

Prodigy® Automatic System HDLV® Pump Panel

Customer Product Manual
Part 1070518A02

Issued 5/07

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

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Table of Contents

Safety	1
Qualified Personnel	1
Intended Use	1
Regulations and Approvals	1
Personal Safety	1
Fire Safety	2
Grounding	2
Action in the Event of a Malfunction	2
Disposal	2
Description	3
Panel Components	4
External Components	4
Internal Components	5
Pump Panel Configuration and Layout	6
Network Switch Settings	6
SW1 Settings	6
SW2 Settings	6
Typical Pump Panel Layout	7
Pneumatic Diagrams	8
Pump Panel to Pump Manifolds	8
Pump Manifolds to Circuit Board	9
Wiring Diagrams	10
Circuit Board to Pump Manifolds	10
Network and Power Wiring Diagram	11
Parts	12
Using the Illustrated Parts List	12
Internal Pump Panel Replacement Parts	12
External Pump Panel Replacement Parts	14

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

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:

1053244 HDLV Pump

1062382 HDLV Pump Manifold and Circuit Board

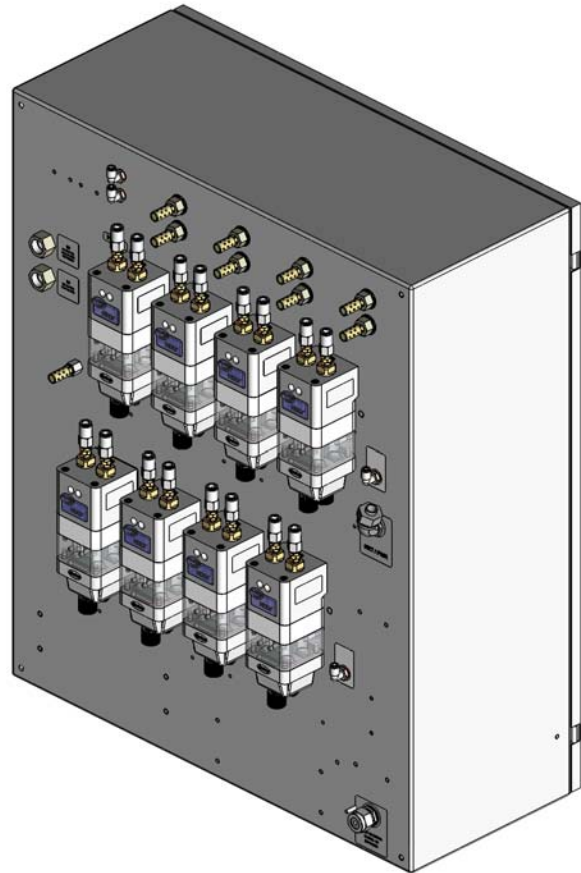


Figure 1 Prodigy Automatic System HDLV Pump Panel (Eight-Pump Panel Shown)

