Prodigy® Color-on-Demand® Controller and Control Panel

Customer Product Manual
Part 1066483A04

Issued 03/09

For parts and technical support, call the Finishing Customer Support Center at (800) 433-9319.

This document is available on the Internet at http://emanuals.nordson.com/finishing

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NORDSON CORPORATION • AMHERST, OHIO • USA

Table of Contents

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address: http://www.nordson.com.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
555 Jackson Street
Amherst, OH 44001

DECLARATION of CONFORMITY

PRODUCT:

Prodigy Color on Demand, HDLV Manual Pump Cabinet and Controls
One or two gun, manual pump system for use with a Manual Applicator and Controller.

APPLICABLE DIRECTIVES:

98/37/EEC	(Machinery)
2006/95/EC	(Low–Voltage Directive)
2004/108/EEC	(Elecromagnetic Compatibility Directive)

STANDARDS USED TO VERIFY COMPLIANCE:

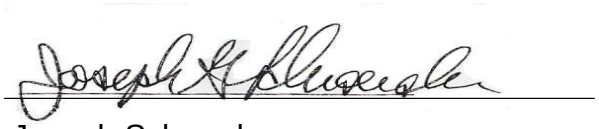
IEC60417	EN61000–6–2
EN12100	EN55011
EN60204	EN61000–6–3
NFPA79	

PRINCIPLES:

This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

Quality Certificate:

DNV ISO9001:2000



Date: 15 October 2007

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Engineering Manager,
Finishing Product Development Group

Nordson

Nordson Corporation • Westlake, Ohio

DOC14019A02

Color-on-Demand® Controller and Control Panel

Safety

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to all persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.

- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class 2, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables, and wires after servicing equipment.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

This manual covers the Color-on-Demand Controller and Control Panel.

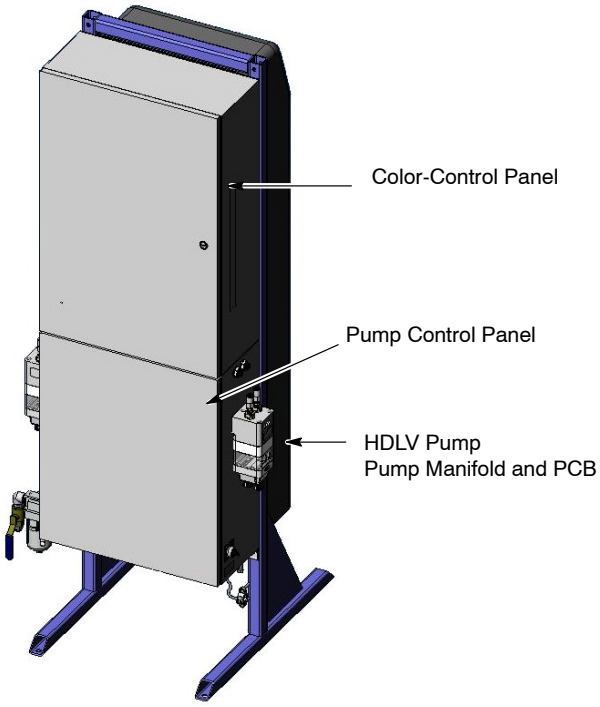
For operation instructions, refer to the Color-on-Demand Operator Card.

Detailed maintenance and repair instructions and parts lists for other components of the system are contained within their manuals.

Prodigy Manual Gun

Manual Gun Controller

Color-on-Demand Controller



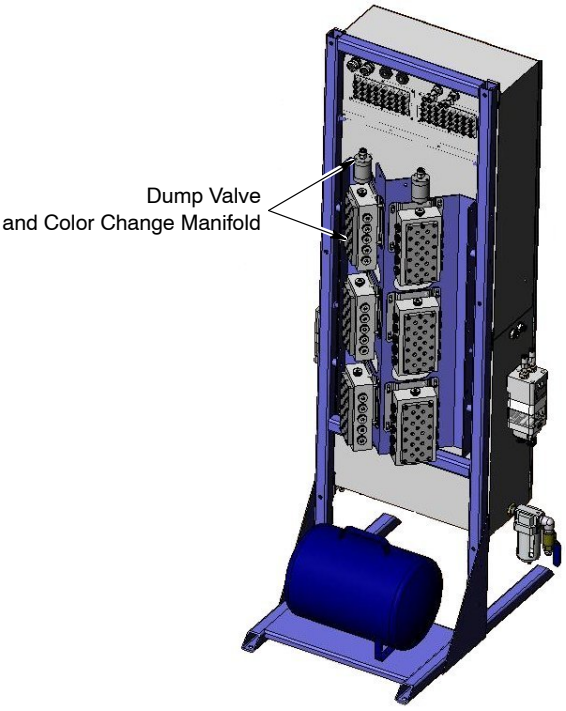


Figure 1 Color-on-Demand System Components and Manuals

System Operation

Air and power are supplied to the color control panel from the pump control panel.

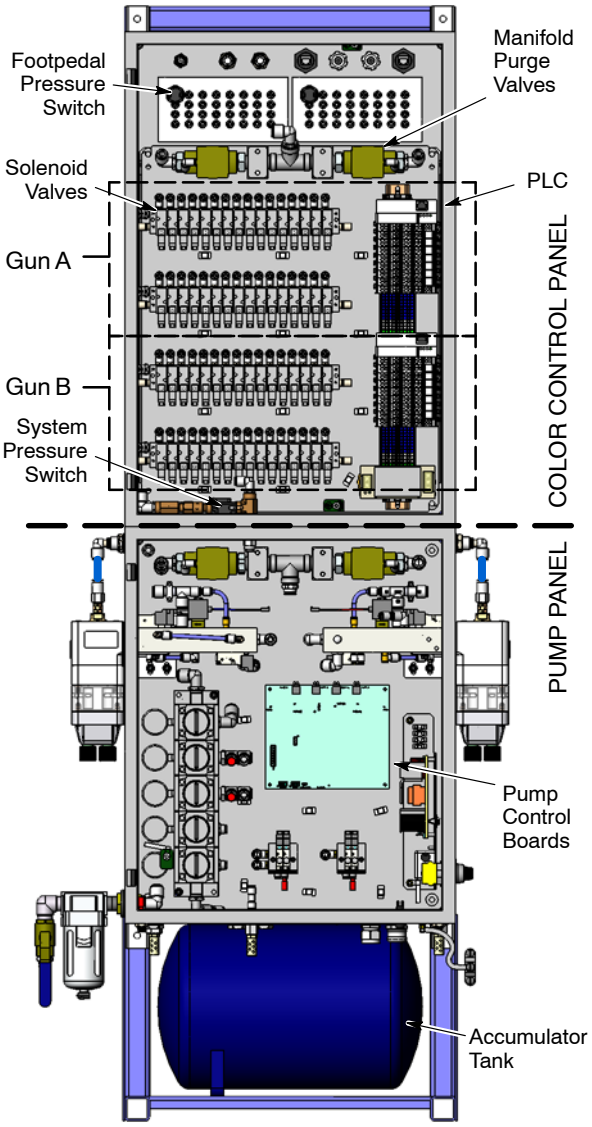


Figure 2 System Control Panels (Dual Gun System)

The color control panel houses the PLC and solenoid valves that control the color change system. The PLC also interfaces with the pump control boards in the pump control panel to signal a color change start.

The Color-on-Demand controller provides the operator interface for the color change controls. The controller communicates with the color control panel through an Ethernet cable.

NOTE: Refer to the *Prodigy® Color-on-Demand System* manual for instruction on wiring the ethernet cable.

Power is supplied to the COD controller from the color control panel through a separate power cable.

Other major components of the color control panel include the manifold purge valves, which provide manifold purge air during the color change cycle; and the system pressure switch, which senses system air pressure and prevents a color change from starting if the air pressure drops below 70 psi, and the foot pedal pressure switches. When the operator steps on the foot pedal it sends a signal to the pressure switch, which signals the PLC to initiate a color change.

Accumulator Tank Function

The accumulator tank bolted to the bottom of the panel stand contains an emergency supply of compressed air to keep the color change manifold valve bladders inflated if air pressure to the system is lost while there is powder in the system. If air pressure is lost and the bladders deflate, some of the powder may migrate into the other color valves.

Cleaning the system after a loss of air pressure is covered in the Maintenance section of this manual.

Color Change Manifold

The color change manifold consists of 3 valve blocks with 10 ports in the side of each block and ports at each end. Of the 30 side ports, 28 are powder inlet valves, one is a purge air inlet valve and one is a dump outlet valve (Dump 1) to the booth. A separate external dump valve (Dump 2) is connected to the top outlet on the top block.

The manifold valve bladders are inflated to close the side ports and deflated to open them. The currently selected powder flows around the valve bladder and out the suction line to the HDLV pump. During a color change, air is exhausted from the Dump 1 and Dump 2 valves, allowing them to open so that purge air can push the remaining powder in the suction lines and manifold out through the dump lines to the booth.

Color change cycle settings are made from the Manual Gun Controller interface (**Tools**>**Purge**). These settings determine the pump soft purge, pulse purge, and new color pre-load timing.

Both gun controllers must be set for the "Gun No: 1" network address. Refer to the *Prodigy Manual Spray Gun Controller* (manual 1054580) for a description of the color change cycle and settings.

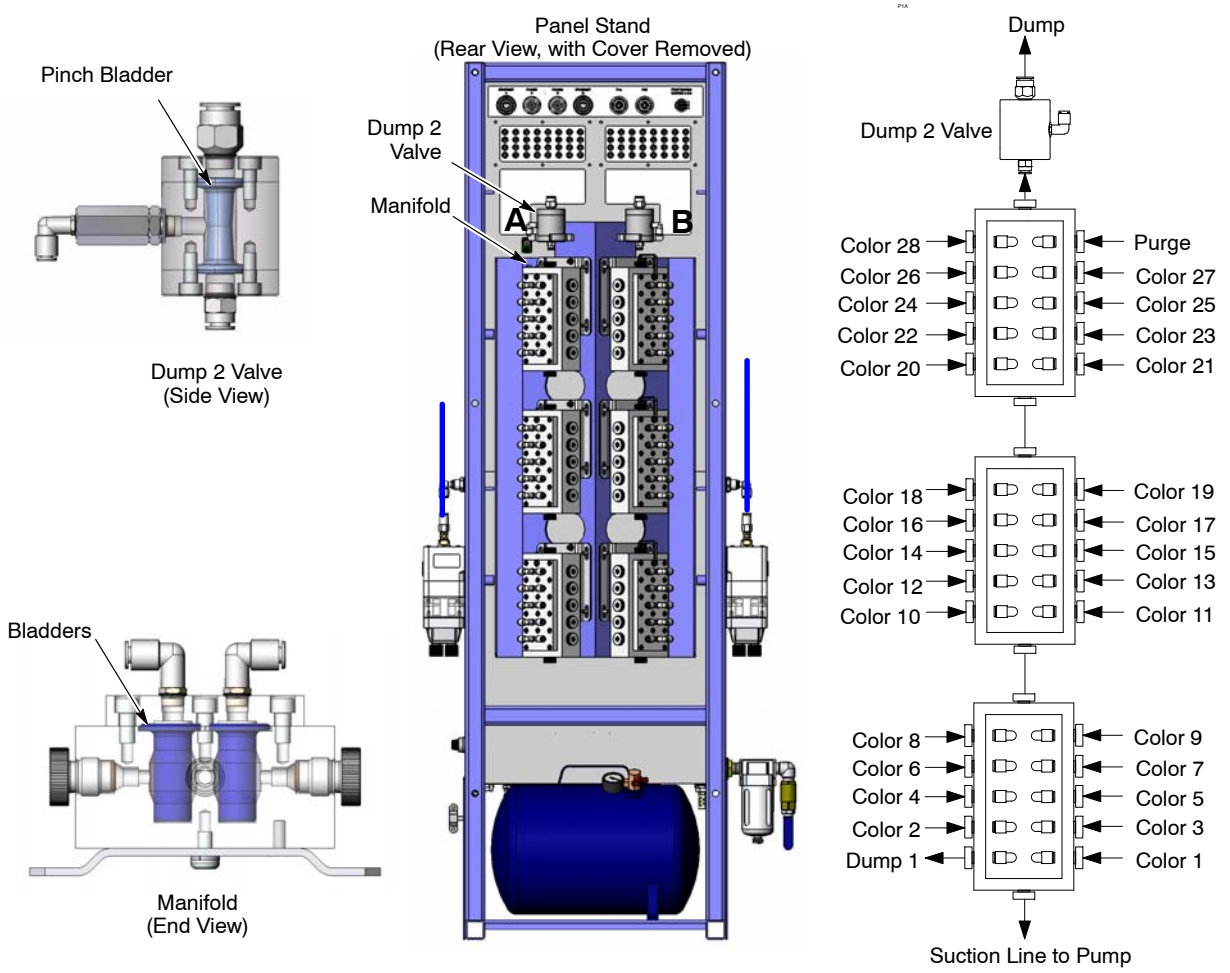
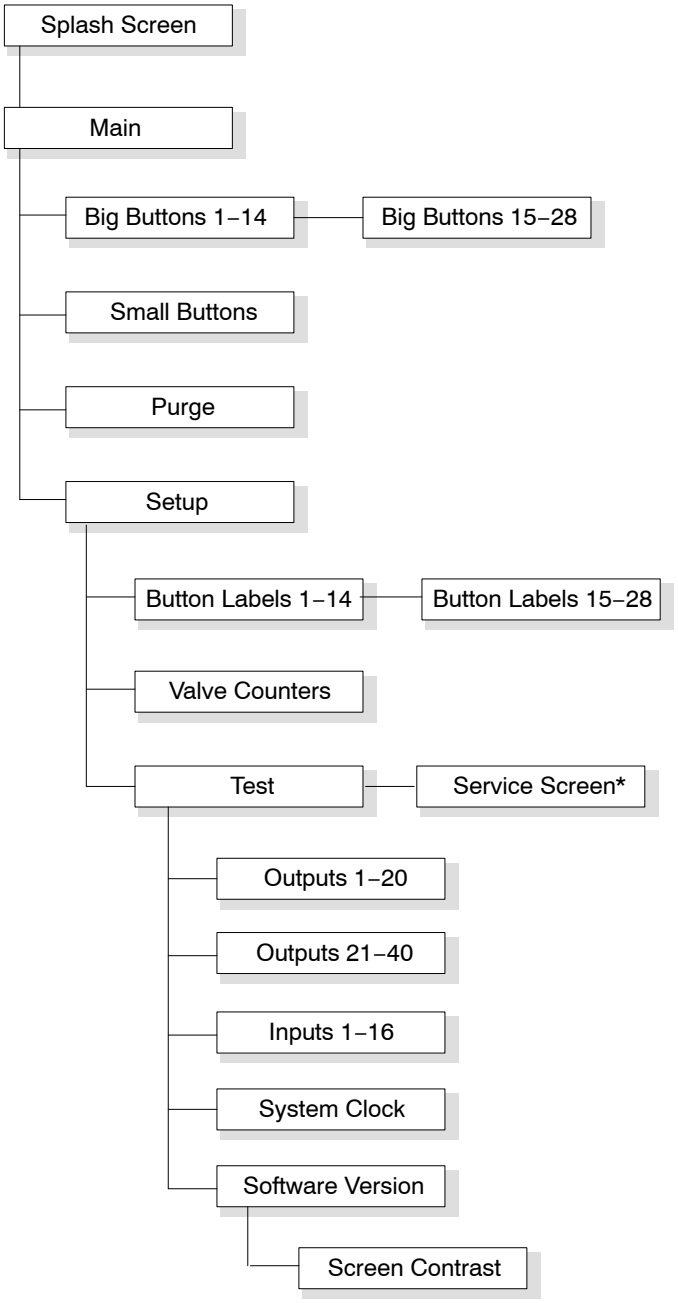


Figure 3 Color Change Manifold and Dump Valve

Color-on-Demand Controller Setup and Operation

Screen Map



* Service Screen is for use by Nordson CSRs.

