Prodigy® HDLV® Pump Generation II, Pump Manifold and Circuit Board

Customer Product Manual
Part 1081195-11

Issued 10/18

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: http://www.nordson.com.

Address all correspondence to:

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Attn: Customer Service
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Change Record

Revision	Date	Change
A04	8/09	Added pinch valve kit 1097918 and cleaning instructions.
A05	12/09	Added manifold and circuit board information and parts list. Added flow control kit (part number 1098501) to parts list.
A06	1/10	Replaced solenoid valve 1027412 with part number 1099534.
A07	5/10	Replaced manifold assembly 1052915 with part number 1101343. Replaced PCA replacement kit 1057815 with part number 1101498.
08	6/14	Replaced gasket part numbers.
09	1/16	Updated troubleshooting section.
10	3/16	Updated gaskets.
11	10/18	Updated gasket part numbers. Added enhanced pinch valve manifold kit. Added to torque instructions on assembling pump.

Prodigy HDLV Generation II Pump, Pump Manifold, and Circuit Board

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 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 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

See Figure 1. The Prodigy HDLV (High-Density powder, Low-Volume air) Generation 2 powder feed pump transports precise amounts of powder from a feed source to a powder spray gun.

The design of the pump and the small diameter powder tubing used allow powder to be purged quickly and thoroughly for fast color changes.

The pump is more efficient than traditional venturi-style pumps in that very little of the air that is used to operate the pump is delivered to the spray gun. The only air in the powder stream to the spray gun is that which is used to move the powder out of the pump.

The standard-flow pump can be converted into a hi-flow pump by installing a hi-flow fluidizing tube retrofit kit. Refer to page 20 for the kit part number. The kit includes installation instructions.

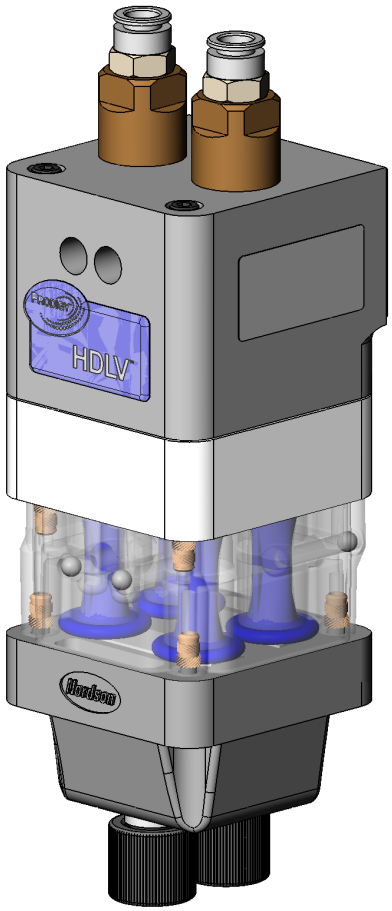


Figure 1 Prodigy HDLV Generation 2 Pump

HDLV Pump Components

See Figure 2.

Item	Description	Function
1	Purge Air Fittings and Check Valves	Route high pressure purge air through the pump. Check valves prevent powder contamination of the purge valves.
2	Fluidizing Tubes	Porous cylinders that draw powder into the pump when a vacuum is applied, and force powder out of the pump when air pressure is applied.
3	Top Manifold	Contains the fluidizing tubes, check valves, and air passages.
4	Upper Y-Manifold	Interface between the pinch valves and the porous tubes; consists of two Y-shaped passages that join the inlet and outlet branches of either half of the pump.
5	Lower Manifold and Wear Blocks	Connect the inlet and outlet fittings to the pinch valves on either half of the pump.
6	Inlet Fitting	Connects to the tubing leading from the powder source.
7	Outlet Fitting	Connects to the tubing leading to the powder spray gun.
8	Pinch Valves	Open and close to allow powder to be drawn in or dispensed out of the fluidizing tubes.
9	Pinch Valve Manifold	Houses the pinch valves. Made from clear plastic with metal thread inserts and ground spring molded in.

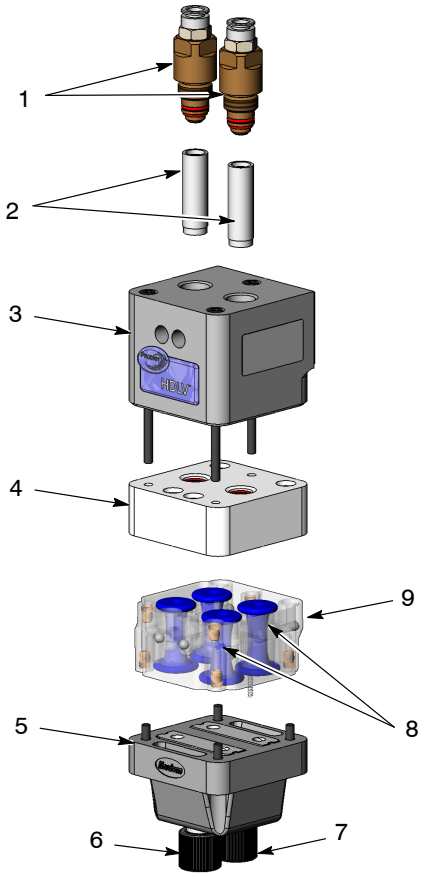


Figure 2 HDLV Pump Components

Theory of Operation

Pumping

The Prodigy HDLV pump consists of two halves that function identically. The halves alternately draw powder in and dispense powder out of the pump; while one half is drawing powder in, the other half is dispensing powder out.

Left Half Drawing Powder In
See Figure 3. The left suction pinch valve is open, while the left delivery pinch valve is closed. Negative air pressure is applied to the left porous fluidizing tube, which draws powder in the inlet fitting, up the left side of the inlet manifold wear block, through the left suction pinch valve, and into the left fluidizing tube. After the negative air pressure has been on for the specified time, the fluidizing tube's negative air pressure shuts off and the left suction pinch valve closes.
Right Half Dispensing Powder Out
See Figure 3. The right suction pinch valve is closed, while the right delivery pinch valve is open. Positive air pressure is applied to the right porous fluidizing tube, which dispenses the powder out of the fluidizing tube, down the right delivery pinch valve, down the right side of the outlet manifold wear block, out the delivery fitting, and out to the tubing that leads to the powder spray gun.

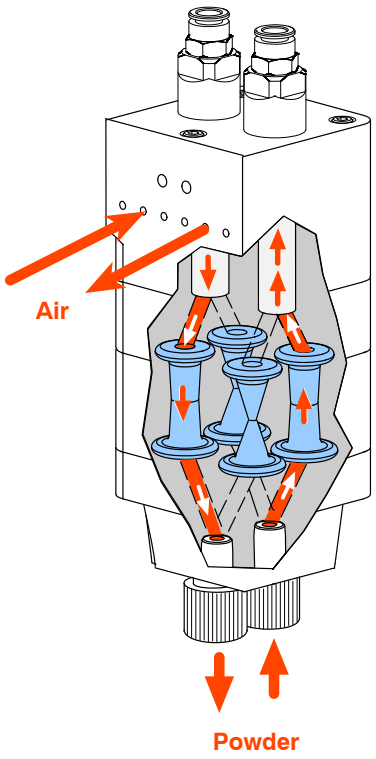


Figure 3 Left Side Drawing In, Right Side Dispensing

Note: Rear, left view of pump.

See Figure 4.

As the sides complete these processes, they alternate. In the example explained above, the left half would now dispense powder out while the right half would draw powder in.

As each half dispenses powder out, the powder in the tubing blends together, resulting in a consistent flow of powder from the spray gun.

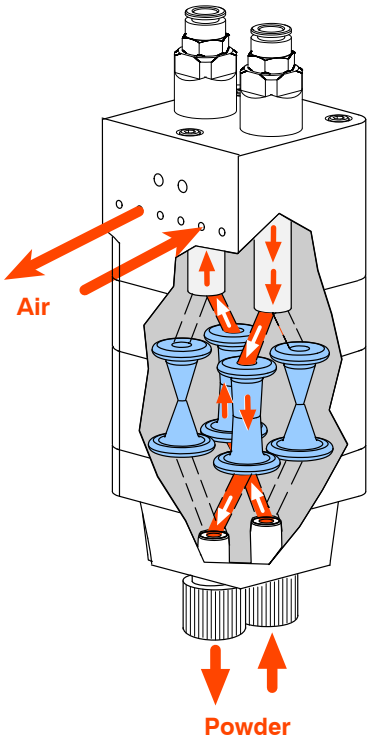


Figure 4 Left Side Dispensing, Right Side Drawing In

Purging

See Figure 5. When the operator initiates a color change, the pump goes through a three-stage purge process.

Stage 1: Soft Purge to Spray Gun

The suction pinch valves close, while the delivery pinch valves remain open. Pump assist air pressure turns on, starting at a low pressure and building up to maximum pump assist pressure. The air dispenses powder out of both fluidizing tubes, through the powder delivery tubing and spray gun and out into the booth.

Stage 2: Soft Purge to Feed Source

The suction pinch valves are open, while the delivery pinch valves close. Pump assist air pressure turns on, starting at a low pressure and building up to maximum pump assist pressure. The air dispenses powder out of both fluidizing tubes, through the powder suction tubing, and back into the powder feed source.

Stages 3 and 4: Hard Purge to Spray Gun and Feed Source

The delivery pinch valves open. Pump assist air pressure turns on at maximum pressure, while pulses of line air pressure are sent down the purge air fittings at the tops of the fluidizing tubes. The pulses of air remove any powder that remains in the pump, spray gun, and suction and delivery tubing.

After the delivery side is purged, the delivery pinch valves close and the suction pinch valves open. The suction side is purged in the same way as the delivery side.

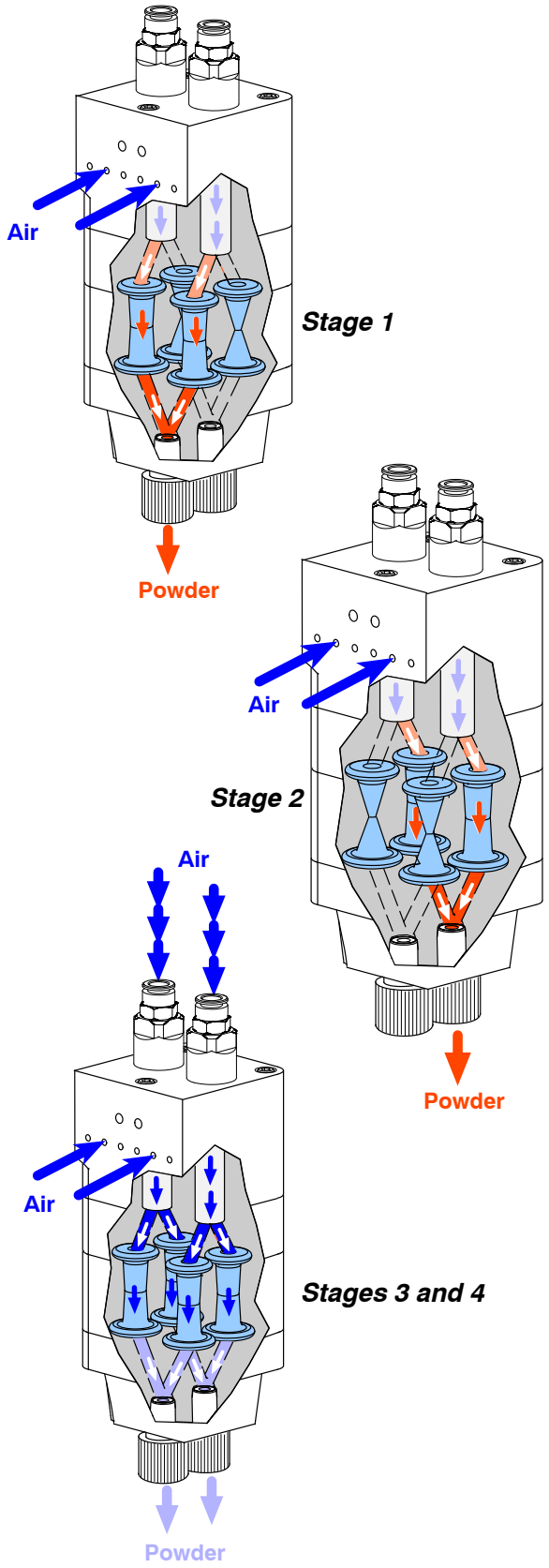


Figure 5 Purging Operation

Specifications

Standard Pump Output (Maximum)	
27 kg (60 lb) per hour	
Air Consumption	
Conveying Air	12.5–31 l/min (0.438–1.1 scfm)
Gun Pattern Air	6–57 l/min (0.2–2.0 scfm)
Total Consumption	85–170 l/min (3–6 scfm)
Operating Air Pressures	
Pinch Valves	2.4 bar (35 psi)
Flow Control (to pattern air/pump assist)	5.9 bar (85 psi)
Vacuum Generator	3.5 bar (50 psi)
Powder Tubing	
Size	8 mm OD x 6 mm ID
Length	Output: 9–23 m (30–75 ft) Input: 1–3 m (3.5–12 ft)
Dimensions	
See Figure 6	