Panel Components

External Components

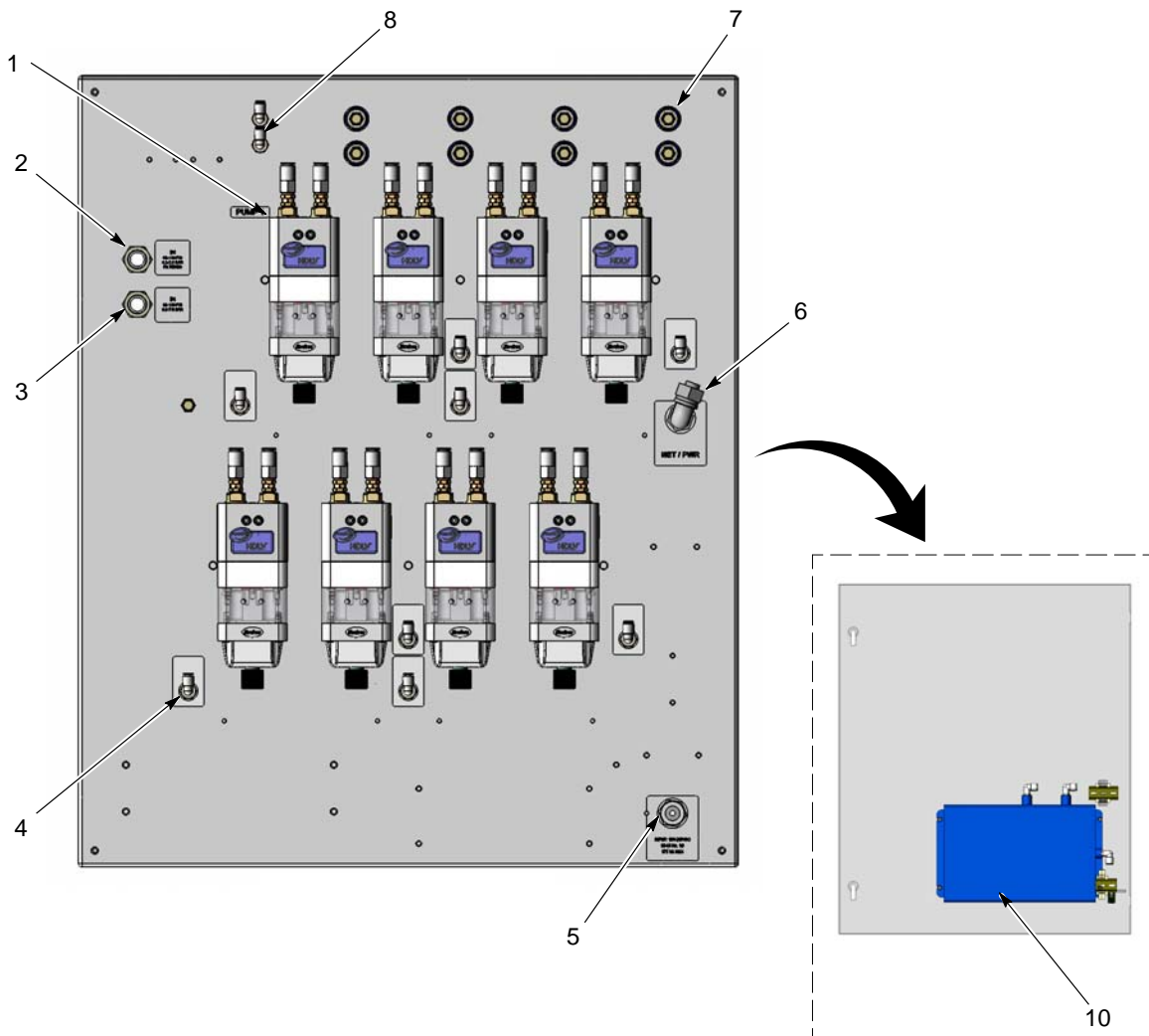


Figure 2 External Pump Panel Components (Eight-Pump Panel Shown)

