

# **Prodigy® Color-on-Demand® System Generation III**

Customer Product Manual  
Part 1102101-07

Issued 8/18

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## 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

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# Prodigy® Color-on-Demand® System Generation III

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## 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 Safety Data Sheets (SDS) 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 SDS 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

## System Components

The Prodigy Color-on-Demand system has been carefully tested, inspected, and packaged prior to shipping. Upon receipt, inspect the shipping materials and components for visible damage. Report any visible damage immediately to the shipper and to your Nordson representative.

The Prodigy Color-on-Demand System consists of the components shown in Figure 1.

The system pump stand is shipped bolted to a pallet. The spray guns, controllers, and installation kits are shipped on another pallet.



Prodigy Manual Spray Gun



Prodigy Manual Gun Controller  
(1 per Gun)



Color-on-Demand Controller  
(1 per Gun)

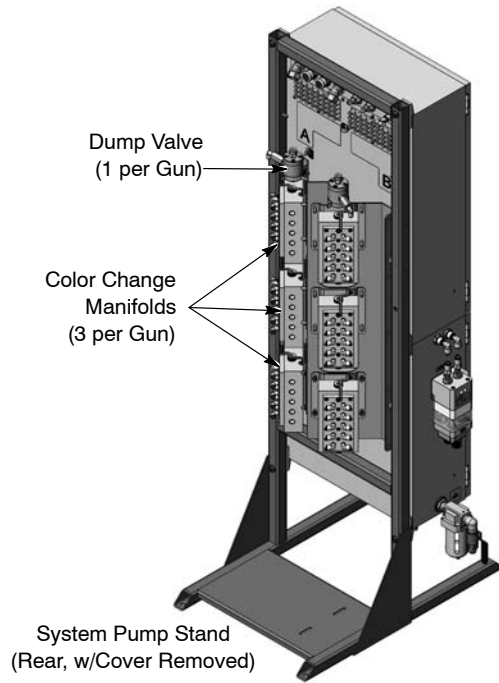
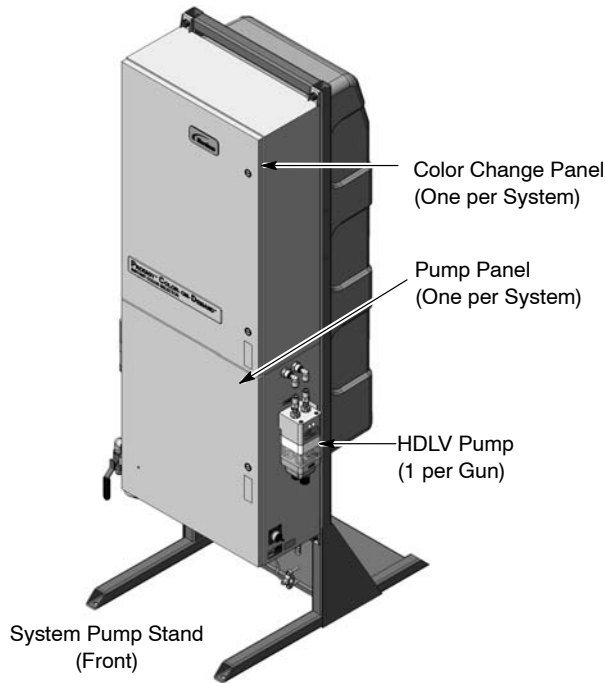


Figure 1 System Components

## Pump Control Panel

The pump panel is the central electrical and pneumatic enclosure for the Color-on-Demand system. The pump panel houses the Prodigy HDLV® pumps, pump manifolds and control boards, air filter and pneumatic controls, and DC power supply.



**WARNING:** Allow only qualified personnel to service this panel. Shut off power at an external disconnect before performing any repairs. Shut off the air supply at the ball valve and relieve the system air pressure before disconnecting pneumatic tubing or components.

## Manifold Specifications

<b>Output (Maximum)</b>	23.5 kg (52 lb) per hour
<b>Air Consumption</b>	
Conveying Air	21–35 l/min (0.75–1.25 scfm)
Gun Pattern Air	6–57 l/min (0.2–2.0 scfm)
Total Consumption	85–170 l/min (3–6 scfm)
<b>Operating Air Pressures</b>	
Pinch Valves	2.4–2.75 bar (35–40 psi)
Flow Control (to air cap/pump assist)	5.9 bar (85 psi)
Vacuum Generator	3.5 bar (50 psi)

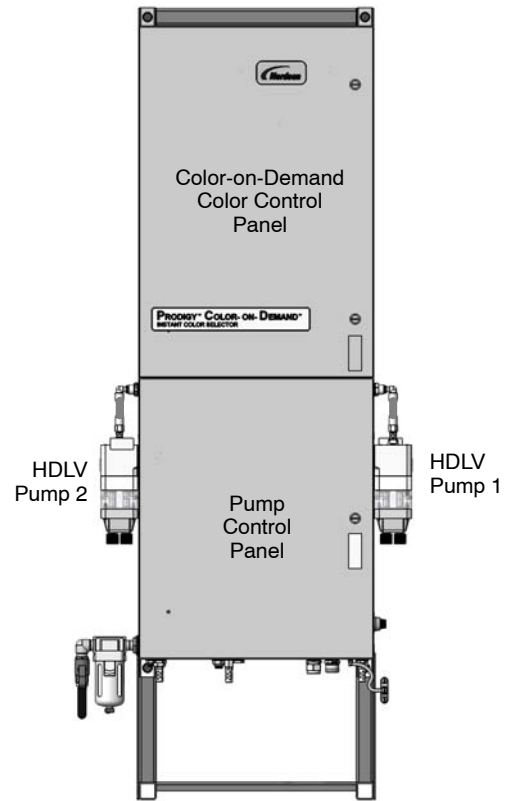


Figure 2 Manual Color-on-Demand System Panels



## Pump Control Panel Components

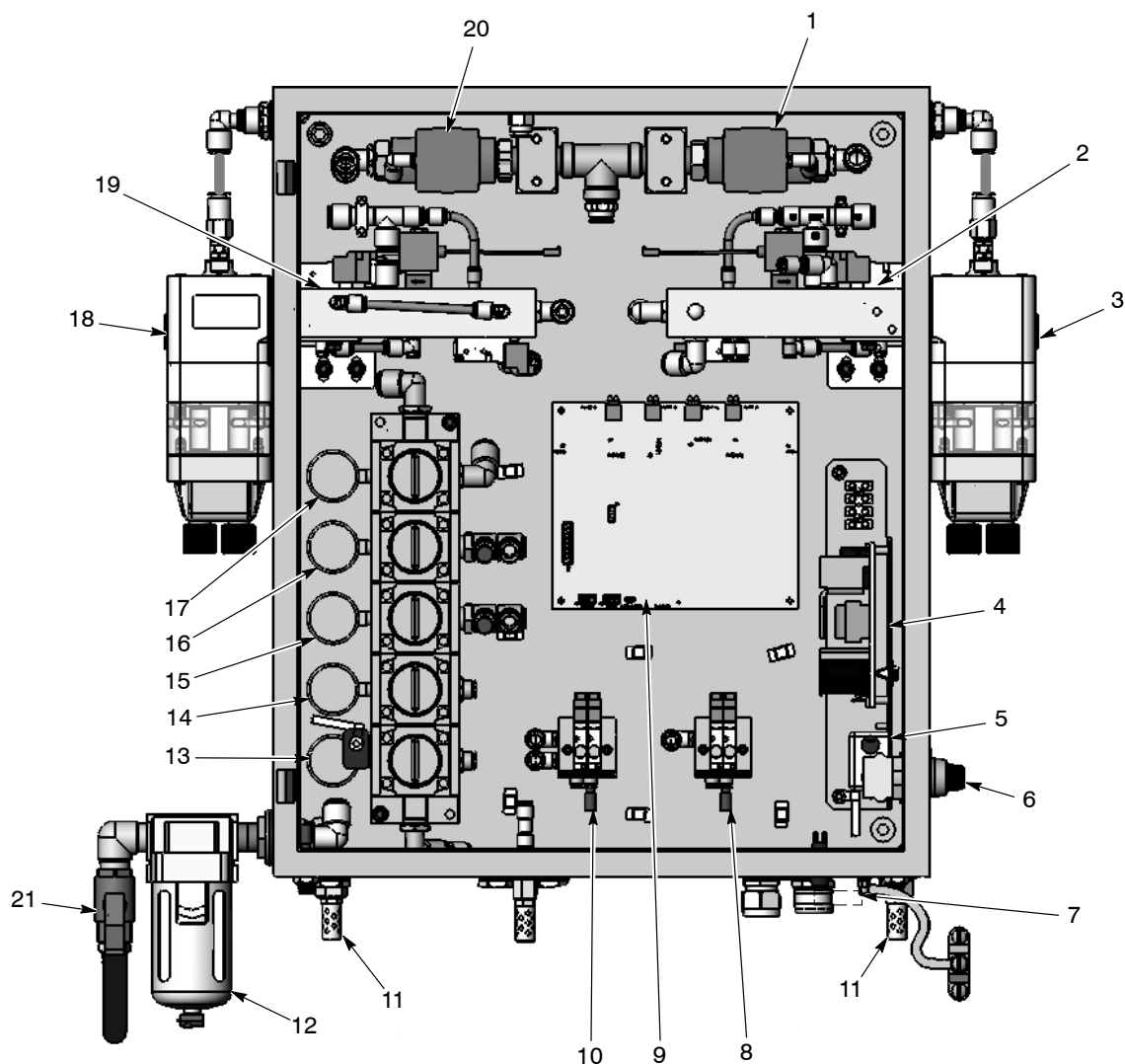


Figure 3 Pump Panel Components (Two-Gun System Panel Shown)

- |                                   |                                     |                               |
|-----------------------------------|-------------------------------------|-------------------------------|
| 1. Pump 2 purge valve             | 8. Purge pilot manifold/solenoids   | 15. Flow control air (85 psi) |
| 2. Pump 1 control manifold        | 9. Pump control boards              | 16. Vacuum air (50 psi)       |
| 3. Pump 1                         | 10. Pinch select manifold/solenoids | 17. Purge air (85 psi)        |
| 4. 24 VDC power supply            | 11. Vacuum generator mufflers       | 18. Pump 2                    |
| 5. Line filter                    | 12. Air filter                      | 19. Pump 2 control manifold   |
| 6. Power switch and contact block | 13. Pinch low air (35 psi)          | 20. Pump 1 purge valve        |
| 7. Fuse, time delay, 3.15 A       | 14. Pinch high air (75 psi)         | 21. Air supply ball valve     |

**NOTE:** One pump control board (9) controls one pump. If the system has two pumps, then there are two control boards stacked on top of each other.

For wiring and pneumatic diagrams, refer to the foldouts in the back of this manual.

For pump repair and parts, refer to manual 1081195.

## HDLV Pump Manifold Components

The Prodigy High-Density powder, Low-Volume air (HDLV) powder feed pump transports precise amounts of powder from a feed source to a powder spray gun. The pump manifold controls the pump air and vacuum flow. The pump control board controls all manifold functions.

Table 1 Manifold Components

Item	Description	Function
1	Solenoid Valves	Control the air flow to the pump during operation. <b>NOTE:</b> Refer to <i>Solenoid and Control Valve Functions</i> on page 33 to identify each valve's specific function.
2	Pattern Air Flow Control Valve	Regulates the air pressure to the spray gun's nozzle, which shapes the powder spray pattern.
3	Pump Air Flow Control Valve	Regulates the positive air pressure to the fluidizing tubes, which dispenses the powder out of the tubes.
4	Vacuum Air Solenoid	Turns the airflow through the vacuum generator on or off.
5	Vacuum Generator	Works on the venturi principle to generate the negative air pressure required to draw powder into the fluidizing tubes.

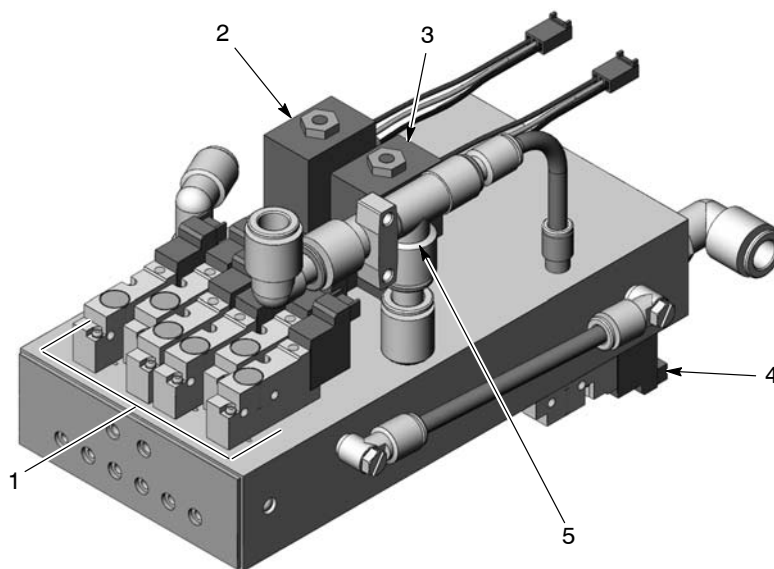


Figure 4 Pump Manifold Components

## Color-on-Demand Color Control Panel

See Figure 5. Air and power are supplied to the color control panel from the pump control panel.

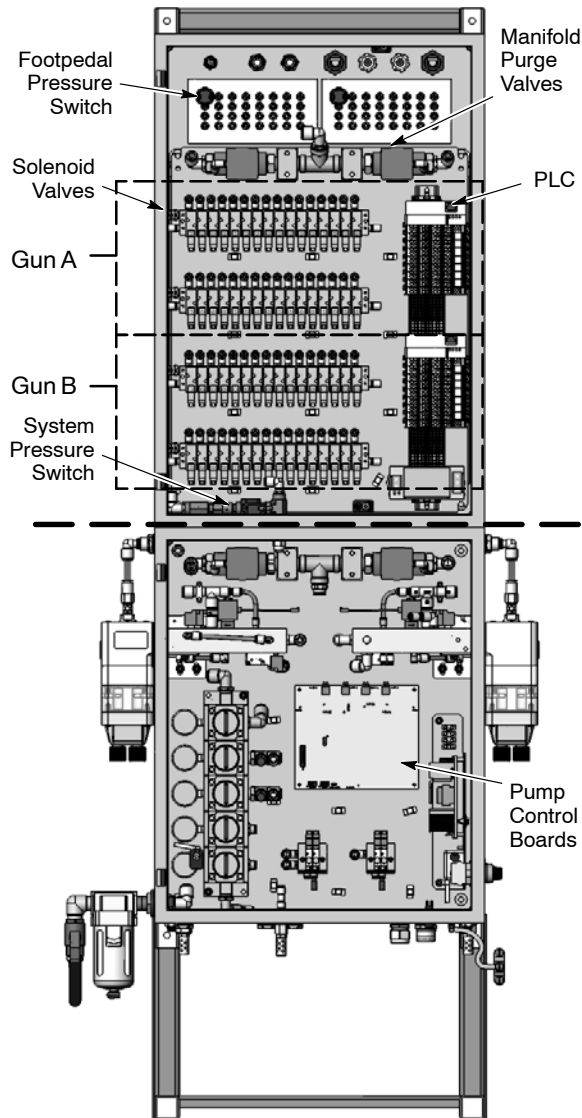


Figure 5 System Control Panels (Dual Gun System)

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.

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.

## Color Change Manifold

See Figure 6. 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 and one is a purge air inlet valve. A separate external dump valve 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 2 valve, 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 HDLV Manual System* (manual 1102106) for a description of the color change cycle and settings.

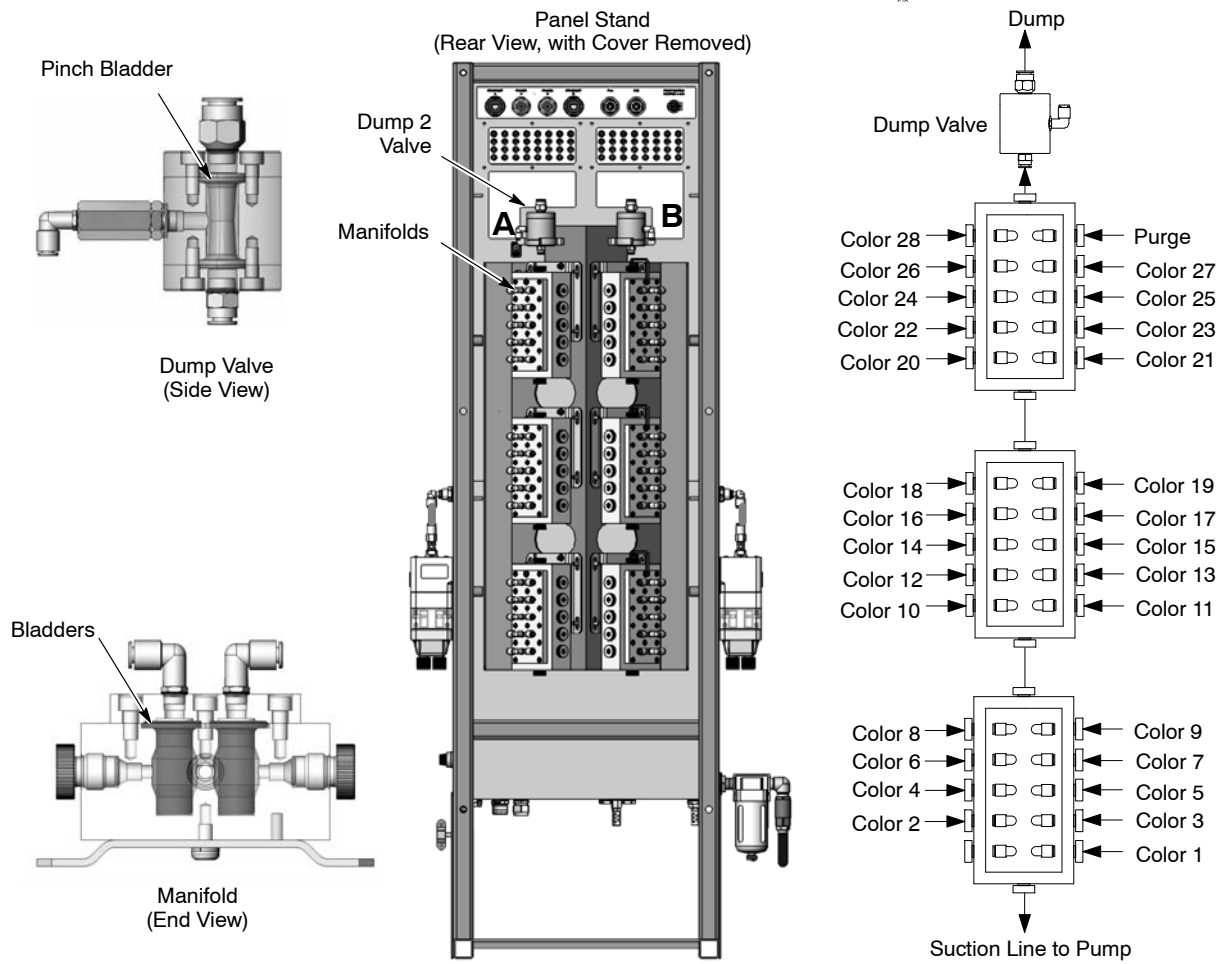


Figure 6 Color Change Manifold and Dump Valve

# System Installation



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

## Specifications

Electrical	100–240 V, 50/60 Hz, 275 VA max. 1 PH
Air Input Pressure	6.2–7.6 bar (90–110 psi) maximum
Air Flow Requirements	10 CFM during purge; 4–6 CFM during normal operation, depending on powder flow and atomizing air settings.
Weight *	125 kg (275 lbs)
Remote Control Input	24 V, 25 mA max
* Weight of stand with control panels, color change manifolds, and cover.	

## System Pump Stand Installation

The System Pump Stand must be located as close to the powder feed hoppers as possible, since the maximum suction tubing length is 3 meters (9 ft, 9 inches) from the manifold inlet ports to the pump adapters on the feed hoppers.



**WARNING:** The stand weighs 125 kg (275 lbs). Use approved lifting equipment to remove the stand from the shipping pallet and move it to its installation location.

Unbolt the stand from the shipping pallet and secure two nylon lifting straps to the horizontal bar at the top of the stand. Secure the straps to the forks of a forklift or a crane hook. Lift the stand off the pallet and move it to the chosen location.

Bolt the stand securely to the floor with the lag bolts included in the installation kits.

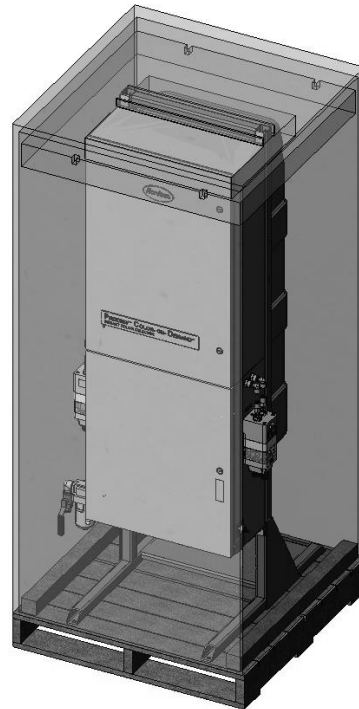


Figure 7 Packaged System Pump Stand

## Controller Installation

Install the Manual Gun Controller and Color-On-Demand Controller on a wall, panel, or platform rail before making any connections. Both controllers must be accessible to the operator at all times.

Both controllers are shipped with the same mounting hardware.

**NOTE:** Both Gun 1 controller and Gun 2 controller must be set for the “Gun No: 1” network address. Refer to the Prodigy Manual Spray Gun Controller manual for more information.

## Pump Stand Mounting

The panel stand is shipped with a controller support arm. It can be bolted to the side of the stand with the included M8 x 30 bolts and washers. Use the U-brackets and M6 fasteners to mount the controllers to the arm; color controller above and gun controller below.

## Wall or Panel Mounting

Use the U-bracket and 6M fasteners to mount the controllers to a wall or panel.

## Rail Mounting

Use the Rail Mount hardware to mount the controllers to a platform rail. The bracket will fit any 2 inch wide rail or bar.

## Grounding

Connect the ground strap to the controller ground stud and clamp it to a true earth ground.