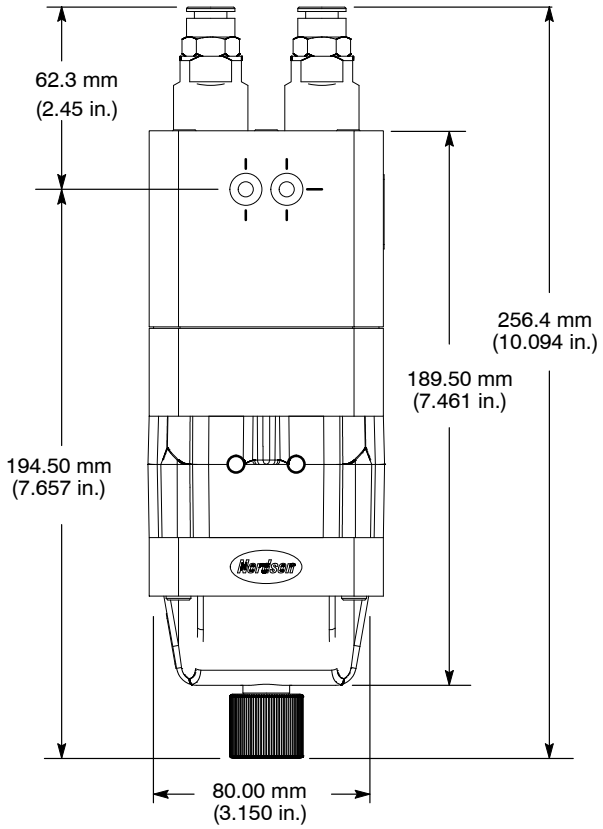


Figure 6 Standard Pump Dimensions

Powder Tubing Installation

Standard 8-mm OD Poly Tubing

NOTE: Cut the poly tubing with a tubing cutter. Powder cross-contamination may result if the powder tubing is cut unevenly.

1. See Figure 7. Remove a retaining nut (2) and O-ring (1) from the pump.
2. Slide the retaining nut over the poly tubing (3).
3. Install the O-ring onto the powder tubing, sliding it down approximately 50 mm (2 in.) from the end.
4. Push the poly tubing into the wear block (6) until it bottoms out.
5. Slide the O-ring up the powder tubing until it stops against the wear block threads.
6. Thread the retaining nut onto the wear block and tighten it finger-tight.

Flexible 8-mm OD Tubing

NOTE: The barbed adapters used to connect flexible tubing to the pump are not included with the pump. They are shipped with manual powder spray guns, and can also be ordered separately. Refer to the Spare Parts list on page 20 for the part number.

1. See Figure 7. Remove a tube retaining nut (2) and O-ring (1) from the pump.
2. Install the O-ring onto the tubing adapter (4), until it is up against the adapter flange.
3. Install the end of the adapter into the wear block (6).
4. Install the retaining nut over the end of the barbed adapter, then thread the nut onto the wear block and tighten it finger-tight.
5. Push the flexible powder tubing (5) over the barbed end of the adapter.

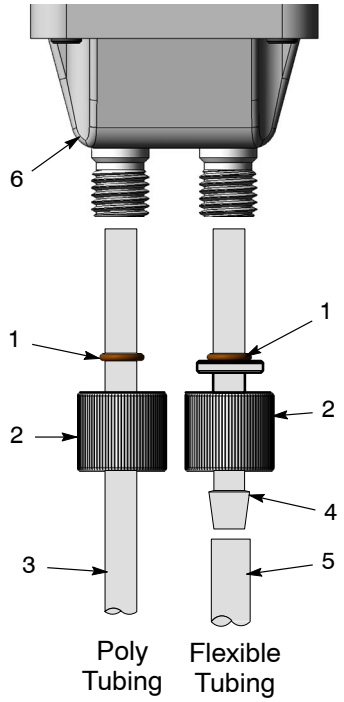


Figure 7 Powder Tubing Installations

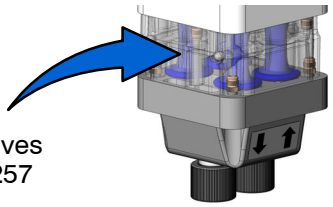
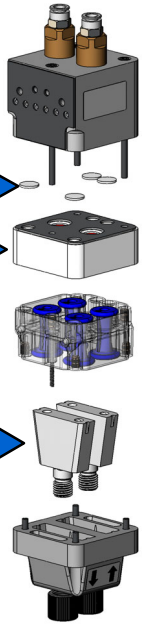
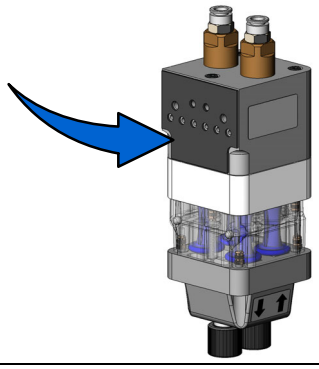
1. O−ring
2. Tube retaining nut
3. Poly tubing
4. Barbed tubing adapter
5. Flexible tubing
6. Wear block

Maintenance

Perform these maintenance procedures to keep your pump operating at peak efficiency.

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

NOTE: You may have to perform these procedures more or less frequently, depending on factors such as operator experience and type of powder used.

Frequency	Part	Procedure
Daily	Pinch Valves Kit 1057257 	Inspect the pinch valve manifold for signs of powder leakage. If you see powder in the pinch valve manifold or stress cracks in the pinch valves, replace the pinch valves and filter discs.
Every Six Months or Each Time You Disassemble the Pump	Filter Discs included in Kit 1057257 Upper Y-Manifold Kit 1057262 Lower Manifold Wear Blocks Kit 1057260 	**NOTE:** To reduce downtime, keep a spare upper manifold and set of lower wear blocks in stock to install while you are cleaning the other set. Disassemble the pump and inspect the lower manifold wear blocks and upper Y-manifold for signs of wear or impact fusion. Clean these parts in an ultrasonic cleaner if necessary. **NOTE:** If you clean the upper Y-manifold in an ultrasonic cleaner, you must replace its gasket. Remove as much of the gasket as possible, then use isopropyl alcohol to clean the adhesive from the manifold.
	Gasket 1613040 	Inspect the gasket for damage. Replace if necessary.

Troubleshooting

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

These troubleshooting procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, call the Nordson Finishing Customer Support Center at (800) 433-9319 or contact your local Nordson representative for help.

Problem	Possible Cause	Corrective Action
1. Reduced powder output (pinch valves are opening and closing)	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.
	Defective check valve	Replace the check valves.
2. Reduced powder output (pinch valves are not opening and closing)	Defective pinch valve	Replace the pinch valves and filter discs.
	Defective pinch solenoid valve	Replace the solenoid valve. Refer to either the pump panel or control manifold manual for more information.
	Defective check valve	Replace the check valves.
3. Reduced powder input (loss of suction from feed source)	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 either the pump panel or control manifold manual for more information.

Pump Port Functions

Figure 8 identifies the functions of the ports on the rear face of the pump.

Item	Function
1	Left Side Delivery Pinch Valve
2	Left Side Fluidizing Tube
3	Left Side Suction Pinch Valve
4	Right Side Suction Pinch Valve
5	Right Side Fluidizing Tube
6	Right Side Delivery Pinch Valve

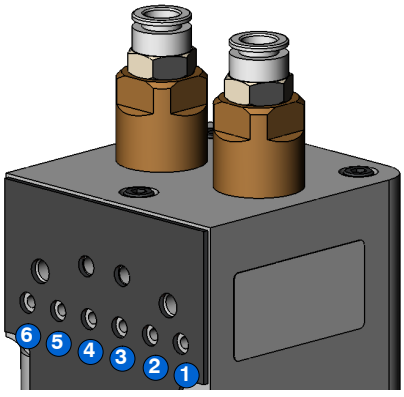


Figure 8 Solenoid and Flow Control Valve Functions

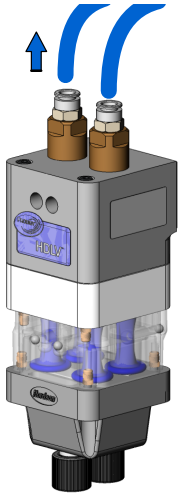
Repair

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

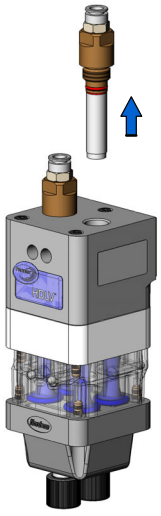
Fluidizing Tube Replacement

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

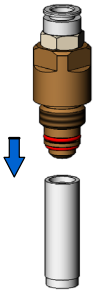
1. Relieve air pressure and disconnect the purge air tubing.



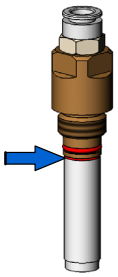
2. Loosen the fluidizing tube access plug and pull the fluidizing tube assembly straight out of the pump body.



3. Pull the fluidizing tube off the access plug.

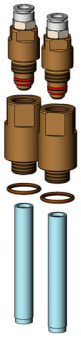


Seat the new fluidizing tube against the red O-ring.

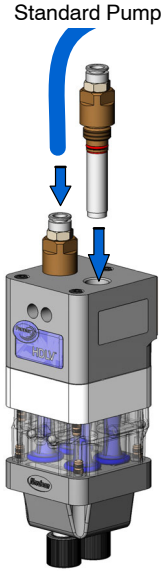


4. Install the fluidizing tube assemblies into the pump body. Tighten the access plugs, then connect the purge air tubing.

Retrofit Hi-Flow



Standard Pump



Pump Disassembly

To reduce downtime, keep a spare pump in stock to replace a pump that is being repaired. Refer to *Pump Parts* on page 18 for ordering information.

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

NOTE: Tag all air and powder tubing before disconnecting from the pump.

1. See Figure 9. Disconnect the purge air lines from the top of the pump.
2. Disconnect the inlet and outlet powder tubing from the bottom of the pump.
3. Remove the two screws, lock washers, and flat washers securing the pump to the pump panel and move the pump to a clean work surface.
4. See Figure 10. Starting with the fluidizing tubes, disassemble the pump as shown. Gaskets that are glued on do not need to be removed unless they are damaged.

NOTE: Refer to *Pinch Valve Replacement* on page 16 for instructions on removing the pinch valves from the pinch valve manifold.

