

Encore[®] HD Powder Spray System with Pump Cabinet

Customer Product Manual

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Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding



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

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

Disposal

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

Description

System Components

The Encore HD® manual spray system with an Encore pump cabinet includes the advanced design of the Encore HD manual spray gun and the Encore HD manual controller.

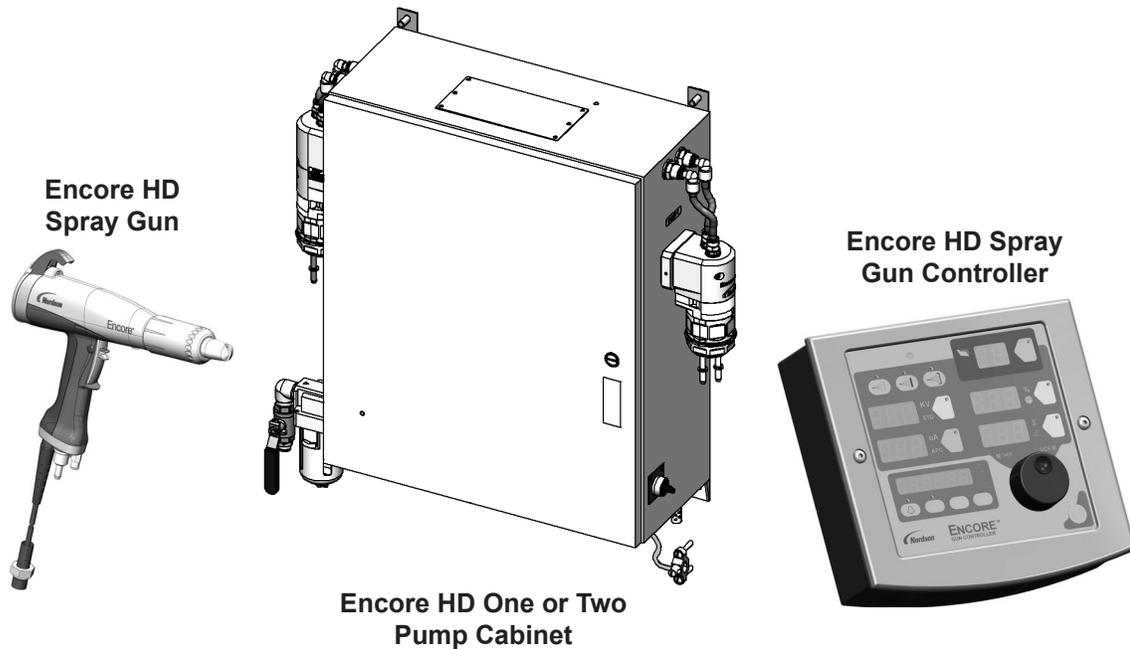


Figure 1 Encore HD Powder Spray System Components

System Components reference documents

- Encore HD Manual Powder Spray Gun
- Encore HD and XT Manual Powder Spray Controller
- Encore HD Pump Manual
- Encore HD Pump Control Unit and Power Supply

Pump Panel

The pump panel is the central electrical and pneumatic enclosure for the Encore HD manual system. The pump panel houses the Encore HD pumps, pump manifolds and pump control board, air filter and pneumatic controls, and DC power supply. The panel is shipped with brackets and fasteners for mounting on a rail, wall, or stand.



WARNING: Allow only qualified personnel to service this panel. Shut off power at an external disconnect before performing any electrical repairs. Shut off the air supply at the ball valve and relieve system air pressure before disconnecting pneumatic tubing or components.

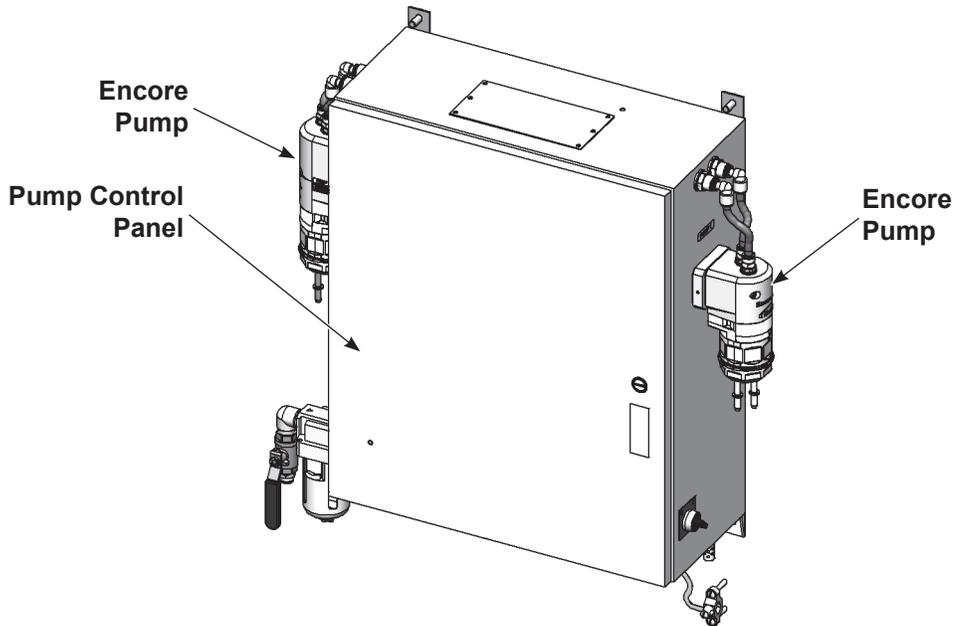


Figure 2 Pump Panel (Two Pump System Version)

System Options include:

- Single pump/spray gun system with stand
- Single pump/spray gun system, wall mount
- Dual pump/spray gun system with stand
- Dual pump/spray gun system, wall mount

Pump Panel Components

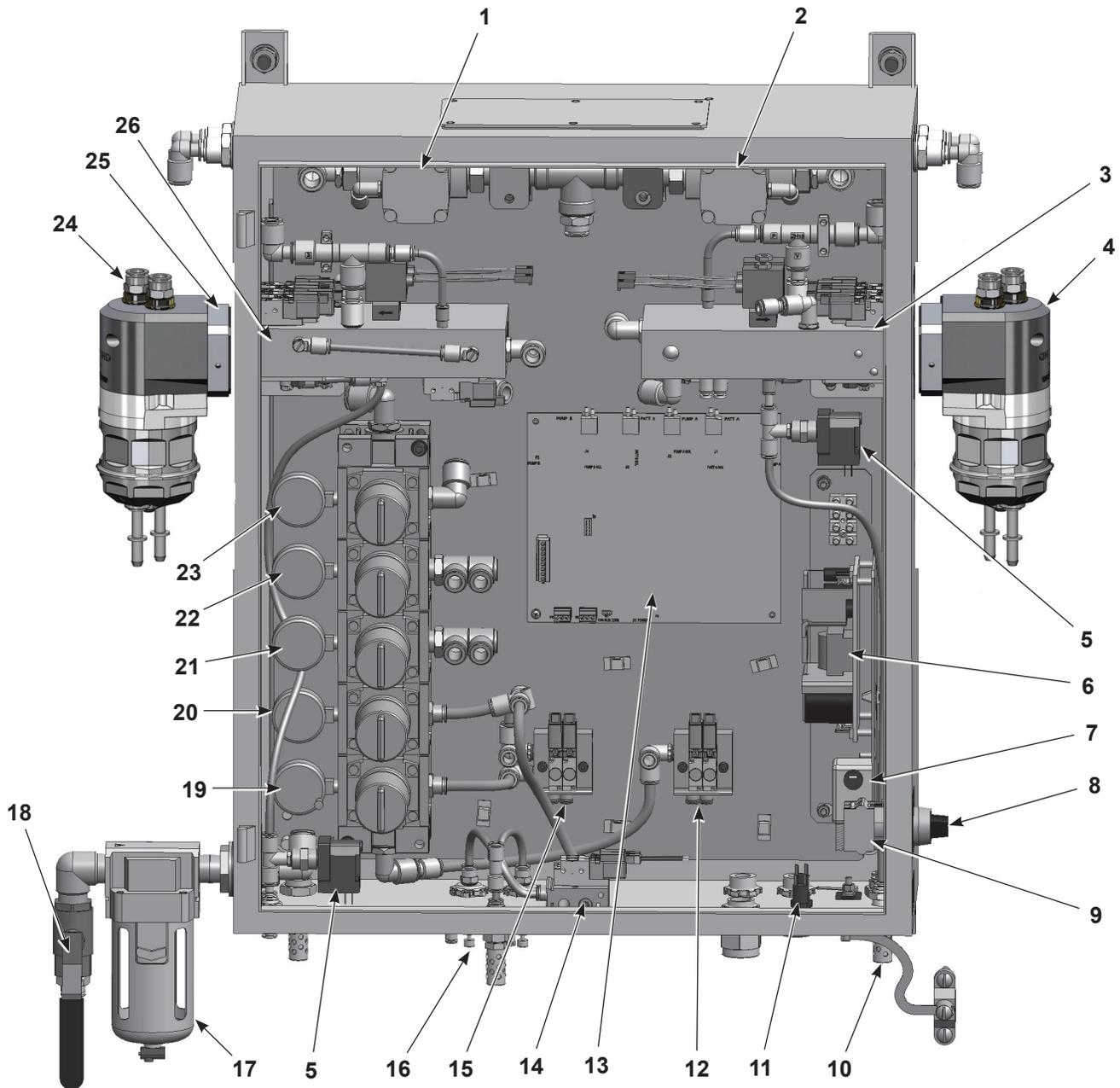


Figure 3 Pump Panel Components (Two-Gun Panel Shown)

- | | | |
|----------------------------|-------------------------------------|----------------------------------|
| 1. Pump 2 purge valve | 10. Vacuum generator mufflers | 19. Pinch low regulator/gauge |
| 2. Pump 1 purge valve | 11. Fuse, time delay, 3.15 A | 20. Pinch high regulator/gauge |
| 3. Pump 1 control manifold | 12. Purge pilot manifold/solenoids | 21. Flow control regulator/gauge |
| 4. Pump 1 | 13. Pump control board | 22. Vacuum regulator/gauge |
| 5. Pressure switch | 14. Electrode air wash manifold | 23. Purge regulator/gauge |
| 6. 24 Vdc power supply | 15. Pinch select manifold/solenoids | 24. Pump 2 |
| 7. Line filter | 16. Flow control valve | 25. Adapter plate |
| 8. Power switch | 17. Air filter | 26. Pump 2 control manifold |
| 9. Contact block | 18. Air supply ball valve | |

HD Pump Manifold Components

The Encore HD powder feed pump transports precise amounts of powder from a feed source to a powder spray gun. The pump manifold controls the pump air and vacuum flow. The pump control board controls all manifold functions.

Table 1 Manifold Components

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 7 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.

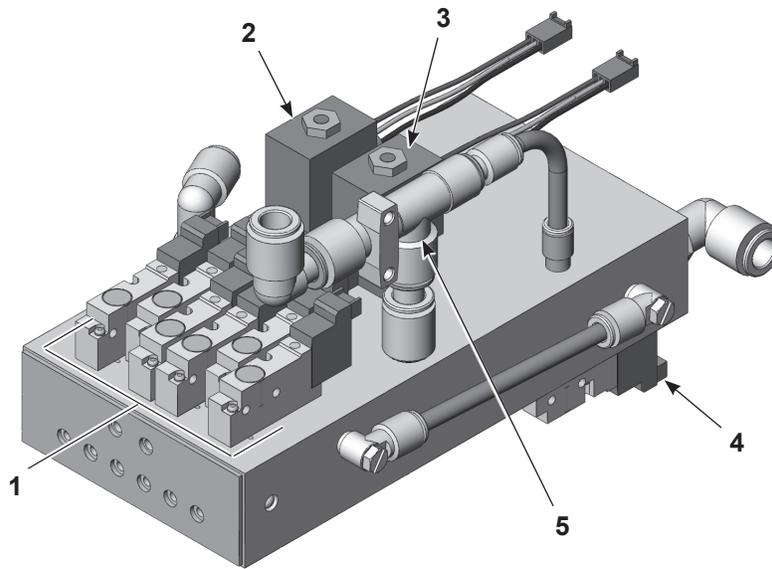


Figure 4 Pump Manifold Components

Solenoid and Flow Control Valve Functions

Figure 5 identifies the solenoid and flow control valve functions and the corresponding ports on the pump and manifold.

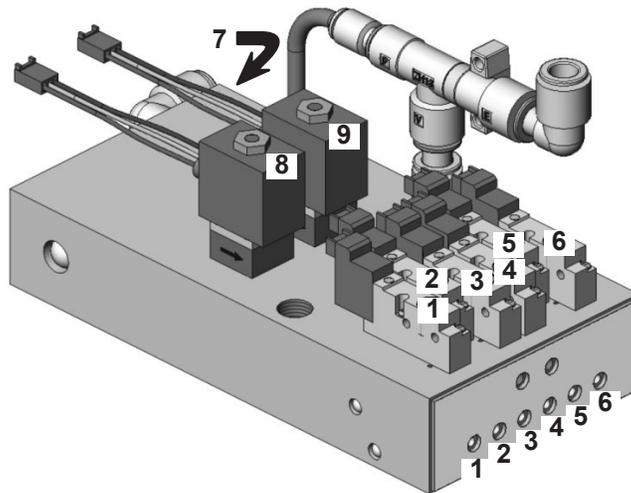


Figure 5 Solenoid and Flow Control Functions

Position	Function	Position	Function
1	Left Side Delivery Pinch Valve	6	Right Side Delivery Pinch Valve
2	Left Side Fluidizing Tube	7	Vacuum Air (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		

Spray Gun Controller

The Encore HD manual powder spray gun Controller provides electrostatic, powder flow, and pattern air controls for the Encore HD manual powder spray gun.

The controller interfaces with the HD pump controls. It can also interface with a Nordson iControl® system or a Color-on-Demand® quick color change system.

Standard mounting equipment is a hand rail bracket, swivel bracket, and a ground clamp. The gun cable and pump panel power/network cable connect to receptacles on the bottom of the enclosure.

Operator Controls

The **Arrow keys** and **Rotary Knob** serve two functions: to move the cursor around the screen, and to change settings.

The **Color Change** key starts gun purging, which is the first step in a color change procedure. This key is disabled if the system includes Color-On-Demand.

The **Nordson** key opens the Configuration screen if pressed and held during the power on sequence. During normal operation it opens the Fault screen.

See *Encore HD and XT Manual Powder Spray System Controller* manual for set up and operation instructions.

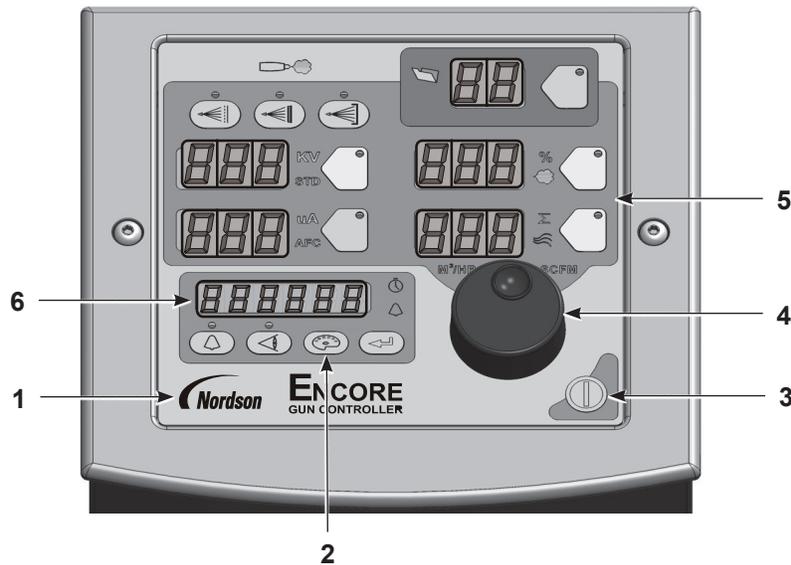


Figure 6 Solenoid and Flow Control Functions

- | | | |
|---------------------|-------------------|--------------------------|
| 1. Nordson key | 3. Standby button | 5. Controller interface |
| 2. Color Change key | 4. Rotary knob | 6. Function/Help display |

Installation

Manifold and Pump

Use the following instructions to install a pump and manifold into an existing pump panel.

1. See Figure 7. 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.
5. Perform the *Control Board Configuration* procedure on page 14.