Figure 4 Color-on-Demand Controller Screen Map

Color Change without Suction Line Purge

When the color controller is turned on, the splash screen appears.

NOTE: Note that the controller power switch only turns on and off the controller. The color change PLC remains powered up until the system power switch is turned off.

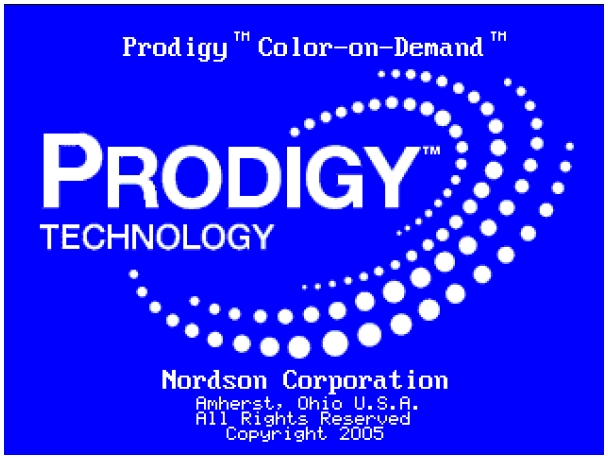


Figure 5 Splash Screen

Touch the Splash screen to open the Main screen.

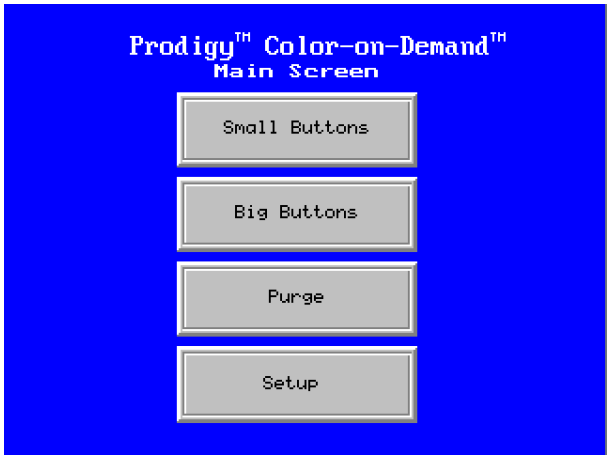


Figure 6 Main Screen

Choose the desired button size by touching **Small Buttons** or **Big Buttons**.

The Small Buttons screen has all 28 color buttons on one screen:

Figure 7 Small Buttons Screen

The Big Buttons screens have 14 color buttons on each of two screens:

Figure 8 Big Buttons Screen

To change colors, touch the desired color button then the **Start** button, or touch the Start button and then select a color, or press the foot pedal then touch the desired color button.

After starting a color change with the footpedal or Start button, you have approximately 11 seconds (with factory default Purge settings) to select a new color or the system will load the current color again.

When a new color is selected it becomes the Next color while the color in the system is the Current color.

When the color change cycle is complete and the new color is loaded, the Current color and Next color will be the same. COMPLETE appears at the bottom of the screen.

Button Labeling

From the **Main** Screen, touch **Setup**. Use the **Button Label** screens to enter labels for each color button and for the system.

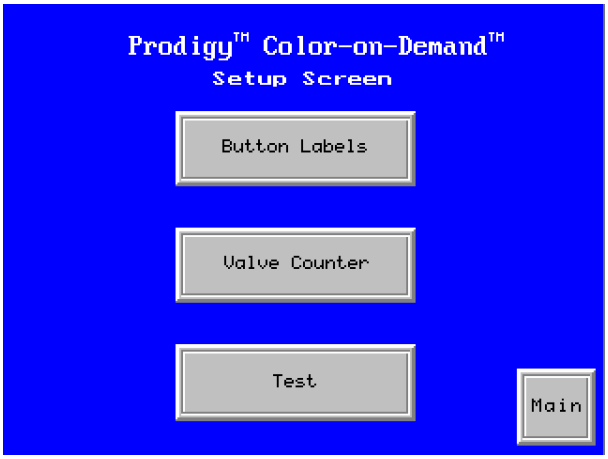


Figure 9 Setup Screen

The first screen has label buttons for colors 1 to 14, plus the label button for the system name. The system name appears in yellow at the bottom left of the color buttons screens.

Touch the **More** button to go to the button label screen for colors 15–28.

To create a label for a color or the system name, touch the label button. A keyboard screen appears. Enter a 6-character label for the color, or a 12-character label for the system.

Figure 10 Button Label Screen (1 of 2)

Touch **Main** to return to the Main screen.

System Cleaning

Before shutting down the system or removing air pressure from the system, you must clean the system by performing a system purge.

From the **Main** screen, touch **Purge**. Touch the **Clean** button, then **Start**.

The system performs a color change cycle without loading a new color. COMPLETE appears at the bottom of the screen when the cycle is complete.

Next time the system is started, you must select a color and perform a full color change to load the color.

Figure 11 Purge Screen

Color Change with Suction Line Purge

NOTE: To perform this procedure the Hopper Purge and Hopper Mode fuctions must be enabled. See the Service Screen section on page 13 to enable and disable the functions.

Remove the suction line to be purged from the feed hopper and place the suction line in a hopper for excess powder disposal (waste).

From the color selection controller screen, select the desired color button, then touch **Start w/Suction LN**.

The next screen will offer a reminder to confirm if the suction line has been removed from the feed hopper.

Touch the button for **Suction Line Selection** to display option between **Current** Suction Line or **Next** Suction Line. If the desired suction line is not displayed, touch the button again to toggle to the other selection.

After selecting the correct suction line, touch the **Start** button to begin the suction line purge. The words **In Process** will flash on screen while system is cleaning the suction line.

When the system is done purging the suction line the screen will revert back to the **Main screen** with the word **Complete** showing at the bottom of the screen.

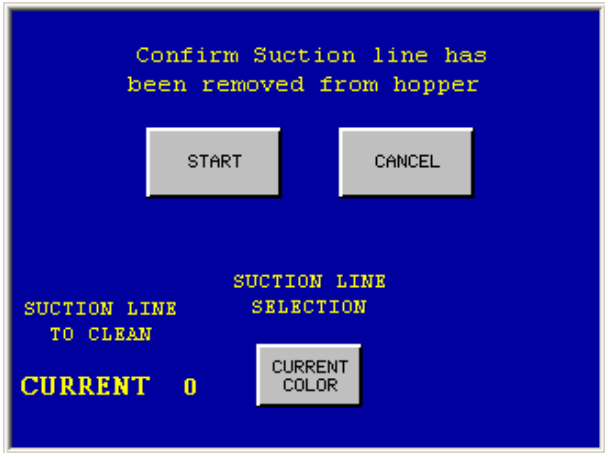


Figure 12 Screen display for CURRENT suction line purge

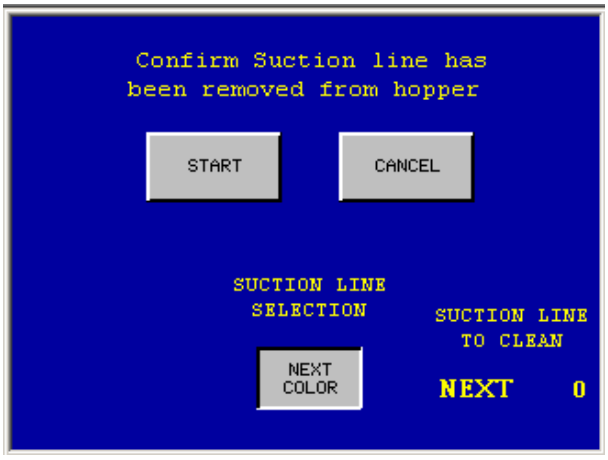


Figure 13 Screen display for NEXT suction line purge

Valve Counters

Use the Valve Counter screen for maintenance. The recommended valve bladder change interval is 30,000 cycles. When this count is reached, you should disassemble the color change manifolds and install new bladders. Replacing the bladders before they fail will prevent color contamination and expensive unscheduled downtime.

Note that the WARNING BLADDER MAINTENANCE message will appear at the set count if enabled from the Service Screen. Refer to page 12 for more information on this screen.

Figure 14 Valve Counter Screen

System Clock

See Figure 15. To set the system clock, go to the **Test** screen, then touch the **Set Clock** button.

Software Version

See Figure 15. Go to the **Test** screen, then touch **Software Version**. This screen displays software version information. You may be asked for this information if you call for technical support.

Screen Brightness

After selecting the **Software Version** option, touch the arrow buttons to adjust the brightness of the display screen.

Troubleshooting

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

SYSTEM PRESSURE ALARM: If this message appears on the screens, the system pressure has fallen below 70 psi and color changes cannot be started. Check the system compressed air supply.

For other color change system troubleshooting, use the Output and Input screens along with the color control panel labels. The PLC LEDs, solenoid valves, and air tubing are all coded on the labels so that you can track down any problems. For example, when color 1 is selected for gun1, the LEDs for C1AE on both the PLC and solenoid should light.

Refer also to the diagrams and schematics in the back of this manual.

NOTE: You must turn the Test Mode OFF before you can exit the Test screen.

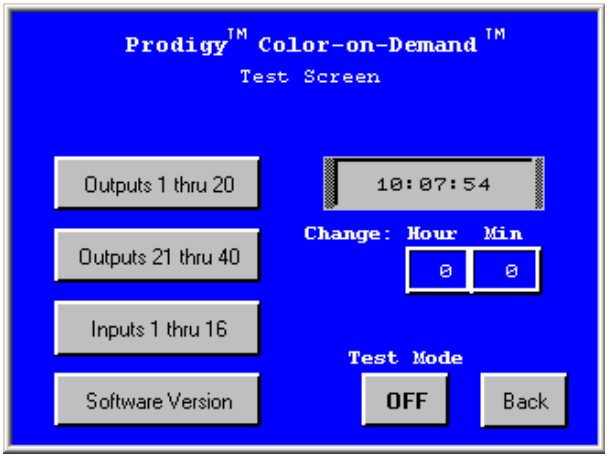


Figure 15 Test Screen

NOTE: Before triggering any outputs from the test screens, it is strongly recommended that you do a system purge. Refer to System Cleaning on the previous page.

On either of the Output screens, touch the Test button to toggle the Test mode ON or OFF, then touch an output button to turn the device on and off.

Inputs

This screen shows the status of the input signals. The LEDs on the top two PLC modules (MD2 and MD3), should light when the inputs are on. Module 2 handles inputs from the system, while module 3 handles a binary 5 bit color selection signal and color change start signal from a remote customer device.

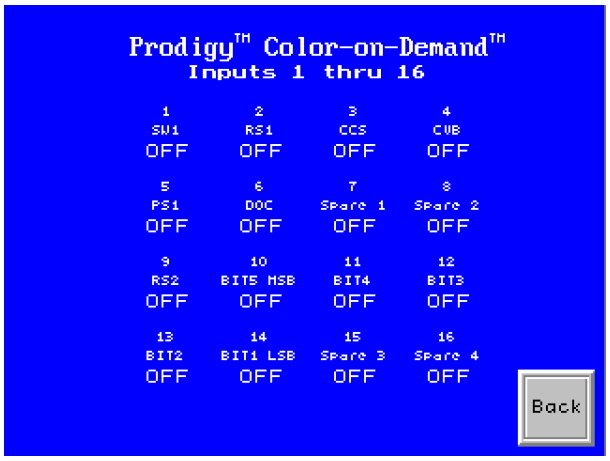


Figure 16 Inputs 1–16 Screen

Input Channel	Code	Function
1	SW1	Not Used
2	RS1	Remote Start 1: Signal from foot pedal pressure switch.
3	CCS	Color Change Status signal from pump control board.
4	CVB	Color Valve Back purge signal from pump control board.
5	PS1	Air pressure switch: prevents color change start if air pressure falls below 70 psi.
6	DOC	Dump Output Control signal from pump control board.
7, 8	Spares	
9	RS2	Remote Start 2: 24V remote start signal from customer device to PLC.
10	BIT 5	Binary 5 bit remote color selection inputs for colors 1 – 28 from customer device to PLC: BIT 1 = Least Significant Bit BIT 5 = Most Significant Bit Set the color selection bits first, then strobe RS2.
11	BIT 4	
12	BIT 3	
13	BIT 2	
14	BIT 1	
15, 16	Spares	N/A

Outputs

Touching the Output screen buttons should light the LEDs on the PLC output modules and on the corresponding solenoid valves, and send an air signal to the appropriate valve bladder.

