Prodigy® High-Capacity HDLV® Powder Transfer Pump with Electric Timing Valve

Customer Product Manual

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– English –
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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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http://www.nordson.com/en/global-directory

Change Record

Revision	Date	Change
01	01/21	Initial Release
02	10/21	Revised valve connections
03	12/21	Added UKCA certification labels.
04	02/22	Updated parts lists.
05	08/24	Updated parts lists.
06	10/24	Updated parts lists. Applied Caution to page 11 (steps 1-3 and Figure 8) to utilize 10 mm tubing with expander. Removed reference to “optional 8 mm” regarding table on page 12.

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 (SDS) for all materials used. Follow the manufacturer’s instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class 2, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and

516), and NFPA 77, latest conditions.

- All electrically conductive objects in the spray areas shall be electrically connected to ground with a resistance of not more than 1 megohm as measured with an instrument that applies at least 500 volts to the circuit being evaluated.
- Equipment to be grounded includes, but is not limited to, the floor of the spray area, operator platforms, hoppers, photoeye supports, and blow-off nozzles. Personnel working in the spray area must be grounded.
- There is a possible ignition potential from the charged human body. Personnel standing on a painted surface, such as an operator platform, or wearing non-conductive shoes, are not grounded. Personnel must wear shoes with conductive soles or use a ground strap to maintain a connection to ground when working with or around electrostatic equipment.
- Operators must maintain skin-to-handle contact between their hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If gloves must be worn, cut away the palm or fingers, wear electrically conductive gloves, or wear a grounding strap connected to the gun handle or other true earth ground.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments or cleaning powder spray guns.
- Connect all disconnected equipment, ground cables,

  and wires after servicing equipment.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out electrical power. Close pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the equipment.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

The Prodigy High-Capacity HDLV (High-Density powder, Low-Volume air) powder pump transports large amounts of powder from one location to another.

The pump design and the small diameter suction and delivery tubing used with the pump allow it to be purged quickly and thoroughly.

The pump is more efficient than traditionalventuri-style pumps in that very little of the air that is used to operate the pump is mixed into the powder stream. Only the air that is used to move the powder out of the pump and into the delivery tubing enters the powder stream.

NOTE: Two versions of the pump are available. One with a generator and one without. All images shown in manual reference the pump with generator.

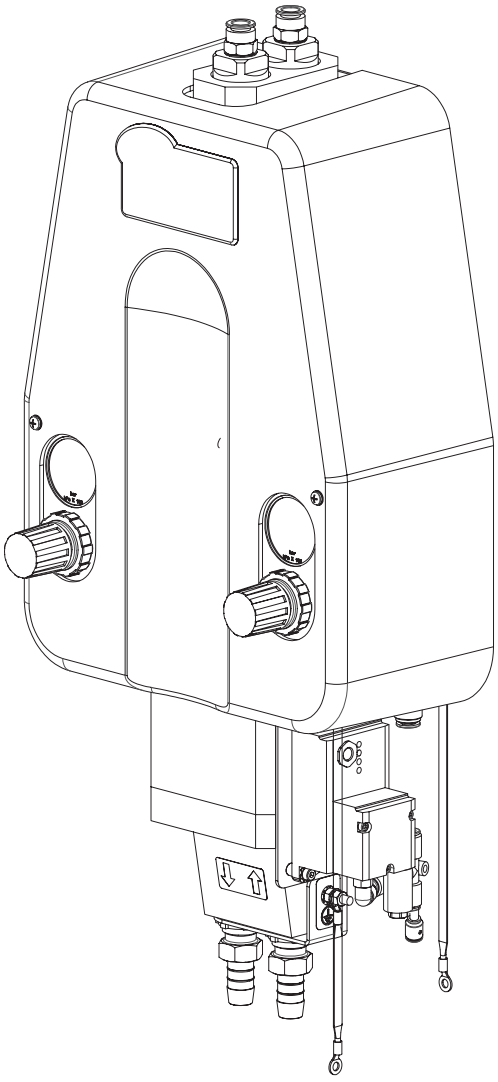


Figure 1 Prodigy High-Capacity HDLV Pump

Prodigy High-Capacity HDLV Pump

See Figure 2.

Item	Description	Function
Air Control Components		
1	Fluidizing Tube Control Valve	Cycles to alternate positive and negative air pressure to the fluidizing tubes.
2	Pinch Valve Control Valve	Cycles to switch the pinch pressure between the pinch valves in each pump halves.
3	Conveying Air Regulator and Gauge	Regulates the positive and negative air pressure being applied to the fluidizing tubes. Typically set to 0.7−1.0 bar (10−15 psi).
4	Exhaust Muffler	Allows the pump's operating air to silently exit the pump.
5	Turbine Generator	Uses compressed air to generate 24 Vdc for the electrically controlled timing valve.
6	Input Air Fitting	Connects the high-capacity HDLV pump to a 4.8−6.2 bar (70−90 psi) air source.
7	Pinch Pressure Regulator and Gauge	Regulates the air pressure being applied to the pinch valves. Typically set to 2.4−2.75 bar (35−40 psi).
8	Vacuum Generator	Works on the venturi principle to generate the negative air pressure required to draw powder into the fluidizing tubes.
9	Timing Control Valve	Controls the fluidizing tube control valve and pinch valve control valve operating sequences.
Pump Assembly Components		
10	Fluidizing Tubes	Porous cylinders that alternately draw powder in when a vacuum is applied to their exterior, and force powder out when air pressure is applied to their exterior. The tubes act as a filter to prevent powder from passing through and contaminating the control valves and air tubing.
11	Purge Air Fittings	Send line air pressure through the pump assembly during the purge process.
12	Upper Y-Manifold	Interface between the pinch valves and the porous tubes; consists of two Y-shaped passages that join the pinch valves to the fluidizing tubes.
13	Pinch Valves	Open and close to allow powder to be drawn in or forced out of the fluidizing tubes.
14	Lower Y-Block with grounded tubing barbed fittings	Provides a powder path from the suction and delivery fittings to the pinch valves on both halves of the pump, with grounded tubing barbed fittings.
15	Powder Delivery Tube Fitting	19-mm OD antistatic tube fitting to the powder destination.
16	Powder Suction Tube Fitting	19-mm OD antistatic tubing from the powder source.

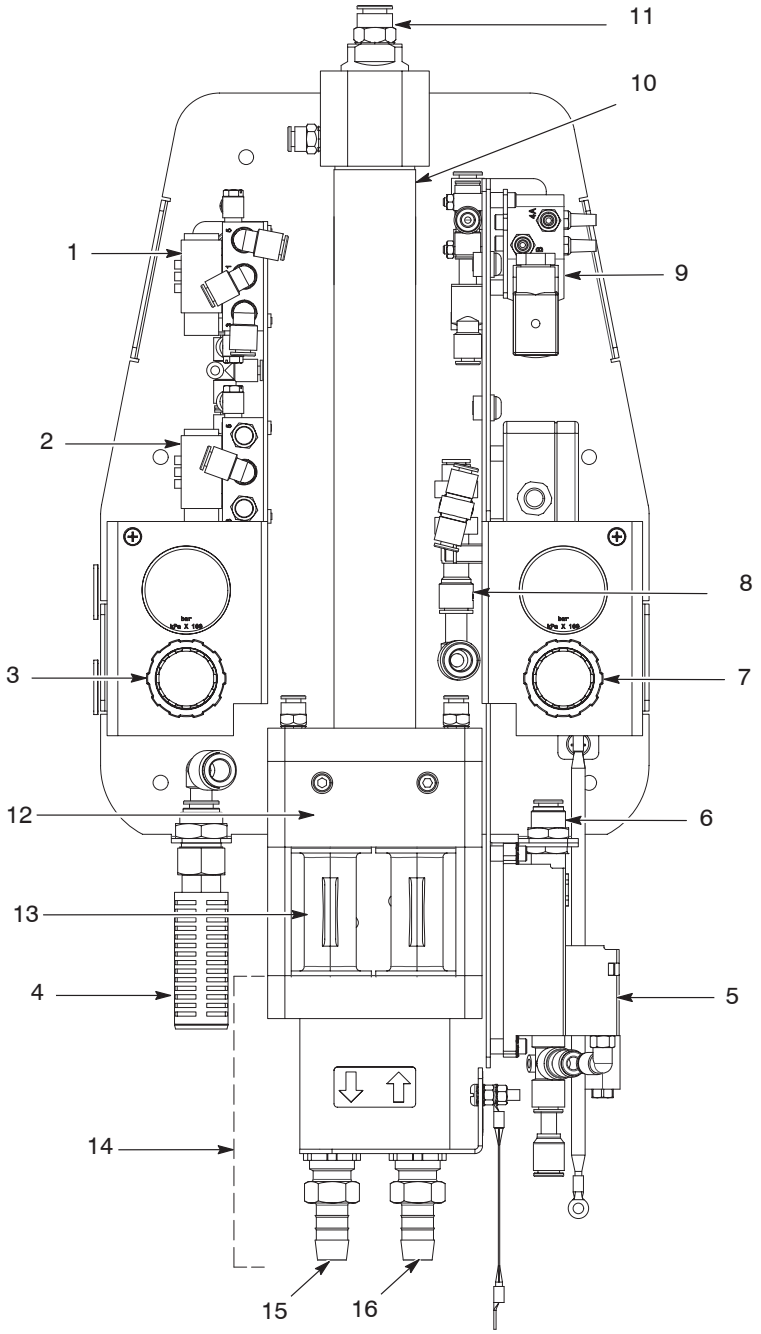


Figure 2 Pump Components (shown with cover removed)

Theory of Operation

Pumping

See Figure 3. The Prodigy high-capacity HDLV pump consists of two halves that function identically. The halves alternately draw powder in and force powder out of the pump; while one half is drawing powder in, the other half is forcing powder out.

Front Half in Suction Phase
The front suction pinch valve is open, and the front delivery pinch valve is closed. A vacuum is applied to the front fluidizing tube, which draws powder through the suction tubing, inlet fitting, inlet lower Y-block, front suction pinch valve, and into the front fluidizing tube. After a set period of time, the vacuum is shut off and the front suction pinch valve closes.

Rear Half in Delivery Phase
The rear suction pinch valve is closed, and the rear delivery pinch valve is open. Air pressure is applied to the rear fluidizing tube, forcing the powder out of the fluidizing tube and through the rear delivery pinch valve, lower Y-block, delivery fitting, and delivery tubing to the powder destination.

Next each halves switches to the alternate phase. The front half now forces out the powder in the fluidizing tubes while the rear half draws powder in.

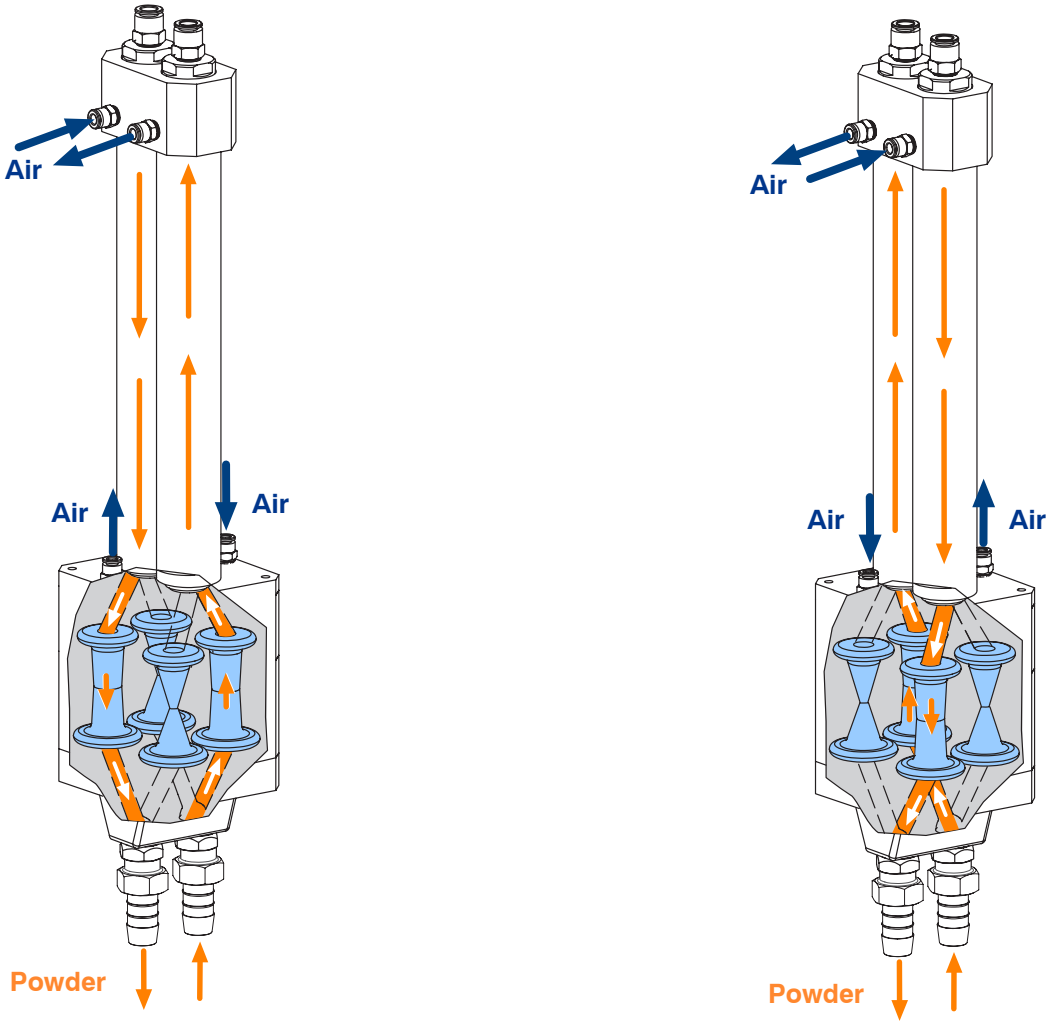


Figure 3 Theory of Operation - Pumping

Purging

NOTE: The pump purge process is dependent on how the pump is integrated into a powder coating system.

See Figure 4. The pump must be operating while it is purged. During the purge, line air pressure flows through the fluidizing tubes, the pinch valves, and out the suction and delivery lines.

If the purge air is supplied from a feed center or bulk delivery system it is typically pulsed. The pulses are typically 250 milliseconds on and 250 milliseconds off.

If the purge is manually initiated by pressing the purge button on a manual pump station, the purge air is not pulsed. The purge button should be pressed repeatedly to supply air in pulses.

