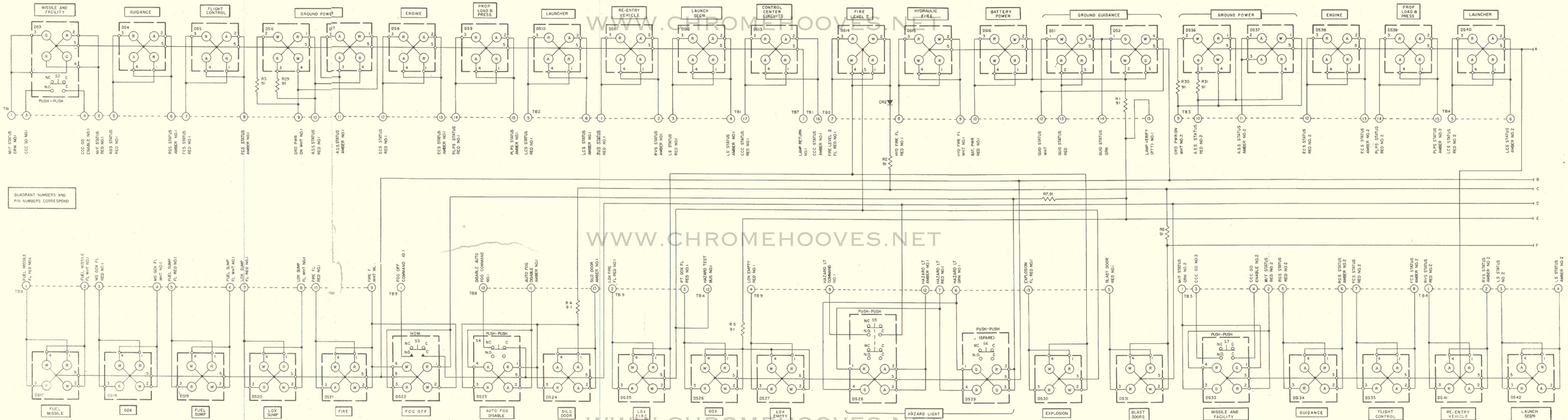

Figure 7-15. Launch Complex Facilities Console, Schematic (Sheet 1 of 3)

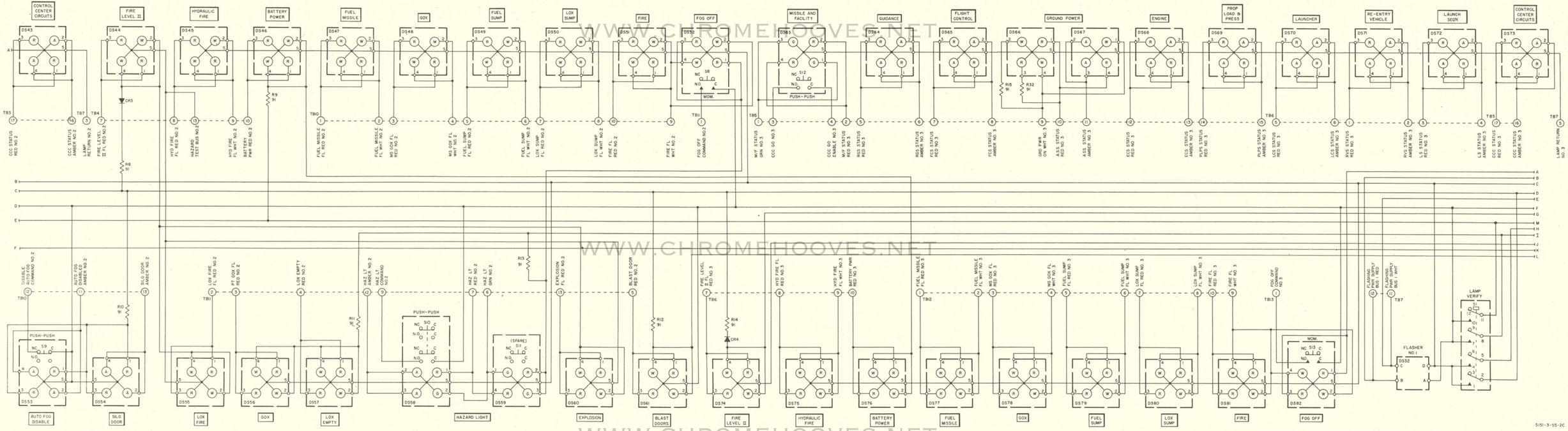

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Figure 7-15. Launch Complex Facilities Console Schematic (Sheet 2 of 3)

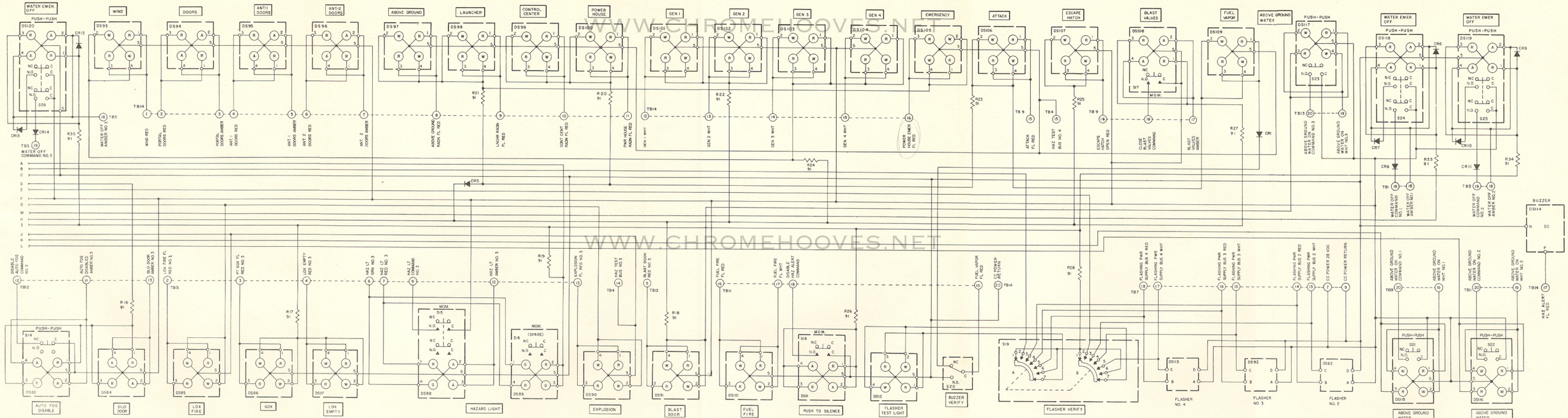


Figure 7-15. Launch Complex Facilities Console Schematic (Sheet 3 of 3)