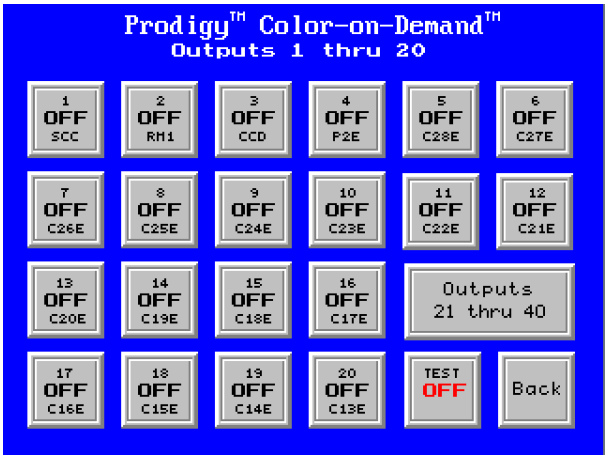


Figure 17 Outputs 1–20 Screen

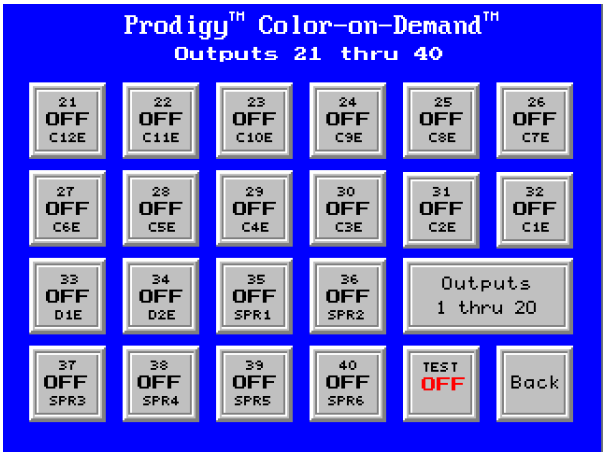


Figure 18 Outputs 21–40 Screen

Output Channel	Code	Function
1	SCC	Start Color Change signal to the pump control boards
2	RM1	Remote Monitor 1
3	CCD	Not Used
4	P2E	Purge 2 solenoid: Manifold purge air inlet actuation air
5–32	C28E–C1E	Color 28 to 1 solenoids
33	D1E	Dump 1 solenoid: Manifold dump outlet actuation air
34	D2E	Dump 2 solenoid: Dump valve actuation air
35–40	SPR1–6	Spares

Powder Flow

Lose Flow of one Color: Check for leaks in the siphon tubing from the manifold to the hopper. Check the tubing connections.

Lose Flow of Multiple Colors or All Colors: Check the tubing between the manifold and the dump valve. Check the pinch valve visible inside the dump valve body. If the pinch valve has failed, powder will be visible in the body cavity around the pinch valve.

Service Screen

The Service screen is used by Nordson CSRs.

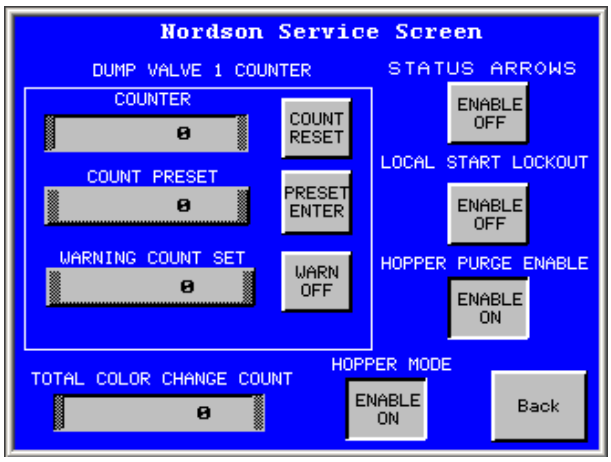


Figure 19 Service Screen

Dump Valve Counter Reset: Resets the counter. Can also be done from the Valve Counter screen.
Dump Valve Counter Preset: Allows the counter to be reset if accidentally reset from the Valve Counter screen.
Warning Count Set: When this value is exceeded by the valve counter, causes the WARNING BLADDER MAINTENANCE message to appear.
Total Color Change Counter: Number of color change cycles initiated. Cannot be reset.
Status Arrows: Enables/Disables color change status arrows on operation screens. Default is Off.
Local Start Lockout: Enables/Disables color change start from the controller. Typically enabled when PLC remote color select and start is used.
Hopper Purge Enable: Enables/Disables option to purge the hopper suction line during a color change.
Hopper Mode: Enables/Disables ability for operator to select the suction line to be purged between current or next suction line from the confirmation screen.

Repair

WARNING: Before making repairs to any component of the system, disconnect and lockout power at the system disconnect. Shut off the system air supply at the ball valve on the pump panel and release the air in the accumulator tank.

Repair of the Color-on-Demand controller and color control panel is limited to replacement of components. Refer to to the foldouts in the back of this manual for pneumatic and electrical diagrams.

Refer to the parts lists in this manual for replacement parts for the controller and control panel, and . Manifold and dump valve parts are listed in manual 1066484 for Generation II systems.

Parts

To order parts, call the Nordson Finishing Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

Controller Kit Parts

See Figure 20.

Item	Part	Description	Quantity	Note
—	1084554	KIT, controller interface, Prodigy color change	1	
1	1084529	• CONTROLLER interface, Prodigy color change	1	A
2	129592	• KNOB, clamping, M6 x 12 mm long	2	
3	129590	• SPACER, cabinet, friction	2	
4	982649	• SCREW, hex, machine, M10 x 22 mm	1	
5	983405	• WASHER, lock, split, M10, steel, zinc	1	
6	288828	• KIT, bracket, mounting, rail	1	
7	982500	• SCREW, hex, machine, M8 x 16 mm	1	
8	984707	• NUT, hex, M8, steel, zinc	1	
9	240976	• CLAMP, ground w/wire	1	
10	- - - - - -	• BRACKET, base, manual control interface	1	
11	- - - - - -	• BRACKET, post, Prodigy, manual control	1	
12	- - - - - -	• BRACKET, mounting, U, Prodigy, manual control	1	
NOTE A: See Figure 20 and accompanying parts list for serviceable parts.				

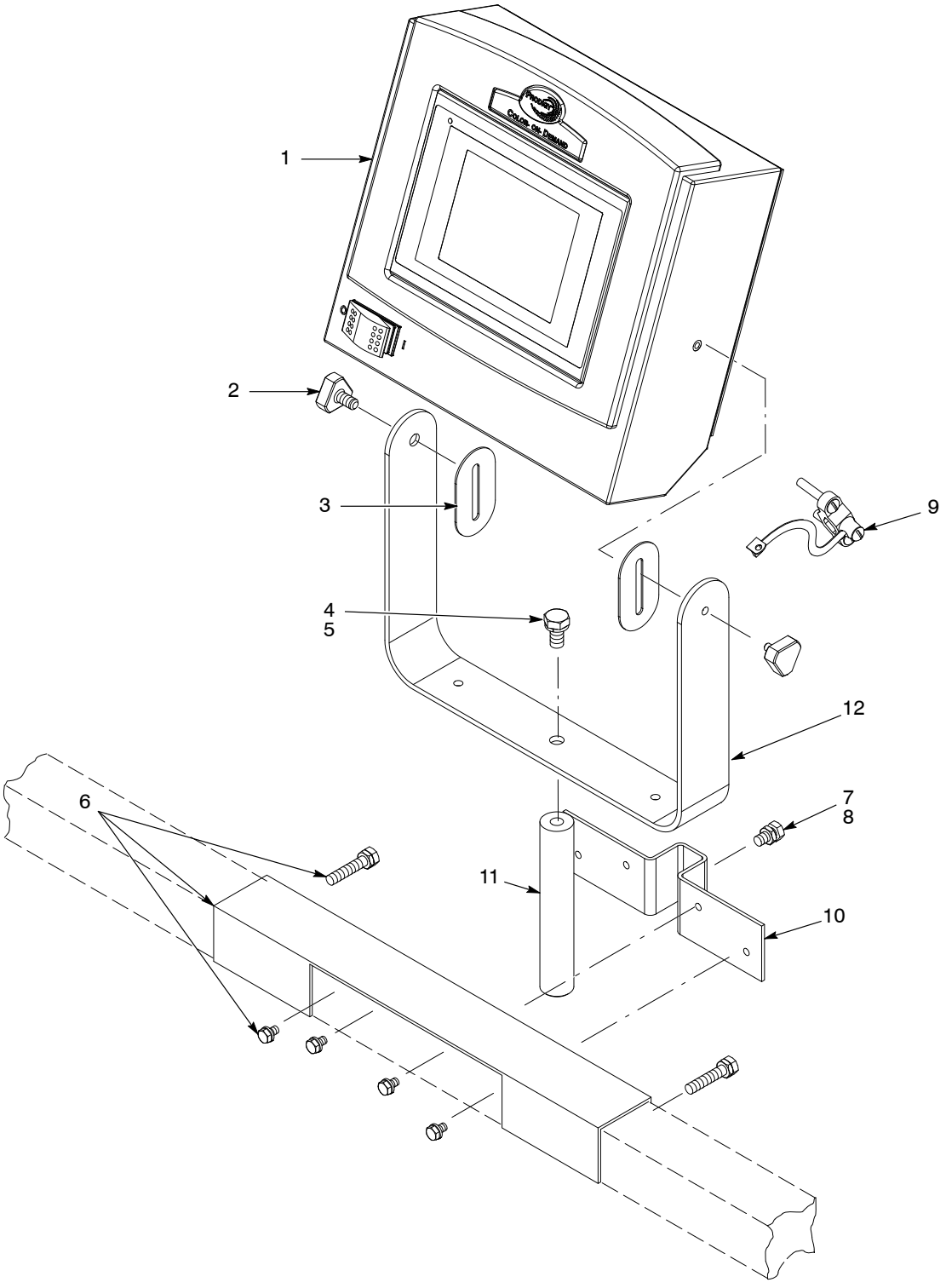


Figure 20 Controller Kit Parts

Controller Parts

See Figure 21.

Item	Part	Description	Quantity	Note
—	1084529	CONTROLLER, interface, Prodigy color change	1	
1	1084403	• TERMINAL, display, COD Generation II	1	A
2	322404	• SWITCH, rocker, DPST, dust-tight	1	
3	939122	• SEAL, conduit fitting, 1/2 in., blue	2	
4	984526	• NUT, lock, 1/2 in. conduit	2	
5	324343	• CONNECTOR, conduit, straight, 1/2 in.	1	
6	984702	• NUT, hex, M5, brass	4	
7	983401	• WASHER, lock, split, M5, steel, zinc	4	
8	983021	• WASHER, flat, 0.203 x 0.406 x 0.040 in., brass	1	
9	240674	• TAG, ground	4	
10	271221	• LUG, 45, double, 0.250, 0.438 in.	2	
NOTE A: Use Retrofit Kit 1084551 to replace Cimrex 69 display terminal with the Proface AGP3300 display terminal.				

Retrofit Kit

Item	Part	Description	Quantity	Note
—	1084551	KIT, retrofit, display, COD Generation II	1	
1	1084403	• TERMINAL, display, COD, Generation II	1	
11	- - - - - -	• PLATE, adapter with studs	1	
12	- - - - - -	• GASKET, adapter plate	1	
13	- - - - - -	• PLATE, adapter	1	
14	983102	• WASHER, lock, E, SPT, #6, steel, zinc, 14451–CA	4	
15	984101	• NUT, hex, machine, #6–32, steel, zinc, 14441–CA	4	

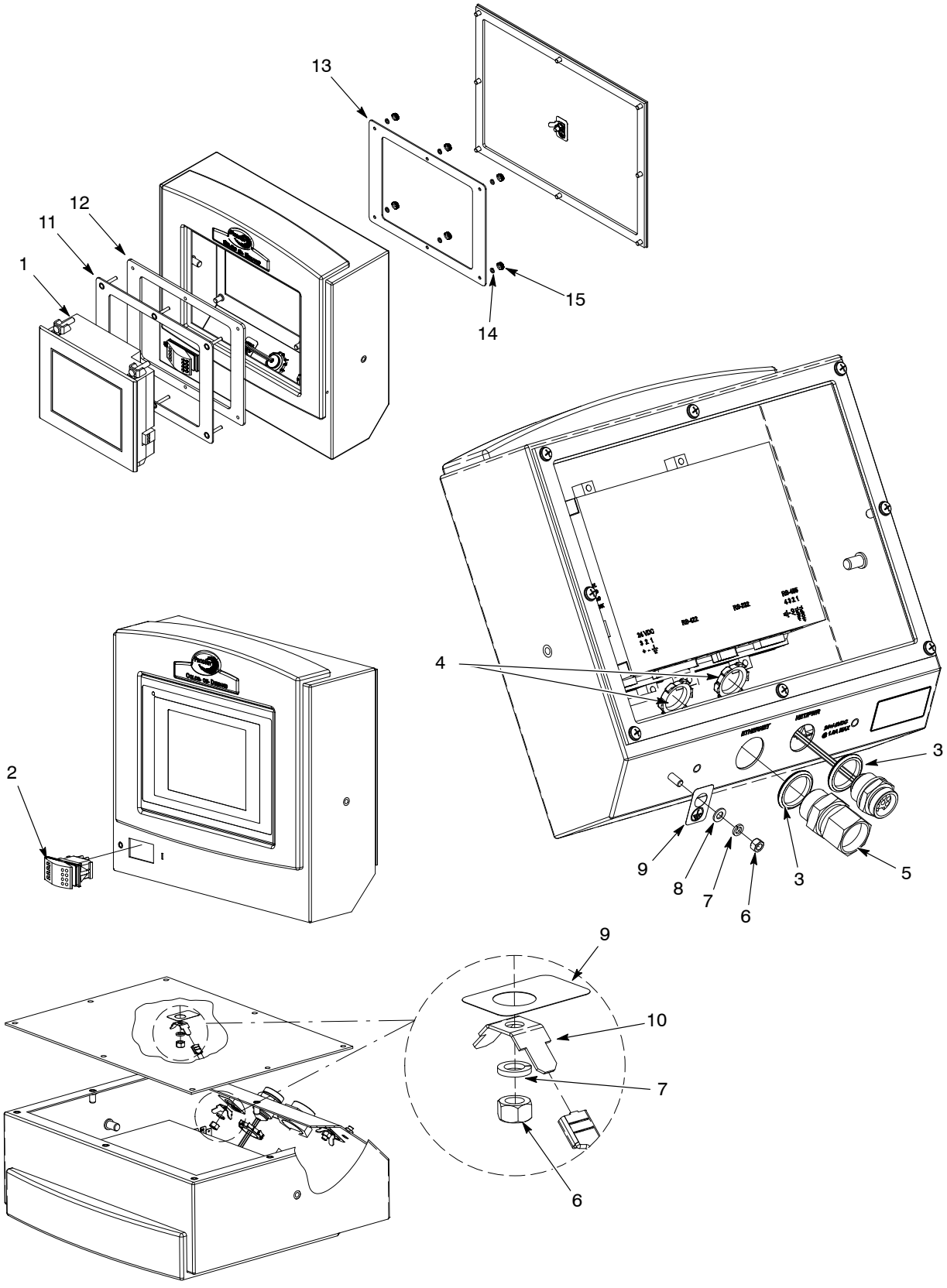


Figure 21 Controller Parts

Color Change Control Panel Parts

See Figure 22.