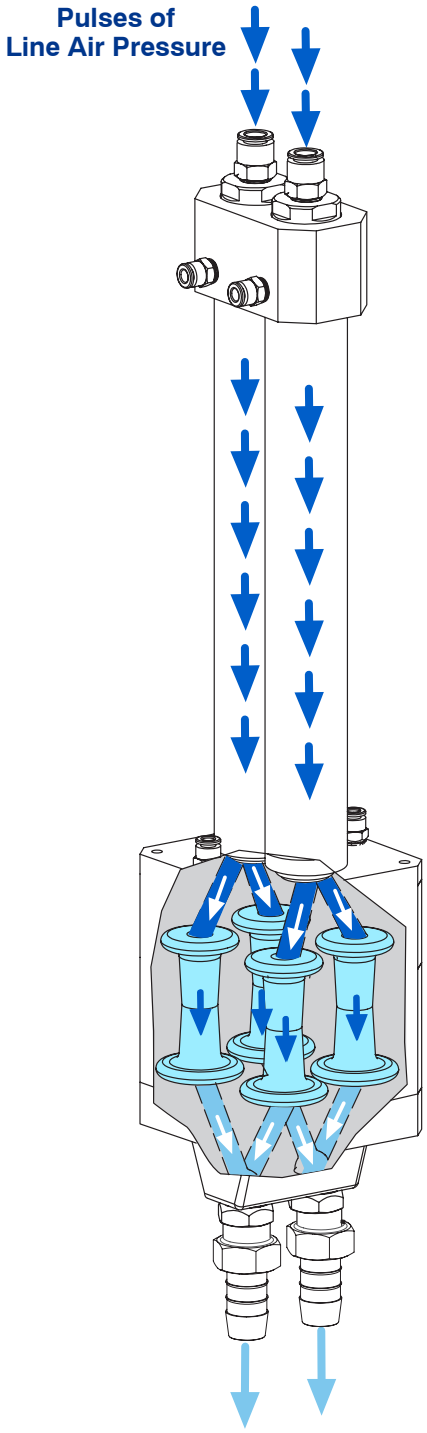


Figure 4 Theory of Operation - Purging

Specifications

Output (Maximum)	4 kg (9 lb) per minute
Input Air (at pump inlet)	4.8−6.2 bar (70−90 psi)
Purge Air	Line Air Pressure (7 bar (100 psi) maximum)
Operating Air Pressures	
Pinch Valves	2.4−2.75 bar (35−40 psi)
Conveying Air	0.7−1.0 bar (10−15 psi)
Air Consumption	
Conveying Air	28−56 l/min (1−2 cfm)
Total Consumption	255−311 l/min (9−11 cfm)
Electric Input (pump without generator)	24 Vdc, 1.75 W (73 mA)
Tubing Size	10-mm OD polyurethane, 10-m (33-ft) long max
Air Input	19-mm OD antistatic hose, 3.65-m (12-ft) long max
Powder Suction	19-mm OD antistatic hose, 30.5-m (100-ft) long max
Powder Delivery	**NOTE:** For best results, keep the powder suction and delivery tubing as short as possible.
Dimensions	See Figure 5.

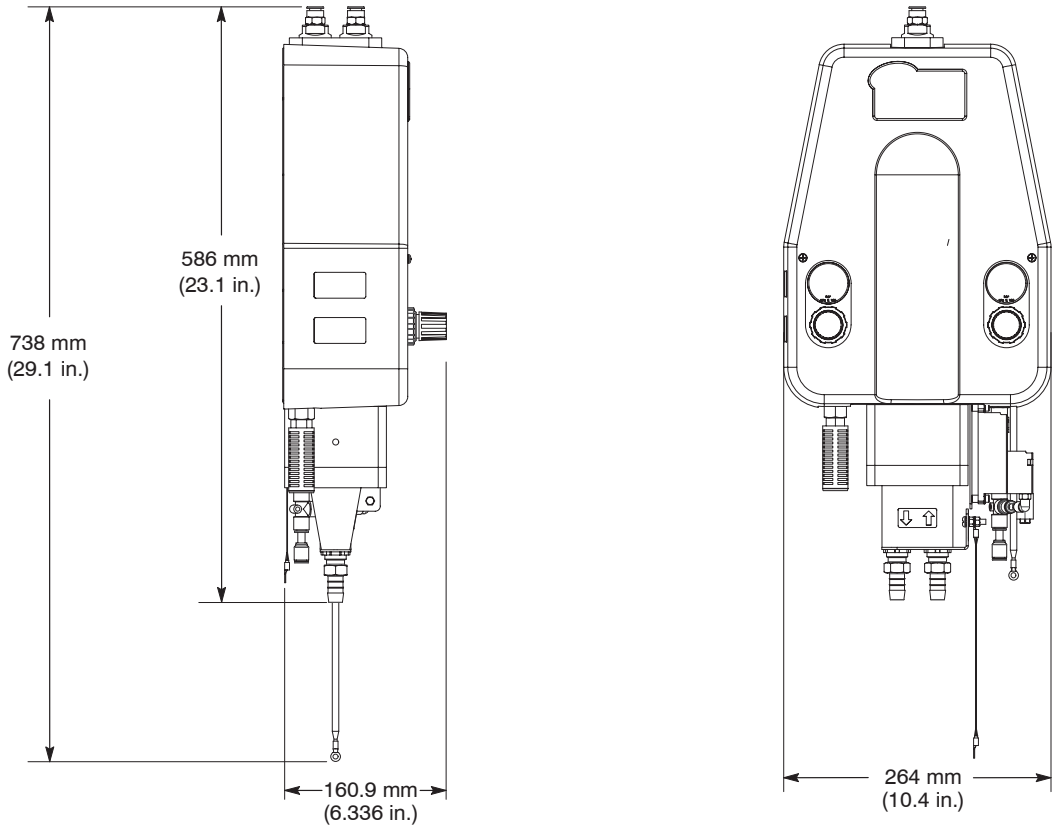
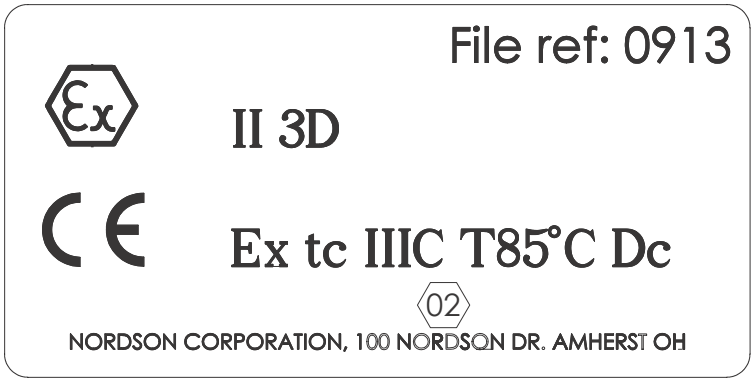


Figure 5 Pump Dimensions

Approval Label



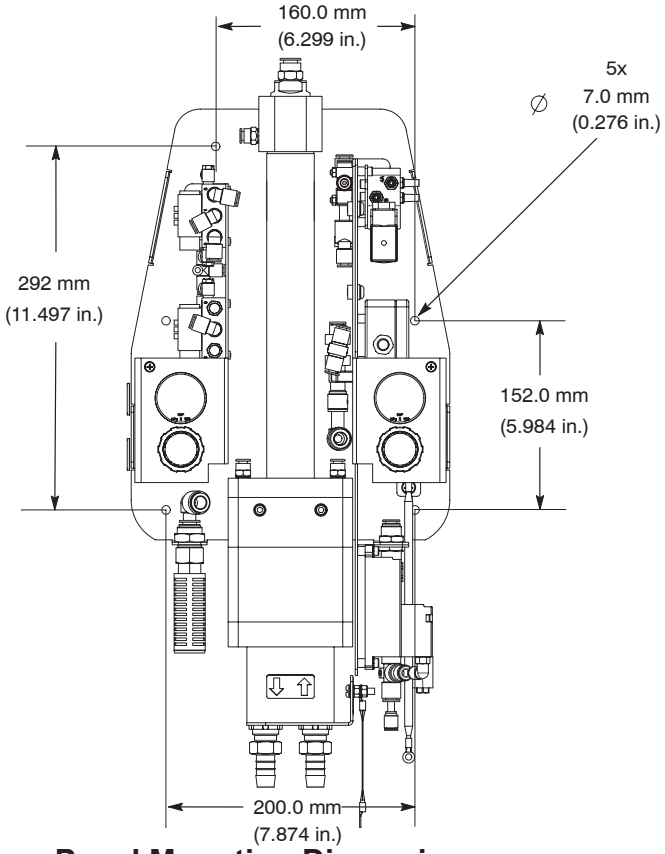
1620616

Figure 6 Approval Label

Installation

WARNING: The pump must be securely connected to a true earth ground. Failure to ground the pump could result in a fire or explosion.

NOTE: The pump is normally mounted on a panel that includes an operating air regulator, and a manual pushbutton and piloted-operated air valve for manual purging. The panel may also include an auxiliary regulator for fluidizing the powder source.

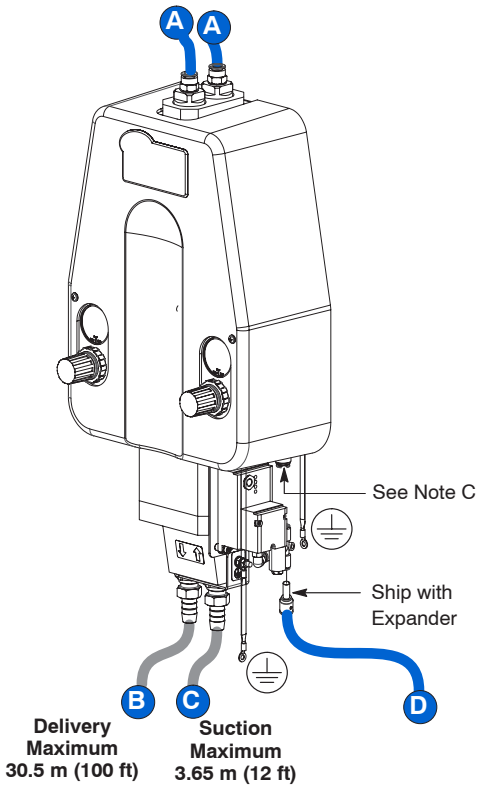


Panel Mounting Dimensions

Use the supplied M6 screws, washers, and nuts to mount the pump.

NOTE A: Five mounting holes and four sets of M6 fasteners are included.

Use the four mounting holes that best match your mounting surface.



Tubing Connections

NOTE B: For best results, keep the powder suction and delivery tubing as short as possible.

NOTE C: Location of ship with expander and connection for 10 mm tubing for versions without generator.

Connection	Type	Function
A	10 mm blue polyurethane tubing	From customer-supplied purge air source (7 bar [100 psi] max)
B	19 mm antistatic tubing	Delivery: to powder destination
C	19 mm antistatic tubing	Suction: from powder source
D	10 mm blue polyurethane tubing	From input air source 4.8−6.2 bar (70−90 psi)
⏚	Pump ground wire	To earth ground

Figure 7 Pump Installation

Operation

See Figure 8 and Table 1 for typical operating pressures. After making the initial pump assist and pinch air pressure settings, adjustments should not be needed again.

The settings listed are approximate. Adjust as needed during setup to obtain desired results.

Pump with Generator

CAUTION: When using an air generator, be sure to utilize 10 mm tubing with an expander.

1. To start the pump, turn on the operating air supply.
2. Regulate the air pressure to typical operating pressure or 4.8-6.2 bar (70-90 psi).
3. To stop the pump, turn off the operating air supply.

Pump without Generator

CAUTION: 24 Vdc must be applied to the pump before (or at the same time) air supply is applied. If pressure is applied without 24 Vdc, the pump will not operate properly and fill with powder.

1. To start the pump, turn on 24 Vdc and the operating air supply.
2. Regulate the air pressure to typical operating pressure or 4.8-6.2 bar (70-90 psi).
3. To stop the pump, turn off the operating air supply and 24 Vdc.

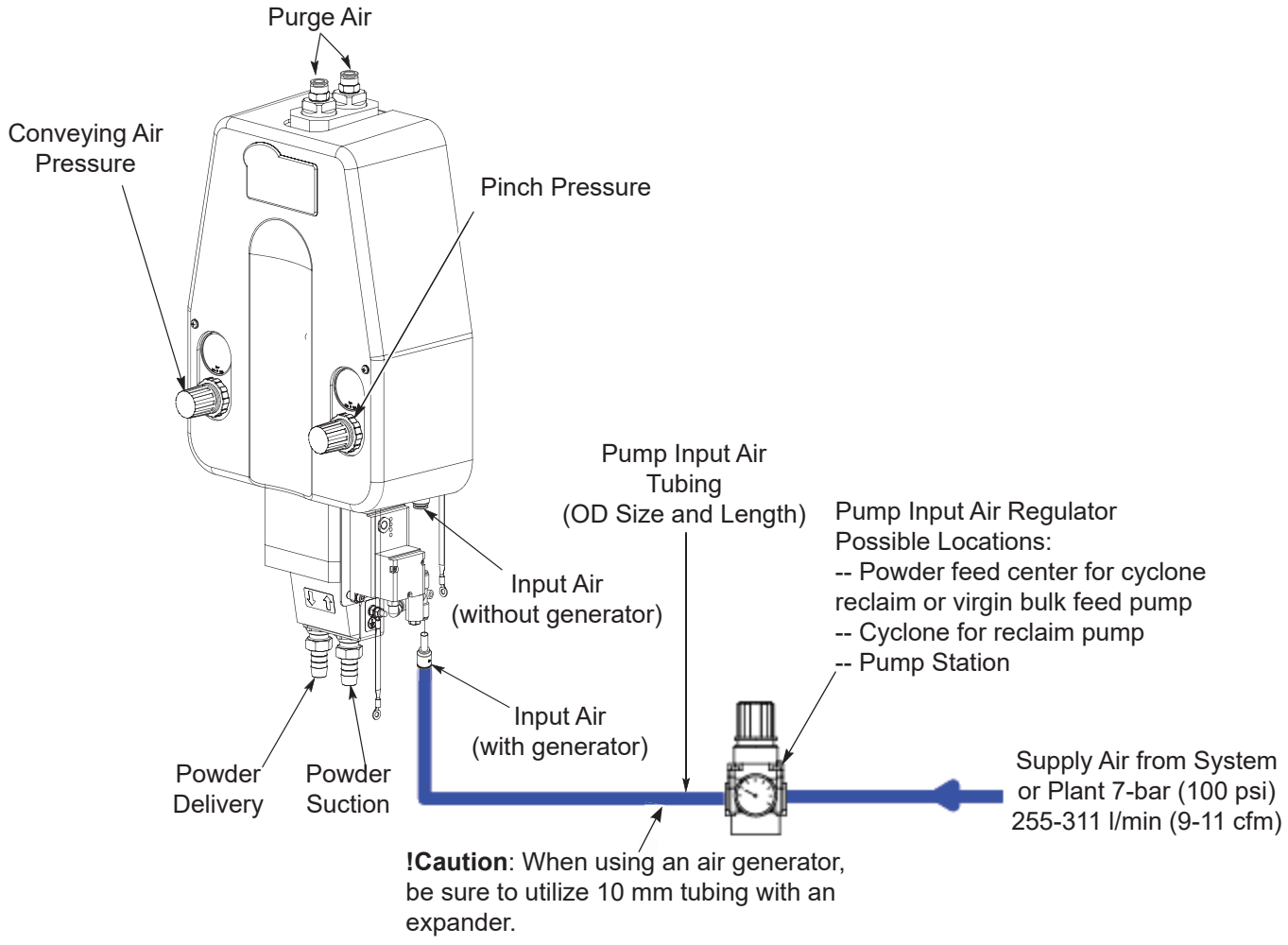


Figure 8 Pump Operation

Table 1 Typical Operating Pressures (Refer to Figure 8)