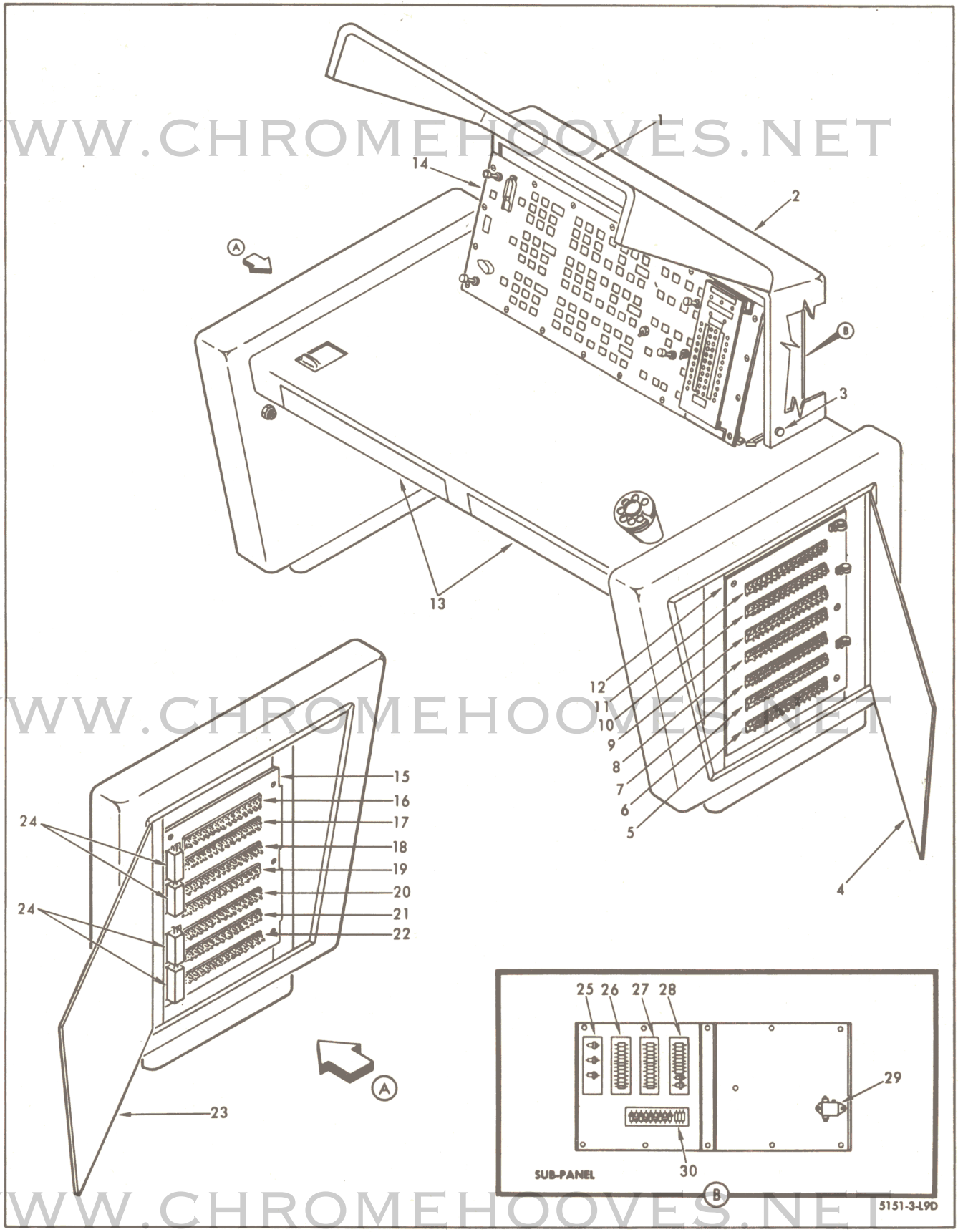


Figure 7-16. Launch Complex Facilities Console Parts Location (Sheet 1 of 2)

1. Front Panel (See FIG. 1-4.)
2. Display Panel
3. Latches (2)
4. Right Side Access Door
5. TB14
6. TB13
7. TB12
8. TB11
9. TB10
10. TB9
11. TB8
12. Terminal Board Assembly
13. Storage Drawers
14. Back Panel (See FIG. 1-5.)
15. Terminal Board Assembly
16. TB1
17. TB2
18. TB3
19. TB4
20. TB5
21. TB6
22. TB7
23. Left Side Access Door
24. Flashers (4)
25. TB18 (CR2 thru CR4)
26. TB15 (R1 thru R10, R29, and R30)
27. TB16 (R11 thru R20, R31, and R32)
28. TB17 (R21 thru R28 and CR1 and CR5)
29. Buzzer DS114
30. TB20 (R33 thru R35 and CR6 thru CR14)

Figure 7-16. Launcher Complex Facilities Console Parts Location (Sheet 2 of 2)

(Text continued from page 7-36.) h. If necessary, remove flashers (24) from terminal board assembly (15) by unsoldering wires and removing four screws from each flasher.

7-23. CLEANING.

7-24. The following general procedures may be used when performing corrective maintenance on the launch complex facilities console:

a. Clean parts only when visual inspection shows that cleaning is required. Use a clean, dry, lint-free cloth or dry brush for cleaning. If necessary, clean all parts except electrical contacts by using a brush or cloth moistened with solvent (Federal Specification P-S-661, Type 1). After using this solvent, wipe off white film deposit which remains when solvent dries.

WARNING

Wear goggles and rubber gloves and provide adequate ventilation when using trichloroethylene as a cleaning agent. This solvent is toxic if vapors are inhaled, and repeated contact with the skin may produce skin irritation.

CAUTION

Do not use trichloroethylene on polystyrene, lucite, or similar plastics as they will be damaged by the chemical action.

b. Clean electrical contacts with cloth moistened with trichloroethylene (Military Specification MIL-T-7003).

CAUTION

Be careful not to damage equipment with first air blast. When using compressed air, always direct first blast toward the floor to clean condensed moisture from the line.

c. Use dry compressed air at line pressure no greater than 60 PSIG to remove dust from inaccessible places.

7-25. INSPECTION.

7-26. To inspect disassembled components of the launch complex facilities console, see figure 7-17.

7-27. REPAIR AND REPLACEMENT.

7-28. The following paragraphs present information for repairing or replacing components on the back panel of the launch complex facilities console.

INSPECTION POINT	EXAMINE FOR	CORRECTIVE ACTION	REF.
General	Dust, rust, fungus, and corrosion.	Clean.	Paragraph 7-23
	Scratches or dents on painted, enameled, or anodized surfaces.	Touch up or repaint.	
	Loose, missing, or damaged hardware, electrical, or electronic parts.	Repair or replace.	Paragraph 7-27
Cabling or wiring	Breaks, frayed insulation; faulty insulation or terminals; sharp bends; inadequate lacing or tying; plastic tubing missing, excess slack or tension.	Repair or replace.	Paragraph 7-27
Wire terminations	Poor solder connections; loose or improper mechanical connections.	Repair or replace	Paragraph 7-27
FLASHER VERIFY switch	Insecure mounting.	Secure.	Paragraph 7-29
	Rough or binding action; damaged stops; pitted, burned, or corroded contacts; dirty or cracked insulation; wear at pivot points and non-positive action.	Repair or replace.	
LAMP VERIFY and BUZZER VERIFY switches.	Insecure mounting.	Secure.	Paragraph 7-36
	Rough or binding action; pitted, burned, or corroded contacts.	Repair or replace.	
Pushbutton indicators	Cracked or damaged lenses; pitted, burned, or corroded contacts; dirty or cracked insulation.	Repair or clean.	Paragraph 7-31

Figure 7-17. Table of Inspection of Parts

7-29. FLASHER VERIFY SWITCH.

7-30. Replace FLASHER VERIFY switch as follows:

a. Loosen Allen-head screw on knob of switch.

b. Withdraw knob from shaft.

c. Unsolder and tag all leads.

e. Replace switch by reversing removal procedure and soldering leads to proper terminals.

7-31. PUSHBUTTON INDICATORS AND INDICATORS.

7-32. The back panel contains pushbutton indicators and indicators (lamp assemblies without switch attachments) whose removal, repair, and replacement are similar. The procedures for performing these functions are contained in the following paragraphs.

7-33. SWITCH REPLACEMENT. Remove switch from pushbutton indicator (figure 7-18) as follows:

a. Withdraw back panel from console frame to provide access to switch being removed.

CAUTION

Do not confuse switch leads with lamp assembly leads or malfunction will occur.

b. Unsolder and tag all leads from switch being removed.

c. Unscrew and remove switch from rear of indicator lamp.

d. Replace defective switch with new switch and reassemble by reversing removal procedure.