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

Internal Components

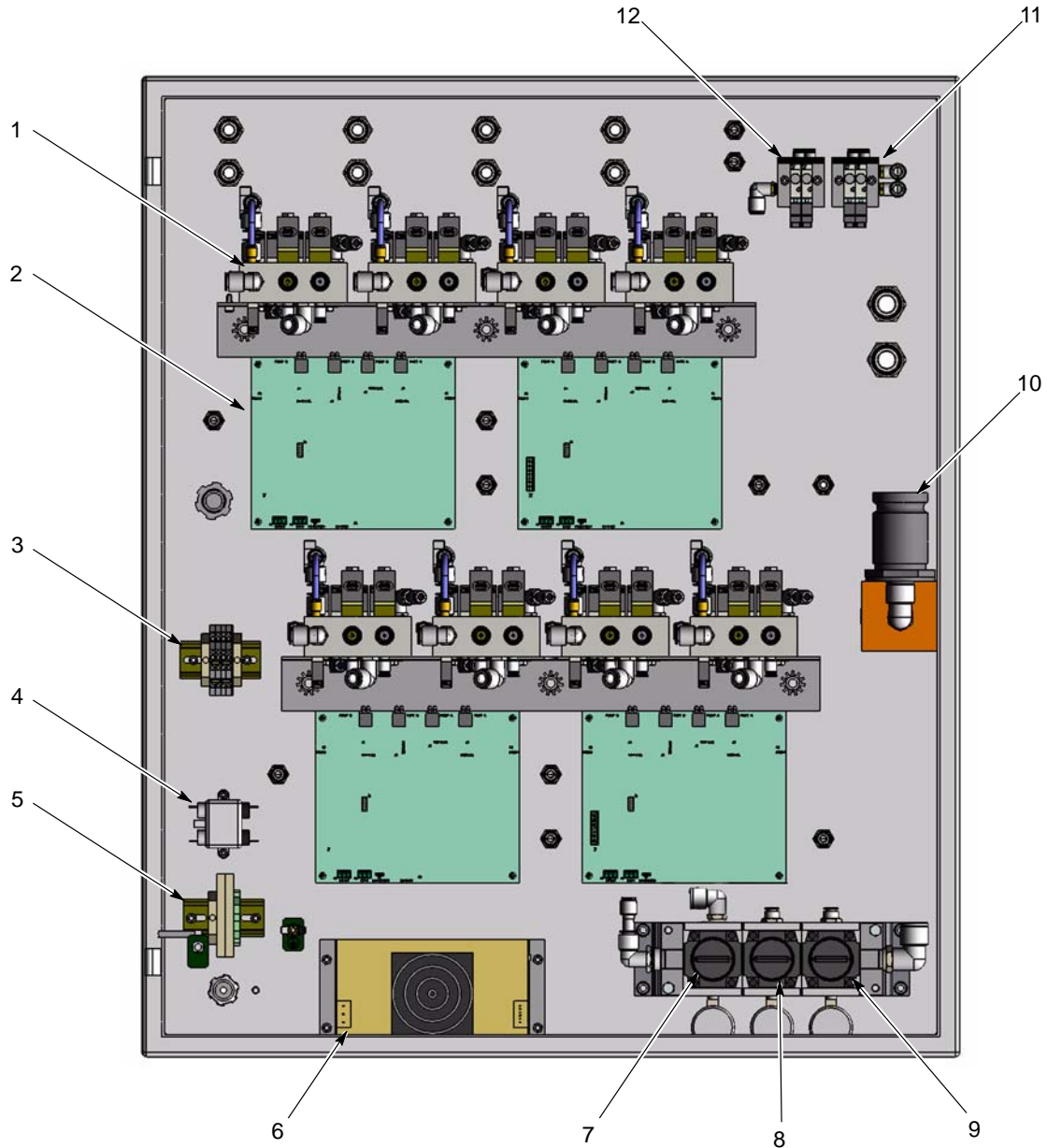


Figure 3 Internal Pump Panel Components (Eight-Pump Panel Shown)

- | | | |
|-------------------------------------|-----------------------------|--|
| 1. Pump control manifolds | 5. Fuses | 9. Pinch low air regulator |
| 2. Pump circuit boards | 6. 145 W power supply | 10. Pump assist/pattern air flow regulator |
| 3. Power and network terminal strip | 7. Vacuum air regulator | 11. Pinch select manifold |
| 4. Filter | 8. Pinch high air regulator | 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