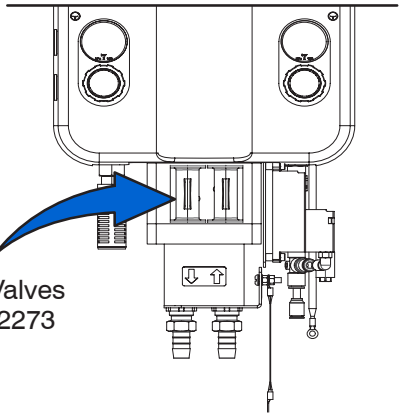
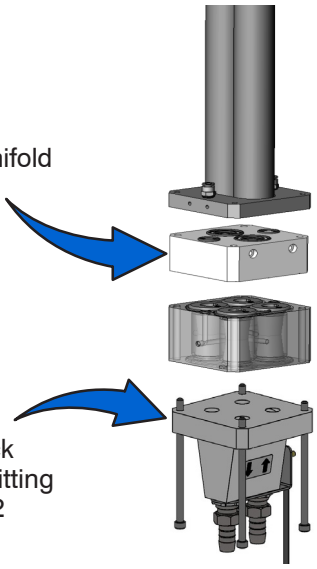
Air Pressure	Settings	
	Pump with Generator (requires air to operate)	**Pump without Generator (requires 24 Vdc and air to operate)**
Pump Input Air - Regulator/gauge connected with tubing to pump input air, 10-mm tubing 4-m (13-ft) long max	4.8 bar (70 psi)	4.8 bar (70 psi)
Pump Input Air - Regulator/gauge connected with tubing to pump input air, 10-mm tubing 10-m (33-ft) long max	5.5 bar (80 psi)	4.8 bar (70 psi)
Purge Air	7 bar (100 psi)	7 bar (100 psi)
Pinch Valve Air (right regulator of the pump)	2.4 bar (35 psi)	2.4 bar (35 psi)
Conveyance Air (left regulator on pump)	1.0 bar (15 psi)	1.0 bar (15 psi)

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 1092273	Inspect the pinch valve body for signs of powder leakage. If you see powder in the pinch valve body or stress cracks in the pinch valves, replace the pinch valves.
Every Six Months or Each Time You Disassemble The Pump	 Upper Y-Manifold Kit 1057269 Lower Y-Block with barbed fitting Part 1610762	Disassemble the pump assembly and inspect the lower Y-block and upper Y-manifold for signs of wear or impact fusion. Clean these parts in an ultrasonic cleaner if necessary. **NOTE:** To reduce downtime, keep a spare upper Y-manifold and lower Y-block in stock to install while you are cleaning the other set.

Troubleshooting

Problem	Possible Causes	Corrective Action
1. Reduced powder output (pinch valves are opening and closing)	Blockage in the powder tubing to the destination	Check the tubing for blockages. Purge the pump.
	Conveying air is set too high	Decrease the conveying air pressure.
	Conveying air is set too low	Increase the conveying air pressure.
	Defective pinch valve	Replace the pinch valves.
	Fluidizing tubes clogged	Replace the fluidizing tubes.
	Conveying air solenoid valve not actuating	Refer to the Tubing Diagrams on page 28 and page 29. 1. Turn off the pump and disconnect tubes J and K from the top of the pump. 2. Turn the pump on and check the tubes for alternating positive and negative air pressure. • If there is no pressure, replace the valve. • If the valve is actuating, but you cannot feel positive or negative air pressure at the tubes, check for obstructions in the air lines leading in and out of the valve.
	Timing Control Valve not actuating OR Fault in Prodigy electric control HDLV kit	Refer to “Prodigy Electric Control Timing Valve Kit” on page 16 for troubleshooting related to items included in kit.
2. Reduced powder output (pinch valves are not opening and closing)	Defective pinch valve	Replace the pinch valves.
	Defective check valve	Replace the check valves.
	Pinch pressure solenoid valve not actuating	Refer to the Tubing Diagrams on page 28 and page 29. Turn off the pump and disconnect tubes H and G from the pump. Turn the pump on and check the tubes for alternating positive air pressure. If there is no pressure, replace the valve. If the valve is actuating, but you cannot feel air pressure at the tubes, check for obstructions in the air lines leading in and out of the valve.
	Timing Control Valve not actuating OR Fault in Prodigy electric control HDLV kit	Refer to “Prodigy Electric Control Timing Valve Kit” on page 16 for troubleshooting related to items included in kit.

Continued...

Problem	Possible Causes	Corrective Action
3. Reduced powder input (loss of suction from powder source)	Blockage in the powder tubing from the feed source	Check the tubing for blockages. Purge the pump.
	Loss of vacuum at the vacuum generator	Check the vacuum generator for contamination. Check the exhaust muffler. If the exhaust muffler appears to be plugged, replace it.
	Damaged O-rings in powder path	Check all powder path O-rings. Replace any worn or damaged O-rings.
4. Pinch valves failing rapidly, cracking around the flange	Pump is not properly grounded. Powder is tribo-charging in the pump and grounding through the pinch valves.	Check that pump and hoses are properly grounded. Replace pinch valves. Refer to *Parts* for replacement.

Prodigy Electric Control Timing Valve Kit

See Figure 9 and refer to Table 2 and Table 3 for troubleshooting related to items included in the Prodigy electric timing valve kit.

NOTE: Generator LED not applicable on assemblies without generator.

NOTE: Timing Control Valve Connector referred to as Connector in Table 2 and Table 3.

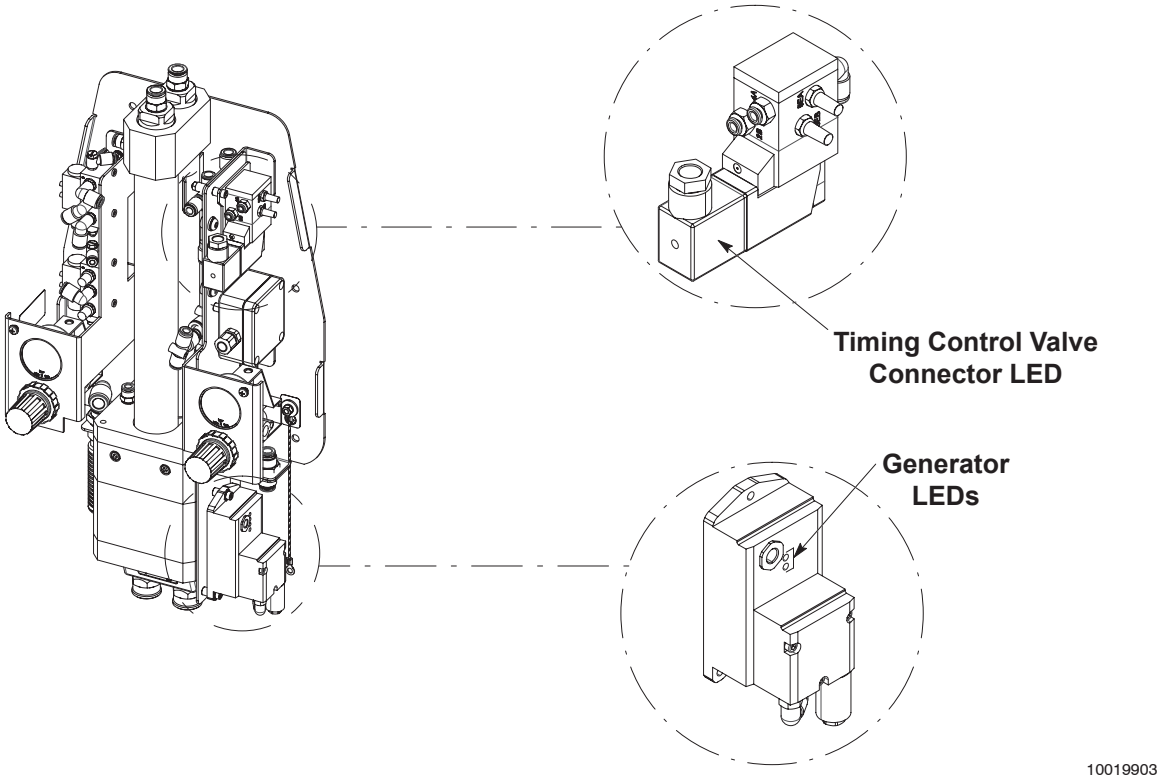


Figure 9 Location of Diagnostic LEDs

Table 2 Normal Operating State for LEDs

Generator LED States		Timing Control Valve Connector LED State
Green	**Red**	**Red**
Flashing	OFF	Flashing
NOTE: This assumes proper operating air pressure settings are applied to pump (refer to “Operation” on page 11 for settings).		

Table 3 Troubleshooting LED States for Prodigy Electric Control Timing Valve Kit

Generator LED States		Connector LED State	Possible Cause	Corrective Action
Green	**Red**	**Red**		
NOTE: If LEDs are not in their normal operating state, it is recommended to first go through corrective action steps for “Air supply to pump is too low” before using LED states to diagnose other possible causes.			Air supply to pump is too low	1. Increase air pressure to transfer pump assembly 4.8−6.2 bar (70−90 psi) until the timing valve and pump operates. 2. Check if LEDs indicate their normal operating state. If not, continue to next step. 3. Check air supply tubing to pump for OD size and approximate length. If tubing OD is 8 mm and tubing length is greater than 4 m long, replace with 10-mm tubing. Use an expander at the pump input air location and also at the air source to adapt 10 mm tubing to existing 8 mm connection, if needed. 4. Adjust air supply pressure to transfer pump to 5.5 bar (80 psi) or higher until timing valve and pump operate.
OFF	OFF	OFF	Fault with generator	1. Increase air pressure to transfer pump assembly 4.8−6.2 bar (70−90 psi) until the timing valve and pump operates. 2. Check if LEDs indicate their normal operating state. If not, continue to next steps. 3. If the green generator LED is not flashing, replace the generator kit (refer to *Spare Parts* for the part number). 4. If green generator LED is flashing, but the red connector LED is OFF, refer to corrective action steps for “Fault in Prodigy electric control HDLV kit.”
Flashing	Flashing	OFF		

Continued...

Generator LED States		Connector LED State	Possible Cause	Corrective Action
Green	**Red**	**Red**		
Flashing	OFF	OFF	Fault in Prodigy electric control HDLV kit	**For versions with generator, go to Step 4.** **For versions without generator complete the following steps:** 1. Check that 24 Vdc is being supplied to the pump. 2. Check that air supply pressure to transfer pump is set properly. 3. Check that the 24 Vdc and air supply turn ON and OFF at the same time. If both are working and timing control valve LED is still not flashing, continue to step 4. 4. Increase air pressure to transfer pump assembly 4.8−6.2 bar (70−90 psi) until the timing valve and pump operates. 5. Check if LEDs have returned to their normal operating state. If not, continue to next step. 6. Replace Prodigy electric control HDLV kit (refer to *Spare Parts* for part numbers).

Continued...

Generator LED States		Connector LED State	Possible Cause	Corrective Action
Green	Red	Red		
Flashing	OFF	Flashing	Timing control valve not actuating **NOTE:** LEDs will show in normal operating state when dealing with this particular cause.	1. Increase air pressure to transfer pump assembly 4.8−6.2 bar (70−90 psi) until the timing valve and pump operates. 2. Check to see if timing valve and pump are operating consistently at 1 second per cycle rate. 3. If not, turn off pump. 4. Refer to the Tubing Diagrams on page 28 and page 29. Disconnect tubes L and M from the timing control valve. 5. Turn pump on and check the timing control valve for alternating positive air pressure 0.5 seconds ON and 0.5 seconds OFF. 6. If air is not alternating at consistent rate, replace the timing control valve kit (refer to *Spare Parts* for part numbers).

Repair

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

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

Fluidizing Tube Replacement

NOTE: Four O-rings are included in the fluidizing tube kit. Replace the O-rings if they are worn. It is not necessary to replace the O-rings each time you replace the fluidizing tubes.

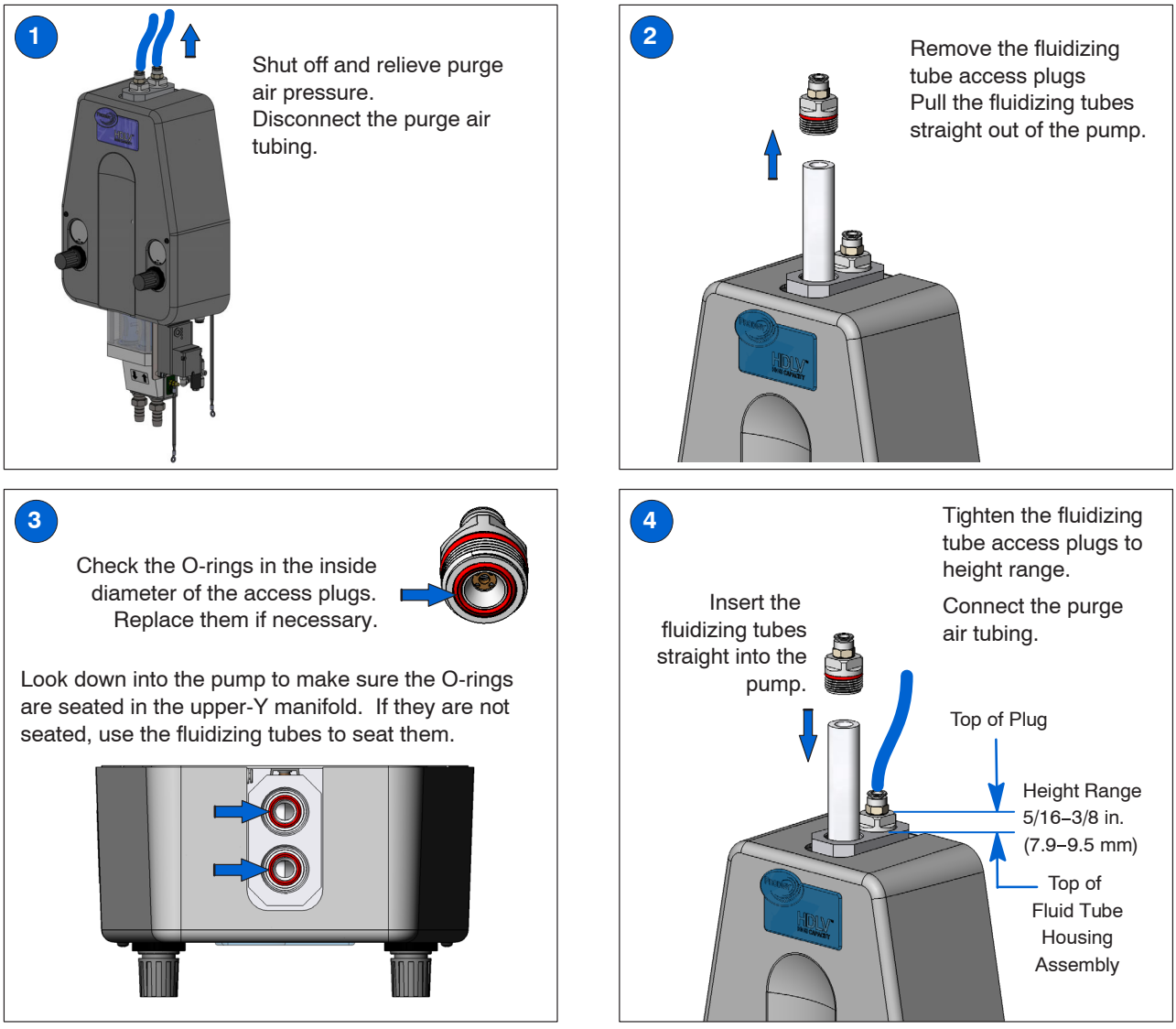


Figure 10 Fluidizing Tube Service

Pump Disassembly

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 11. 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 (A) and the cover from the pump.
4. See Figure 12. Disconnect one end of each of the seven air tubes indicated.