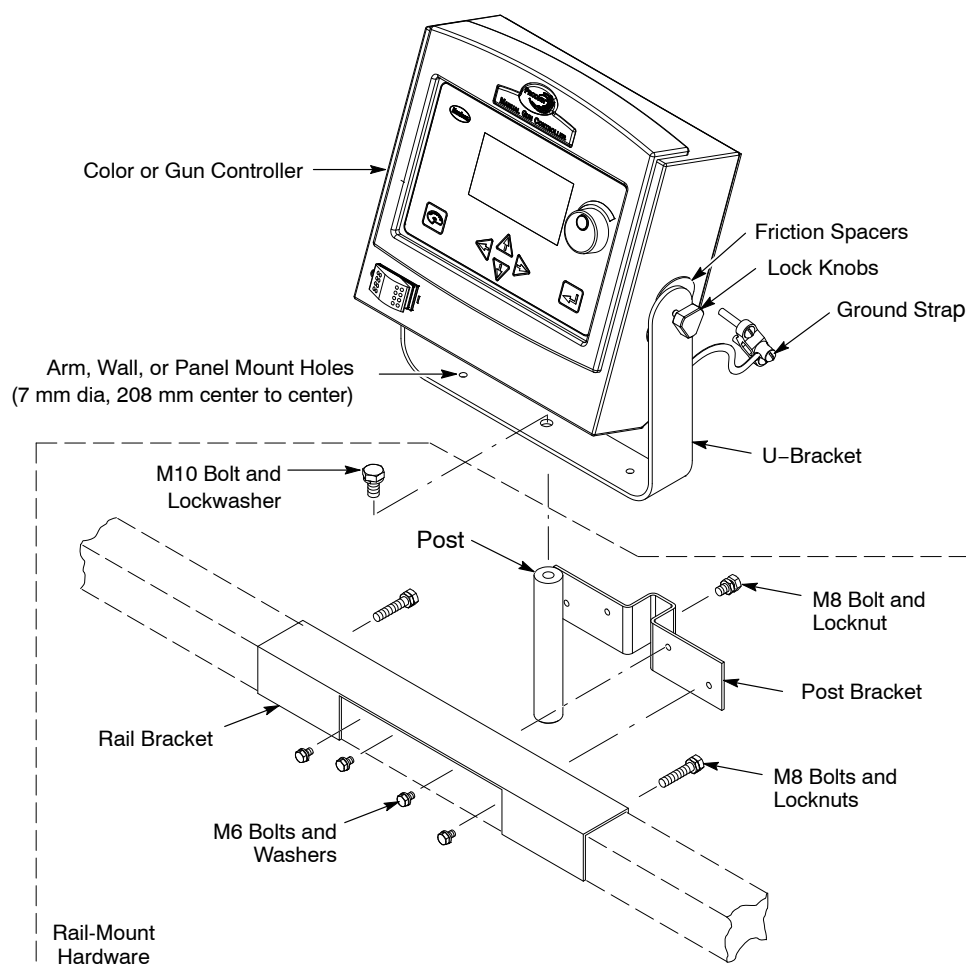


Figure 8 Controller Mounting

# Connection Diagram (Rear View of System)

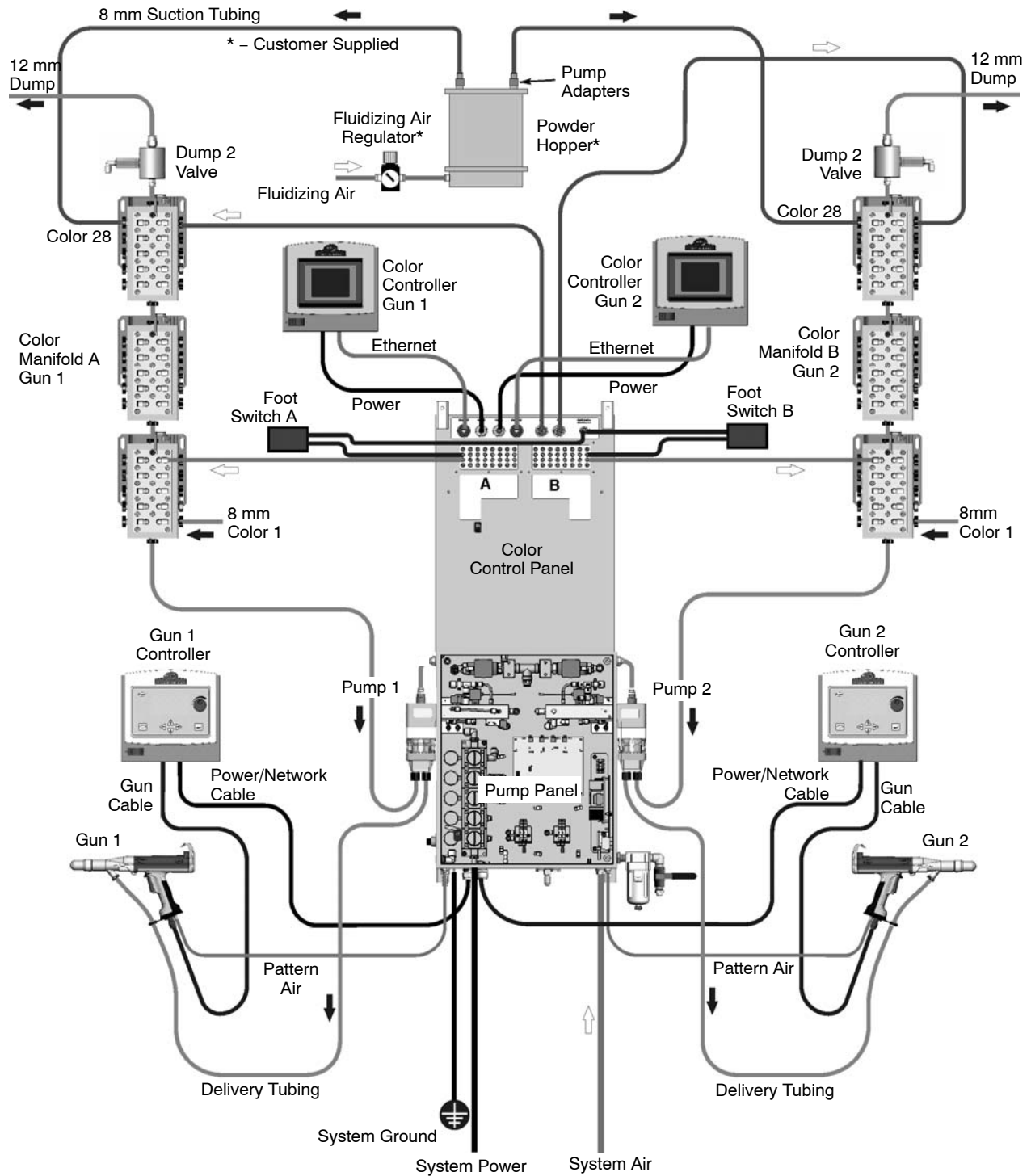


Figure 9 System Diagram

## System Power, Ground, and Gun Controller Connections

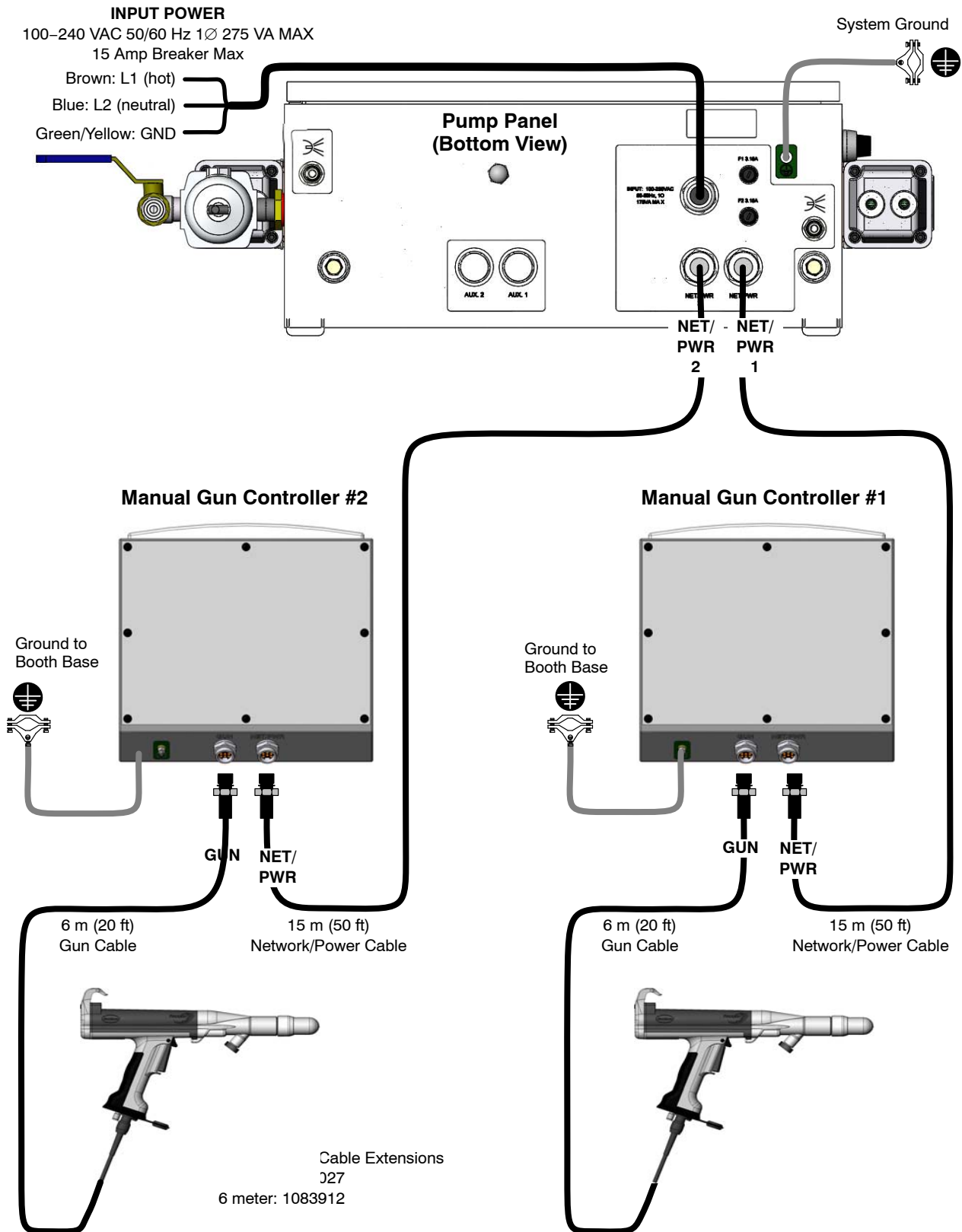


Figure 10 System Power, Ground, and Gun Controller Connections



## System Air Supply and Gun Air Connections

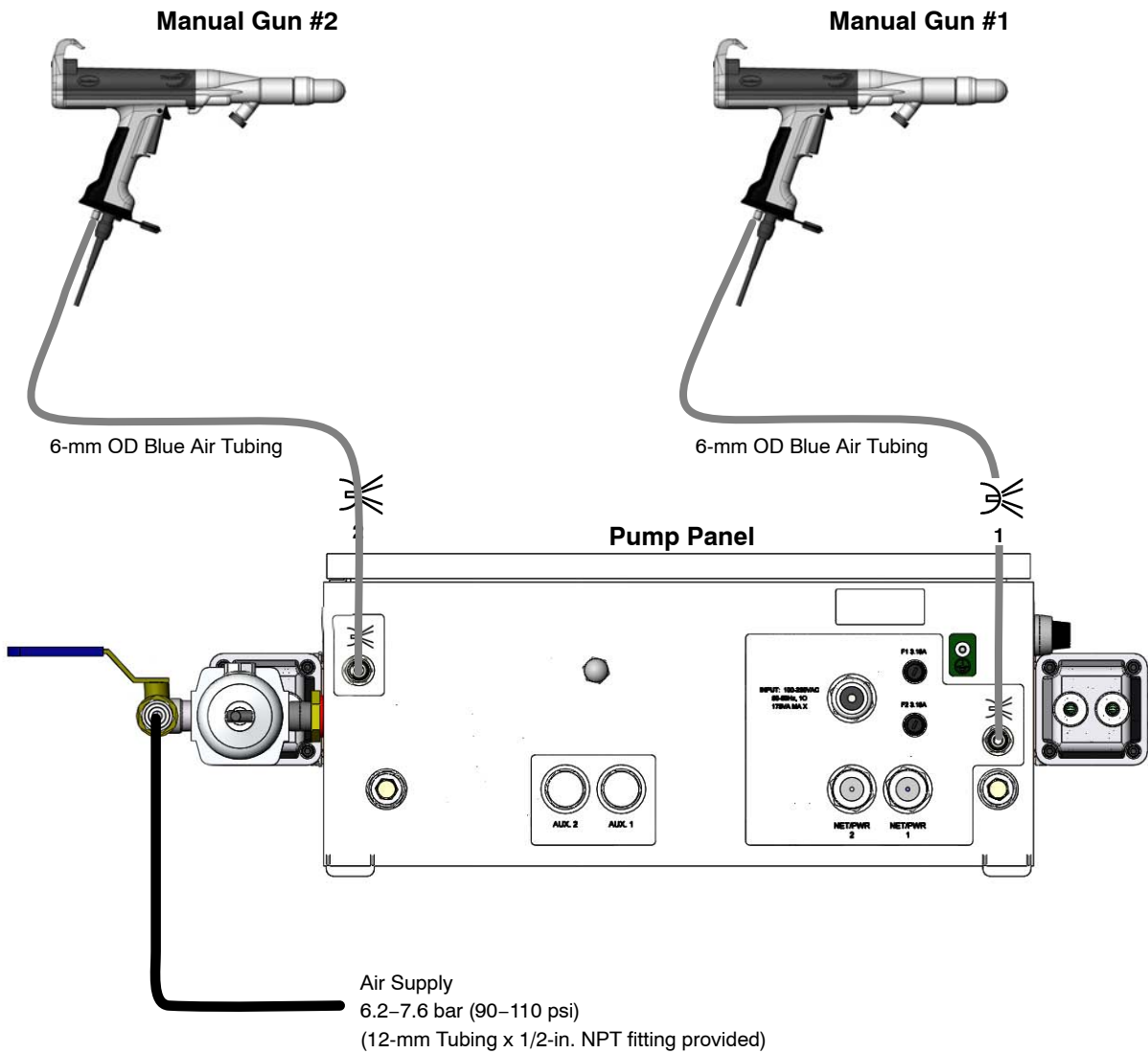


Figure 11 System Air Supply and Gun Air Connections

## Color-on-Demand Controller and Foot Switch Connections

1. Connect the power cables to the Color-on-Demand controllers.
2. Cut one of the RJ45 jacks off the 100 ft. long Ethernet cable included in the ship-with kit, leaving a jack on the other end.
3. Remove the back from the controller and plug the Ethernet cable into the socket as shown.
4. Pull the cut end of the cable through the provided 1/2 in. conduit connector and conduit to the color panel and route it inside the panel.
5. Connect the cable leads to the termination module as shown on page 15.
6. Connect the conduit to the controller and panel.
7. If you are going to use the foot switches, remove the bottom covers and install the provided connectors. Connect 6-mm tubing from the FOOTSWITCH A & B fitting to the IN fitting on the switch, and from the OUT fitting to the SWA RTN or SWB RTN ports on the tubing manifolds.

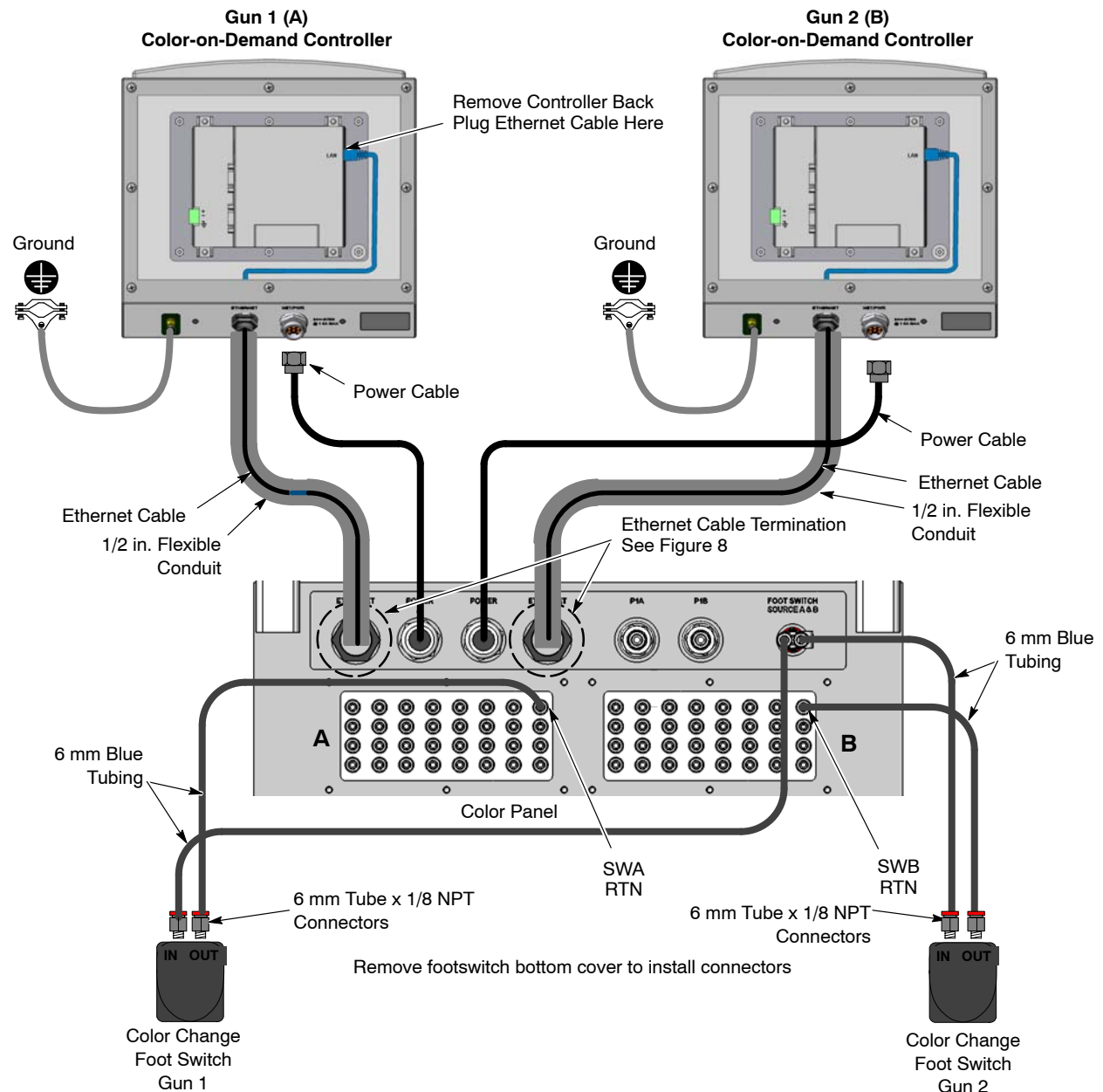
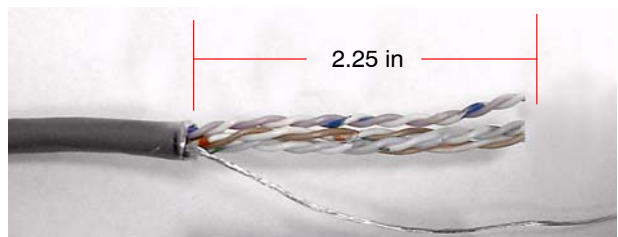
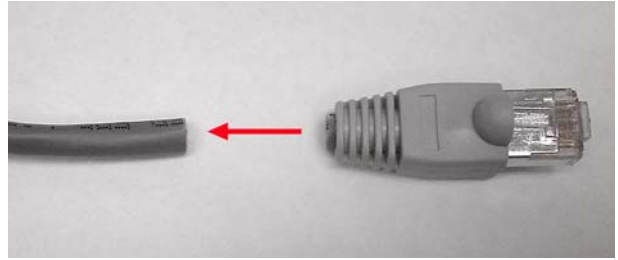


Figure 12 Color-on-Demand Controller and Foot Switch Connections

## Ethernet Cable Termination

Follow these steps to complete the ethernet cable termination.

1. Cut the RJ45 jack from one end of the Ethernet cable.
2. Route the cut end of the Ethernet cable into the color panel.
3. Trim back the cable jacket about eight inches.
4. Cut the foil, clear wrapper, and pull string on the cable.
5. Trim back the four twisted pair wires to approximately 2.25 inches.



6. See Figure 13. Arrange the twisted pair wires in the module according to the T568-B wiring scheme, with the ends at least 1/4 in. through the terminals. Retain the twists in the wires as close to the terminals as possible. Use a 110 punch-down tool to attach the wires.
7. Trim the ends of the wires as close to the termination module as possible.
8. Install the retention caps on the termination module.
9. Crimp a ground lug to the shield wire.
10. Assemble the ethernet termination case as shown. For rear-connect modules, snap the termination module into the bezel, then install the bezel into the adapter.

**Use Type T568B cables.  
Use T568-B wiring scheme.**

**Rear-Connect Module  
(End View)**

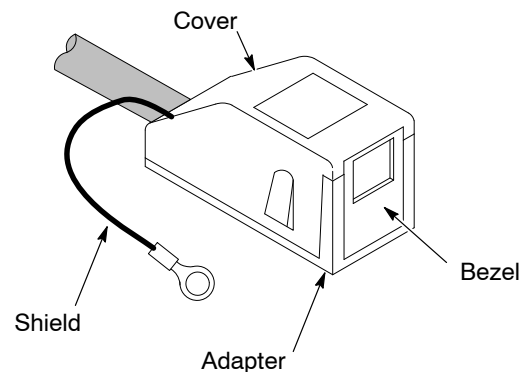
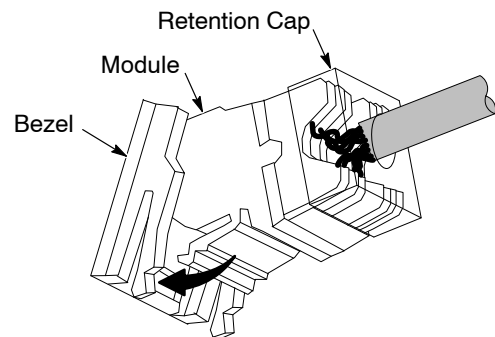
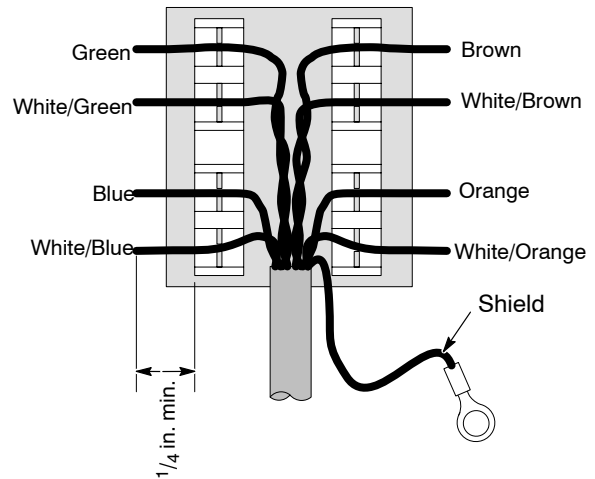


Figure 13 Ethernet Cable Connection to Termination Module

11. See Figure 14. Install the termination modules under the top side of the enclosure.
12. Connect the 1 meter (3 ft.) long crossover cables from the termination modules to the PLCs.
13. Attach the termination module ground wires to the cabinet ground stud.

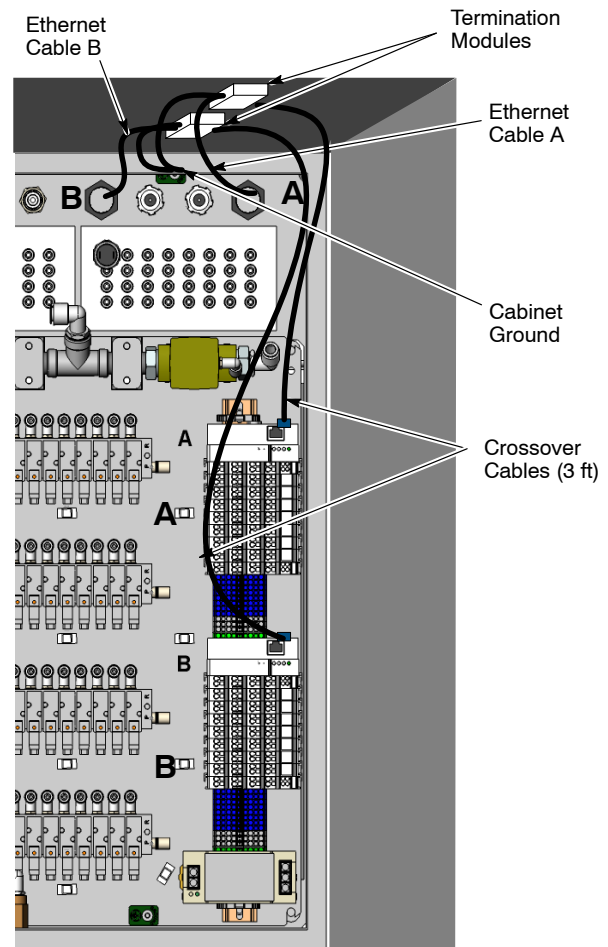


Figure 14 Ethernet Cable Termination Inside Color Control Panel

## Delivery Tubing Installation

Connect 8-mm clear delivery tubing from the pump outlets to the spray guns. Observe tubing length guidelines, coil excess tubing in loops of at least 1 meter (3 ft) diameter, and lay coil flat on floor.

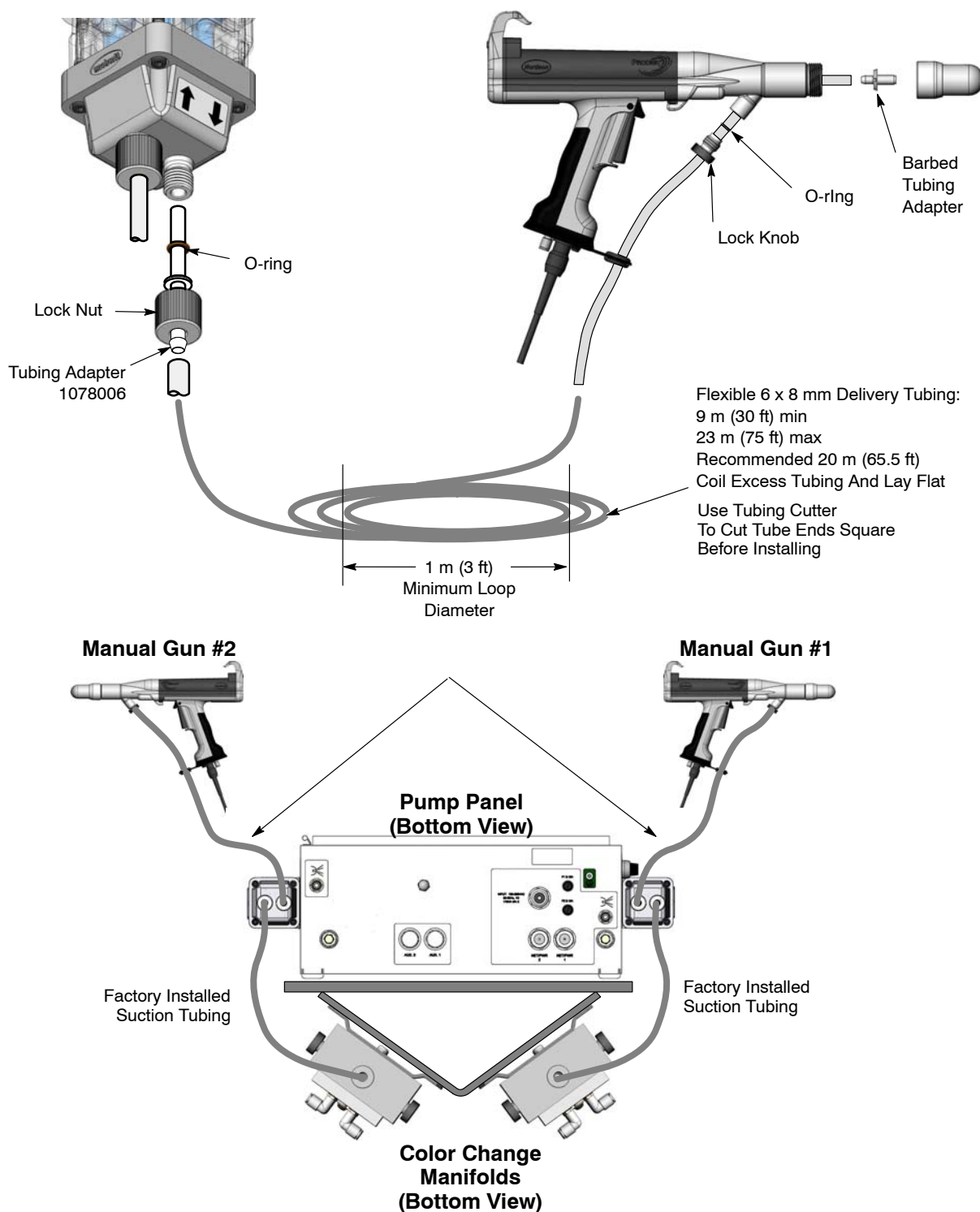


Figure 15 Delivery Tubing Installation

## Suction and Dump Tubing Installation

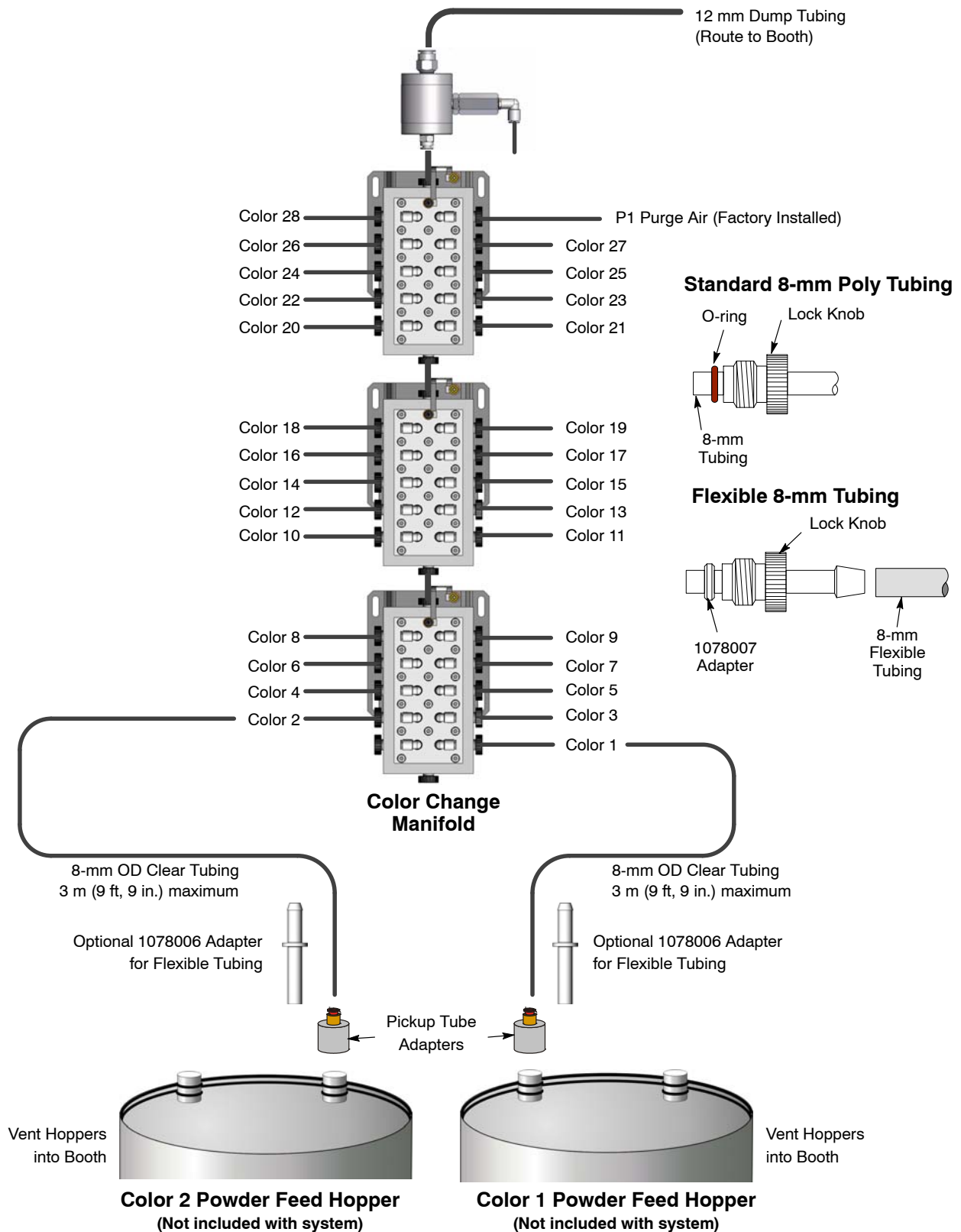


Figure 16 Suction and Dump Tubing Installation

## Remote Color Selection and Color Change Start Option

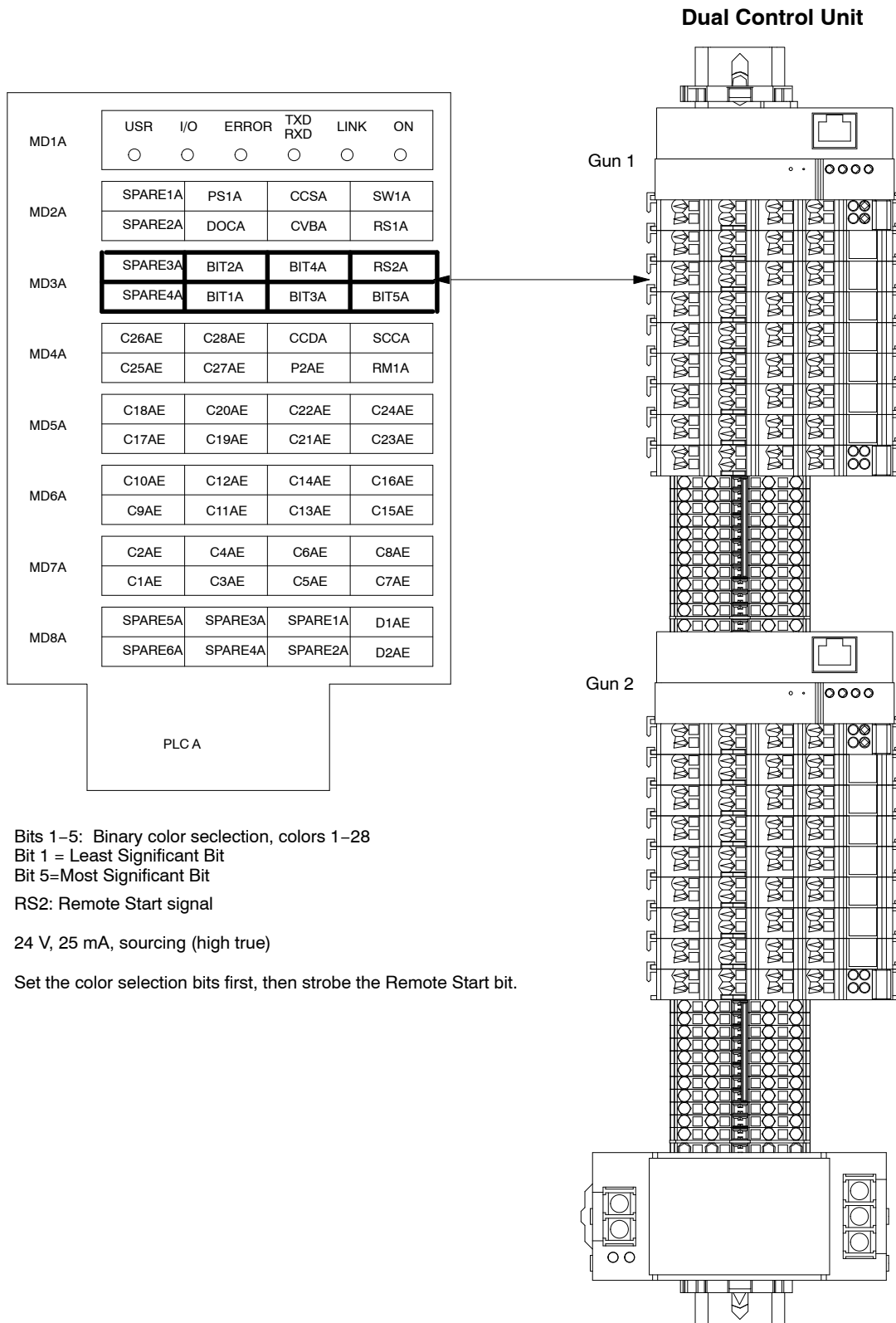


Figure 17 Remote Color Selection and Color Change Start Connections



# Pump Control Panel Setup and Operation

## ***Manifold and Pump Installation***

To install a pump and manifold into an existing pump panel:

1. See Figure 18. Make sure that the gaskets on the pump (2) and manifold (5) are not damaged. If the gaskets are damaged, replace them.
2. Set the manifold onto the appropriate mounting bracket (4) against the pump panel wall (3). Secure the manifold with the mounting screws (6), but do not tighten the screws.
3. Secure the pump to the pump panel and manifold using the pump mounting screws (1). Tighten the pump mounting screws securely.
4. Tighten the manifold mounting screws securely.
5. Perform the Calibration procedure on page 24.