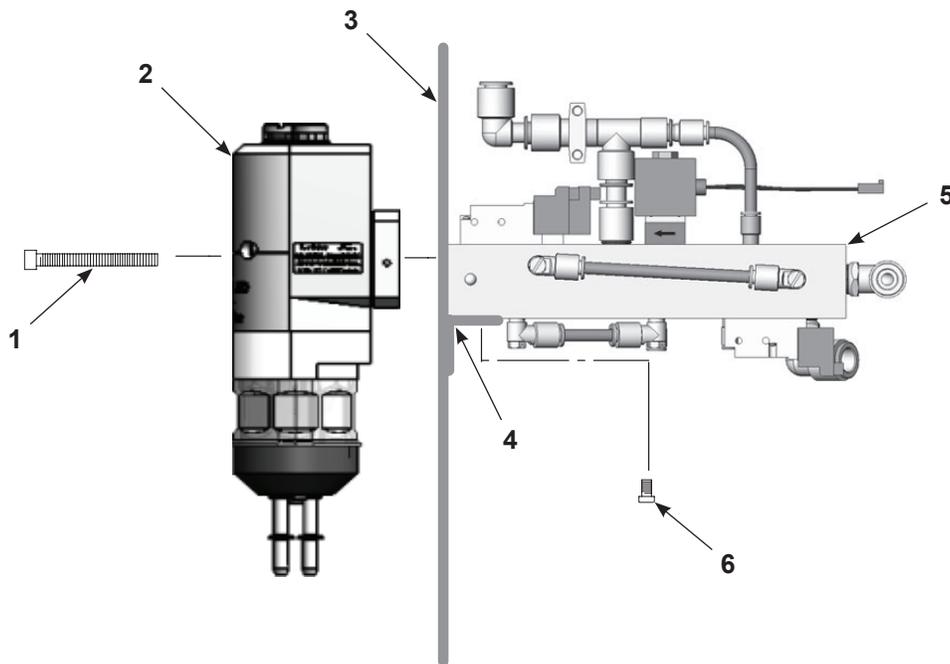


Figure 7 Pump and Manifold Installation

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

Pump Control Board



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.

Electrical and Pneumatic Connections

See Figure 8 and the following table for the control board connections. Refer to the circuit drawings in the back of this manual.

Item	Description
XD CR1	Pump 1 Pattern Air Pressure Transducer In/Out
XD CR2	Pump 1 Flow Air Pressure Transducer In/Out
XD CR 3	Pump 2 Pattern Air Pressure Transducer In/Out
XD CR4	Pump 1 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 8 and the following table for the switches and indicators on the control board.

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

P1 and P2 Pinouts

Pin	P1 Function	P2 Function
1	+24 Vdc	Not Used
2	+24 Vdc	Not Used
3	+24 Vdc	Not Used
4	+24 Vdc	Not Used
5	+24 Vdc	Not Used
6	+24 Vdc	Not Used
7	+24 Vdc	Not Used
8	Delivery 2 – Solenoid 6	Not Used
9	Pressure 2 – Solenoid 5	Not Used
10	Suction 2 – Solenoid 4	Not Used
11	Suction 1 – Solenoid 3	Not Used
12	Pressure 1 – Solenoid 2	Not Used
13	Delivery 1 – Solenoid 1	Pull up resistor for CCS
14	Vacuum – Solenoid 7	Color Change Status (CCS)

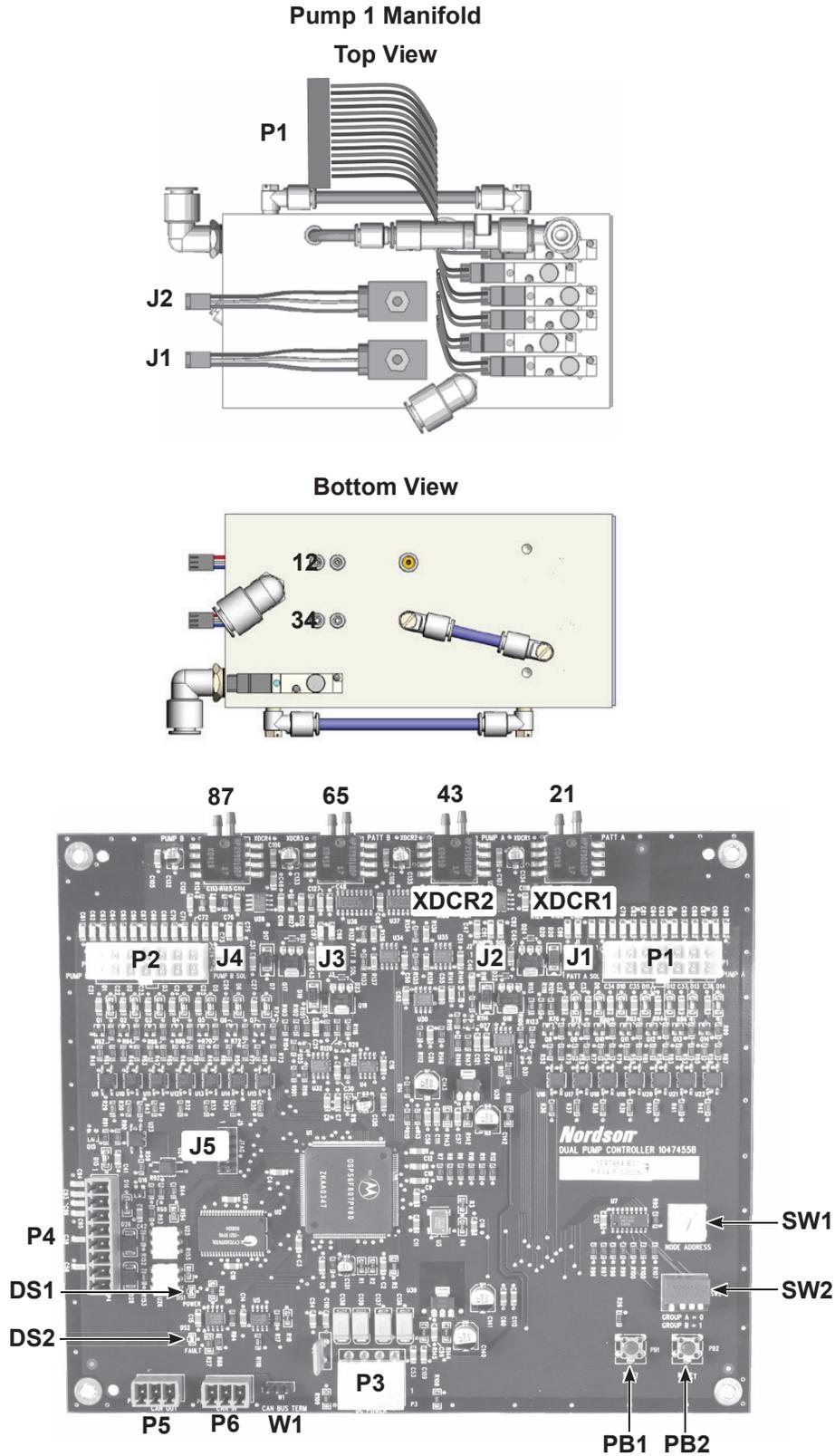


Figure 8 Control Board and Manifold Connections

NOTE: The control board is shipped with air tubing labeled from 4-1 installed in the XDCR fittings. Connect the tubing to the appropriate fittings on the manifolds as illustrated.

Control Board Configuration

See Figure 9. Make sure that SW1 and SW2 are set as illustrated for the Color-on-Demand system.

Two flow options are available controlled by the SW2-3:

- Low Flow (default) – maximum 400 grams/hour
- High Flow – 600+ grams/hour

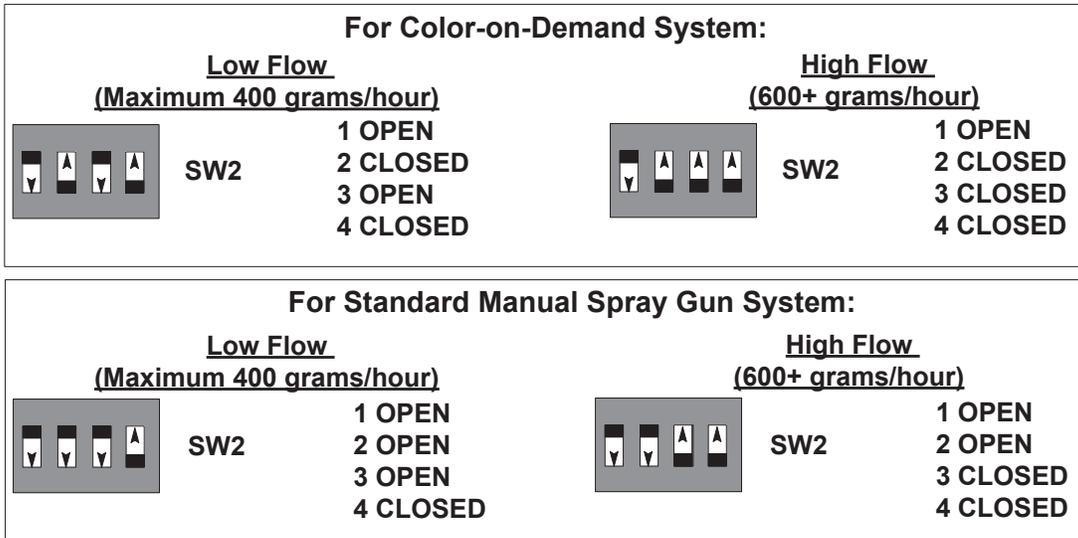


Figure 9 SW1 and SW2 Settings

Network Termination

See Figure 10. The control board is shipped with a jumper across pins 2 and 3 of the CAN BUS TERM terminals. Move the jumper to pins 1 and 2.



Figure 10 CAN BUS TERM Jumper Settings

Configuration Procedure

If replacing a control board or manifold, use this procedure to configure the system.

-  Select and hold the Nordson button for five seconds. The Function/Help display lights to show the function numbers and values. Use the functions to configure the controller for the appropriate application. See Figure 11.
- The function numbers are in the form F00–00 (Function Number–Function Value).
- Rotate the knob to scroll through the function. To select the displayed function number, select the Enter button.
- When the function is selected, the function value blinks. To change the function value, rotate the knob. Select the Enter button to save the change and exit the value, so that rotating the knob now scrolls through the function numbers.

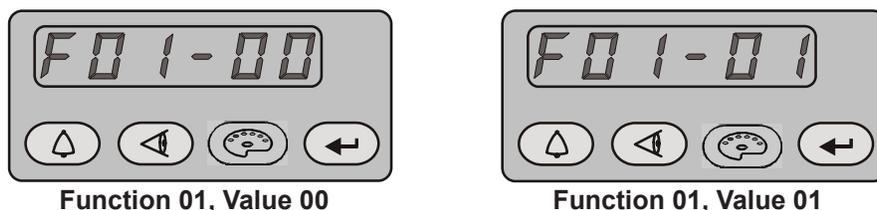


Figure 11 Displaying and Changing Configuration Functions

- Use the function controls F-34 through F-37 to set the conveyance air and pattern air calibration values. See Table 2.
- See the Encore HD Manual Powder Spray System Controller manual for more information on configuration settings.

Table 2 Function Settings

Function Number	Function Name	Function Values	Default HDLV Mode
F34	Conveyance Air Constant A	3.500 to 4.500	4.000
F35	Conveyance Air Constant C	-0.500 to +0.500	0
F36	Pattern Air Constant A	1.500 to 4.500	4.000
F37	Pattern Air Constant C	-0.500 to +0.500	0

Air and Powder Tubing Connections

See Figure 12 for the air and powder tubing connections for the pump and manifold.

NOTE: Only the XDCR1 and XDCR2 transducers on the control board are used for this application.

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 Suction from Feed Source	H	6-mm Blue	Spray Gun Pattern Air Flow Control (to spray gun)
C	8-mm Clear	Powder Delivery to Spray Gun	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)			
E	10-mm Blue	Vacuum Air Generator Supply 3.45 bar (50 psi)	3 - 4	4-mm Clear	Pump 1 Flow Air Pressure Transducer
F	10-mm Blue	Vacuum Generator Vent			

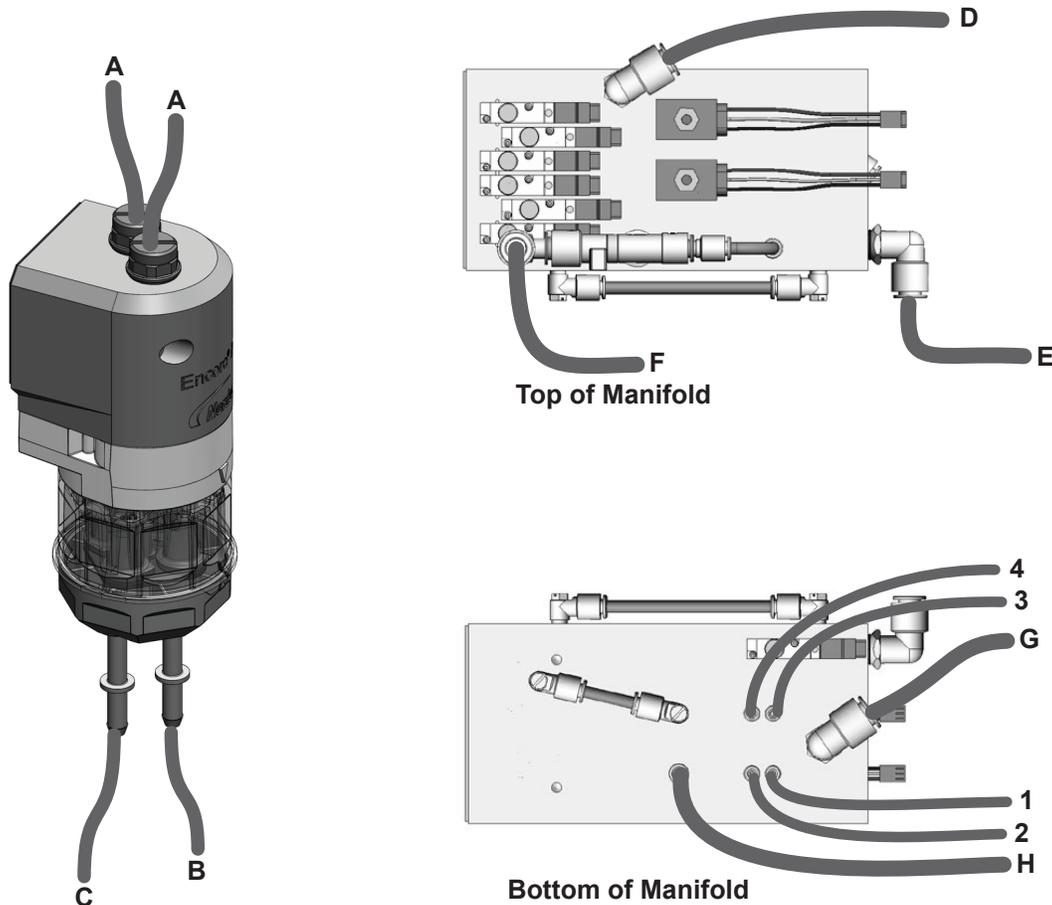


Figure 12 Powder and Air Tubing Connections

System Diagram

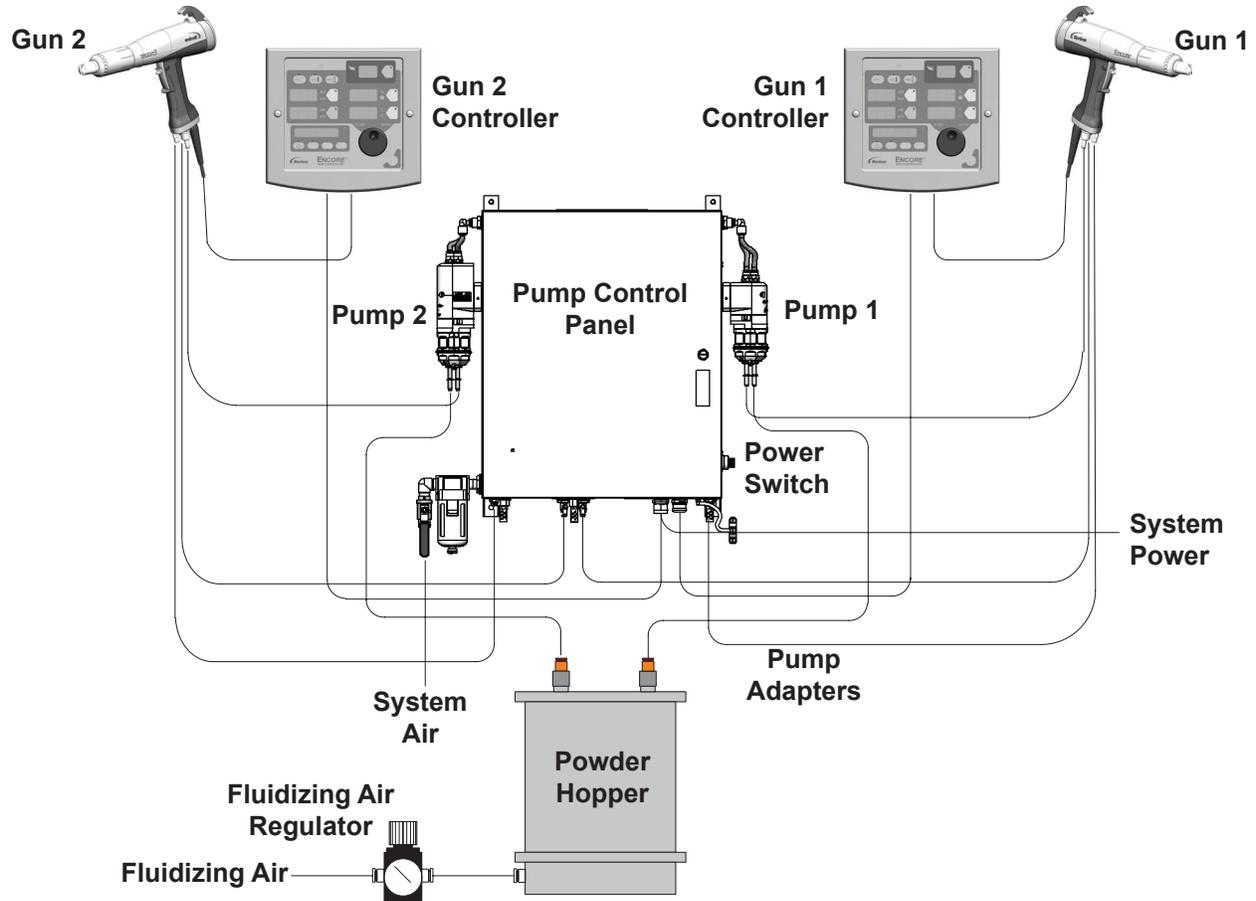


Figure 13 Typical System Diagram (Dual Pump Manual System Shown)

