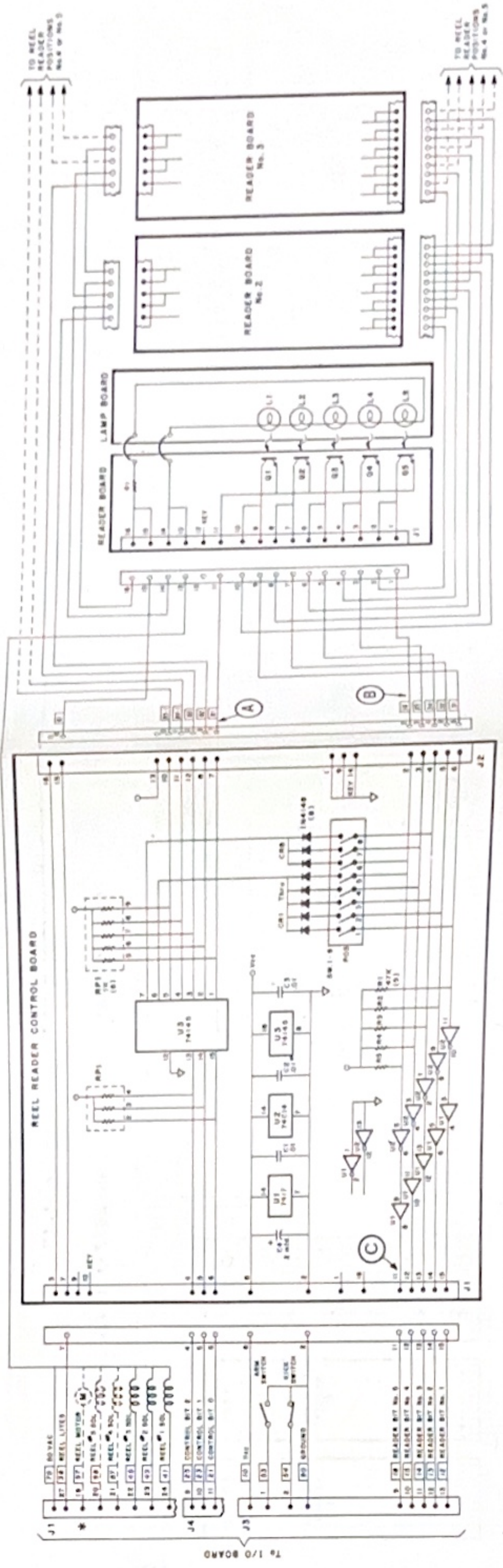
Each reel position reader is configured in two sections; a light source and a light detection source. The light source contains five incandescent light sources wired in series with the current limiting resistor R1. The light detection source contains five photo-transistors wired with common emitters and five separate collector outputs.

The reel reader control board contains a BCD to decimal decoder/driver U3 which decodes the reel control bits #0, #1 and #2 from the I/O Board into five reel select strobes, a CMOS inverter buffer U2, which converts the phototransistor outputs into TTL level signals, an open collector TTL hex buffer U1, which provides the drive to boost the CMOS outputs back to an I/O Board TTL level input port circuitry.