7-34. LAMP ASSEMBLY REPLACEMENT. Remove indicator lamp assembly (figure 7-18) as follows:

CAUTION

Do not confuse lamp assembly leads with switch leads or malfunction will occur.

a. Unsolder and tag all leads from lamp assembly being removed.

b. Remove two screws, nuts, and spacers fastening assembly to back panel.

c. Replace defective lamp assembly and reassemble by reversing removal procedure.

7-35. LAMP REPLACEMENT. Replace indicator lamp (figure 7-18) as follows:

a. Insert prongs of module extractor (7) into slots at sides of indicator lamp body (4) until they engage rear edges of lens cap (6).

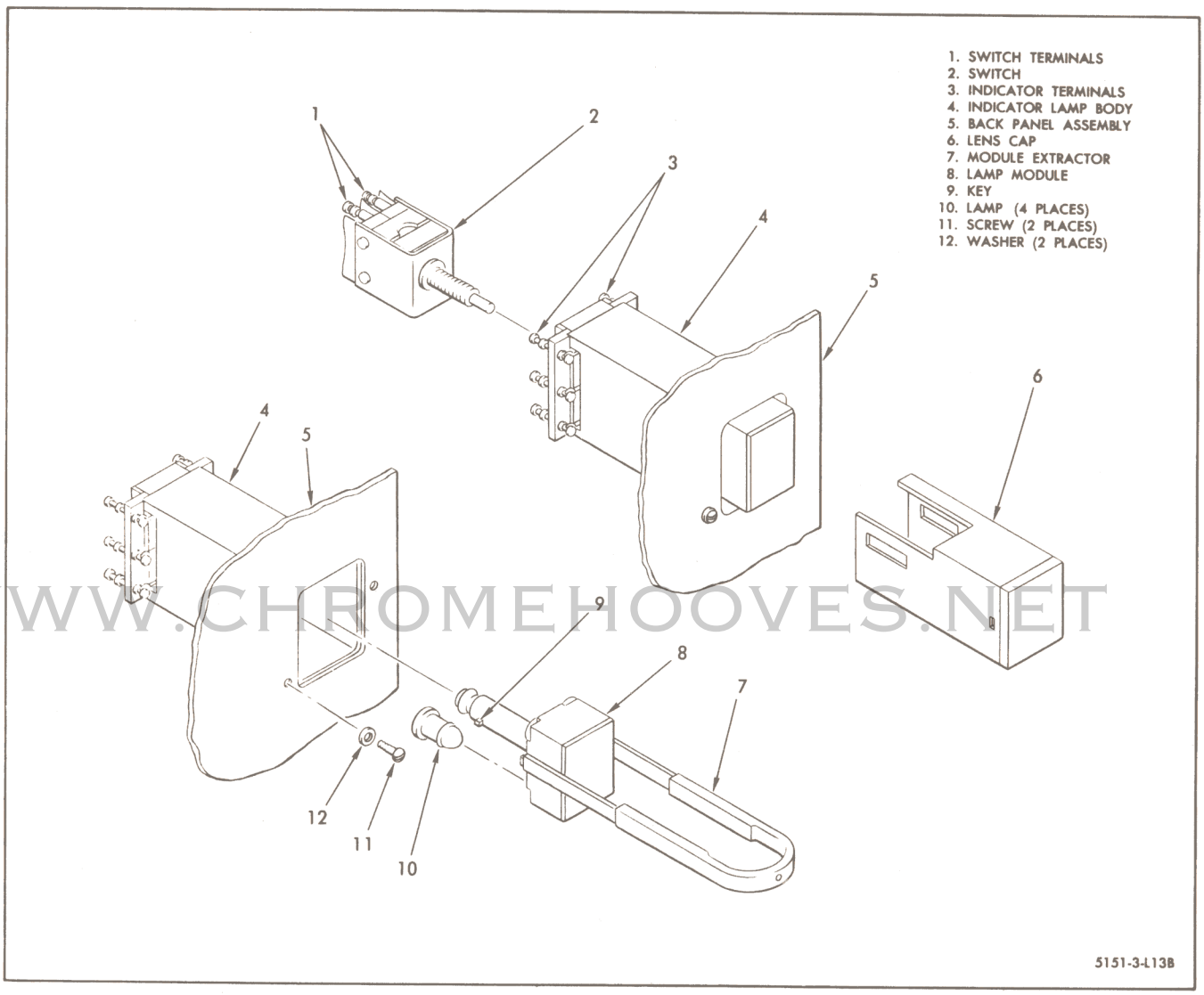


Figure 7-18. Repair of Pushbutton Indicator

b. Withdraw lens cap from indicator lamp body.

c. Insert prongs of module extractor into slots of indicator lamp body until they engage rear edges of lamp module (8).

d. Withdraw lamp module from indicator lamp body.

e. Remove defective lamp (10) from lamp module.

CAUTION

This note applies when the console is connected to the missile launch system.

During replacement of lamps and lamp modules of pushbutton indicators, use caution when replacing the lens cap to prevent actuation of the switch. The lens cap should be inserted until a barely audible clicking sound indicates that the locking mechanism has engaged. No additional pressure should be applied as this may actuate the switch.

f. Replace defective lamp and reassemble indicator by reversing removal procedure.

7-36. LAMP VERIFY AND BUZZER VERIFY SWITCHES.

7-37. Replace LAMP VERIFY and BUZZER VERIFY switches as follows:

a. Unsolder and tag all leads of switch to be replaced.

b. Remove nut fastening switch to back panel.

c. Replace defective switch and reassemble by reversing removal procedure.

7-38. LUBRICATION.

7-39. (Not Applicable)

7-40. REASSEMBLY.

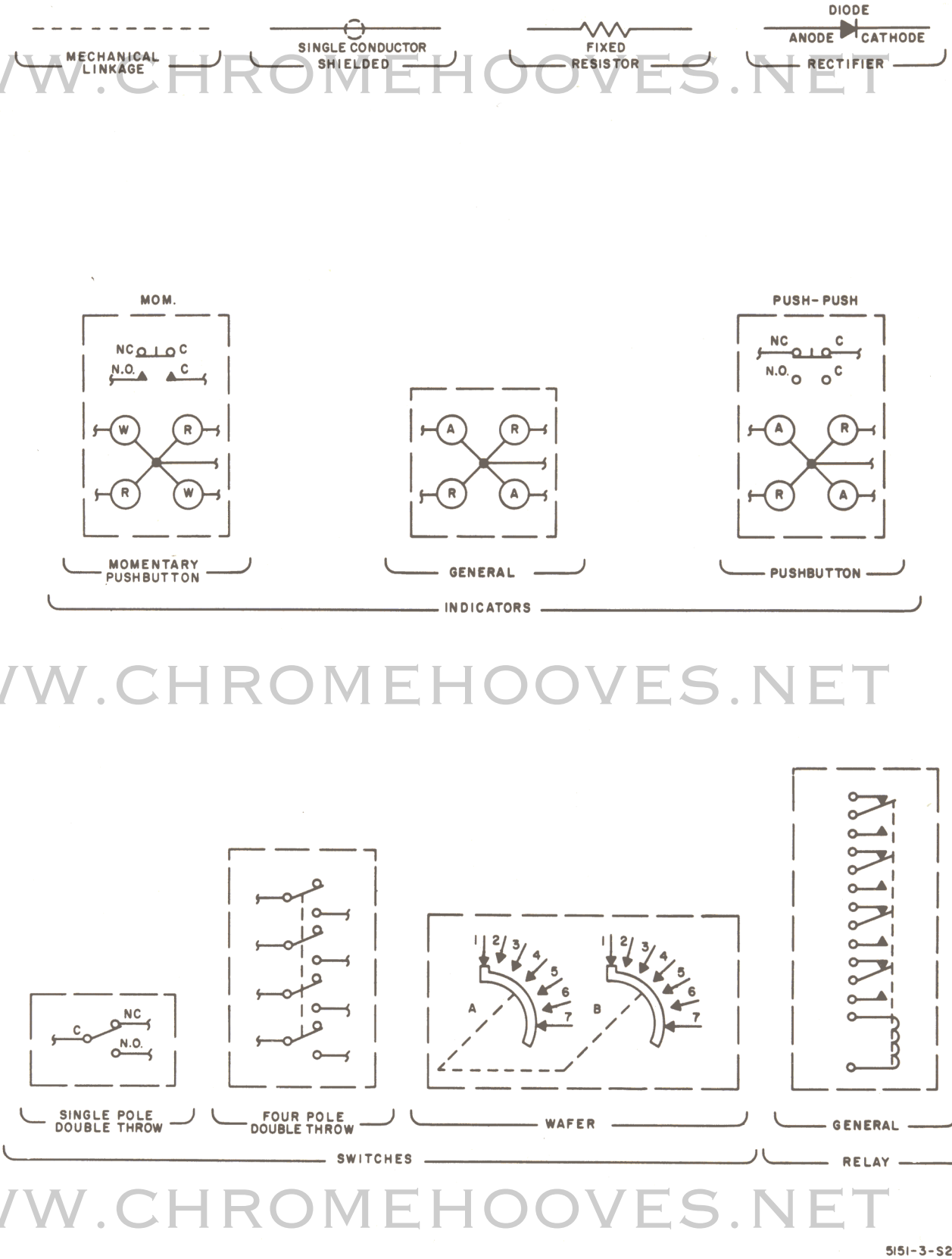
7-41. Reverse the disassembly procedures in paragraph 7-22 to reassemble the launch complex facilities console.

