Prodigy® Automatic System HDLV® Pump Panel Generation III

Customer Product Manual

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

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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.
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555 Jackson Street
Amherst, OH 44001

1102110-03

Change Record

Revision	Date	Change
1081748A03	12/09	Removed manifold assembly part number and added reference to the pump, manifold, and circuit board manual 1081195.
A04	1/10	Replaced solenoid valve 1027412 with 1099534.
1102110A	5/10	Manual part number changed from 1081748 to 1102110. 1101498 replaces part number 1092274 for PCA replacement kit.
02	2/22	Replaced power supply.
03	08/22	Updated receptacle and approval information.

Safety

Introduction

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 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 (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.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when 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.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- 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 II, 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 system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

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

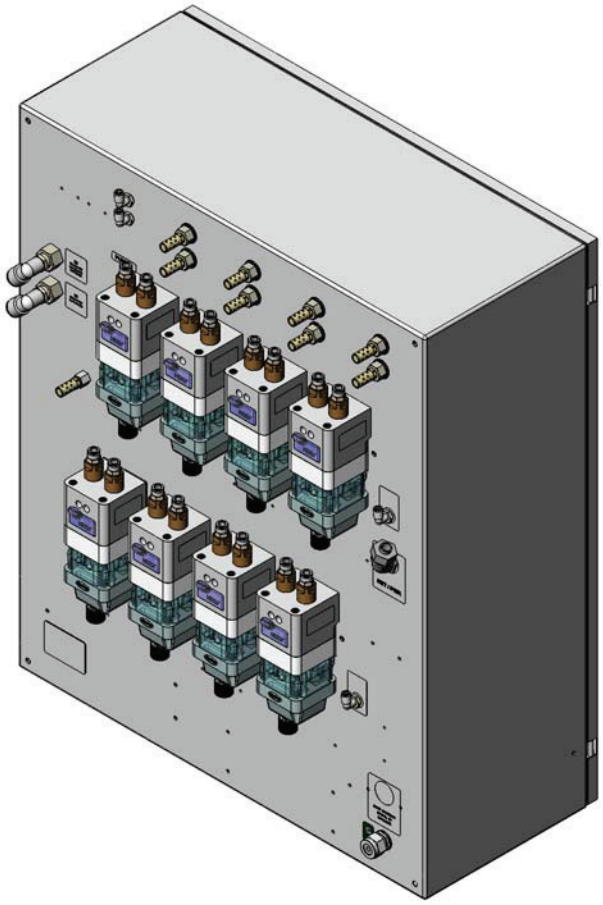


Figure 1 Prodigy Automatic System HDLV Pump Panel (Eight-Pump Panel Shown)