Item	Part	Description	Quantity	Note
—	- - - - - -	CONTROLLER, Prodigy, single or dual color changer	1	
1	1084550	• CONTROL UNIT, dual pump color changer, PLC	1	A
2	1084489	• CONTROL UNIT, single pump color changer, PLC	1	A
3	303132	• VALVE, 3/4 in. NPT, air operated	AR	B
4	1095074	• SWITCH, pressure, N.O., 30 psi	AR	B
5	1068324	• VALVE, solenoid, 3 port, 24V, N.O., w/o leads	AR	C
6	1068325	• VALVE, solenoid, 3 port, 24V, N.C., w/o leads	AR	C
NS	173101	• TUBING, polyethylene, 8 mm x 6 mm, natural	AR	D
NS	900742	• TUBING, polyurethane, 6/4 mm, blue	AR	D
NS	900618	• TUBING, polyurethane, 8 mm OD, blue	AR	D
NS	900740	• TUBING, polyurethane, 10 mm OD, blue	AR	D
NS	226690	• TUBING, polyurethane, 12 mm OD, blue	AR	D

NOTE A: Select appropriate control unit for your system. Parts breakdown on following pages.
B: One required per gun.
C: 31 N.O. valves and 1 N.C. valve required per gun.
D: Order in increments of one foot.
AR: As Required
NS: Not Shown

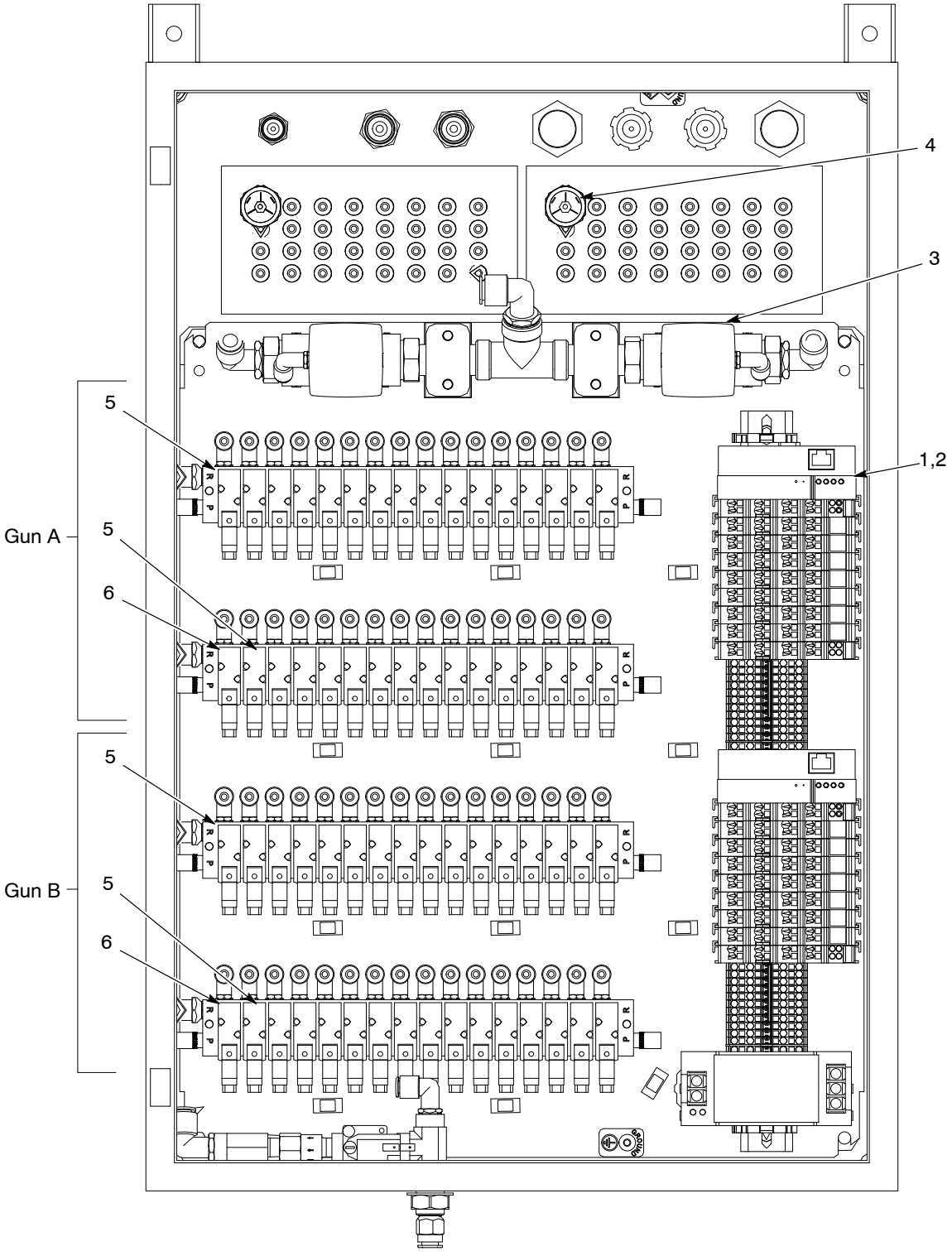


Figure 22 Color Control Panel Parts

Control Unit (PLC) Parts

See Figure 23.

Item	Part	Description	Quantity	Note
–	1084550	CONTROL UNIT, dual pump color changer, PLC	1	
–	1084489	CONTROL UNIT, single pump color changer, PLC	1	
1	1106849	• CONTROLLER, programmed, COD Generation II	AR	A, D
2	1064193	• MODULE, 8-channel digital input, Wago, 750-430	AR	B, D
3	1064195	• MODULE, 8-channel digital input, Wago, 750-530	AR	C, D
4	1064191	• MODULE, end, carrier, Wago, 750-600	1	
5	1064192	• POWER SUPPLY, 90W, 24Vdc, 3.75 amps, DIN rail	1	D

NOTE A: Two required for dual control unit, one for single.
B: Four required for dual control unit, two for single.
C: Ten required for dual control unit, five for single.
D: Installation by a qualified Nordson service representative is recommended for these parts.
AR: As Required
NS: Not Shown

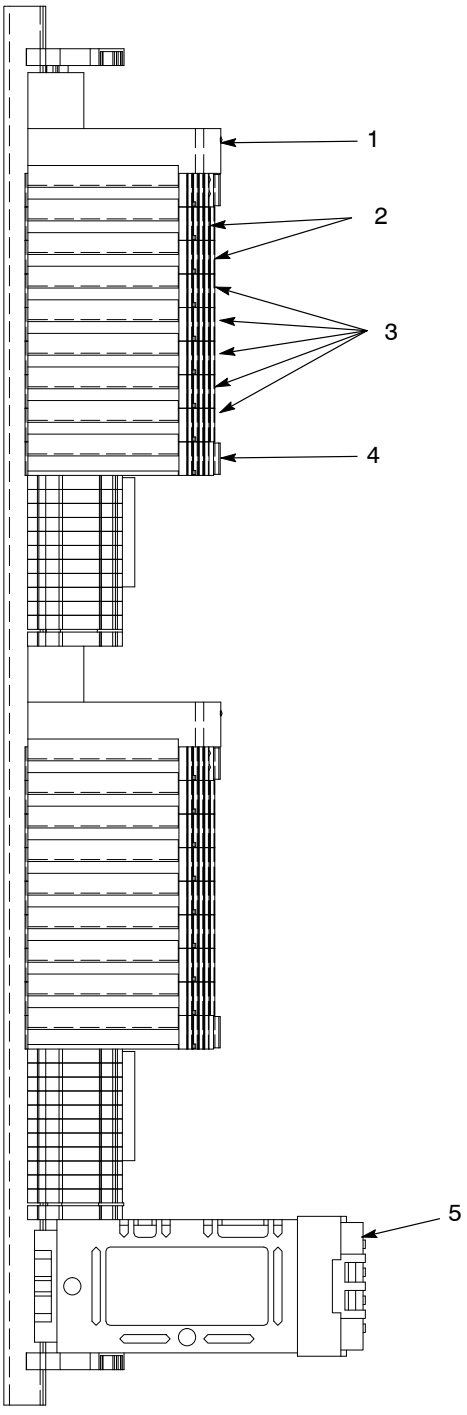


Figure 23 Control Unit (PLC) Parts

Ship-With Kit Parts

Part	Description	Quantity	Note
1067148	KIT, ship-with, Color-on-Demand system	1	
1072866	• CABLE, Ethernet CAT5E, 50 ft	1	
248375	• CONDUIT, flexible, bulk, 1/2 in. (50 ft)	AR	A
226690	• TUBING, polyurethane, 12/8 mm, blue (50 ft)	AR	A
1064948	• SWITCH, foot, air, 3-way, 100 psi	AR	
900742	• TUBING, polyurethane, 6/4 mm, blue (100 ft)	AR	A
972141	• CONNECTOR, male, 6 mm tube x 1/8 in. unithread	2	
911110	• UNION, bulkhead, 12 mm tube x 12 mm tube	2	
933071	• TERMINAL, ringtong, ins, 22–18, 10	1	

NOTE A: Order replacements in increments of one foot.