7-42. ADJUSTMENTS.

7-43. (Not Applicable)

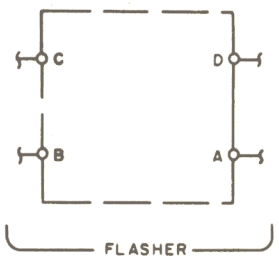
7-44. CHECKOUT AFTER REASSEMBLY.

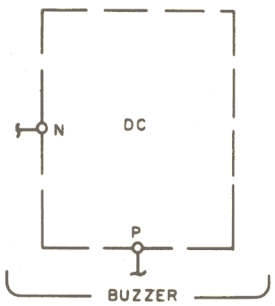
7-45. After reassembly, check out the console as described in paragraph 7-18.



5151-3-S22A

Figure 7-19. Military Standard Electrical and Electronic Symbols





5151-3-S23A

Figure 7-20. Non-Standard Electrical and Electronic Symbols

LAUNCH COMPLEX FACILITIES
CONSOLE, CONTROL MONITOR
GROUP OA-2436(XAA-3)/GJQ-11

PART NO. 327P2130000-009

THE INSTRUCTIONS FOR THE MODEL IN THIS DIFFERENCE DATA SHEET ARE THE SAME AS THE PROCEDURES FOR PART NO. 327N2130000-009 EXCEPT FOR THE DIFFERENCES NOTED.

PURPOSE OF LAUNCH COMPLEX FACILITIES CONSOLE. Same as for part number 327N2130000-009.

DESCRIPTION. Same as for part number 327N2130000-009 except for the differences shown in figure 7-21.

LEADING PARTICULARS. Same as for part number 327N2130000-009 except for the differences listed in figure 7-22.

LOCATION AND FUNCTION OF OPERATING CONTROLS AND INDICATORS. Same as for part number 327N2130000-009 except for the following changes noted in figures 7-23, 7-24, 7-25, 7-26, and 7-27.

a. Deletion of above ground water and water emergency off indicators.

b. Placarding changes of FIRE LEVEL II to FIRE and FOG OFF to FOG ON.

c. Signal nomenclature changes of fire Level II FL red NO. 1 to ET fire FL red NO. 1 and close blast valves command to blast valves command. Function of BLAST VALVES pushbutton indicator is to indicate amber when blast valves are closed.

d. Relocation of ground guidance and explosion indicators, flasher test light, and module extractor.

e. Fire indication, flashing red indicator, for Level II has been relocated to equipment alarm panel on Level III.

f. Addition of portal access and fence gate indicators.

g. Function of ESCAPE HATCH indicator; to indicate escape hatch in tunnel junction is open.

PREPARATION FOR USE AND RESHIPMENT. Not applicable.

TEST EQUIPMENT. Same as for part number 327N2130000-009.

(Text continued on page 7-65.)

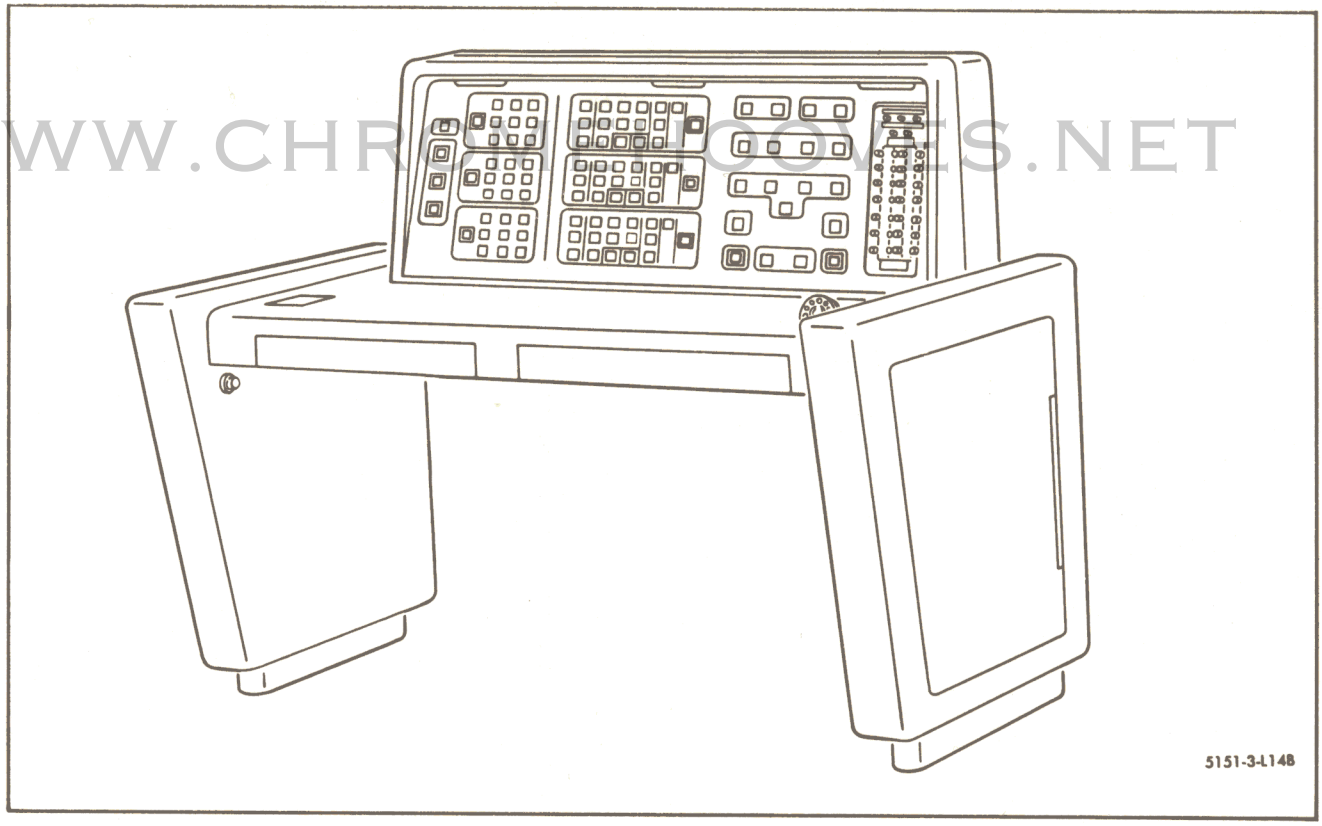


Figure 7-21. Launch Complex Facilities Console, Part NO. 327P2130000-009

ELECTRICAL DATA	
Operating voltages	26.5 to 32.5 VDC
	125(±6.3) VDC
	117(±6.0) VAC 60 CPS
Outputs monitored	24.5 to 27.5
	30.5 to 33.5