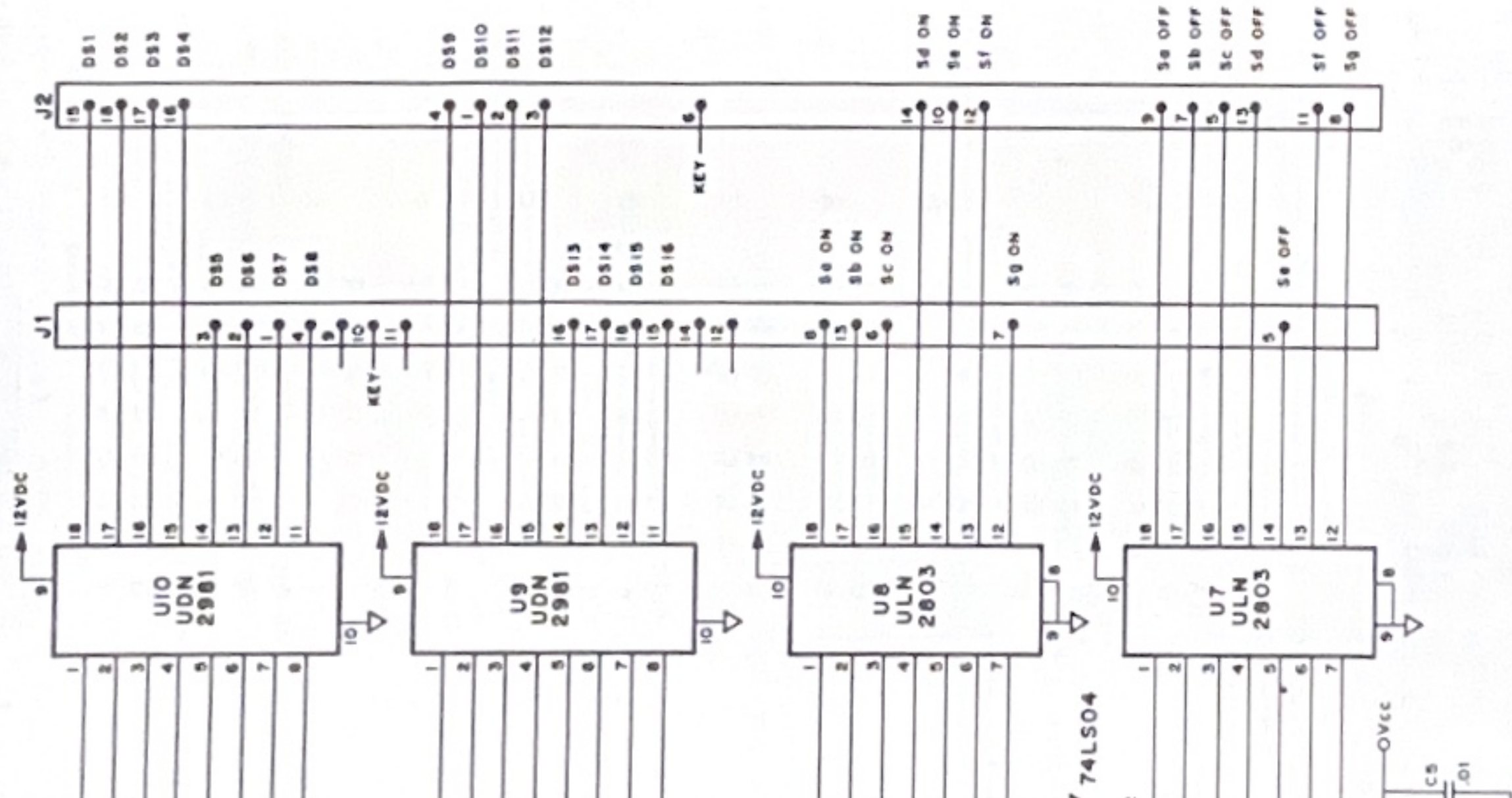
The reel reader control board receives a reel select signal on the control bits and decodes them into a reel select signal. The selected reel line goes to a logic 0 state which enables the phototransistors of the selected reel position reader assembly.

When enabled, the phototransistors sense for light. The index wheel is punched with holes arranged in a binary pattern, which have unique codes for each reel index position. If there is a hole in the wheel, the phototransistor will detect the light and turn on, grounding the collector output. If no hole is present, the transistor will not turn on and a high logic level will remain at the collector output.