AR: As Required

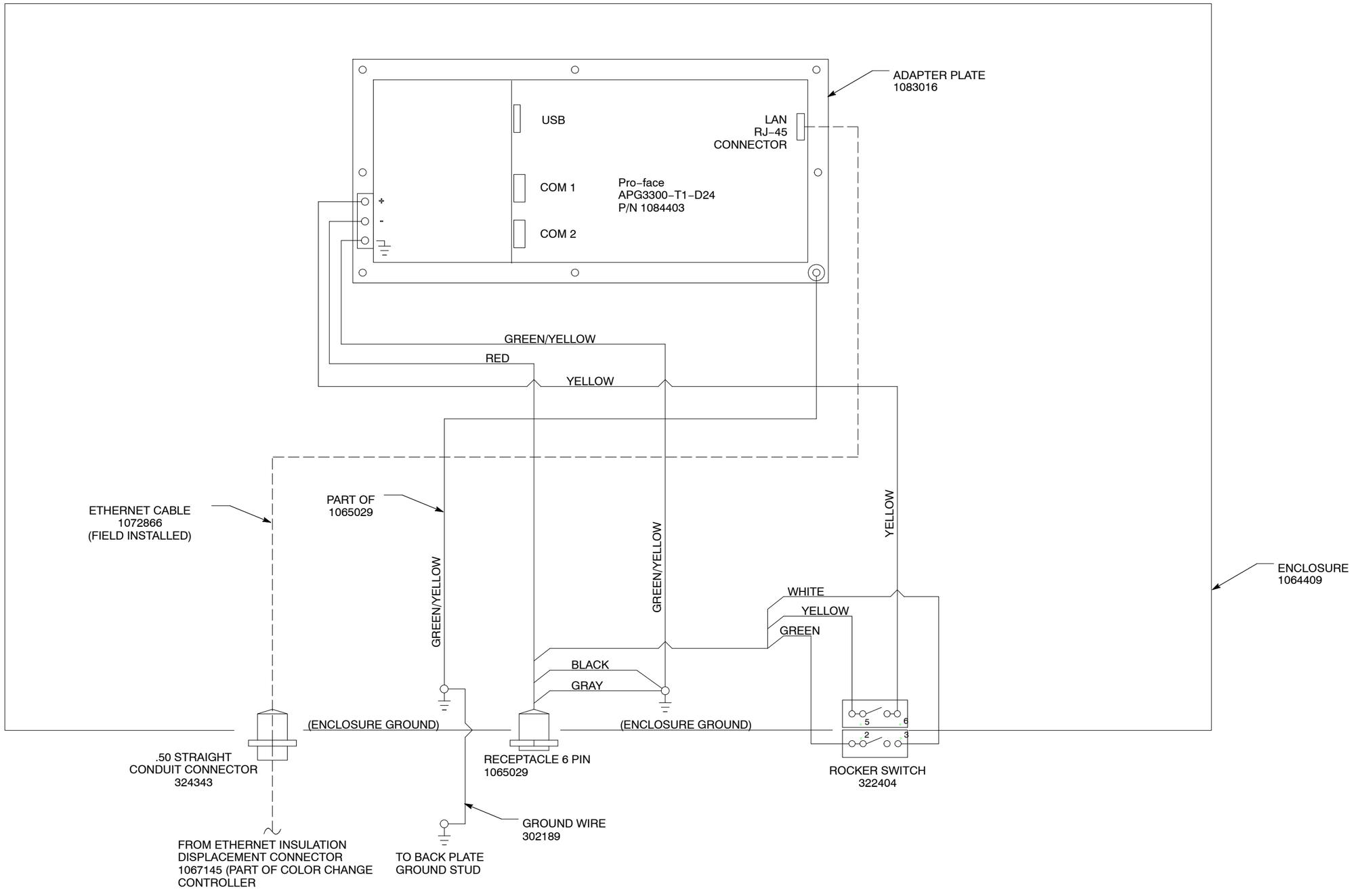


Figure 24 Color-on-Demand Controller Wiring Diagram

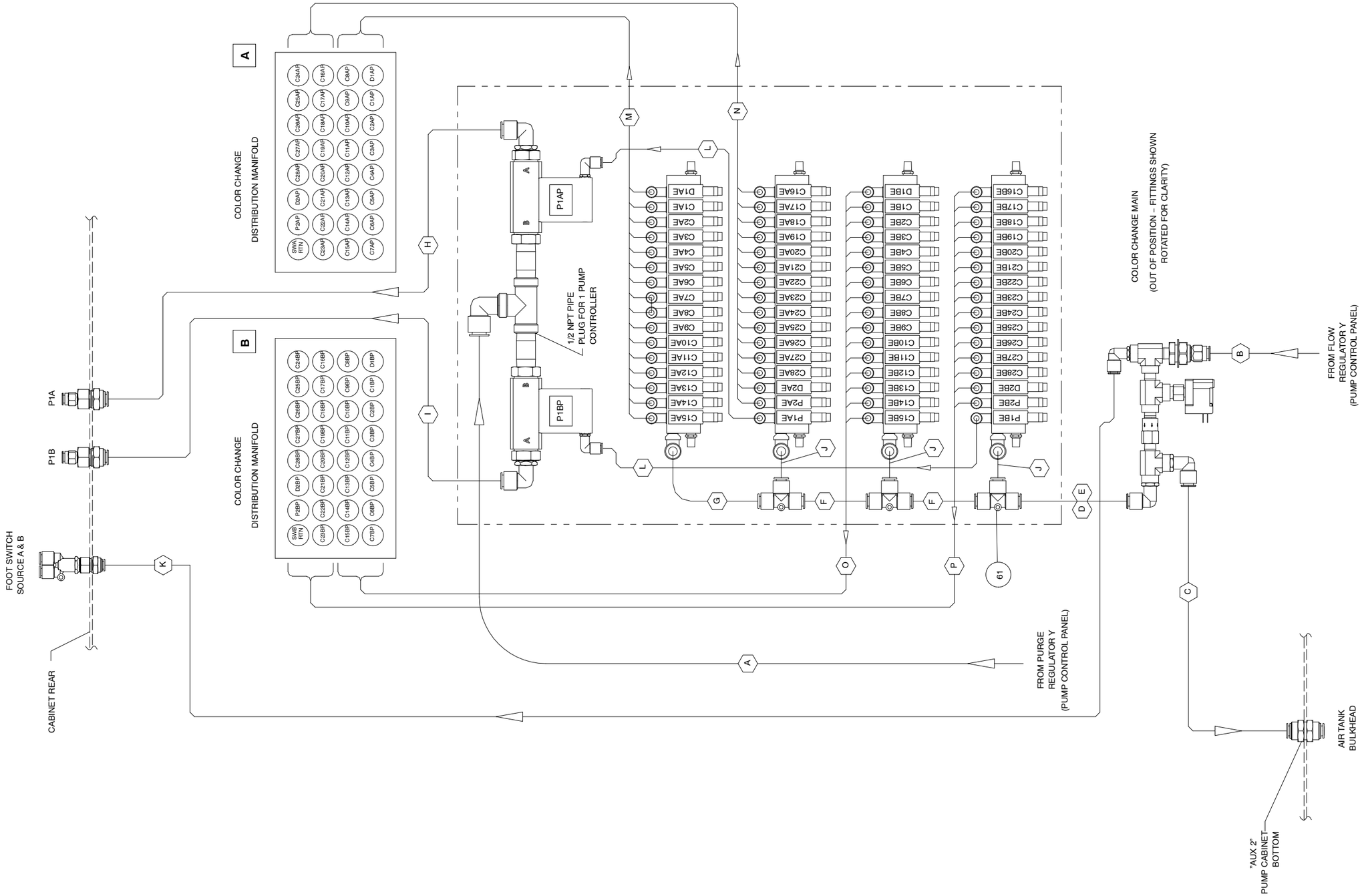


Figure 25 Color Change Control Panel Internal Pneumatic Diagram (Dual Unit Shown)

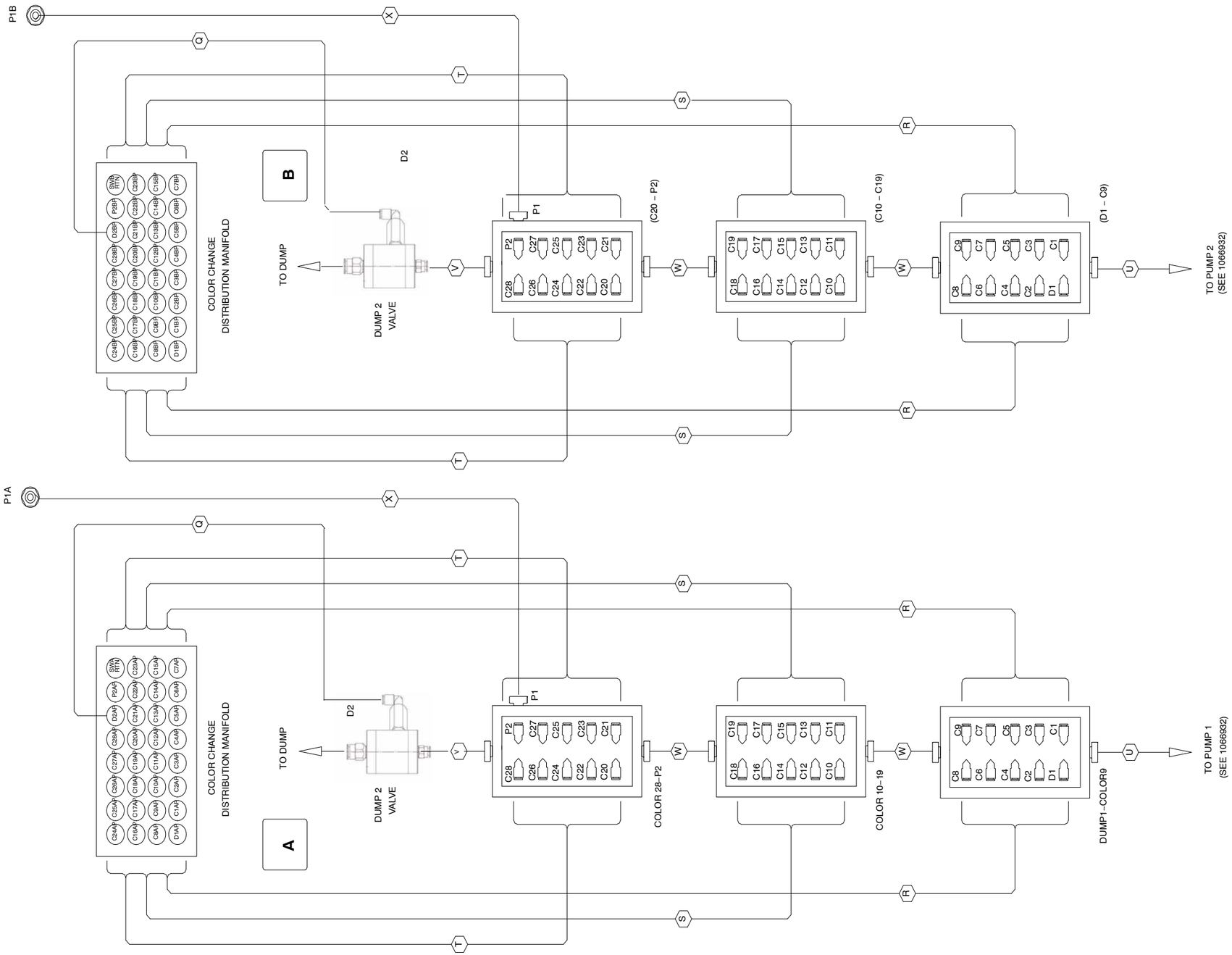


Figure 26 Color Change Control Panel External Pneumatic Diagram (Dual Unit Shown)

XXXPEXXXXX

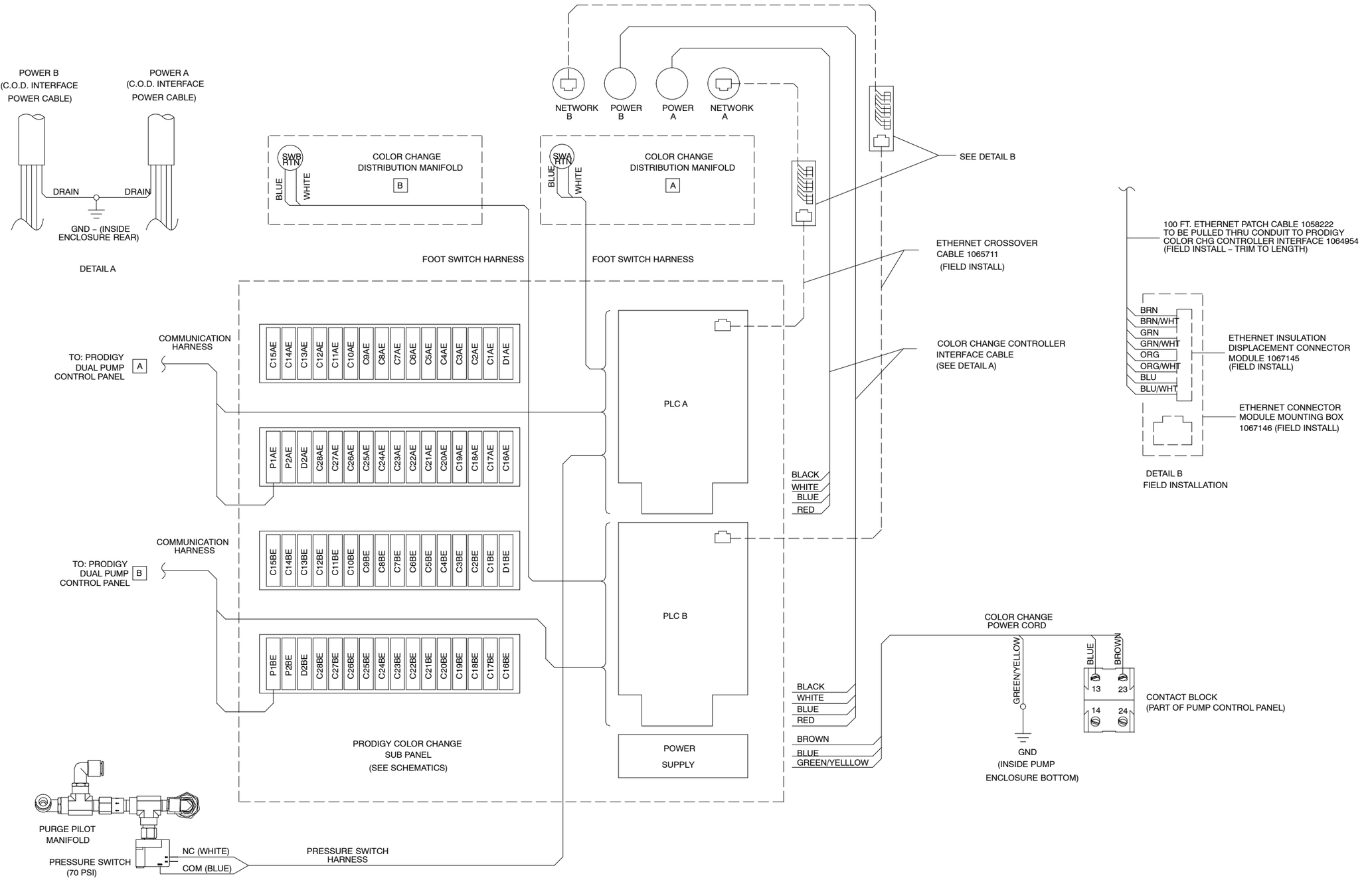


Figure 27 Color Change System Wiring Diagram (Dual Unit, Sheet 1 of 2)

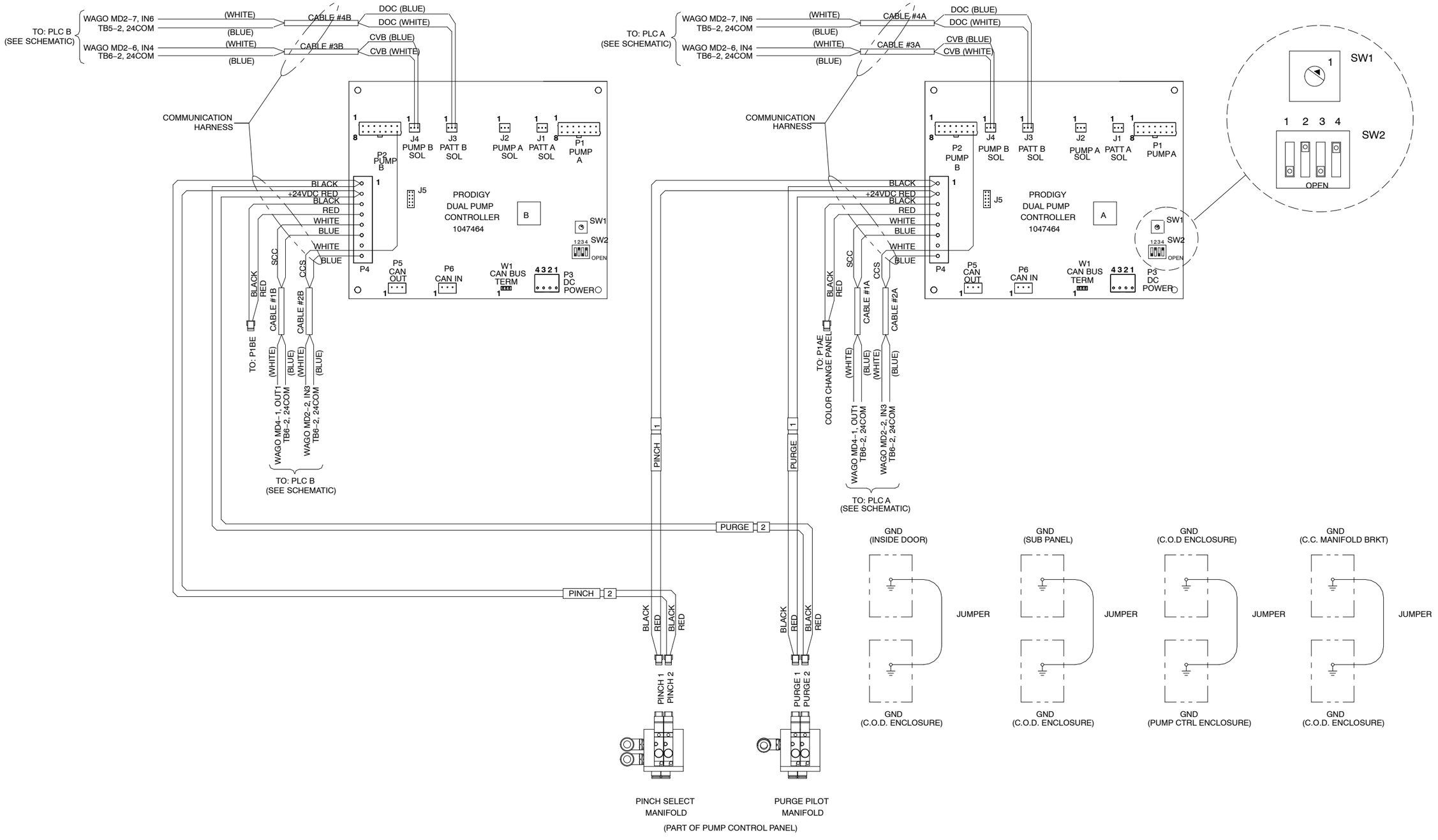


Figure 28 Color Change System Wiring Diagram (Dual Unit, Sheet 2 of 2)