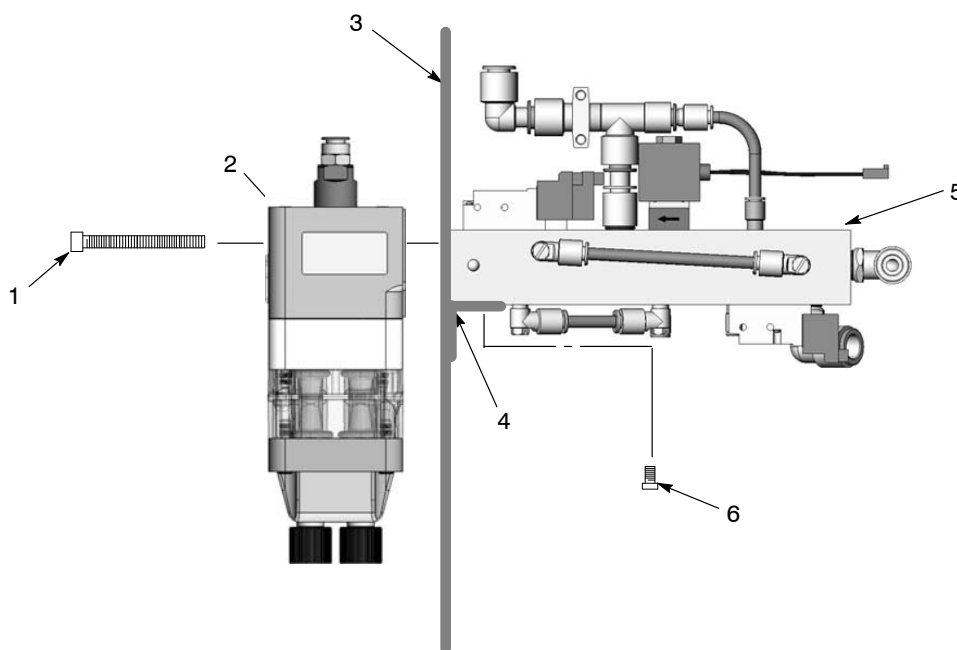


Figure 18 *Pump and Manifold Installation*

- |                        |                              |                                 |
|------------------------|------------------------------|---------------------------------|
| 1. Mounting screws (2) | 3. Pump panel wall           | 5. Manifold                     |
| 2. Pump                | 4. Manifold mounting bracket | 6. Manifold mounting screws (2) |

## Pump Control Board



**CAUTION:** The circuit board is an electrostatic sensitive device. To prevent damage to the board while handling it, wear a grounding wrist strap connected to the pump panel or other ground.

### Electrical and Pneumatic Connections

See Figure 19 and the following table for the control board connections. Refer to the circuit drawings in the back of this manual.

Item	Description
<b>XD CR1</b>	Gun Pattern Air Pressure Transducer In/Out
<b>XD CR2</b>	Pump Flow Air Pressure Transducer In/Out
<b>XD CR 3</b>	Not Used
<b>XD CR4</b>	Not Used
<b>J1</b>	Gun Pattern Air Flow Control Valve
<b>J2</b>	Pump Air Flow Control Valve
<b>J3</b>	To Color Control Panel PLC: Dump Output Control (DOC)
<b>J4</b>	To Color Control Panel PLC: Color Valve Back purge (CVB)
<b>J5</b>	JTAG Programming/Debug
<b>P1</b>	Manifold Solenoid I/O Harness
<b>P2</b>	To Color Control Panel PLC: Color Change Status (CCS)
<b>P3</b>	DC Power In
<b>P4</b>	To Color Control Panel PLC: Start Color Change (SCC) Color Change Status (CSS) return P1E (Purge 1 Solenoid) To Pump Control Panel: Purge Pilot Manifold Pinch Select Manifold
<b>P5</b>	CAN Out Connector
<b>P6</b>	CAN In Connector
<b>W1</b>	CAN Network Termination Header

### Switches and Indicators

See Figure 19 and the following table for the switches and indicators on the control board.

Item	Description
<b>SW1</b>	Node Address Switch
<b>SW2</b>	Console Address/Gun Type Switch
<b>PB1</b>	Test Mode Switch (used for calibration)
<b>PB2</b>	Reset Switch
<b>DS1</b>	Power Indicator
<b>DS2</b>	Fault Indicator

### P1 and P2 Pinouts

Pin	P1 Function	P2 Function
1	+24 Vdc	Not Used
2	+24 Vdc	Not Used
3	+24 Vdc	Not Used
4	+24 Vdc	Not Used
5	+24 Vdc	Not Used
6	+24 Vdc	Not Used
7	+24 Vdc	Not Used
8	Delivery 2 – Solenoid 6	Not Used
9	Pressure 2 – Solenoid 5	Not Used
10	Suction 2 – Solenoid 4	Not Used
11	Suction 1 – Solenoid 3	Not Used
12	Pressure 1 – Solenoid 2	Not Used
13	Delivery 1 – Solenoid 1	Pull up resistor for CCS
14	Vacuum – Solenoid 7	Color Change Status (CCS)

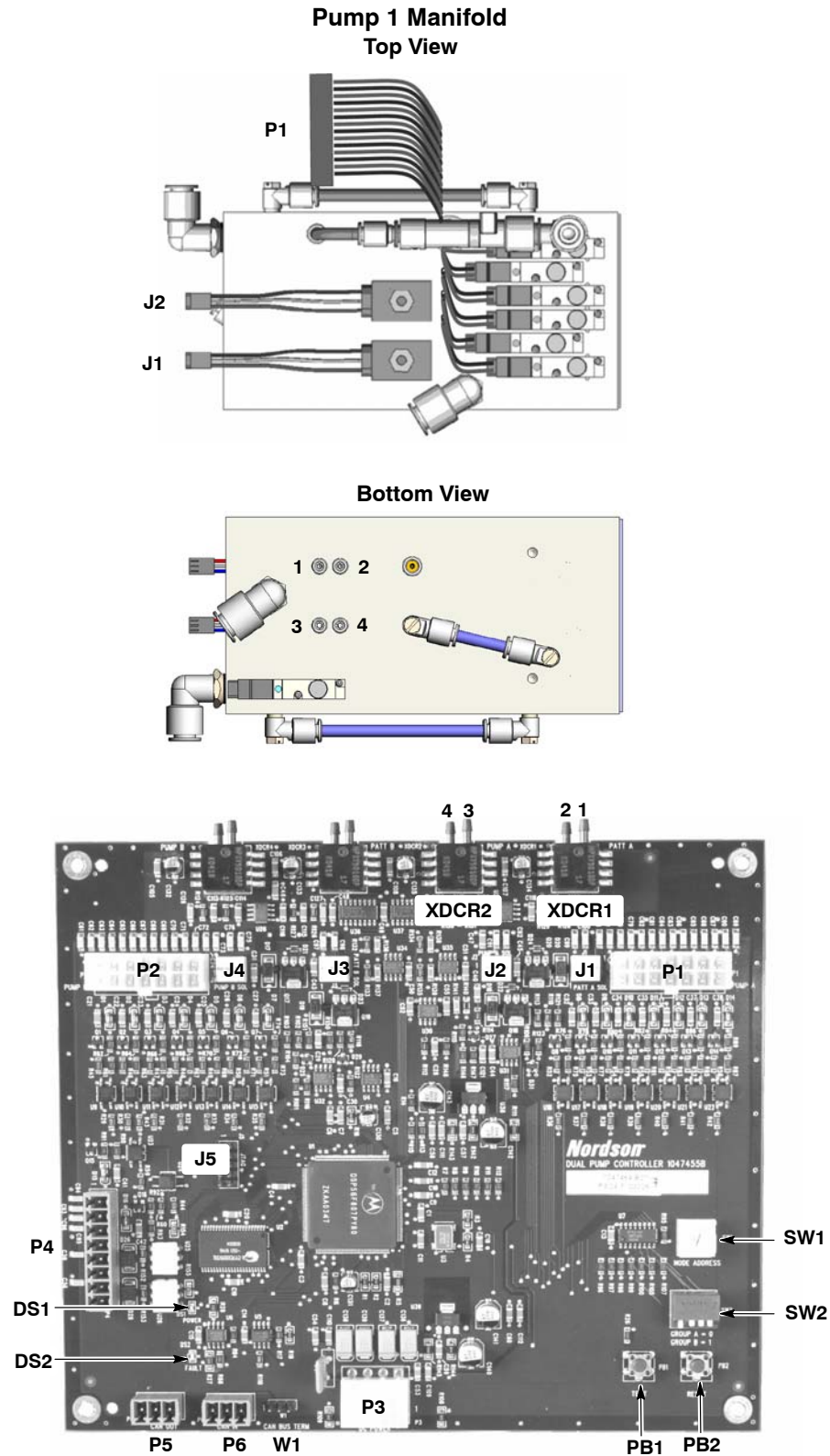


Figure 19 Control Board and Manifold Connections

*Note:* The control board is shipped with air tubing labeled from 4–1 installed in the XDCR fittings. Connect the tubing to the appropriate fittings on the manifolds as illustrated.

## Control Board Configuration

See Figure 20. Make sure that SW1 and SW2 are set as illustrated for the Color-on-Demand system.

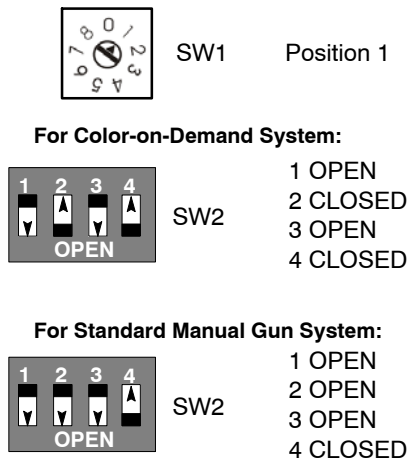


Figure 20 SW1 and SW2 Settings

## Network Termination

See Figure 21. The control board is shipped with a jumper across pins 2 and 3 of the CAN BUS TERM terminals. Move the jumper to pins 1 and 2.

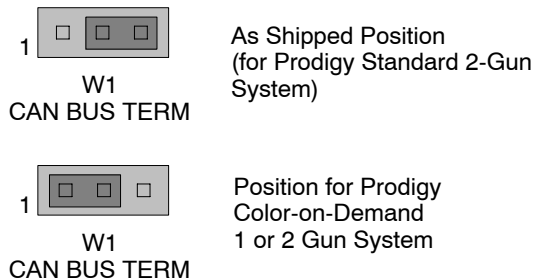


Figure 21 CAN BUS TERM Jumper Settings

## Calibration Procedure

If you replace a control board or manifold, use this procedure to calibrate the system.

1. Turn off the Prodigy Manual Gun Controller.
2. Press and hold the Nordson key, then turn on power to the Prodigy Manual Gun Controller. The Configuration screen appears.

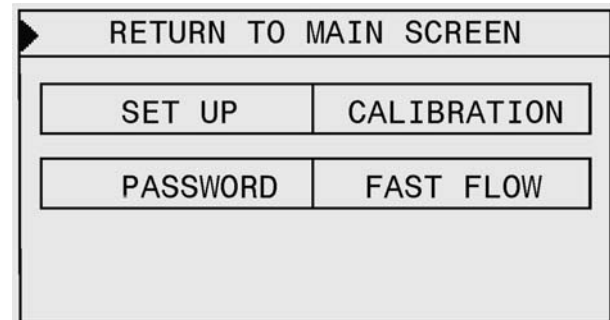


Figure 22 Configuration Screen

3. Using the arrow keys or rotary dial, point to the CALIBRATION selection. Press the  $\downarrow$  key. The Calibration screen appears.

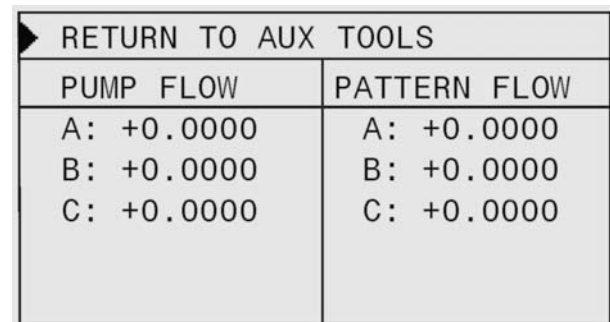


Figure 23 Calibration Screen

**NOTE:** Use the arrow keys or rotary dial to move the cursor to the appropriate setting, then press the  $\downarrow$  key to select it. Use the arrow keys or rotary dial to change that value, then press the  $\downarrow$  key to accept the new value and select a new setting.

4. Enter the PUMP FLOW and PATTERN FLOW A, B, and C calibration numbers from the sticker on the pump control manifold.

## Air and Powder Tubing Connections

See Figure 24 for the air and powder tubing connections for the pump and manifold.

**NOTE:** Only the XDCR1 and XDCR2 transducers on the control board are used for this application.

Item	Tubing	Function	Item	Tubing	Function
<b>A</b>	10 mm Blue	From Purge Air Source (Line Air Pressure)	<b>G</b>	10 mm Blue	Pump Assist/Pattern Air Flow Control 5.9 bar (85 psi)
<b>B</b>	8 mm Clear	Powder Delivery to Spray Gun	<b>H</b>	6 mm Blue	Spray Gun Pattern Air Flow Control (to gun)
<b>C</b>	8 mm Clear	Powder Suction from Feed Source	<b>1 – 2</b>	4 mm Clear	Pump 1 Pattern Air Pressure Transducer
<b>D</b>	8 mm Clear	Pinch Valve Air Pressure 2.0–2.75 bar (30–40 psi)			
<b>E</b>	10 mm Blue	Vacuum Air Generator Supply 3.45 bar (50 psi)	<b>3 – 4</b>	4 mm Clear	Pump 1 Flow Air Pressure Transducer
<b>F</b>	10 mm Blue	Vacuum Generator Vent			

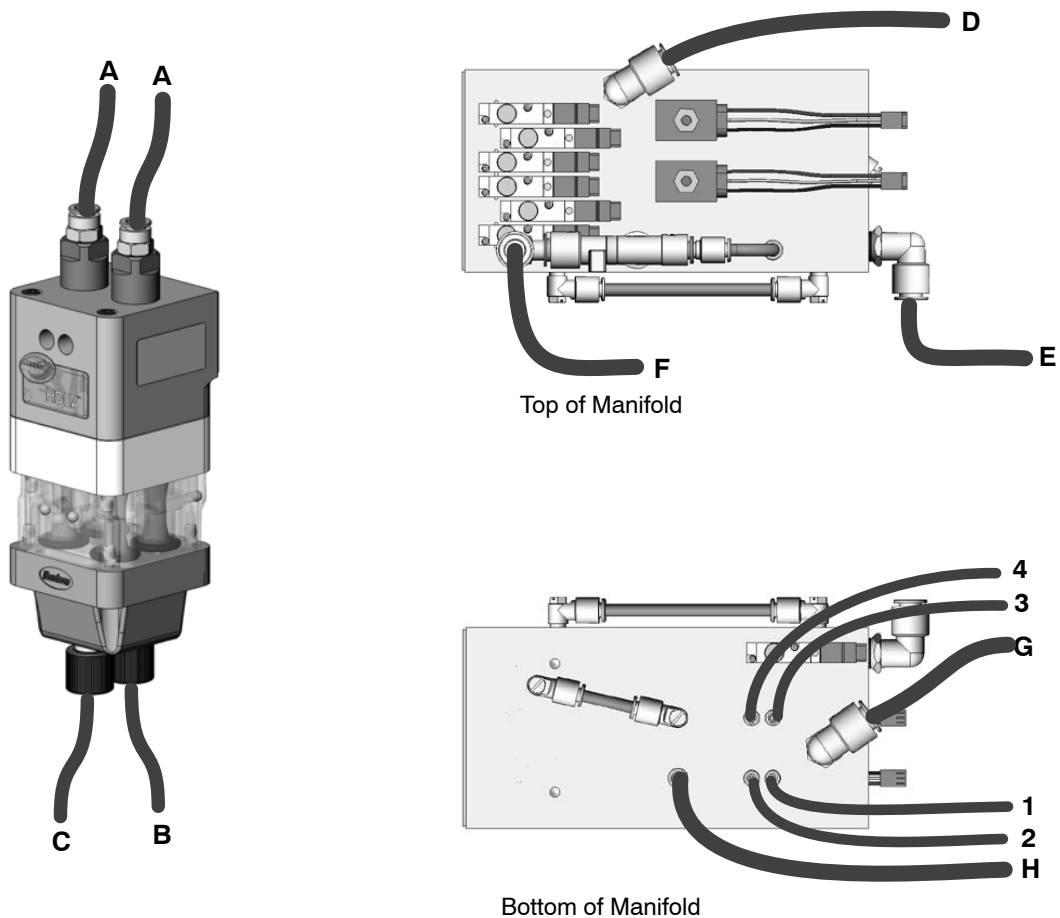


Figure 24 Powder and Air Tubing Connections

## Operation



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



**CAUTION:** Do not adjust the regulators inside the pump cabinet. The regulators are factory set and should not be adjusted without guidance from your Nordson representative.

Powder flow rate and pattern air flow is controlled by the gun controller operator interface settings. Refer to the *Operation* section of the *Prodigy HDLV Manual System* manual for specific instructions.

The powder flow rate is controlled by specifying a setpoint from 0–100, equivalent to a percent of flow, which corresponds to a predefined pump cycle rate. Increasing the flow rate setting increases the cycle rate; decreasing the flow rate setting decreases the cycle rate.

Spray gun pattern air flow (in either scfm or m<sup>3</sup>/hr) is regulated by the pattern air flow control valve on the pump manifold.

The color change cycle, which purges the pump, gun, delivery tubing, and suction lines of powder and loads a new color powder, is controlled by the Purge screen settings on the gun controller.

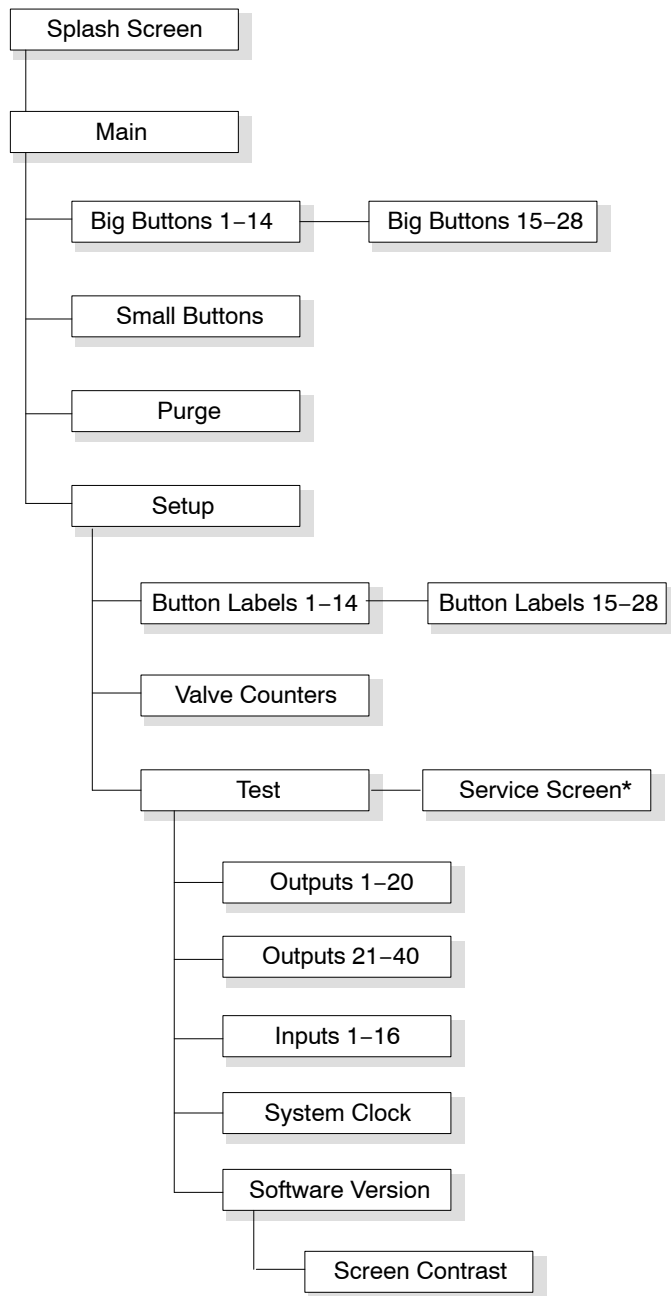
The color change system is controlled by the color control panel PLC and solenoid valves, and the pump control boards.

Colors are selected and color changes are initiated by the operator, using the color controller touch screen and the foot switch, or by a remote signal from a customer process controller.

**NOTE:** When the fluidizing tubes become clogged with powder, the powder delivery rate will decrease. The gun controller will generate a fault to indicate this condition and notify you that it is time to replace the fluidizing tubes.

# Color-on-Demand Controller Setup and Operation

## Screen Map



\* Service Screen is for use by Nordson CSRs.

Figure 25 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.

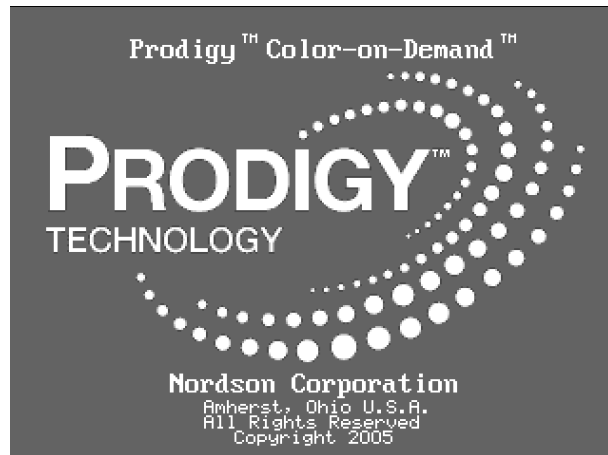


Figure 26 Splash Screen

Touch the Splash screen to open the Main screen.

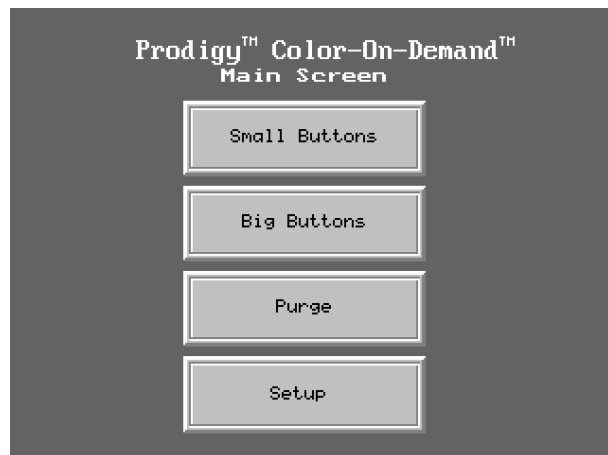


Figure 27 Main Screen

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

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

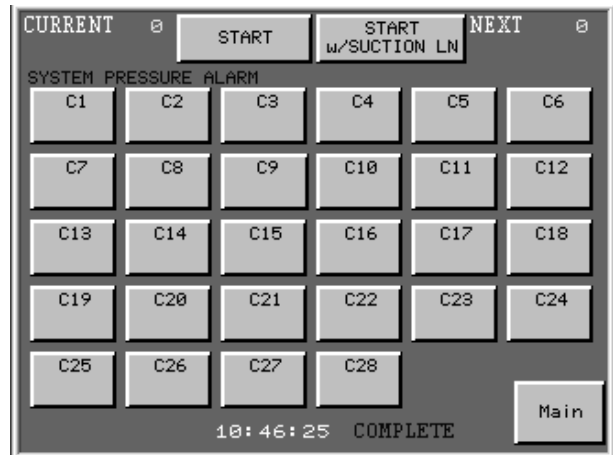


Figure 28 Small Buttons Screen

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

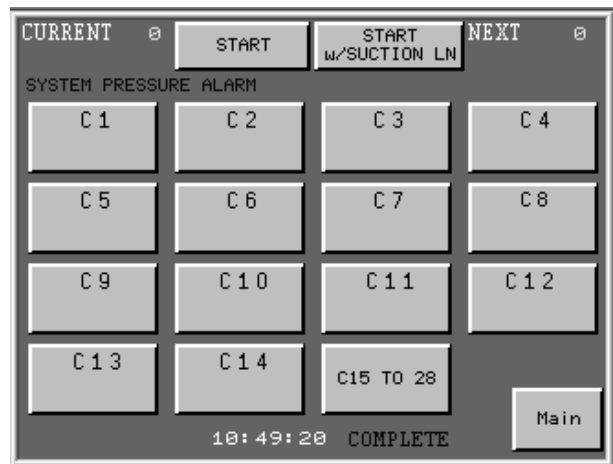


Figure 29 Big Buttons Screen

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 foot pedal 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.

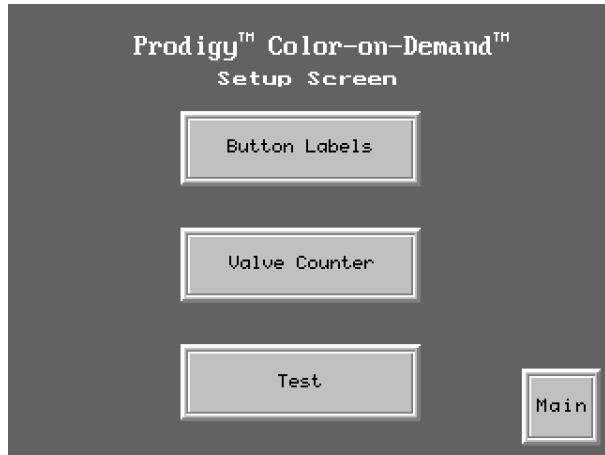


Figure 30 Setup Screen

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.

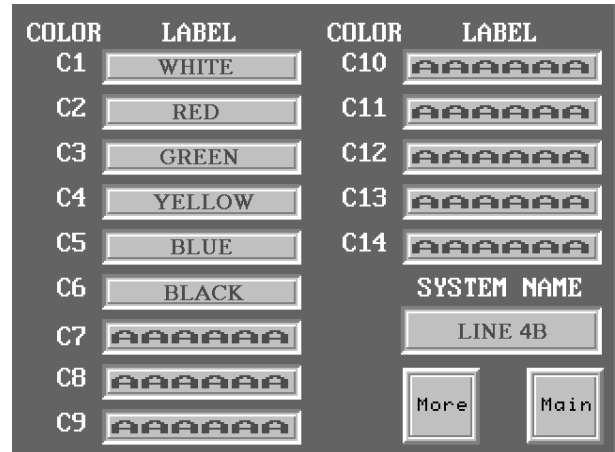


Figure 31 Button Label Screen (1 of 2)

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. You can also use this procedure to clean the system if it loses air pressure while operating.