Figure 7-22. Table of Leading Particulars, Part NO. 327P2130000-009

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FACILITY STATUS & CONTROL FENCE GATE	S21 and DS115	Momentary push-button indicator with amber and green lamps.	Amber lamp indicates that command to open gates has been initiated. Green lamp indicates that gate is closed.
FACILITY STATUS & CONTROL PORTAL ACCESS LOCK	S22 and DS116	MOMENTARY push-button indicator with green lamps.	Green lamp indicates that portal revolving blast door is locked. Pressing push-button sends signal to lock door.
FACILITY STATUS & CONTROL PORTAL ACCESS UNLOCK	S23 and DS117	Momentary push-button indicator with red lamps.	Red lamp indicates that portal revolving blast door is unlocked. Pressing pushbutton sends signal to unlock door.
FACILITY STATUS & CONTROL EQUIP TERM FIRE		Indicator with flashing red lamps.	Flashing red lamp indicates a fire in the equipment terminal.
LAUNCHER NO.1 LAUNCHER NO.2 LAUNCHER NO.3	DS14 DS44 DS74		Note A visual check of the equipment terminal alarm panel on level III must be made to determine the level on which a fire exists.
Note The following indications are added by TCTO 31X3-10-26-514.			
LOX P.T. VENT LAUNCHER NO.1 LAUNCHER NO.2 LAUNCHER NO.3	 DS118 DS119 DS120	Indicator with flashing red lamps.	Flashing red lamp indicates the presence of LOX in the propellant terminal vent shaft.

Figure 7-23. Table of Operating Controls and Indicators, Part NO. 327P2130000-009

STEP	PROCEDURE	NORMAL RESULT	TROUBLE ANALYSIS REF
1	Connect negative terminal of power supply to TB7-9. Do not remove connection until completion of checkout. Apply 28 VDC to TB2-12.	GROUND GUIDANCE lamp DS1 quadrant 1 lights white and DS2 quadrant 4 lights white.	Replace lamp.
2	Apply 28 VDC to TB2-13.	GROUND GUIDANCE lamp DS1 quadrant 2 and 3 light red.	Replace lamp.
3	Apply 28 VDC to TB2-14.	GROUND GUIDANCE lamp DS1 quadrant 4 lights green.	Replace lamp.
		GROUND GUIDANCE lamp DS2 quadrant 1 lights green.	Replace lamp.
	Note After incorporation of TCTO 31X3-10-26-514 perform steps 4, 5, and 6.		
4	Apply 28 VDC to TB8-14.	LOX P.T. VENT lamp DS118 quadrant 1 and 3 light red.	Replace lamp.
5	Apply 28 VDC to TB10-14.	LOX P.T. VENT lamp DS119 quadrant 1 and 3 light red.	Replace lamp.
6	Apply 28 VDC to TB12-14.	LOX P.T. VENT lamp DS120 quadrant 1 and 3 light red.	Replace lamp.

Figure 7-24. Table of Checkout Procedures for Ground Guidance Indicators, Part NO. 327P2130000-009

STEP	PROCEDURE	NORMAL RESULT	TROUBLE ANALYSIS REF
	CAUTION This note applies when the console is connected to the missile launch system. During replacement of lamps and lamp modules of pushbutton indicators, use caution when replacing the lens cap to prevent actuation of the switch. The lens cap should be inserted until a barely audible clicking sound indicates that the locking mechanism has engaged. No additional pressure should be applied as this may actuate the switch.		
1	Check for open circuit from TB6-16 to TB6-17, -18, -19, and -20.	Meter indicates infinity.	Repair wiring.
2	Apply 117 V 60 CPS to TB6-19 and -18 (neutral). Press and hold FENCE GATE pushbutton S21. Before removing 117 V 60 CPS from TB6-19 and -18 (neutral) complete step 3.	FENCE GATE lamp DS115 Quadrants 2 and 4 light amber. Check for 117(±6)V 60 CPS at TB6-20.	Replace resistors or lamps. Replace pushbutton S21.
3	Release FENCE GATE pushbutton S21.	FENCE GATE lamp DS115 quadrants 2 and 4 go off. Check for 0 V at TB6-20.	Replace pushbutton S21.
4	Apply 117 V 60 CPS to TB6-17 and -18 (neutral).	FENCE GATE lamp DS115 quadrants 1 and 3 light green.	Replace resistors or lamps.
5	Apply 125 VDC to TB6-15 and connect power supply return to TB6-13. Before removing connections complete steps 6 through 9.	PORTAL ACCESS LOCK lamp DS116 quadrants 1 and 3 light green.	Replace resistors or lamps.
6	Apply 28 VDC to TB7-7 and 125 VDC to TB5-18. Connect 28 VDC power supply return to TB7-9.	PORTAL ACCESS LOCK lamp DS116 quadrants 1 and 3 remain lighted.	Replace resistors or lamps.

Figure 7-25. Table of Checkout Procedures for Common Facilities Indicators, Part NO. 327P2130000-009 (Sheet 1 of 2)

STEP	PROCEDURE	NORMAL RESULT	TROUBLE ANALYSIS REF
7	Press and hold PORTAL ACCESS LOCK pushbutton S22.	Check for 125(±6) VDC at TB5-20.	Replace diode CR7, relay K2, or PORTAL ACCESS pushbutton S22.
8	Release PORTAL ACCESS LOCK pushbutton S22.	Check for 0 volts at TB5-20.	Release diode CR7, relay K2, or PORTAL ACCESS pushbutton S22.
9	Remove all inputs and power supply returns.		
10	Apply 125 VDC to TB6-14 and connect power supply return to TB6-13. Before removing connections complete steps 11 through 14.	PORTAL ACCESS UNLOCK lamp DS117 quadrants 1 and 3 light red.	Replace resistors or lamps.
11	Apply 28 VDC to TB7-7 and 125 VDC to TB6-12. Connect 28 VDC power supply return to TB7-9.	PORTAL ACCESS UNLOCK lamp DS117 quadrants 1 and 3 remain lighted.	Replace resistors or lamps.
12	Press and hold PORTAL ACCESS UNLOCK pushbutton S23.	Check for 0 Volts at TB6-11.	Replace diode CR6, relay K1, or PORTAL ACCESS UNLOCK pushbutton S23.
13	Release PORTAL ACCESS UNLOCK pushbutton S23.	Check for 125(±6) VDC at TB6-11.	Replace diode CR6, relay K1, or PORTAL ACCESS UNLOCK pushbutton S23.
14	Remove all inputs and power supply returns.		