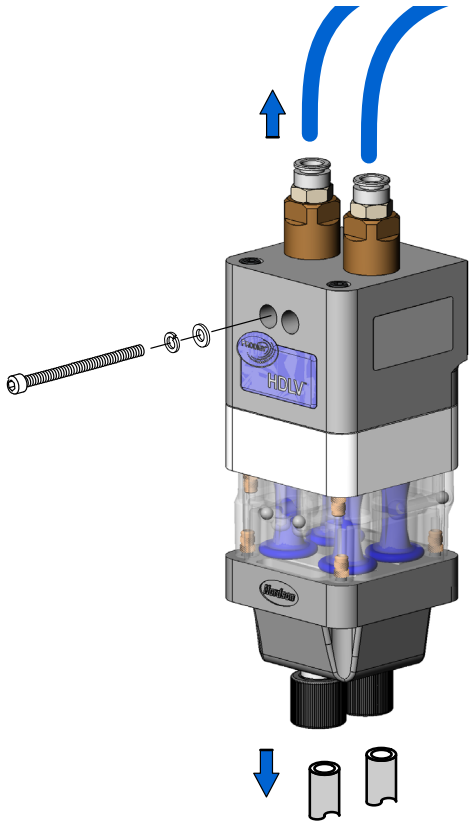


Figure 9 Disassembly Preparation

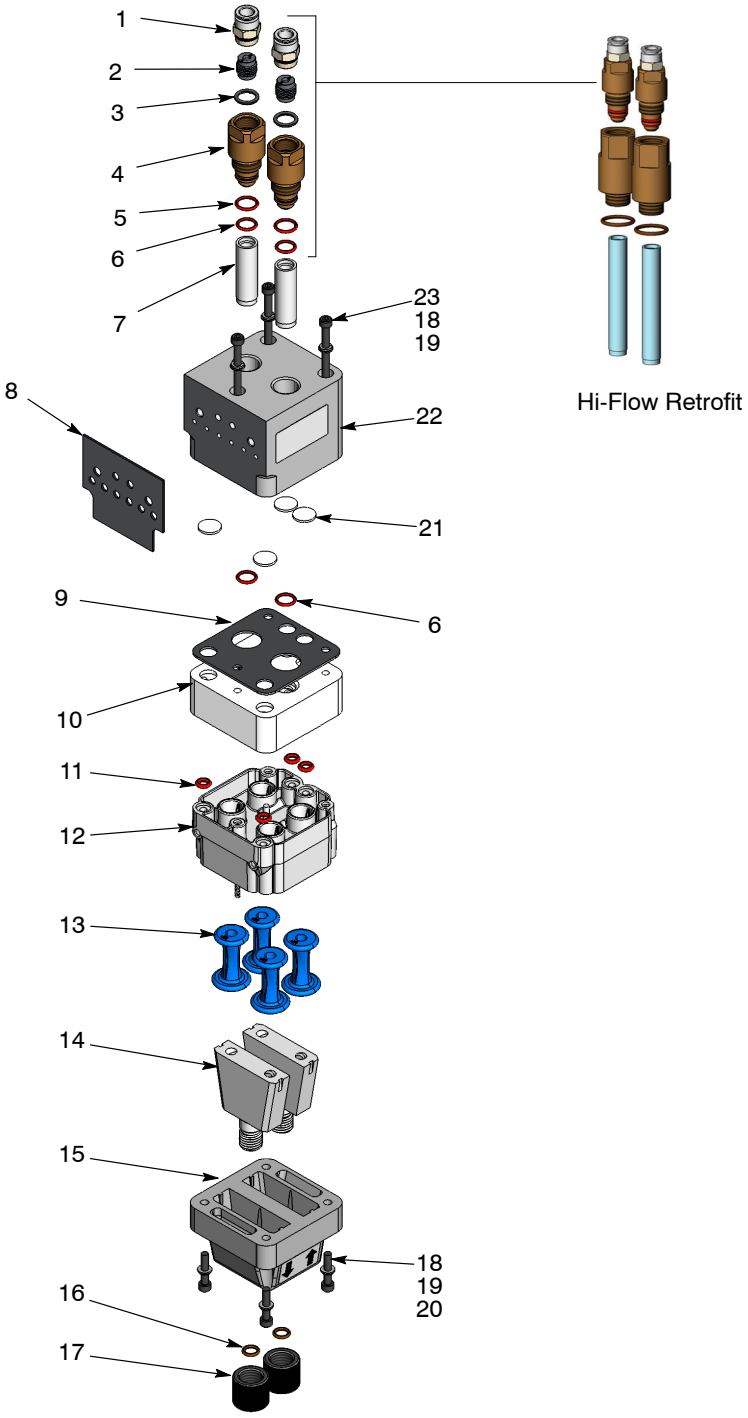


Figure 10 Pump Disassembly

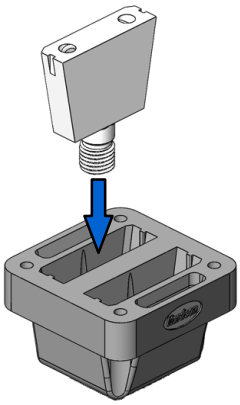
1. 10-mm tube fittings (2)
2. Check valves (2)
3. O-rings (2)
4. Access plugs (2)
5. O-rings (2)
6. O-rings (4)
7. Fluidizing tubes (2)
8. Body gasket
9. Upper Y manifold gasket
10. Upper Y manifold
11. O-rings (4)
12. Pinch valve manifold
13. PInch valves (4)
14. Lower manifold wear blocks (2)
15. Lower manifold body
16. O-rings (2)
17. Tube nuts (2)
18. Screws M5 x 25 (4)
19. Lockwashers M5 (7)
20. Flatwashers M5 (7)
21. Filter discs (4)
22. Top manifold
23. Screws M5 x 100 (3)

Pump Assembly

CAUTION: Follow the assembly order and specifications shown. Pump damage may occur if you do not carefully follow the assembly instructions.

NOTE: Upper and lower Y manifolds intended for repeated contact with food must be thoroughly cleansed prior to their first use. However, do not clean the porous fluidizing tubes.

1



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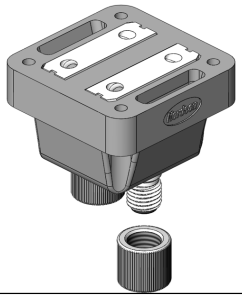

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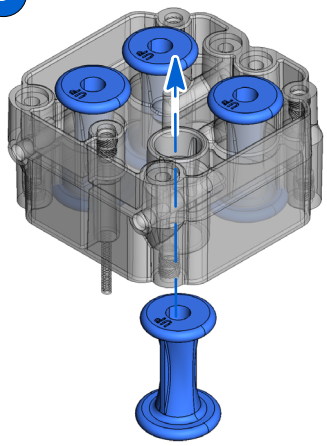
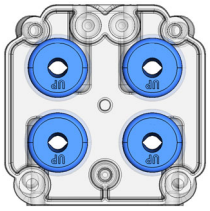
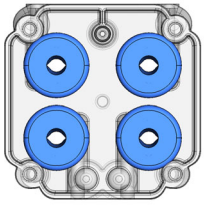




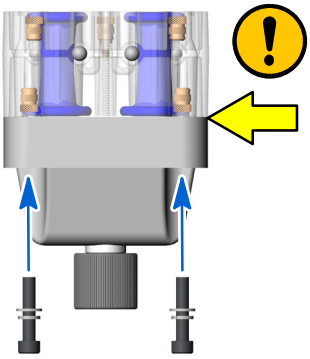
Top



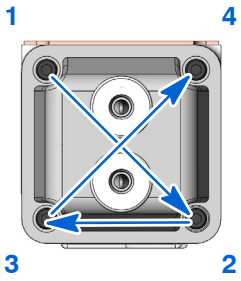
Bottom

Refer to *Pinch Valve Replacement* on page 16 for specific instructions.

4

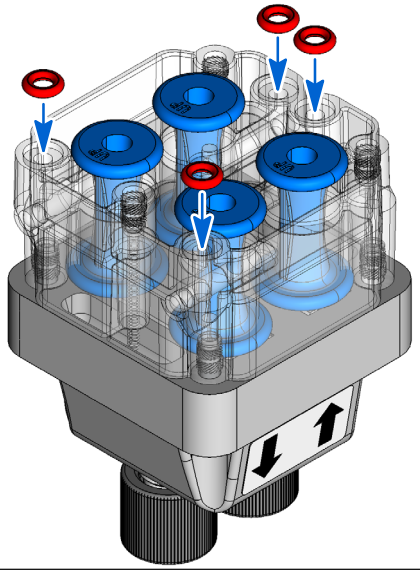


CAUTION: Stop tightening when the pinch valve manifold contacts the lower manifold body. Then torque screws as described below.



Tighten screws two turns at a time using an alternating pattern until pinch valve manifold contacts the lower Y manifold. Once in contact with lower Y manifold, torque each screw to 20–25 in-lb.

5



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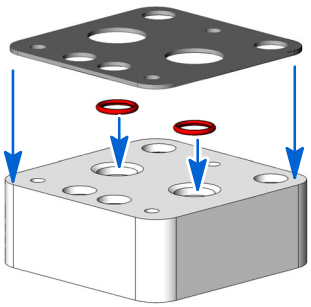

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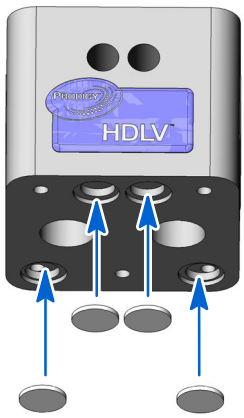

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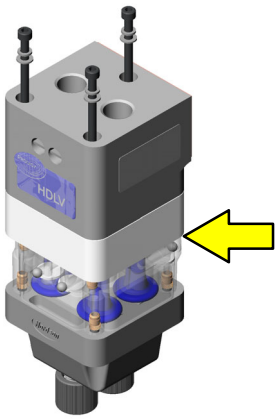
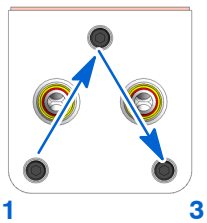
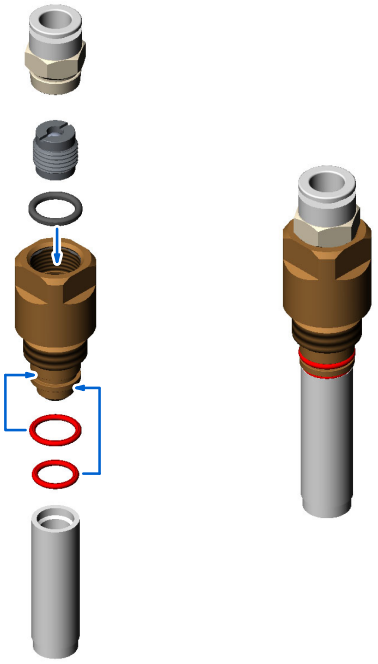


CAUTION:
Stop tightening when the pinch valve manifold contacts the upper Y manifold. Then torque the screws as described below.



Tighten screws two turns at a time using an alternating pattern until pinch valve manifold contacts upper Y manifold. Once in contact with upper Y manifold, torque each screw to 20–25 in-lb.

9



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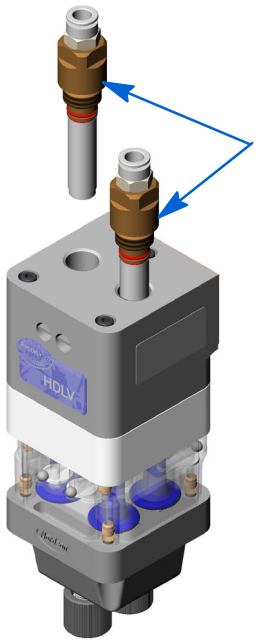


Pinch Valve Replacement

CAUTION: Before placing the pinch valve manifold in a vise, pad the jaws. Tighten the vise only enough to hold the valve manifold firmly. Failure to observe may result in damage to the pinch valve manifold.

Figure 11 shows the top of a pinch valve manifold.

- The top flanges of the pinch valves have the word UP molded into them.
- The top side of the valve manifold has four air passages sealed with O-rings.

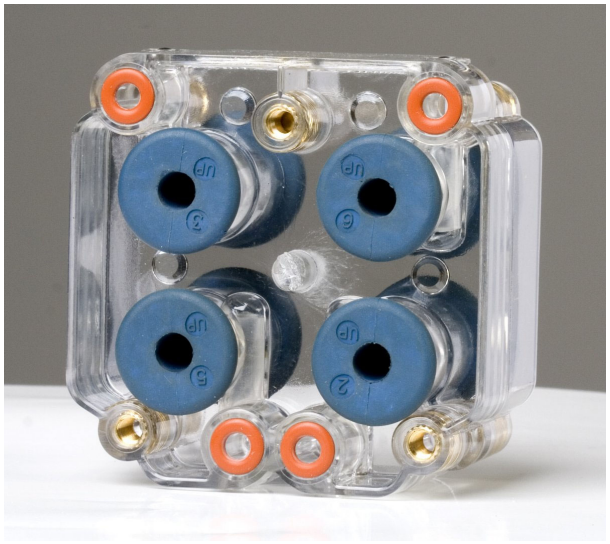


Figure 11 Top of Pinch Valve Manifold

NOTE: Replace the filter discs (included in the pinch valve kit) when you replace the pinch valves. Refer to step 7 of the *Pump Assembly* procedure.

