

# **Prodigy® Automatic System HDLV® Pump Panel**

Customer Product Manual  
Part 1081748A04

Issued 01/10

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

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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:  
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# Prodigy® Automatic System HDLV® Pump Panel

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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 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

The pump panel is the central electrical and pneumatic enclosure for Prodigy HDLV pumps used with Prodigy Automatic Spray Guns. The panels are installed on the sides of the Prodigy Powder Feed Center. The pump panels are available in four, six, and eight pump configurations. Each panel houses the Prodigy HDLV pumps, pump manifolds and pump control board, air filter and pneumatic controls, and DC power supply.

This manual provides panel wiring and pneumatic diagrams and replacement parts only. Refer to the powder feed center manual for operation instructions.

Refer to the following manuals for additional repair and parts information:

1081195 HDLV Pump

1062382 HDLV Pump Manifold and Circuit Board

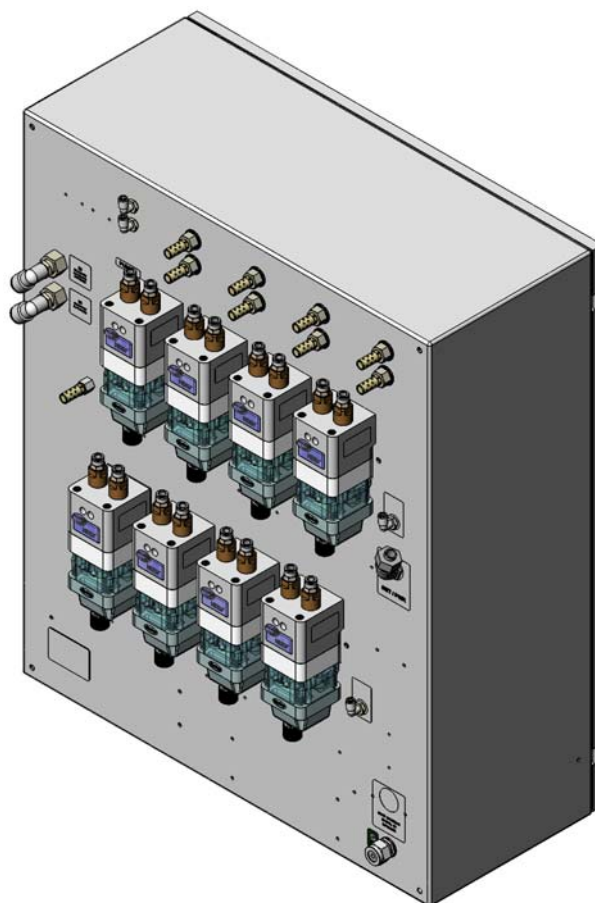


Figure 1 Prodigy Automatic System HDLV Pump Panel (Eight-Pump Panel Shown)