   NOTE: The letters in Figure 11 correspond to the letters in the Tubing Diagram on page 28.
5. See Figure 11. Remove the two screws (B) securing the pump assembly to the base. Remove the pump assembly to a clean work surface.
6. See Figure 13. Starting with the fluidizing tubes, disassemble the pump as shown.

NOTE: Refer to “Pinch Valve Replacement” on page 26 for pinch valve replacement instructions. Filter discs are included in pinch valve kits.

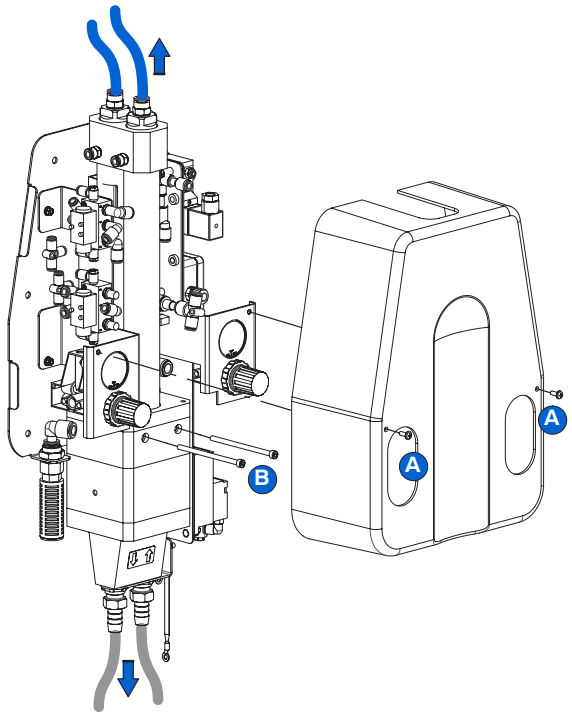


Figure 11 Removing the Pump Assembly

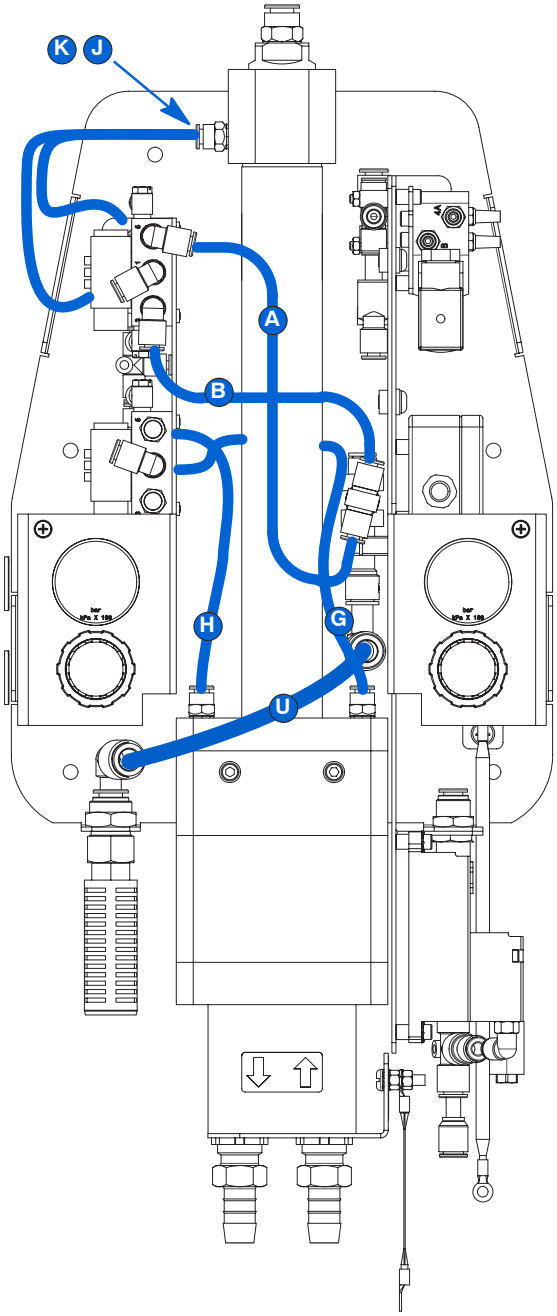


Figure 12 Disconnecting Air Tubing

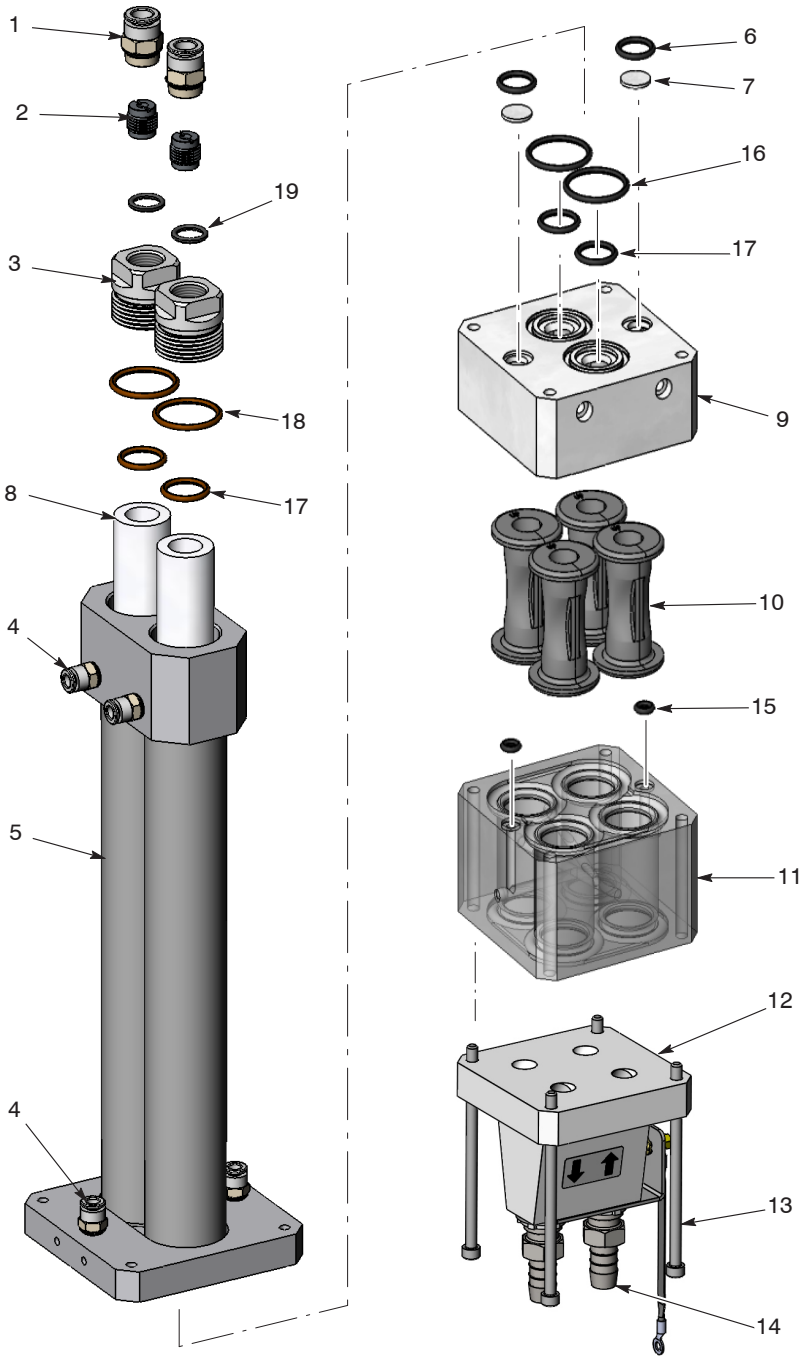


Figure 13 Pump Disassembly and Assembly

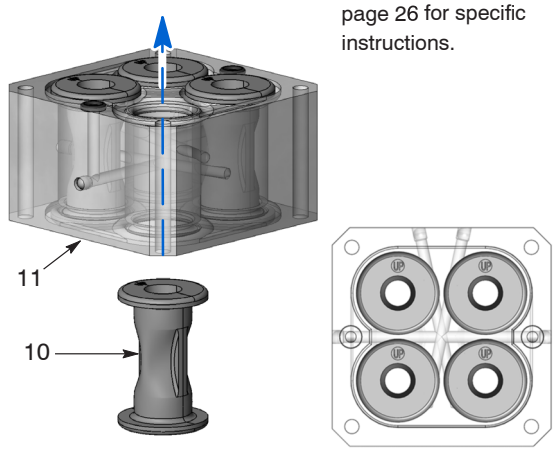
1. 10-mm tube connectors (2)
2. Check valves (2)
3. Fluidizing tube access plugs (2)
4. 6-mm tube connectors (4)
5. Outer fluidizing tube assembly
6. O-rings (2), 0.625 x 0.813 in.
7. Filter discs (2)
8. Fluidizing tubes (2)
9. Upper-Y manifold
10. Pinch valves (4)
11. Pinch valve body
12. Lower Y-block
13. 120-mm screws (4)
14. 19 mm barbed fittings
15. O-rings (2), 0.219 x 0.406 in.
16. O-rings (2), 1.188 x 1.375 in.
17. O-rings (4), 0.688 x 0.875 in.
18. O-rings (2), 1.25 x 1.063 in.
19. O-rings (2), 0.438 x 0.625 in.

Pump Assembly

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

1

Refer to *Pinch Valve Replacement* on page 26 for specific instructions.



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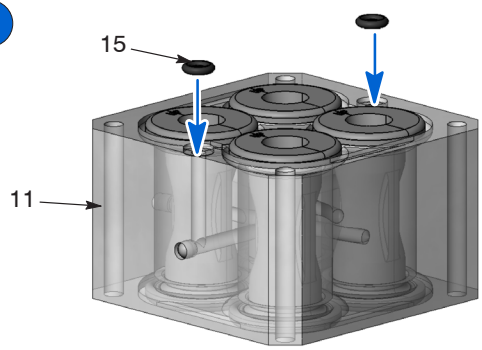
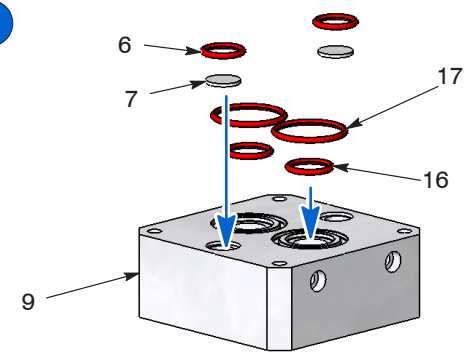


3



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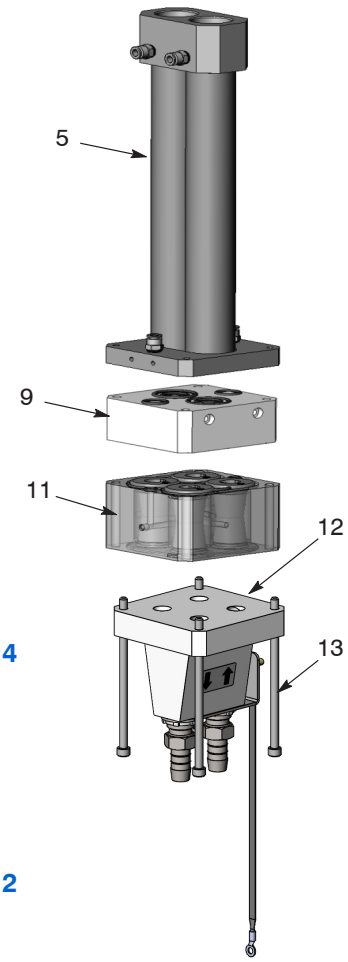
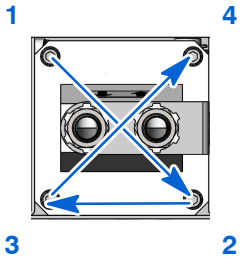
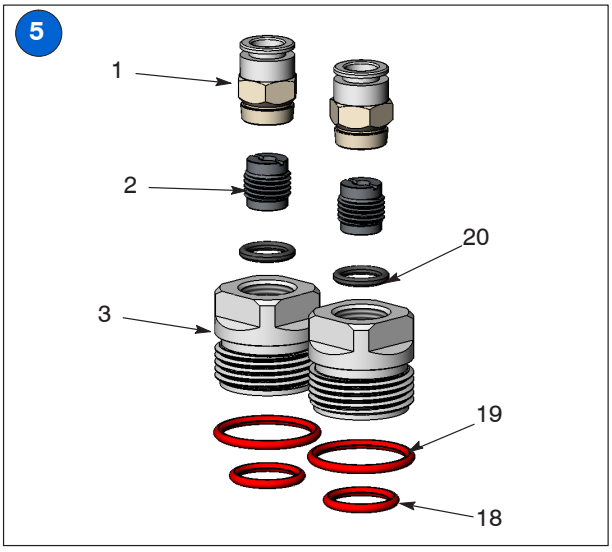
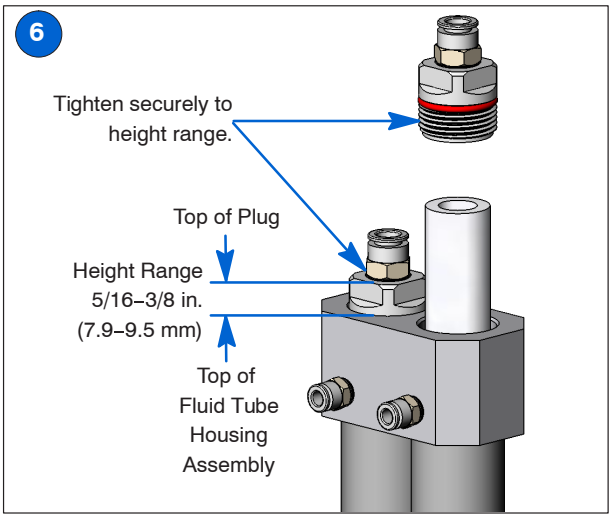
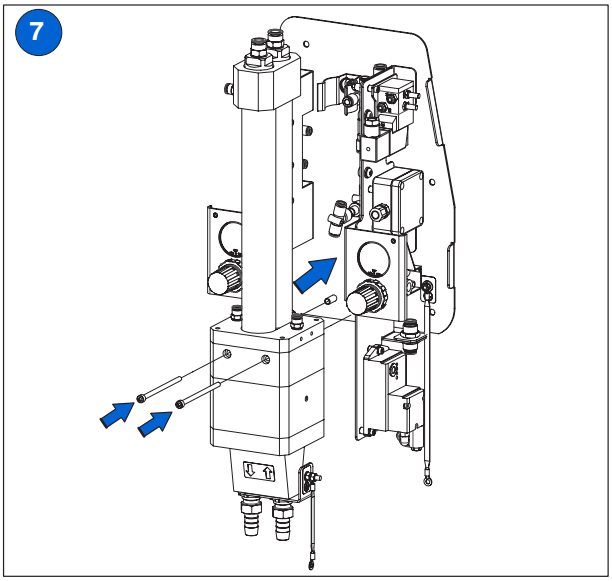