Reel Reader Circuitry AS-2977-1 & AS-2983-2



Board Schematic



Progressive Display Board Schematic

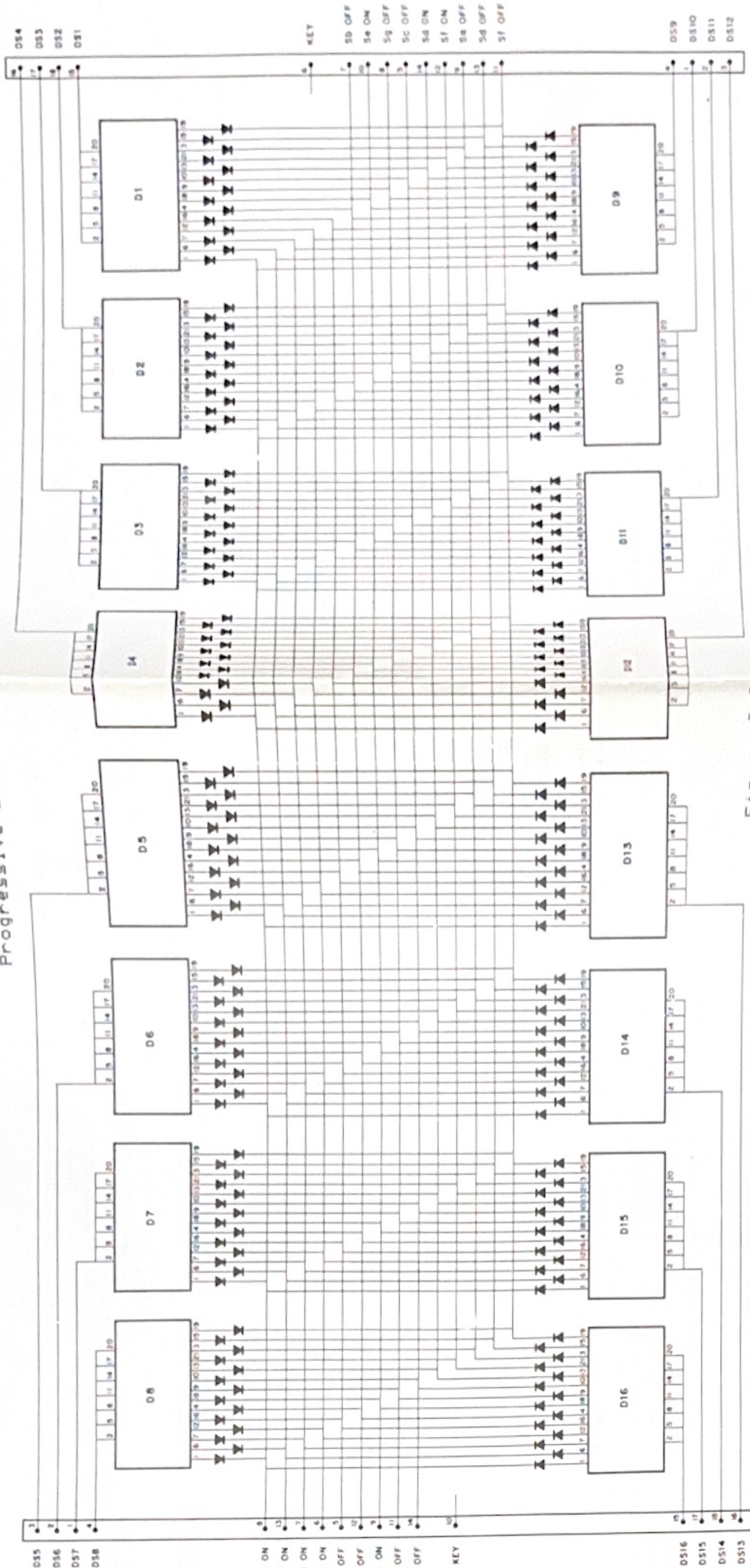


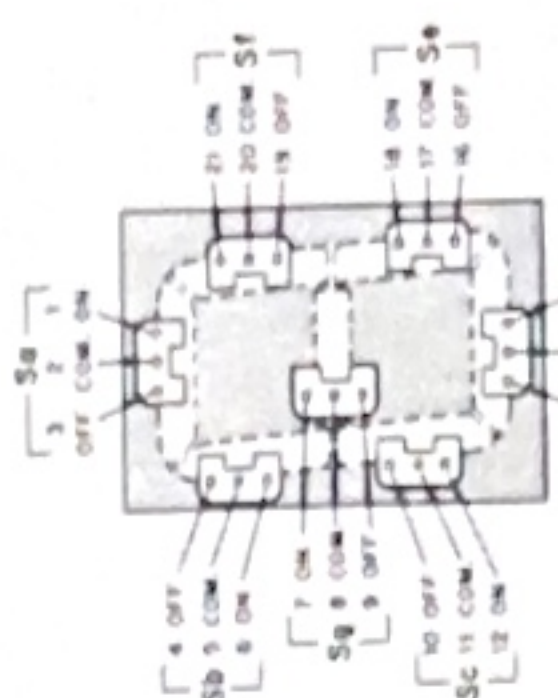
Figure 9.3

Progressive Display Diode Assignment Chart

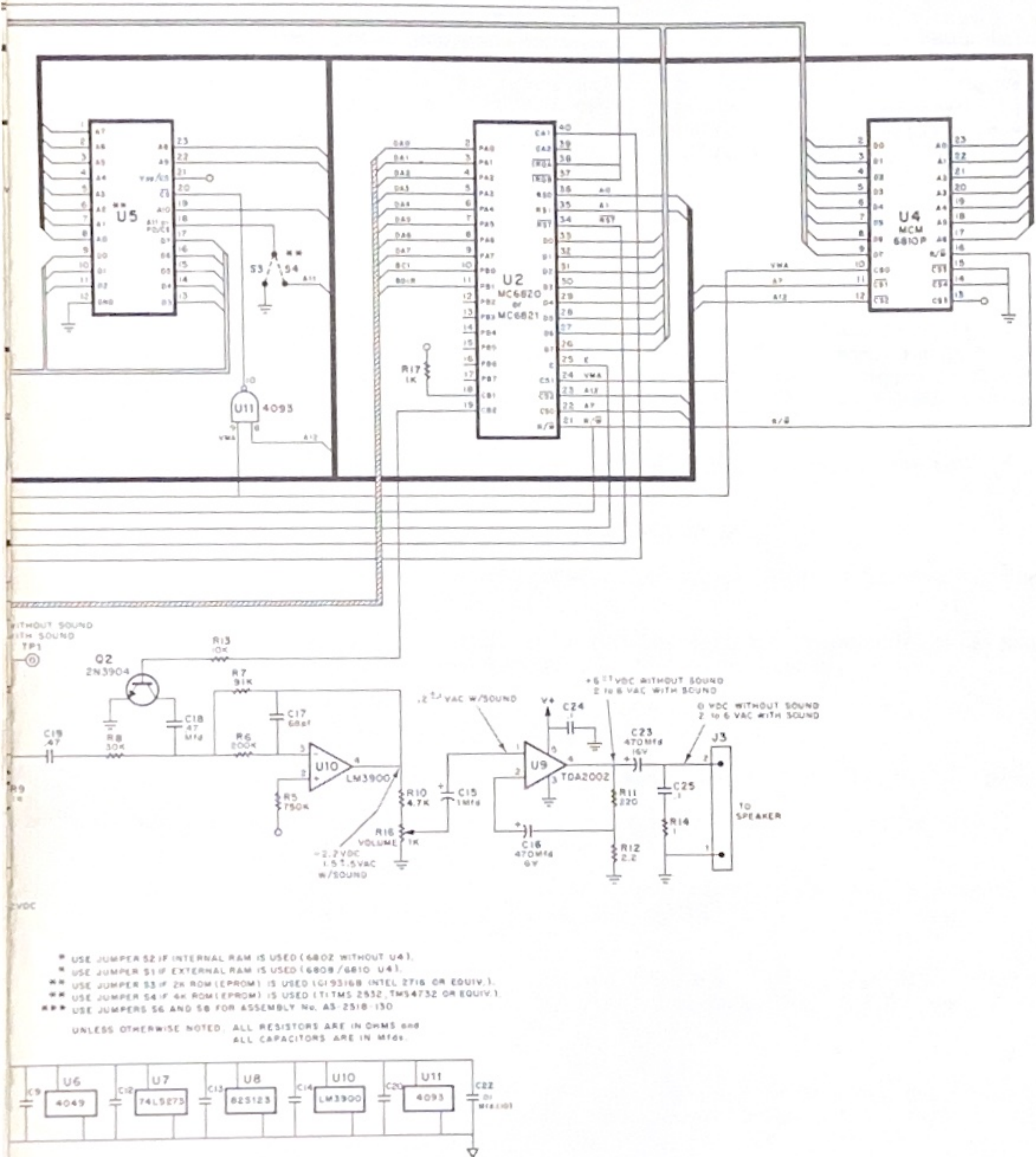
DISPLAY NO.	Sa		Sb		Sc		Sd		Se		Sf		Sg	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D1	B73	A76	A79	A78	B79	A80	A74	B71	A71	A72	A73	A72	B77	A77
D2	B63	A66	A69	A68	B69	A67	A64	B61	A61	A62	A63	A62	B67	A67
D3	B53	A56	A59	A58	B59	A55	A54	B51	A51	A52	A53	A52	B57	A57
D4	B43	A46	A49	A48	B49	A40	A44	B41	A41	A42	A43	A42	B47	A47
D5	B33	A36	A39	A38	B39	A35	A34	B31	A31	A32	A33	A32	B37	A37
D6	B23	A26	A29	A28	B29	A20	A24	B21	A21	A22	A23	A22	B27	A27
D7	B13	A16	A19	A18	B19	A15	A14	B11	A11	A12	A13	A12	B17	A17
D8	B74	A76	A79	A78	B79	A80	A74	B71	A71	A72	A73	A72	B77	A77
D9	B64	A66	A69	A68	B69	A67	A64	B61	A61	A62	A63	A62	B67	A67
D10	B54	A56	A59	A58	B59	A55	A54	B51	A51	A52	A53	A52	B57	A57
D11	B44	A46	A49	A48	B49	A40	A44	B41	A41	A42	A43	A42	B47	A47
D12	B34	A36	A39	A38	B39	A35	A34	B31	A31	A32	A33	A32	B37	A37
D13	B24	A26	A29	A28	B29	A20	A24	B21	A21	A22	A23	A22	B27	A27
D14	B14	A16	A19	A18	B19	A15	A14	B11	A11	A12	A13	A12	B17	A17
D15	B14	A16	A19	A18	B19	A15	A14	B11	A11	A12	A13	A12	B17	A17
D16	B14	A16	A19	A18	B19	A15	A14	B11	A11	A12	A13	A12	B17	A17