## Panel Components

### External Components

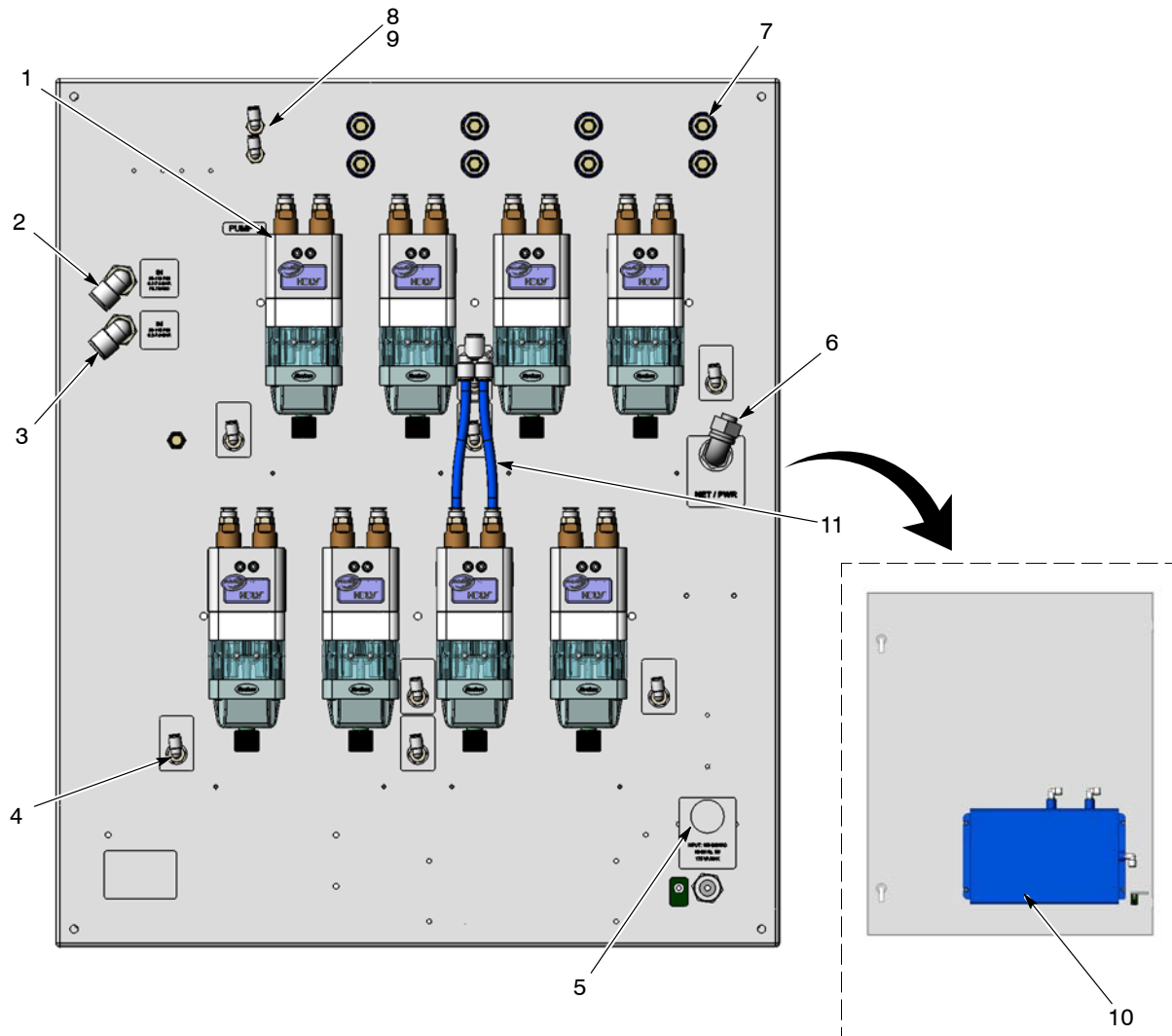


Figure 2 External Pump Panel Components (Eight-Pump Panel Shown)

- |  |  |                                     |
|--|--|-------------------------------------|
| 1. Prodigy HDLV Pumps                                    | 4. Pattern air out                             | 8. Purge pilot-bottom bank of pumps |
| 2. IN Filtered air supply (pump assist/pattern air flow) | 5. INPUT power                                 | 9. Purge pilot-top bank of pumps    |
| 3. IN Air supply (pinch and vacuum)                      | 6. NET/PWR to feed center network junction box | 10. Accumulator tank                |
|  | 7. Vacuum exhaust mufflers                     | 11. Purge air tubing/Y-connectors   |



## Internal Components

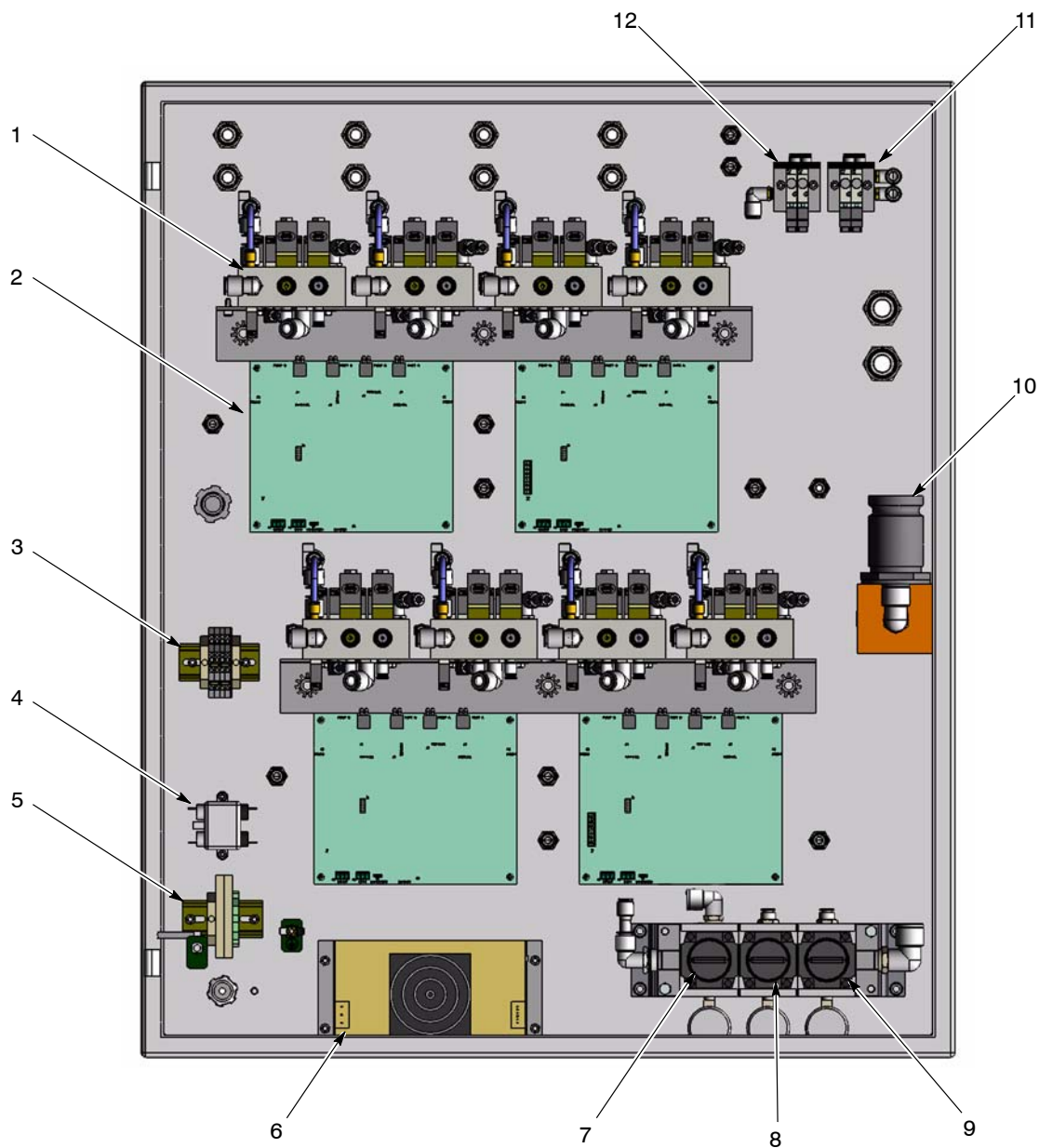


Figure 3 Internal Pump Panel Components (Eight-Pump Panel Shown)