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 32 Purge Screen

## Color Change with Suction Line Purge

**NOTE:** To perform this procedure the Hopper Purge function must be enabled. See the Service Screen section on page 37 to enable and disable the function.

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 default number of suction pulses is 12. The pulse range is from 1 to 50.

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

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.

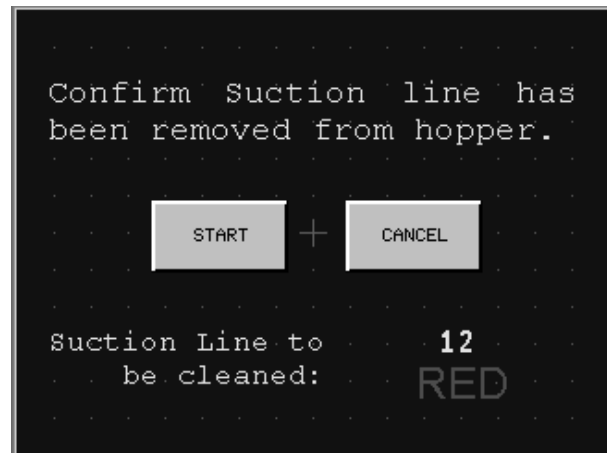


Figure 33 Screen display for CURRENT suction line purge

## 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 37 for more information on this screen.



Figure 34 Valve Counter Screen

## System Clock

See Figure 35. To set the system clock, go to the **Test** screen, then touch the **Set Clock** button.

## Software Version

See Figure 35. 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.

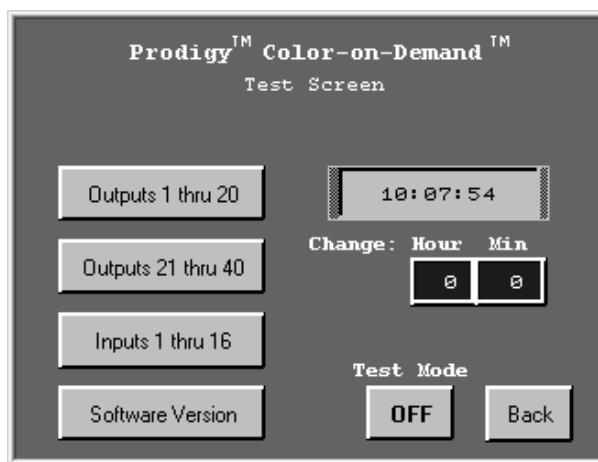


Figure 35 Test Screen

## Troubleshooting



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

### Pump Control Panel

Problem	Possible Cause	Corrective Action
<b>1. Reduced powder output (pinch valves are opening and closing)</b>	Blockage in the powder tubing to the spray gun	Check the tubing for blockages. Purge the pump and spray gun.
	Defective pump air flow control valve	Clean the pump air flow control valve. Refer to <i>Flow Control Valve Cleaning</i> on page 38 for instructions.  If the problem persists, replace the pump air flow control valve. Refer to <i>Flow Control Valve Replacement</i> on page 39 for instructions.
	Defective pump check valve	Replace the check valves.
<b>2. Reduced powder output (pinch valves are not opening and closing)</b>	Defective pinch valve	Replace the pinch valves and filter discs.
	Defective solenoid valve	Replace the solenoid valve. Refer to <i>Solenoid and Flow Control Valve Functions</i> on page 33 to determine which solenoid valve controls the affected pinch valve.
	Defective pump check valve	Replace the check valves.
<b>3. Reduced powder input (loss of suction from feed source)</b>	Blockage in the powder tubing from the feed source	Check the tubing for blockages. Purge the pump and spray gun.
	Loss of vacuum at the vacuum generator	Check the vacuum generator for contamination.  Check the pump panel exhaust muffler. If the exhaust muffler appears to be plugged, replace it.
	Defective pump air flow control valve	Clean the pump air flow control valve. Refer to <i>Flow Control Valve Cleaning</i> on page 38 for instructions.  If the problem persists, replace the pump air flow control valve. Refer to <i>Flow Control Valve Replacement</i> on page 39 for instructions.
<b>4. Spray gun fan pattern changes</b>	Defective pattern air flow control valve	Clean the pattern air flow control valve. Refer to <i>Flow Control Valve Cleaning</i> on page 38 for instructions.  If the problem persists, replace the pattern air flow control valve. Refer to <i>Flow Control Valve Replacement</i> on page 39 for instructions.

## Solenoid and Flow Control Valve Functions

Figure 36 identifies the solenoid and flow control valve functions and the corresponding ports on the pump and manifold.

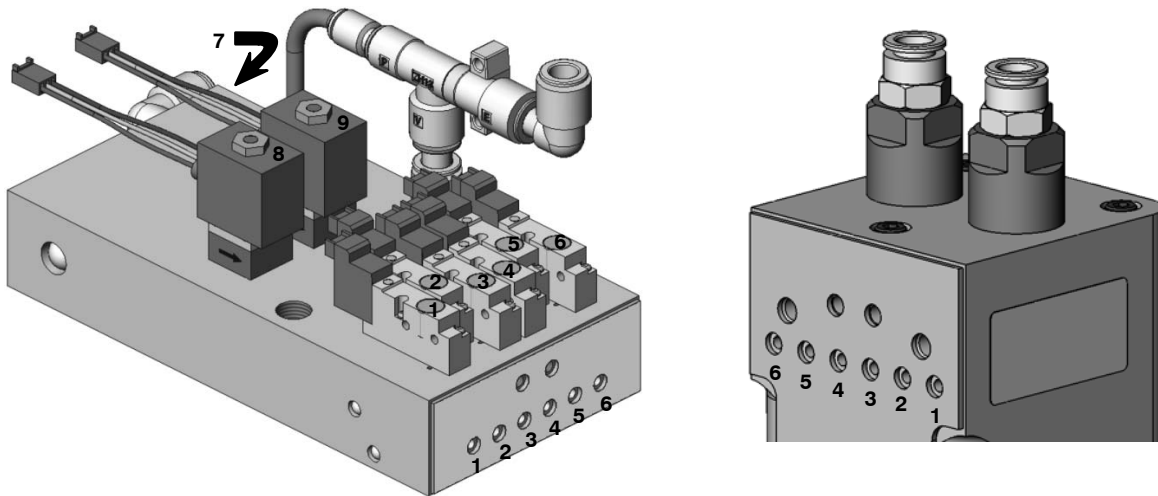


Figure 36 Solenoid and Flow Control Valve Functions

Item	Function	Item	Function
1	Left Side Delivery Pinch Valve	6	Right Side Delivery Pinch Valve
2	Left Side Fluidizing Tube	7	Vacuum Air (on bottom of manifold)
3	Left Side Suction Pinch Valve	8	Pump Air Flow Control
4	Right Side Suction Pinch Valve	9	Pattern Air Flow Control
5	Right Side Fluidizing Tube		

## Color-on-Demand Controller and Control Panel

**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.

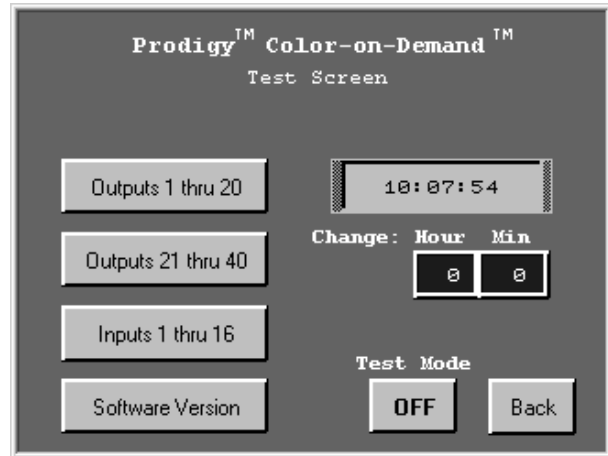


Figure 37 Test Screen

**NOTE:** Before triggering any outputs from the test screens, it is strongly recommended that you do a system purge. Refer to System Cleaning on page 29.

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.

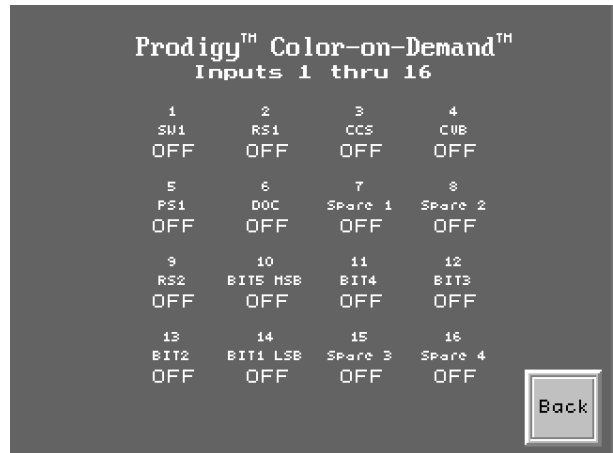


Figure 38 Inputs 1–16 Screen

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
11	BIT 4	
12	BIT 3	
13	BIT 2	
14	BIT 1	Set the color selection bits first, then strobe RS2.
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.

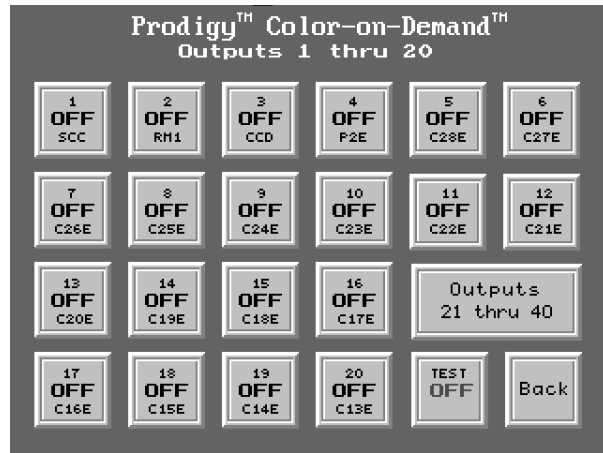


Figure 39 Outputs 1–20 Screen



Figure 40 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	P1E	Purge 1 Solenoid
36–40	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.

**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.

**Suction Line Purge Pulses:** Number of pulses used to purge the suction line.

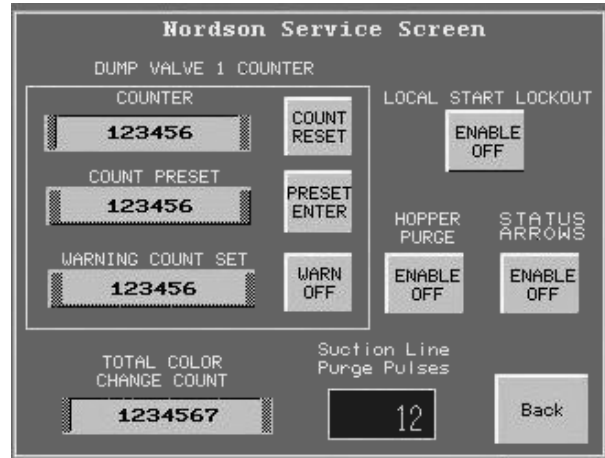


Figure 41 Service Screen

# Repair

## Pump Control Panel Repair



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

Repair of the manifold is limited to

- cleaning or replacing the flow control valves
- replacing the solenoid valves

## Preparation

**NOTE:** Tag all air tubing and wiring harnesses before disconnecting them from the manifold.

1. On the color change controller, go to the Purge screen, touch CLEAN and START to perform a system purge.



**WARNING:** Shut off and lock out system electrical power and relieve system air pressure before performing the following tasks. Failure to relieve air pressure may result in personal injury.

2. Shut off system power and air pressure. Relieve the system air pressure.
3. Tag the pump manifold air tubing, then disconnect the tubing from the manifold.



**CAUTION:** The circuit board is an electrostatic sensitive device (ESD). To prevent damage to the board while handling it, wear a grounding wrist strap connected to the pump panel or other ground.

4. Tag and disconnect the flow control valve and solenoid valve wiring harnesses from the circuit board below the manifold.
5. Remove the pump from the pump panel.
6. Remove the two screws securing the manifold to the mounting bracket. Take the manifold assembly to a clean work surface.

To reduce downtime, keep a spare manifold in stock to install in place of one being repaired. Refer to *Manifold Parts* on page 46 for ordering information.

Field replacement of other parts is not possible, due to the need to calibrate the manifold at the factory using equipment not available in the field.

## Flow Control Valve Cleaning

A dirty air supply can cause the flow control valves to malfunction. Follow these instructions to disassemble and clean the flow control valves.

1. See Figure 42. Remove the nut (1) and coil (2) from the flow control valve.
2. Remove the two long screws (10) to remove the flow control valve from the manifold.



**CAUTION:** The valve parts are very small. Be careful not to lose any parts. Do not mix the springs from one valve with those from another. The valves are individually calibrated with the springs installed.

3. Remove the two short screws (3), then remove the valve stem (4) from the valve body (7).
4. Remove the valve cartridge (6) and spring (5) from the stem.
5. Clean the cartridge seat and seals, and the orifice (9) in the valve body. Use low-pressure, compressed air. Do not use sharp metal tools to clean the cartridge or valve body.
6. Install the spring and then the cartridge in the stem, with the plastic seat on the end facing out.
7. Make sure the O-rings furnished with the valve are in place on the bottom of the valve body.
8. Secure the valve body to the manifold with the long screws, making sure the arrow on the valve body points toward the solenoid valves.
9. Install the coil on the stem, with the coil wiring pointing away from the solenoid valves. Secure the coil with the nut.

## Flow Control Valve Replacement

If cleaning the flow control valve does not correct the flow problem, replace the flow control valve.

See Figure 42. Remove the valve by removing the nut (1), coil (2), and long screws (10).

Before installing a new valve, remove the protective cover from the bottom of the valve body (7). Be careful not to lose the O-rings (8) under the cover.

## Solenoid Valve Replacement

See Figure 42. To remove the solenoid valves, remove the two screws (11) in the valve body and lift the solenoid valve (12) off the manifold.

Make sure the gasket furnished with the new solenoid valve are in place before installing it on the manifold.

## Manifold Installation

Refer to *Installation* on page 21 for instructions for installing the manifold and pump into the pump panel.

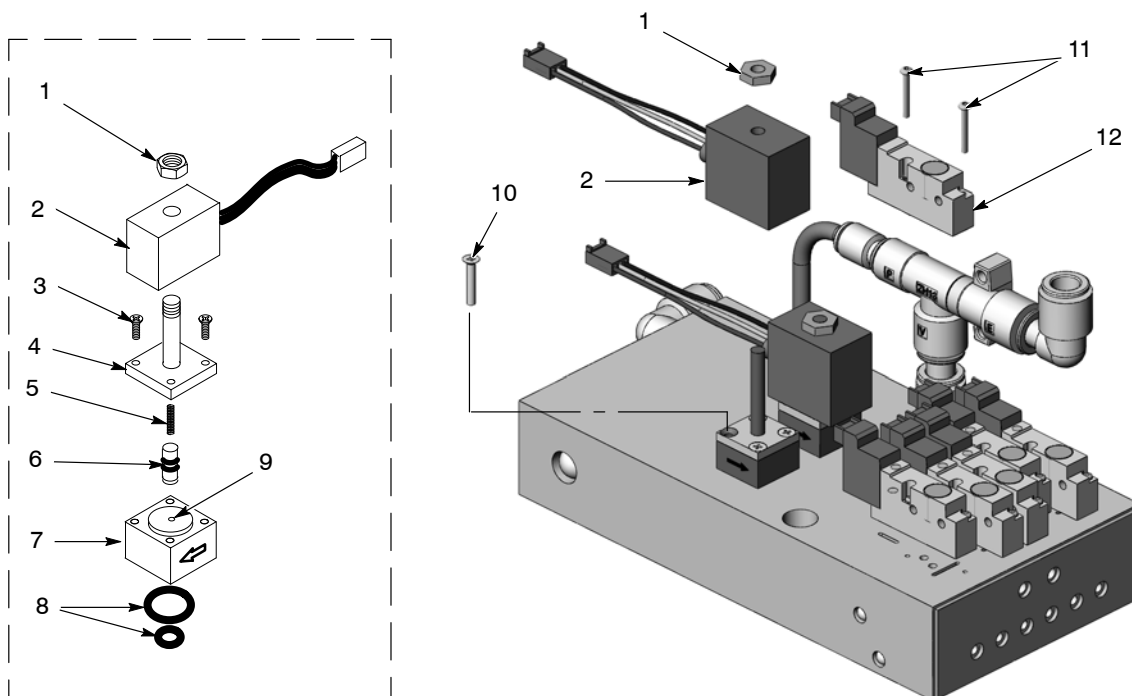


Figure 42 *Manifold Repair*

- |                     |                |                     |
|---------------------|----------------|---------------------|
| 1. Nut              | 5. Spring      | 9. Orifice          |
| 2. Coil             | 6. Cartridge   | 10. Long screws (2) |
| 3. Short screws (2) | 7. Valve body  | 11. Screws (2)      |
| 4. Valve stem       | 8. O-rings (2) | 12. Solenoid valve  |

## Color-on-Demand Controller and Control Panel Repair



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



**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 relieve the system air pressure.

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

### Manifold Repair

The color change manifold consists of three identical valve modules connected together with tubing and mounted on a V-shaped panel.

Repair of the manifold modules consists of disassembly, cleaning, and reassembly. The following kits are available for repair:

- Bladder Kit: 10 valve bladders and filter discs
- O-ring Kit: 12 O-rings for tubing connections

### Repair Procedure

See Figure 43.

1. Disconnect the air tubing from the elbow fittings (1).
2. Unscrew the side lock knobs (8) and pull the powder tubing out of the ports.
3. Unscrew the top and bottom lock knobs.
4. Remove the fasteners securing the module bracket to the panel. Save the fasteners for reuse.
5. Lift the module away from the panel and move it to a clean workbench.
6. Unscrew the nut (5) securing the ground jumper (7) to the bracket stud. Remove the nut, lock washer (6), and flat washer (4).
7. Remove the 16 socket screws (2) securing the cover (17) to the manifold and lift the cover off the manifold.
8. Remove the filter discs, valve bladders, and bladder supports (10, 11, 12) from the manifold.
9. Remove the bladder supports from the valve bladders.
10. Blow out the manifold, cover, and bladder supports. Make sure all traces of powder have been removed.
11. Insert the bladder supports into the new valve bladders, with the hole closest to the end of the support going in first.
12. Insert the new valve bladders into the manifold, with the flat edges on the flanges facing to the center of the manifold.
13. Install the new filter discs on the cover.
14. Install the cover on the manifold and thread the 16 screws in finger tight.
15. Tighten the screws in a crisscross pattern, a turn at a time, until all are tight. Be careful not to overtighten the screws or the manifold threads could be damaged.
16. Secure the ground strap to the module bracket with the flat washer, lock washer, and nut.
17. Install the manifold on the panel.
18. Slide the lock knobs, then the O-rings (9), on the powder tubing.
19. Insert the tubing into the manifold ports until it bottoms out, then screw the lock knobs into the ports until tight.

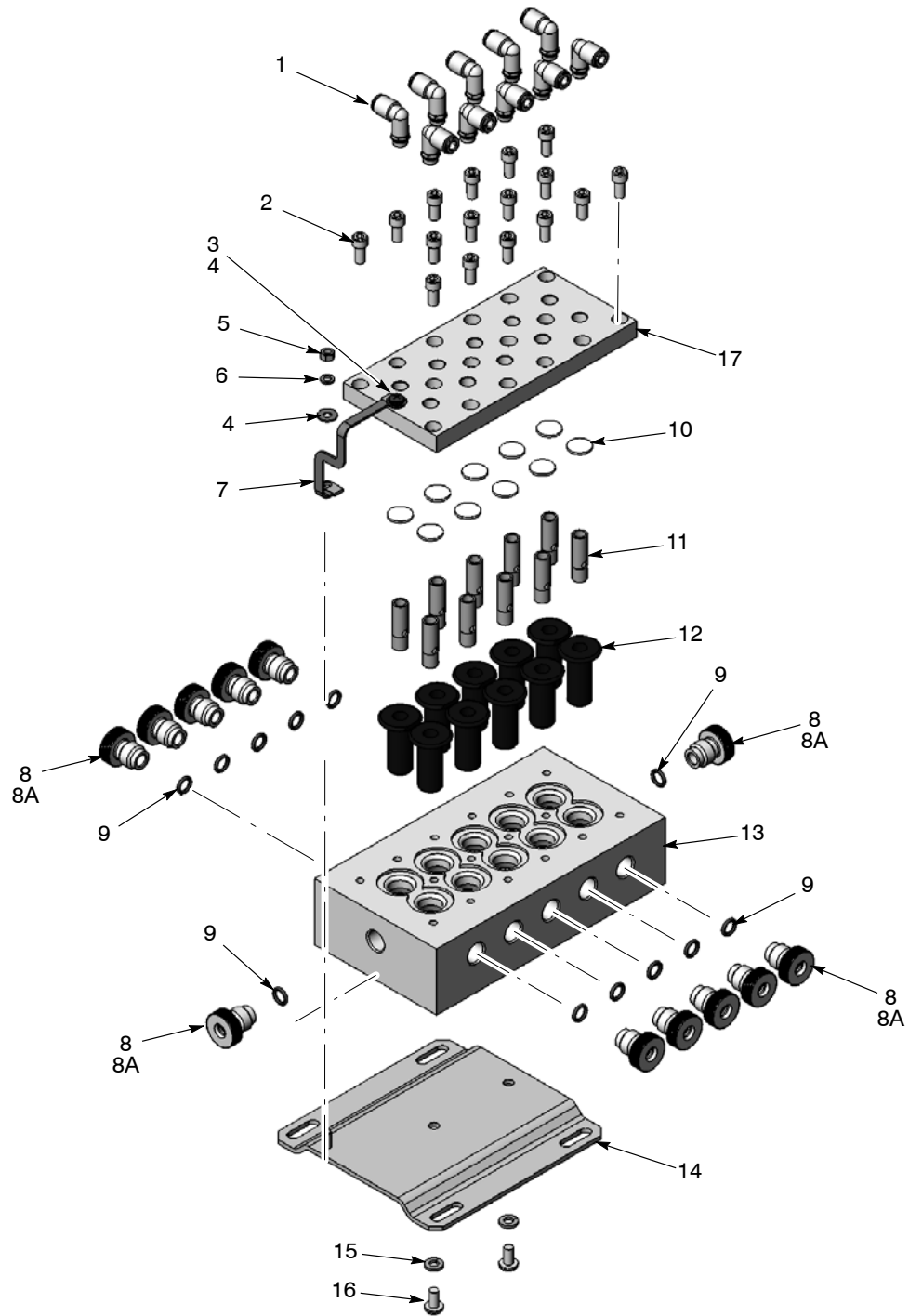


Figure 43 *Manifold Exploded View*

## Dump Valve Repair

See Figure 44. Use the insertion tool shipped with the HDLV pump pinch valve kit to install the dump valve pinch valve. Refer to the HDLV pump manual 1053244 for a detailed pictorial procedure.

1. Remove the 8 socket head screws from the valve caps and remove the caps.
2. Place the valve body in a padded vise.
3. Grasp the large bottom flange of the pinch valve and pull it out of the valve body.
4. Clean the valve body.
5. Install the insertion tool through the valve body. Put the UP end of the new pinch valve in the tool. The UP end of the pinch valve fits into the smaller counterbore in the valve body.
6. Pinch the UP end of the pinch valve through the insertion tool and pull on the other end of the tool until the pinch valve is through the valve body.
7. Install the cap with the 12 mm fitting over the UP end of the pinch valve, and the cap with the 8 mm fitting on the other side, and tighten the screws in a crisscross pattern. Do not overtighten the screws or the valve body threads could be damaged.

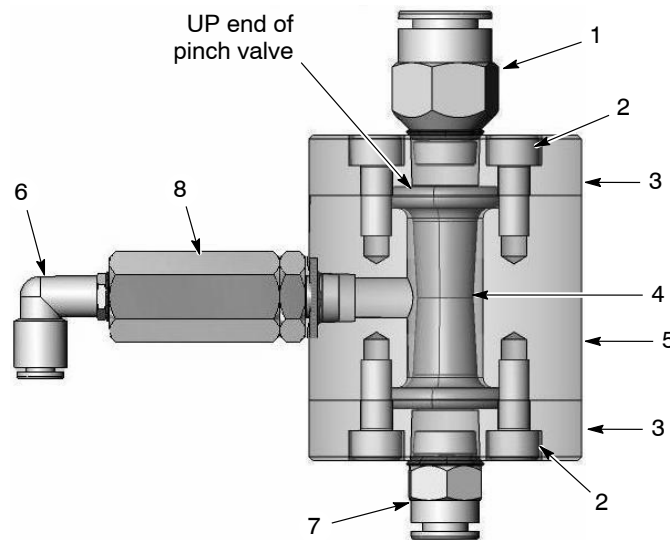


Figure 44 Dump Valve Cross-Section View

# Parts

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

## System Manuals

Manual Part No.	Title/Contents
1102101	Color-on-Demand System: Installation, repair, parts lists, diagrams, and schematics for system, pump control panel, color change controller and panel, manifold, and dump valve.
1081751	Color-on-Demand System Operator Card: Operation and color changing
1077434	Manual Spray Gun: Installation, troubleshooting, repair, parts
1102106	Manual System: Configuration, preset setup, troubleshooting, parts lists for manual gun controller and pump panel.
1081071	Manual Gun System Troubleshooting: Basic gun and pump troubleshooting
1081195	HDLV Pump, Manifold, and Circuit Board: Troubleshooting, repair, and parts

## Single Gun System

Part No.	Description	Quantity	Note
OBSOLETE	SYSTEM, Color-on-Demand, manual, single, Prodigy Generation III		
1101388	• KIT, controller, manual, Prodigy, Generation III	1	
1101491	• KIT, controller interface, Prodigy color change, Generation III	1	
1077058	• GUN, manual, 95 kV, Prodigy, Generation II	1	A
-----	• CONTROLLER, single pump, Prodigy wall mount	1	
1080507	• KIT, ship-with, wall mount system, Prodigy II	1	
1067148	• KIT, ship-with, Color-on-Demand, Prodigy	1	
NOTE A: Part is obsolete.			

## Dual Gun System

Part No.	Description	Quantity	Note
OBSOLETE	SYSTEM, Color-on-Demand, manual, dual, Prodigy Generation III		
1101388	• KIT, controller, manual, Prodigy, Generation III	2	
1101491	• KIT, controller interface, Prodigy color change, Generation III	2	
1077058	• GUN, manual, 95 kV, Prodigy, Generation II	2	A
-----	• CONTROLLER, dual pump, Prodigy wall mount	1	
1080507	• KIT, ship-with, Prodigy wall mount	2	
1067148	• KIT, ship-with, Color-on-Demand, Prodigy	2	
NOTE A: Part is obsolete.			

## Spray Gun Body Repair Kit

Part No.	Description	Quantity	Note
1611771	KIT, repair, gun body, Prodigy, manual	1	A
NOTE A: Kit does not include nozzles.			

## Pump Panel Replacement Parts

See Figure 45.