Pneumatic Diagram Dual Pump/Spray Gun System

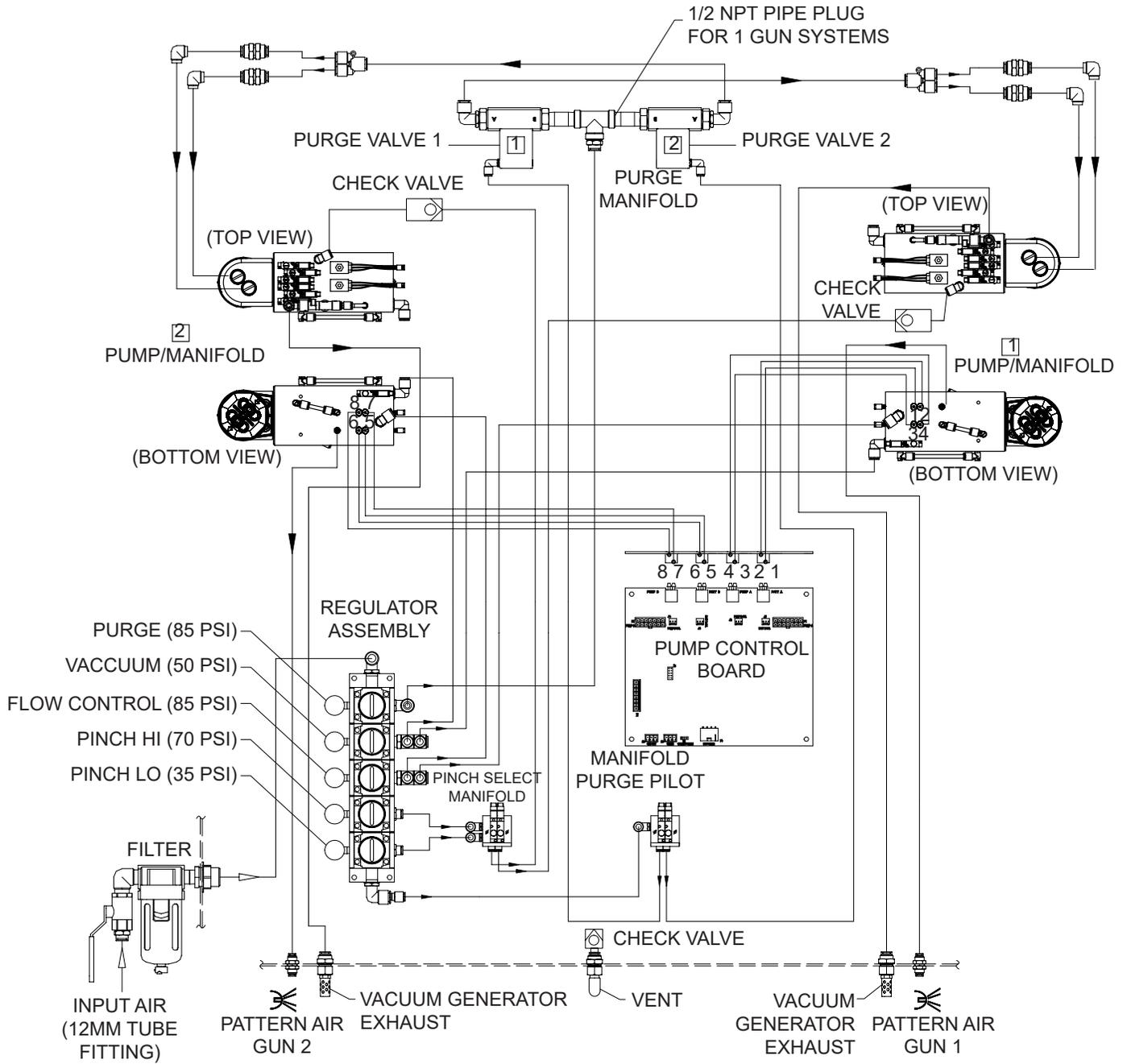


Figure 14 Pump Panel Pneumatic Diagram (Two Pump/Spray Gun System Shown)

Wiring Diagram Dual Pump/Spray Gun System

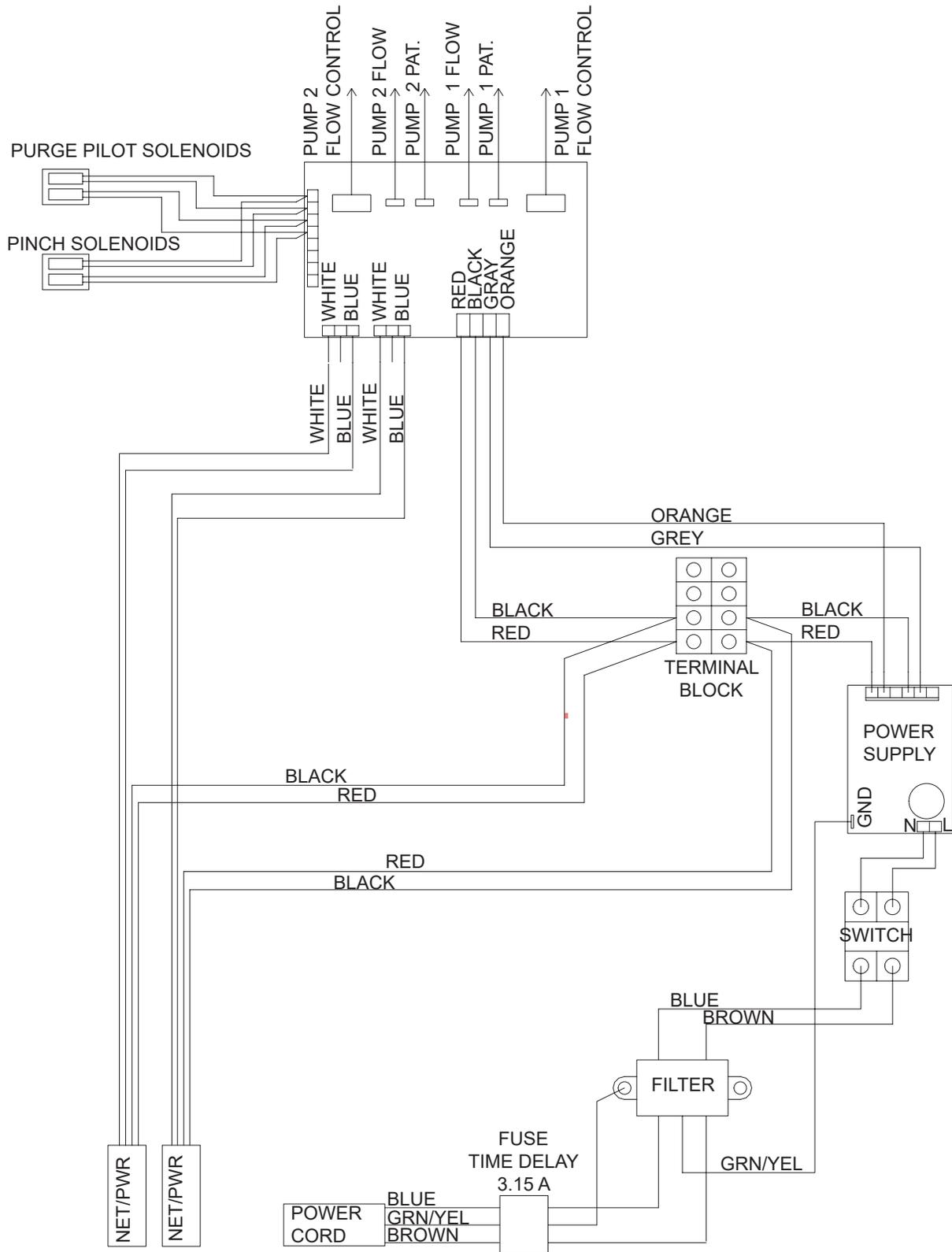


Figure 15 Pump Panel Wiring Diagram (Dual Pump System Shown)

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 a Nordson representative.

- Powder flow rate and pattern air flow is controlled by the spray gun controller operator interface settings. Refer to the *Operation* section of the controller manual for specific instructions.
- The powder flow rate is controlled by specifying a setpoint from 0–100, equivalent to a percent of flow, which corresponds to a predefined pump cycle rate. Increasing the flow rate setting increases the cycle rate; decreasing the flow rate setting decreases the cycle rate.
- Spray gun pattern air flow (in either scfm or m³/hr) is regulated by the pattern air flow control valve on the pump manifold.
- The color change cycle, which purges the pump, spray gun, delivery tubing, and suction lines of powder and loads a new color powder, is controlled by the *Purge* screen settings on the spray gun controller.

Troubleshooting

Pump Control Panel

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. <i>Refer to Flow Control Valve Cleaning</i> in this section for instructions. If the problem persists, replace the pump air flow control valve. <i>Refer to Flow Control Valve Replacement</i> in this section 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. <i>Refer to Solenoid and Flow Control Valve Functions</i> in this section 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. <i>Refer to Flow Control Valve Cleaning</i> in this section for instructions. If the problem persists, replace the pump air flow control valve. <i>Refer to Flow Control Valve Replacement</i> in this section for instructions.
4. Spray gun fan pattern changes	Defective pattern air flow control valve	Clean the pattern air flow control valve. <i>Refer to Flow Control Valve Cleaning</i> in this section for instructions. If the problem persists, replace the pattern air flow control valve. <i>Refer to Flow Control Valve Replacement</i> in this section for instructions.

Repair



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

Pump Control Panel

- To reduce downtime, keep a spare manifold in stock to install in place of one being repaired. Refer to *Manifold Parts* in the *Parts* section for ordering information.
- Repair of the manifold is limited to cleaning/replacing the flow control valves and 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

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

1. On the color change controller, go to the Purge screen and select *CLEAN* and *START* to perform a system purge.



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

2. Shut off system power and air pressure. Relieve the system air pressure.
3. Tag the pump manifold air tubing, then disconnect the 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.

4. Tag and disconnect the flow control valve and solenoid valve wiring harnesses from the circuit board below the manifold.
5. Remove the pump from the pump panel.
6. Remove the two screws securing the manifold to the mounting bracket. Relocate the manifold assembly to a clean work surface.

Flow Control Valve 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 16. 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 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.

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, 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 (5) and then the cartridge (6) in the stem, with the plastic seat on the end facing out.
7. Make sure the O-rings (8) furnished with the valve are in place on the bottom of the valve body (7).
8. Secure the valve body (7) to the manifold with the long screws (10), making sure the arrow on the valve body points toward the solenoid valves (12).
9. Install the coil (2) on the stem, with the coil wiring pointing away from the solenoid valves (12). Secure the coil with the nut (1).

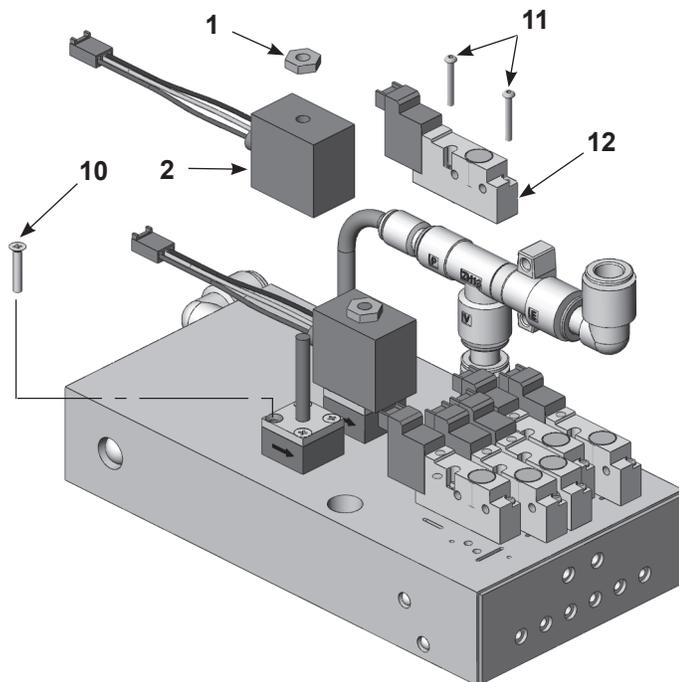
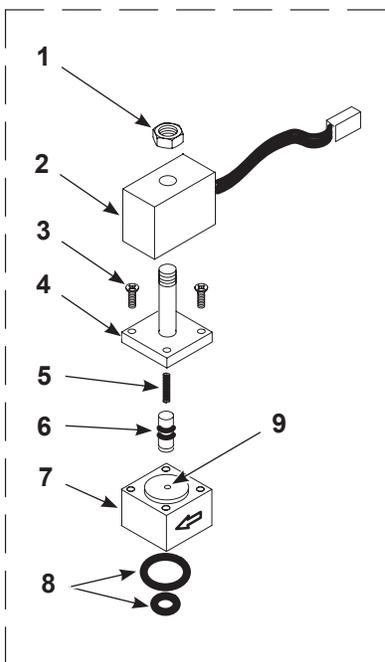


Figure 16 Manifold Repair, Flow Control Valve Cleaning and Replacement, and Solenoid Valve Replacement

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

Flow Control Valve Replacement

- If cleaning the flow control valve does not correct the flow problem, replace the flow control valve.
- See Figure 16. 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 16. 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* section 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 Industrial Coating Systems Customer Support Center at (800) 433-9319 or contact your local Nordson representative. For customers outside the USA, refer to the Global Locations list on www.nordson.com.