- |                                     |   |  |
|-------------------------------------|---|--|
| 1. Pump control manifolds           | 5. Fuses  | 9. Pinch low air regulator<br>(35 psi/2.4 bar) |
| 2. Pump circuit boards              | 6. 145 W power supply                           | 10. Pump assist/pattern air flow<br>regulator  |
| 3. Power and network terminal strip | 7. Vacuum air regulator<br>(50 psi/3.4 bar)     | 11. Pinch select manifold                      |
| 4. Filter                           | 8. Pinch high air regulator<br>(70 psi/4.8 bar) | 12. Purge pilot manifold                       |

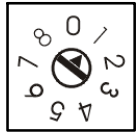
## Pump Panel Configuration and Layout

The pump panel is available in 4-, 6-, and 8-pump configurations. Up to four pump panels may be connected to a single powder feed center.

### Network Switch Settings

Use the following guidelines to set switches SW1 and SW2 on each HDLV pump circuit board.

#### SW1 Settings



SW1 identifies the sequential node address of the circuit board.

Each circuit board controls two pumps. Refer to the following chart and Figure 5 for a description of how to set SW1.

Switch Position	Pumps Controlled	
	Left Side of Feed Center	Right Side of Feed Center
1	1, 2	17, 18
2	3, 4	19, 20
3	5, 6	21, 22
4	7, 8	23, 24
5	9, 10	25, 26
6	11, 12	27, 28
7	13, 14	29, 30
8	15, 16	31, 32

#### SW2 Settings

See Figure 4. SW2 identifies the pump panel address and the type of gun (manual or automatic) that is controlled by the circuit board.

Switch	Position
1	Down: Panels 1 and 2 (Guns 1–16) Up: Panels 3 and 4 (Guns 17–18)
2	Down (not used)
3	Down (not used)
4	Down: Automatic Guns Up: Manual Guns

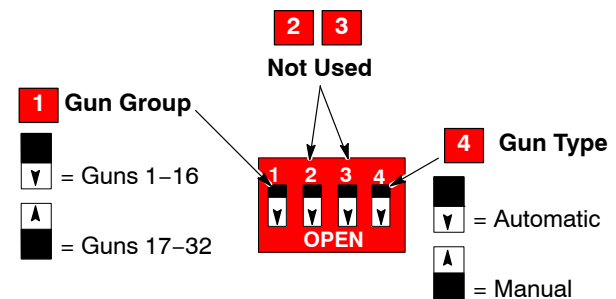


Figure 4 SW2 Settings

## Typical Pump Panel Layout

Figure 5 shows the layout and switch settings of a typical powder feed center. The example shows a layout that controls 28 automatic and four manual powder spray guns.

Pump panel layout typically follows these guidelines:

- A powder feed center may have up to four separate pump panels.
- Each pump panel may control up to eight pumps.
- One circuit board controls two pumps.
- Manual guns are typically connected to the last pumps in the feed center.
- The network must be terminated at the last circuit board in the feed center.