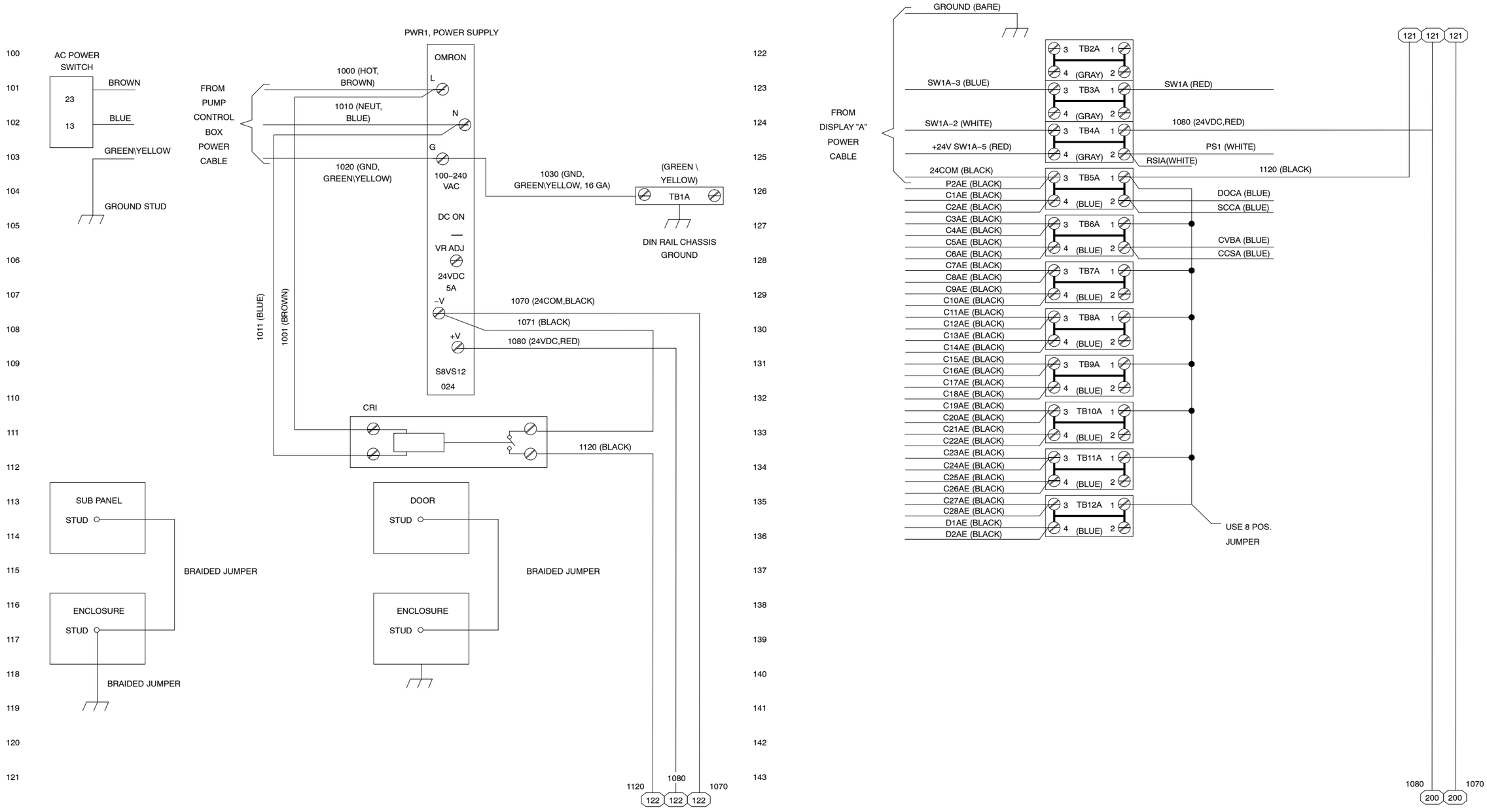
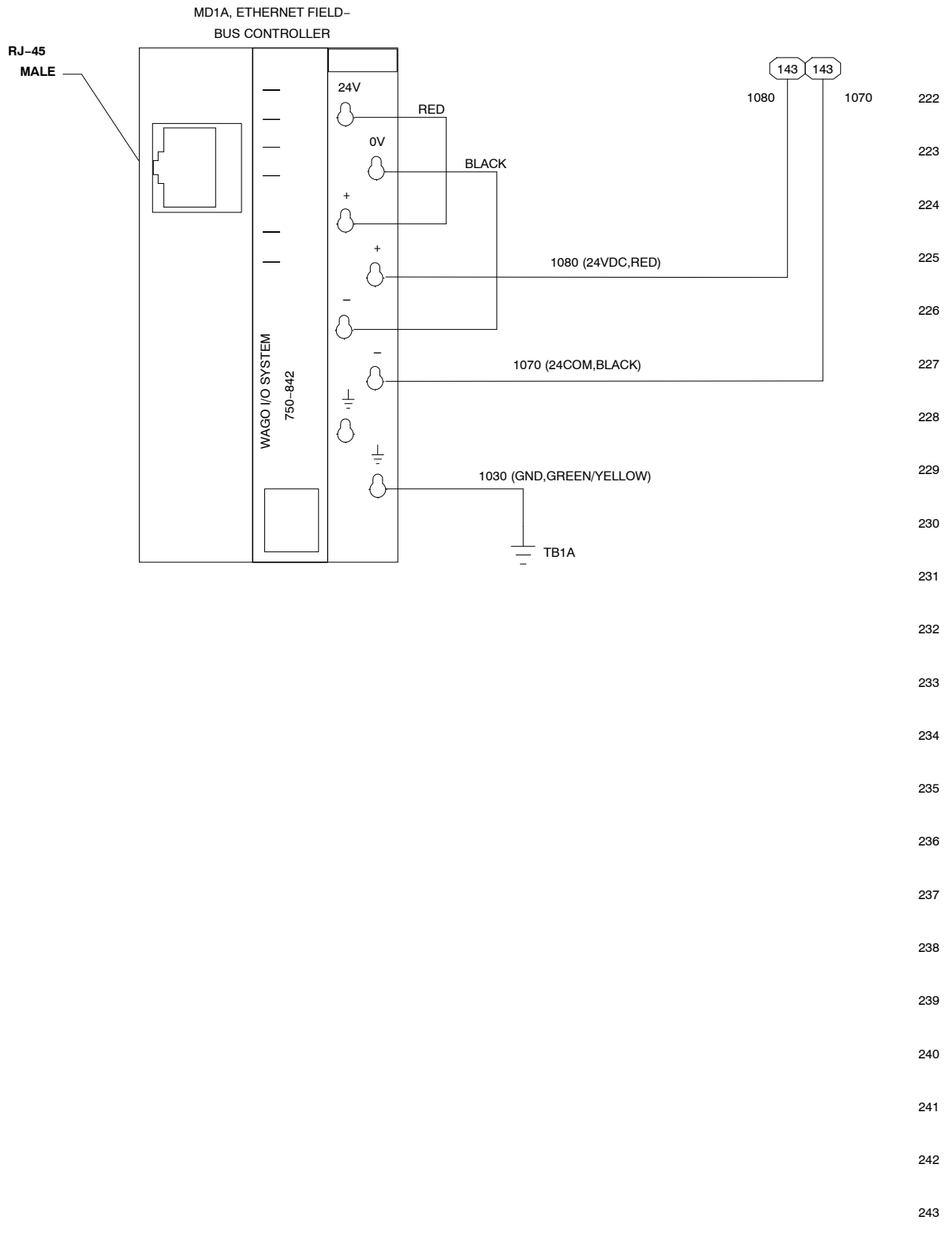
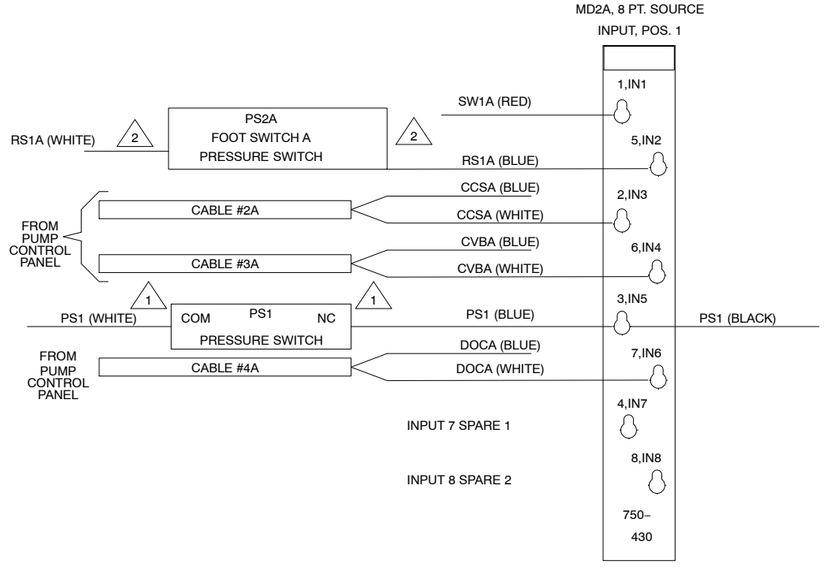


Figure 29 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 1 of 10)





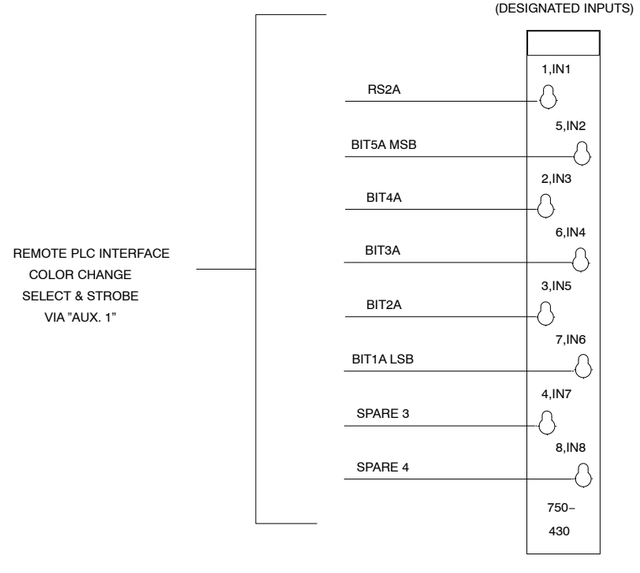
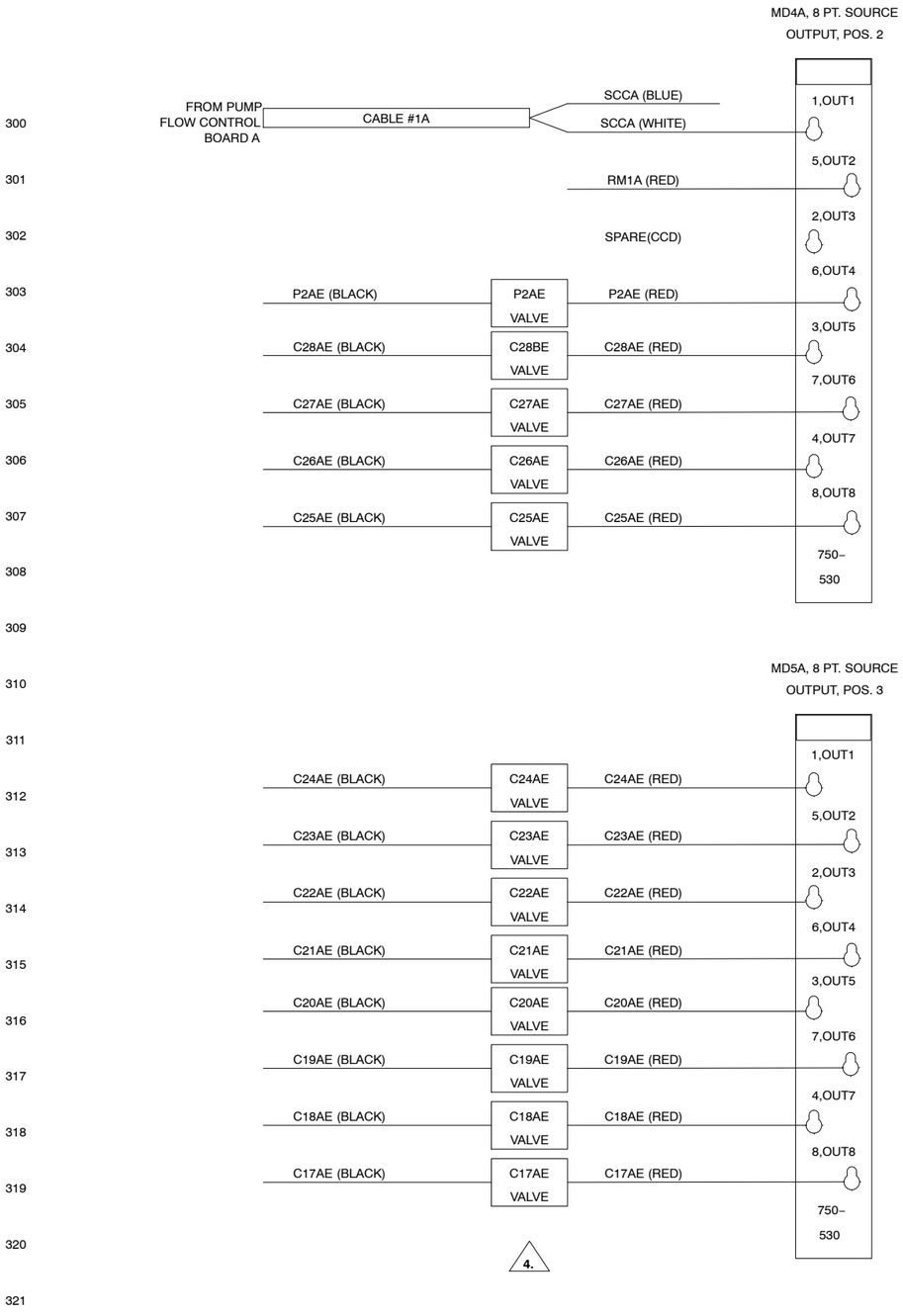


Figure 30 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 2 of 10)