Panel Components

External Components

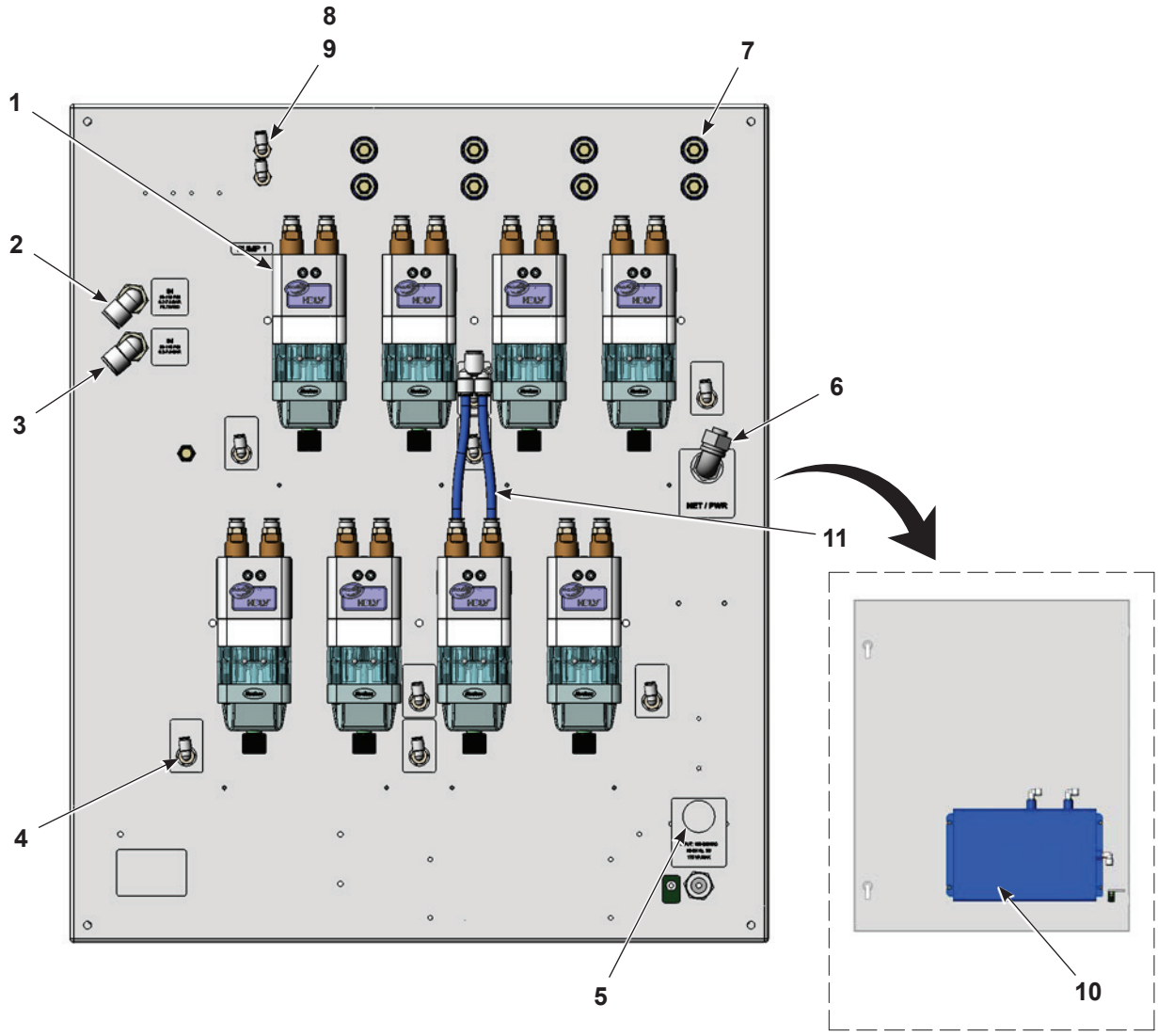


Figure 2 External Pump Panel Components (Eight-Pump Panel Shown)