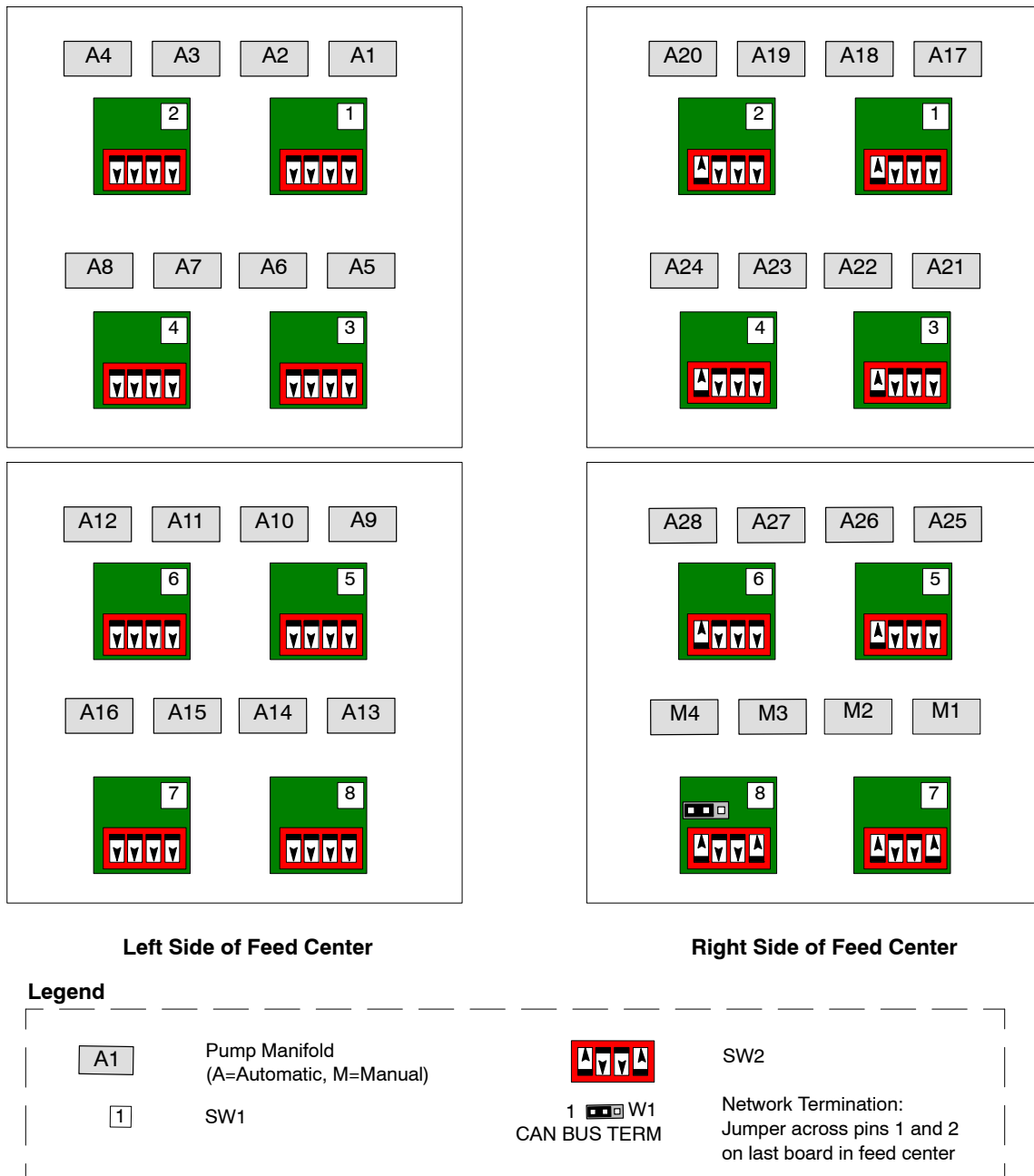


Figure 5 Typical Pump Panel Layout

## Pneumatic Diagrams

### Pump Panel to Pump Manifolds

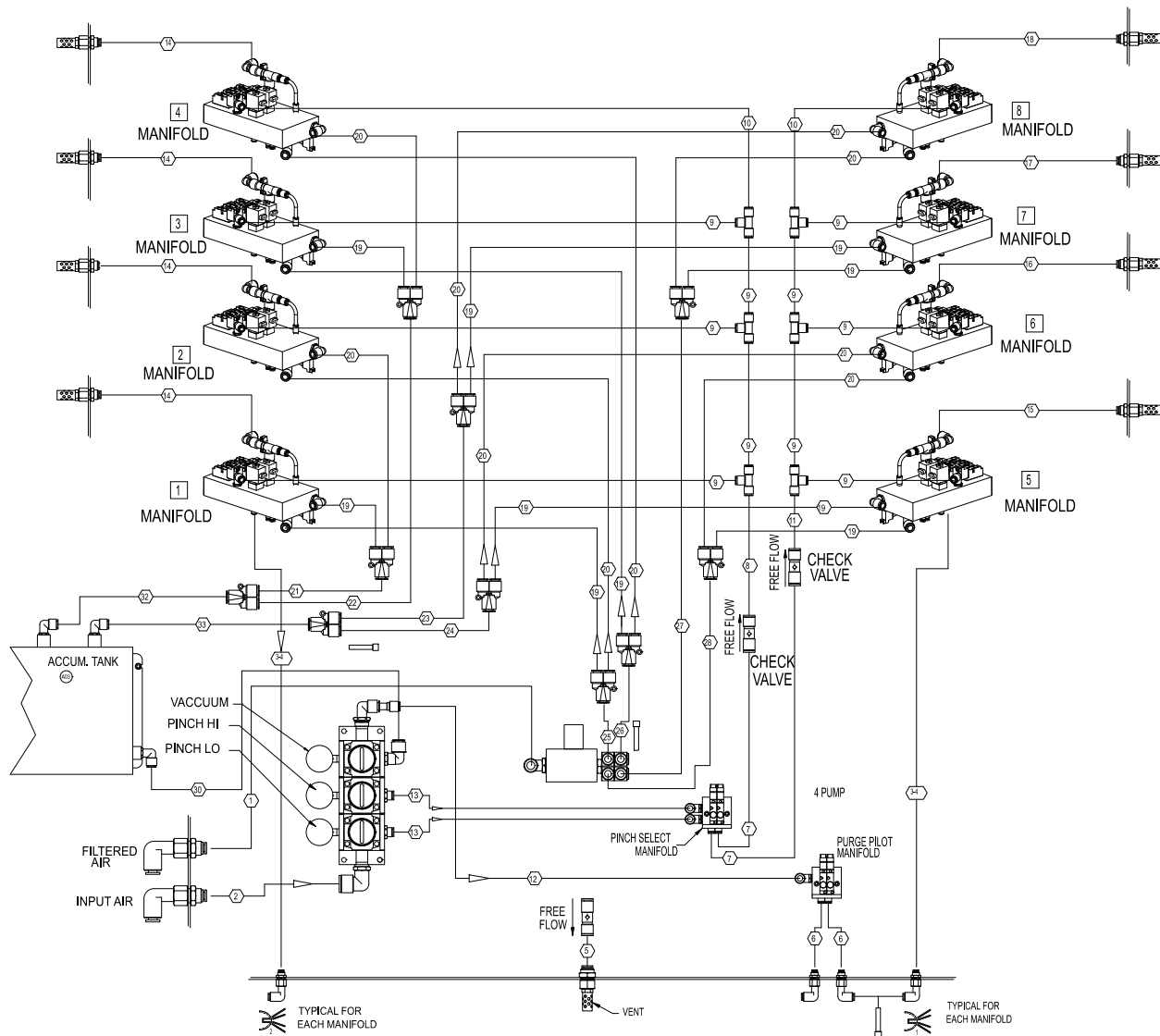


Figure 6 Pump Panel Pneumatic Diagram – Pump Panel to Pump Manifolds (Eight-Pump Panel Shown)