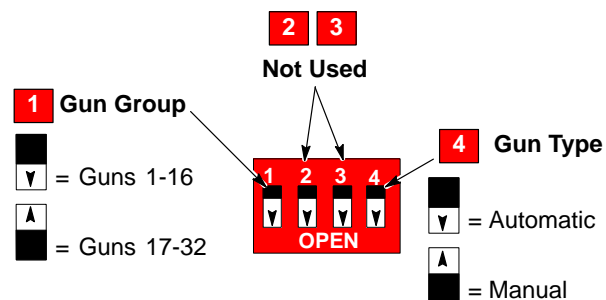


Figure 4 SW2 Settings

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

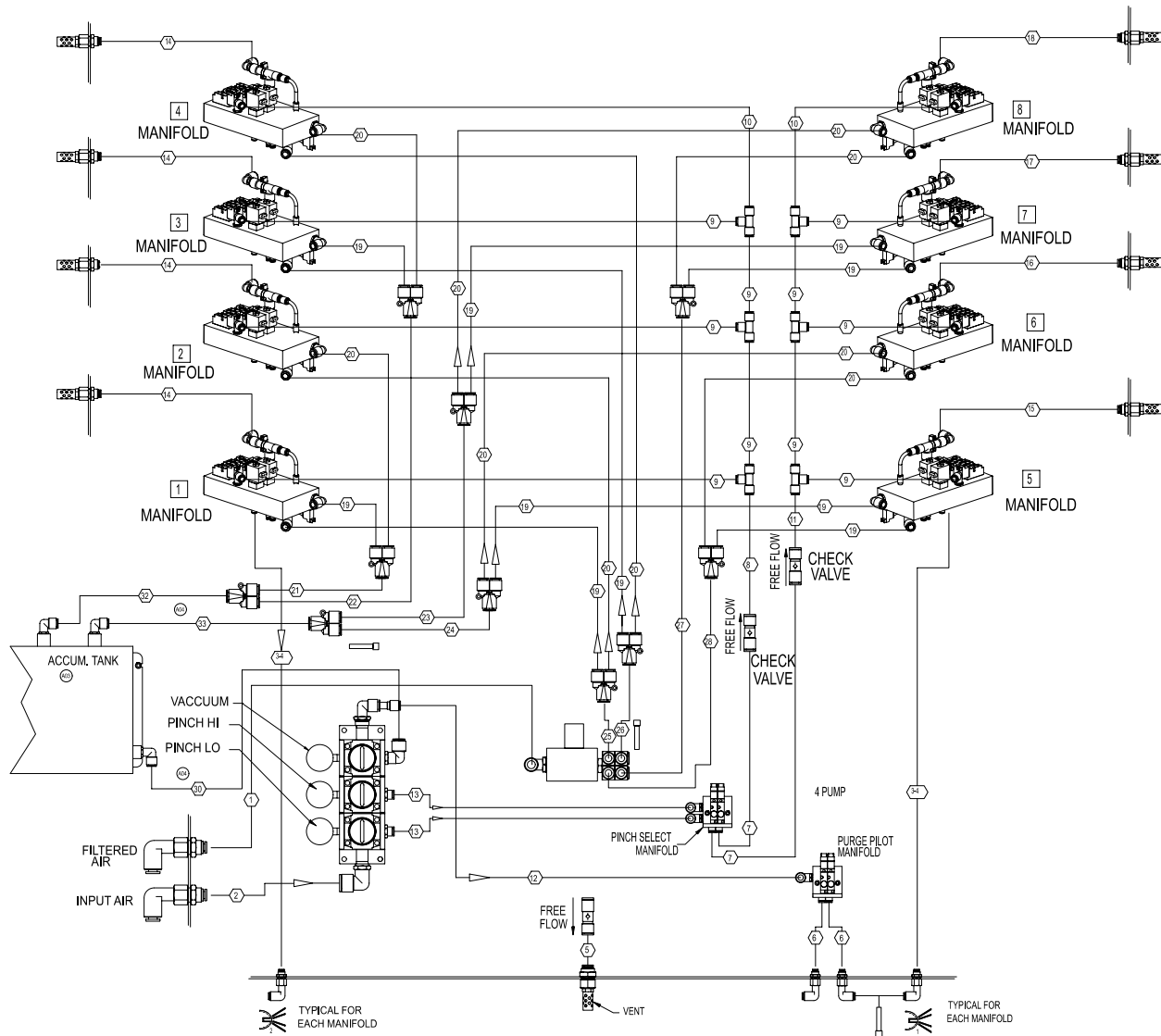


Figure 6 Pump Panel Pneumatic Diagram - Pump Panel to Pump Manifolds (Eight-Pump Panel Shown)