Figure 7-25. Table of Checkout Procedures for Common Facilities Indicators, Part NO. 327P2130000-009 (Sheet 2 of 2)

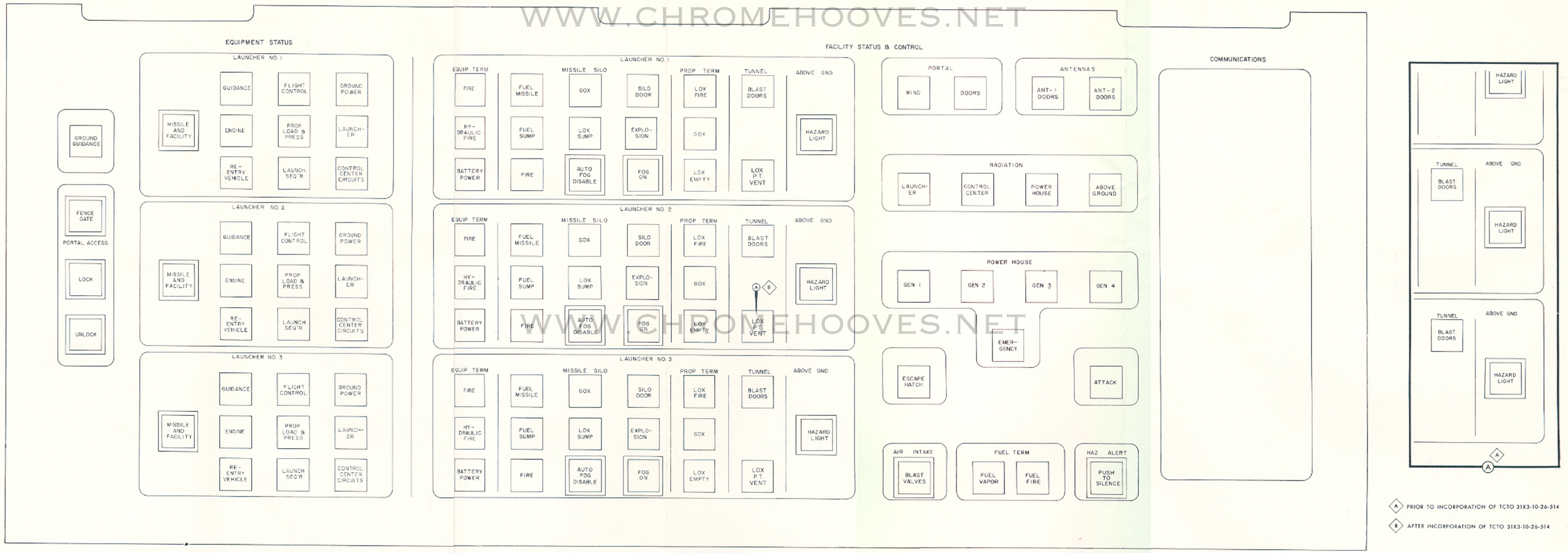


Figure 7-26. Front Panel Operating Controls and Indicators Part NO. 327P2130000-009
Changed 15 May 1963

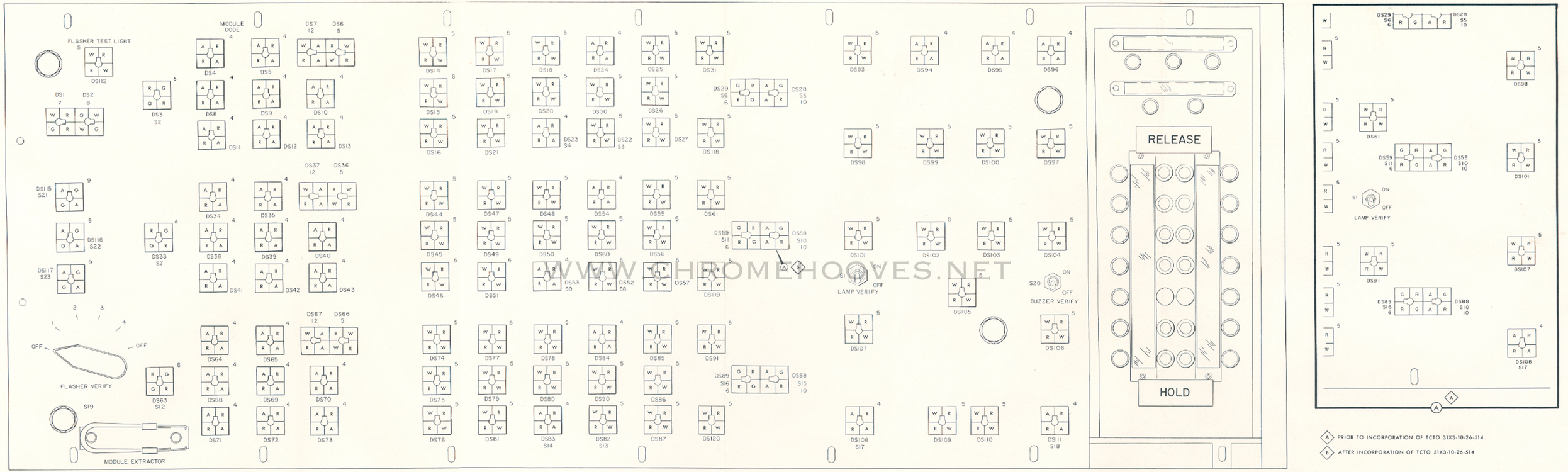


Figure 7-27. Back Panel Operating Controls and Indicators Part NO. 327P2130000-009
Changed 15 May 1963

(Text continued from page 7-57)

SPECIAL TOOLS. Same as for part number 327N2130000-009.

THEORY OF OPERATION. Not applicable.

DESCRIPTION OF SYSTEM TIE-IN OF EQUIPMENT AND ACCESSORIES. Not applicable.

CHECKOUT AND ANALYSIS. Not applicable.

CIRCUIT DESCRIPTION. Same as for part number 327N2130000-009 except for the following changes:

a. Deletion of above ground water and water emergency off capabilities.

b. Relocation of explosion indicators from the above ground section to the missile silo section.

c. Addition of fence gate and portal access indicators which monitor the status of the fence gate and portal revolving blast door.

Note

The LOX propellant tunnel vent indicators are added by TCTO 31X3-10-26-514.

d. Addition of LOX propellant tunnel vent indicators which monitor the presence of LOX in the propellant terminal vent shaft.

TEST SETUP. Same as for part number 327N2130000-009 except for the use of 125 VDC and 117 V 60 CPS facility power. Connections between facility power and console are given in the checkout tables.

CHECKOUT. Same as for part number 327N2130000-009 except for the following:

a. Table of checkout procedures for ground guidance indicators, figure 7-4, are to be performed using figure 7-24.

b. Table of checkout procedures for common facilities indicators are listed in figure 7-25.

c. Placarding changes of FOG OFF to FOG ON and FIRE LEVEL II to FIRE, whenever they appear in figures 7-6 through 7-9.

TROUBLE ANALYSIS. Same as for part number 327N2130000-009 except for the following:

a. Additional procedures listed in figure 7-24 and 7-25.

b. See figure 7-28 to trace the circuit to the parts listed in the corrective action column.

c. Page 7-43, step 1, second trouble analysis procedure now reads, check for voltage at GROUND GUIDANCE lamp DS2 pin 3.

DISASSEMBLY. Same as for part number 327N2130000-009.

CLEANING. Same as for part number 327N2130000-009.

INSPECTION. Same as for part number 327N2130000-009.

REPAIR AND REPLACEMENT. Same as for part number 327N2130000-009.

LUBRICATION. Not applicable.

REASSEMBLY. Same as for part number 327N2130000-009.

ADJUSTMENTS. Not applicable.

CHECKOUT AFTER REASSEMBLY. Refer to CHECKOUT.