Air Pressure Settings	
Function	Setting
Vacuum	3.4 bar (50 psi)
Pinch High	4.8 bar (70 psi)
Pinch Low	2.4 bar (35 psi)

## Pump Manifolds to Circuit Board

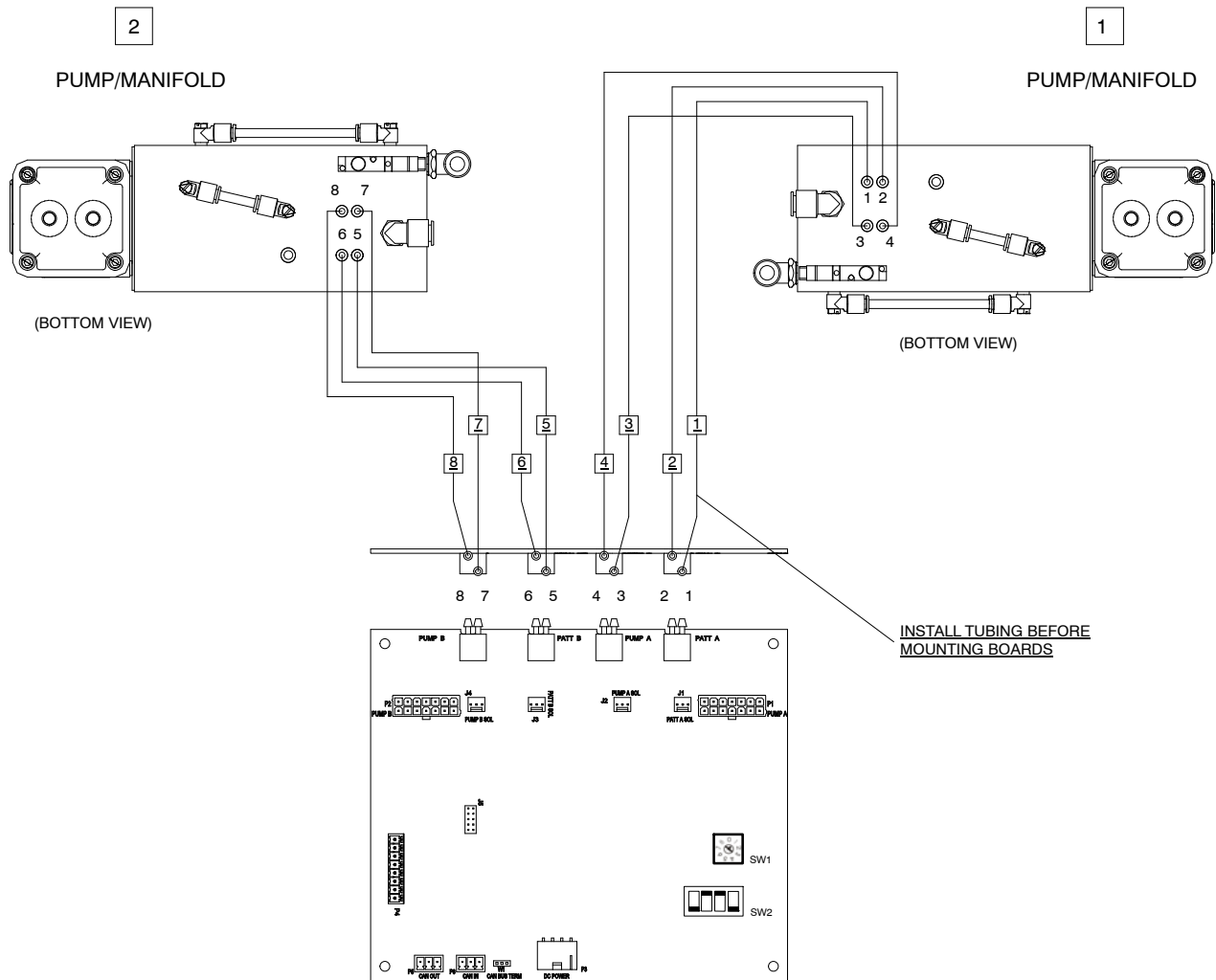


Figure 7 Pump Panel Pneumatic Diagram – Pump Manifolds to Circuit Board

## Wiring Diagrams

### Circuit Board to Pump Manifolds

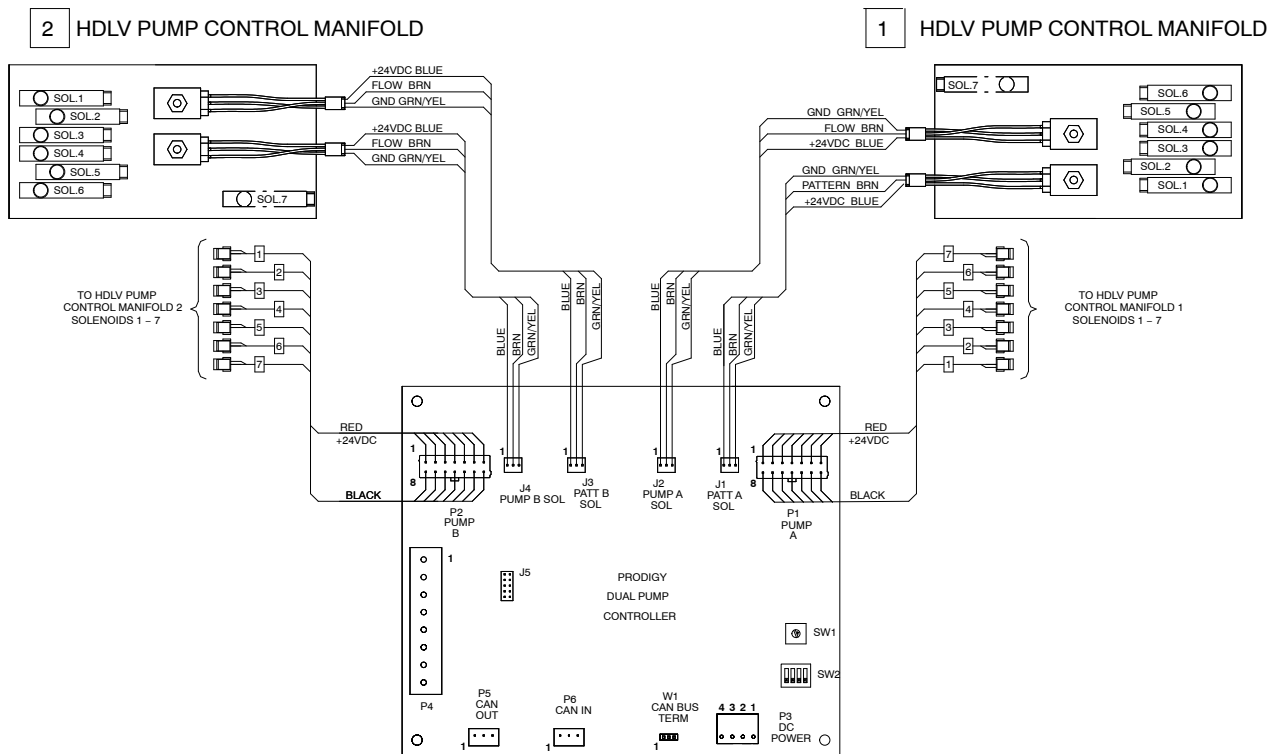