Pump Manifolds to Circuit Board

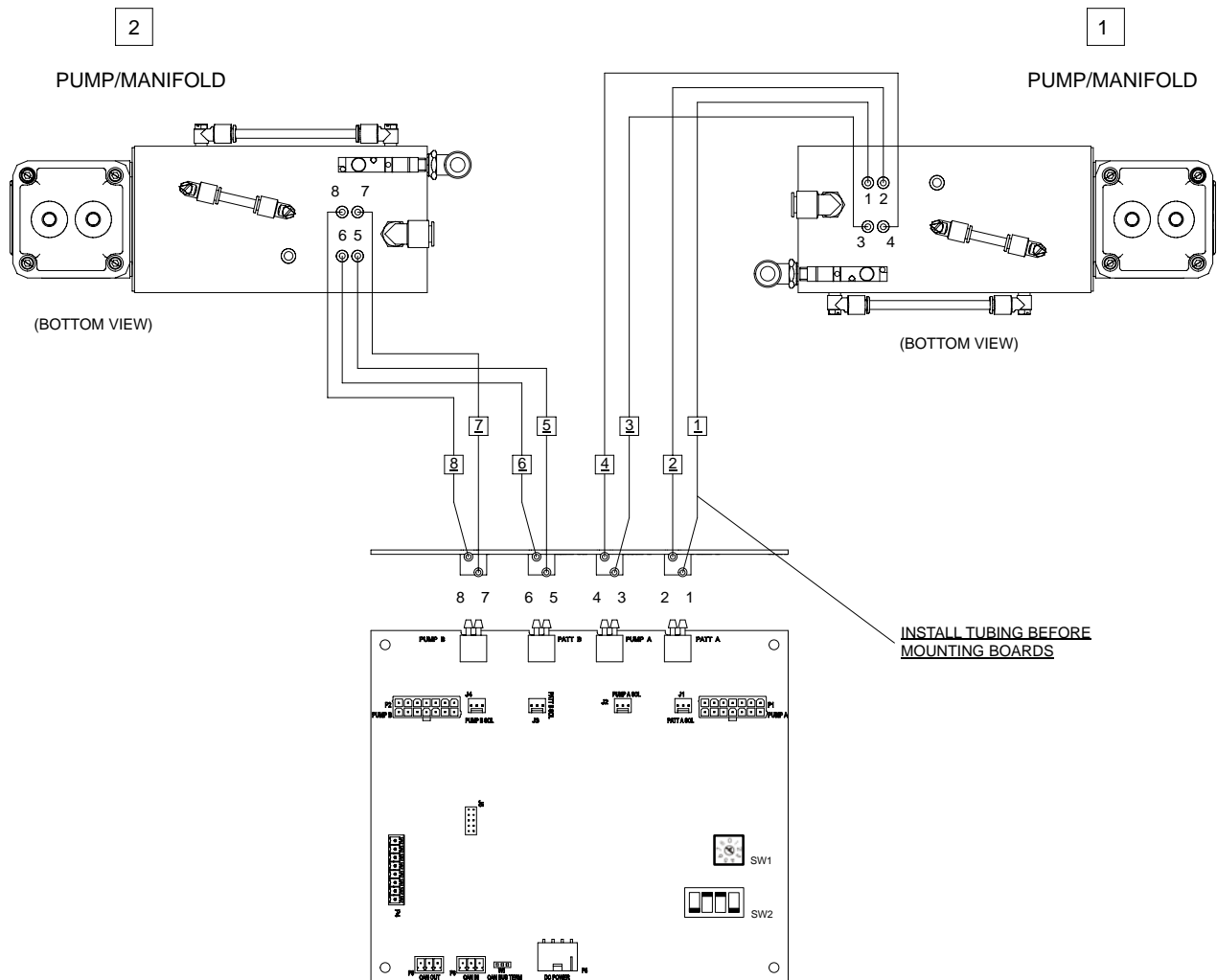


Figure 7 Pump Panel Pneumatic Diagram - Pump Manifolds to Circuit Board

Wiring Diagrams

Circuit Board to Pump Manifolds

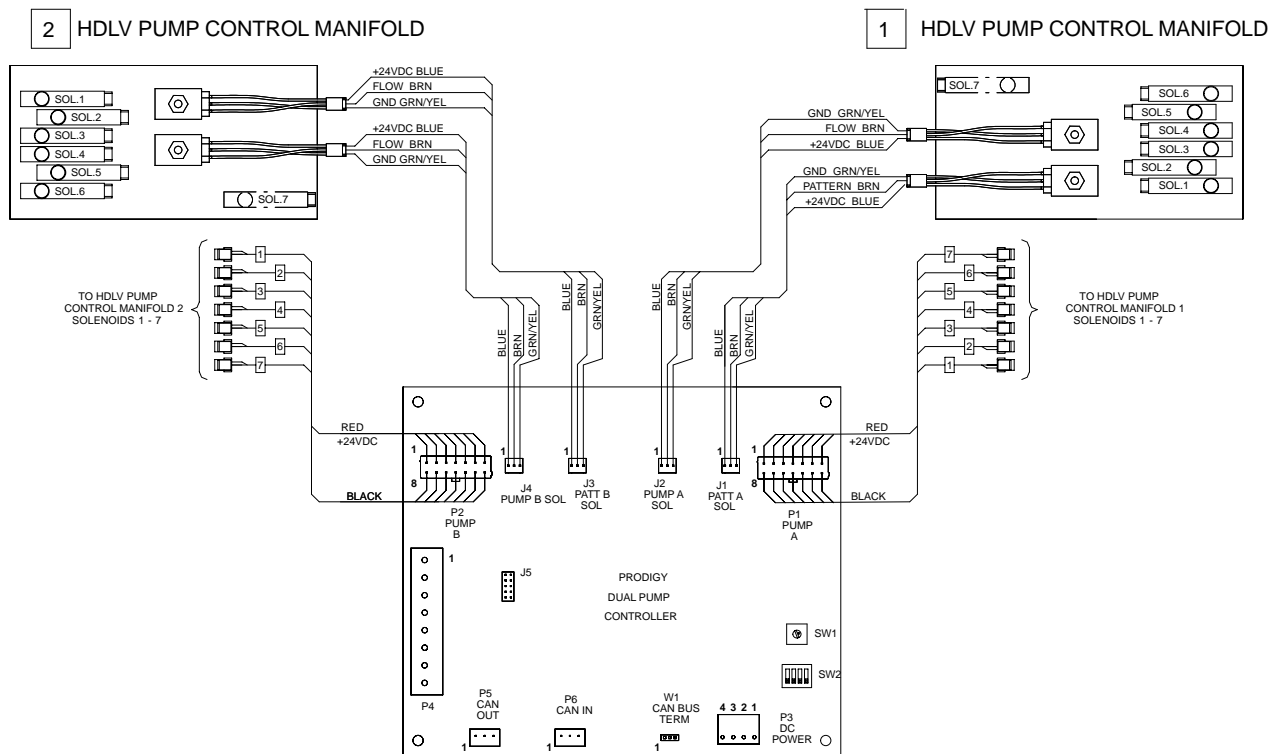


Figure 8 Circuit Board to Pump Manifolds Wiring Diagram