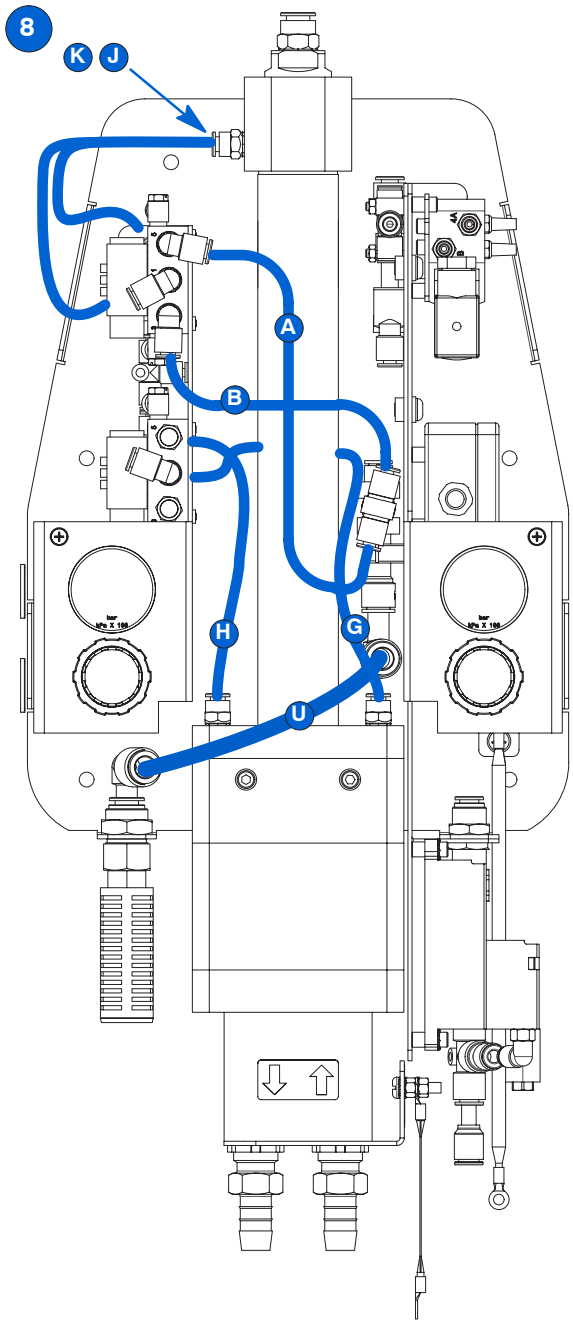


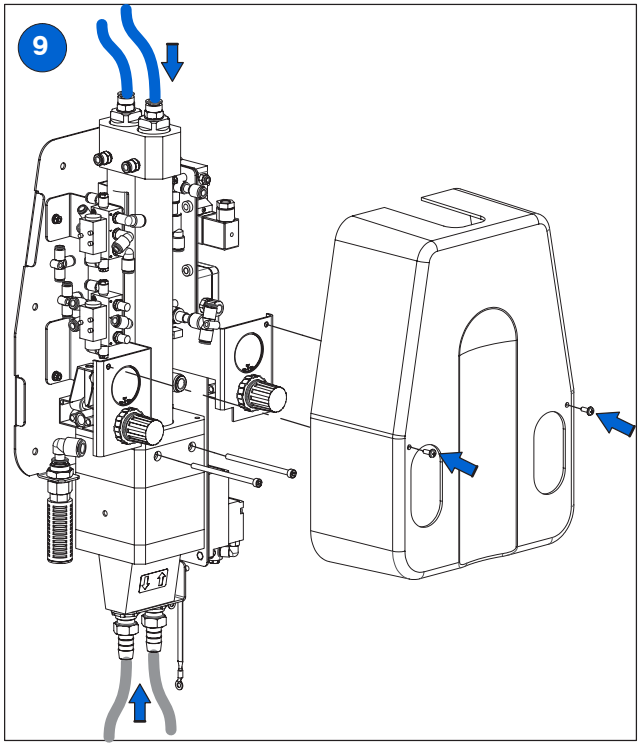
Tighten screws two turns at a time to 7–10 in. lb using an alternating pattern.











Pinch Valve Replacement

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

NOTE: The top flanges of the pinch valves have the word UP molded into them.

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.**inch Valve Removal**

1

Place the pinch valve body in a padded vise with the bottom end facing you. Grasp and pull the bottom end of the pinch valve with one hand.

2

Use your other hand to pinch the flange on the opposite end of the pinch valve.

3

Pull the pinch valve firmly until it comes out of the pinch valve body.

Pinch Valve Installation

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

1

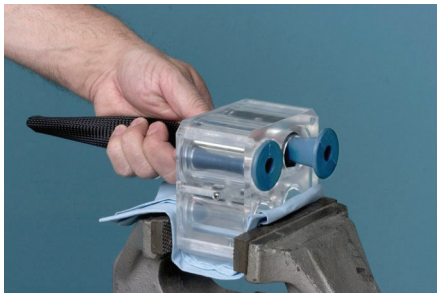
Turn the pinch valve body around so that the top end faces you. Insert the pinch valve insertion tool through the pinch valve body.

NOTE: After you put the pinch valve into the insertion tool, pinch flat the flange on the UP end of the valve.

2

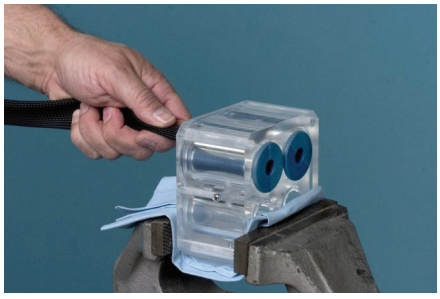
Insert the UP end of the pinch valve into the pinch valve insertion tool. Pinch the UP end flange flat and feed the small end of the flattened flange into the pinch valve body.

3



While keeping the UP end flange pinched flat, pull on the the insertion tool.

4



Pull the insertion tool through the valve body until the UP end of the pinch valve and the insertion tool comes out the top of the pinch valve body.

Tubing Diagrams

See Figure 14 and Figure 15.

NOTE: Refer to “Installation” on page 10 for proper installation location of ship with expander for each version of the pump.

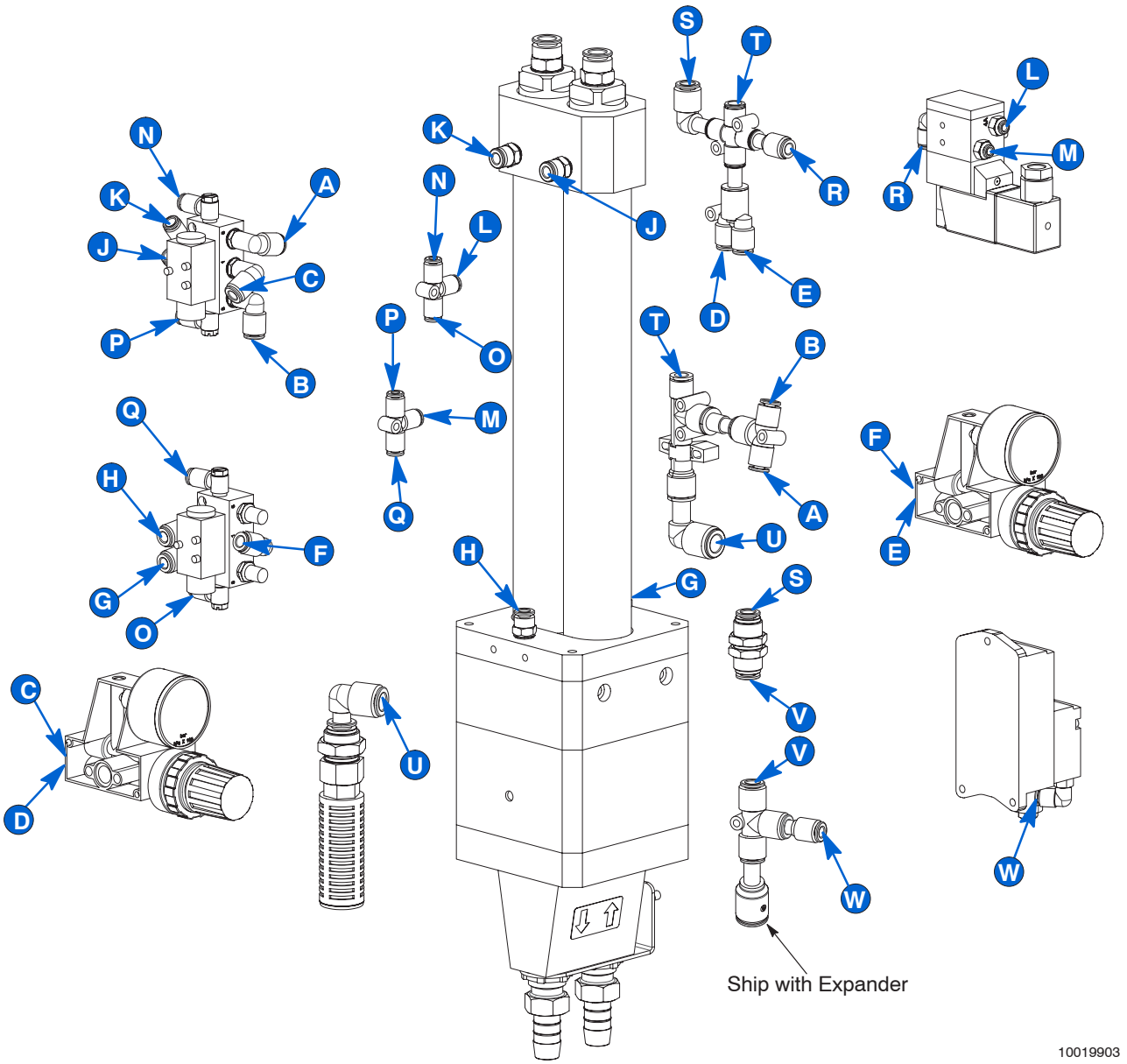


Figure 14 Tubing Diagram - 1 of 2

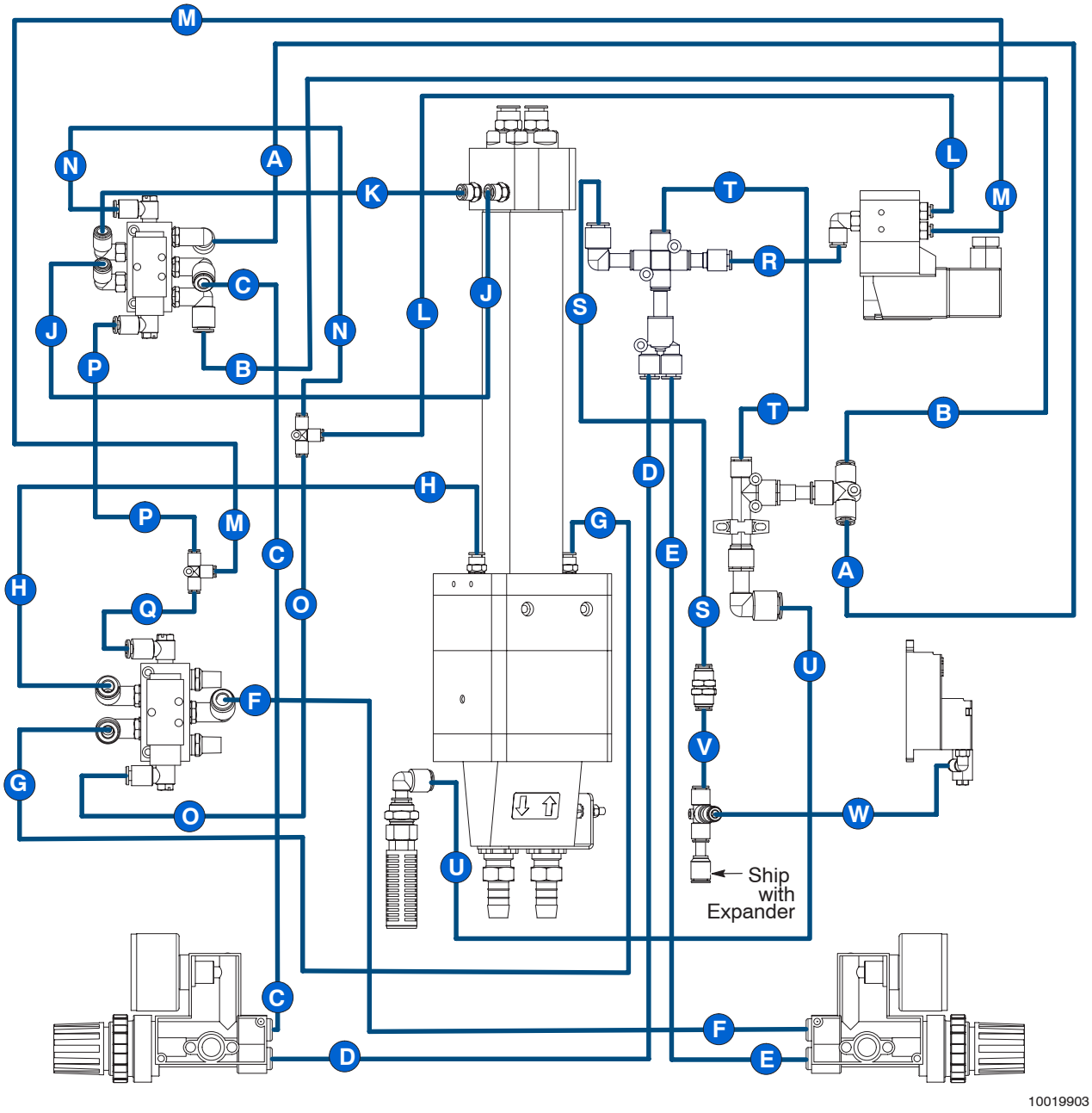


Figure 15 Tubing Diagram - 2 of 2

Refer to *Parts* for tubing part numbers.

	OD	Color	Length mm (in.)
A — A	6 mm	Blue	213 (8.37)
B — B	6 mm	Blue	213 (8.37)
C — C	6 mm	Blue	273 (10.74)
D — D	6 mm	Blue	238 (9.36)
E — E	6 mm	Blue	383 (15.07)
F — F	6 mm	Blue	383 (15.07)
G — G	6 mm	Blue	278 (10.93)
H — H	6 mm	Blue	213 (8.37)
J — J	6 mm	Blue	153 (6.01)
K — K	6 mm	Blue	118 (4.63)
L — L	4 mm	Clear	300 (11.81)

	OD	Color	Length mm (in.)
M — M	4 mm	Clear	243 (9.56)
N — N	4 mm	Clear	123 (4.83)
O — O	4 mm	Clear	123 (4.83)
P — P	4 mm	Clear	108 (4.25)
Q — Q	4 mm	Clear	108 (4.25)
R — R	6 mm	Blue	260 (10.25)
S — S	8 mm	Blue	433 (17.04)
T — T	8 mm	Blue	238 (9.36)
U — U	10 mm	Blue	223 (8.77)
V — V	8 mm	Blue	98 (3.88)
W — W	6 mm	Blue	50 (2.00)

Parts

Pump Assembly

See Figure 16 along with the following parts list.