Figure 9.4

Electro Magnetic Numeric Display Pin Connections



Circuitry



* USE JUMPER S2 IF INTERNAL RAM IS USED (6802 WITHOUT U4).
* USE JUMPER S1 IF EXTERNAL RAM IS USED (6809/6810 U4).
** USE JUMPER S3 IF 2K ROM (EPROM) IS USED (I193168 INTEL 2716 OR EQUIV.).
** USE JUMPER S4 IF 4K ROM (EPROM) IS USED (I1TMS 2532, TMS4732 OR EQUIV.).
*** USE JUMPER S5 AND S6 FOR ASSEMBLY NO. A3-2518-130
UNLESS OTHERWISE NOTED, ALL RESISTORS ARE IN OHMS AND ALL CAPACITORS ARE IN MFD.

1. Turn on the Test Station power switch and check the test station display for the program I.D. code 000801.
2. Test the insert display board by executing test .8.0. . . .3, (referred to as #8-3), which is done by:

Pressing the test button eight times for about one second each. The test station display should display .0.0.0.0.0.1, .0.0.0.0.0.2, .0.0.0.0.0.3, .0.0.0.0.0.4, .0.0.0.0.0.5, .0.0.0.0.0.6, .0.0.0.0.0.7 and .0.0.0.0.0.8 respectively after each test button closure. .8.0. . . .1 should then appear on the display. Now press the spare interrupt switch, three times, for about one second each. The display should briefly display .8.0. . . .3.

The Test Station display will now sequence thru the illustrated pattern.

DIGIT #	TEST STATION DISPLAY						U1 THRU U7		Segment Position Diagram
	1	2	3	4	5	6			
START OF DISPLAY PATTERN	. 8 . 0	. 0	. 1	. 2	. 3	. 4	ALL 0's		f/---a---/ b --g-- e/---c d D.P.
	. 8 . 0	. 1	. 2	. 3	. 4	. 5	ALL 1's		
	. 8 . 0	. 2	. 3	. 4	. 5	. 6	ALL 2's		
	. 8 . 0	. 3	. 4	. 5	. 6	. 7	ALL 3's		
	. 8 . 0	. 4	. 5	. 6	. 7	. 8	ALL 4's		
	. 8 . 0	. 5	. 6	. 7	. 8	. 9	ALL 5's		
	. 8 . 0	. 6	. 7	. 8	. 9	. ALL (c,d,e,g)			
	. 8 . 0	. 7	. 8	. 9	. ALL (a,b,f,g)				
	. 8 . 0	. 8	. 9	. ALL (a)					
	. 8 . 0	. 9	. ALL (g)						
	. 8 . 0	. ALL (d)							
	. 8 . 0	ALL BLANKED							
	. 8 . 0	5 4 3 2 1							
	. 8 . 0	87							

*Indicated segments will be illuminated. Refer to segment position diagram.

Simultaneously, U1 thru U7 seven segment LED modules on the insert Display board will follow the same pattern. Digit #6 on the test station display is the number or segment character that is displayed. Each number or segment is displayed for approximately one second before scanning to the next number or character in digit #6.

The 001 switch on the front panel is used to stop the test sequence scan in any display mode except 5 4 3 2 1, which will appear for approximately four seconds, then advance to the all 0's pattern on the display.

If a problem is encountered concerning the insert display board, proceed to section 11.3, Insert Display Board Troubleshooting Guide.