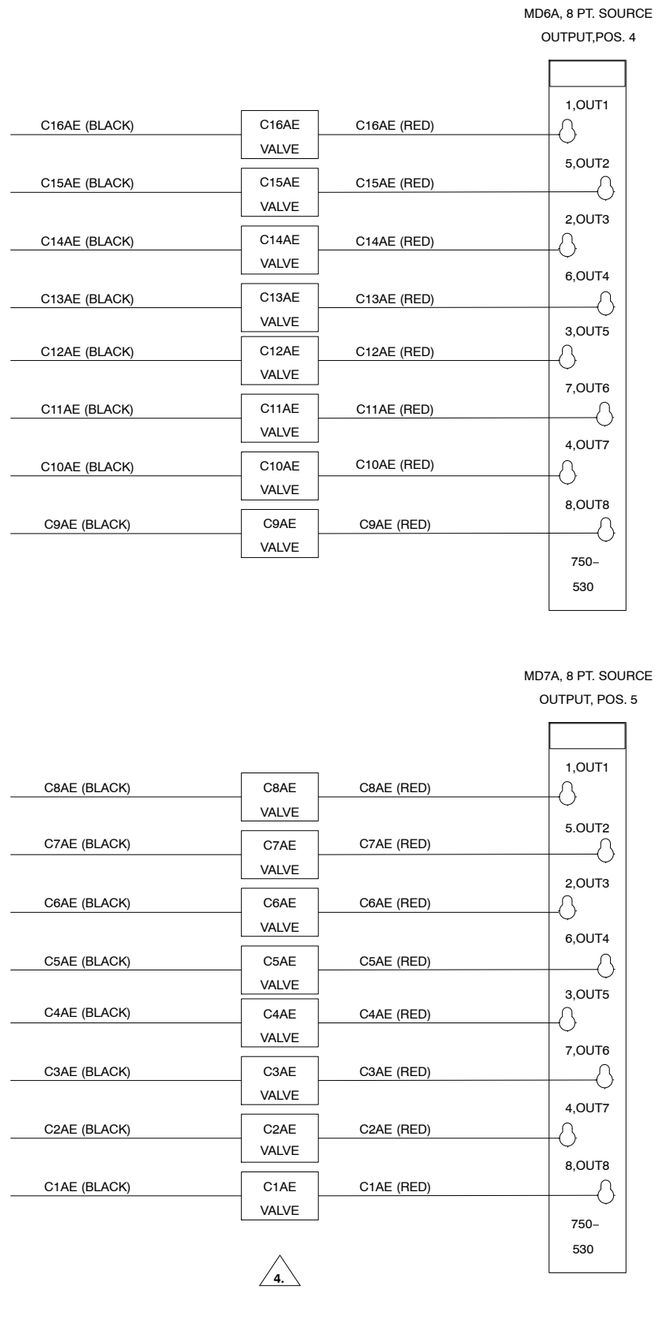
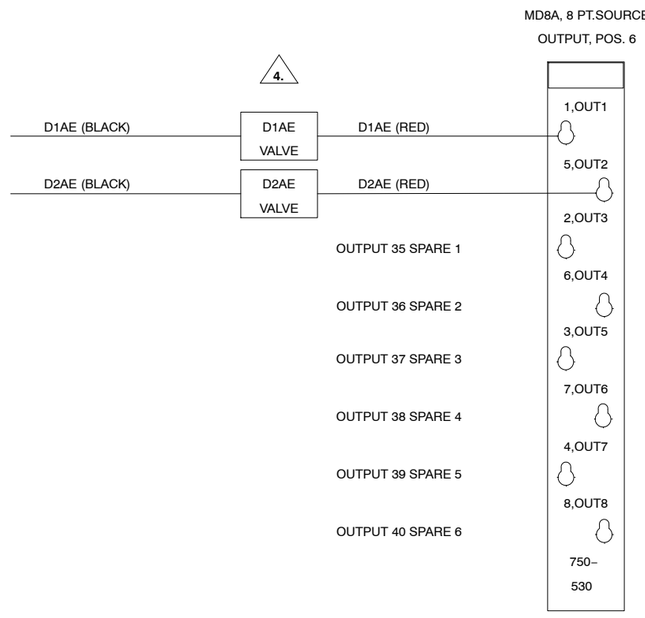


Figure 31 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 3 of 10)



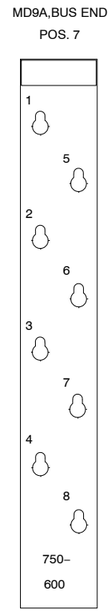


Figure 32 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 4 of 10)

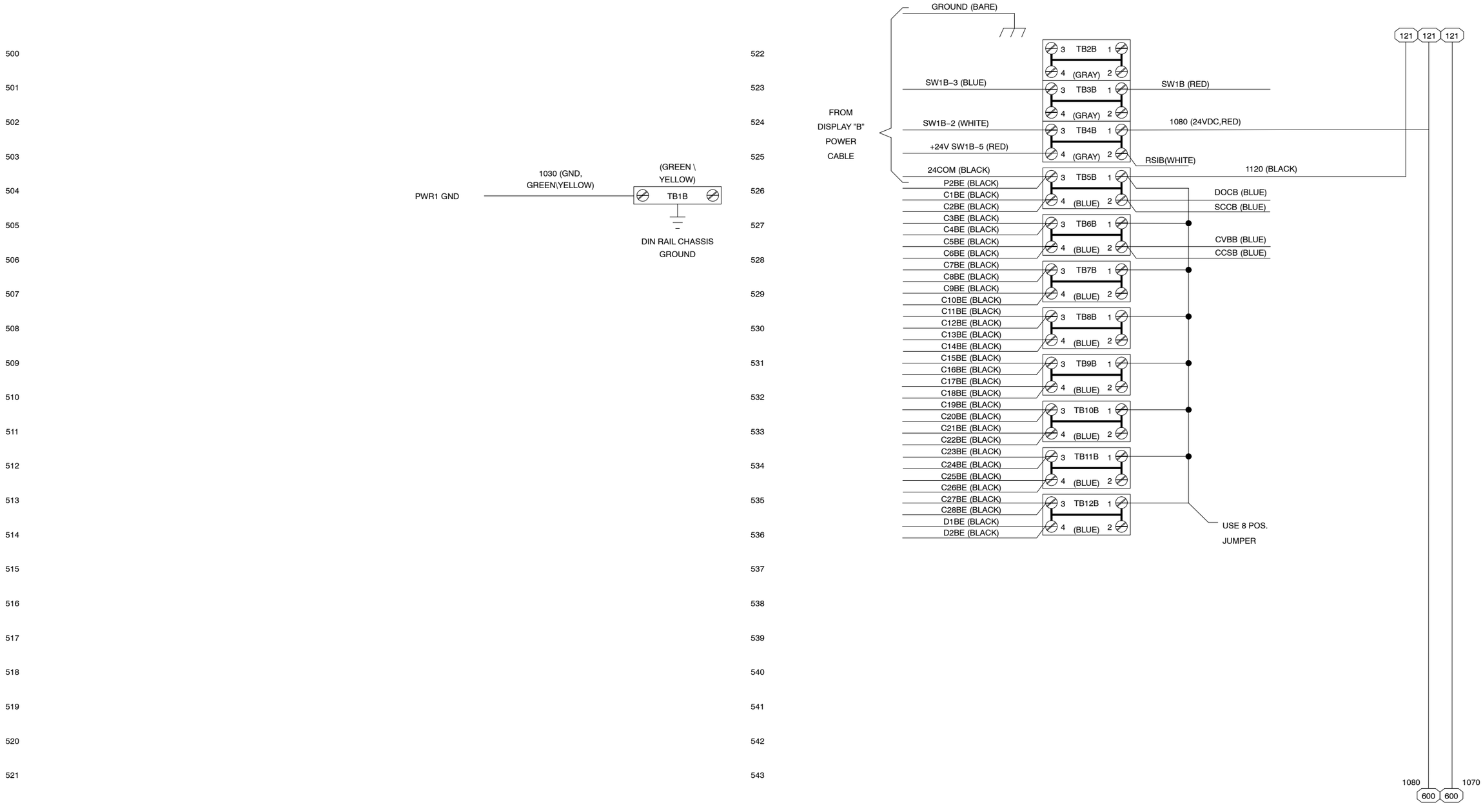
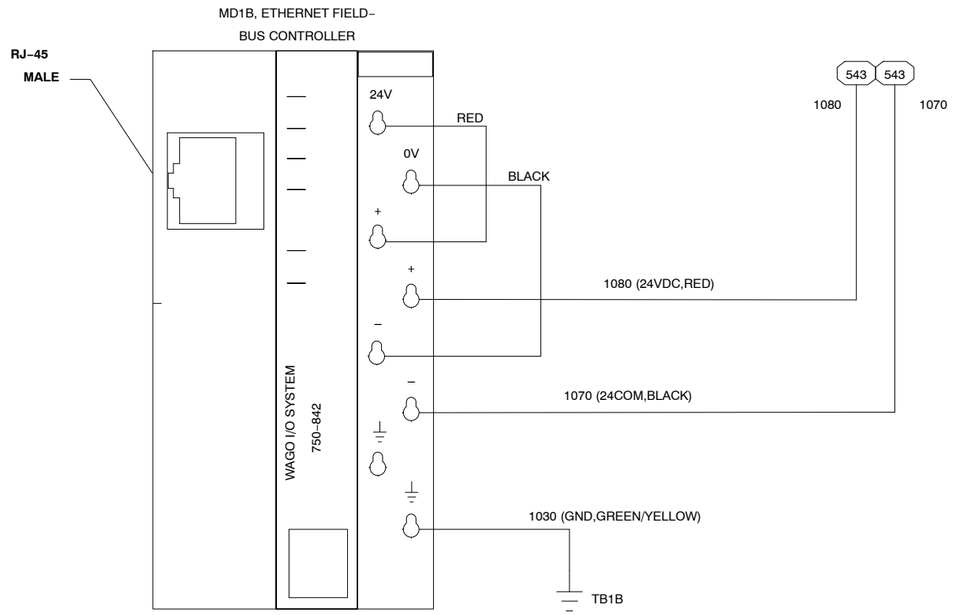
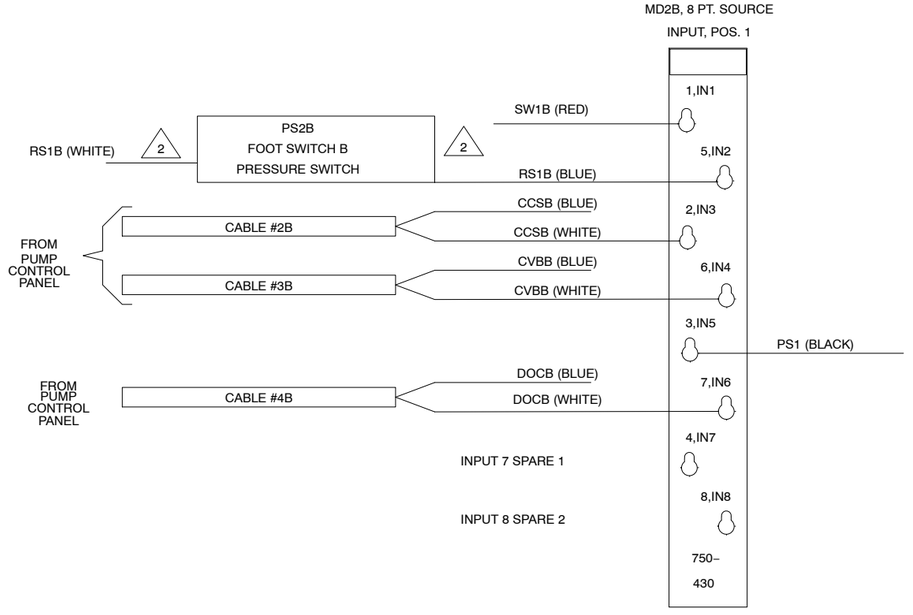


Figure 33 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 5 of 10)





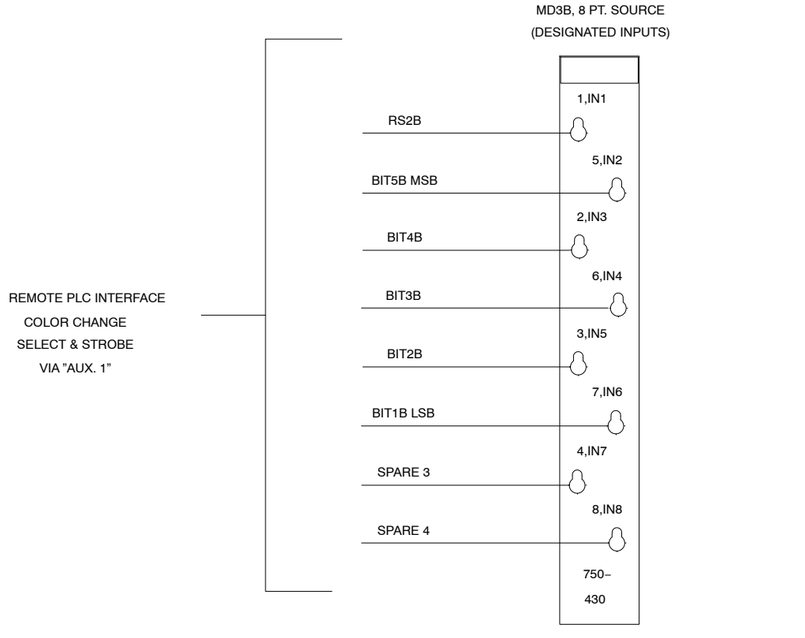
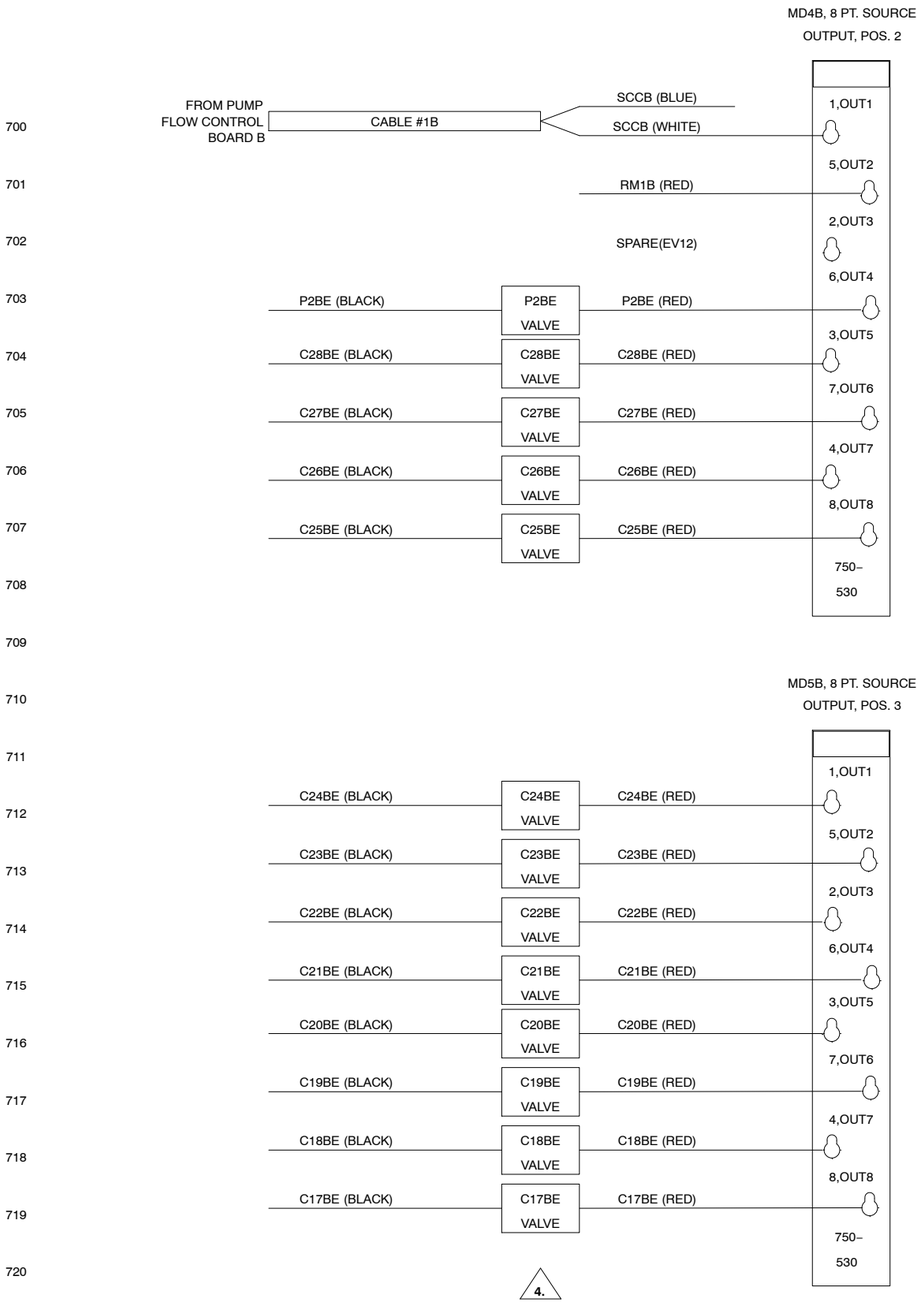