Network and Power Wiring Diagram

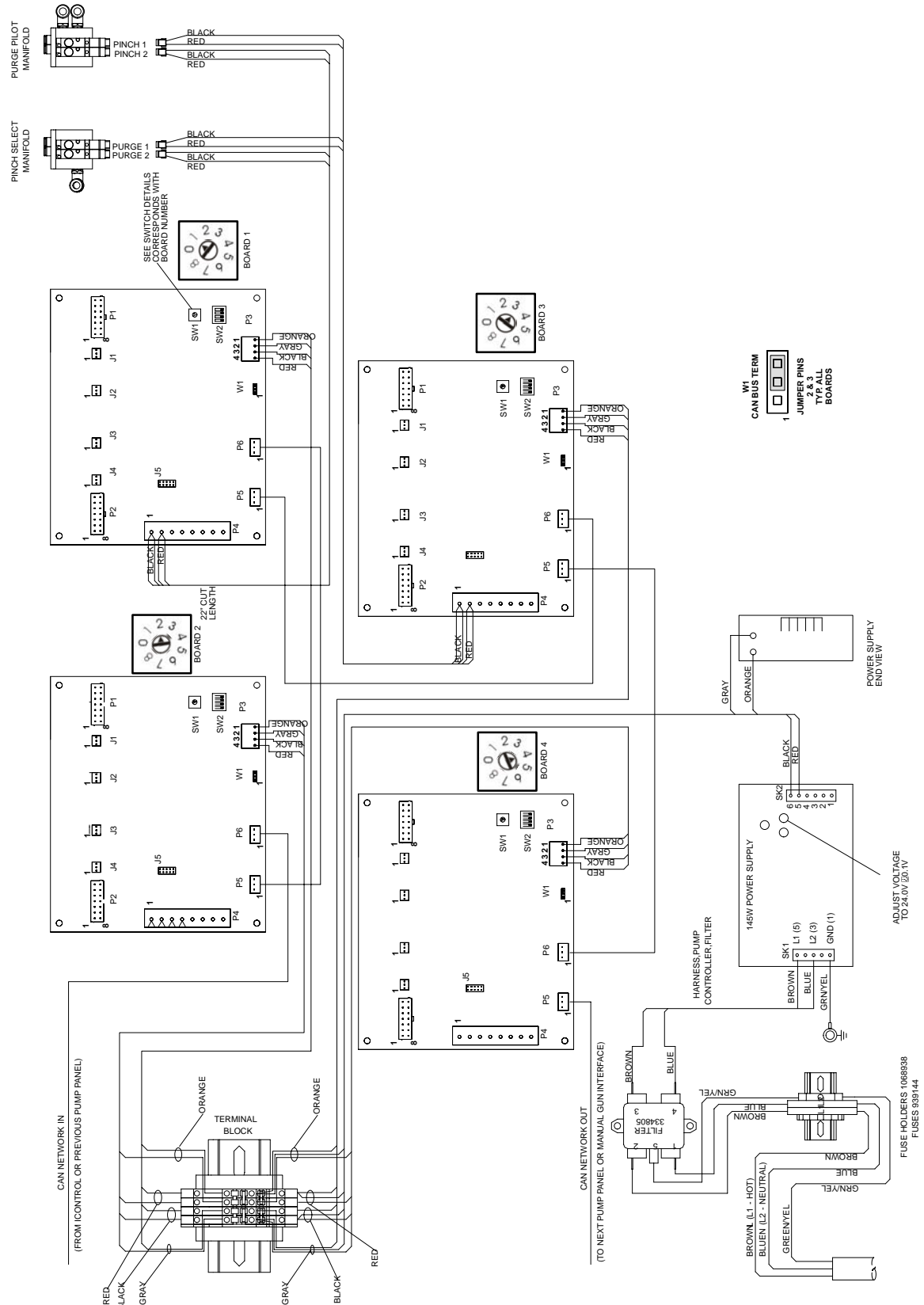


Figure 9 Network and Power Wiring Diagram

Parts

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

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

Internal Pump Panel Replacement Parts

See Figure 10.