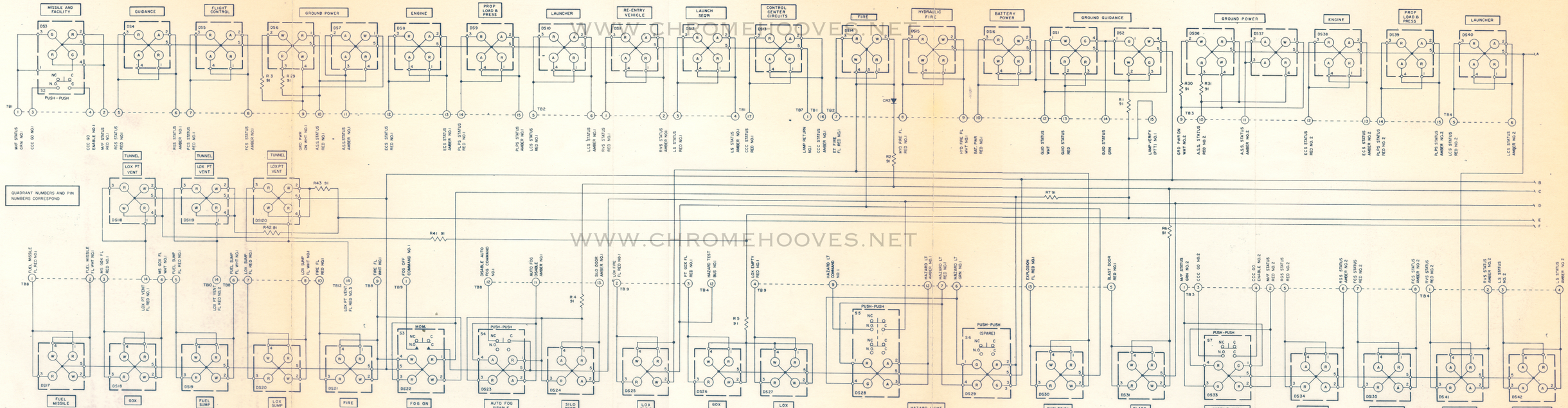


Figure 7-28. Launch Complex Facilities Console Schematic Part NO. 327P2130000-009 (Sheet 1 of 3)
Changed 16 June 1964

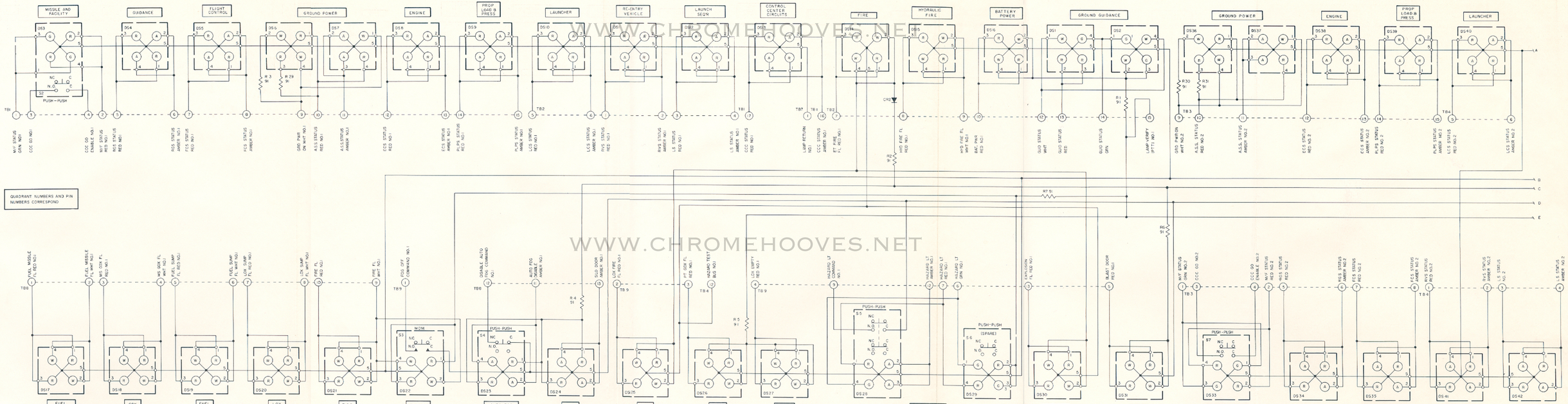


Figure 7-28. Launch Complex Facilities Console Schematic
Part NO. 327P2130000-009 (Sheet 1A of 3)

Changed 15 May 1963

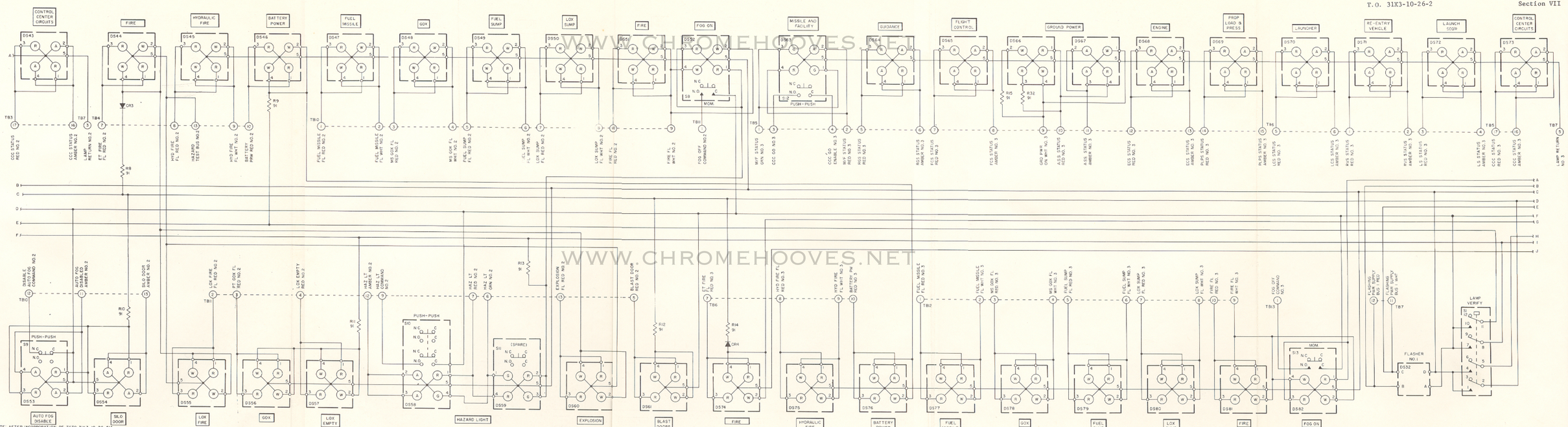


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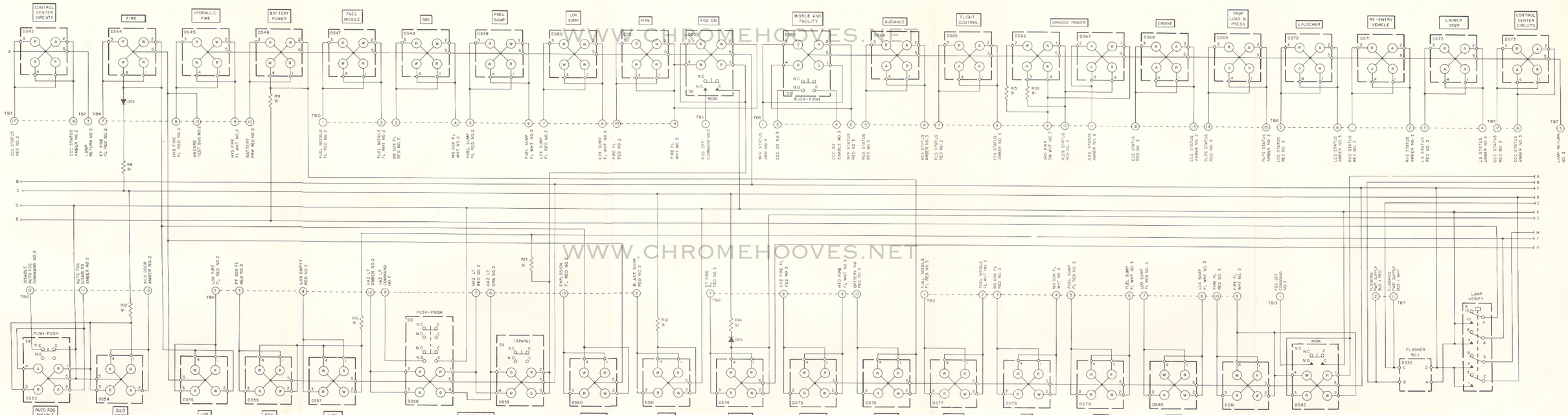
Figure 7-28. Launch Complex Facilities Console Schematic
Part NO. 327P2130000-009 (Sheet 2 of 3)