Figure 8 Circuit Board to Pump Manifolds Wiring Diagram

## Network and Power Wiring Diagram

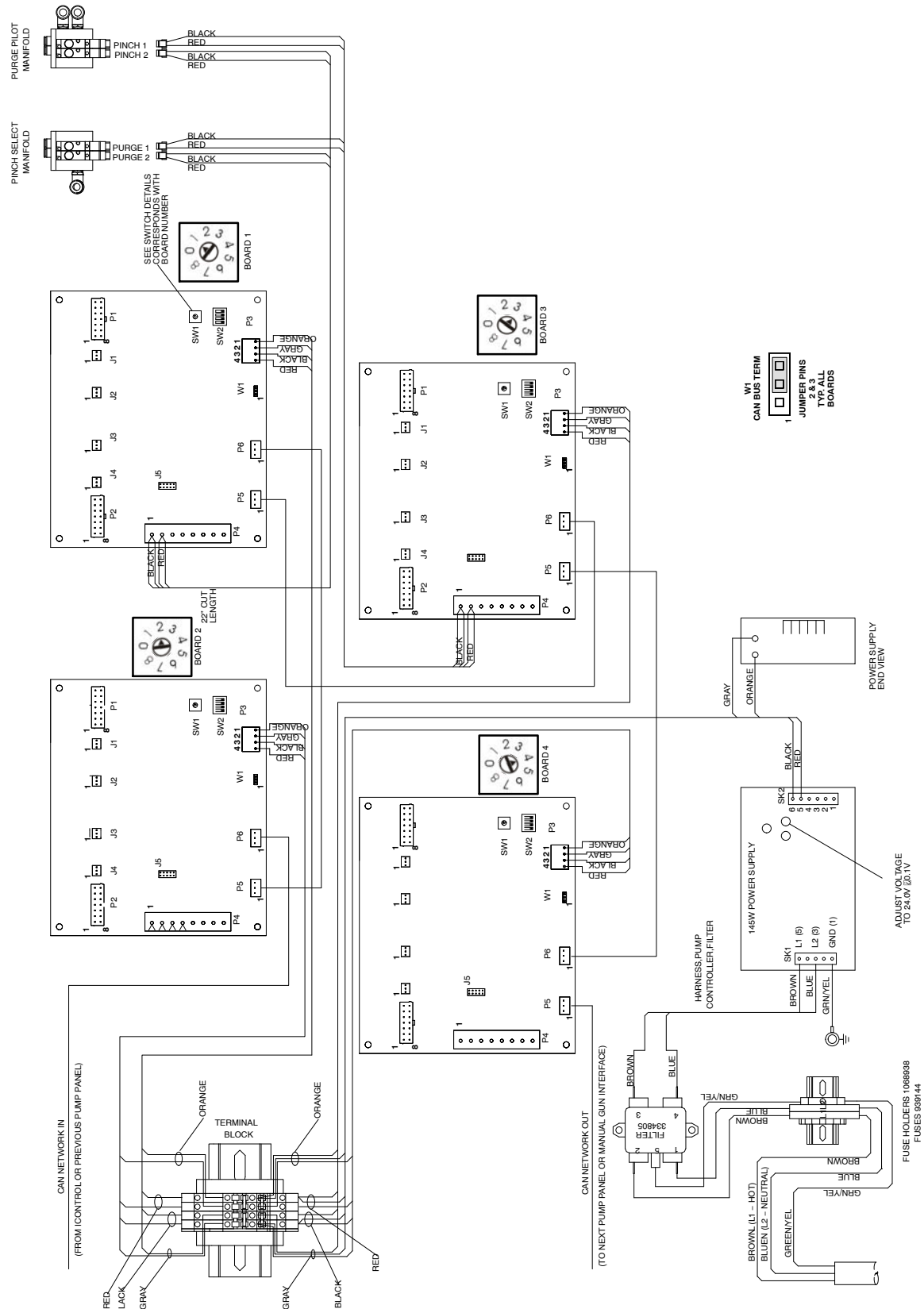


Figure 9 Network and Power Wiring Diagram

## Parts

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

### Internal Pump Panel Replacement Parts

See Figure 10.