Pinch Valve Removal

1. Place the pinch valve manifold in a padded vise.
2. Grasp the bottom flange of a pinch valve with one hand and pull it away from the valve manifold.
3. Cut the flange off with scissors, then pull the rest of the pinch valve out of the top of the valve manifold.

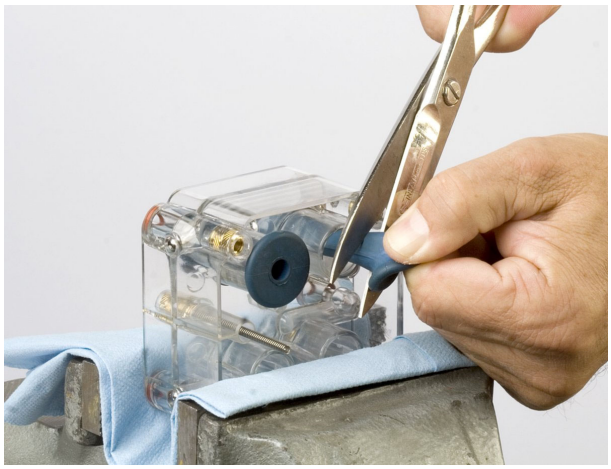


Figure 12 Pinch Valve Removal

Pinch Valve Installation

NOTE: All pinch valves intended for repeated contact with food must be thoroughly cleansed prior to their first use.

1. Insert the insertion tool through one of the valve chambers, then insert the UP flange of the pinch valve into the bottom end of the insertion tool.

   Align the pinch valve ribs with the square grooves in the valve chamber.

Figure 13 Inserting Pinch Valve into Insertion Tool

2. Pinch flat the UP flange of the pinch valve, then feed one end of the flange into the valve chamber.

Figure 14 Pinching Flat Pinch Valve UP Flange

3. Pull on the insertion tool until the end of the pinch valve is inside the valve manifold.

Figure 15 Pulling Pinch Valve into Valve Manifold

4. Continue pulling on the insertion tool until the pinch valve pops through the valve manifold and the tool comes loose.

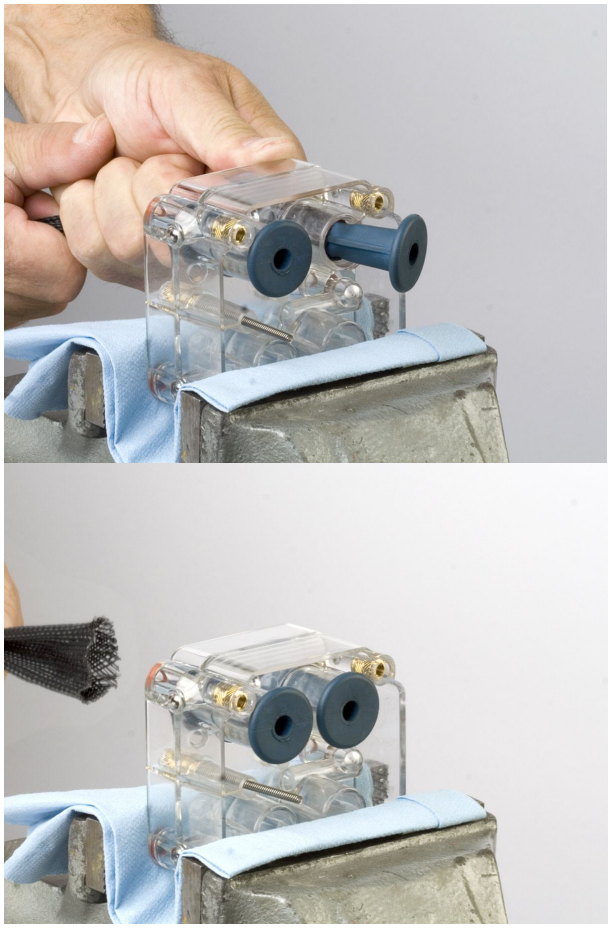


Figure 16 Pulling Pinch Valve through Valve Manifold

5. Pull the pinch valve bottom flange away to check the alignment of the valve ribs with the square grooves in the valve manifold. Pull and twist the pinch valve to align the ribs with the grooves as necessary.

Figure 17 Checking Rib and Groove Alignment

Parts

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

Pump Parts

See Figure 18.

Item	Part	Description	Quantity	Note
—	1081194	PUMP ASSEMBLY, HDLV	1	
1	971102	• CONNECTOR, male, 10 mm tube x $^{3}/_{8}$ in. unithread	2	
2	- - - - - -	• CHECK VALVE assembly, pump, Prodigy	2	A, C
3	941113	• O-RING, silicone, 0.438 x 0.625 x 0.094 in.	2	
4	- - - - - -	• PLUG, fluidizing tube access, HDLV pump	2	
5	940142	• O-RING, silicone, 0.50 x 0.625 x 0.063 in.	2	
6	940137	• O-RING, silicone, 0.437 x 0.562 x 0.063 in.	4	C
7	- - - - - -	• TUBE, fluidizing, HDLV pump	2	A, C
8	1613040	• GASKET, face, HDLV pump	1	C
9	1053234	• GASKET, HDLV pump	1	A
10	- - - - - -	• MANIFOLD, upper Y, HDLV pump	1	A
11	1053292	• O-RING, silicone, 0.219 x 0.406 x 0.094 in.	4	C
12	1614272	• MANIFOLD, pinch valve, HDLV pump	1	C
13	- - - - - -	• VALVE, pinch, HDLV pump	4	A, C
14	- - - - - -	• BLOCK, wear, lower manifold, HDLV pump	2	A
15	- - - - - -	• BODY, lower manifold, HDLV pump	1	C
16	945115	• O-RING, Viton, 8.00 x 2.00	2	A, C
17	1062070	• NUT, wear block tube retaining	2	
18	982085	• SCREW, socket, M5 x 25, black	4	C
19	983401	• WASHER, lock, M, split, M5, steel, zinc	7	C
20	983035	• WASHER, flat, M, regular, 5, steel, zinc	7	C
21	1080408	• DISC, filter, Prodigy HDLV pump	4	A, C
22	- - - - - -	• MANIFOLD, top, HDLV pump	1	
23	1053293	• SCREW, socket, M5 x 100, black	3	
NS	982802	• SCREW, socket, M5 x 70, black	2	B
NS		• WASHER, flat, regular, M5, steel, zinc	2	B
NS		• WASHER, lock, split, M5, steel, zinc	2	B

NOTE A: These parts are available in service kits listed on page 20.
B: Use these fasteners to secure the pump to the pump control panel.
C: Included in enhanced pinch valve manifold kit (1614438).
NS: Not Shown

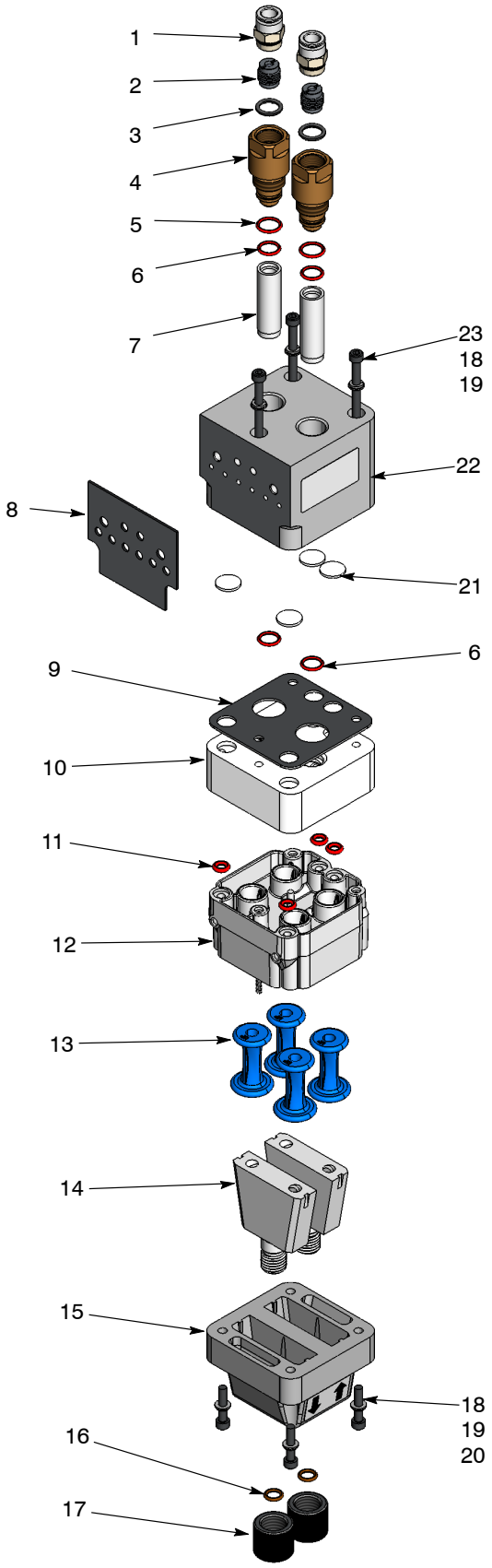


Figure 18 Standard Pump Parts

Spare Parts

★ Keep one of each of these assemblies in stock for each pump in your system.

Pinch Valve Kit ★
1081221
(Includes
8 pinch valves,
8 filter discs,
and 1 insertion tool)

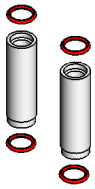
Instructions on page 16

Pinch Valve Kit ★
(for food contact)
1097918
(Includes
8 pinch valves,
8 filter discs,
and 1 insertion tool)

Instructions on page 16

Fluidizing Tube Kit ★
1057258
(Includes 4 tubes
and 8 O-rings part 940137)

Instructions on page 11

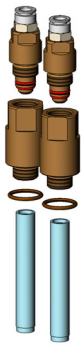


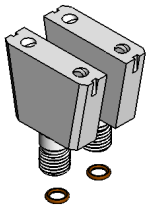
Check Valve Service Kit ★
1078161
(Includes 2 valves)

Check Valve Upgrade Kit
1078151
(Upgrades older pumps to
new design check valves.
Includes all parts shown)

Hi-Flow Fluidizing Tubes
Retrofit Kit
1093596

(Converts pump to hi-flow)



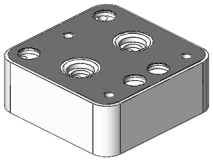


Lower Manifold Wear Block Kit ★
1057260
(Includes 2 wear blocks and
2 945115 O-rings)

Instructions on page 12

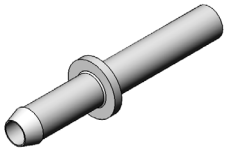
Upper Y-Manifold ★
1057262
(Includes manifold
and gasket)

Instructions on page 12



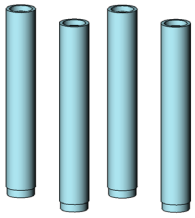
Barbed Tubing Adapter
for Flexible Tubing
1078006

Not included
with pump.
Order separately.

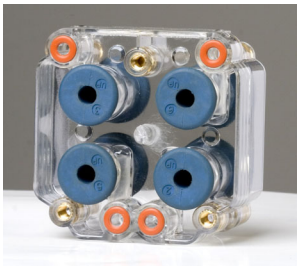


Hi-Flow Fluidizing Tube
Replacement Kit
1093557

(must have retrofit kit
installed to use)



Pinch Valve Body
Upgrade Kit
1081976
(Includes new
pinch valve manifold
with four pinch valves
and four O-rings
installed)



Enhanced Pinch Valve
Manifold Kit
1614438

(For parts included in
kit, refer to *Notes* in
parts list on page 18)

Manifold and Circuit Board

Description

See Figure 19. 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 control manifold controls the air flow in and out of the pump.