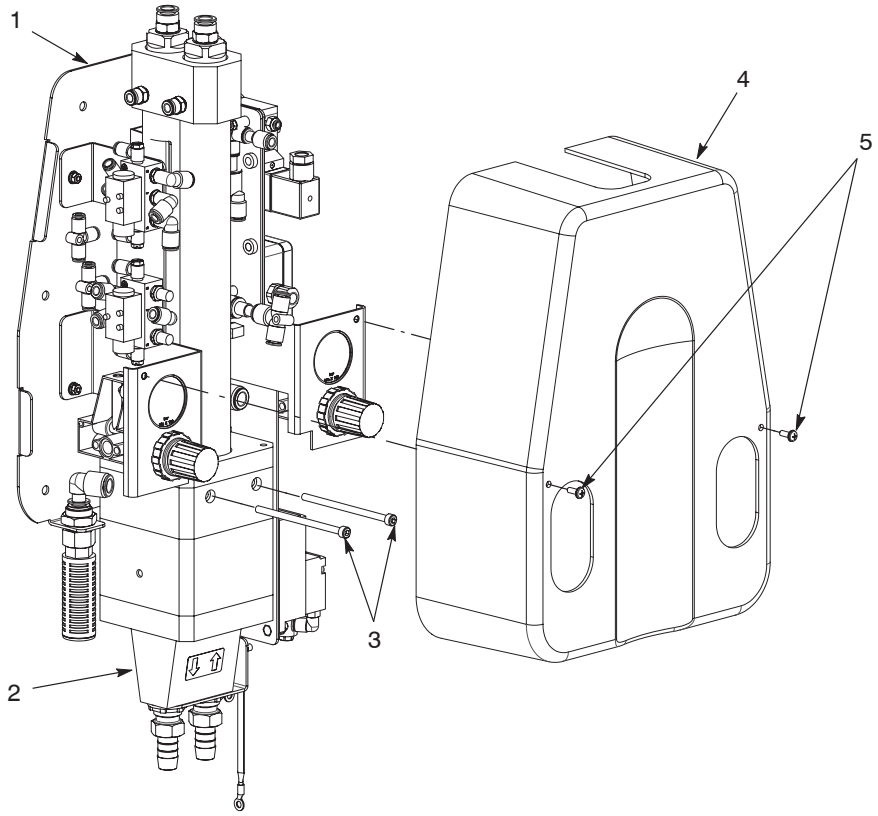


Figure 16 Pump Assembly Parts

Miscellaneous Pump Assembly Parts

Item	Part	Description	Quantity	Note
—	1619673	PUMP, high capacity, HDLV, electric, barbed, Prodigy, with generator, packaged	1	
—	1619912	PUMP, high capacity HDLV, electric, barbed, Prodigy, no generator, packaged	1	
1	- - - - - -	• PUMP CONTROLS	1	A
2	- - - - - -	• PUMP ASSEMBLY	1	B
3	UA	• SCREW, socket, M5 x 90 mm, black	2	
4	1054586	• COVER, high capacity HDLV pump	1	
5	UA	• SCREW, pan head, recessed, M4 x 12, with integral lockwasher bezel	2	C
NS	UA	• SCREW, socket, M6 x 25 mm, zinc	4	C
NS	UA	• NUT, hex, M6, steel, zinc	4	C
NS	UA	• WASHER, flat, M, regular, M6, steel, zinc	8	C
NS	UA	• WASHER, lock, M, split, M6, steel, zinc	4	C

NOTE: A. Refer to *Pump Controls* for a breakdown of the parts included in this assembly.

B. Refer to *Pump Assembly Without Controls* for a breakdown of the parts included in this assembly.

C. Use these fasteners to mount the pump.

NS: Not Shown

UA: Unavailable for purchase through Nordson. Contact local distributor or local source.

Pump Assembly Without Controls

See Figure 17 along with the following parts list.

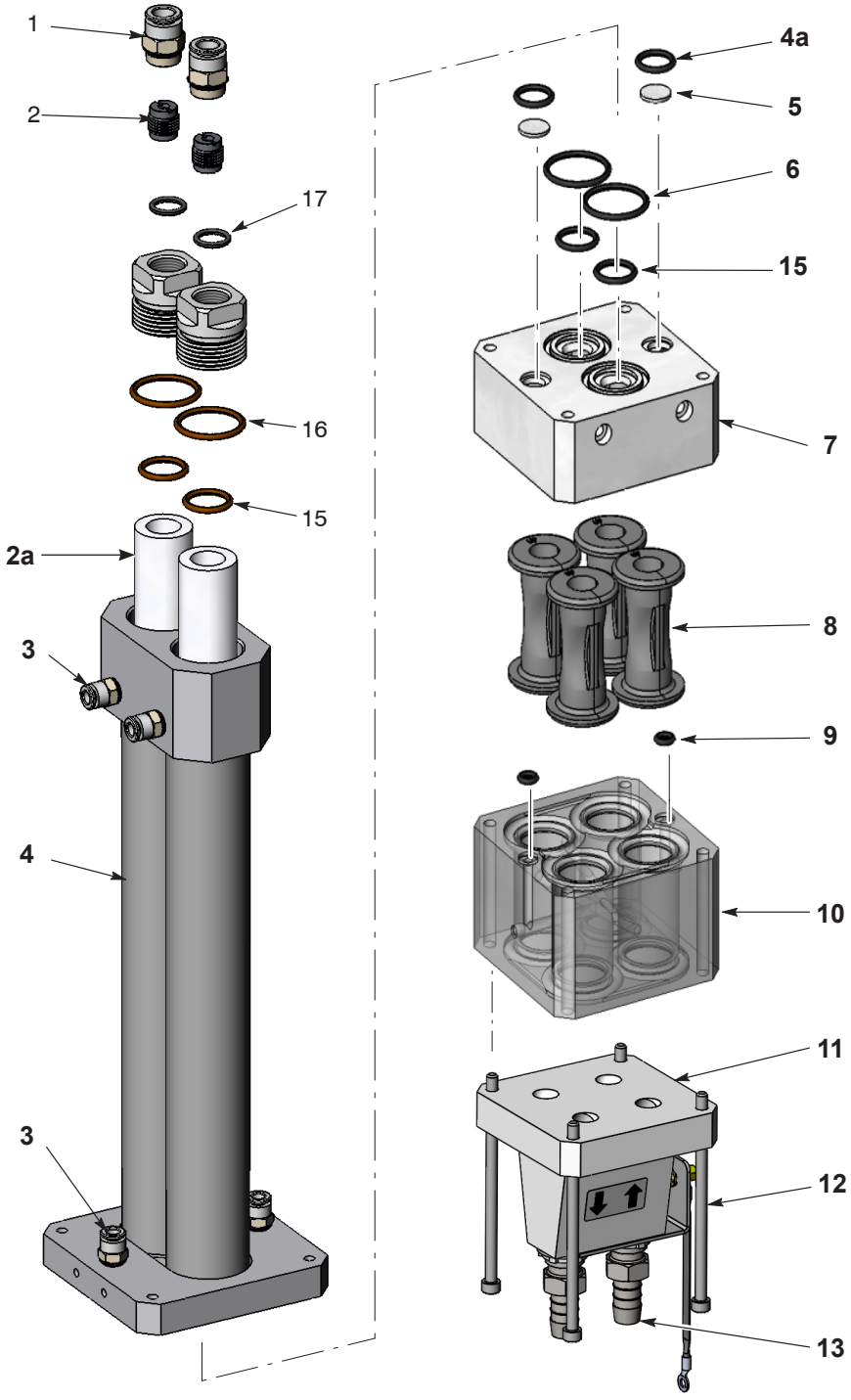


Figure 17 Pump Assembly Without Controls

Check Valve Kit

Refer to Figure 17 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

Item	Description	Quantity
1078161 - CHECK VALVE KIT		—
2	• CHECK VALVE ASSEMBLY	2

Fluidizing Tube Kit

Refer to Figure 17 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

Item	Description	Quantity
1104542 - FLUIDIZING TUBE KIT		—
2a	• FLUIDIZING TUBE	2
15	• O-RING, silicone, 0.688 x 0.875 x 0.094 in.	4

Lower Y Manifold Kit

See Figure 18 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

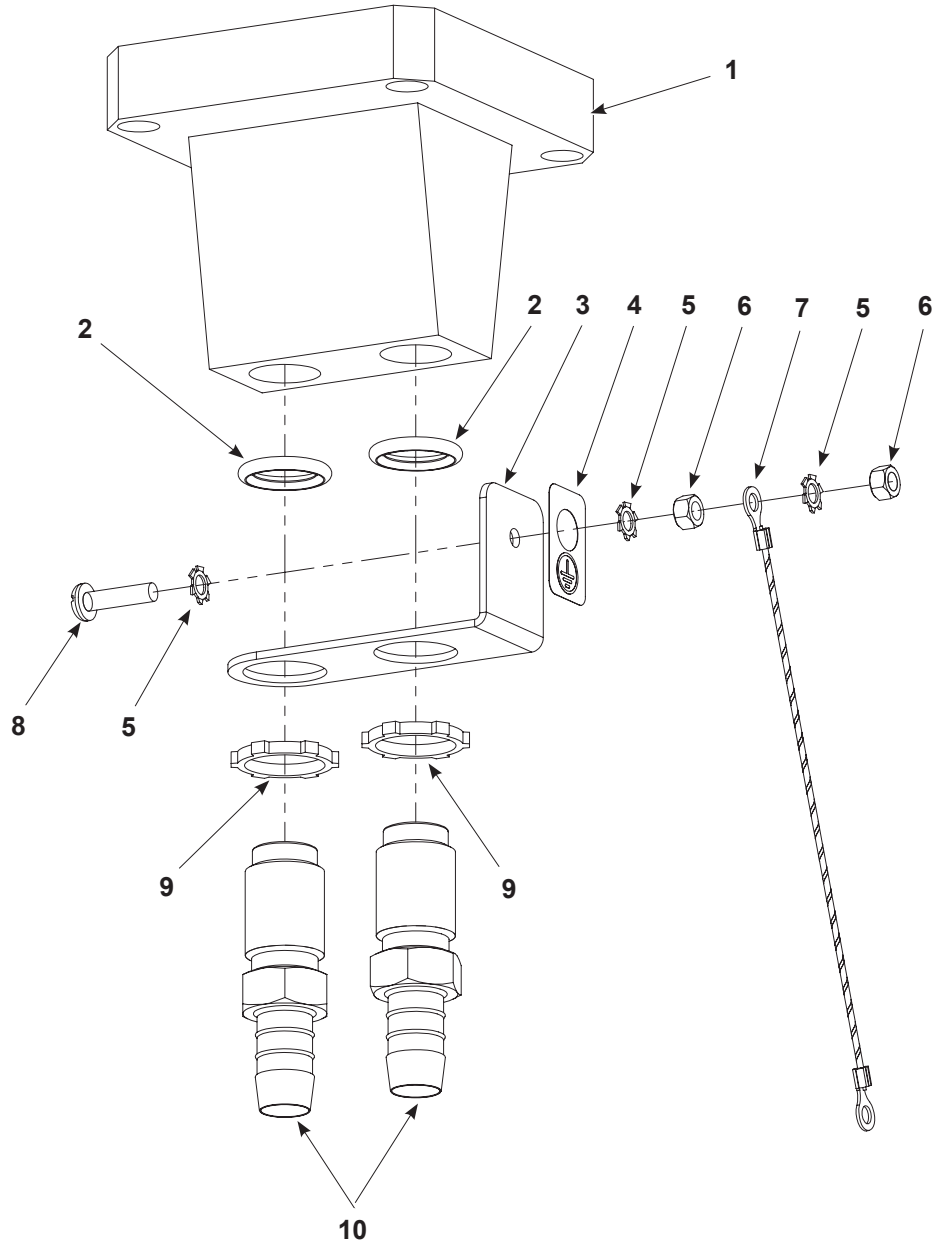


Figure 18 Lower Y Manifold Kit

Lower Y Manifold Kit

Refer to Figure 18 along with the following parts list.

Item	Description	Quantity
1610762 - LOWER Y MANIFOLD KIT		—
1	• LOWER BODY	1
2	• O-RING, silicone, 0.688 x 0.938 x 0.125 in.	2
3	• GROUND PLATE	1
4	• GROUND TAG	1
5	• LOCK WASHER, male, external, M5, steel, 0.5 in.	3
6	• NUT, hex, M5, brass	1
7	• GROUND JUMPER	1
8	• PAN SCREW, slotted, m5 x 20 mm, bronze	1
9	• NUT, lock, conduit, steel, 0.5 in.	2
10	• BARB FITTING, gauge 1/2, male, 12.7 mm hose, stainless steel	2

O-ring Service Kit

Refer to Figure 17 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

Item	Description	Quantity	Note
1625740 - O-RING SERVICE KIT		—	
4a	• O-RING, silicone, 0.625 x 0.813 x 0.094 in.	2	
6	• O-RING, silicone, 1.188 x 1.375 x 0.094 in.	2	
9	• O-RING, silicone, 0.219 x 0.406 x 0.094 in.	2	
15	• O-RING, silicone, 0.688 x 0.875 x 0.094 in.	4	
16	• O-RING, silicone, 1.250 x 1.063 x 0.094 in.	2	
17	• O-RING, silicone, 0.438 x 0.625 x 0.094 in.	2	
NS	• O-RING, Viton, 8.000 x 2.000 in.	2	
NS: Not Shown			

Pinch Valve Kit

Refer to Figure 17 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

Item	Description	Quantity	Note
1092272 - PINCH VALVE KIT, HDLV, blue, 4 pack		—	
1625738 - PINCH VALVE KIT, HDLV, black, 4 pack		—	
1625739 - PINCH VALVE KIT, HDLV, FDA, 4 pack		—	
5	• FILTER DISC	4	
8	• PINCH VALVE	4	
4a	• O-RING, silicone, 0.625 x 0.813 x 0.094 in.	2	
9	• O-RING, silicone, 0.219 x 0.406 x 0.094 in.	2	A
NS	• SLEEVE	0.83 ft	
NS	• PINCH VALVE INSTALLATION TOOL	1	
NOTE: A. Kit 1092272 does not include this component.			

Upper Y Manifold Kit

Refer to Figure 17 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with and without a generator.

Item	Description	Quantity
1057269 - Upper Y Manifold Kit		—
6	• O-RING, silicone, 1.188 x 1.375 x 0.094 in.	2
7	• UPPER Y MANIFOLD	1

Miscellaneous Pump Assembly Without Controls Parts

Refer to Figure 17 along with the following parts list.