Item	Part	Description	Quantity	Note
1	303132	VALVE, $\frac{3}{4}$ in. I/O, air operated	AR	A
2	- - - - -	MANIFOLD ASSEMBLY, HDLV pump control	AR	B, E
3	1081194	PUMP ASSEMBLY, HDLV	AR	A
4	1043906	POWER SUPPLY, 24, 5, 12 VDC, 60 W	1	G
5	334805	FILTER, line, RFI, power, 10A	1	
6	334806	SWITCH, round, 2 position, 90 degree	1	
7	288806	CONTACT BLOCK, 2 N.O. contacts	1	
8	1009090	FUSE, time delay, 215 series, 3.15 A, 5 x 20 mm	2	
9	1099534	VALVE, solenoid, 3 port, 24 V, with adapter	AR	A, F
10	1101498	KIT, PCA replacement, Prodigy pump control	1	A, C
11	1062366	FILTER, air, $\frac{1}{2}$ in. NPT	1	
11A	1064136	• FILTER ELEMENT, air, 5 micron, AF40	1	
12	901151	VALVE, ball, $\frac{1}{2}$ in. NPT	1	
13	1034396	MUFFLER, exhaust, $\frac{1}{4}$ in. NPT male	AR	A
14	1064135	REGULATOR, manifold, modular style	5	D
15	1065536	GAUGE, air, 0–100 psi, 0–0.7 MPA, 1/8 RPT	5	

NOTE A: Quantities for AR items vary depending on number of guns in system.  
 B: When replacing manifold, perform calibration procedure as described in Manual Gun Controller manual.  
 C: Board is shipped with 4-mm air tubing already installed in pressure transducer fittings. When replacing board, set switch settings as shown on page 24 instead of those shipped with instruction sheet shipped with board. You must also perform calibration procedure as described in Manual Gun Controller manual.  
 D: Regulators must be set to the pressure specified in Figure 3.  
 E: For manifold assembly part numbers refer to manual 1081195.  
 F: If using an old harness with 3 positions, use the supplied adapter. If using a new harness with 2 positions, then the supplied adapter can be discarded.  
 G: Power supply cover kit (1611787) available.  
 AR: As Required



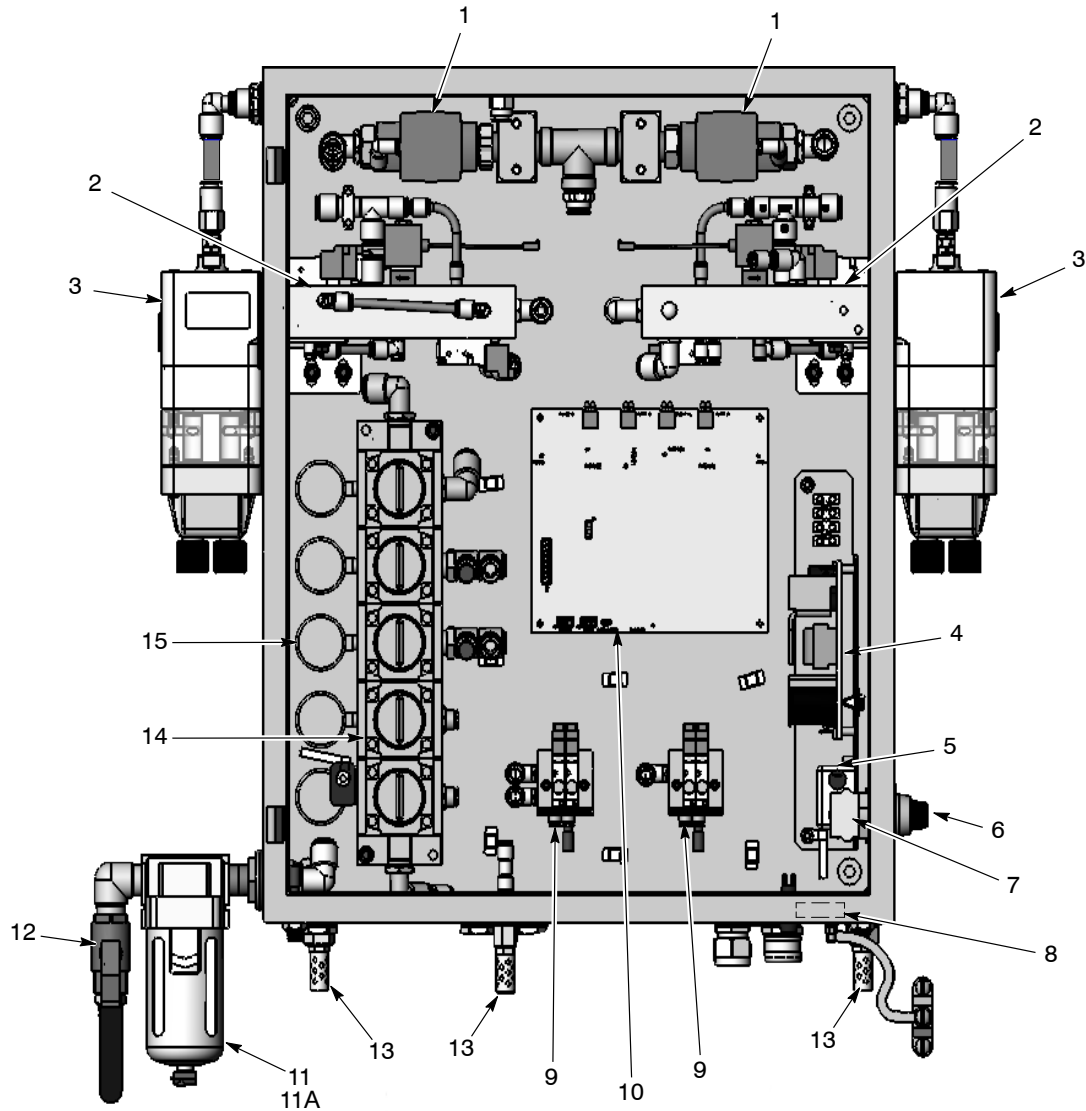


Figure 45 Pump Panel Components (Two-Gun Panel Shown)

## Manifold Air and Powder Tubing Part Numbers

See Figure 46.

Item	Part	Description	Item	Part	Description
A	900740	10 mm Blue polyurethane	F	900740	10 mm Blue polyurethane
B	173101	8 mm Clear polyethylene	G	900740	10 mm Blue polyurethane
C	173101	8 mm Clear polyethylene	H	900742	6 mm Blue polyurethane
D	173101	8 mm Clear polyethylene	1, 8	900617	4 mm Clear polyurethane
E	900740	10 mm Blue polyurethane			

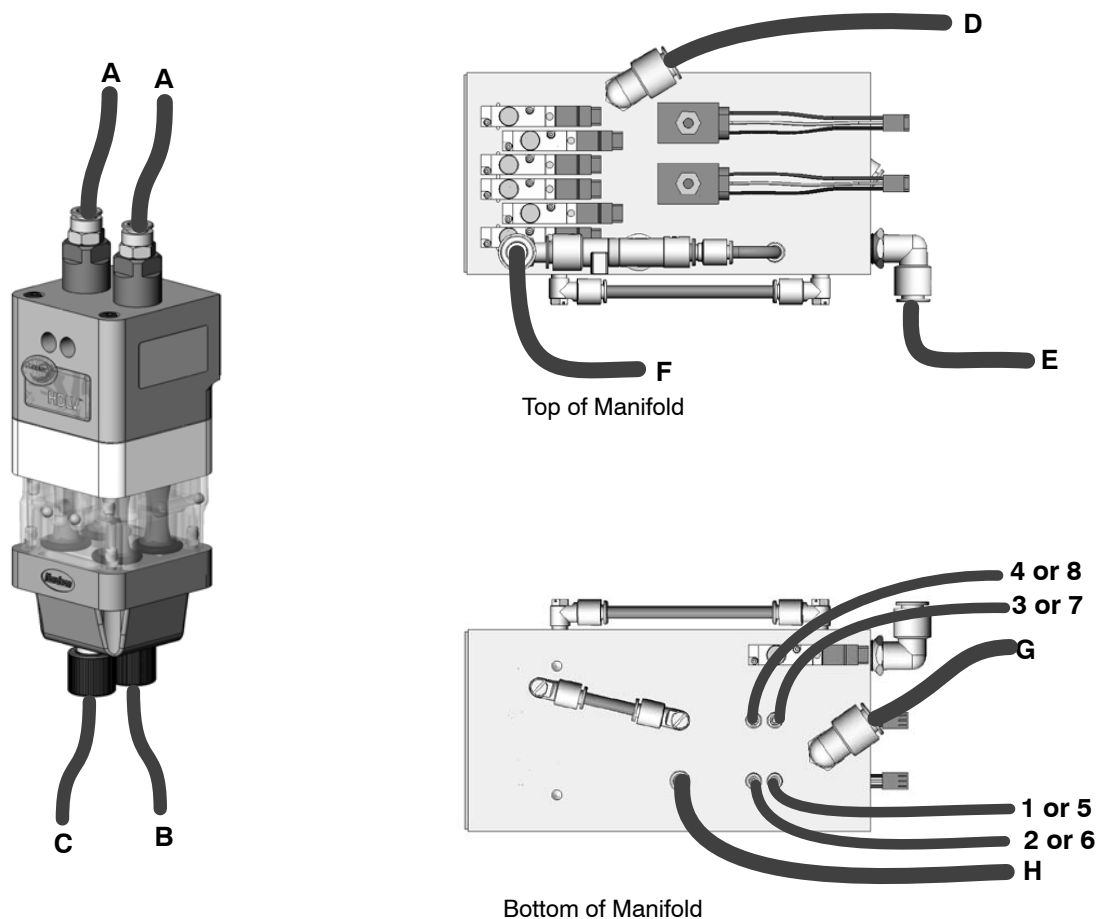


Figure 46 Air and Powder Tubing Part Numbers

## Color-on-Demand Controller and Control Panel Parts

### Controller Kit Parts

See Figure 47.

Item	Part	Description	Quantity	Note
—	1101491	KIT, controller interface, Prodigy color change III	1	
1	1101488	• CONTROLLER interface, Prodigy color change III	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 47 and accompanying parts list for serviceable parts.				

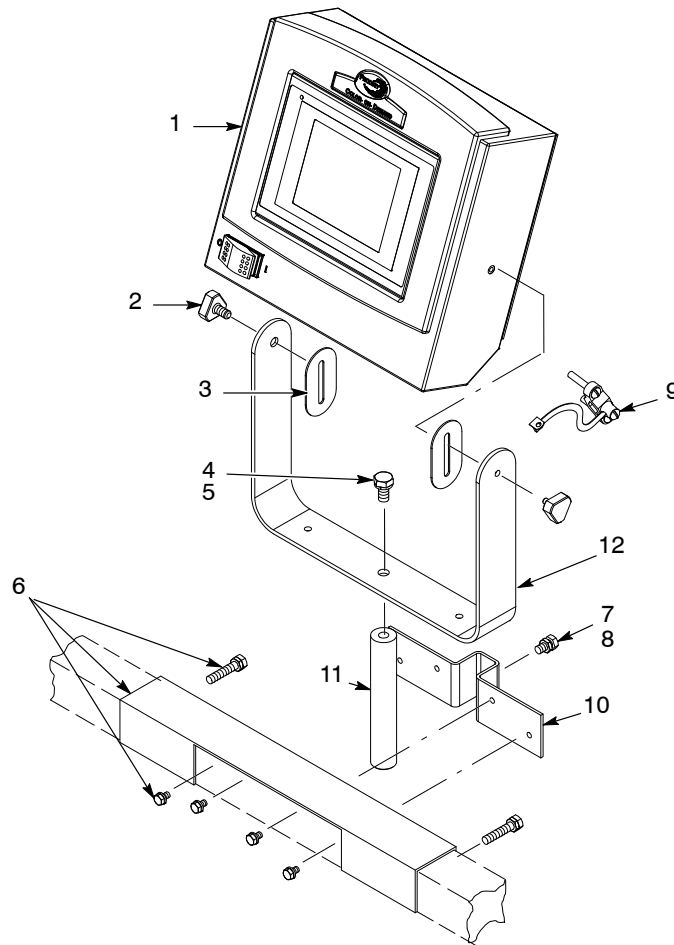


Figure 47 Controller Kit Parts

## Controller Parts

See Figure 48.

Item	Part	Description	Quantity	Note
—	1101488	CONTROLLER, interface, Prodigy color change III	1	
1	1101458	• TERMINAL, display, COD Generation III	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 1101490 to replace the Cimrex 69 display terminal with the Proface AGP3300 display terminal.				

### Retrofit Kit

Item	Part	Description	Quantity	Note
—	1101490	KIT, retrofit, display, COD Generation III	1	
1	1101458	• TERMINAL, display, COD Generation III	1	
11	-----	• PLATE, adapter with studs	1	
12	-----	• GASKET, adapter plate	1	
13	-----	• PLATE, adapter	1	
14	983102	• WASHER, lock, SPT, #6, steel, zinc, 14451-CA	4	
15	984101	• NUT, hex, machine, #6-32, steel, zinc, 14441-CA	4	

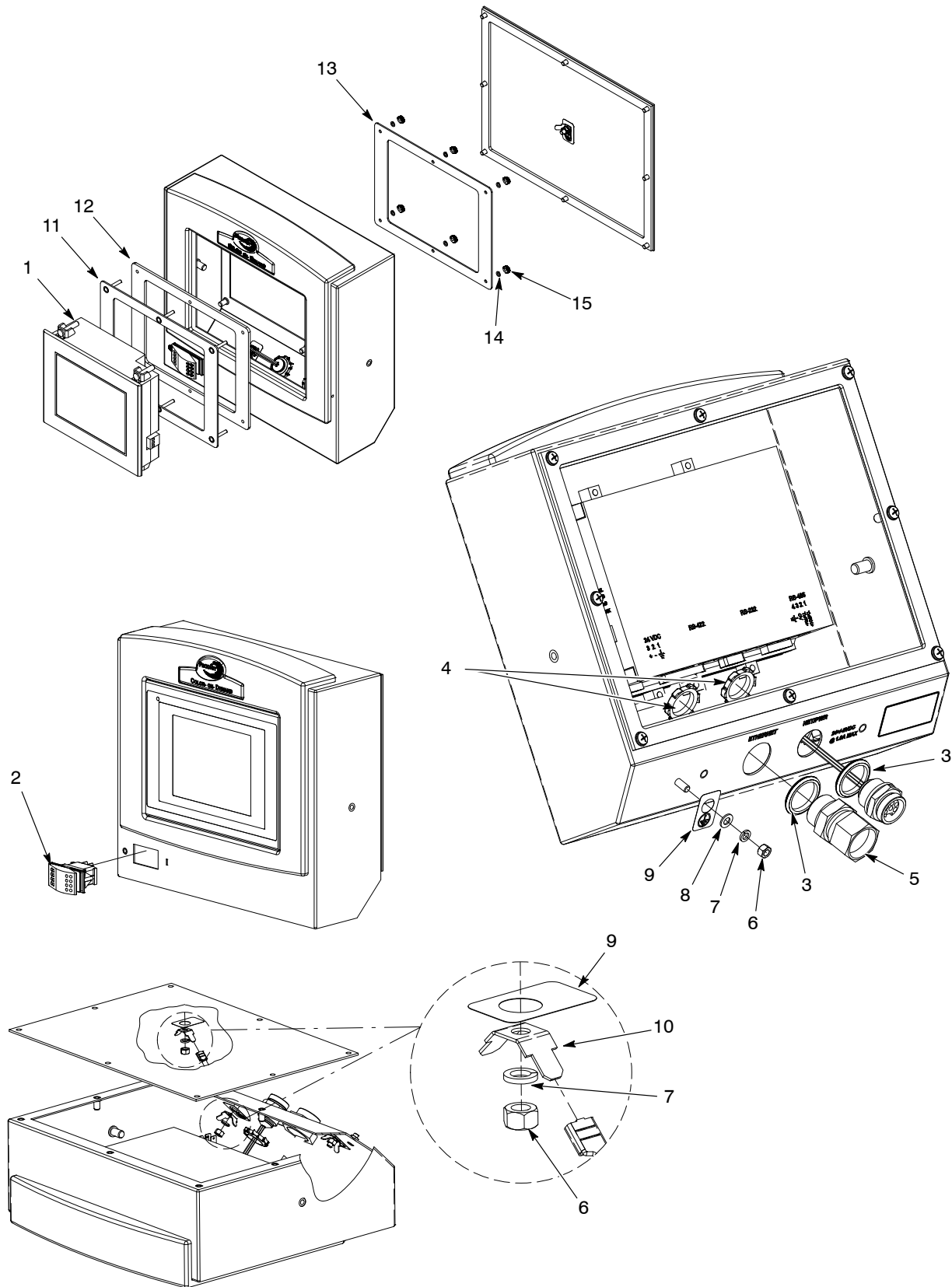


Figure 48 Controller Parts

## Color Change Control Panel Parts

See Figure 49.

Item	Part	Description	Quantity	Note
—	-----	CONTROLLER, Prodigy, single or dual color changer	1	
1	1101489	• CONTROL UNIT, dual pump color changer, PLC	1	A
2	1101459	• 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. H: One required per gun. I: 31 N.O. valves and 1 N.C. valve required per gun. J: Order in increments of one foot. AR: As Required NS: Not Shown				

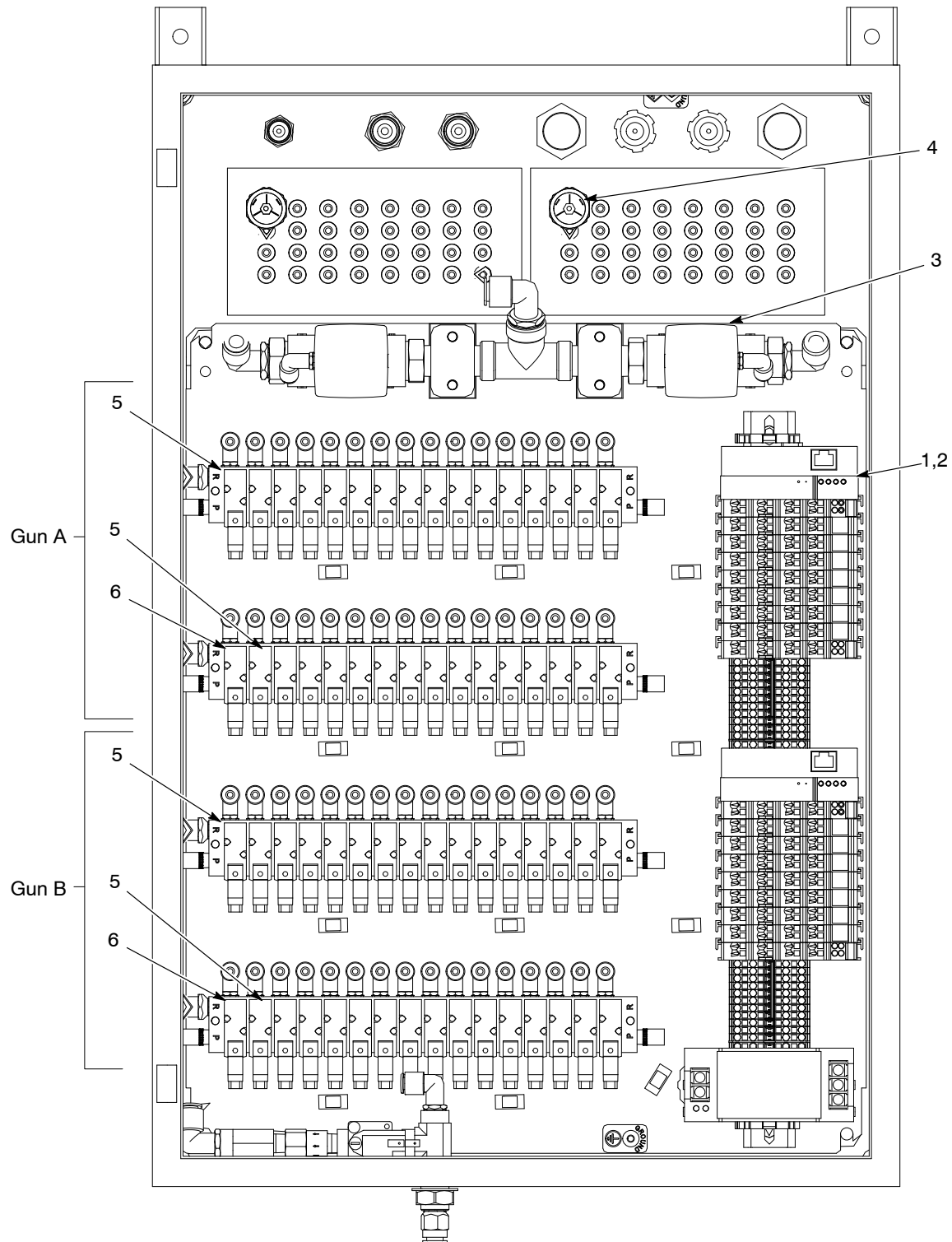


Figure 49 Color Control Panel Parts

## Control Unit (PLC) Parts

See Figure 50.

Item	Part	Description	Quantity	Note
–	1101489	CONTROL UNIT, dual pump color changer, PLC	1	
–	1101459	CONTROL UNIT, single pump color changer, PLC	1	
1	1105978	• CONTROLLER, programmed, COD, Gen III	AR	A, D
2	1064193	• MODULE, 8-channel digital input, Wago, 750-430	AR	B, D
3	1064195	• MODULE, 8-channel digital output, 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
<p>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.</p> <p>AR: As Required            NS: Not Shown</p>				



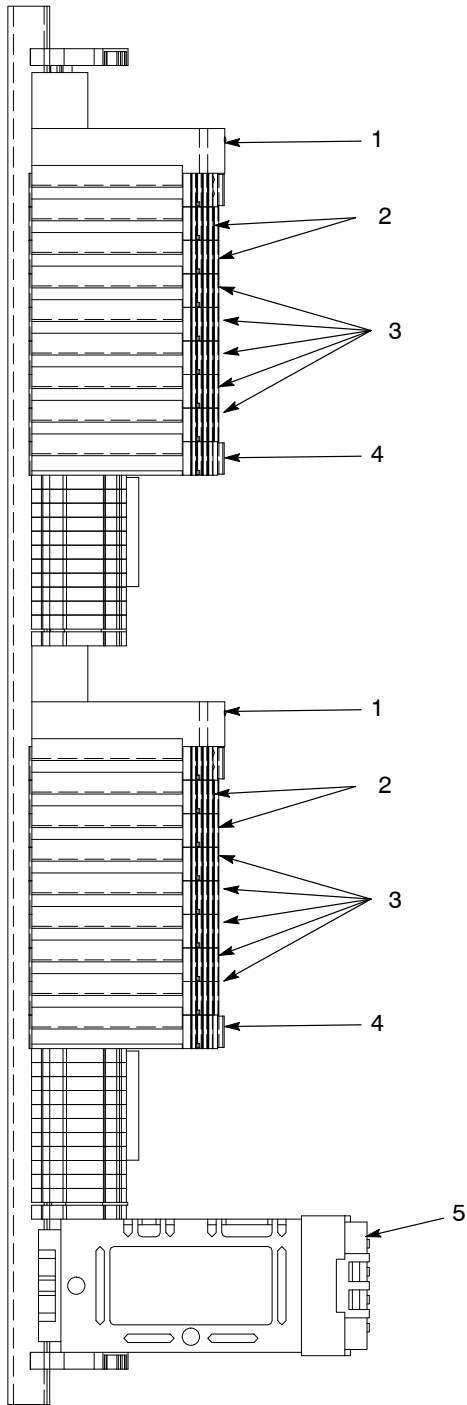


Figure 50 Control Unit (PLC) Parts

## 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
1058224	• CONNECTOR, Ethernet, RJ45-to-IDC, CAT5	1	
1078555	• BOX, surface mount, Ethernet	1	
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
1065711	• CABLE, Ethernet crossover, CAT5E, RJ45, 3 ft	1	
-----	• UNION, reducer, 12 mm tube x 8 mm tube	1	
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			

## Color Change Manifold Parts

See Figure 51.

Item	Part	Description	Quantity	Note
–	1094892	MANIFOLD, module, Color-on-Demand, assembly		
1	972126	• CONNECTOR, male, elbow, 6 mm tube x 1/8 in. unithread	10	
2	981225	• SCREW, socket head, 1/4–20 x 0.625 in.	16	
3	1045837	• SCREW, pan head, M5 x 12, w/lockwasher	1	
4	983021	• WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
5	984702	• NUT, hex, M5, brass	1	
6	983401	• WASHER, lock, split, M5, steel, zinc	1	
7	246458	• JUMPER, ground, 4 in.	1	
8	1047934	• KNOB, lock, powder tube	12	
8A	940117	• O-RING, silicone, .312 x .438 x .063 in.	12	C
9	945115	• O-RING, Viton, 8.00 x 2.00	12	A
10	1080408	• DISC, filter, Prodigy HDLV pump	10	B
11	-----	• SUPPORT, Color-on-Demand bladder	10	
12	-----	• VALVE BLADDER, color changer, 0.12 W, , Color-on-Demand	10	B
13	-----	• MANIFOLD, color changer, Color-on-Demand	1	
14	-----	• BRACKET, Prodigy color changer	1	
15	983409	• WASHER, lock, split, M6, steel, zinc	2	
16	982499	• SCREW, pan head, slotted, M6 x 12, zinc	2	
17	-----	• COVER, manifold, color changer, Color-on-Demand	1	
NOTE A: Available in packages of 12, order 1065983 KIT, Color-on-Demand, O-Ring, 12 pack. B: Available in packages of 10 bladders and 10 filter discs, order 1065982, KIT, Color-on-Demand, bladder, 10 pack. C: Internal O-ring for lock knob.				

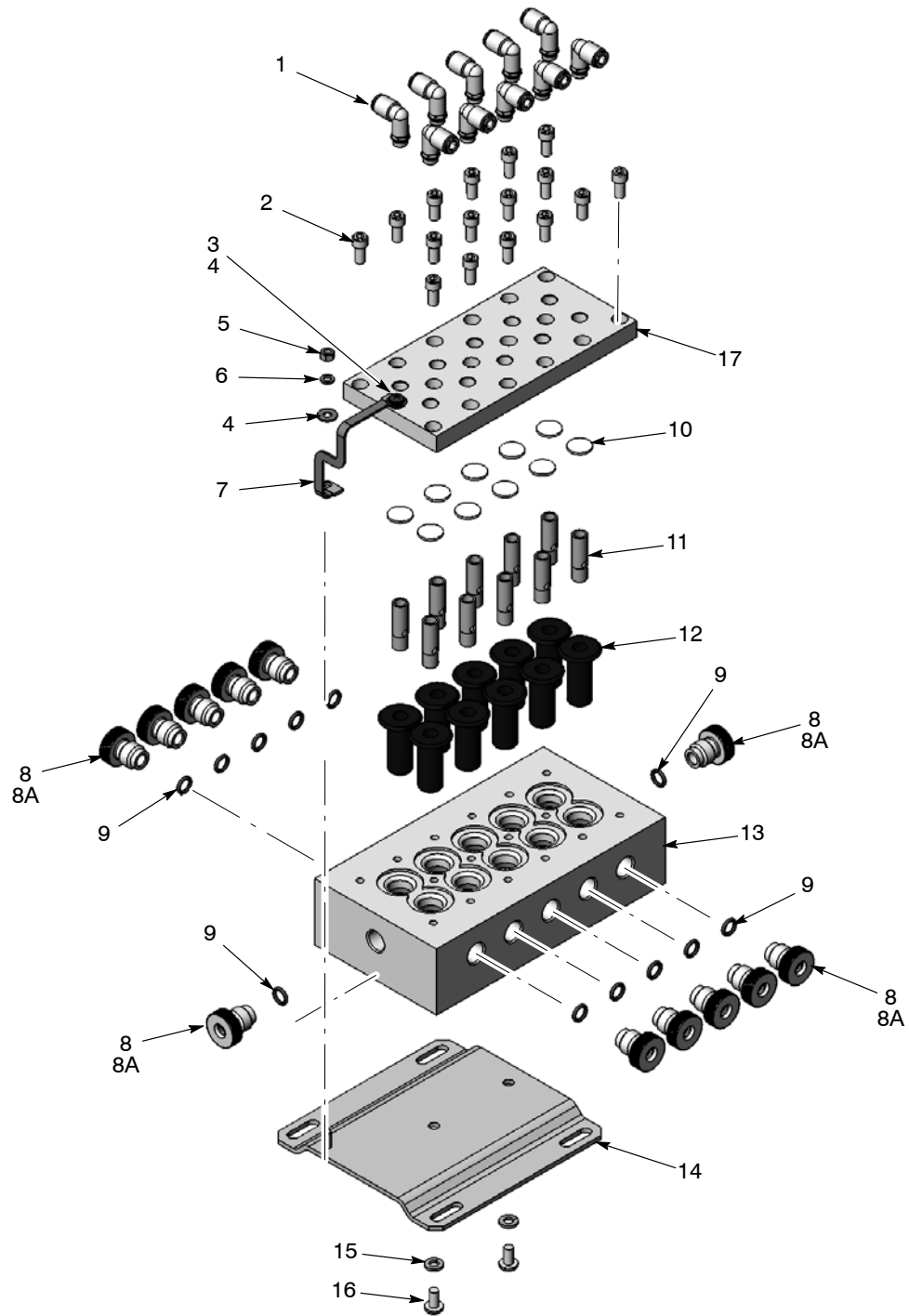


Figure 51 *Color Change Manifold Parts*

## Dump Valve Parts

See Figure 52.

Item	Part	Description	Quantity	Note
–	1074720	VALVE, dump, Color-on-Demand	1	
1	971104	• CONNECTOR, male, 12 mm x 1/4 in. unithread	1	
2	1064886	• SCREW, socket head, M6 x 14, zinc	8	
3	– – – – –	• CAP, dump valve, Color-on-Demand	2	
4	1066626	• VALVE, pinch, HDLV pump	1	A
5	1074028	• BODY, dump valve, Color-on-Demand	1	
6	972126	• CONNECTOR, male, elbow, 6 mm x 1/8 in. unithread	1	
7	971121	• CONNECTOR, male, 8 mm x 1/4 in. unithread	1	
8	1075460	FILTER, inline, 1/8-in. NPT	1	

NOTE A: To replace, order 1066626 KIT, dump valve, pinch valve, 4 pack. Use insertion tool shipped with pump pinch valve kit to install.