Single Pump/Spray Gun System with Stand

With nLighten™ Option	Standard Systems	Description	Quantity
1613911	1612592	SYSTEM, single pump, Encore HD, with stand	
1612390	1612390	• CONTROLLER, single pump, Encore HD	1
1609763	1609763	• CONTROL UNIT, interface, Encore XT	1
1603160	1603160	• GUN ASSY, manual Encore XT/HD	1
1605276	1605276	• KIT, ship-with, spray system, Encore HD	1
1064433	1064433	• STAND, Prodigy Color Change System	1
1611977	-----	• KIT, nLighten, LED, Encore	1

Dual Pump/Spray Gun System with Stand

With nLighten™ Option	Standard Systems	Description	Quantity
1613912	1612593	SYSTEM, dual pump, Encore HD, with Stand	
1612391	1612391	• CONTROLLER, dual pump, Encore HD	2
1603160	1603160	• GUN, manual, Encore HD	2
1609763	1609763	• CONTROL, interface, Encore XT/HD	2
1605276	1605276	• KIT, ship-with, spray system, Encore HD	2
1064433	1064433	• STAND, Prodigy Color Change System	1
1611977	-----	• KIT, nLighten, LED, Encore	2

Pump Panel

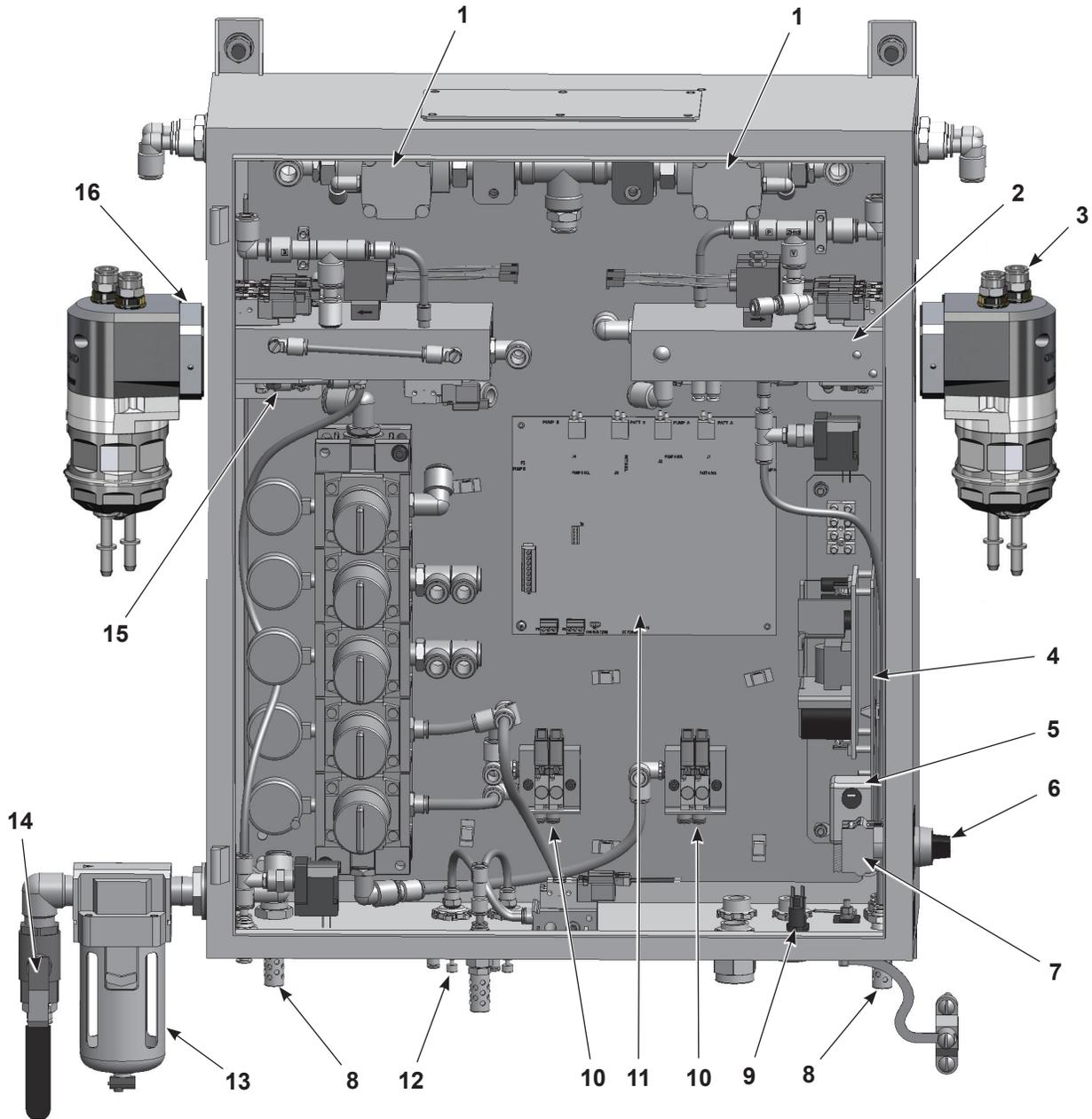


Figure 17 Pump Panel Parts (Two-Gun System Version Shown)

See Figure 17 and refer to the following parts list.

Item	Part	Description	Quantity	Note
1	303132	VALVE, 3/4 in. I/O, air operated	AR	A
2	-----	MANIFOLD ASSEMBLY, pump control	AR	A, B
3	1605940	PUMP ASSEMBLY, HD	AR	A
3	1610978	PUMP ASSEMBLY, HD+	AR	A
3	1611247	PUMP ASSEMBLY, XD	AR	A
4	1043906	POWER SUPPLY, 24, 5, 12 VDC, 60 W	1	
5	334805	FILTER, line, RFI, power, 10A	1	
6	334806	SWITCH, round, 2 position, 90 degree	1	
7	288806	CONTACT BLOCK, 2 N.O. contacts	1	
8	1034396	MUFFLER, exhaust, ¼-in., NPT male	AR	
9	1009090	FUSE, time delay, 215 series, 3.15 A, 5 x 20 mm	2	
10	1099534	VALVE, solenoid, 3 port, 24 V, with adapter	AR	A, D
11	1101498	KIT, PCA replacement, Encore HD pump control	1	B
12	1034396	MUFFLER, exhaust, 1/4 in. NPT male	AR	C
13	1062366	FILTER, air, 1/2 in. NPT	1	
NS	1064136	• FILTER ELEMENT, air, 5 micron, AF40	1	
14	901151	VALVE, ball, 1/2 in. NPT	1	
15	1064964	SWITCH, pressure	AR	
16	1606480	ADAPTER, pump mounting	AR	
NS	1604832	HARNESS SET, single air wash	AR	
NS	1604833	HARNESS SET, dual air wash	AR	

NOTE: A. Quantities for AR items vary depending on number of guns in system.

B. When replacing manifold, perform calibration procedure as described in Manual Gun Controller manual.

C. When replacing board, refer to instruction sheet shipped with kit for switch settings. Also perform calibration procedure as described in Manual Gun Controller manual.

D. If using an old harness with 3 positions, use the supplied adapter. If using a new a harness with 2 positions, then the supplied adapter can be discarded.

NS: Not Shown

AR: As Required

Manifold

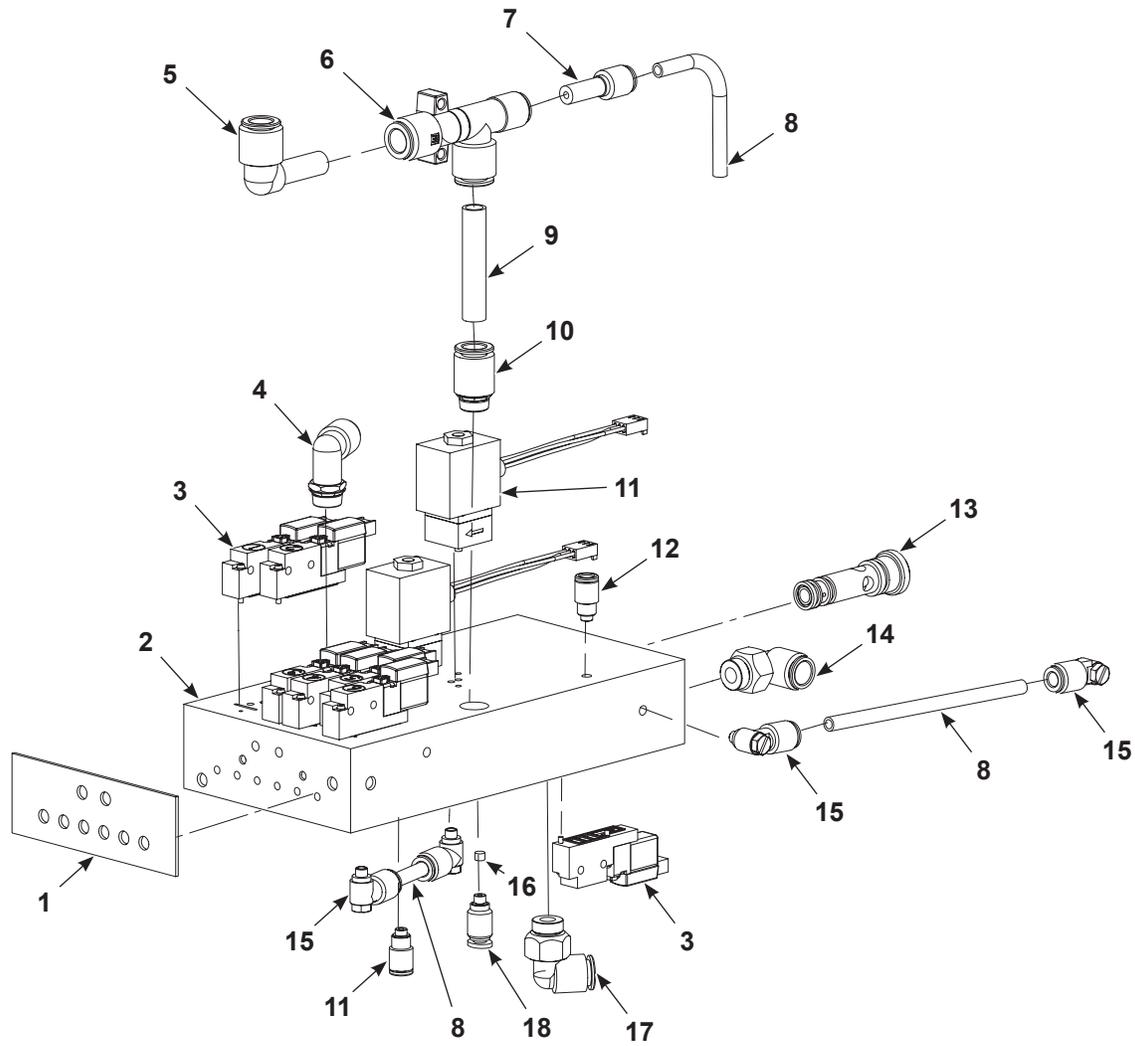


Figure 18 Manifold Parts

See Figure 18 and refer to the following parts list.

Item	Part	Description	Quantity	Note
—	1101343	MANIFOLD ASSEMBLY, HDLV pump control, Generation III	1	
1	1053510	• GASKET, face, HDLV pump control manifold	1	
2	-----	• MANIFOLD, HDLV pump control	1	
3	1099534	• VALVE, solenoid, three-way, with connector	7	B
4	972277	• CONNECTOR, male, elbow, 8 mm x ¼ 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	1052894	• NIPPLE, push in 10 mm tube x 10 mm tube, plastic	1	
10	972283	• CONNECTOR, male, with internal hex, 10 mm tube x ¼ in. universal	1	
11	1098501	• KIT, flow control valve, pump control	2	
12	328524	• CONNECTOR, male, with internal hex, 6 mm tube x M5	2	
13	-----	• ORIFICE	2	A
14	972125	• CONNECTOR, male, elbow, 10 mm tube x ¼ 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 ¼ 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 three positions, use the supplied adapter. If using a new harness with two positions, the supplied adapter can be discarded.

AR: As Required

Air and Powder Tubing

See Figure 19 and refer to the following parts list.

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			

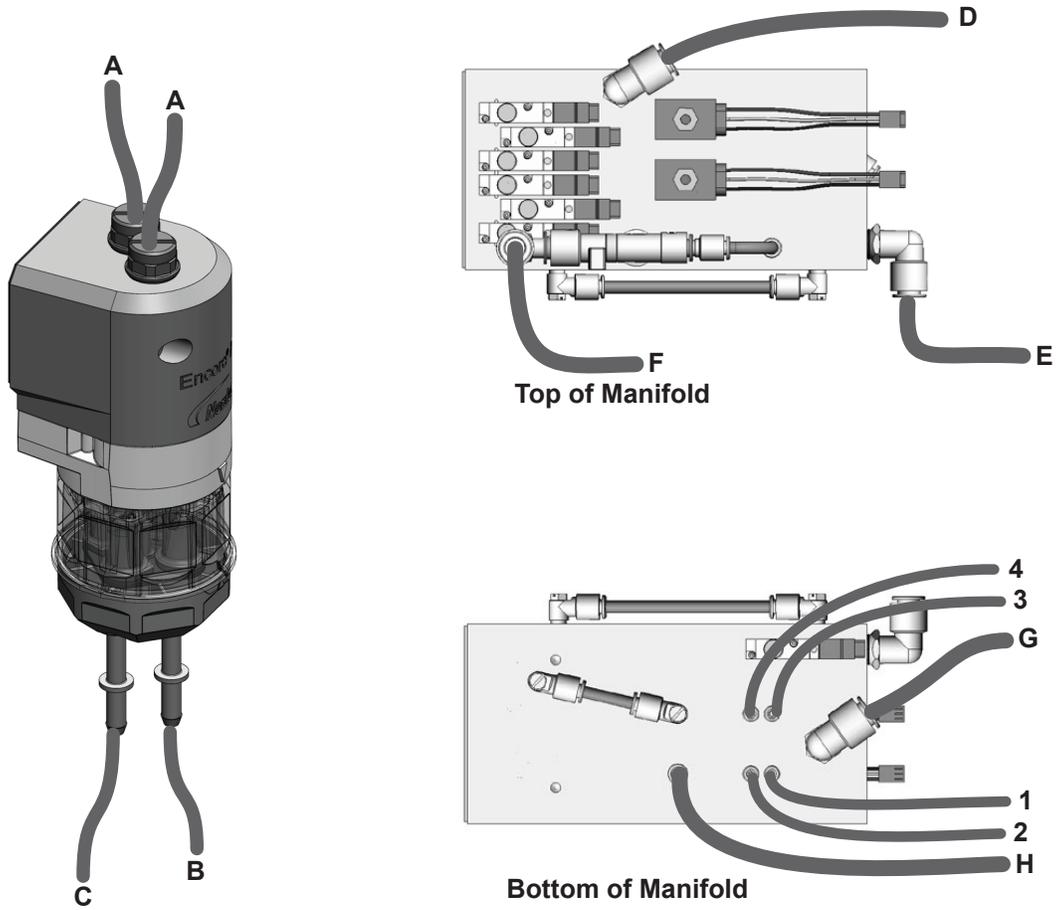


Figure 19 Air and Powder Tubing Parts

PCA Replacement Kit

See Figure 20 and refer to the following parts list.

Part	Description	Note
1101498	KIT, PCA, replacement, pump control	

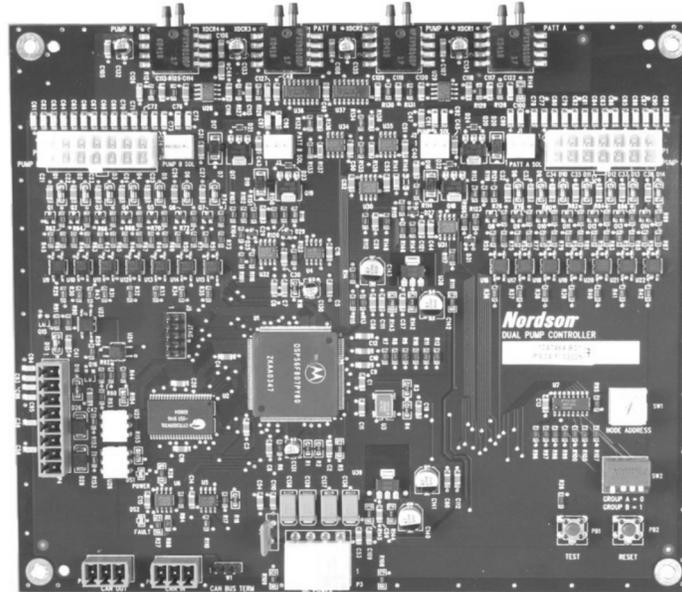


Figure 20 PCA Replacement Kit

Encore® HD/XD Pump

Customer Product Manual
Document Number 1605708-12
– English –
Issued 04/2025

**For parts and technical support, call the Industrial Coating
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Contact Us

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<http://www.nordson.com>.

<http://www.nordson.com/en/global-directory>

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Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding



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

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

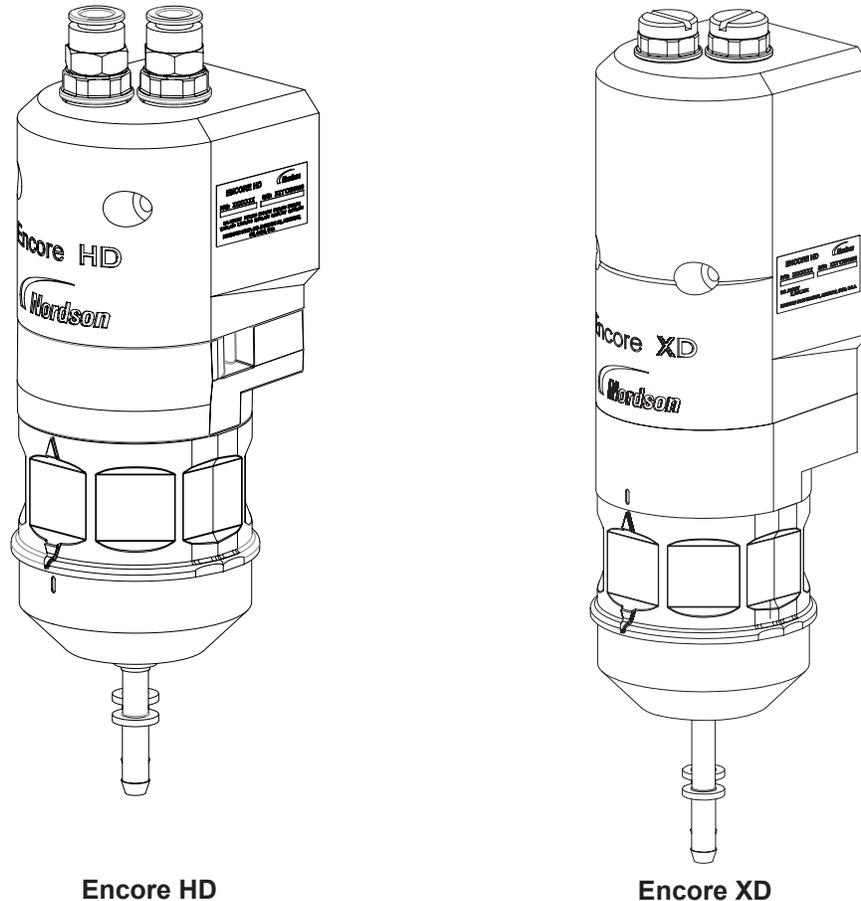
Disposal

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

Description

Pump

See Figure 1. The Encore HD and XD powder feed pump transports precise amounts of powder from a feed source to a powder spray gun.