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

Internal Components

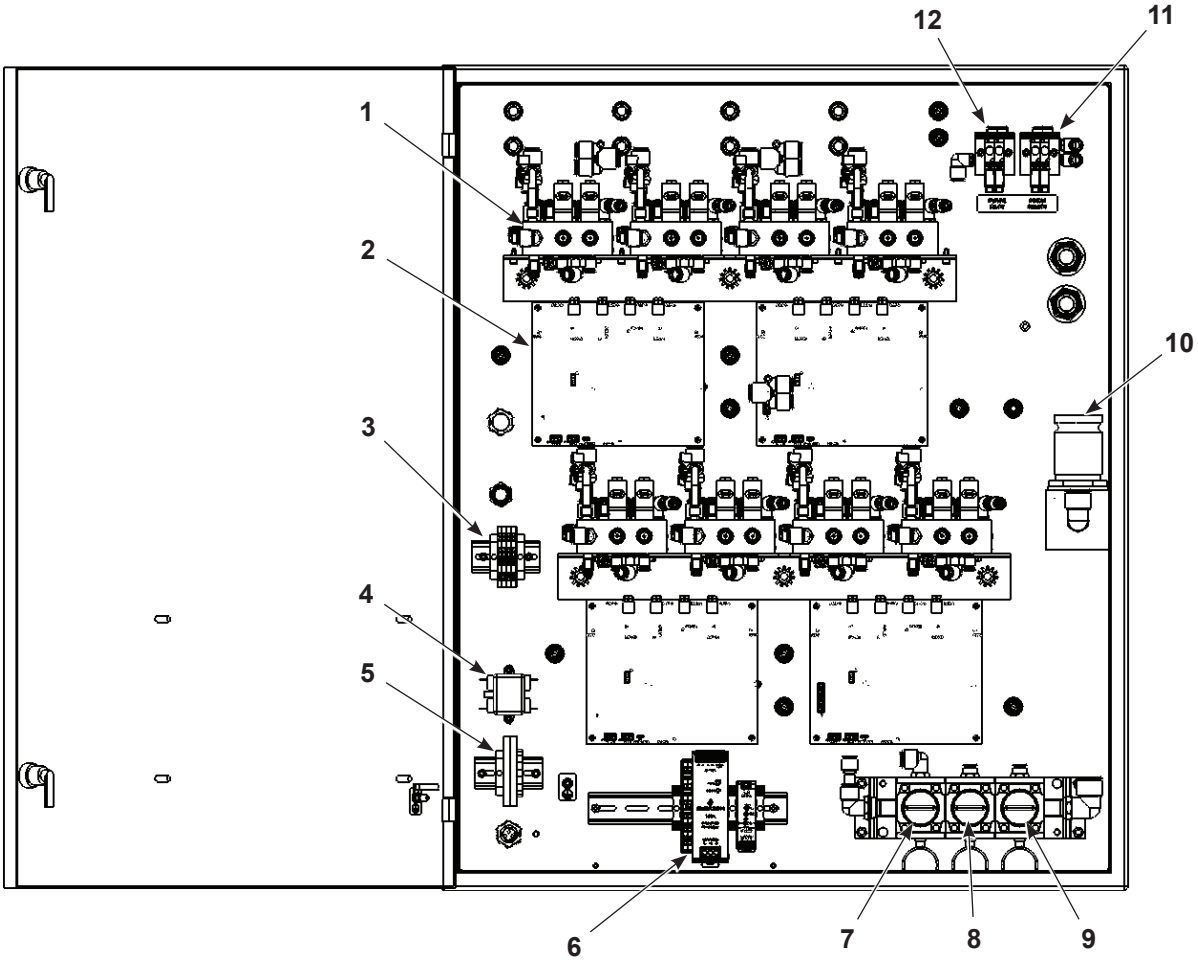


Figure 3 External Pump Panel Components (Eight-Pump Panel Shown)