Item	Part	Description	Quantity	Note
1	1052915	MANIFOLD ASSEMBLY, HDLV pump control	AR	A
2	1057815	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 RPT	3	
10	1033878	REGULATOR, rolling diaphragm, 0-120 psi, 1/2 in.-NPT	1	
11	1027412	VALVE, solenoid, 3 port, 24 V, without leads	4	
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>NS: Not Shown</p> <p>AR: As Required</p>				

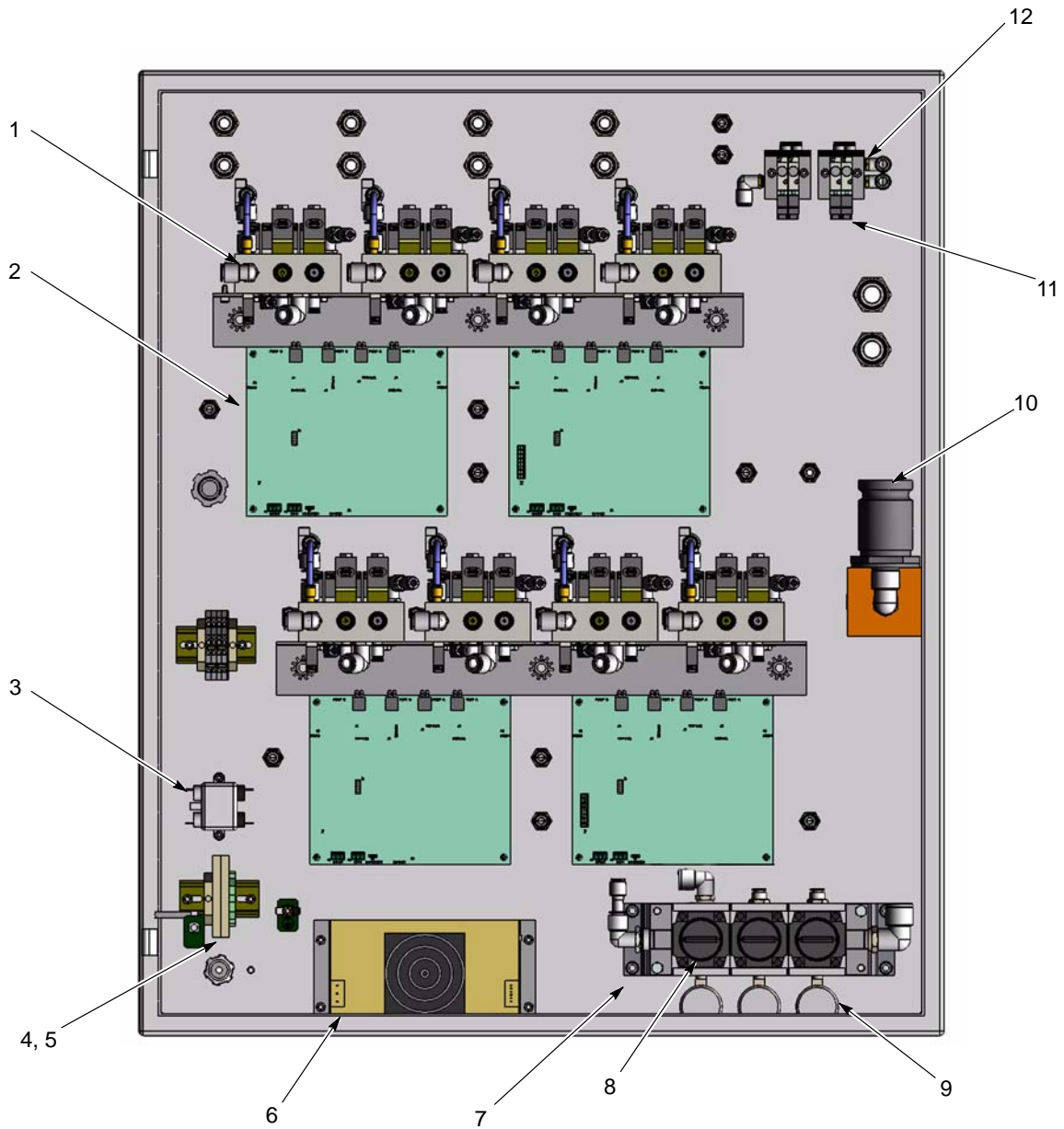


Figure 10 Internal Pump Panel Replacement Parts (Eight-Pump Panel Shown)

External Pump Panel Replacement Parts

See Figure 11.