Manifold Components

See Figure 19.

Item	Description	Function
1	Solenoid Valves	Control the air flow to the pump during operation. **NOTE:** Refer to *Solenoid and Control Valve Functions* on page 35 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.
—	Solenoid Wiring Harness	Connects the manifold solenoids to the circuit board.
—	Circuit Board (Not Shown)	Contains the hardware and software that controls the timing of the solenoid and flow control valves. **NOTE:** The circuit board provides control for up to two pump control manifolds.

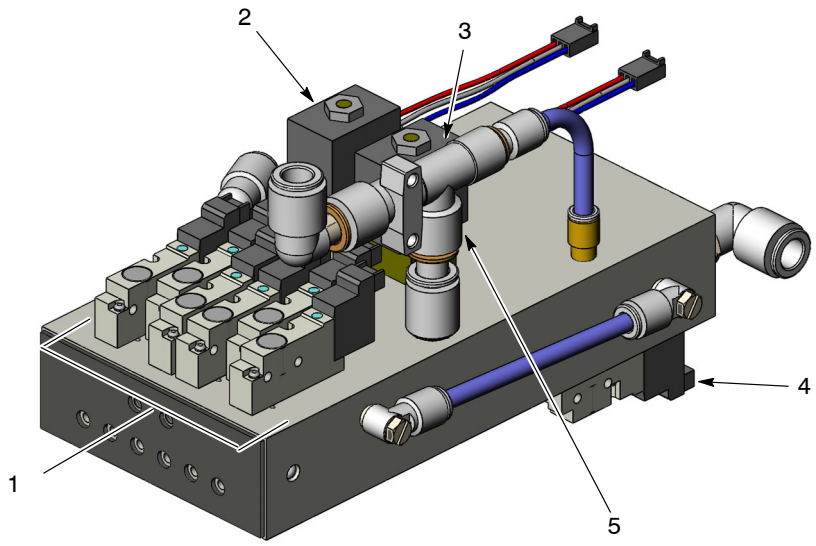


Figure 19 Prodigy HDLV Pump Control Manifold

Note: Manifold solenoid wiring harness and circuit board not shown.

Specifications

Output (Maximum)	27 kg (60 lb) per hour
Air Consumption	
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)
Operating Air Pressures	
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)

Installation

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

Pump and Manifold Installation

Follow these instructions to install a pump and manifold into an existing pump panel.

1. See Figure 20. 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.

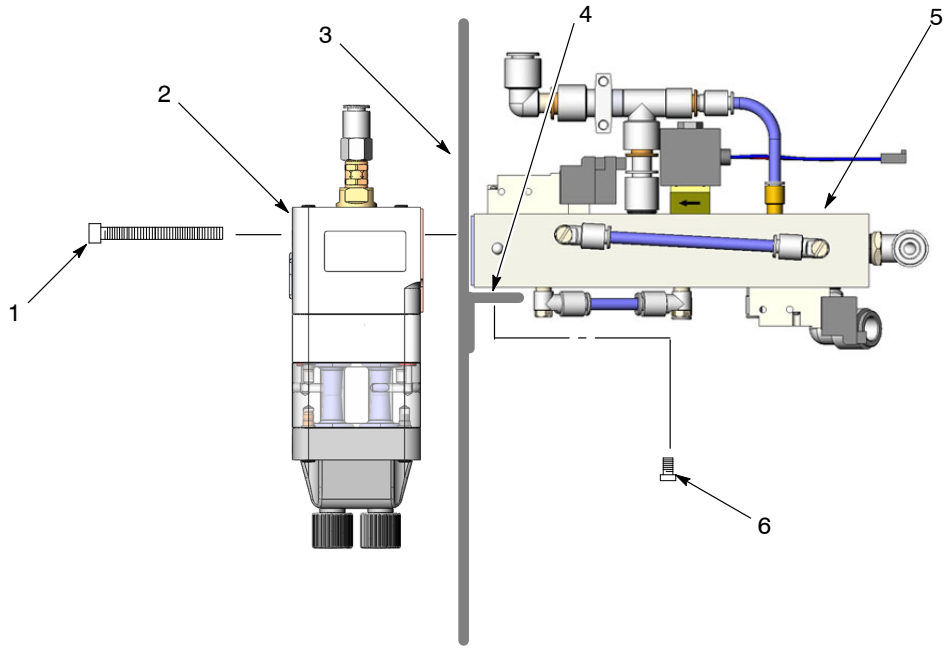


Figure 20 Pump and Manifold Installation

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

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Circuit Board Installation

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.

Refer to your pump panel manual for the mounting location of the HDLV pump circuit board.

Electrical and Pneumatic Connections

See Figure 21 and refer to the following table for a description of the appropriate connections on the circuit board.

NOTE: Each circuit board may control up to two pumps. The pump-specific connections on the circuit board are identified as Pump 1 and Pump 2.

Item	Description
XDCR1	Pump 1 Pattern Air Pressure Transducer In/Out
XDCR2	Pump 1 Flow Air Pressure Transducer In/Out
XDCR3	Pump 2 Pattern Air Pressure Transducer In/Out
XDCR4	Pump 2 Flow Air Pressure Transducer In/Out
J1	Pump 1 Pattern Air Flow Control Valve
J2	Pump 1 Pump Air Flow Control Valve
J3	Pump 2 Pattern Air Flow Control Valve
J4	Pump 2 Pump Air Flow Control Valve
J5	JTAG Programming/Debug Connector
P1	Pump 1 Solenoid I/O Harness
P2	Pump 2 Solenoid I/O Harness
P3	DC Power In
P4	Purge Connector
P5	CAN Out Connector
P6	CAN In Connector
W1	CAN Network Termination Header

Switches and Indicators

See Figure 21 and refer to the following table for a description of the switches and indicators on the circuit board.

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

P1 and P2 Pinouts

Pin	Function
1	+24 Vdc
2	+24 Vdc
3	+24 Vdc
4	+24 Vdc
5	+24 Vdc
6	+24 Vdc
7	+24 Vdc
8	Delivery 2 – Solenoid 6
9	Pressure 2 – Solenoid 5
10	Suction 2 – Solenoid 4
11	Suction 1 – Solenoid 3
12	Pressure 1 – Solenoid 2
13	Delivery 1 – Solenoid 1
14	Vacuum – Solenoid 7

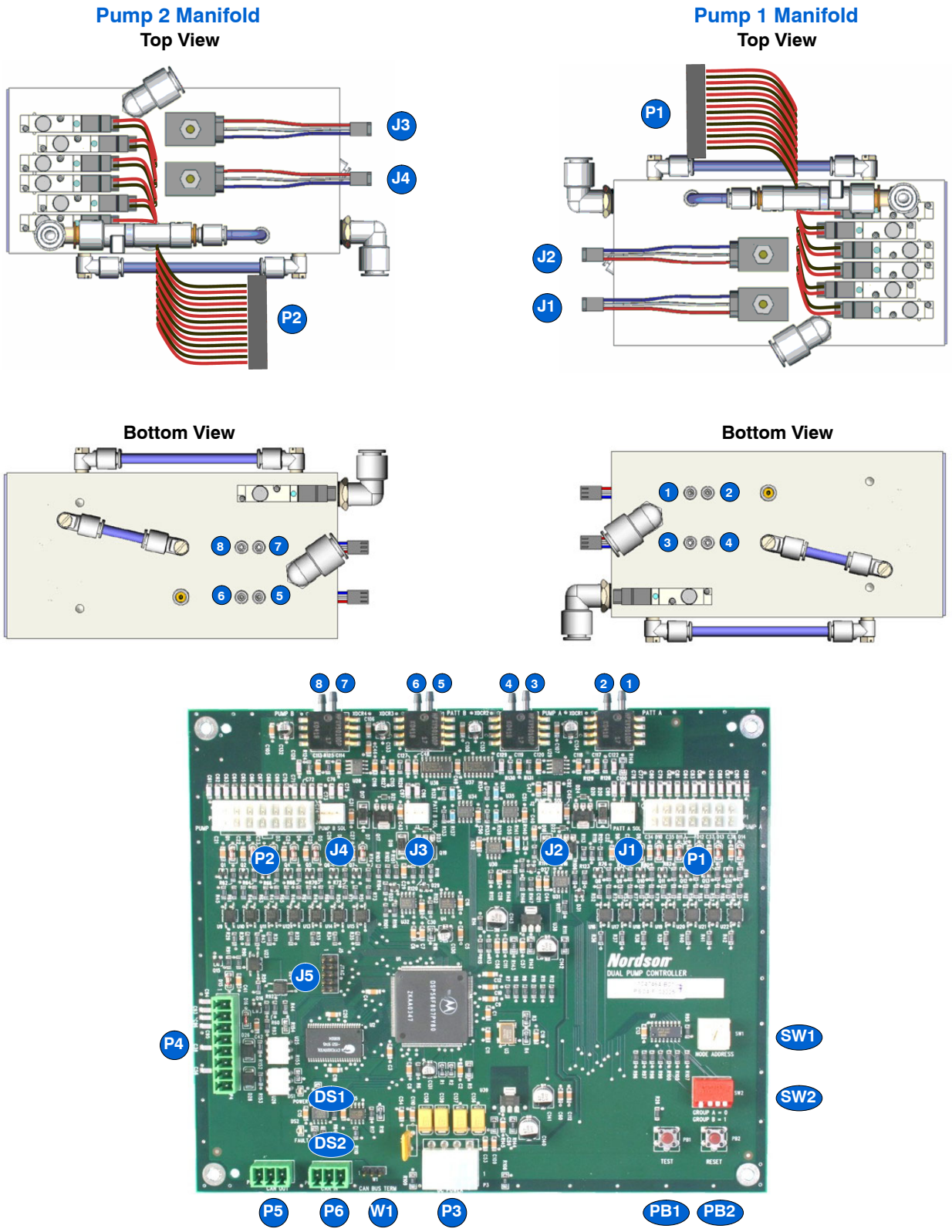


Figure 21 Circuit Board Connections

Note: The circuit board is shipped with air tubing labeled from 8–1 installed in the XDCR fittings. Connect the tubing to the appropriate fittings on the manifolds as illustrated.

Configuring the Circuit Board

See Figure 22. Make sure that SW1 and SW2 are set as illustrated.

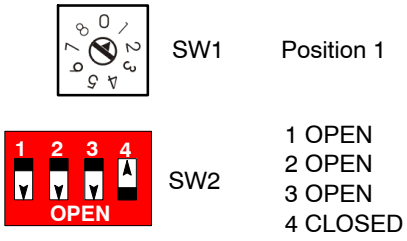


Figure 22 SW1 and SW2 Settings for Manual Powder Spray Systems

Terminating the Prodigy Network at the Circuit Board

See Figure 23. The circuit board is shipped with a jumper across pins 2 and 3 of the CAN BUS TERM terminals. Depending on how many pumps are in your pump panel, you may have to move the jumper to pins 1 and 2.

Two Pump System:
Leave jumper across pins 2 and 3.

One Pump System:
Move jumper to pins 1 and 2.

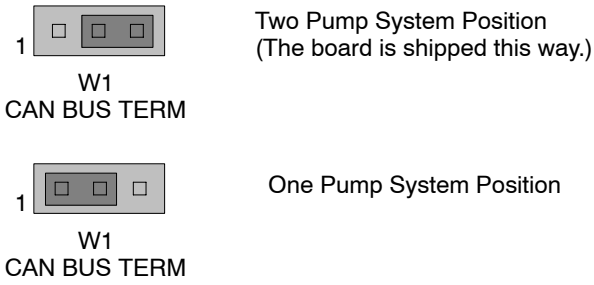


Figure 23 CAN BUS TERM Jumper Settings for Manual Powder Spray Systems

Calibrating the Circuit Board

NOTE: If you have a two-gun system, be sure to perform this procedure on both Prodigy Manual Gun Controllers.

When you install a new circuit board, use this procedure to calibrate it to the manifold.

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.