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

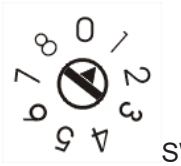
Pump Panel Configuration and Layout

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

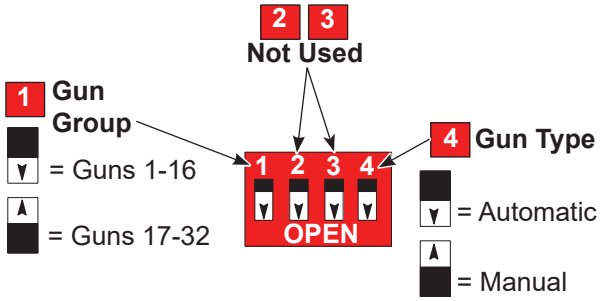


Figure 4 SW2 Settings

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

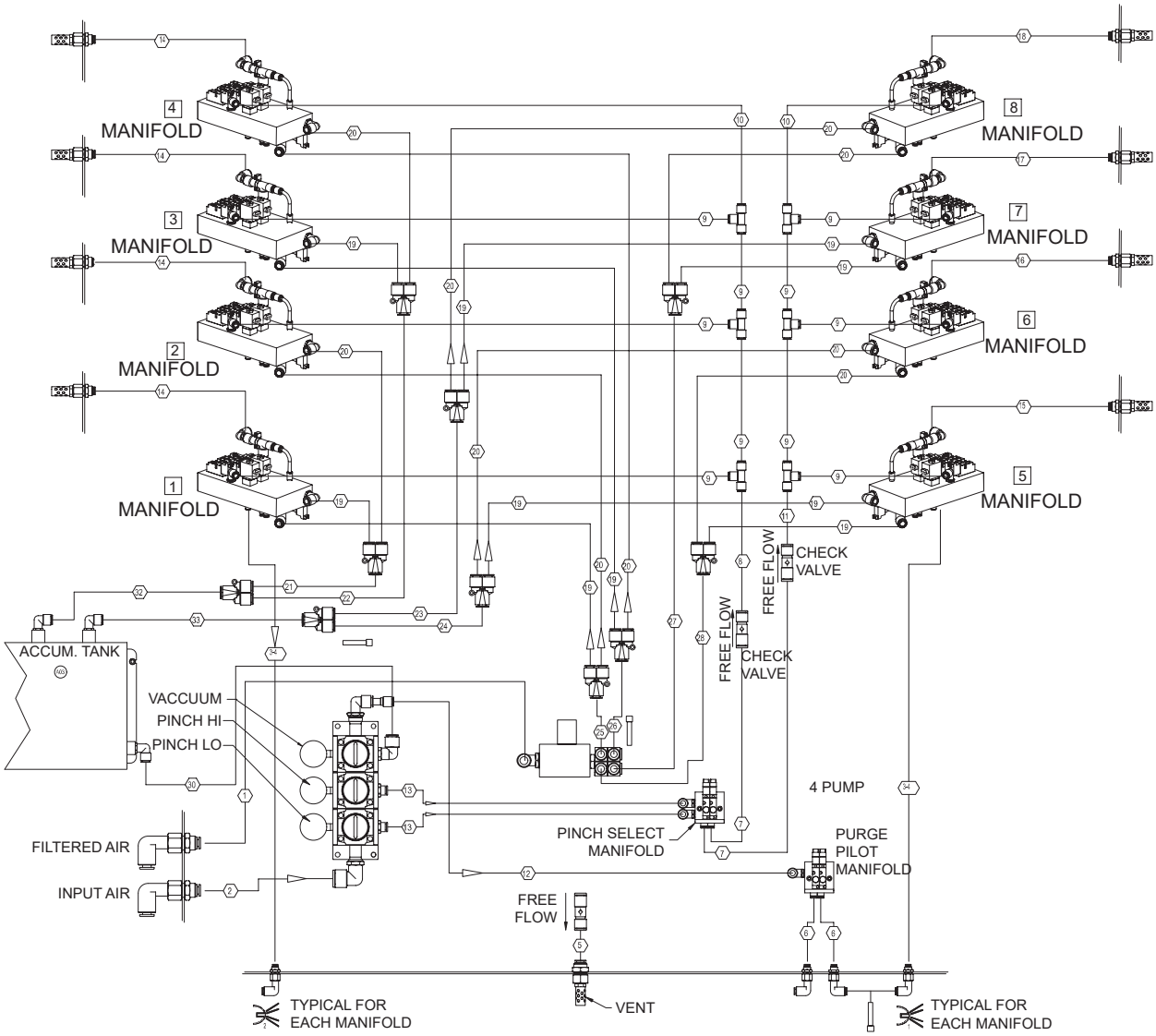


Figure 6 Pump Panel Pneumatic Diagram − Pump Panel to Pump Manifolds (Eight-Pump Panel Shown)