Encore HD

Encore XD

Figure 1 Encore HD/XD Pump

Features and Benefits

- Standard pump (HD) has blue pinch valves, machined Tivar® Y blocks and standard porous tubes.
- Extreme duty pump (XD) is the same as the HD pump with high flow rate capacity.
- Higher powder output.
- Improved uniformity of powder output.
- Maintains high reliability of pinch valves.
- One screw maintenance design.
- Easier filter replacement.
- Improved gasket design.
- Centralized wear parts.
- Over torque protection.

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	Purge Manifold	Contains the fluidizing tubes, check valves, and air passages.
4	Upper Y Block	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	Pinch Valves	Open and close to allow powder to be drawn in or dispensed out of the fluidizing tubes.
6	Pinch Valve Chamber Block	Houses the pinch valves. Made from clear plastic allowing for visual inspection of the pinch valves.
7	Lower Y Block	Connect the inlet and outlet fittings to the pinch valves on either half of the pump.
8	Inlet Fitting	Connects to the tubing leading from the power source
9	Outlet Fitting	Connects to the tubing leading to the powder spray gun

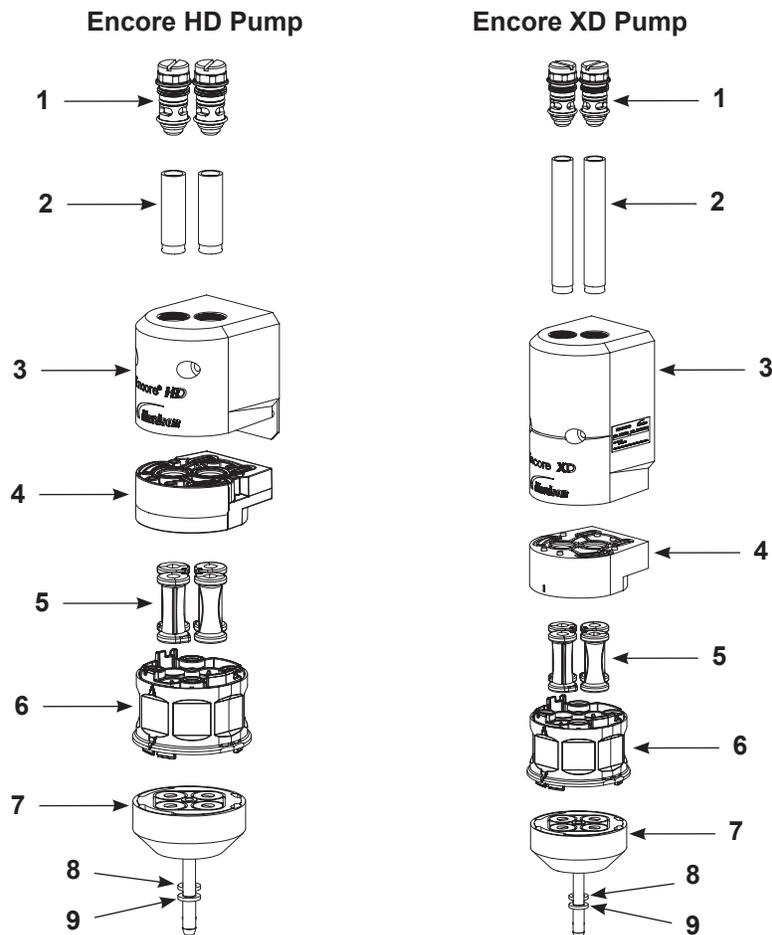


Figure 2 Encore HD/XD Pump Components

Theory of Operation

Pumping

The Encore HD/XD 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 4.

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.

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.

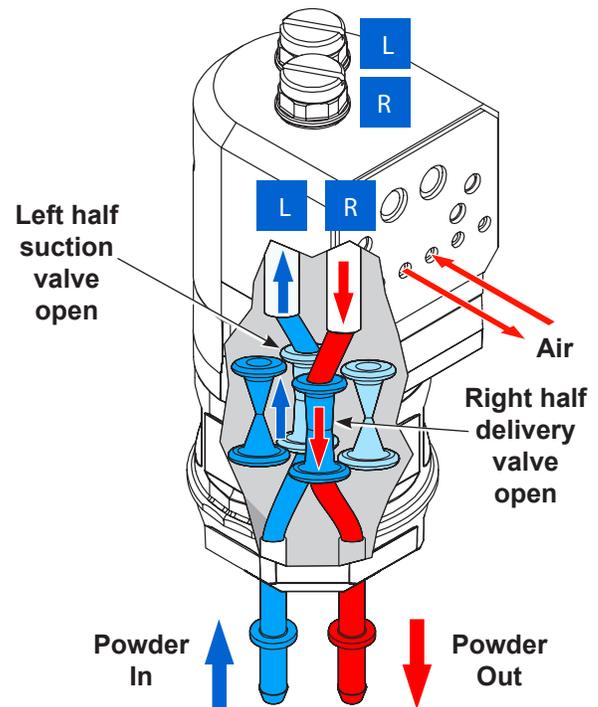


Figure 3 Left Side Drawing In, Right Side Dispensing

NOTE: Illustration is viewed from the right, rear of the pump.

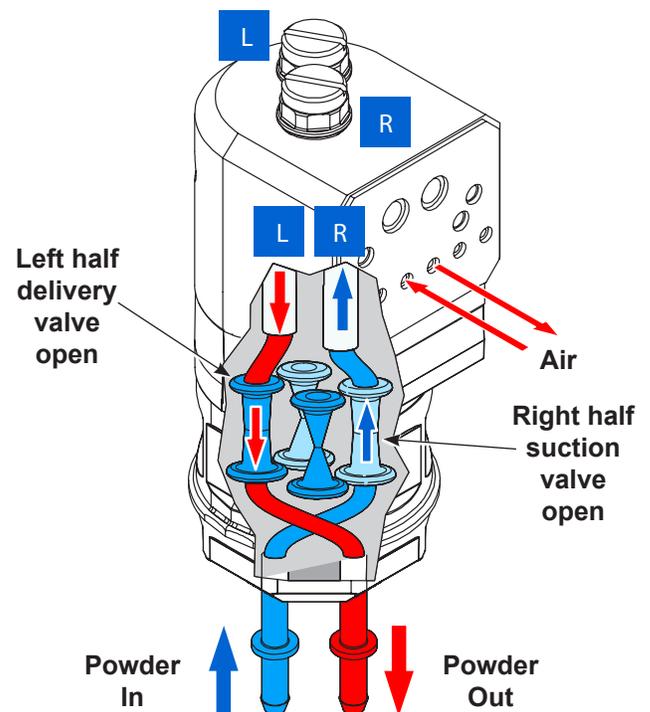


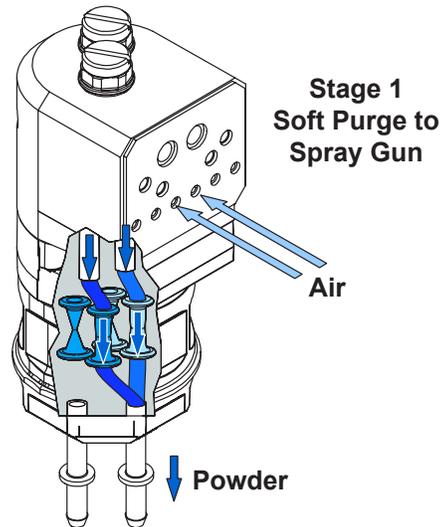
Figure 4 Left Side Dispensing, Right Side Drawing In

Purging

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

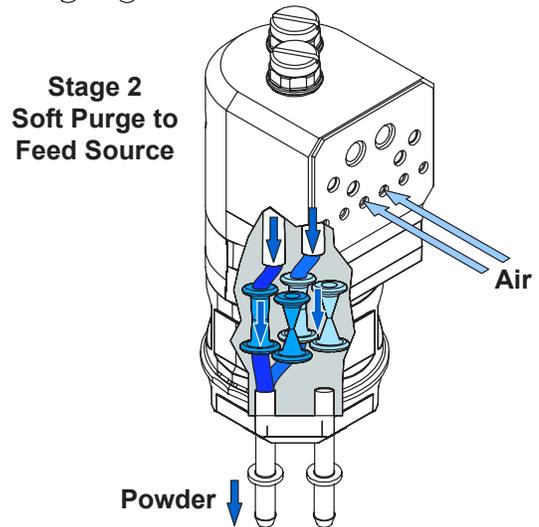
Stage 1: Soft Purge to Spray Gun

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.

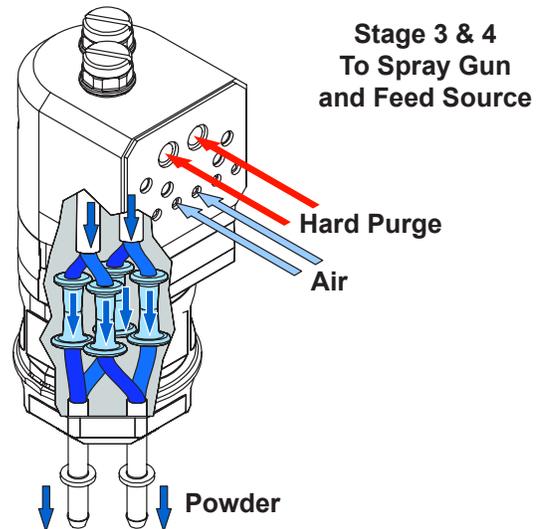


Figure 5 Purging Operation

Pump Port Functions

Figure 6 identifies the functions of the ports on the rear face of the pump.

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

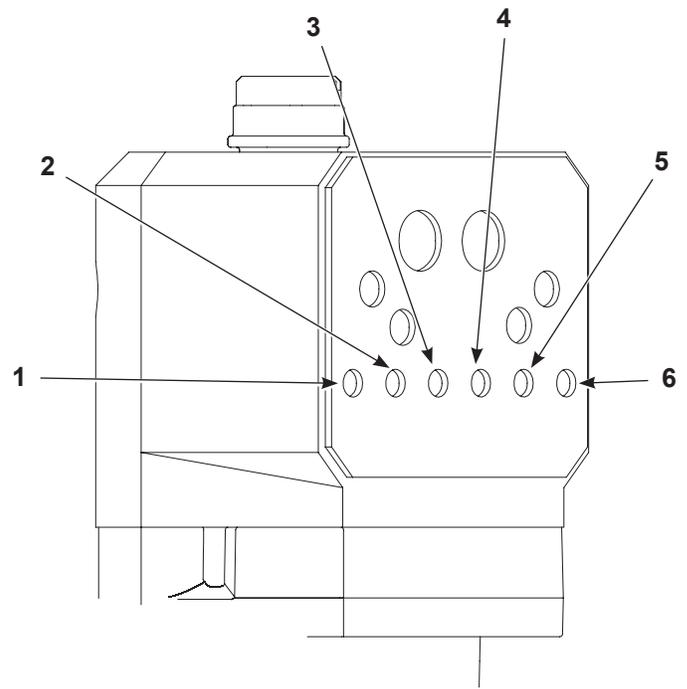


Figure 6 Pump Port Functions

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 spray gun controller. Refer to the *Operation* section of the applicable controller manual for specific instructions.

Pump operation is controlled by specifying a set point from 0-100 (which translates to a percent of flow) at the spray gun controller. At the pump, each set point 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 manifold also has a spray gun pattern air flow control valve. spray gun pattern air is controlled by setting the flow rate (in either scfm or m³/hr) at the spray gun control unit.

NOTE: When the fluidizing tubes become clogged with powder, the powder delivery rate decreases. The spray gun controller will generate a fault to indicate this condition and notify you that it is time to replace the fluidizing tubes. Correct vacuum reading is (9-14 in. Hg).

Specifications

See Figure 7.

Standard Pump Output (Maximum)	
HD: 80 lb/hour (600 g/min)	
XD: 100 lb/hour (750 g/min)	
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 Pressure	
Pinch Valves	37 psi (2.6 bar)
Flow Control (to pattern air/ pump assist)	85 psi (5.9 bar)
Vacuum Generator	80 psi (5.5 bar)
Powder Tubing	
Size	8 mm OD x 6 mm ID
Length	Output: 18.3 m (60 ft) Input: 3.5-12 ft (1-3 m)

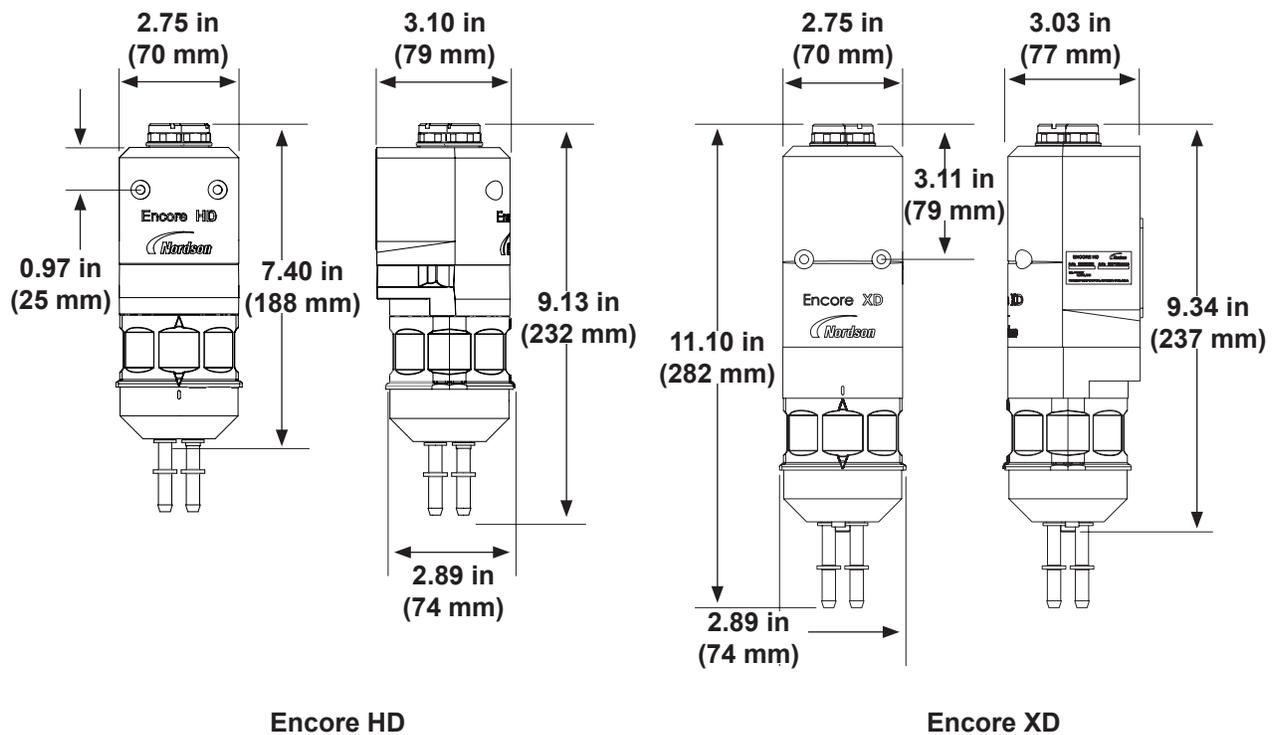


Figure 7 Encore Pump Dimensions

Installation

Pump Tubing Installation

See Figure 8.

Standard 8 mm OD Poly (Semi-Rigid) Tubing

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

Install the semi-rigid tubing (3) into the lower Y block (1) and push to internal connector fitting (not shown).

Flexible 8 mm OD Tubing

NOTE: The barbed adapters used to connect flexible tubing to the pump are shipped with the pump.

1. Install the end of the adapter (2) into the lower Y block (1). Push to internal connect fitting.
2. Push the flexible powder tubing (4) over the barbed ending of the adapter (2).

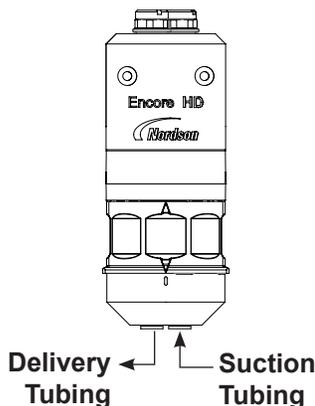
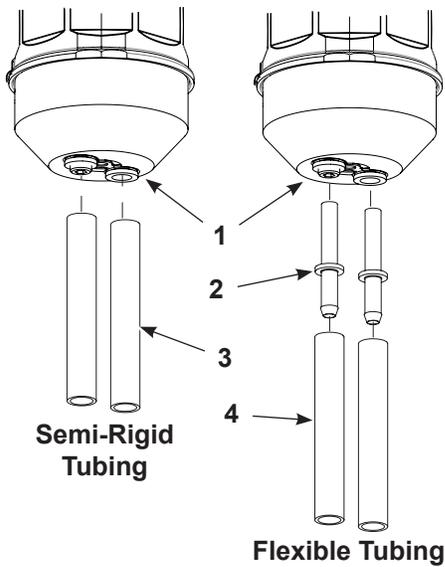


Figure 8 Powder Tubing Installation

Antistatic 8.2 mm OD/5.6 mm ID Tubing

Refer to the *Encore HD Antistatic Tubing Grounding Kit* instruction sheet (1620023). Only used with Encore HD Antistatic Tubing Grounding Kit.