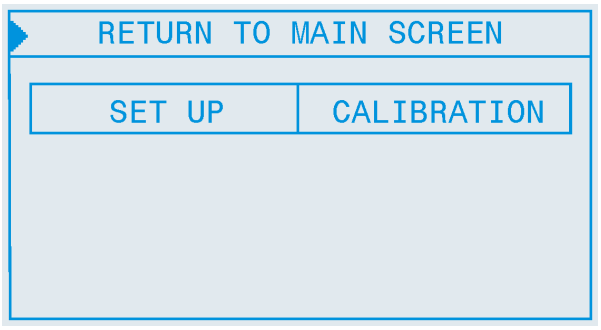


Figure 24 Configuration Screen

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

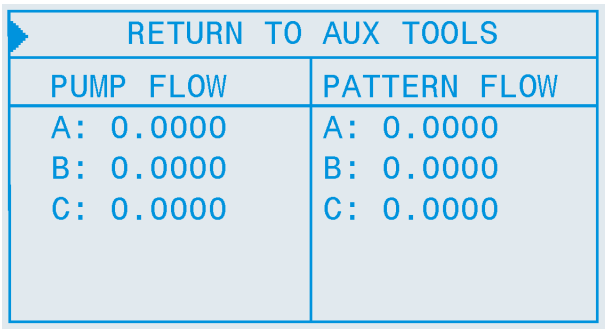


Figure 25 Calibration Screen

NOTE: Use the arrow keys or rotary dial to move the cursor to the appropriate setting, then press the ↵ key to select it. Use the arrow keys or rotary dial to change that value, then press the ↵ 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 26 for a description of the air and powder tubing connections for the pump and manifold.

NOTE: One circuit board may control up to two pumps. The transducer air fittings on the circuit board are pump-specific: XDCR1 and XDCR2 are for pump 1; XDCR3 and XDCR4 are for pump 2.

Item	Tubing	Function	Item	Tubing	Function
A	10 mm Blue	From Purge Air Source (Line Air Pressure)	G	10 mm Blue	Pump Assist/Pattern Air Flow Control 5.9 bar (85 psi)
B	8 mm Clear	Powder Delivery to Spray Gun	H	6 mm Blue	Spray Gun Pattern Air Flow Control (out to gun)
C	8 mm Clear	Powder Suction from Feed Source	1 – 2	4 mm Clear	Pump 1 Pattern Air Pressure Transducer
D	8 mm Clear	Pinch Valve Air Pressure 2.0–2.75 bar (30–40 psi)	3 – 4	4 mm Clear	Pump 2 Flow Air Pressure Transducer
E	10 mm Blue	Vacuum Air Generator Supply 3.45 bar (50 psi)	5 – 6	4 mm Clear	Pump 2 Pattern Air Pressure Transducer
F	10 mm Blue	Vacuum Generator Vent	7 – 8	4 mm Clear	Pump 2 Flow Air Pressure Transducer

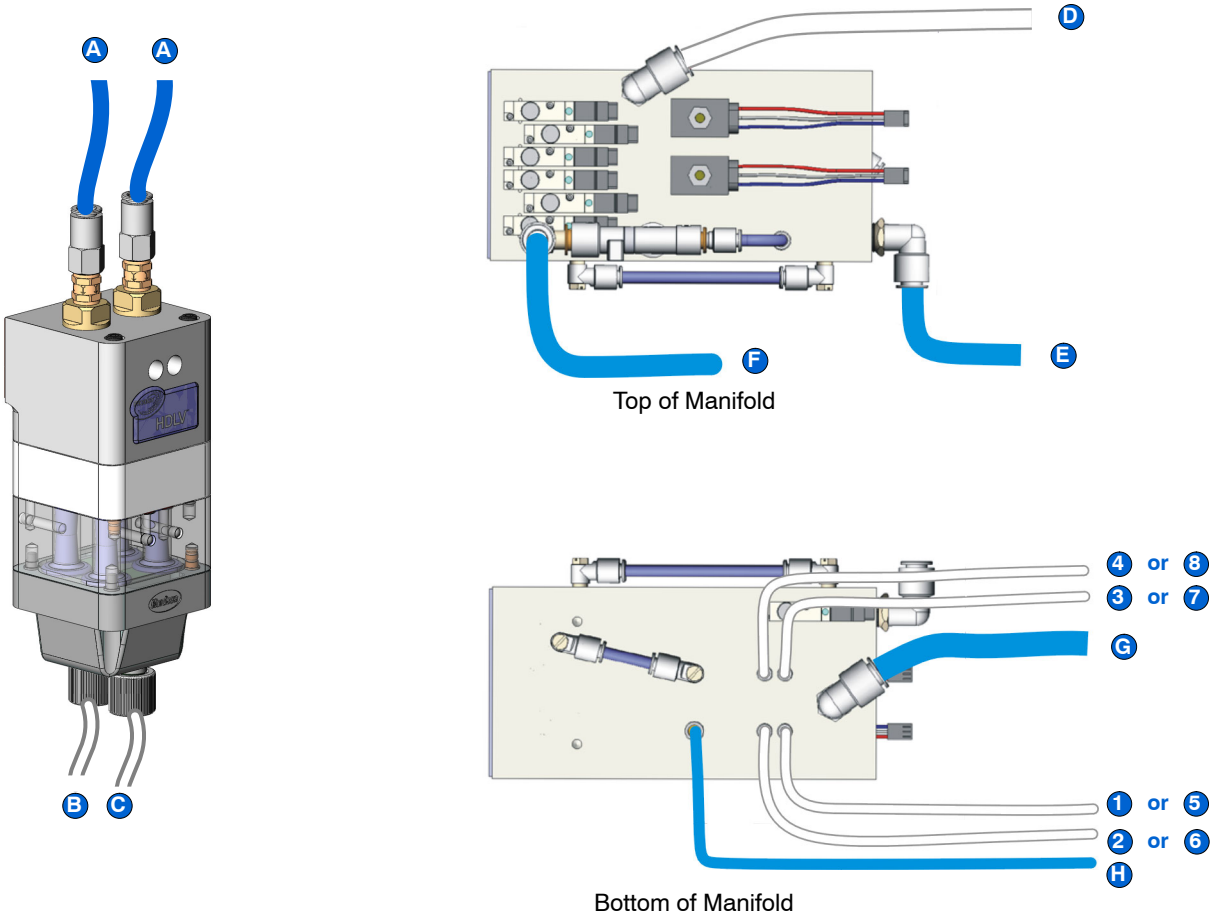


Figure 26 Powder and Air Tubing Connections

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.

Pump operation is controlled through the gun controller. Refer to the *Operation* section of the *Prodigy Manual Gun Controller* manual for specific instructions.

Pump operation is controlled by specifying a setpoint from 0–100 (which translates to a percent of flow) at the gun controller. At the pump, each setpoint results in a predefined cycle rate. Increasing the cycle rate increases the powder delivery rate. Decreasing the cycle rate decreases the powder delivery rate.

The Prodigy HDLV pump manifold also has a gun pattern air flow control valve. Gun pattern air is controlled by setting the flow rate (in either scfm or m^3/hr) at the gun control unit.

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.

Troubleshooting

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

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

Problem	Possible Cause	Corrective Action
1. Reduced powder output (pinch valves are opening and closing)	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 *Flow Control Valve Cleaning* on page 36 for instructions. If the problem persists, replace the pump air flow control valve. Refer to *Flow Control Valve Replacement* on page 38 for instructions.
	Defective pump check valve	Replace the check valves.
2. Reduced powder output (pinch valves are not opening and closing)	Defective pinch valve	Replace the pinch valves and filter discs.
	Defective solenoid valve	Replace the solenoid valve. Refer to *Solenoid and Flow Control Valve Functions* on page 35 to determine which solenoid valve controls the affected pinch valve.
	Defective pump check valve	Replace the check valves.
3. Reduced powder input (loss of suction from feed source)	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 *Flow Control Valve Cleaning* on page 36 for instructions. If the problem persists, replace the pump air flow control valve. Refer to *Flow Control Valve Replacement* on page 38 for instructions.

Continued...

Problem	Possible Cause	Corrective Action
4. Spray gun fan pattern changes	Defective pattern air flow control valve	Clean the pattern air flow control valve. Refer to *Flow Control Valve Cleaning* on page 36 for instructions. If the problem persists, replace the pattern air flow control valve. Refer to *Flow Control Valve Replacement* on page 38 for instructions.
5. Powder inside spray gun inlet adapter	Internal nozzle O-ring worn Powder delivery hose not seated properly in tubing adapter	Replace the internal nozzle O-ring. Loosen the retaining nut to remove the nozzle and retaining nut assembly. Pull the tubing adapter from the end of the flexible powder tube. Loosen the lock knob and gently pull the flexible powder tubing out of the spray gun adapter. Clean the surfaces. If the end of the feed tubing is damaged, cut the damaged end off with a tube cutter. Remove the set screw and inlet adapter from the spray gun. Blow the adapter and powder tube clean. Install the inlet adapter. Feed the flexible powder tubing through the inlet adapter. Tighten the lock knob. Install the tubing adapter on the tube then gently pull the tube back until the adapter stops against the flange. Install the nozzle and retaining ring.
6. Air leaking around end cap	Multiplier gasket worn	Replace the multiplier gasket.
7. Powder tubing too stiff	Spiral wrap too close to the spray gun	Remove any spiral wrap that is within 24 in. of the spray gun handle.
8. “Fingers” in spray pattern	Pattern air setting too low Nozzle plugged Input air pressure too low Calibration constants incorrect	Increase the pattern air setpoint. Remove the nozzle, disassemble, and clean. Increase the input air pressure. Verify that the calibration constants on the manifold match what is entered in the manual spray gun controller.

Continued...

Problem	Possible Cause	Corrective Action
9. Powder delivery problems: Surging, fading, intermittent flow, low flow	Assist air compensation incorrect	Increase or decrease the assist air compensation setting for the current preset.
		Set the controller to a positive number if the spray gun is surging.
		Set the controller to a negative number if the spray gun is fading.
	Fluidizing air pressure incorrect	Increase or decrease the fluidizing air pressure. The powder should be gently boiling.
	Powder damp or contaminated	Check the air driers and filter/separators. Check the powder in the feed hoppers and make sure it flows easily.
	Suction tubing too long	Move the hoppers closer to the pump and shorten the suction tube length. The tube length must be less than 12 ft. from the powder feed.
	Suction or delivery tubing blocked or kinked	Check the tubing. Blow out the tubing or replace it as necessary.
	Pump panel regulator pressure incorrect	Adjust the regulators in the pump panel to the proper pressures. Refer to page 22 for the proper pressure settings.
	Pump adapter 8-mm tube fitting loose	Tighten the 8-mm tube fitting.
	Pump mount O-rings worn	Replace the pump mount O-rings. Refer to your pickup tube instruction sheet or hopper manual for part numbers.
	Pickup tube not tightly threaded into pump mount	Tighten the pickup tube into the pump mount.
	Air leaking around lock knob	Replace the lock knob O-ring.
	Pump inlet tube retaining nut or O-ring loose	Check the O-ring and tighten the retaining nut.
		Check the barbed tubing adapter for wear.
		Check for air leaks between the manifold and cabinet and between the manifold and pump.
	Improper delivery tubing arrangement	The delivery tubing must be arranged in a 3-ft. coil and be parallel to the ground.
	Delivery tubing length is not to specification	The delivery tubing must be 60 ft. from the pump to the spray gun.

Continued...

Problem	Possible Cause	Corrective Action
Powder delivery problems: Surging, fading, intermittent flow, low flow (*cont.)*	Problem with pump or pump control manifold	Vacuum check (requires 0–30 in. Hg vacuum gauge) 1. Purge the pump and spray gun. Do not load a new color. 2. Set the kV output to 0. Set the powder flow to 35%. 3. Disconnect the powder tubing from the pump. Connect a vacuum gauge to the suction fitting or remove the fitting nut and place your finger over the fitting. 4. Trigger the spray gun and watch the vacuum gauge or feel for the vacuum. • For correct vacuum readings (9–14 in. Hg) on both sides of pump (or you feel less vacuum on one side of pump than the other), proceed to procedure A on page 33. • For low vacuum readings (less than 8 in. Hg) on one side of pump (or you feel less vacuum on one side of pump than the other), proceed to procedure B on page 34. • For low vacuum readings (less than 8 in. Hg) on both sides of pump (or you feel weak or no vacuum on both sides of pump cycle), proceed to procedure B on page 34.
10. Pump is bad, requires repair (determined by suction check B)	Fluidizing tube blinded or plugged	Replace the fluidizing tubes. See Figure 18 on page 19. Verify O-ring #6 is in place. If missing, powder buildup could occur in the muffler. **NOTE:** The filter discs **must** be installed flush with the aluminum body. If the discs are even slightly raised, the gasket will leak, causing the pump to malfunction.
	Pinch valve leaking	Replace the pinch valves and filter disks.
	Lower Y-block plugged	Remove and clean the lower Y-blocks.
		Continued...