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

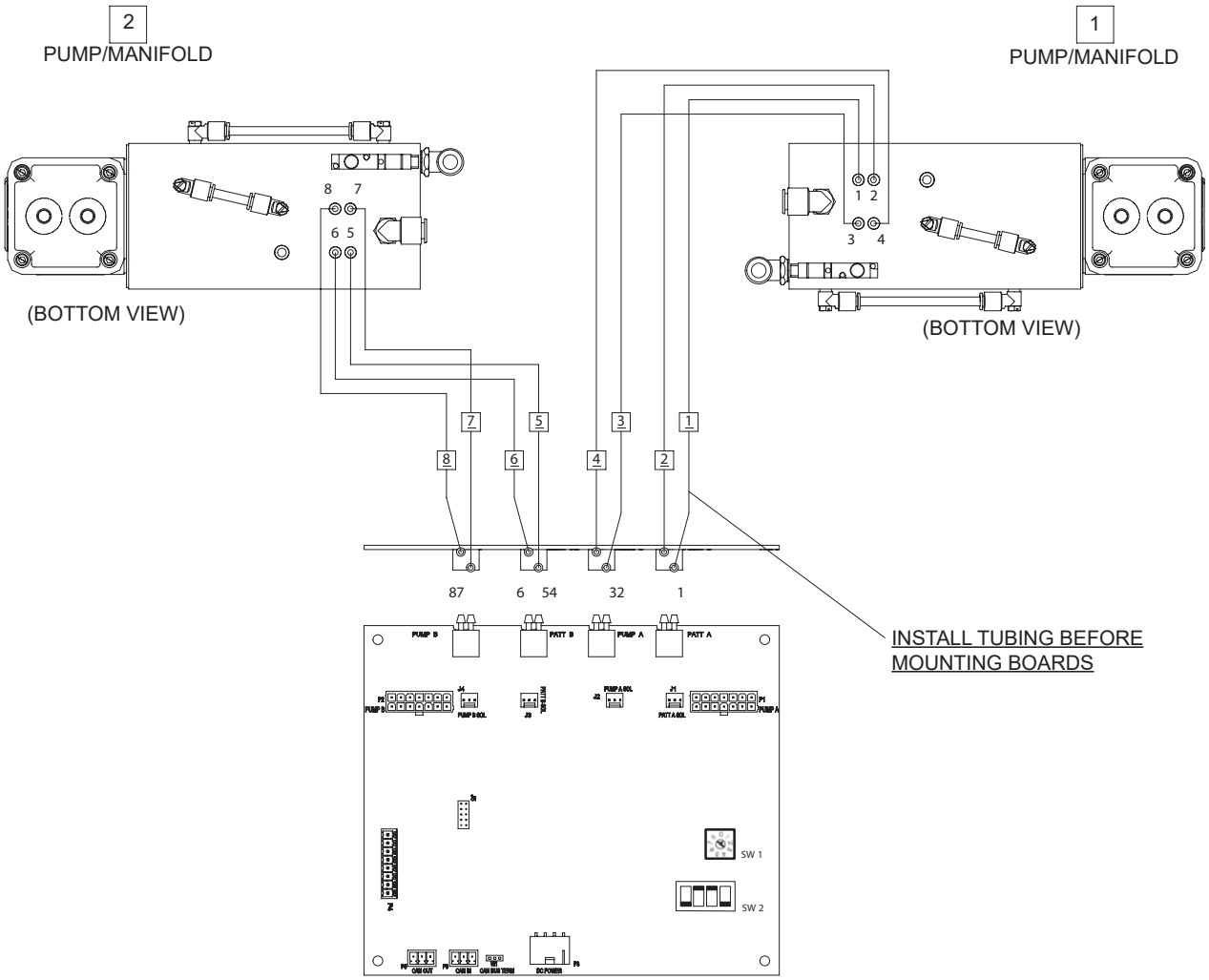


Figure 7 Pump Panel Pneumatic Diagram − Pump Manifolds to Circuit Board

Wiring Diagrams

Circuit Board to Pump Manifolds

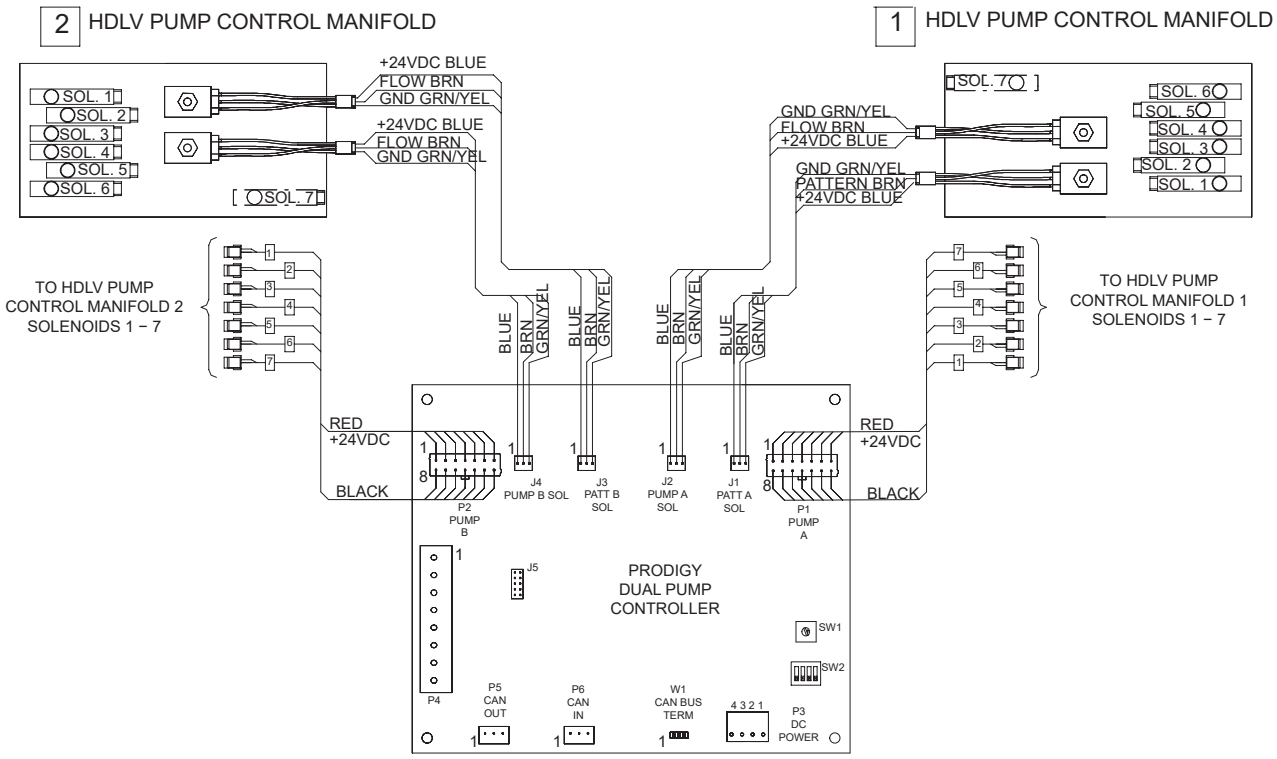


Figure 8 Circuit Board to Pump Manifolds Wiring Diagram

Network and Power Wiring Diagram

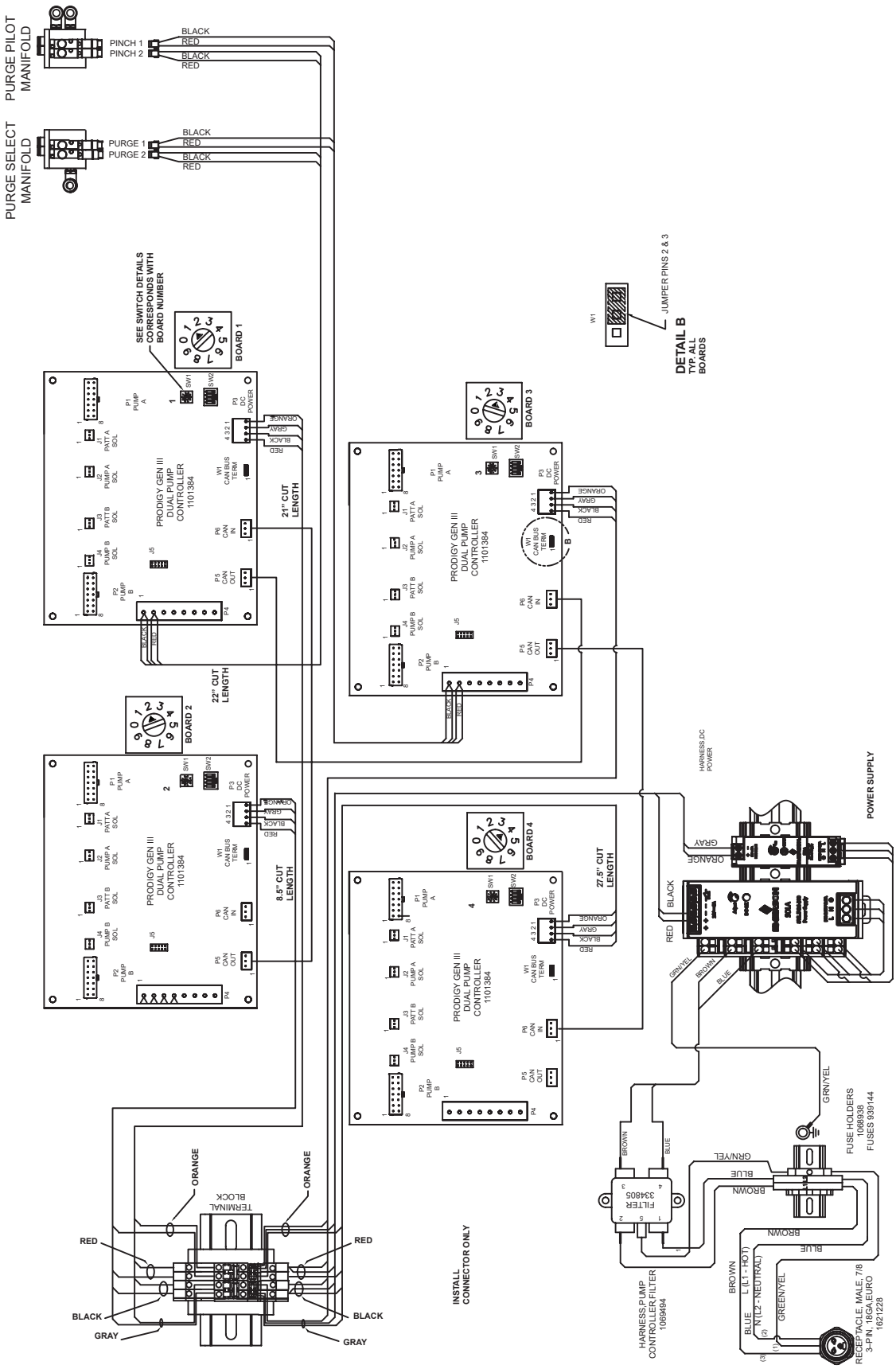


Figure 9 Network and Power Wiring Diagram

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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	1101498	KIT, PCA replacement, Prodigy pump control, Generation III	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	1622073	ASSEMBLY, 24 V and 5 Vdc, power supply, Prodigy	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	

NOTE: A. When replacing manifold, perform calibration procedure as described in Manual Gun Controller manual.

B. When replacing the circuit board, refer to *Pump Panel Configuration and Layout* on page 7 for switch settings. Also perform calibration procedure as described in Manual Gun Controller manual.

C. For manifold assembly part numbers, refer to manual 1081195.

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.