Item	Part	Description	Quantity
1	UA	CONNECTOR, male, 10 mm tube x 3/8 unithread	2
3	UA	CONNECTOR, male, 6 mm tube x 1/8 universal	4
4	1063352	TUBE, outer fluid assembly, high capacity HDLV pump	1
7	1057269	KIT, upper Y manifold, high capacity HDLV	1
10	1090737	BODY, pinch valve, high capacity HDLV pump	1
11	1610762	KIT, lower Y-block, with barbed fittings, high capacity HDLV pump	1
12	UA	SCREW, socket, M6 x 120, stainless steel	4
13	UA	FITTING, barbed, G ½ male, 12.7 mm hose, stainless steel	2
UA: Unavailable for purchase through Nordson. Contact local distributor or local source.			

Pump Controls - Left Side

See Figure 19 along with the following parts list.

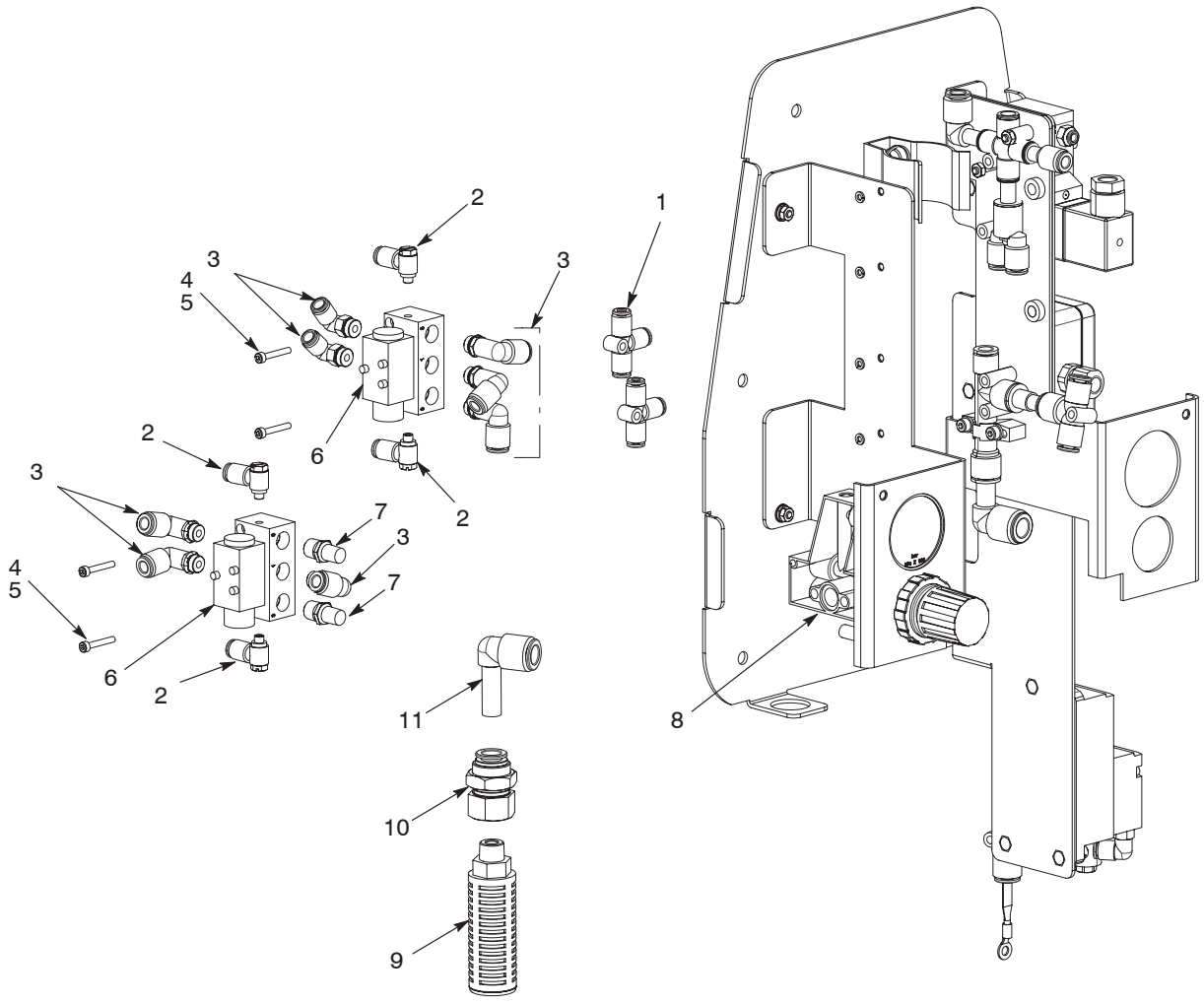


Figure 19 Pump Controls - Left Side (shown with generator version)

Miscellaneous Pump Controls - Left Side Parts

Item	Part	Description	Quantity	Note
1	UA	UNION, tee, 4 mm tube x 4 mm tube x 4 mm tube	2	
2	UA	CONNECTOR, male, universal elbow, 4 mm tube x M5	4	
3	UA	CONNECTOR, male, universal elbow, 6 mm tube x 1/8 in.	8	A
4	UA	SCREW, socket, M3 x 20 long, black oxide	4	
5	UA	WASHER, lock, M, split, steel, zinc	4	
6	1054519	VALVE, miniature, double air piloted, 5 port	2	
7	170269	MUFFLER, exhaust, 1/8 in. NPT	2	
8	1018157	REGULATOR ASSEMBLY, 0−25 psi, 0−1.7 bar	1	
9	1097195	MUFFLER, silencer, 1/4 NPT	1	
10	UA	UNION, female bulkhead, 10 mm tube x 1/4 RPT	1	
11	UA	ELBOW, plug in, 10 mm tube x 10 mm stem	2	

NOTE: A. Included in valve kit (1620576) and generator kit (1620577).

UA: Unavailable for purchase through Nordson. Contact local distributor or local source.

Pump Controls - Right Side

See Figure 20 along with the following parts list.

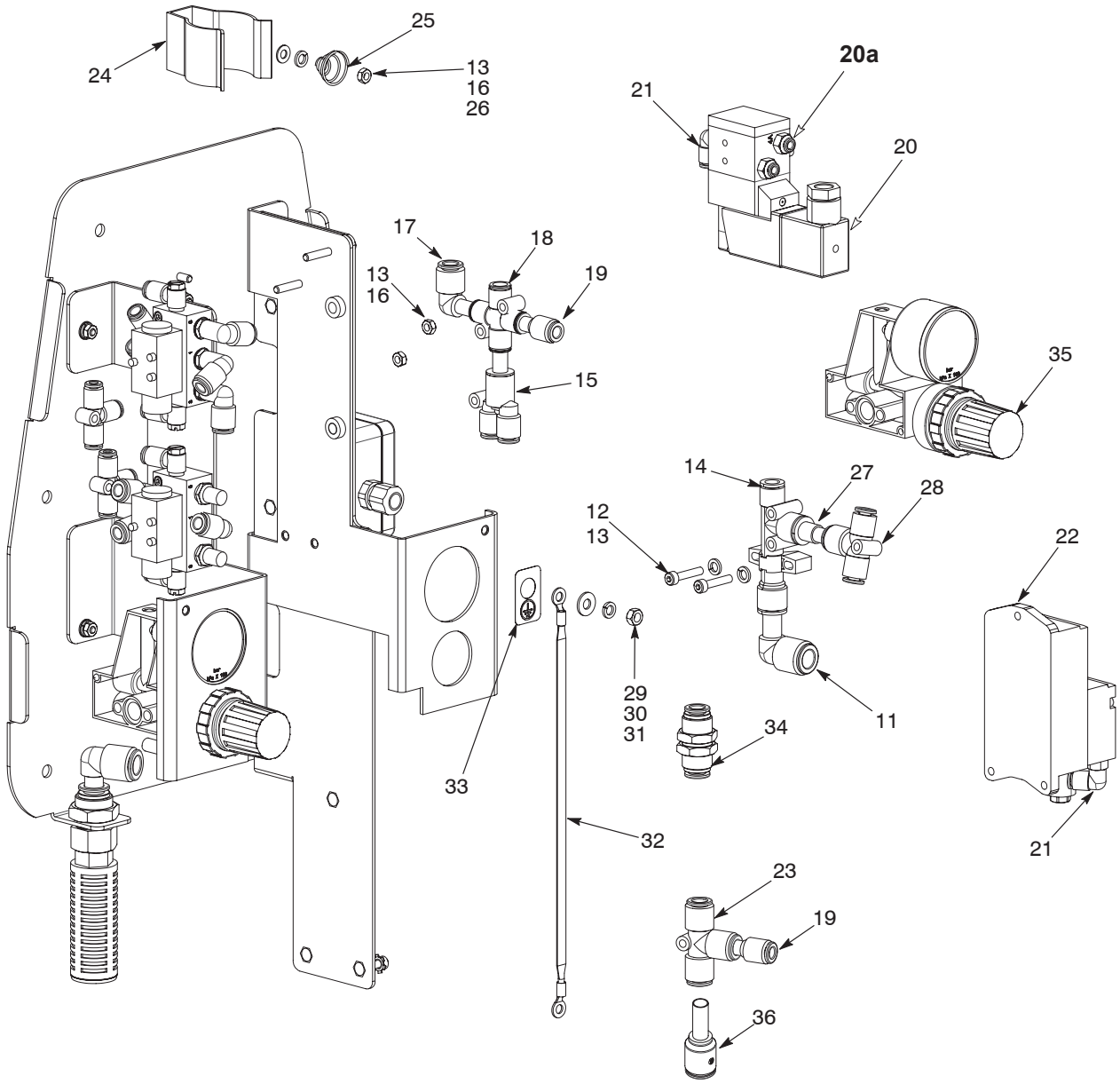


Figure 20 Pump Controls - Right Side (shown with generator version)

Pump Controls Kits

Generator Kit

Refer to Figure 20 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with a generator.

Item	Description	Quantity
1620577 - GENERATOR KIT		—
21	• CONNECTOR, male, elbow, 6 mm T x 1/8, unidirectional	1
22	• GENERATOR	1
NS: Not Shown		

Valve Kit

Refer to Figure 20 along with the following parts list.

NOTE: This kit is applicable to pumps packaged with a generator.

Item	Description	Quantity
1620576 - VALVE KIT		—
20	• VALVE	1
20a	• CONNECTOR, male, 4 mm T x 1/8 RPT	2
21	• CONNECTOR, male, elbow, 6 mm T x 1/8, unidirectional	2
NS	• MUFFLER	2
NS: Not Shown		

Miscellaneous Pump Controls - Right Side

Refer to Figure 20 along with the following parts list.

Item	Part	Description	Quantity	Note
12	UA	SCREW, socket, M4 x 20, zinc	2	
13	UA	WASHER, lock, M, split, M4, steel, zinc	8	
14	1052920	PUMP, vacuum generator	1	
15	UA	CONNECTOR, plug in Y, 8 mm stem x 6 mm tube	1	
16	UA	NUT, hex, M4, steel, zinc	6	
17	UA	ELBOW, plug in, 8 mm tube x 8 mm stem, plastic	1	
18	UA	UNION, cross, 4 mm tube x 8 mm tube	1	
19	UA	REDUCER, 8 mm stem x 6 mm T	AR	
20	1620576	KIT, valve, 5 port, 2 position, NPTF	1	
20a	UA	CONNECTOR, male, 4mm T x 1/8 RPT	2	
21	UA	CONNECTOR, male, elbow, 6 mm T x ⅛ UNI	AR	A
22	1620577	KIT, generator, 12 Vdc, Prodigy	1	B
23	UA	TEE, union, 8 mm tube x 8 mm tube, plastic	1	B
24	- - - - - -	HOLDER, clamping, spring action	1	
25	UA	SPRING, tapered, 0.312 x 0.750 in., pump grounding	1	
26	UA	WASHER, flat, M, narrow, M4, steel, zinc	4	
27	UA	NIPPLE, reducing, 10 mm tube x 8 mm tube, plastic	1	
28	UA	UNION, tee, 8 mm tube x 6 mm tube x 6 mm tube	1	
29	UA	NUT, hex, M5, steel, zinc	1	
30	UA	WASHER, lock, M, split, M5, steel, zinc	1	
31	UA	WASHER, flat, E, 0.203 x 0.406 x 0.040 in., brass	1	
32	1615891	JUMPER, ground, 9 in.	1	
33	240674	TAG, ground	1	
34	1002711	UNION, bulkhead, 8 mm tube x 8 mm tube	1	
35	288821	REGULATOR ASSEMBLY, 0−60 psi, 0−4 bar	1	
36	1618985	EXPANDER, 8 mm stem x 10 mm T	1	C

NOTE: A. Included in valve kit (1620576) and generator kit (1620577).

B. Not included in pump without generator (1619912).

C. Ship with item. Refer to *Installation* for proper installation for each version of the pump.

AR: As Required

UA: Unavailable for purchase through Nordson. Contact local distributor or local source.

Powder and Air Tubing

See Figure 21 along with the following parts list.

NOTE: Refer to *Installation* for proper installation location of ship with expander for each version of the pump.

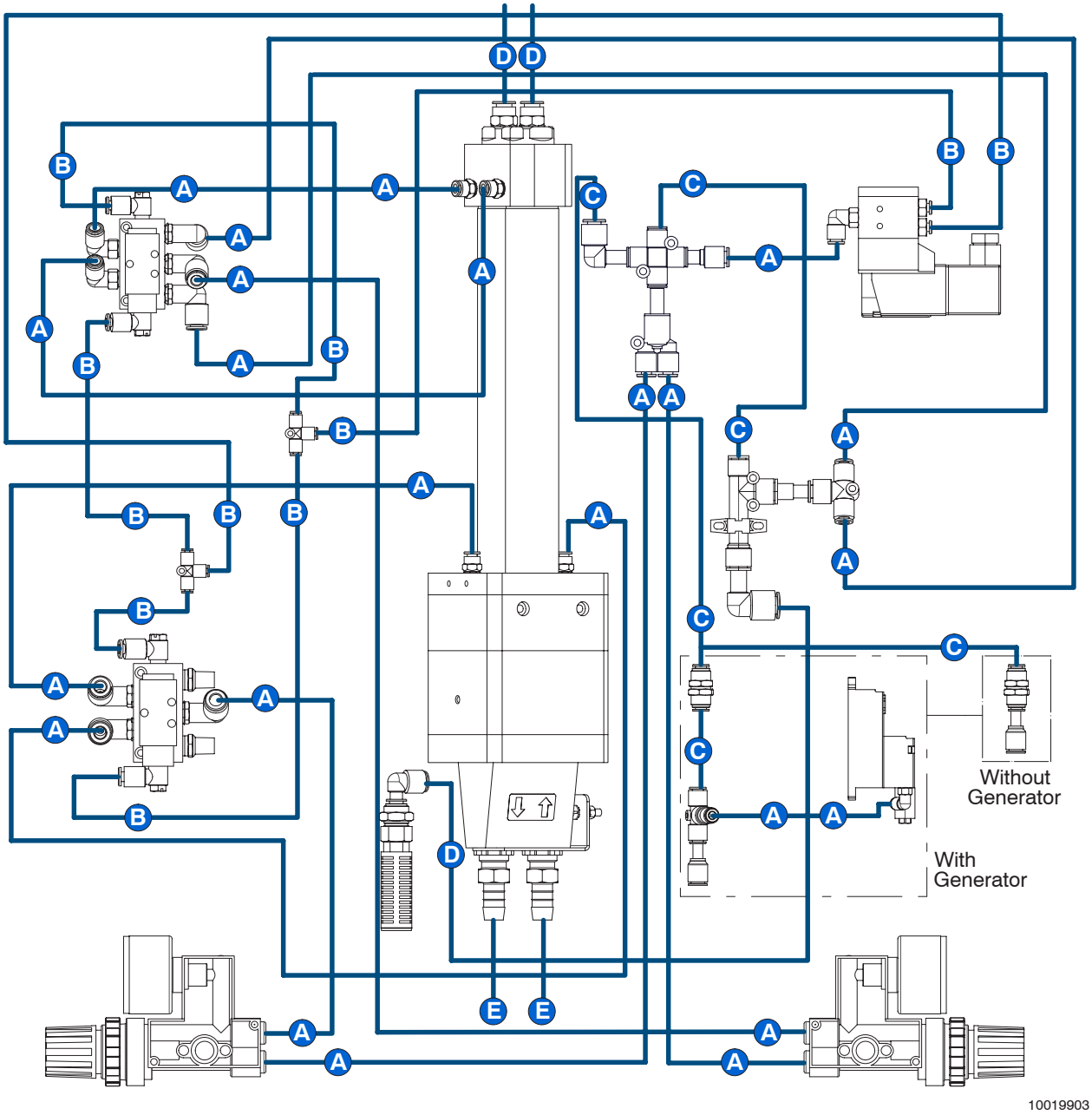


Figure 21 Powder and Air Tubing

Tubing	Part	Description
A	900742	6-mm OD, blue
B	900617	4-mm OD, clear
C	900618	8-mm OD, blue
D	900740	10-mm OD, blue
E	768178	12.7-mm ID, antistatic

Electronic Control Kit

See Figure 22 and Figure 23 along with the following parts list.