Problem	Possible Cause	Corrective Action
11. Control manifold is bad, requires repairs (determined by suction check B)	Pump manifold valves 2 and 5 are contaminated with powder	Remove and inspect the valves. If they are contaminated, blow out the manifold and replace the valves. **NOTE:** If using an old harness with three positions, use the supplied adapter. If using a new harness with two positions, the supplied adapter can be discarded.
	Vacuum generator is blocked	Remove and inspect the vacuum generator venturi nozzle. If it is blocked, blow it out or replace the vacuum generator. 1. Remove the vacuum generator at the manifold. Check for vacuum with your finger. 2. Remove the vacuum generator vent hose at the bottom of the cabinet (inside). Trigger the spray gun on. Check for exhaust and increase the powder flow. 3. Check for proper direction of the check valve.

A – Delivery Check

Correct vacuum reading: 9–14 in. Hg

The problem is not in the pump or the control manifold. Check for problems in delivery tubing or suction tubing.

1. Reconnect the delivery tubing to the pump.
2. Trigger the spray gun and observe the vacuum gauge. The correct vacuum reading ranges from 9–14 in. Hg.

If the problem is in the delivery tubing or spray gun:

1. Clean or replace the delivery tubing.
2. Check the spray gun lock nut O-ring and replace it if it is missing or damaged.
3. Remove the nozzle and powder tubing adapter from the spray gun and clean or replace it.

If the problem is in the suction tubing, fittings, pickup tube, or powder:

1. Connect the suction tubing as shown in Figure 27 on page 34.
2. Trigger the gun and observe the powder flow.

- If the problem disappears, then check the suction tubing fittings and adapter O-rings. Clean the pickup tube. For Color-on-Demand systems, proceed to procedure C on page 34.
- If the problem persists, the suction tubing is blocked. Replace the suction tubing.

Figure 27 Tubing Connection

B – Suction Check

Low vacuum reading: less than 8 in. Hg in one or both sides of the pump

The problem is not in the pump or control manifold.

1. Remove the pump and replace it with a functioning pump.
2. Connect the vacuum gauge to the pump suction fitting.
3. Trigger the spray gun and observe the vacuum gauge.

- If the problem disappears, the original pump was bad. See *Pump is bad, requires repair* in the *Troubleshooting* table.
- If the problem remains, the pump control manifold is bad. See *Pump is bad, requires repair* in the *Troubleshooting* table.

C – Bubble Test for Color-on-Demand (COD) System

1. If the D2 pump valve has a clear body, check for powder inside the body. If powder is visible, disassemble the dump valve and replace the pinch valve. If no powder is visible, proceed to Step 2.
2. Disconnect the delivery tubing from the COD manifold outlet and install a new length of delivery tubing from the manifold outlet to a container of water.
3. Turn the COD controller test mode on by toggling the test mode button. The test mode button pressurizes all the air lines to the COD manifold pinch valves. If any of the pinch valves are leaking, bubbles will appear in the water.
4. If bubbles appear, kink the blue D2 air tubing. If the bubbles stop, the D2 pinch valve is leaking. If the bubbles continue, kink the rest of the pinch valve air tubes, starting with D1, until the leaking pinch valve is found. Replace all the pinch valves in the manifold with the leaking valve, since it is likely that the other valves are also close to failure. If no bubbles appear, check the short pieces of tubing connecting the manifolds and D2 pump valve and replace any that are worn out.

Solenoid and Flow Control Valve Functions

Figure 28 identifies the solenoid and flow control valve functions and the corresponding ports on the pump and manifold.

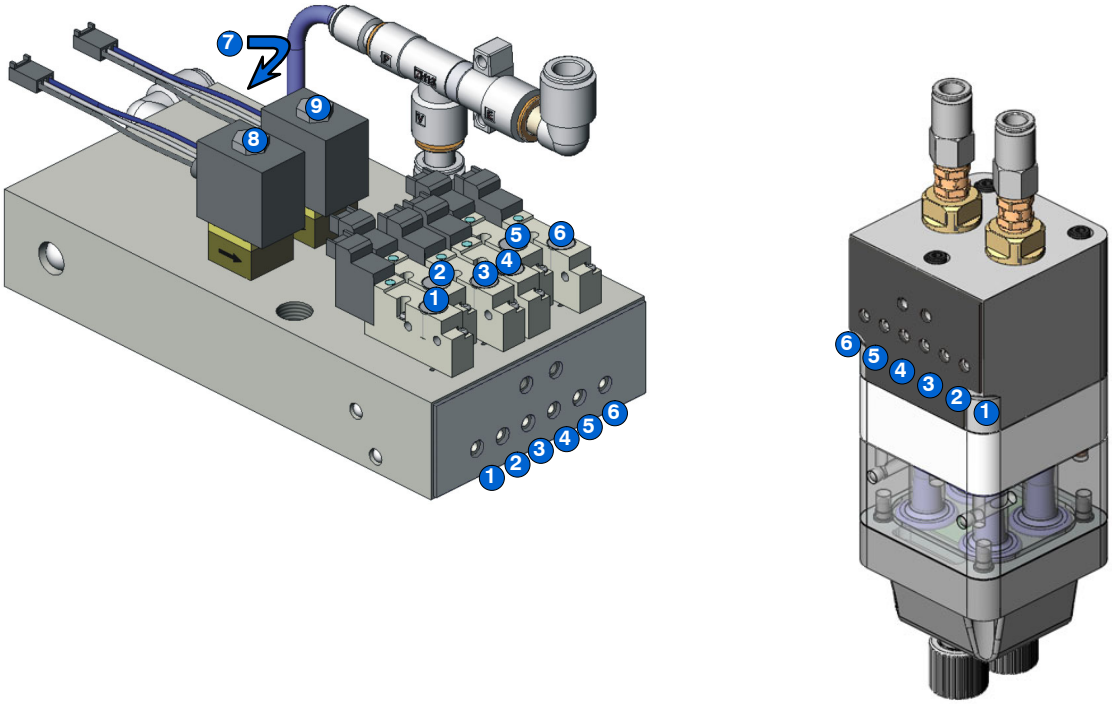


Figure 28 Solenoid and Flow Control Valve Functions

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	Pattern Air Flow Control
4	Right Side Suction Pinch Valve	9	Pump Air Flow Control
5	Right Side Fluidizing Tube		

Repair

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

To reduce downtime, keep a spare manifold in stock to install in place of one being repaired. Refer to *Manifold Parts* on page 39 for ordering information.

Repair of the manifold is limited to

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

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.

Preparation

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

WARNING: Shut off and lock out system electrical power before performing the following tasks. Failure to observe this warning may result in personal injury.

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

CAUTION: Do not disconnect the transducer air tubing from the circuit board. The transducers are very delicate and will break if the air tubing is removed.

1. Disconnect all air 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.

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

Flow Control Valve Kit 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 29. 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 Kit Cleaning *(contd)*

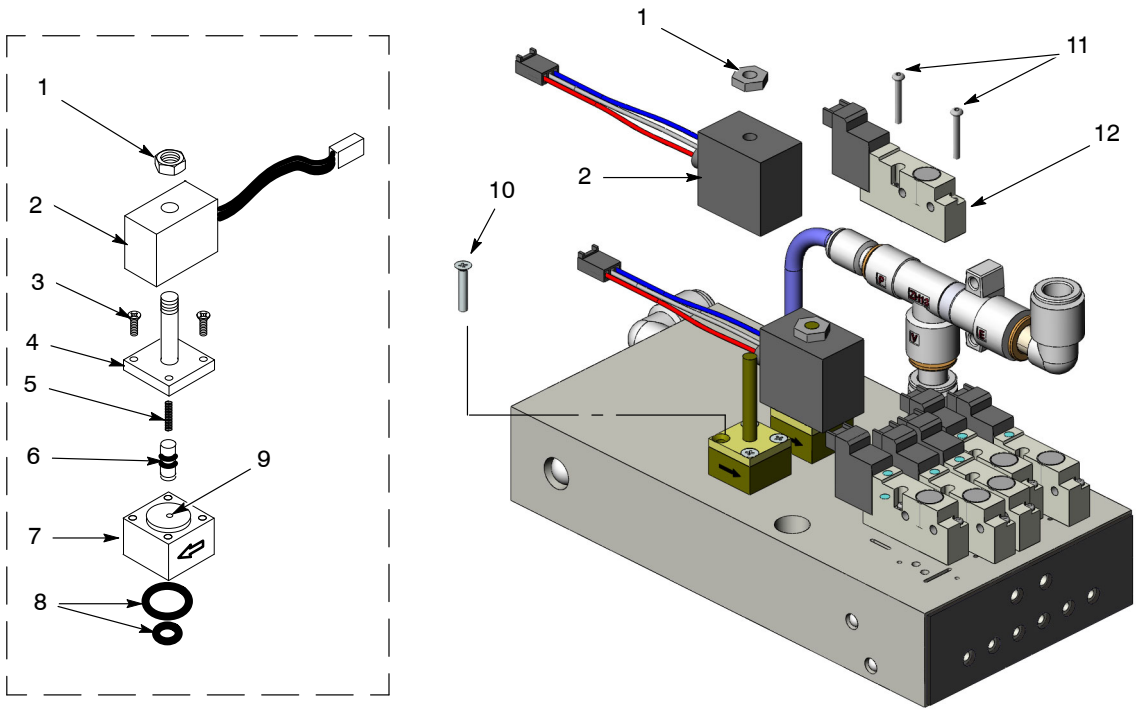


Figure 29 Manifold Repair

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

Flow Control Valve Kit Replacement

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

See Figure 29. 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 29. 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 22 for instructions for installing the manifold and pump into the pump panel.

Circuit Board Replacement

CAUTION: Observe the following cautions when removing or installing the circuit board. Failure to observe these cautions may result in equipment damage.

- The circuit board is an electrostatic sensitive device (ESD). Wear a grounding wrist strap connected to the pump panel or other ground.
- Turn off and relieve air pressure to the pumps before removing the circuit board.
- Do not disconnect the air tubing from the circuit board. The transducers are very delicate and will break if the air tubing is removed.

The circuit board replacement kit comes with detailed removal, installation, and calibration instructions. Follow the instructions carefully to avoid damaging the circuit board.

Parts

To order parts, call the Nordson Customer Support Center or your local Nordson representative.

Manifold Parts

See Figure 30.

Item	Part	Description	Quantity	Note
—	1101343	MANIFOLD ASSEMBLY, HDLV pump control, Generation III	1	
1	1613041	• GASKET, face, HDLV pump control manifold	1	
2	- - - - - -	• MANIFOLD, HDLV pump control	1	
3	1099534	• VALVE, solenoid, 3 way, with connector	7	B
4	972277	• CONNECTOR, male, elbow, 8 mm x $^1/_4$ in. universal	1	
5	1052893	• ELBOW, plug in, 10 mm tube x 10 mm stem, plastic	1	
6	1052920	• PUMP, vacuum generator	1	
7	972286	• REDUCER, 8 mm stem x 6 mm tube	1	
8	900742	• TUBING, polyurethane, 6 mm OD x 4 mm ID, blue	AR	
9	1098501	• KIT, flow control valve, pump control	2	
10	1052894	• NIPPLE, push in, 10 mm tube x 10 mm tube, plastic	1	
11	328524	• CONNECTOR, male, with internal hex, 6 mm tube x M5	2	
12	972283	• CONNECTOR, male, with internal hex, 10 mm tube x $^1/_4$ in. universal	1	
13	- - - - - -	• ORIFICE	2	A
14	972125	• CONNECTOR, male, elbow, 10 mm tube x $^1/_4$ in. universal	1	
15	972310	• CONNECTOR, male, universal elbow, 6 mm tube x M5	4	
16	- - - - - -	• FILTER, 0.168 dia x 0.240 in. long, 20 micron	4	
17	972125	• CONNECTOR, male, elbow, 10 mm tube x $^1/_4$ in. universal	1	
18	1062009	• CONNECTOR, male, with internal hex, oval collar, 4 mm tube x M5	4	

NOTE A: These are not serviceable parts. Do not remove these from the manifold.