NS: Not Shown

AR: As Required

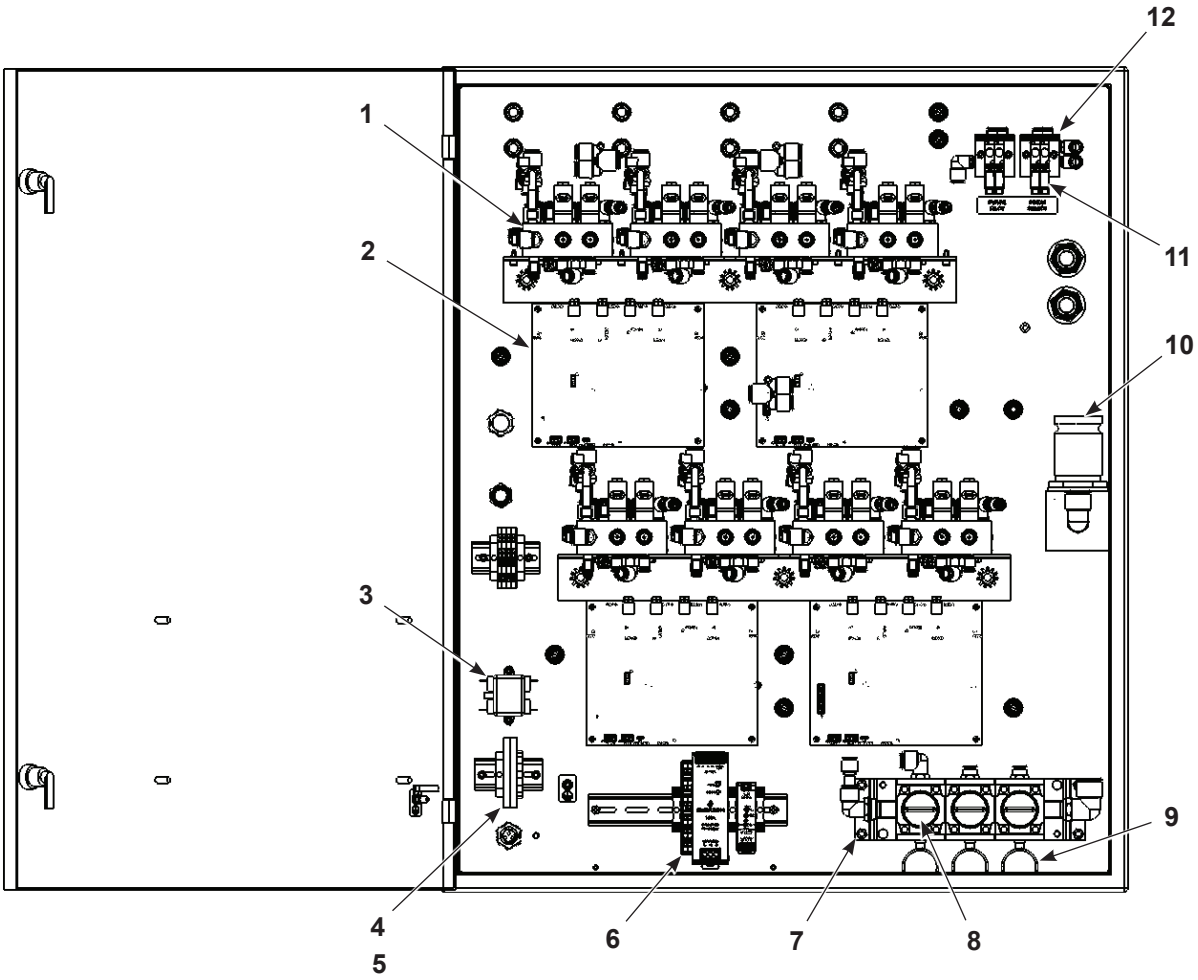

Figure 10 Internal Pump Panel Replacement Parts (Eight-Pump Panel Shown)