Installing the Pump Gasket

See Figure 9.

NOTE: If replacing a damaged gasket with a new gasket, refer to the *Replacing Pump Gasket* in the *Repair* section.

Remove the sticker backing from gasket (1) and place on the pump (2), aligning the holes of the gasket (1) with the port holes on the pump (2).

CAUTION: Ensure gasket is not covering any of the port holes on pump. A second gasket is provided with pumps as an additional spare.

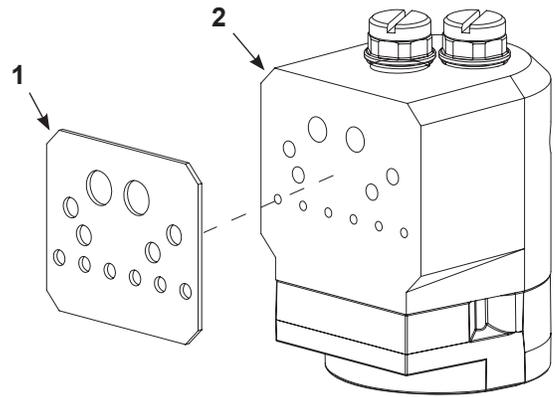


Figure 9 Replacing the Pump Gasket

Pump to Cabinet, Panel, or Housing



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

Follow the below instructions to install the pump to an existing pump panel.

See Figure 10.

1. Make sure that the gaskets on the pump (1), are not damaged, replace them if necessary.
2. Line the pump to the appropriate mounting location on the cabinet wall or housing (3). See *Pump Port Functions* in the *Description* section for port locations.
3. Secure the pump hand tight to the cabinet wall with the pump mounting hardware (2).
4. Tighten all hardware securely.

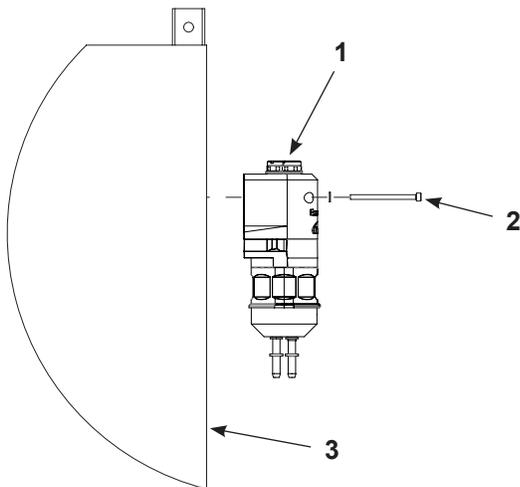


Figure 10 Pump Mounting to Cabinet

Pump Ground Check

NOTE: This procedure requires a multimeter.

See Figure 11

Perform a resistance test with a multimeter to ensure their are good ground connections.

1. Check for good ground connection between the manifold (1) and the screw (3) on the bottom of the pump. Resistance should be less than 1 MΩ.

If the resistance ground is high or there is no continuity, check the following:

- Improper torque - confirm the bottom screw (3) does not exceed 20-25 in-lb (2.3-2.8 N•m).
- Damaged upper Y block (2) or its custom O-ring (4) - replace both upper Y block and custom O-ring.

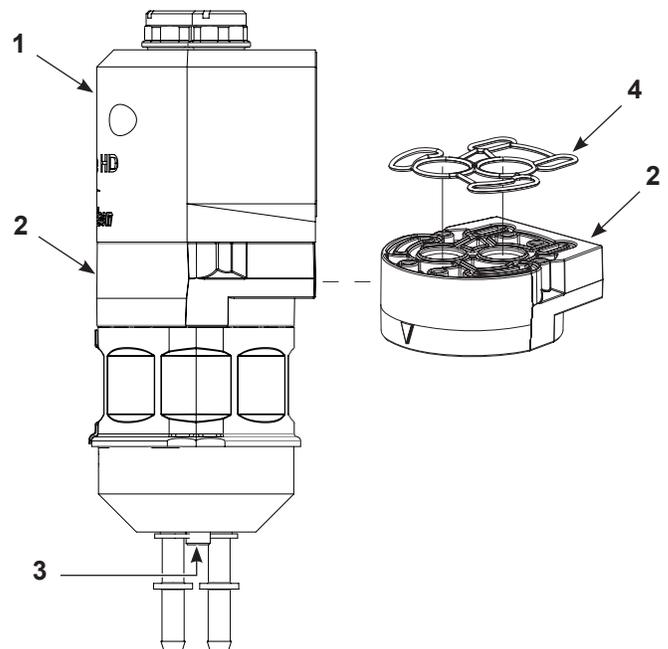


Figure 11 Pump Ground Check

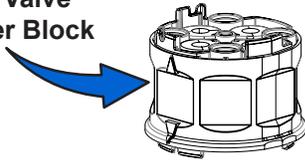
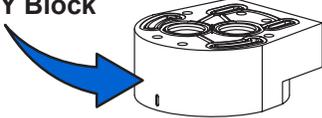
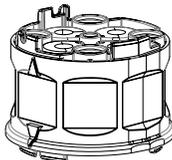
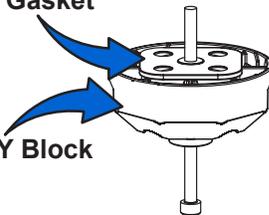
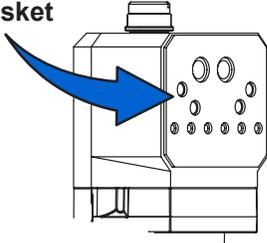
Maintenance

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 Visual Inspection	<p>Pinch Valve Chamber Block</p> 	<p>Inspect the pinch valve body for signs of powder leakage. If powder is seen in the pinch valve body or there are stress cracks in the pinch valves, replace the pinch valve chamber block and filter discs using HD or XD service kit.</p>
Every Six Months or Each Time the Pump Is Disassembled	<p>Upper Y Block</p>  <p>Y Block Gasket</p>  <p>Lower Y Block</p> 	<p>NOTE: To reduce downtime, keep a spare upper manifold and set of lower wear blocks in stock to install while the other set is being cleaned.</p> <p>Disassemble the pump and inspect the lower Y block and upper Y block for signs of wear or impact fusion. Clean these parts in an ultrasonic cleaner if necessary.</p> <p>Replace the Y block gasket.</p> <p>NOTE: Y block gasket must be replaced any time the pump is disassembled.</p> <p>NOTE: Torque screw to 25-30 in.-lb (2.8-3.4 N•m) for assembly.</p>
	<p>Gasket</p> 	<p>Inspect the gasket for damage. Replace if necessary.</p>

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. If the problem persists, replace the pump air flow control valve.
	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 valve chamber block and filter discs using the HD or XD service kit.
	Defective solenoid valve.	Replace the solenoid valve. Refer to the applicable controller manual (per application) 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. If the problem persists, replace the pump air flow control valve.
4. Spray gun fan pattern changes	Defective pattern air flow control valve	Clean the pattern air flow control valve. If the problem persists, replace the pattern air flow control valve.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
5. 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.
6. Streams of powder disrupting uniform spray pattern	Pattern air setting too low.	Increase the pattern air setpoint.
	Nozzle plugged.	Remove the nozzle, disassemble, and clean.
	Input air pressure too low.	Increase the input air pressure.
	Calibration constants incorrect.	Verify that the calibration constants on the manifold match what is entered in the manual spray gun controller.
7. 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 <i>Delivery Check</i> in <i>Troubleshooting</i> section for the proper pressure settings.
	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.
	Loose connections.	Check the barbed tubing adapter for wear. Replace if damaged. Replace lower Y block.
		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 can be either 20 or 60 ft in length from the pump to the spray gun depending on type of system. Check system documentation for applicable length.	
Problem with pump or pump control manifold.	Perform <i>Vacuum Check</i> procedure in <i>Troubleshooting</i> section. (Requires 0-30 in. Hg vacuum gauge.)	

Continued...

Problem	Possible Cause	Corrective Action
8. Pump is bad, requires repair (Suction Check)	Fluidizing tube blinded or plugged.	Replace the fluidizing tubes. Verify O-rings are 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 valve chamber block and filter disks using the HD or XD service kit.
	Lower Y block plugged.	Remove and clean the lower Y blocks.
9. Control manifold is bad, requires repairs (Suction Check)	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.

Vacuum Check

NOTE: Procedure requires a 0-30 in. Hg vacuum gauge. See Figure 13 for reading examples.

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 place your finger over the fitting as shown in Figure 12.
 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 Delivery Check procedure.
 - 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 Suction Check procedure.
 - 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 Suction Check procedure.

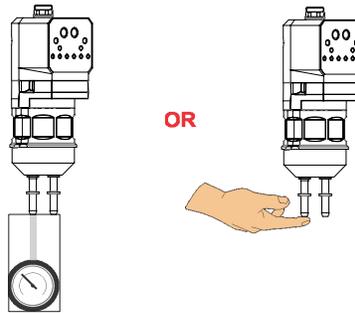


Figure 12 Vacuum Check Options

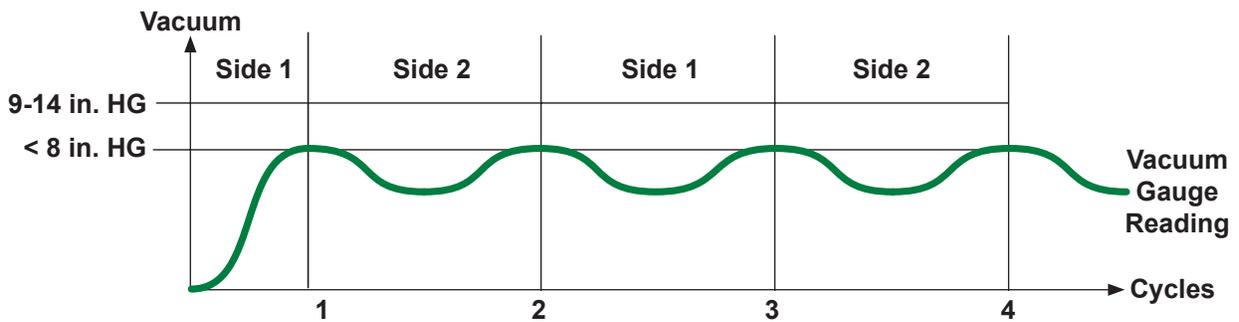
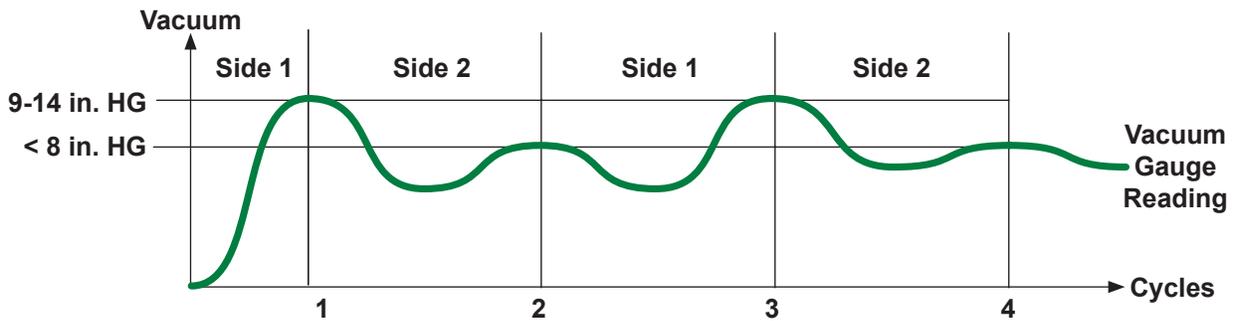
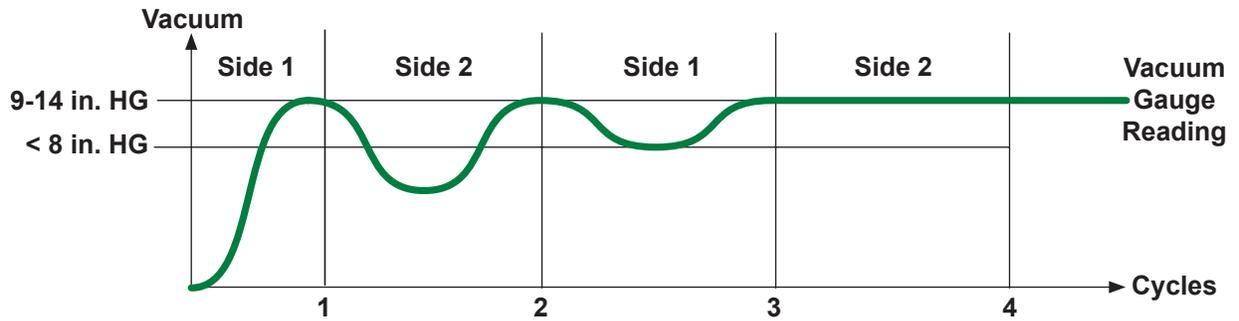


Figure 13 Vacuum Readings

Delivery Check

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 14.
2. Trigger the gun and observe the powder flow.

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, then check the suction tubing fittings and adapter O-rings. Clean the pickup tube. For Color-on-Demand® systems, proceed to procedure on page 19.
 - If the problem persists, the suction tubing is blocked. Replace the suction tubing.
 - 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*.

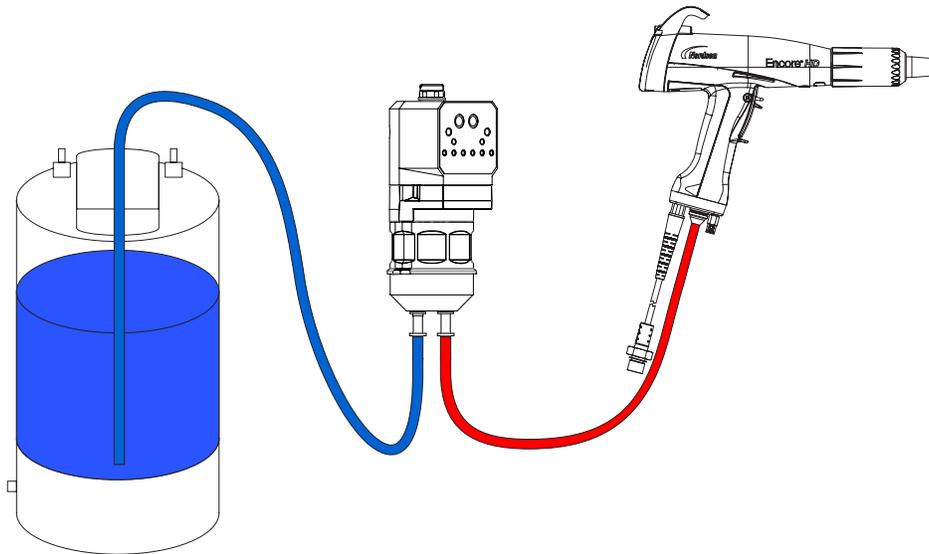


Figure 14 Tubing Connections

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. See Figure 15. Perform a color change to remove old powder from the pump, then relieve the system air pressure and disconnect the purge air tubing.

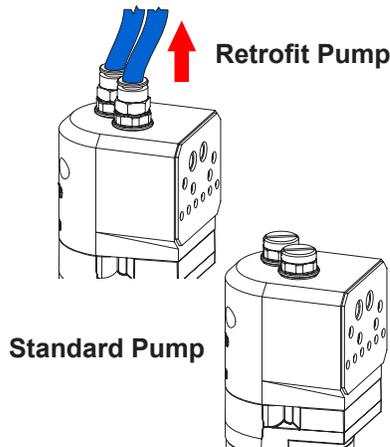


Figure 15 Removing the Purge Air Tubing

2. See Figure 16. Loosen the fluidizing tube access plug and pull the fluidizing tube straight out of the pump body.

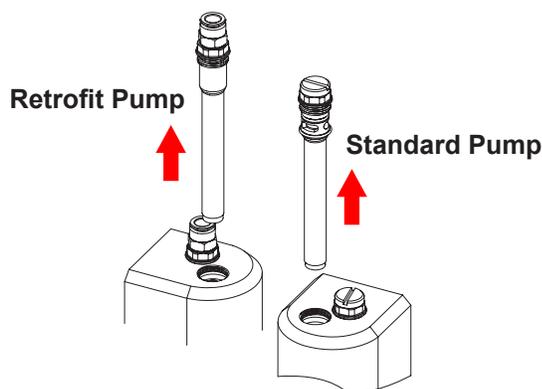


Figure 16 Loosening the Fluidizing Tubes

3. See Figure 17. Pull the old fluidizing tube off the access plug, then seat the new fluidizing tube against the red O-ring.