B: 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.

AR: As Required

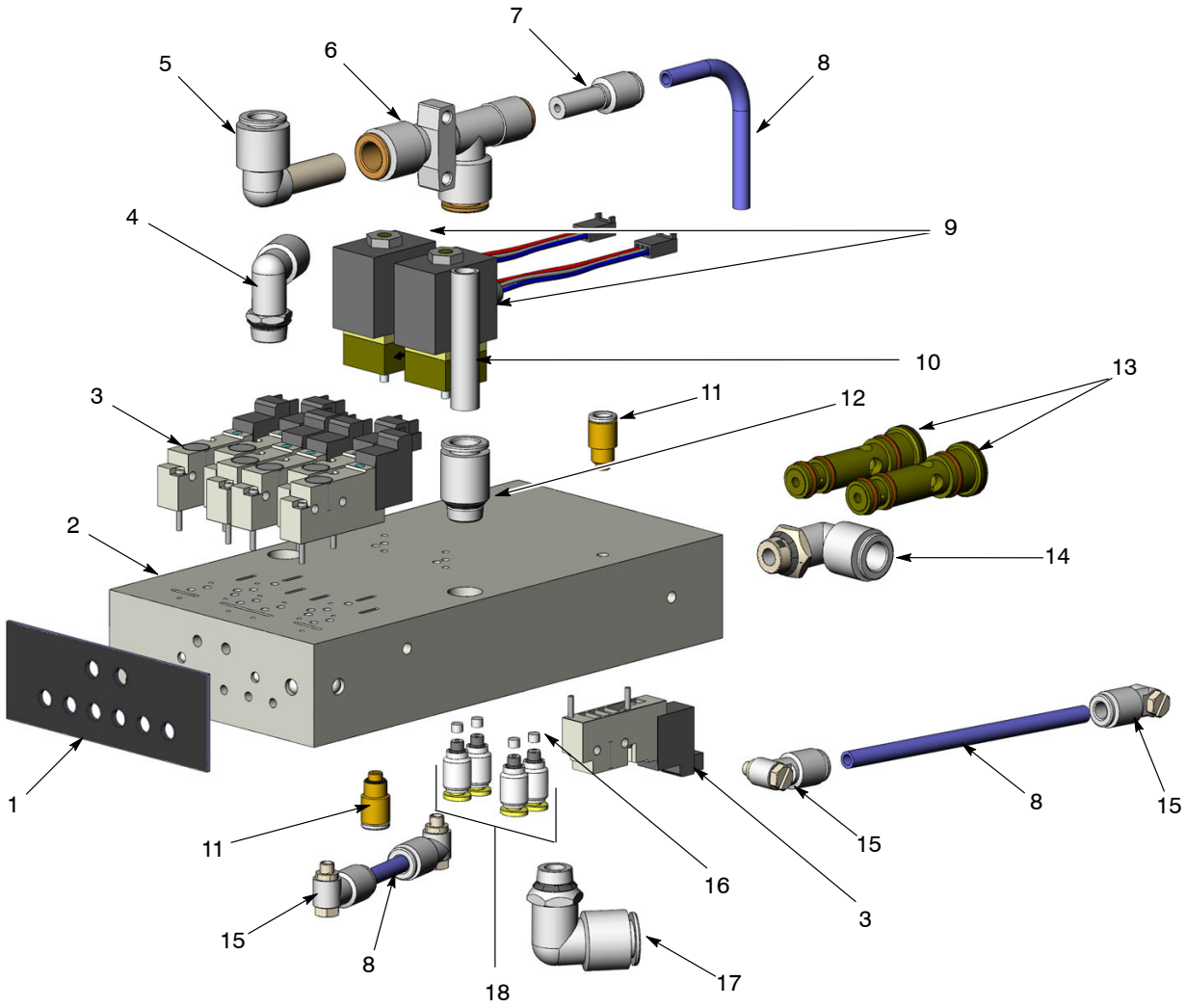
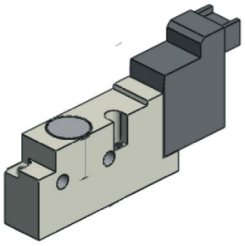


Figure 30 Manifold Parts

Spare Parts

Keep one of each of these assemblies in stock for each pump in your system.

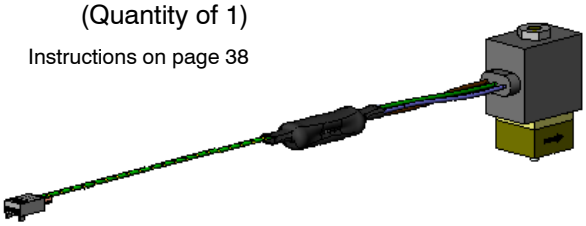


Solenoid Valve
Part 1099534
(Quantity of 1)

Instructions on page 38

Flow control valve kit
Part 1098501
(Quantity of 1)

Instructions on page 38



PCA Replacement Kit

This kit comes with the 4-mm air tubing already installed into the pressure transducer fittings.

Part	Description	Note
1101498	KIT, PCA replacement, Prodigy pump control, Generation III	

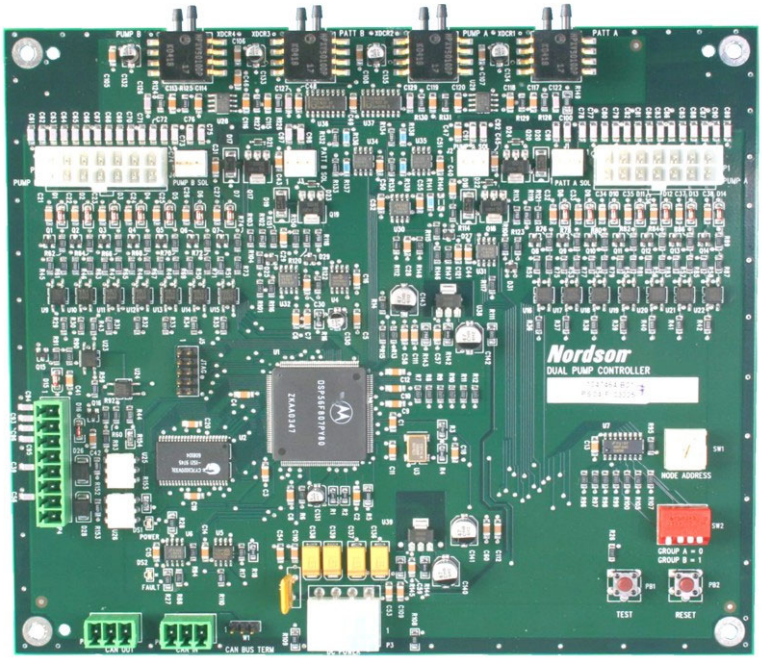


Figure 31 PCA Replacement Kit

Air and Powder Tubing Part Numbers

See Figure 32.

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			

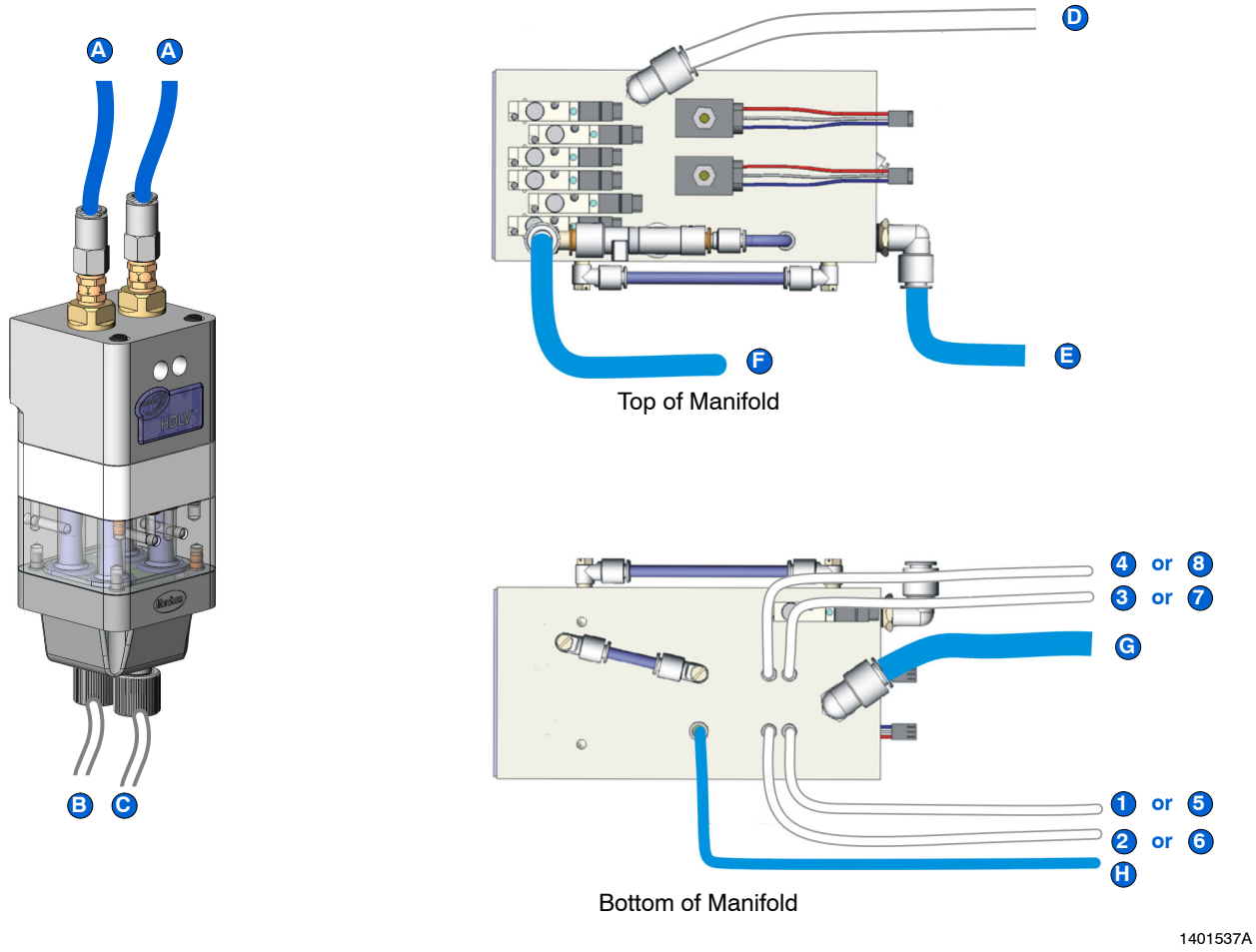


Figure 32 Air and Powder Tubing Part Numbers

EU DECLARATION of Conformity

Product: Prodigy HDLV High Density Powder Pump

Models: Prodigy HDLV Pump

Description: This is a low density air / high density powder pump used for supplying of powder coating material to the applicator. The pump is labeled for use in a Zone 22 area.

Applicable Directives:
2006/42/EC - Machinery Directive
2014/34/EU - ATEX Directive

Standards Used for Compliance:
EN1127-1 EN/ISO12100 EN/ISO80079-36 EN/ISO80079-37

Principles:
This product has been designed & manufactured according to the directives & standards / norms described above.

Markings and Certs:
Flammable Atmosphere Marking: Ex h IIIC T40ºC Dc
Tech File: Notified Body #0518, Sira, UK
DNV ISO9001
ATEX Quality Notification – Baseefa (2001) Ltd (UK)

Vance Wilson

Date: 12Feb2018

Vance Wilson
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Industrial Coating Systems
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