Figure 34 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 6 of 10)



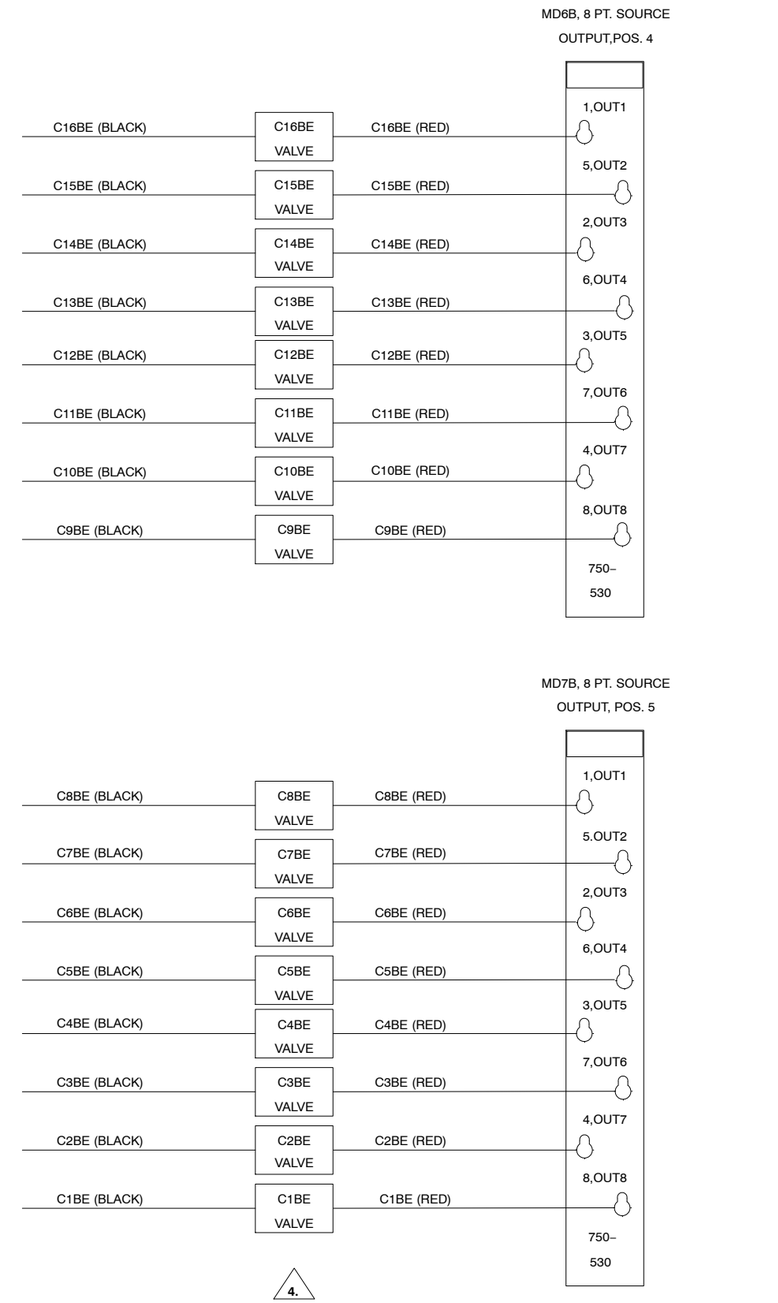
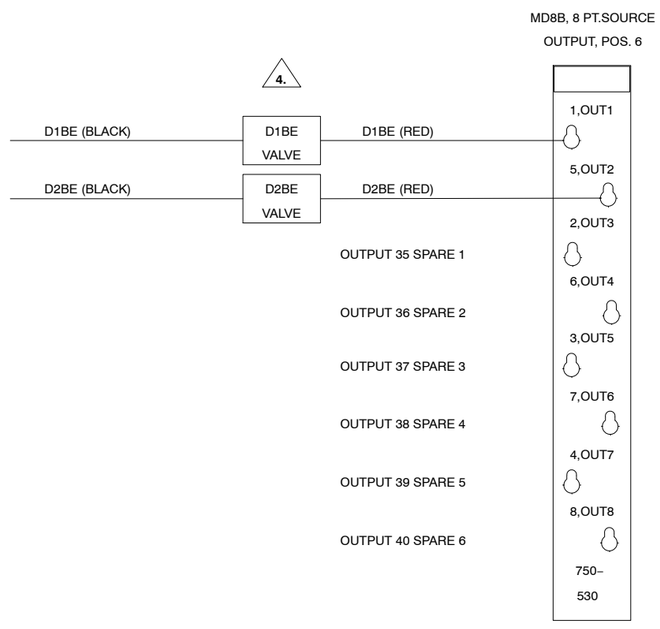


Figure 35 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 7 of 10)



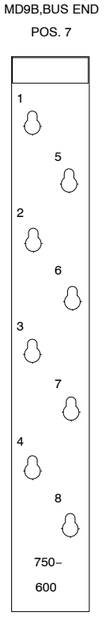


Figure 36 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 8 of 10)

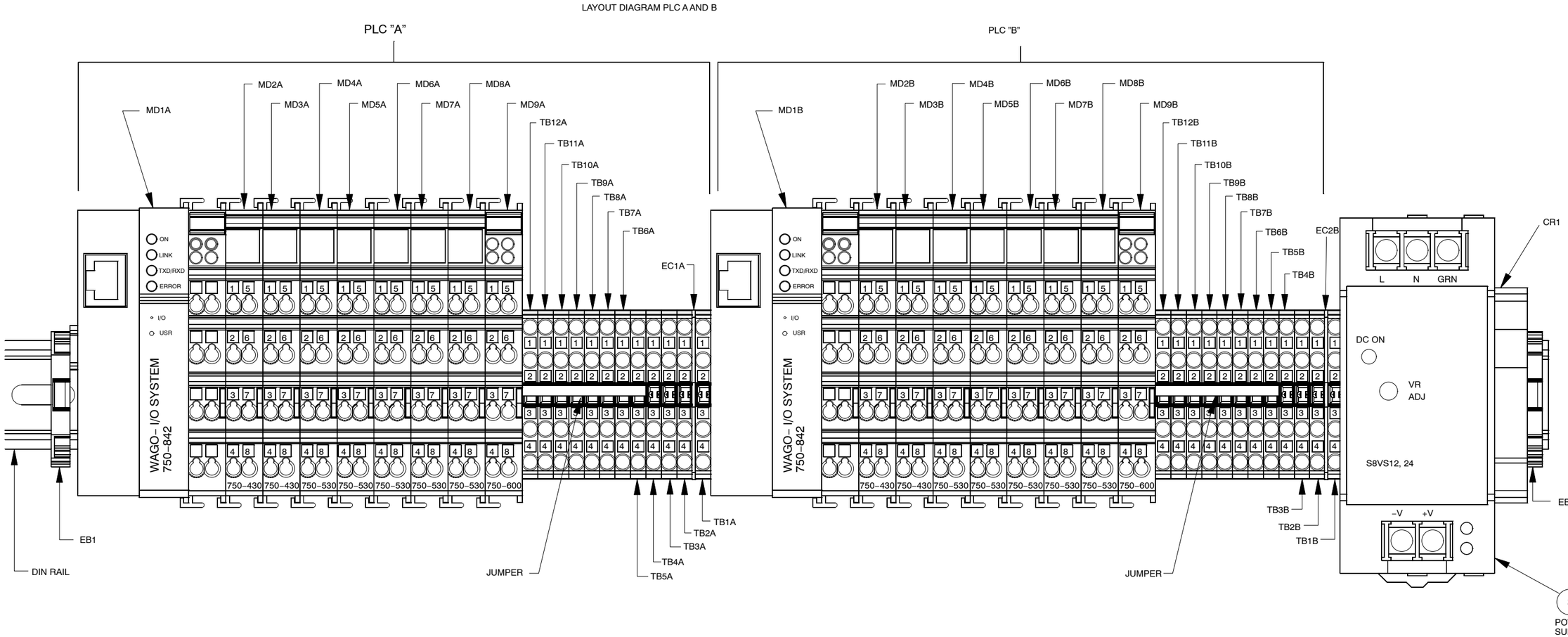


Figure 37 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 9 of 10)

LAYOUT DIAGRAM PLC A AND B

COLOR–ON–DEMAND CONTROLS PLC LABELS

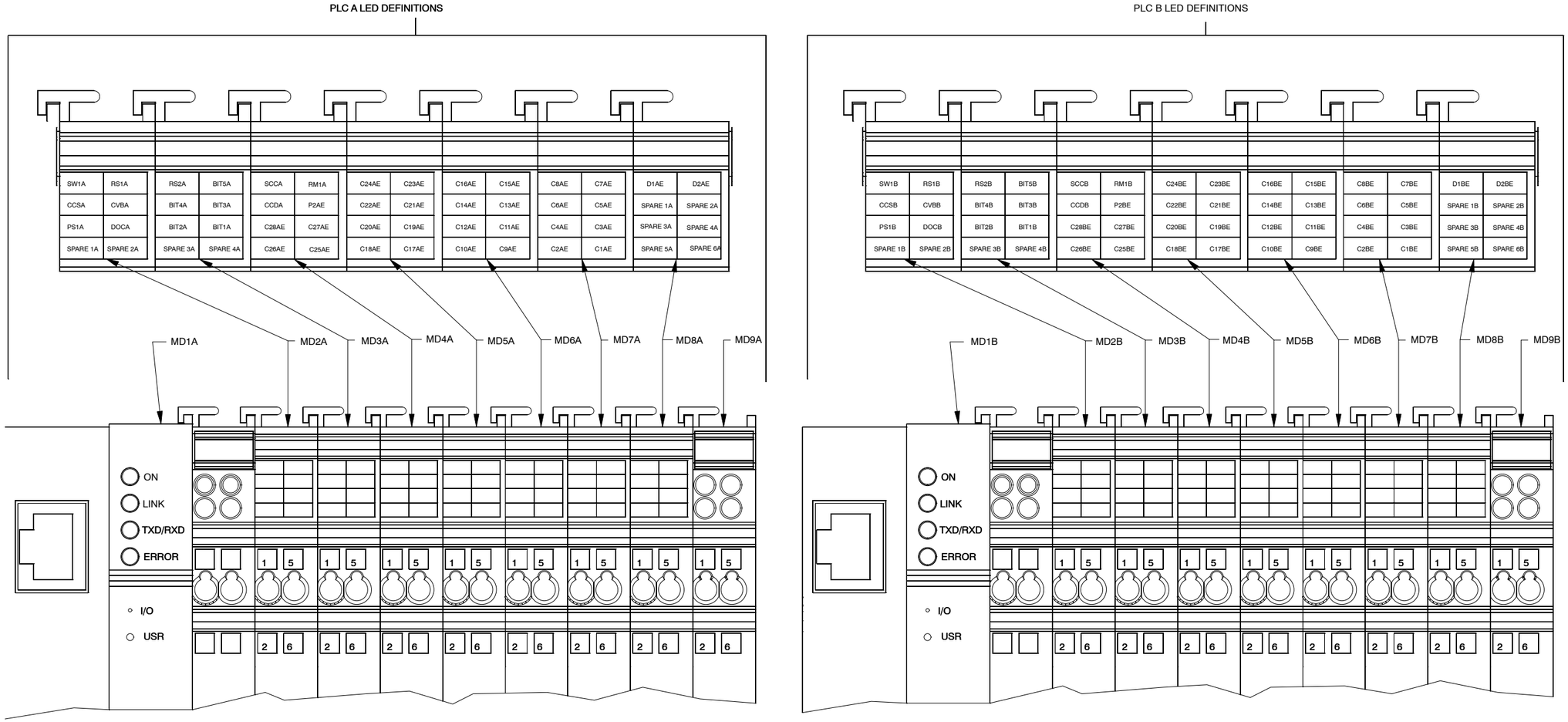


Figure 38 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 10 of 10)