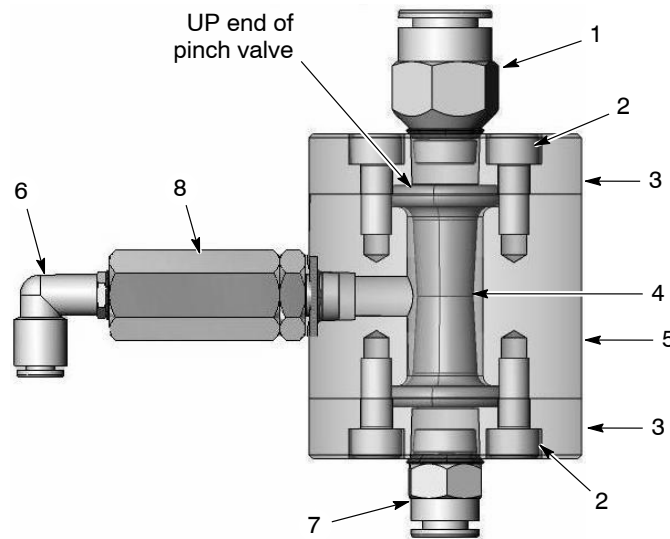
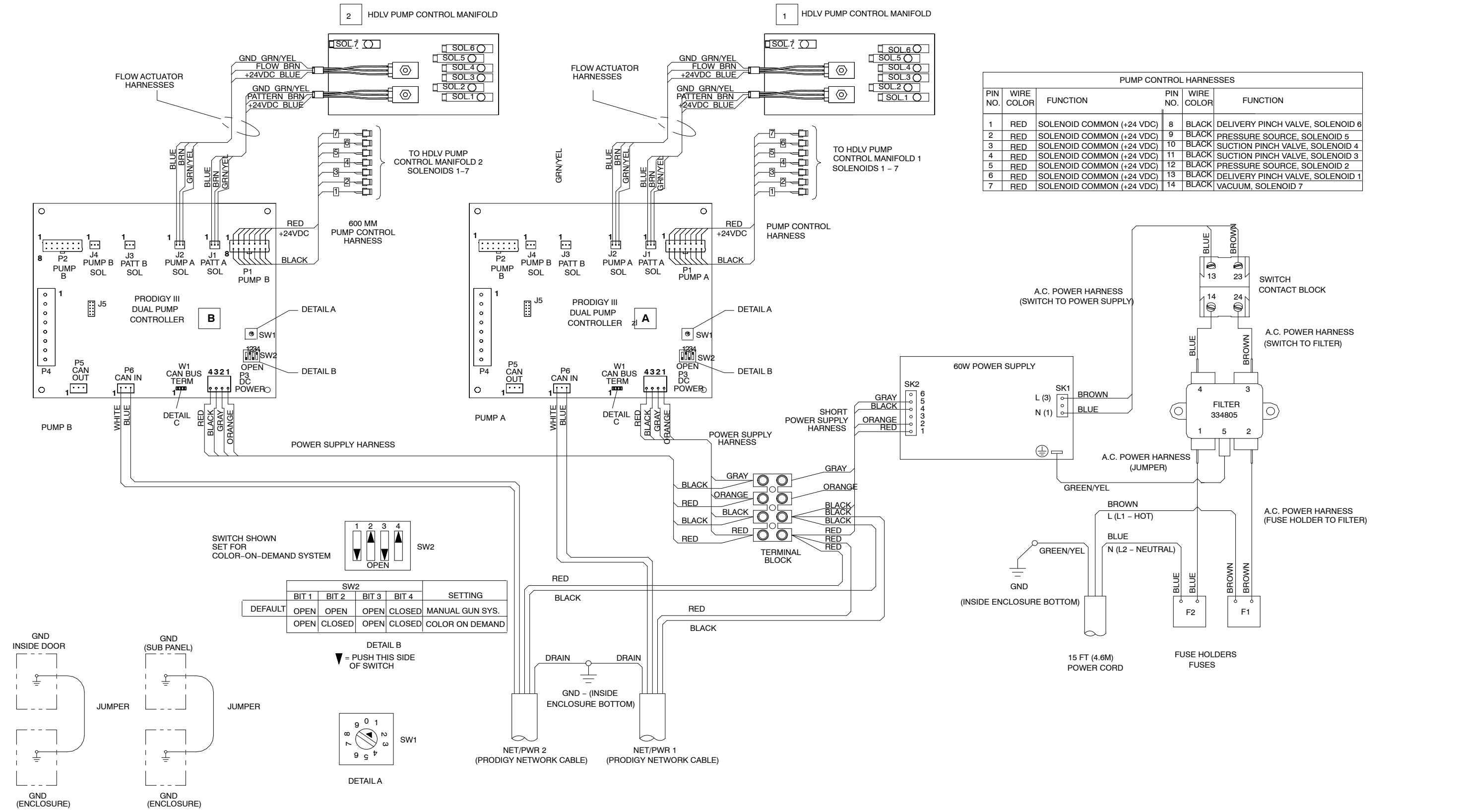


Figure 52 Dump Valve Parts



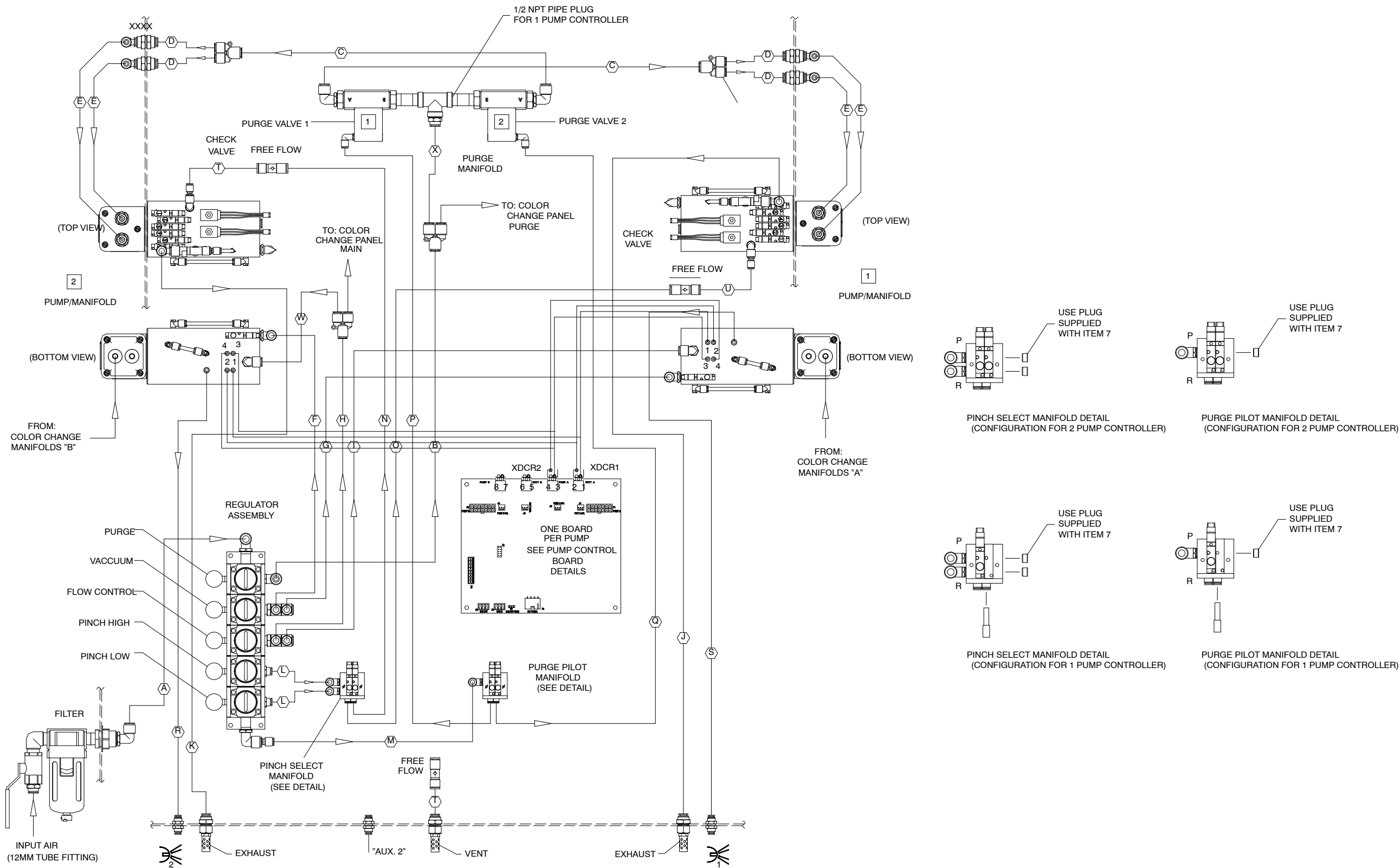


Figure 54 Pump Control Panel Pneumatic Diagram (Sheet 1 of 2)

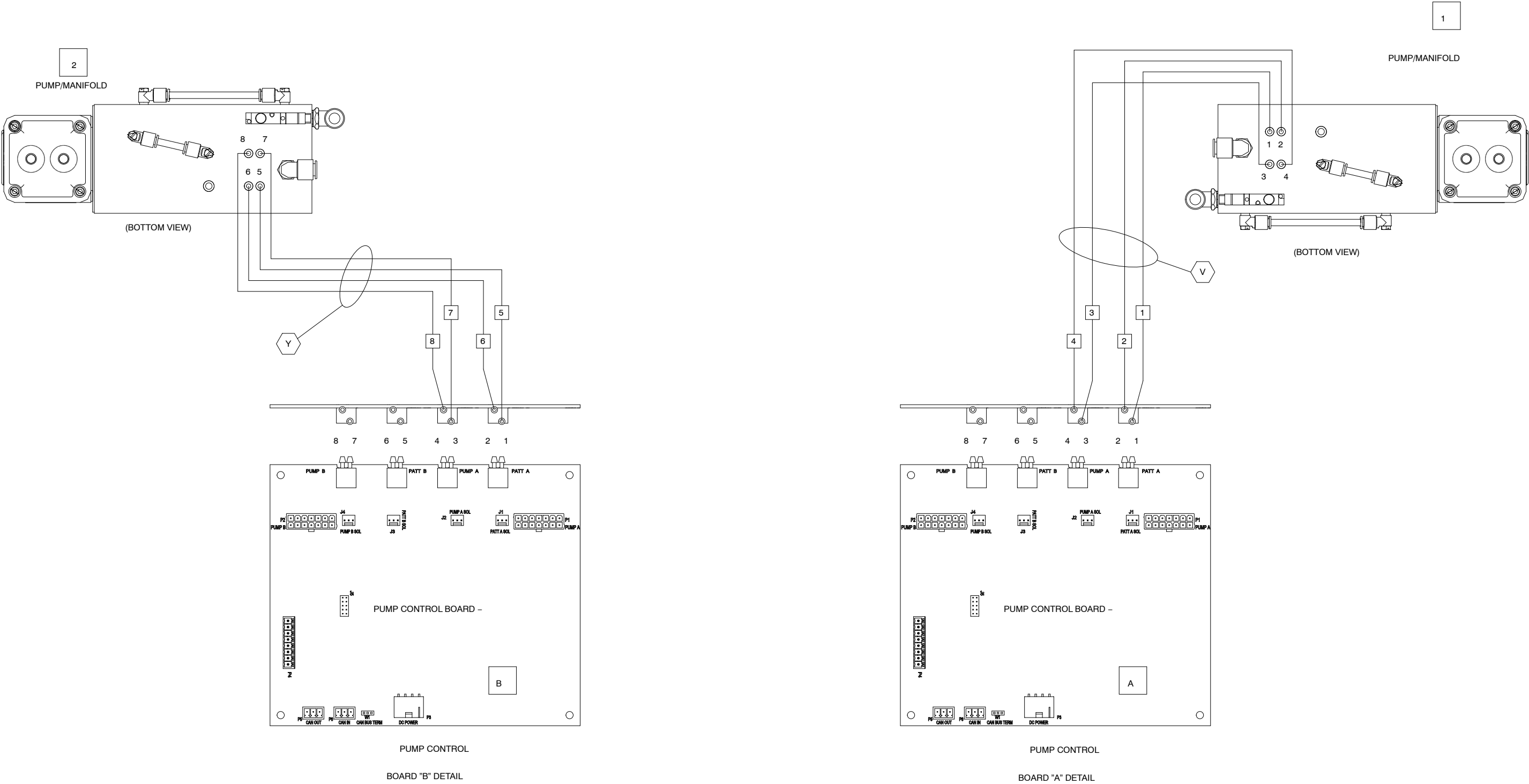


Figure 55 Pump Control Panel Pneumatic Diagram (Sheet 2 of 2)

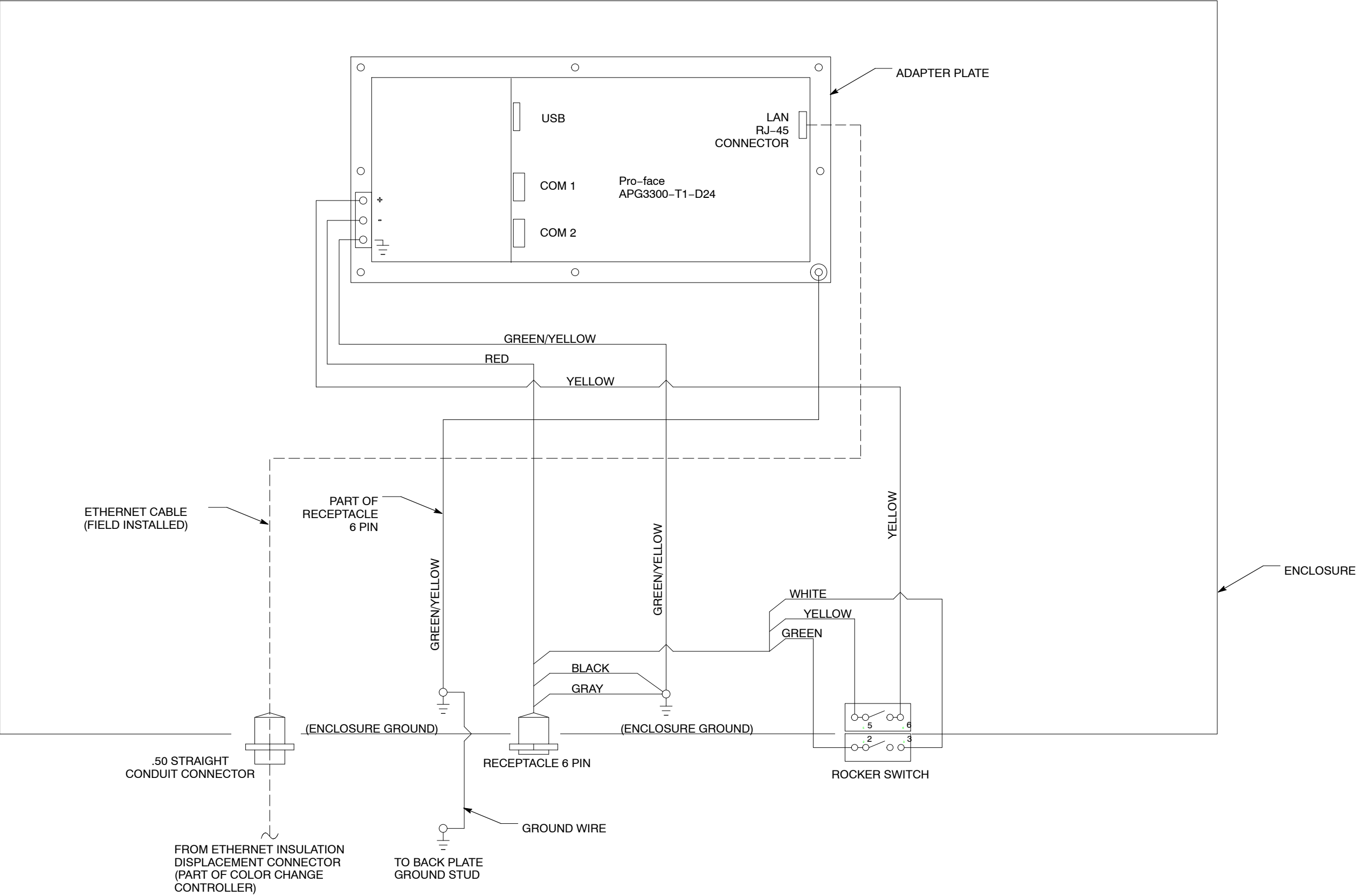


Figure 56 Color-on-Demand Controller Wiring Diagram



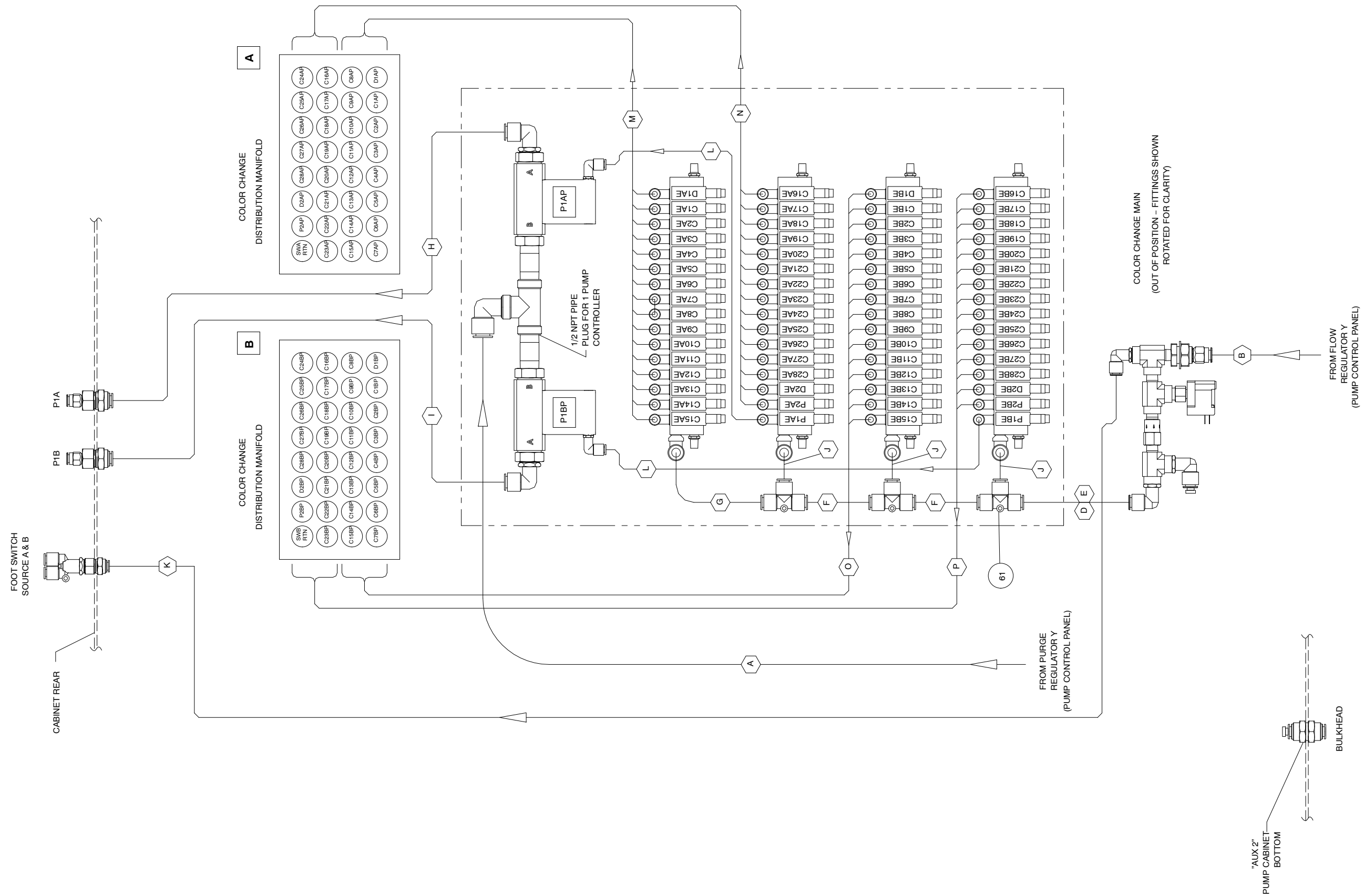


Figure 57 *Color Change Control Panel Internal Pneumatic Diagram (Dual Unit Shown)*

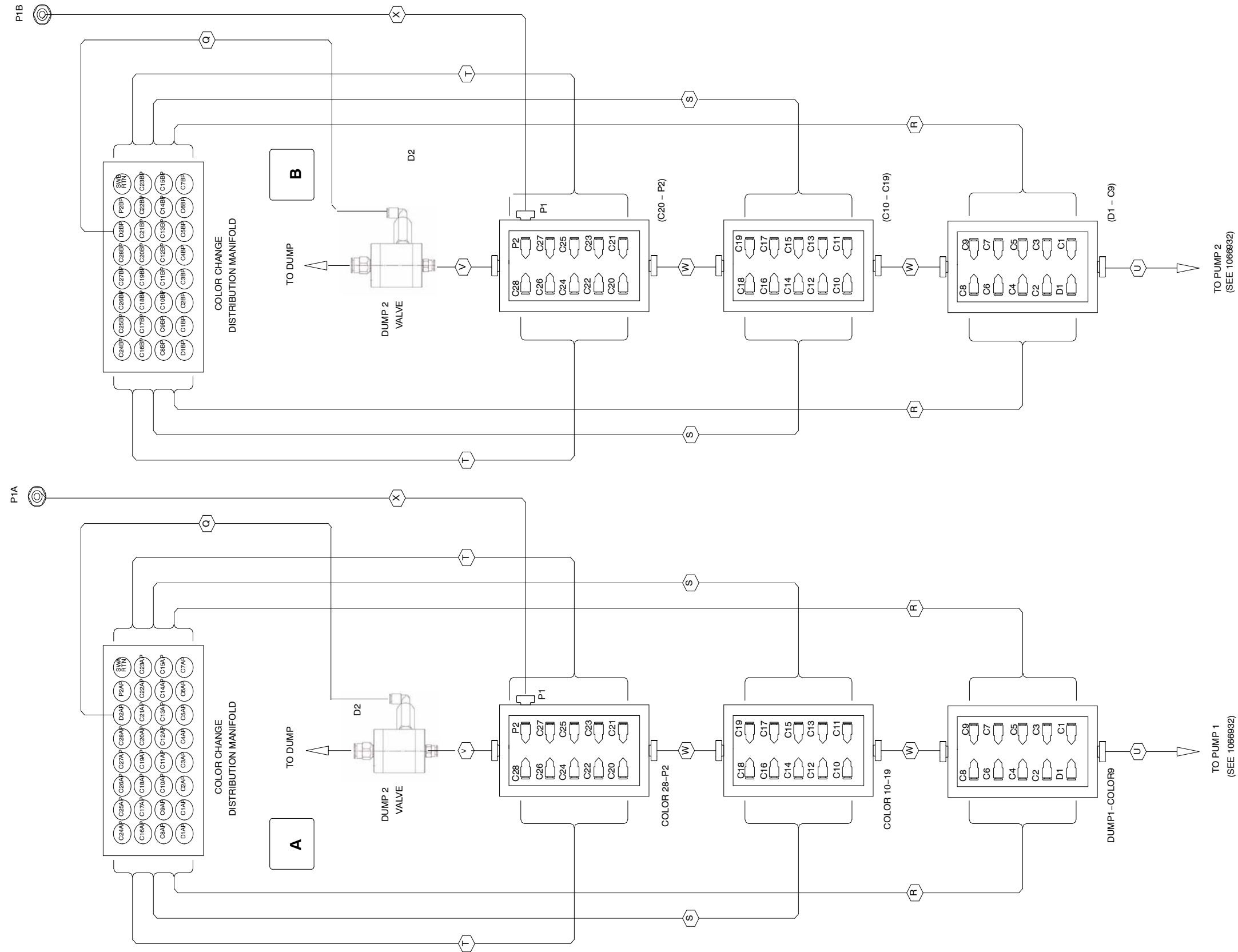


Figure 58 *Color Change Control Panel External Pneumatic Diagram (Dual Unit Shown)*

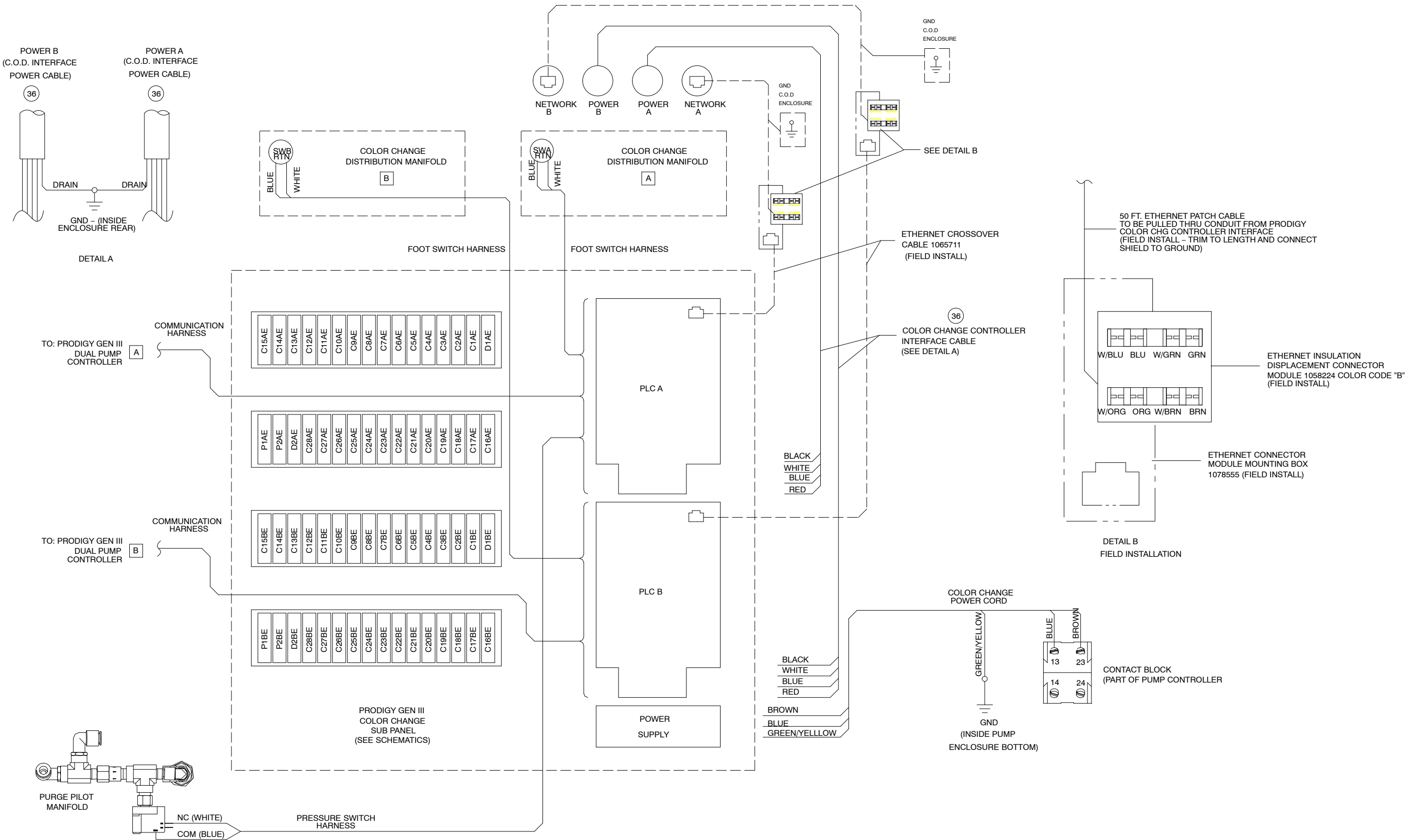


Figure 59 Color Change System Wiring Diagram (Dual Unit, Sheet 1 of 2)