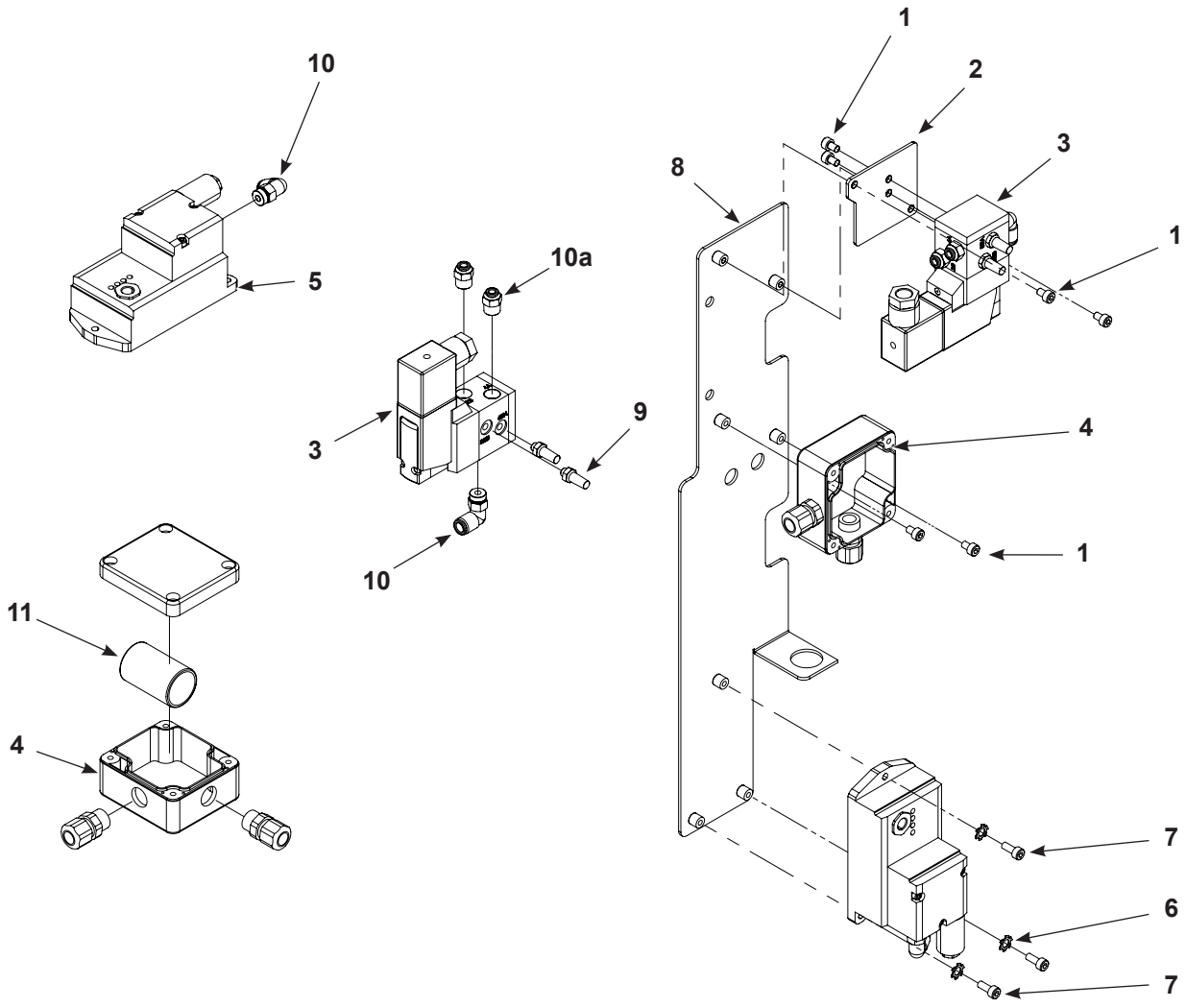


Figure 22 Electronic Control Kit Assembly View (1 of 2)

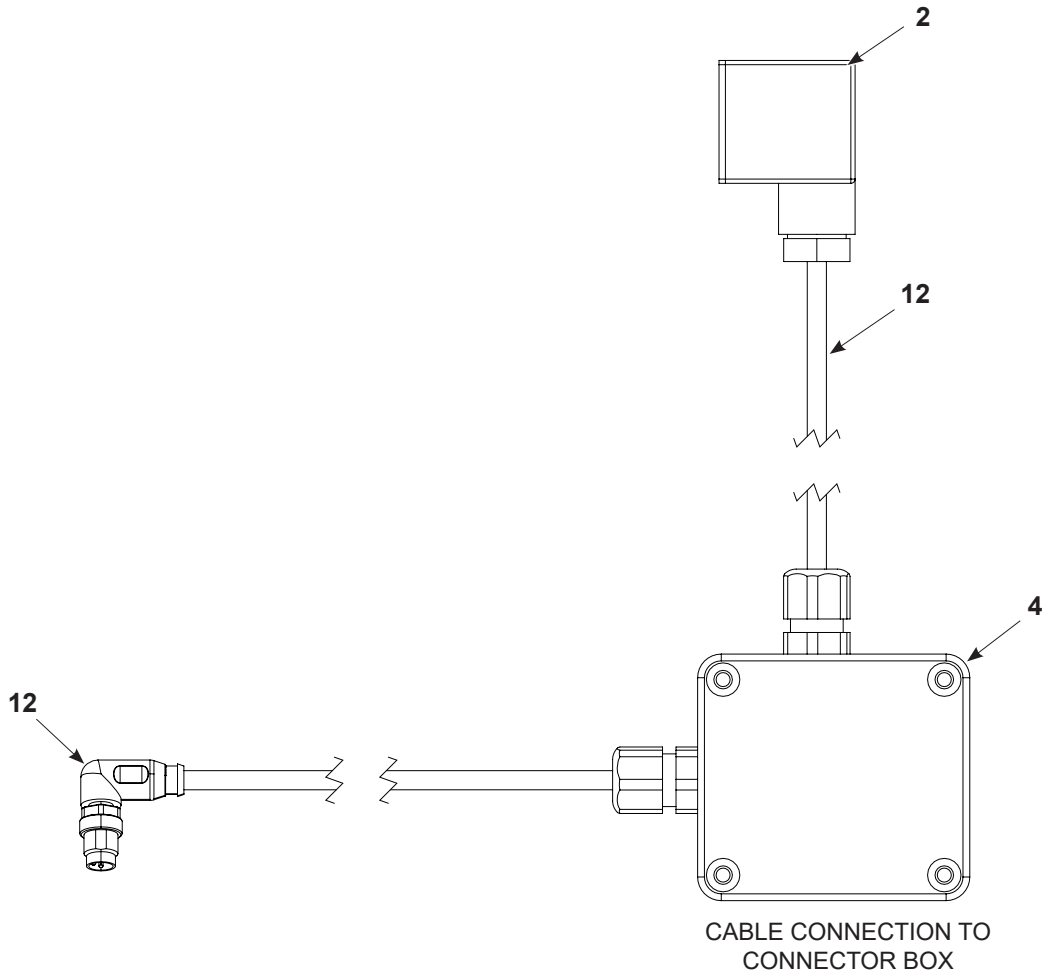


Figure 23 Electronic Control Kit Assembly View (2 of 2)

Item	Description	Quantity	Note
1619498 - ELECTRONIC CONTROL KIT WITH GENERATOR		—	
1619748 - ELECTRONIC CONTROL KIT WITHOUT GENERATOR		—	
1	• SCREW, socket head, m4 x 5 mm, steel, zinc	6	
2	• PLATE MOUNT	1	
3	• VALVE, 5 port, 2 position, NPT, female	1	
4	• CONNECTOR BOX	1	
5	• GENERATOR	1	A
6	• LOCK WASHER, male, external, M4, steel, zinc	3	
7	• SCREW, socket head, M4 x 10 mm, GD 12.9, zinc	3	
8	• PLATE MOUNT, electric assembly	1	
9	• MUFFLER	2	
10	• CONNECTOR, male, elbow, 6 mm T x 1/8 unidirectional	2	
10a	• CONNECTOR, male, elbow, 4 mm T x 1/8 RPT	2	A
11	• FLASHER	1	
12	• CABLE, M8, 3 pin	1	
13	• SPLICE, closed end, nylon, 14-22 AWG, clear	3	
NOTE: A. These components are not included in kit 1619748.			

Wiring Diagram

Refer to Figure 22 and Figure 23. See Figure 24.

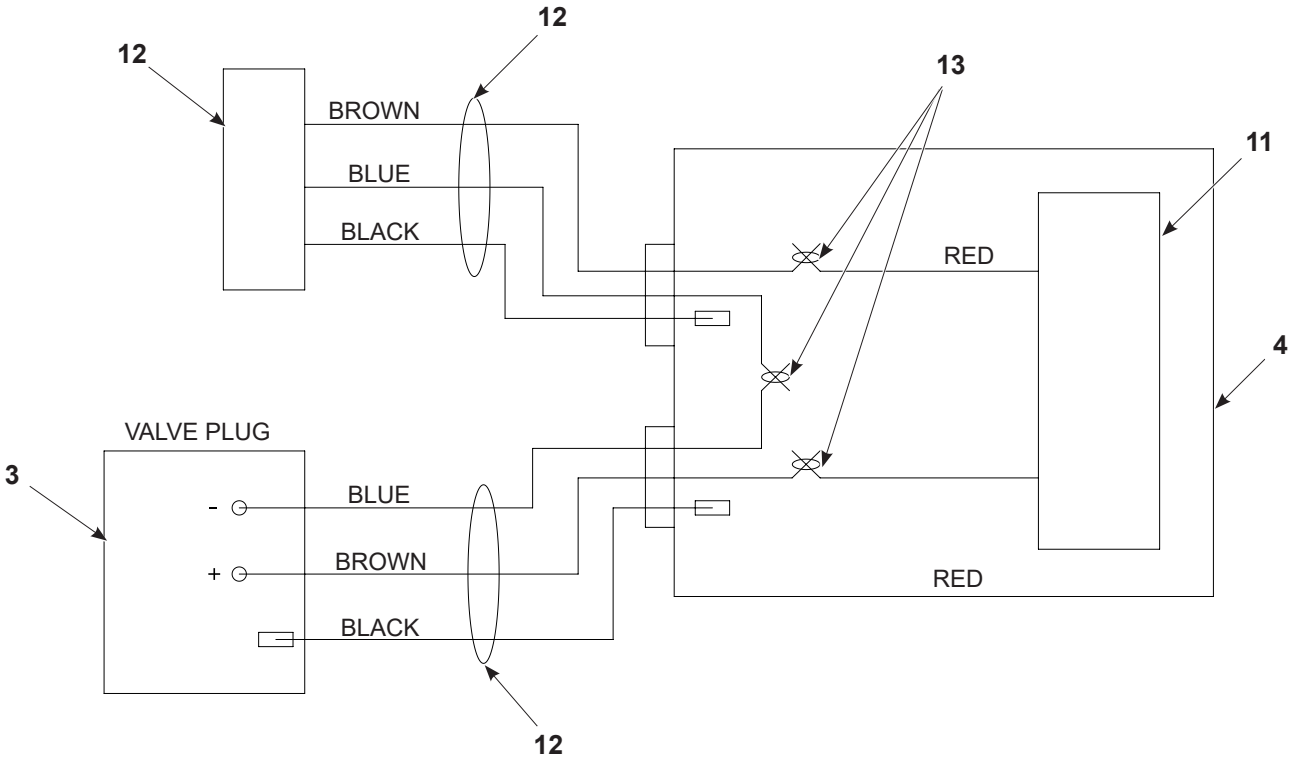


Figure 24 Wiring Diagram

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EU DECLARATION of CONFORMITY

Product: Prodigy HDLV High Capacity Transfer Pump, Stand, Drum Truck or VBF Dolly Mount.

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

Models: Prodigy HDLV

Description: This is a high-density powder pump used for high capacity transfer of powder coating materials. It can be mounted to a stand. Also available on a 55 gal drum mobile unit or a VBF box feed mobile unit.

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

Standards Used for Compliance:

EN/ISO12100	EN 60079-0
EN60204	EN 60079-31

Markings & File Info:
Ex II 3D
Ex tc IIIC T85°C Dc
Tech File – Sira CSA Group, Netherlands NB 2813

Quality System:
- ISO9001
- SGS Fimko Oy, NB 0598 (Helsinki Finland)

Date: 08Oct24

Jeremy Krone
Supervisor Product Development Engineering
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Heinrich-Hertz-Straße 42-44
D-40699 Erkrath

UK DECLARATION of CONFORMITY

Product: Prodigy HDLV High Capacity Transfer Pump, Stand, Drum Truck or VBF Dolly Mount.

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

Models: Prodigy HDLV

Description: This is a high-density powder pump used for high capacity transfer of powder coating materials. It can be mounted to a stand. Also available on a 55 gal drum mobile unit or a VBF box feed mobile unit.

Applicable UK Regulations:
Supply Machinery (Safety) Regulations 2008

Equipment & Protective Systems Intended for use in Potentially Explosive Atmosphere Regulation 2016

Standards Used for Compliance:

EN/ISO12100	EN 60079-0
EN 60204	EN 60079-31

Markings & File Info:
Ex II 3D
Ex tc IIIC T85°C Dc
Tech File – NB 0518 Sira CSA Group, UK

Quality System:
- ISO9001
- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)

Date: 08Oct24

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