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				

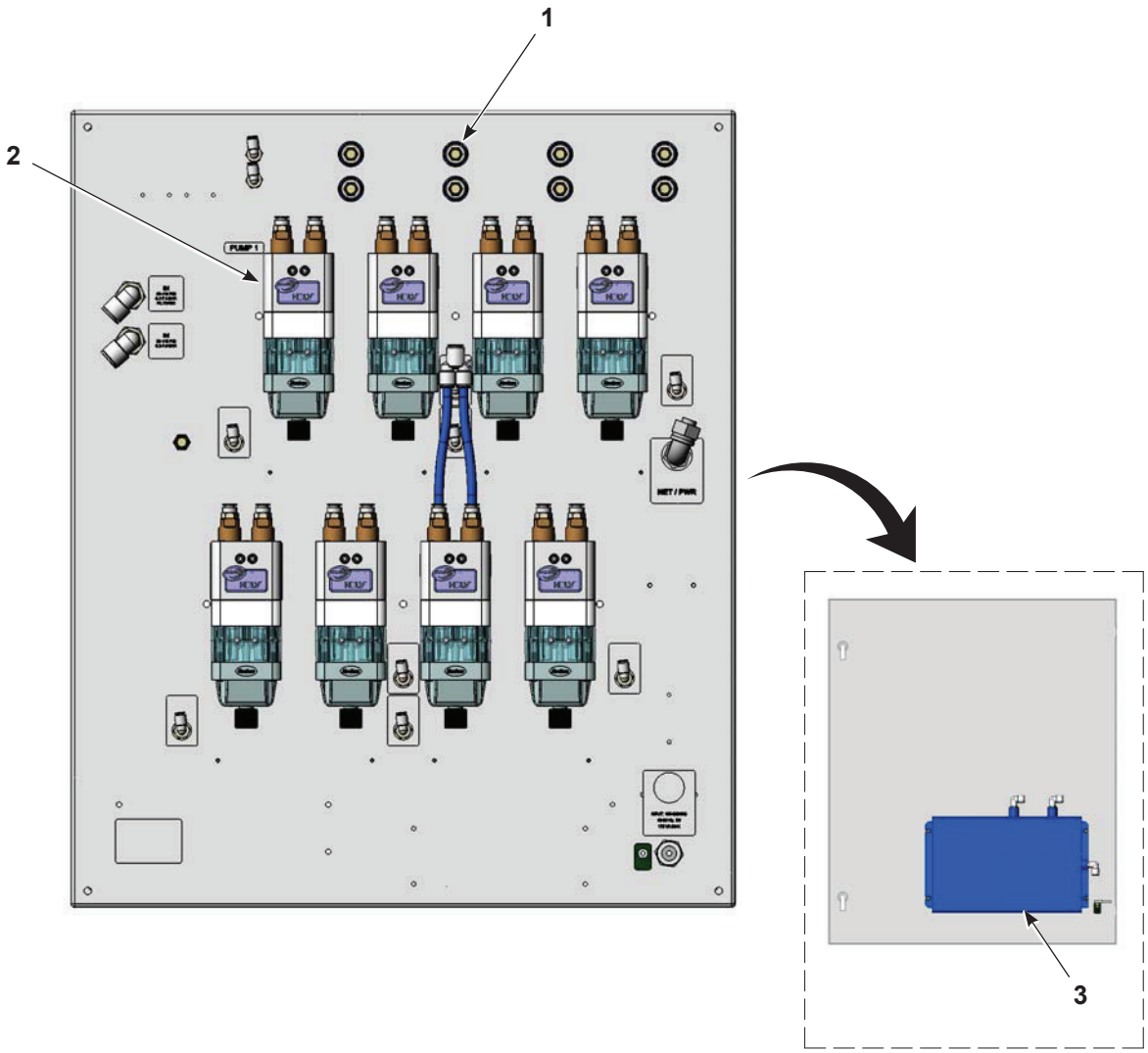

Figure 11 External Pump Panel Replacement Parts (Eight-Pump Panel Shown)

EU DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: Encore HD Automatic System Pump Panel

Models: Prodigy HDLV Automatic Pump System, 4-8 Applicators

Description: Automatic programmable powder pumping system for automatic applicators and interfaced with the controls.

Applicable Directives:
2006/42/EC Machinery Directive
2014/35/EU Low Voltage Directive
2014/30/EU EMC Directive

Current Versions of These Standards / Norms Used for Compliance:

EN/ISO 12100	EN55011
EN60204	EN61000-6-2
	EN61000-6-3

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

Quality System DNV – ISO9001 Certified

Date: 09 Aug 2022

_____
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UK DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: Encore HD Automatic System Pump Panel

Models: Prodigy HDLV Automatic Pump System, 4-8 Applicators

Description: Automatic programmable powder pumping system for automatic applicators and interfaced with the controls.

Applicable UK Regulations
Supply Machinery Safety Regulations 2008
Electrical Equipment Safety Regulations 2016
Electromagnetic Compatibility Regulations 2016

Standards Used for Compliance:

EN/ISO12100	EN55011
EN60204	EN61000-6-2
	EN61000-6-3

Principles:
This product has been manufactured according to good engineering practice.
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Quality System DNV – ISO9001 Certified

Date: 09 Aug 2022

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