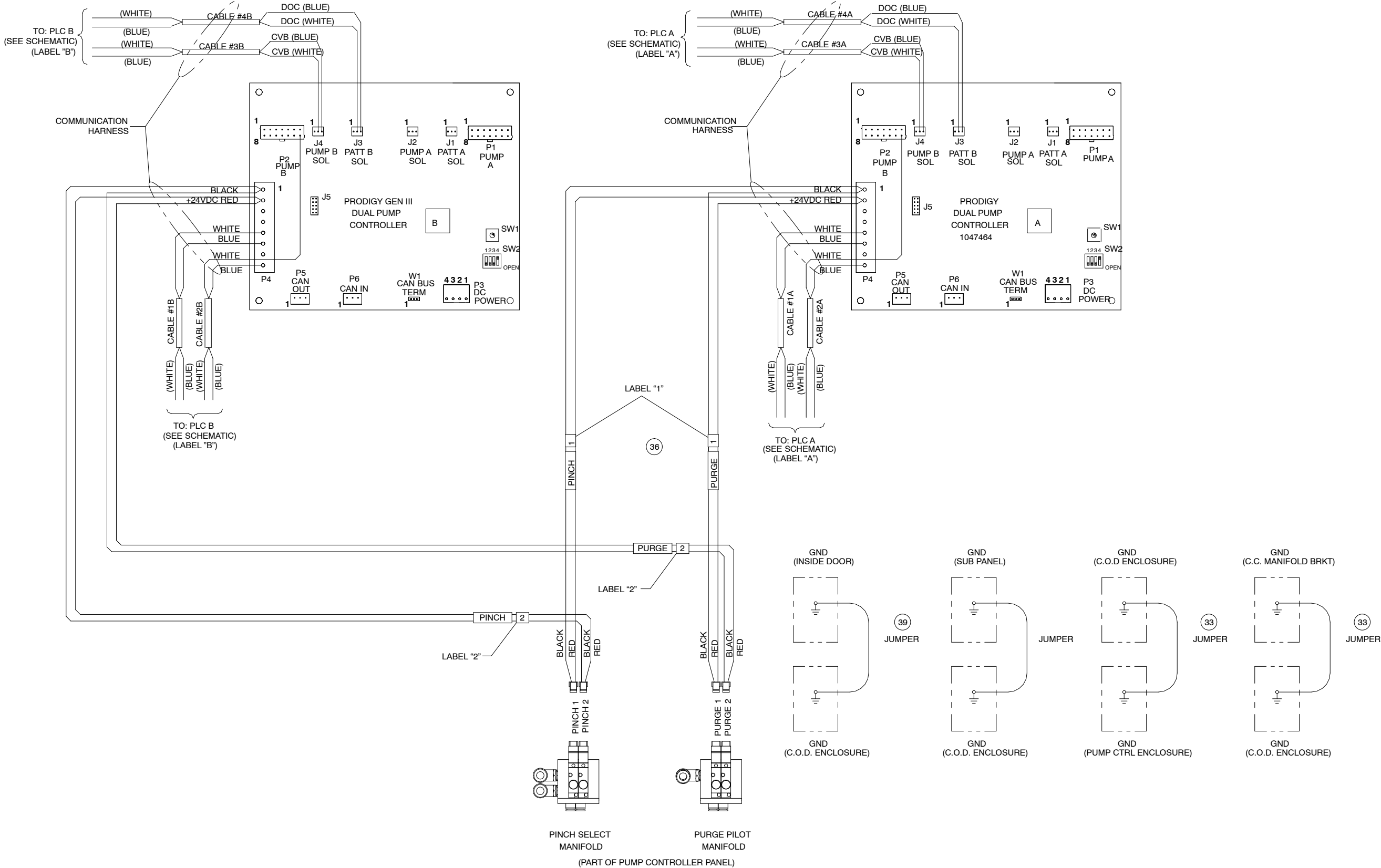


Figure 60 Color Change System Wiring Diagram (Dual Unit, Sheet 2 of 2)

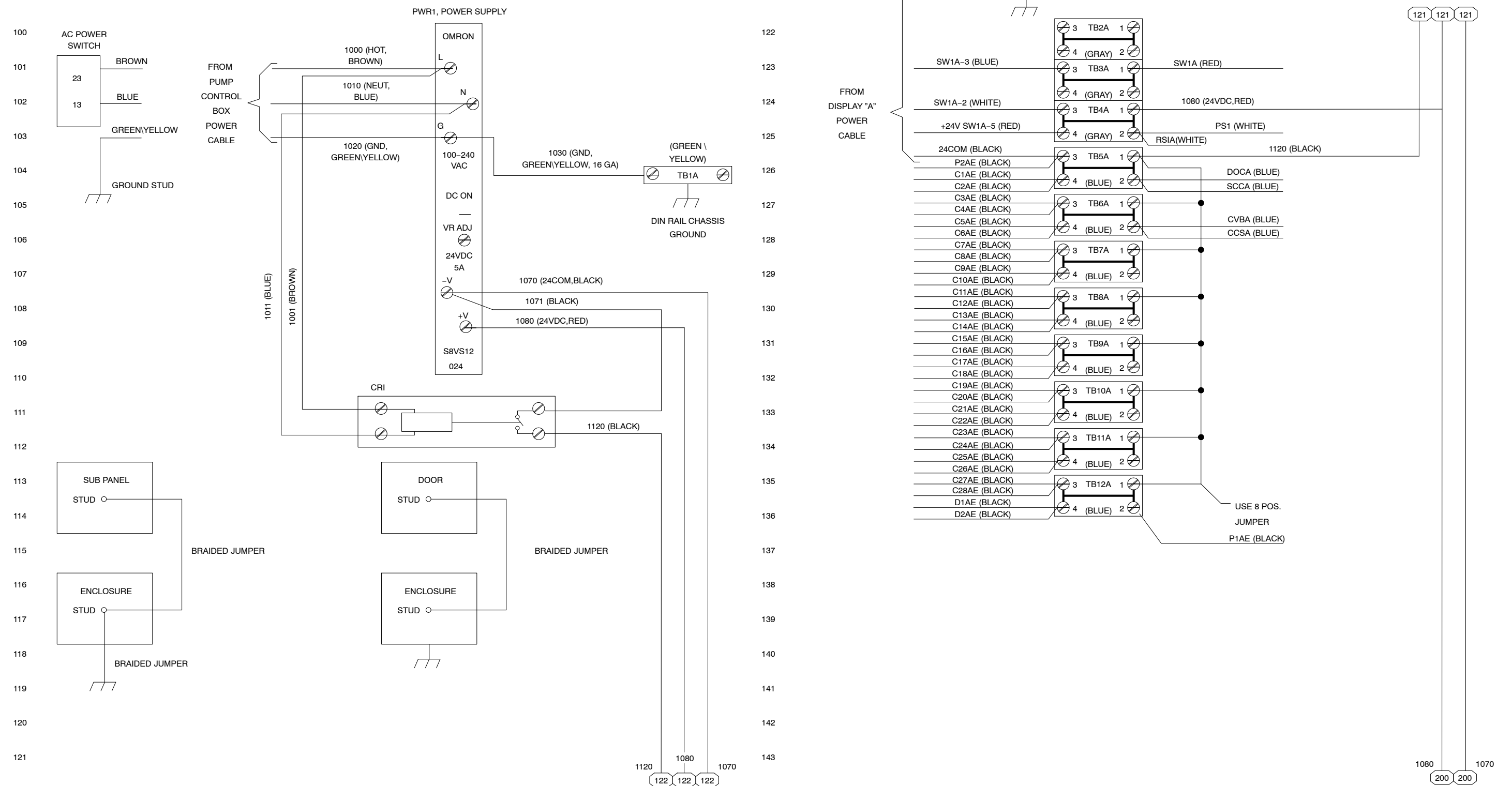


Figure 61 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 1 of 10)

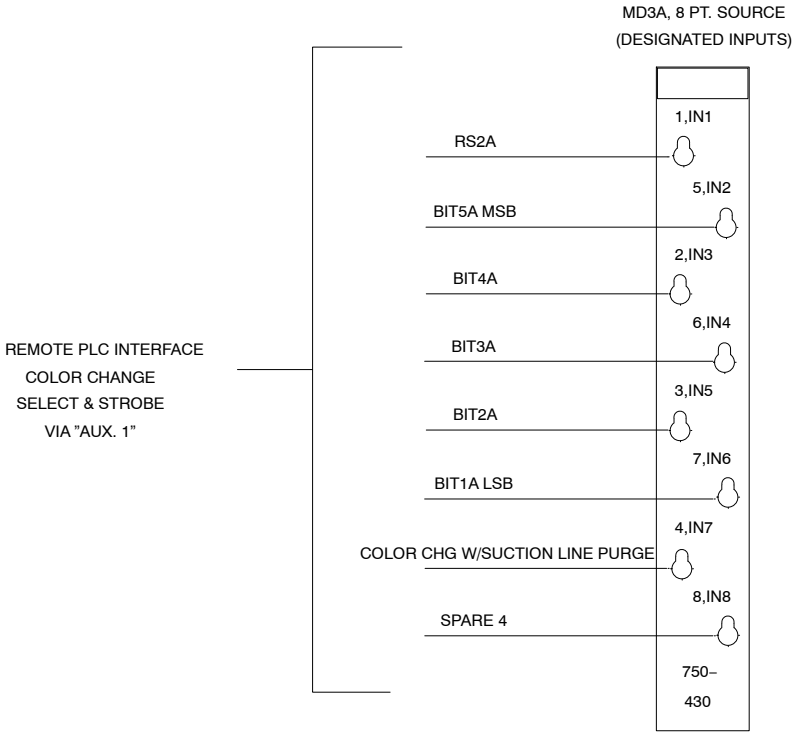
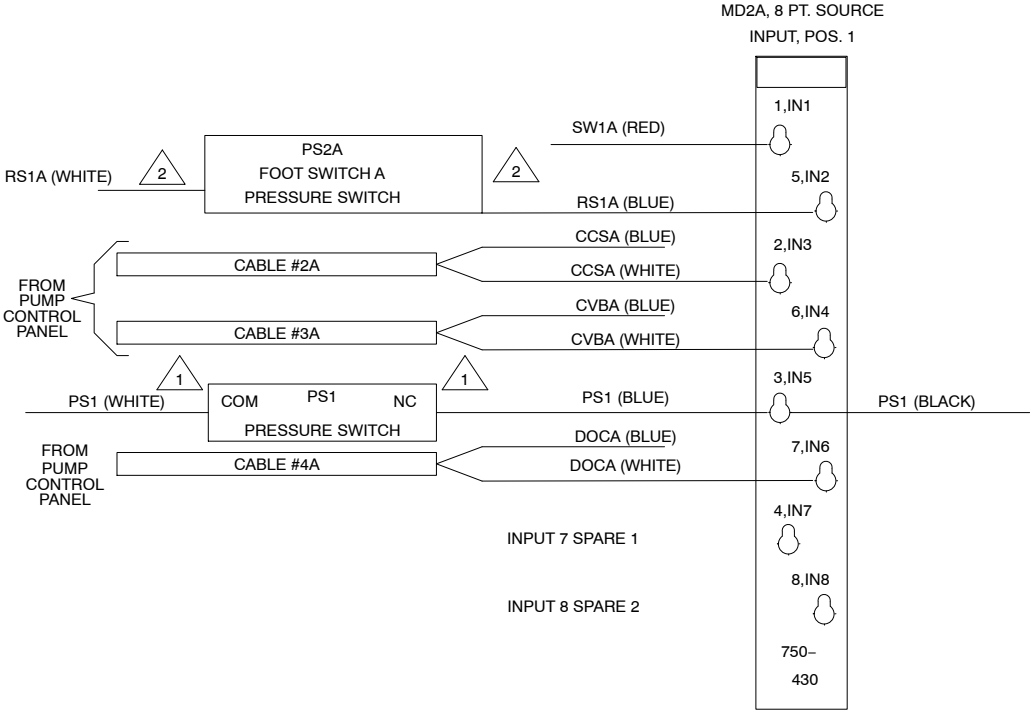
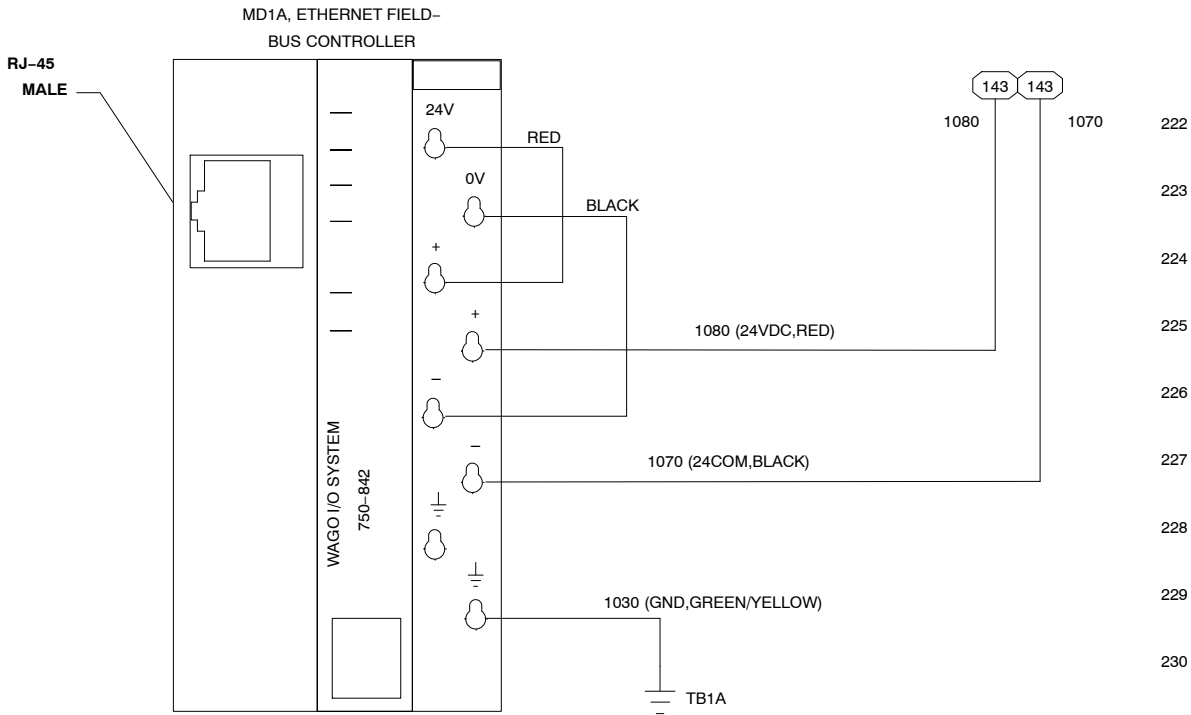


Figure 62 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 2 of 10)

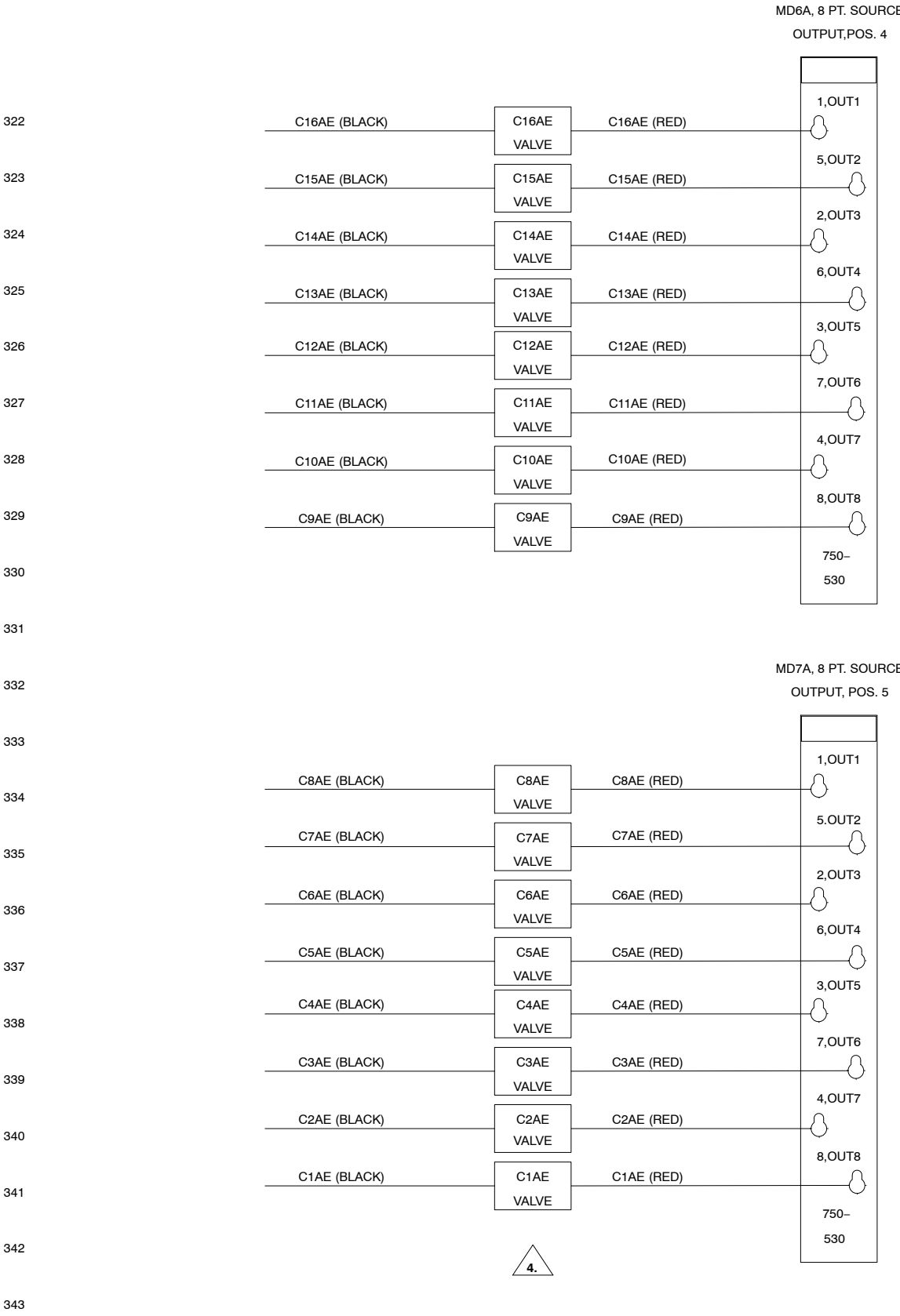
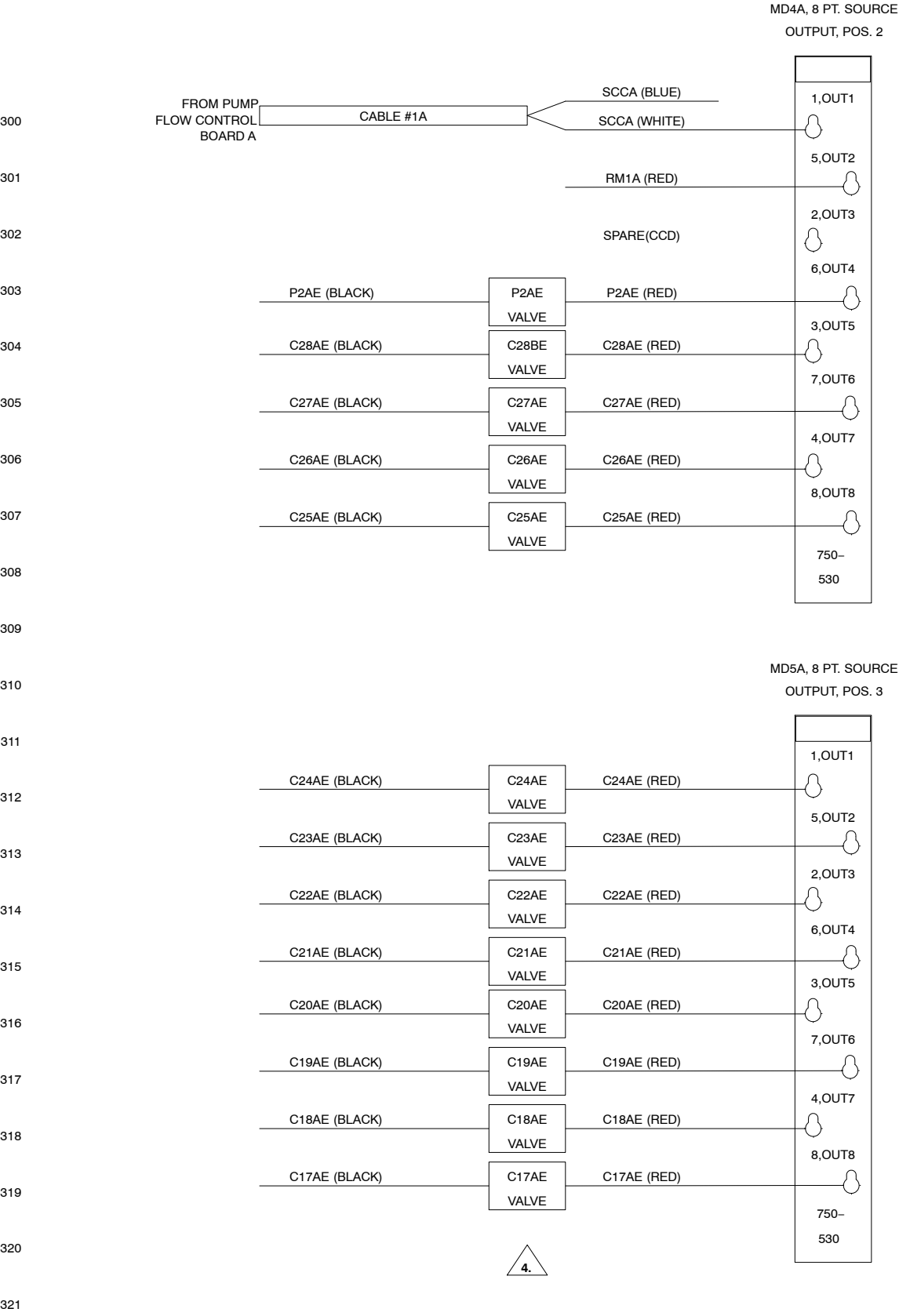


Figure 63 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 3 of 10)

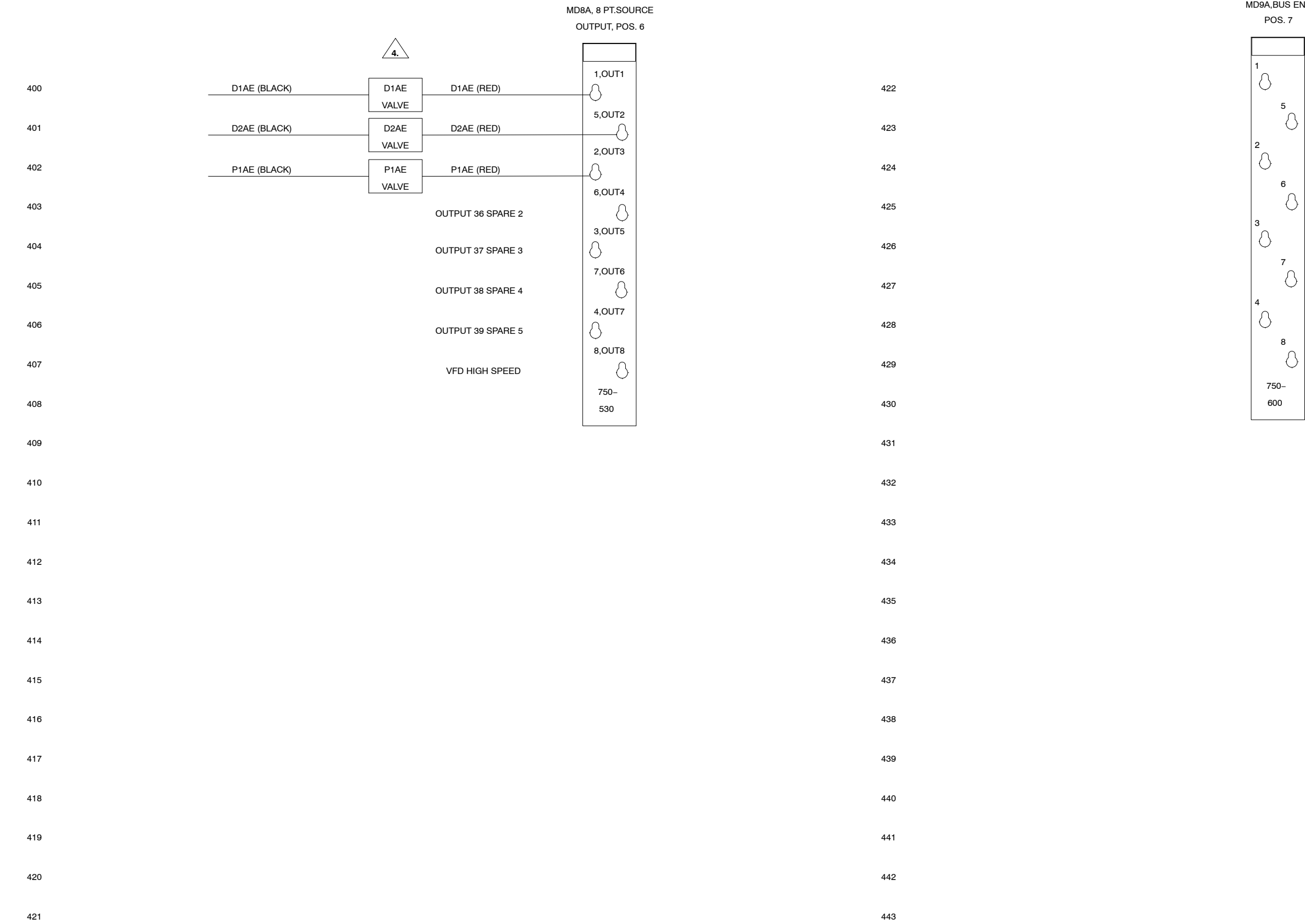


Figure 64 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 4 of 10)



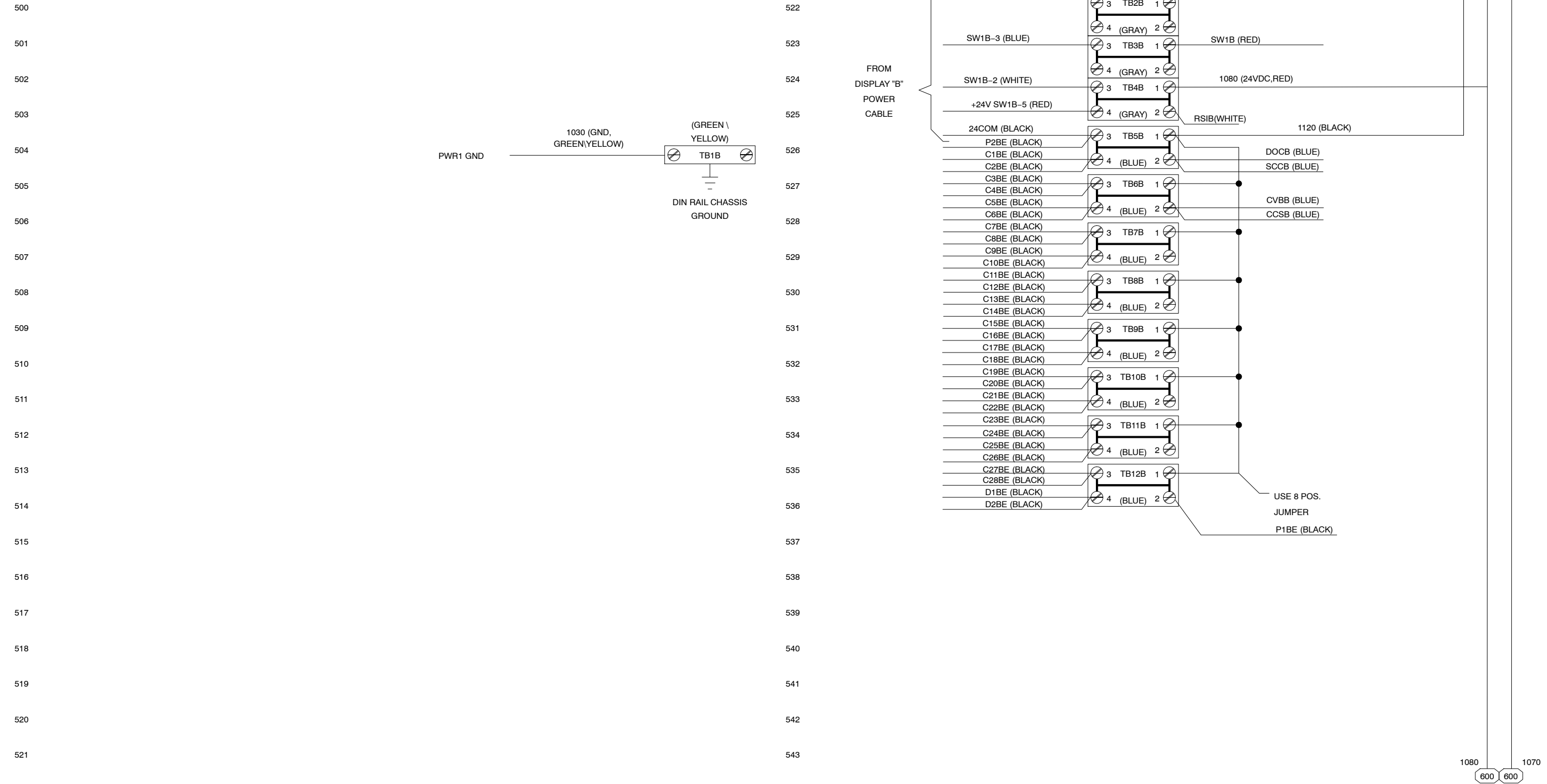


Figure 65 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 5 of 10)