Item	Part	Description	Quantity	Note
1	1040664	MUFFLER, male, 1/4-in. BPST	AR	
2	1053219	PUMP ASSEMBLY, HDLV	AR	
3	1077781	TANK, accumulator, pump controller	1	
AR: As Required				

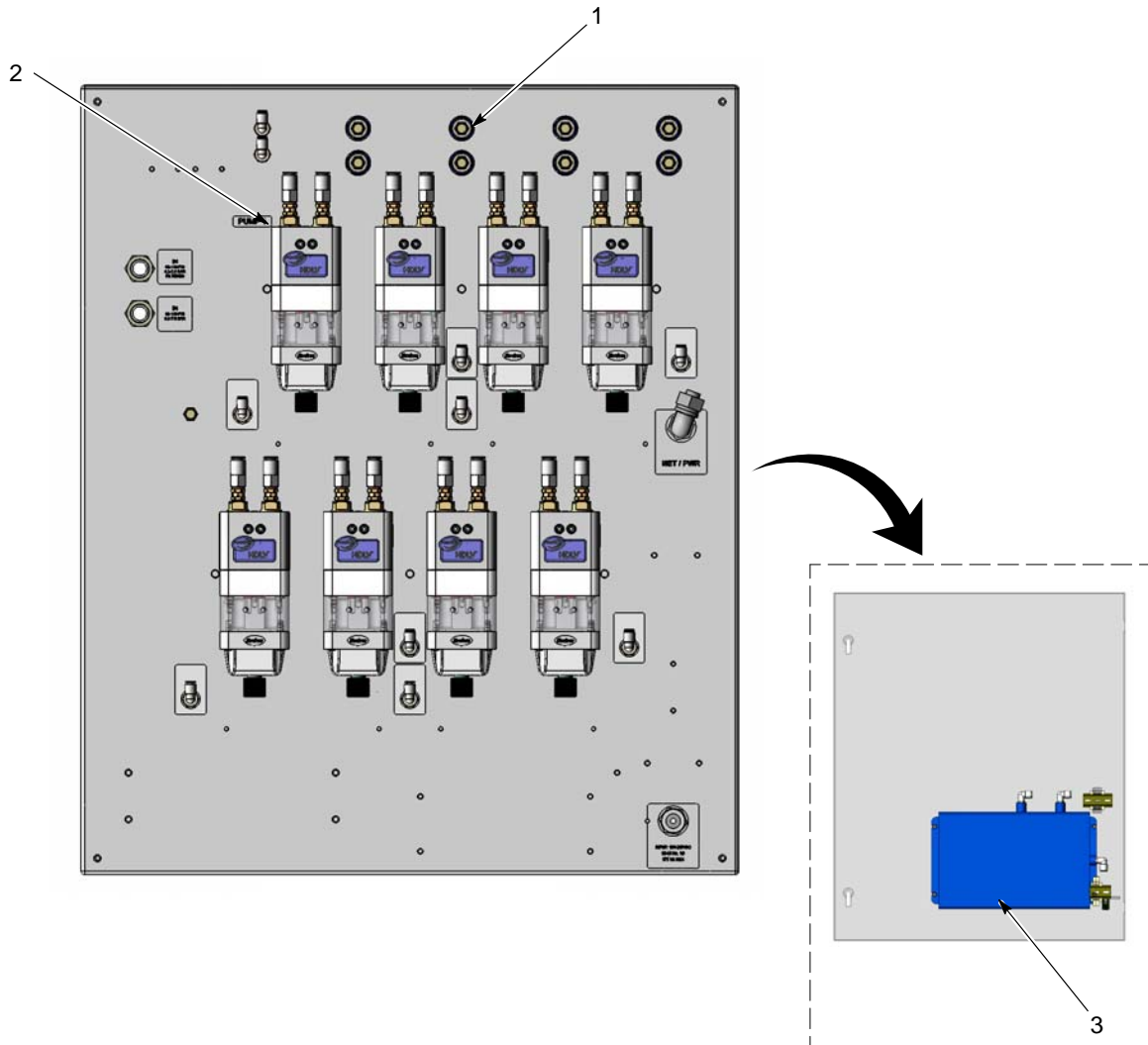


Figure 11 External Pump Panel Replacement Parts (Eight-Pump Panel Shown)

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)

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



Joseph Schroeder
Engineering Manager,
Finishing Product Development Group

Date: 15 October 2007