Item	Part	Description	Quantity	Note
1	- - - - -	MANIFOLD ASSEMBLY, HDLV pump control	AR	A, C
2	1092274	KIT, PCA replacement, Prodigy pump control	AR	B
3	334805	FILTER, line, RFI, power, 10 A	1	
4	1068938	FUSE BLOCK, pump control	1	
5	939144	• FUSE, 4amp, slo blow, fast acting, 250 V	2	
6	1069113	POWER SUPPLY, 145 Watt	1	
7	1077780	REGULATOR ASSEMBLY, 3, Prodigy	1	
8	1064135	• REGULATOR, manifold, modular style	3	
9	1065536	• GAUGE, air, 0–100 psi, 0.7 bar, 1/8 in. RPT	3	
10	1033878	REGULATOR, rolling diaphragm, 0–120 psi, 1/2 in.-NPT	1	
11	1099534	VALVE, solenoid, 3 port, 24 V, with adapter	4	D
12	1062364	MANIFOLD, 2 station, 6-mm tube x 1/8-in. RPT	2	
<p>NOTE A: When replacing manifold, perform calibration procedure as described in Manual Gun Controller manual.</p> <p>B: When replacing the circuit board, refer to <i>Pump Panel Configuration and Layout</i> on page 6 for switch settings. Also perform calibration procedure as described in Manual Gun Controller manual.</p> <p>C: For manifold assembly part numbers, refer to manual 1081195.</p> <p>D: If using an old harness with 3 positions, use the supplied adapter. If using a new harness with 2 positions, the supplied adapter can be discarded.</p> <p>NS: Not Shown</p> <p>AR: As Required</p>				



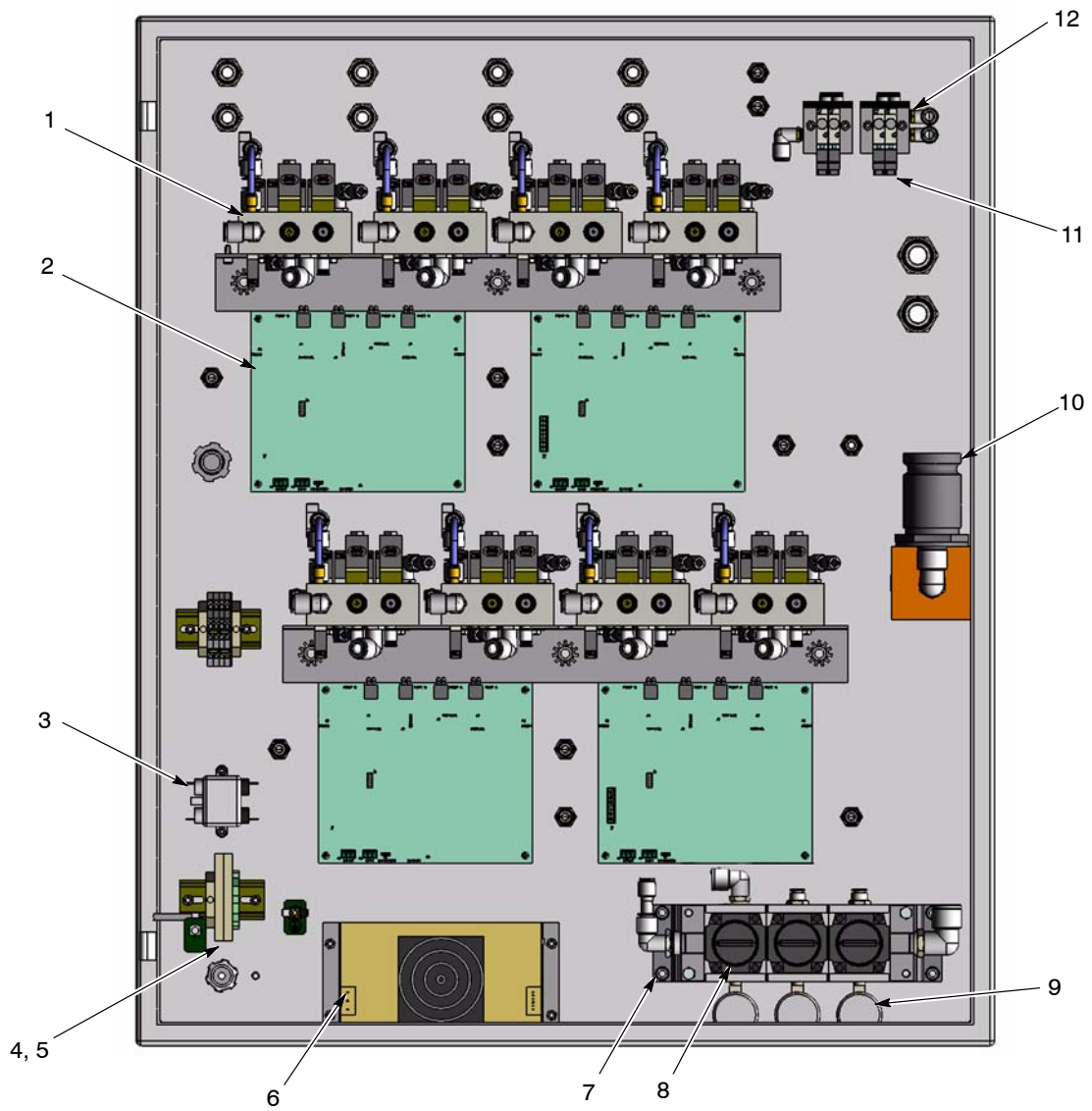


Figure 10 Internal Pump Panel Replacement Parts (Eight-Pump Panel Shown)

## External Pump Panel Replacement Parts

See Figure 11.