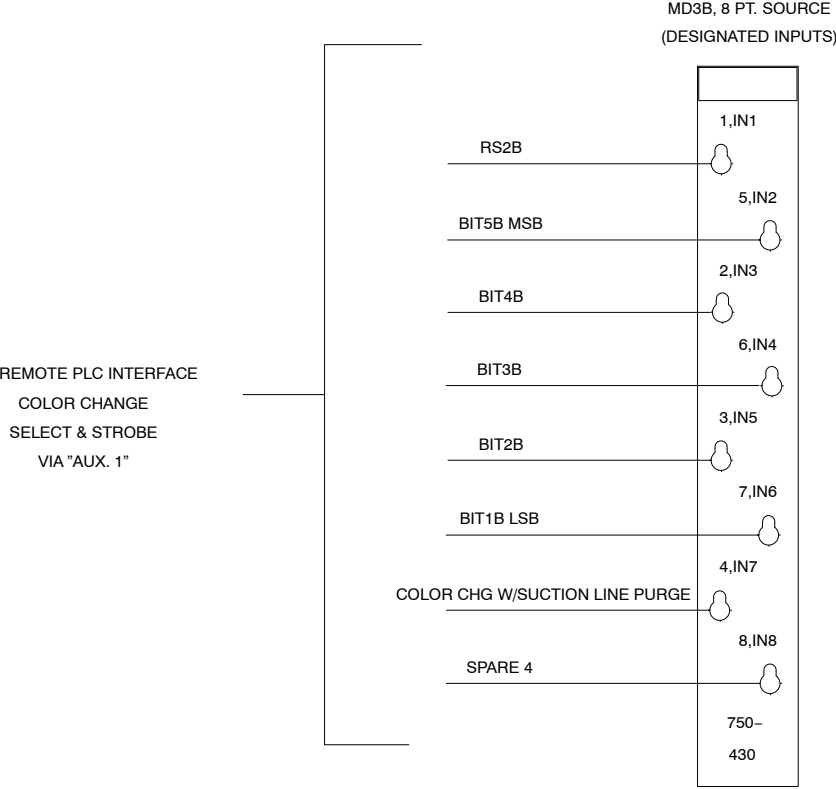
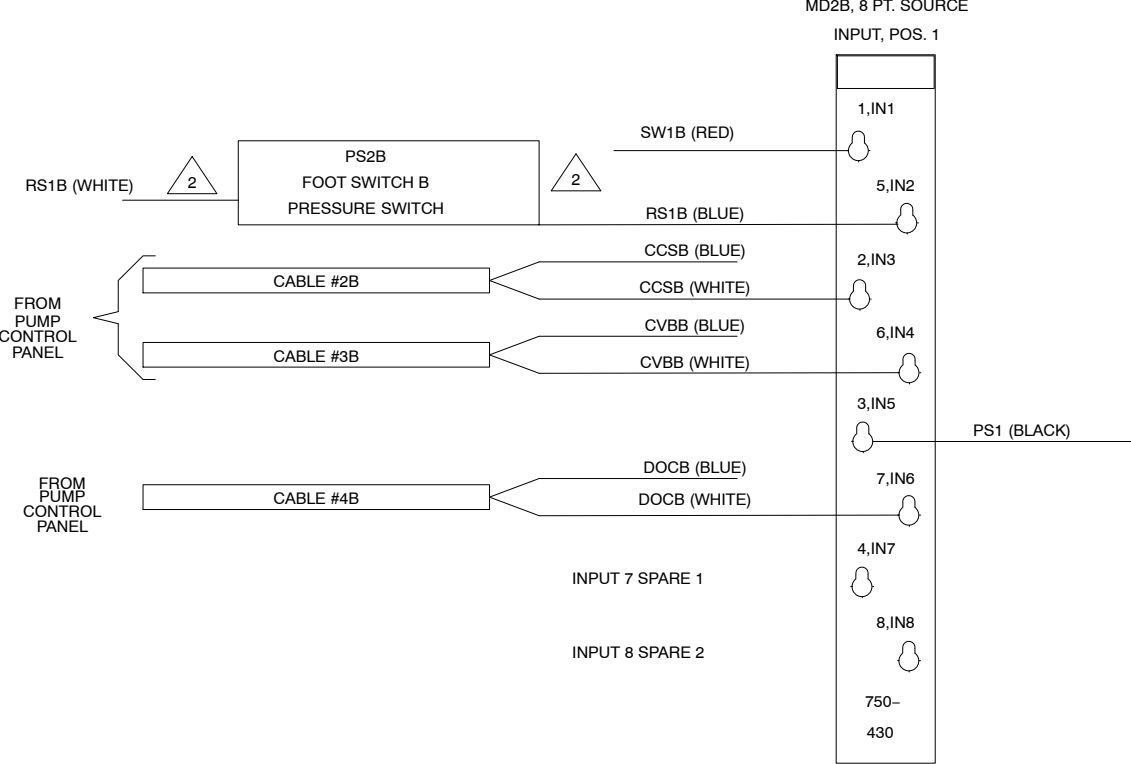
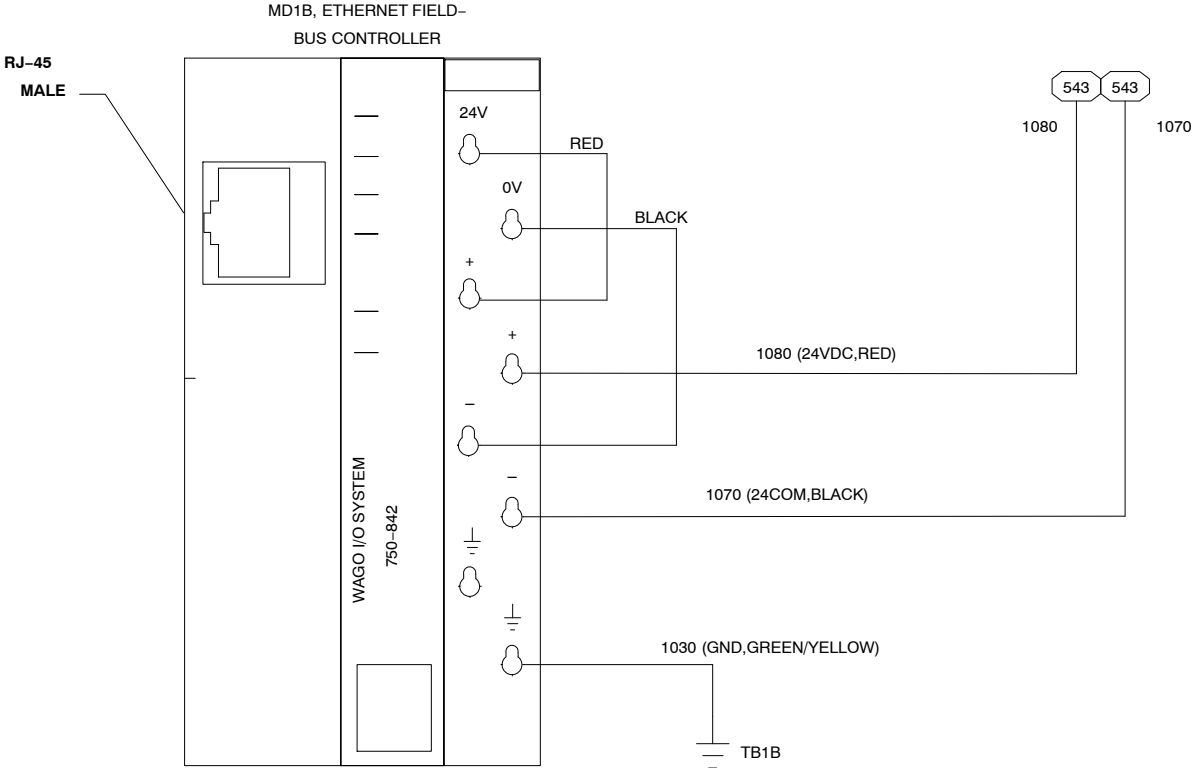


Figure 66 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 6 of 10)

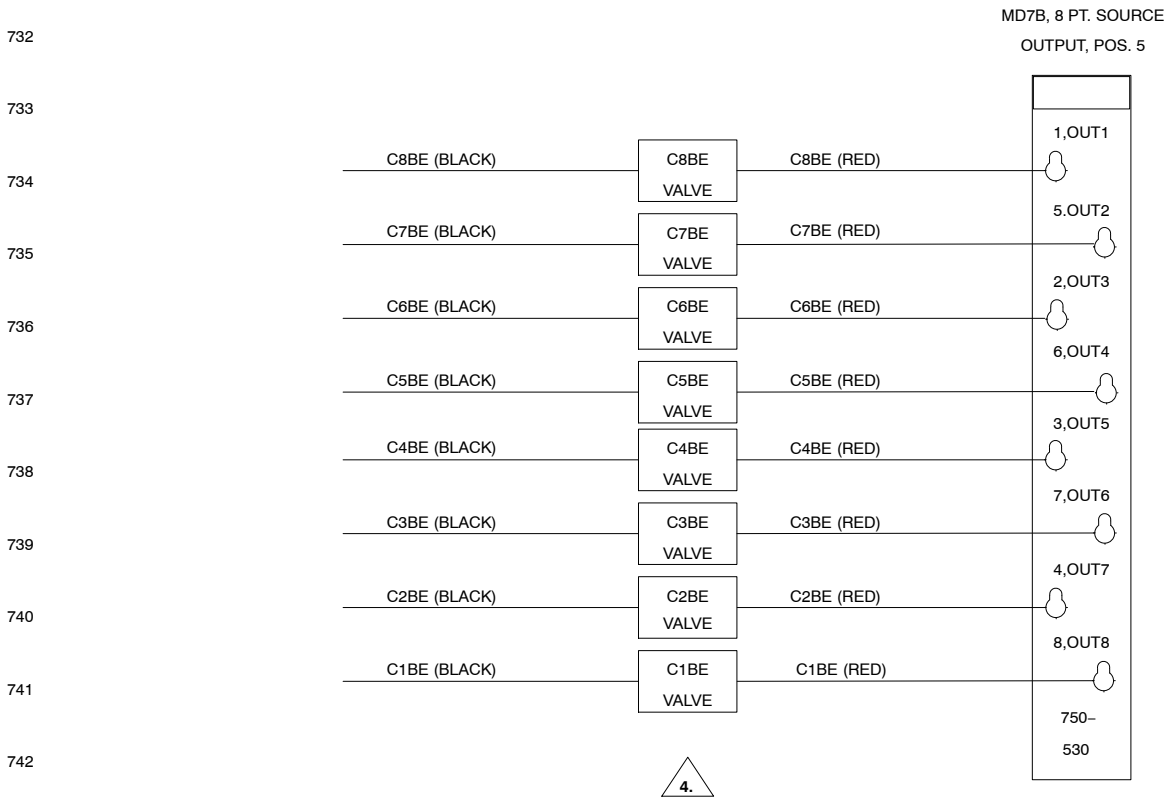
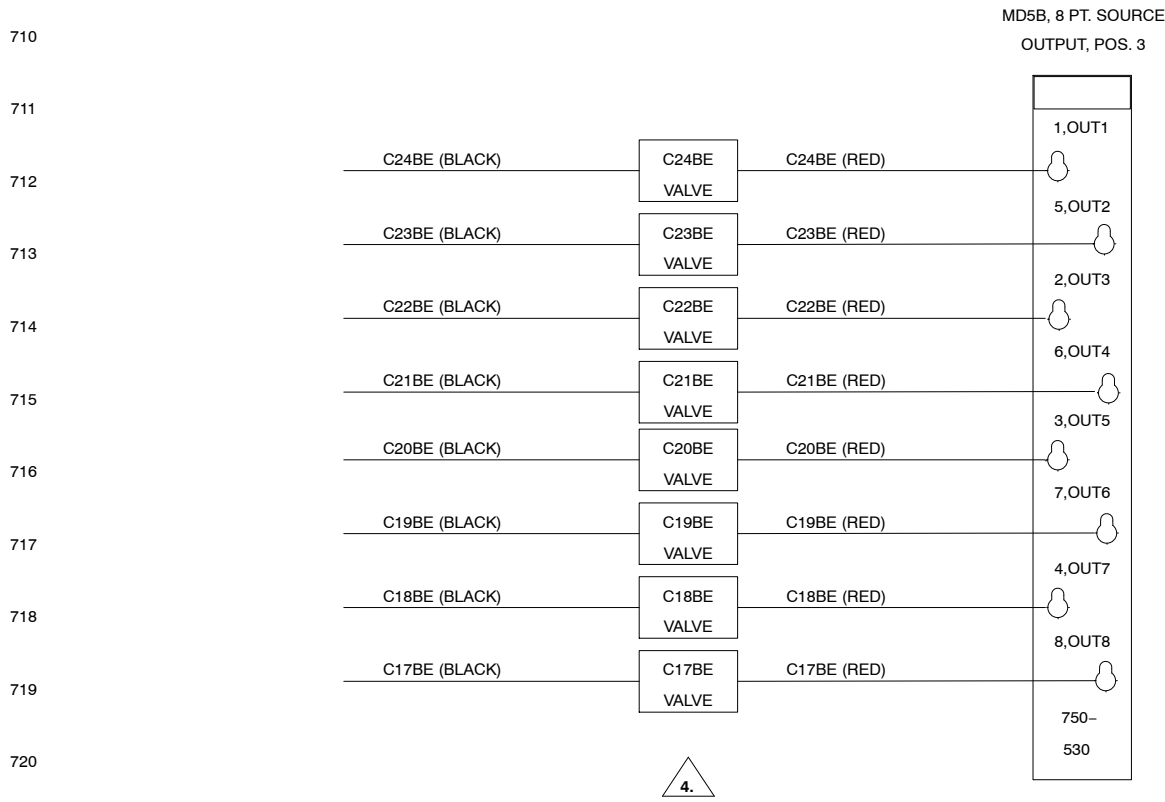
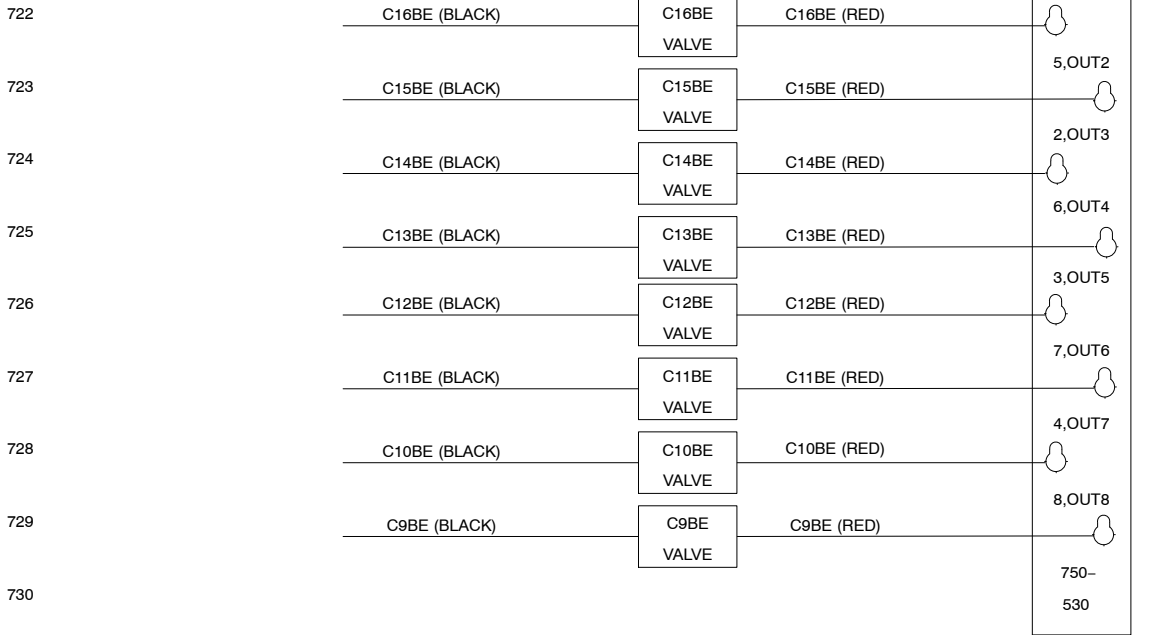
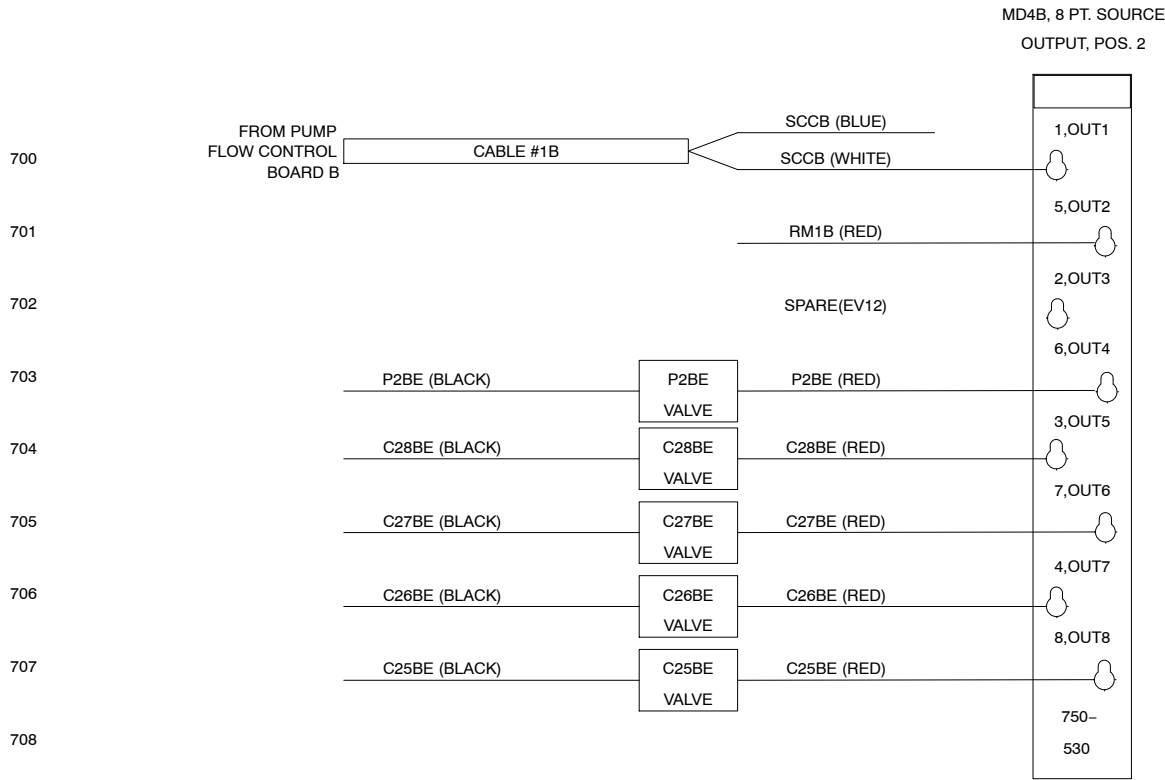


Figure 67 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 7 of 10)

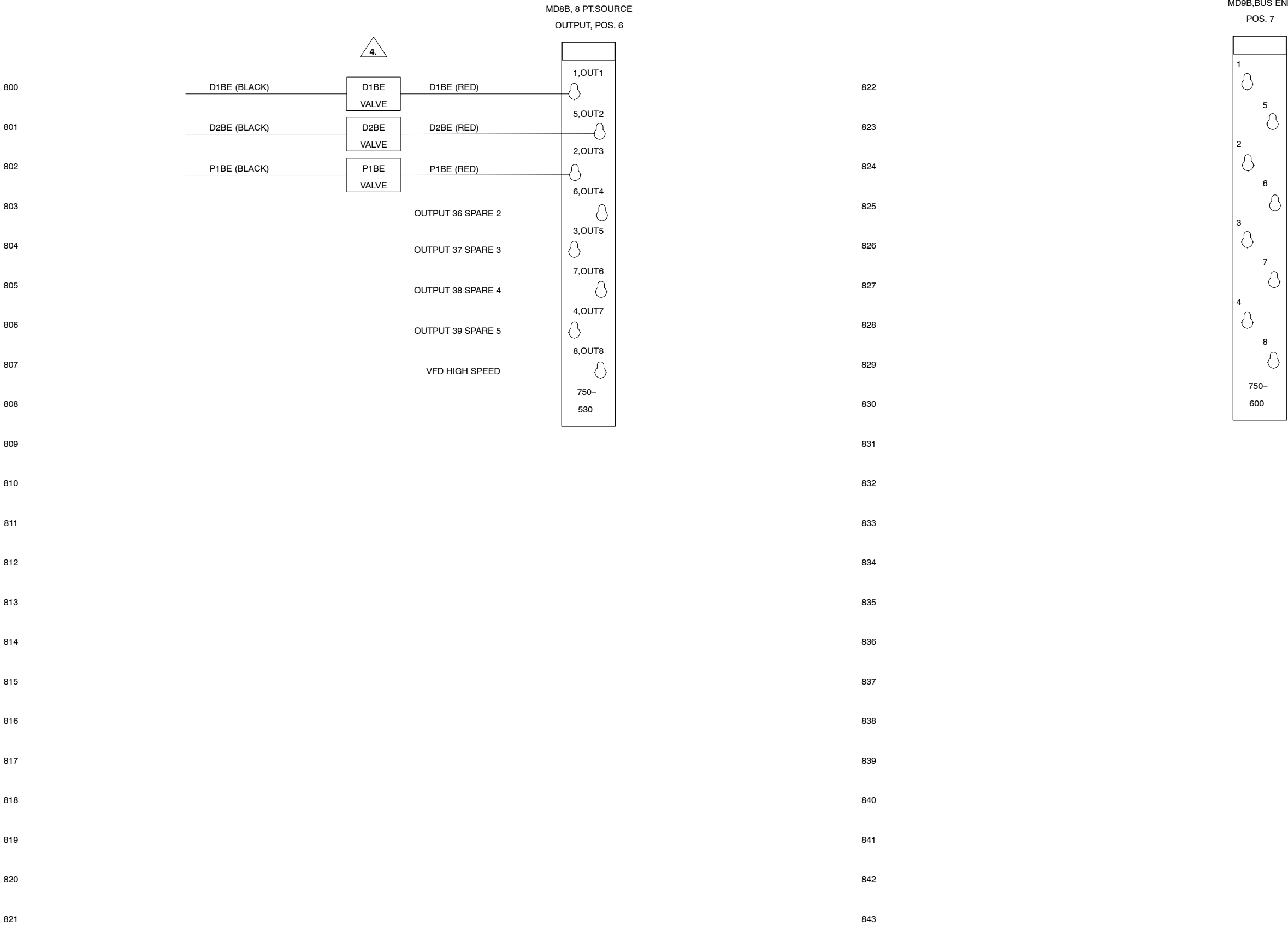


Figure 68 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 8 of 10)

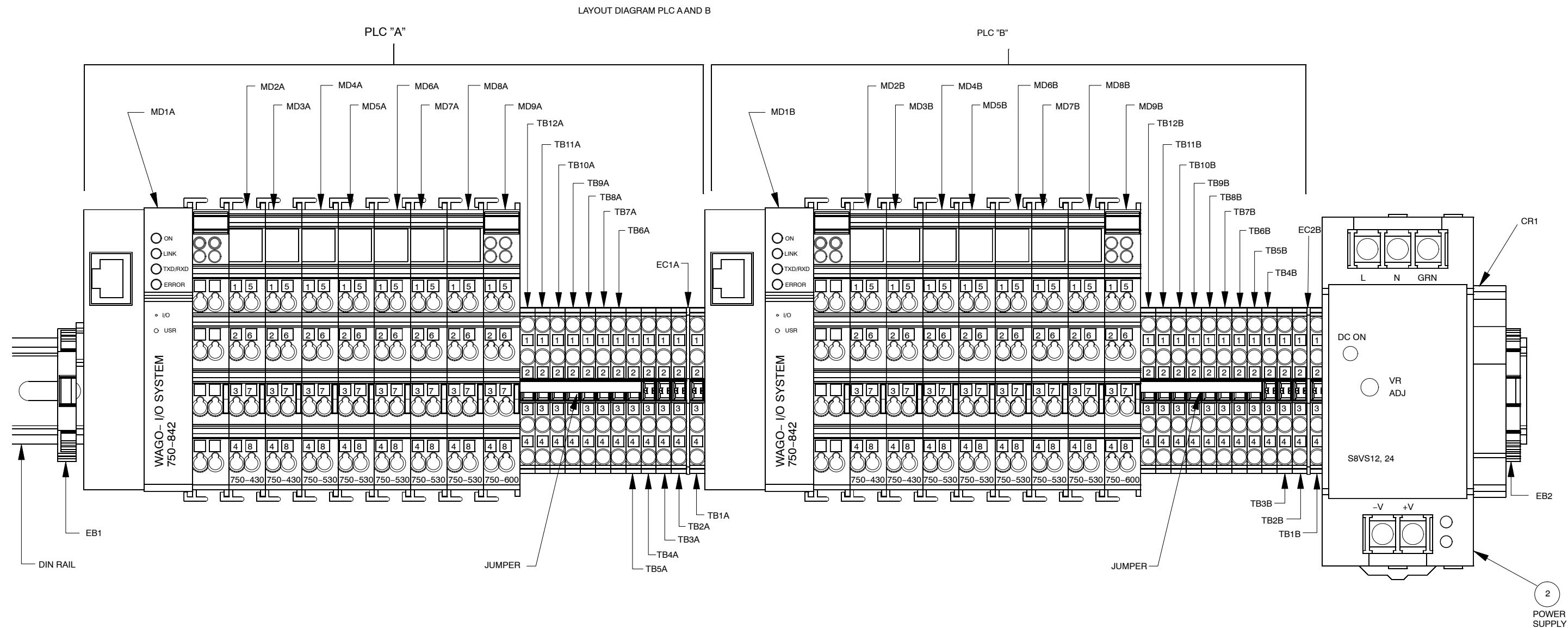


Figure 69 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 9 of 10)

LAYOUT DIAGRAM PLC A AND B

COLOR-ON-DEMAND CONTROLS PLC LABELS

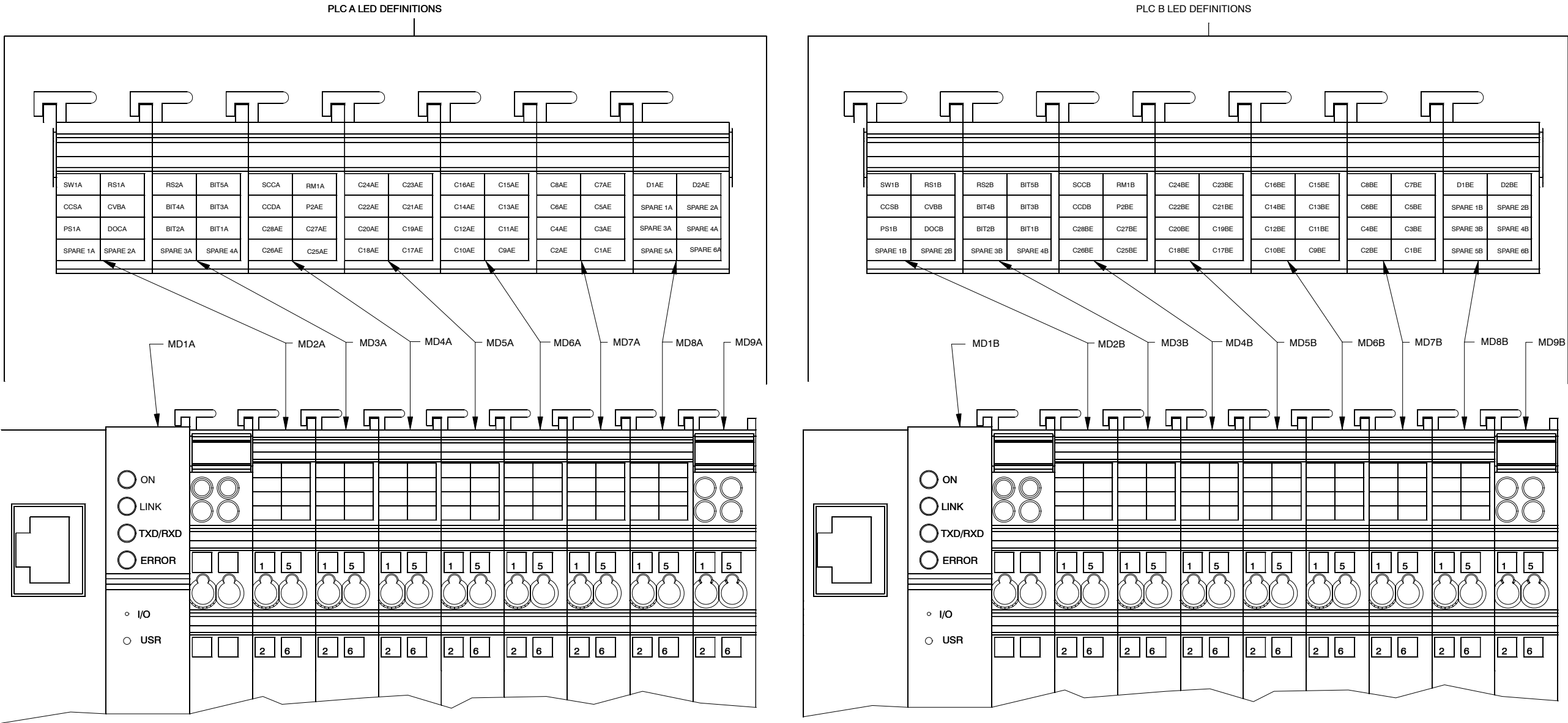


Figure 70 Color-on-Demand Control Panel Schematic (Dual Unit, Sheet 10 of 10)