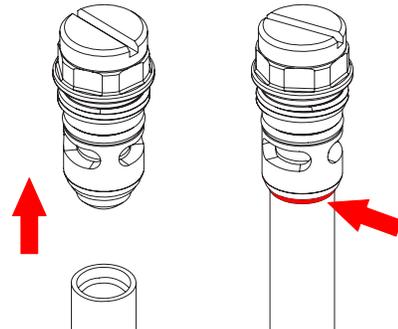


Figure 17 Removing the Tube from the Access Plugs

4. See Figure 18. Install the fluidizing tube assemblies into the pump body. Tighten the access plugs, then reconnect the purge air tubing.

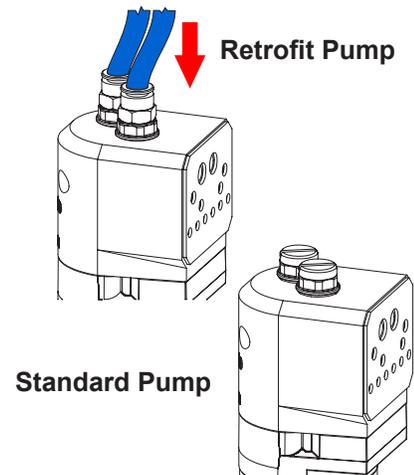


Figure 18 Reinstalling the Purge Air Tubing

Pump Disassembly

To reduce downtime, keep a spare pump in stock to replace a pump that is being repaired.

NOTE: Any time the pump is disassembled, the Y block gasket (item 19 in Figure 20) must be replaced.



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 19. Disconnect the purge air lines from the top of the retrofit pump (1) where applicable.
2. See Figure 20. Disconnect the inlet (2) and outlet powder tubing (3) from the bottom of the pump.
3. Remove the cabinet mounting hardware securing the pump to the pump panel (4) and move the pump to a clean work surface.
4. See Figure 21. 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. Refer to *Replacing Pump Gasket* in the *Repair* section if replacement is needed.

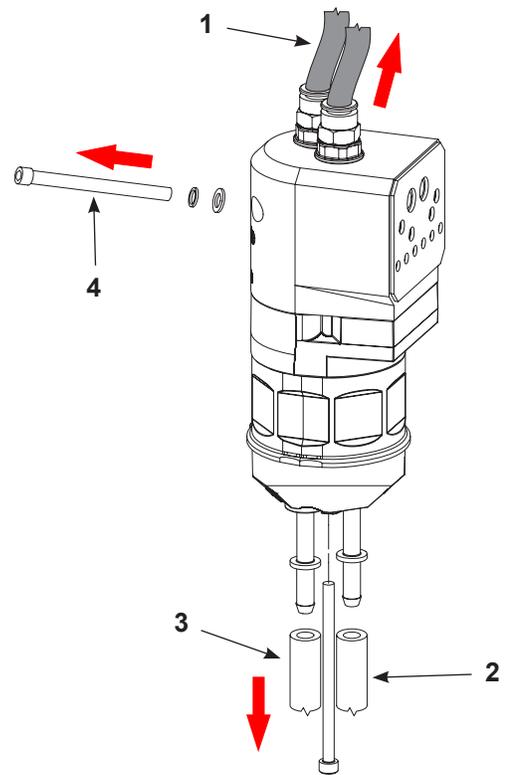


Figure 19 Retrofit Pump Disassemble Preparation

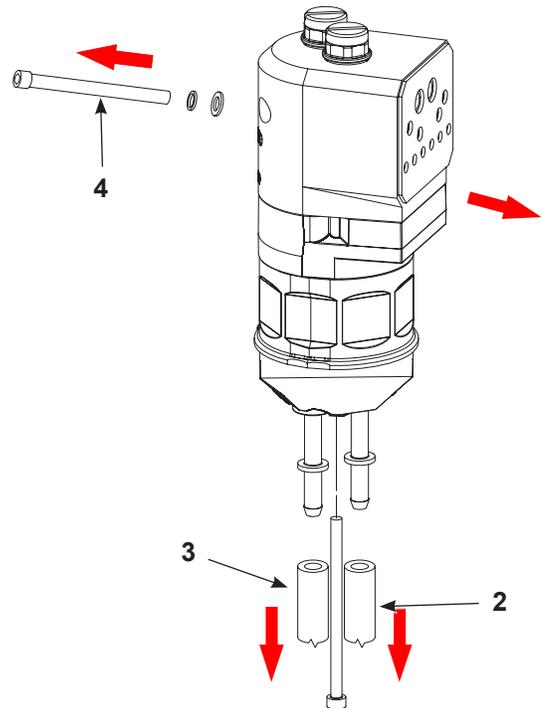


Figure 20 Standard Pump Disassemble Preparation

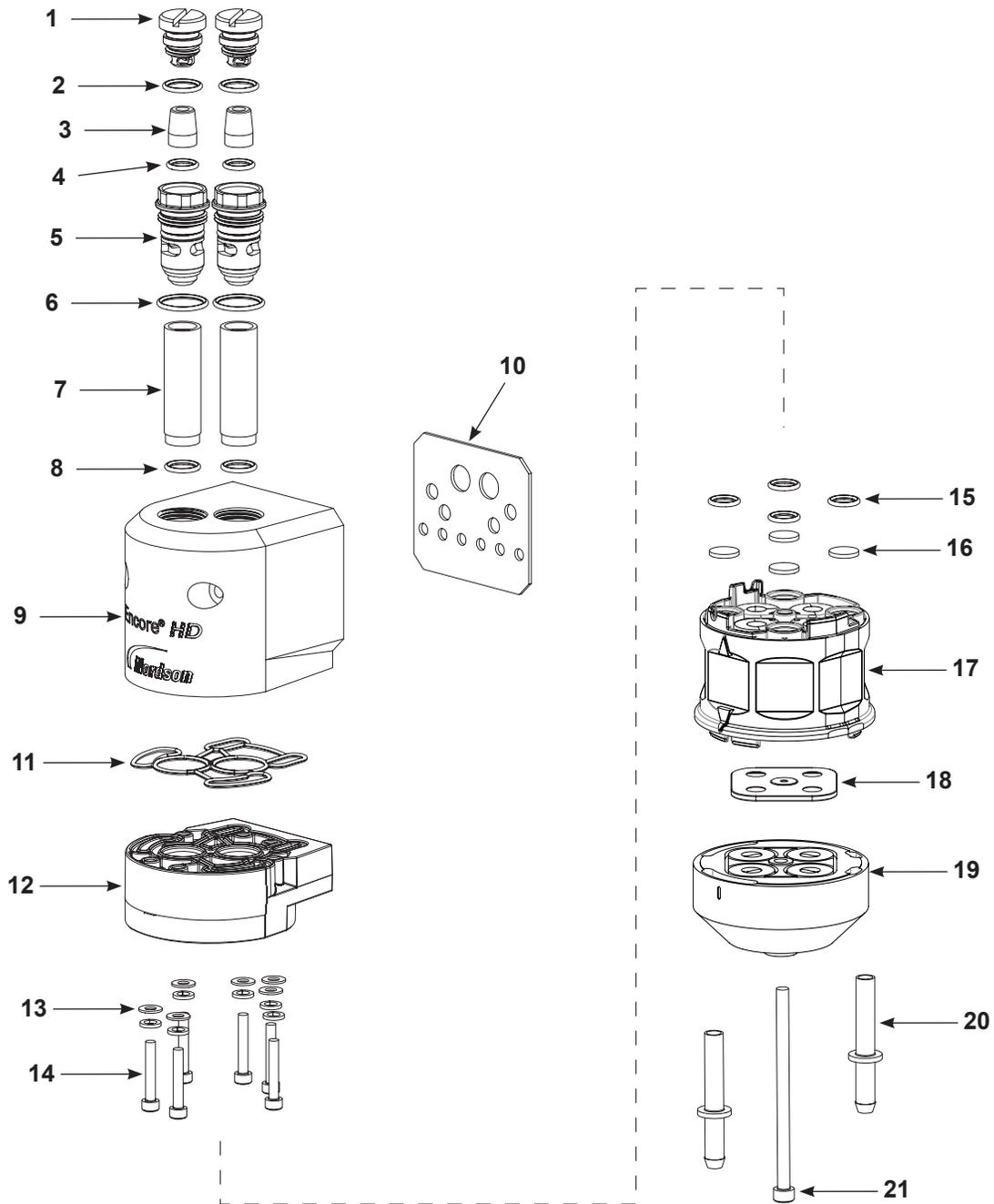


Figure 21 Pump Disassembly (Encore HD Shown)

- | | | |
|-------------------------|-------------------------|-----------------------------------|
| 1. Fitting caps (2) | 9. Purge manifold (1) | 16. Filter discs (4) |
| 2. O-Rings (2) | 10. Manifold gasket (1) | 17. Pinch valve chamber block (1) |
| 3. Check valves (2) | 11. Block seal (1) | 18. Y block gasket (1) |
| 4. O-rings (2) | 12. Upper Y block (1) | 19. Lower Y block (1) |
| 5. Access plugs (2) | 13. Lock washers (12) | 20. Hose barbs (2) |
| 6. O-rings (2) | 14. Screws, M4 x 25 (6) | 21. Screw, M5 x 85 (1) |
| 7. Fluidizing tubes (2) | 15. O-rings (2) | |
| 8. O-rings (2) | | |

Pump Assembly



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

NOTE: Any time the pump is disassembled, the Y block gasket (item 10 in Figure 23) must be replaced.

Procedure

1. See Figure 22. Place the customized O-ring (1) into the upper Y block (2) as shown, then fasten the upper Y block to the purge manifold housing (3) with the provided hardware.

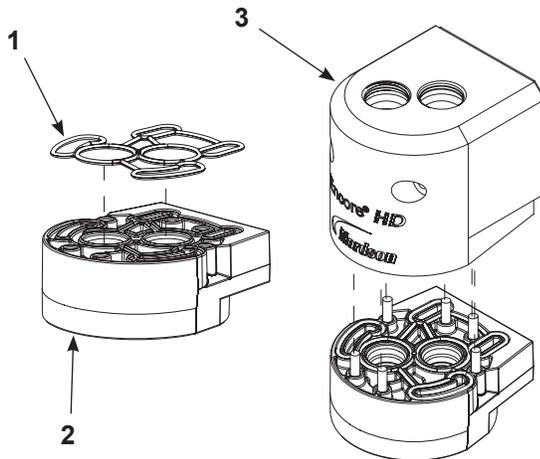


Figure 22 Assemble the Lower Y Block to Purge Manifold

2. See Figure 23. Assemble filter discs (4) and O-rings (5) into pinch valve chamber block (6).

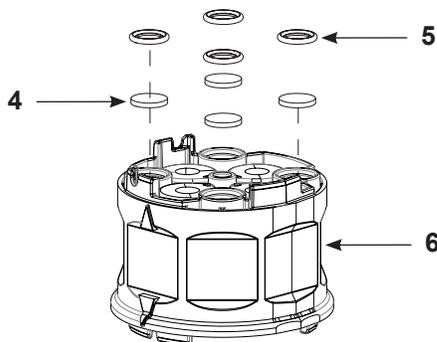


Figure 23 Assemble the Pinch Valve Housing

3. See Figure 24. Assemble gasket (8) over lower Y block (9), then thread long screw (10) through the lower y block and into the pinch valve housing, upper Y block and purge manifold. Torque screw to 25-30 in.-lb (2.8-3.4 N•m).

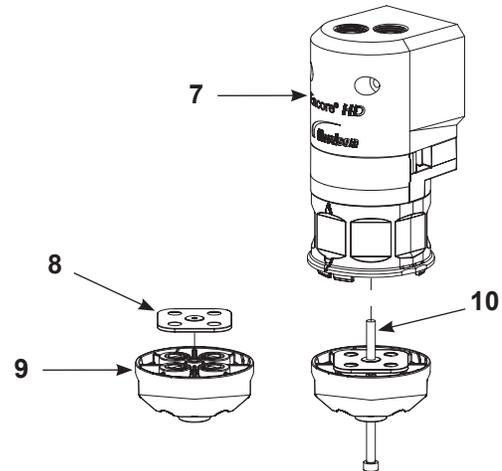


Figure 24 Assemble Gasket and Lower Y Block

4. See Figure 25. Assemble the check valves (13) O-rings (12) access plugs (14), and fitting caps (11) together before replacing the fluidizing tubes (16). Then, once that is complete, assemble the complete access plugs (15) and additional O-rings onto the fluidizing tubes (16).

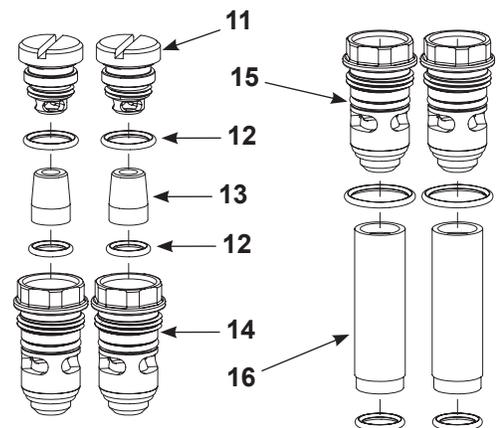


Figure 25 Assemble Fittings to Fluidizing Tubes

- See Figure 26. Insert the assembled fluidizing tube (17) into the top of the purge manifold (18). Snug fit tubes to manifold.

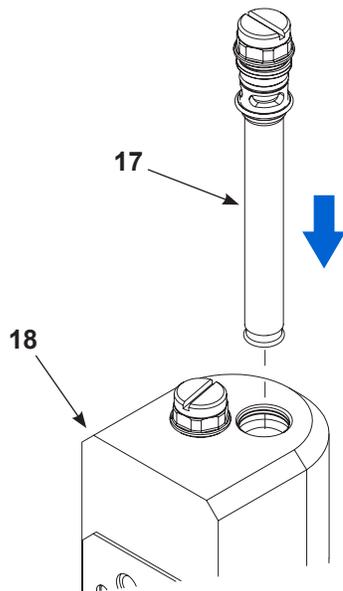


Figure 26 Fasten Fluidizing Tubes into Manifold

- See Figure 24. After the pump is assembled, completely tighten the long screw (10) to fit all components together completely.
- Mount the pump to the cabinet before assembling the feed tubing to the ports in the bottom of the pump. Refer to *Installation* on page 10 for more information.

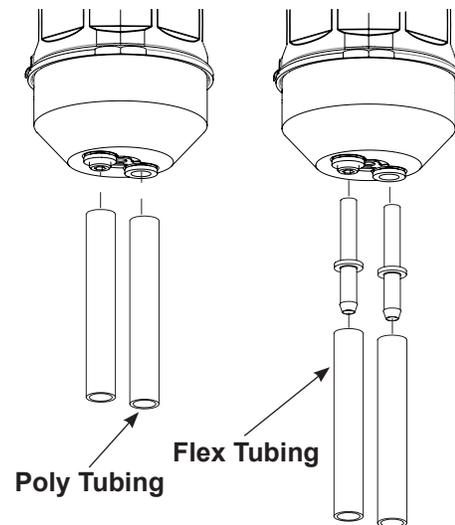


Figure 27 Assemble Tubing into Lower Y Block

Replacing Pump Gasket

- See Figure 28. Remove pump gasket from the pump.
- Using an industrial citrus based adhesive remover and plastic scraper, remove any residual adhesive left from old gasket from the pump. Clean any debris from port holes.
- Remove the sticker backing from the new gasket and place on the pump, aligning the holes of the gasket with the port holes on the pump.



CAUTION: Ensure gasket is not covering any of the port holes on pump. A second gasket is provided with pumps as an additional spare.

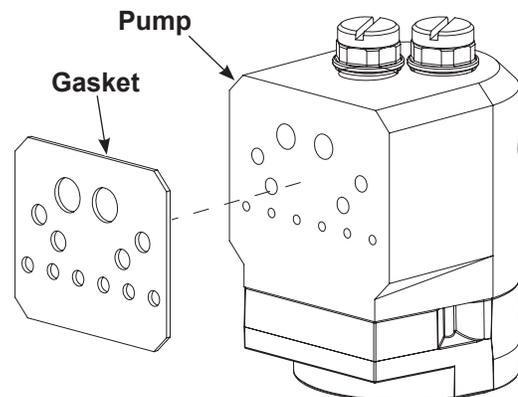


Figure 28 Replacing Pump Gasket

Parts

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

See Figure 29 and the following parts lists.