Item	Part	Description	Quantity	Note
1	1040664	MUFFLER, male, 1/4-in. BPST	AR	
2	1081194	PUMP ASSEMBLY, HDLV	AR	
3	1087160	TANK, accumulator, pump controller	1	
AR: As Required				

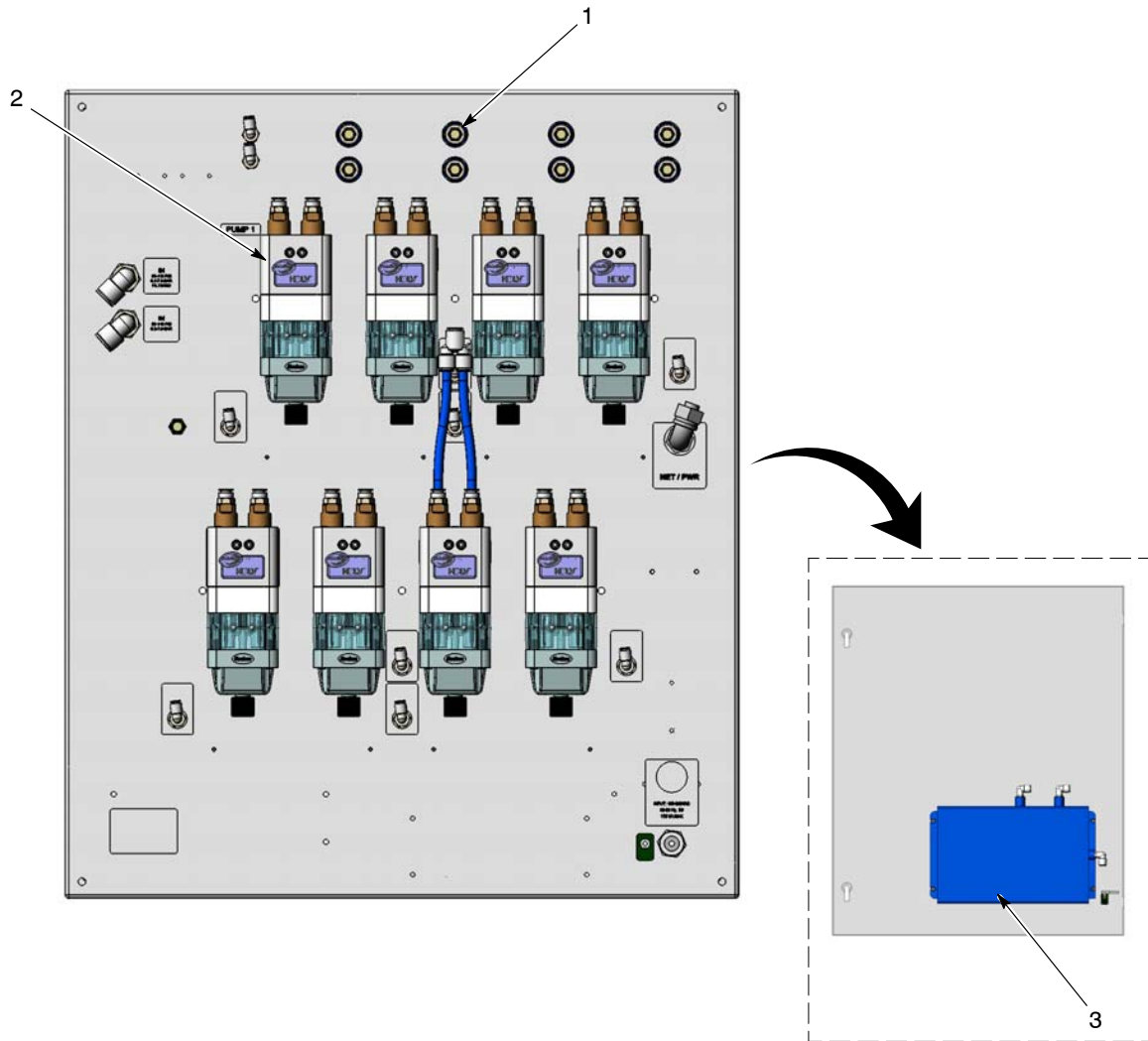


Figure 11 External Pump Panel Replacement Parts (Eight-Pump Panel Shown)

## DECLARATION of CONFORMITY

### PRODUCT:

#### Prodigy HDLV Automatic Pump System, 4-8 Applicators

Automatic Pump System for use with Automatic Applicators and Prodigy iControl

### APPLICABLE DIRECTIVES:

98/37/EEC	(Machinery)
2006/95/EC	(Low-Voltage Directive)
2004/108/EEC	(Electromagnetic Compatibility Directive)
87/404/EEC	(Simple Pressure Vessel Directive)

### STANDARDS USED TO VERIFY COMPLIANCE:

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

### 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



Joseph Schroeder  
Engineering Manager,  
Finishing Product Development Group

Date: 30 April 2008