NOTE: BEFORE INCORPORATION OF TCTO 31X3-10-26-514.

Figure 7-28. Launch Complex Facilities Console Schematic
Part NO. 327P2130000-009 (Sheet 2A of 3)

Changed 15 May 1963

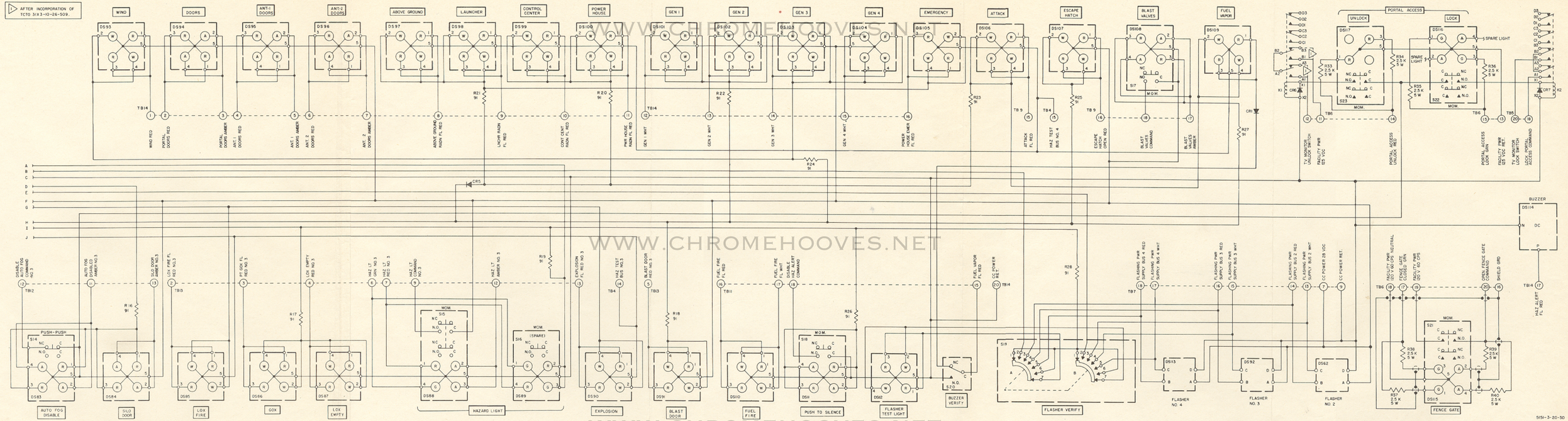


Figure 7-28. Launch Complex Facilities Console Schematic, Part NO. 327P2130-00-009 (Sheet 3 of 3)

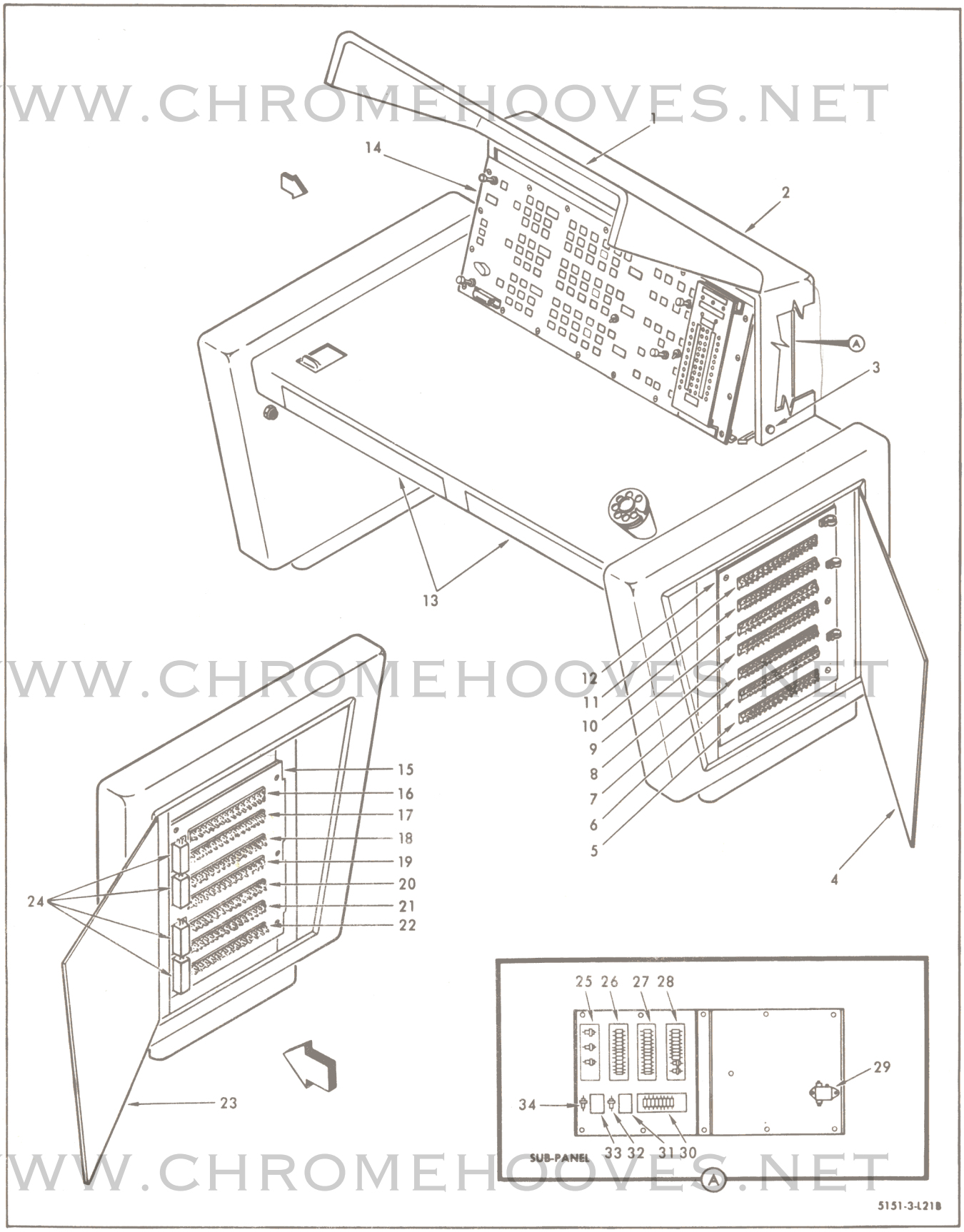


Figure 7-29. Launch Complex Facilities Console Parts Location, Part NO. 327P2130000-009 (Sheet 1 of 2)