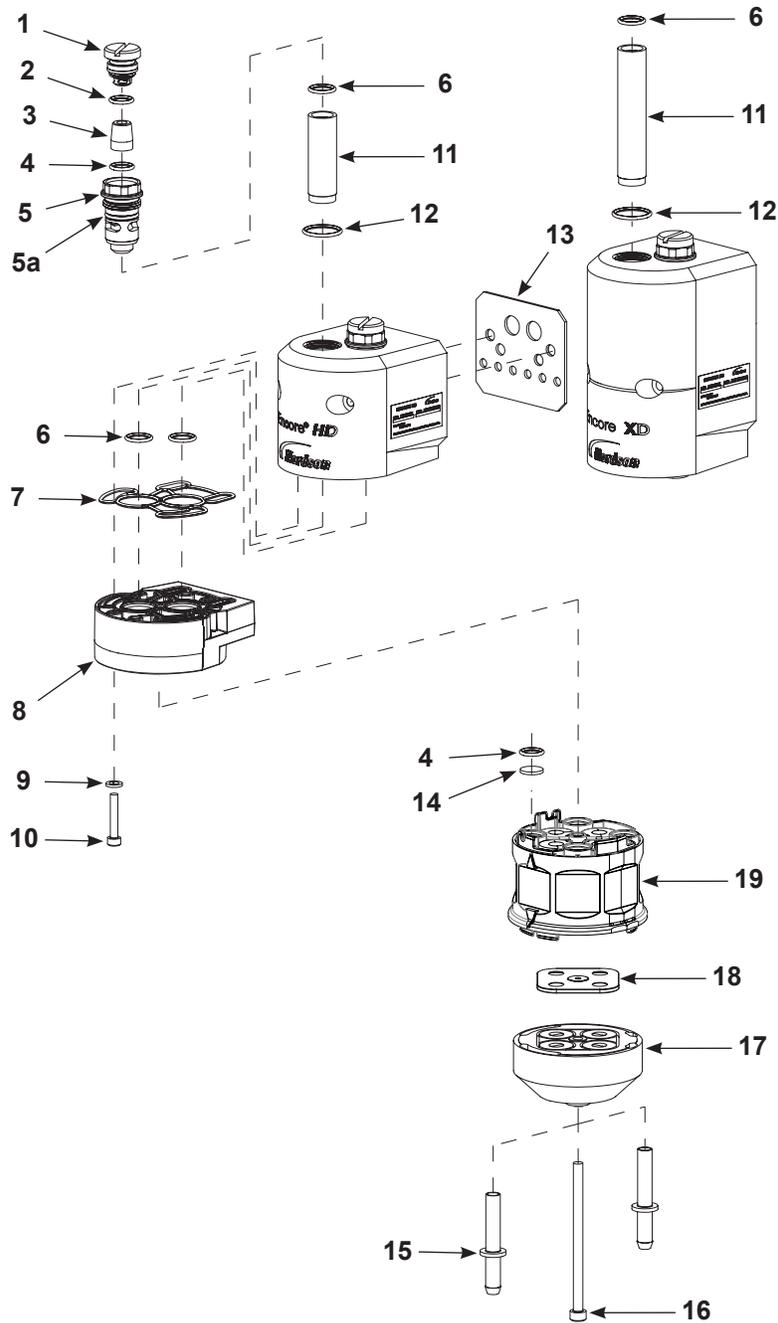


Figure 29 Encore HD and XD Standard Parts (shown with manual system pumps)

Pump for Manual Systems

Part	Description	Quantity	Note
1605940	PUMP ASSEMBLY, Encore HD	—	
1611247	PUMP ASSEMBLY, Encore XD	—	

Pump for Automatic Systems

Part	Description	Quantity	Note
1612248	PUMP, Encore HD retrofit assembly		
1612250	PUMP, Encore XD retrofit assembly		

Kits for Both Manual and Automatic System Pumps

See Figure 29 and the following parts list.

Pump Service Kits

Item	Description	Quantity	Note
1625730 - KIT, service, HD pump		—	
1625731 - KIT, service, XD pump		—	
4	• O-RING, -012, 0.375 x 0.500 x 0.063 in., silicone, 70 Duro	4	
6	• O-RING, -013, 0.437 x 0.562 x 0.063 in., silicone, 70 Duro	4	
11	• Fluidizing tube	2	
12	• O-RING, -017, 0.688 x 0.813 x 0.062 in., silicone, 70 Duro	2	
14	• DISC, filter, pump	4	
18	• GASKET, conductive, lower Y block	1	A
19	• BLOCK, pinch valve chamber	1	B
NOTE: A. Must be replaced any time pump is disassembled.			
B. Pinch valves come preassembled in chamber block.			

Fluidizing Tube Kits

See Figure 29 and the following parts list.

Item	Description	Quantity	Note
1057258 - KIT, HDLV pump fluid tube, 4 pack, HD pump		—	
1093557 - KIT, hi-flow fluid tube, HDLV pump, 4 pack, XD pump		—	
6	• O-RING, -013, 0.437 x 0.562 x 0.063 in., silicone, 70 Duro	8	
11	• Fluidizing tube	4	

Kits for Both Manual and Automatic System Pumps continued

Gaskets

Item	Part	Description	Quantity	Note
7	1625736	KIT, conductive gasket, upper Y-block, 4 pack, HD/XD pump	4 pack	
13	1625735	KIT, manifold gasket, 8 pack, HD/XD pump	8 pack	
18	1625734	KIT, conductive lower gasket, 4 pack, HD/XD pump	4 pack	

Miscellaneous Parts

Item	Part	Description	Quantity	Note
9	UA	WASHER, lock, split M4, zinc plated steel, DIN 7980	1	
10	UA	SCREW, socket cap M4 x 25, zinc plated steel, DIN 912	1	
15	1078006	ADAPTER, tube, barb, powder	1	
16	1619013	SCREW, socket M5, shoulder, stainless steel, HD pump	1	A
	1620035	SCREW, socket, M5, shoulder, blue, stainless steel, XD pump	1	A
17	1626212	BLOCK, lower Y assembly, pump, Encore HD Tivar	1	A

NOTE: A. If removing screw, replace lower conductive gasket (18).

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

Kits for Manual System Pumps

See Figure 29 and the following parts list.

Cap and Plug Kit

Item	Description	Quantity	Note
1625732 - KIT, cap and plug, HD/XD pump		—	
1	• PLUG, fluid	2	
2	• O-RING, -014, 0.500 x 0.625 x 0.063 in., silicone, 70 Duro	2	
4	• O-RING, -012, 0.375 x 0.500 x 0.063 in., silicone, 70 Duro	2	
5	• PLUG, fluid access	2	
5a	• O-RING, -015, 0.563 x 0.688 x 0.063 in., silicone, 70 Duro	2	
6	• O-RING, -013, 0.437 x 0.562 x 0.063 in., silicone, 70 Duro	2	

Check Valve Kit

Item	Description	Quantity	Note
1625733 - KIT, check valve, HD/XD pump		—	
3	• VALVE ASSEMBLY, check, Encore HD	2	
4	• O-RING, -012, 0.375 x 0.500 x 0.063 in., silicone, 70 Duro	2	

Kits for Automatic System Pumps

Fluid Tube and Plug Kit

See Figure 30 and the following parts list.

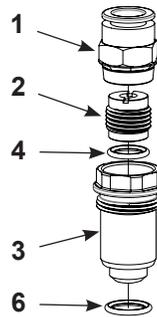


Figure 30 Retrofit Fluid Tube and Plug Kit

Item	Description	Quantity	Note
1610812 - PLUG, retrofit, fluid tube, Encore HD		—	
1	• CONNECTOR, 10 mm T x 3/8 uni	1	
2	• CHECK VALVE ASSEMBLY, pump	1	
3	• PLUG, retro, fluid tube access, Encore HD	1	
4	• O-RING, -012, 0.375 x 0.500 x 0.063 in., silicone, 70 Duro	1	
6	• O-RING, -013, 0.437 x 0.562 x 0.063 in., silicone, 70 Duro	1	
1078161 - KIT, service, check valve, pump Prodigy		—	
2	• CHECK VAVLE ASSEMBLY, pump, Prodigy	2	

Manifold Kit

See Figure 31 and the following parts list.

Item	Description	Quantity	Note
1616440 - KIT, Encore to Prodigy manifold		—	
1	• ADAPTER, Encore, HD pump to Prodigy manifold	1	
2	• GASKET, adapter, Encore HD pump to Prodigy	1	
1625737 - KIT, adapter gasket, 8 pack, HD/XD pump		—	
2	• GASKET, adapter, Encore HD pump to Prodigy	8	

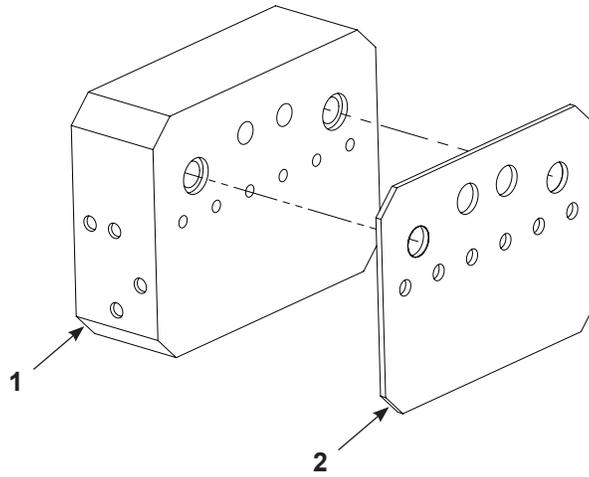


Figure 31 Manifold Kit

Kits for Automatic System Pumps continued

Grounding Kits

See Figure 32 and the following parts list.

Item	Description	Quantity	Note
1621252 - KIT, ground, pump controller, Encore HD		—	
1	• JUMPER, ground, 72 in.	4	
2	• LUG, ground, dual tap	1	
3	• SCREW, socket set, 1/4-20 x 0.50, flat zinc	2	
4	• NUT, hex, M5, brass	1	
5	• WASHER, lock, M, split, M5, steel, zinc	9	
6	• WASHER, flat, M5, brass	9	
7	• TAG, ground	1	
8	• SCREW, pan, slot, M5 x 16, brass	8	
9	• FITTING, barb, 8 mm, anitstatic hose, stainless steel	8	
10	• GROUND BLOCK, right, hose, pump, Encore	8	
11	• GROUND BLOCK, left, hose, pump, Encore	8	
1620013 - KIT GROUND PUMP, Encore, antistatic tubing		—	
9	• FITTING, barb, 8 mm, anitstatic hose, stainless steel	1	
11	• GROUND BLOCK, left, hose, pump, Encore	1	
1	• JUMPER, ground, 72 in.	1	
6	• WASHER, flat, M5, brass	1	
5	• WASHER, lock, M, split, M5, steel, zinc	1	
8	• SCREW, pan, slot, M5 x 16, brass	1	
10	• GROUND BLOCK, right, hose, pump, Encore	1	

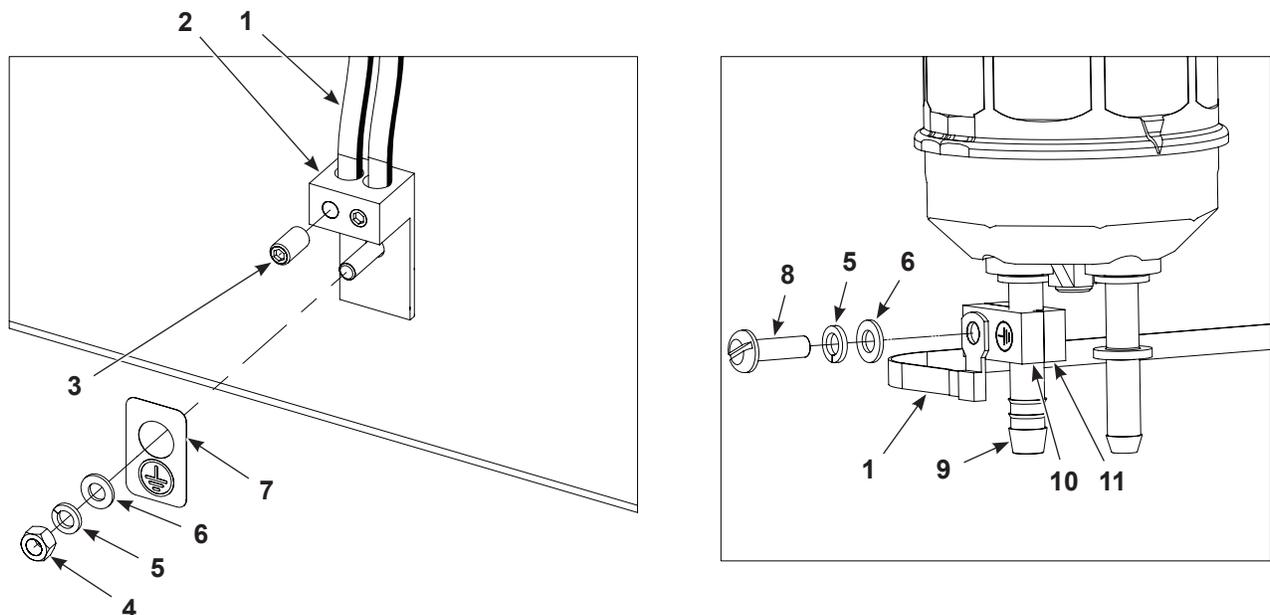


Figure 32 Grounding Kits

Air and Powder Tubing Part Numbers

See Figure 33 and the following parts list..

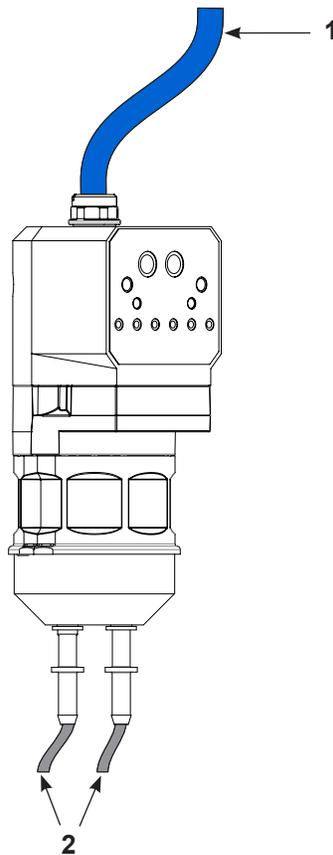


Figure 33 Air and Powder Tubing Part Numbers

Item	Part	Description	Note
1	900740	6.5 mm x 10 mm OD, blue polyurethane	D
2	1613849	6 mm ID x 8 mm OD, polyolefin, 40 m	A
2	1613850	6 mm ID x 8 mm OD, polyolefin, 160 m	A
2	1615026	6 mm ID x 8 mm OD, polyurethane 60 ft	B
2	1606695	6 mm ID x 8 mm OD, polyurethane 500 ft	B
2	173101	6 mm ID x 8 mm OD, natural, polyethylene	B, E
2	1620002	TUBING, powder, antistatic, 5.6 x 8.2 mm 160 m roll	C
2	7035356	TUBING, powder, antistatic, 5.6 x 8.2 mm 23 m roll	C

NOTE: A. Barbed fitting required.

B. Optional powder hose to use in place of the standard polyolefin.

C. Encore HD antistatic tubing for eliminating turbo-charging. Must be used with Encore pump grounding kits 1620013 and 1621252.

D. For purge air.

E. For suction line.

EU DECLARATION of Conformity

Product: Encore HD High Density Powder Pump

Models: Encore HD, Encore HD+, Encore XD Pump

Description: These pumps allow for low velocity air / high density powder and are used to deliver powder coating material to the applicator. These pumps are labeled for use in a Zone 22 area. The Encore HD is the standard Model. The Encore HD+ has higher flow then the standard. The Encore XD is for high abrasive powders and powder which have tendency to impact fuse.

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 T40°C Dc

Tech File: Notified Body #2813, Sira CSA Group, Netherlands B.V.

DNV ISO9001

ATEX Quality Notification – Baseefa Fimko Oy, Helsinki Finland



Date: 16March2021

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D-40699 Erkrath



UK DECLARATION of Conformity

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

Product: Encore HD High Density Powder Pump

Models: Encore HD, Encore HD+, Encore XD Pump

Description: These pumps allow for low velocity air / high density powder and are used to deliver powder coating material to the applicator. These pumps are labeled for use in a Zone 22 area. The Encore HD is the standard Model. The Encore HD+ has higher flow then the standard. The Encore XD is for high abrasive powders and powder which have tendency to impact fuse.

Applicable UK Regulations:

Supply Machinery Safety 2008

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

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 T40°C Dc

Tech File: Notified Body #2813, Sira CSA Group, Netherlands B.V.

DNV ISO9001

- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)



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Encore® HD and XT Manual Powder Spray System Controller

Customer Product Manual
Document Number 1604870-10
Issued 01/23

**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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Check <http://emanuals.nordson.com> for the latest version.



Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:

<http://www.nordson.com>.

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Section 1

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read 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 system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

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

Section 2

Overview

Introduction

See Figure 2-1 Encore HD/XT Manual Powder Spray System Controller. This manual covers the Encore® HD and XT manual powder spray system controller.



Figure 2-1 Encore HD/XT Manual Powder Spray System Controller

The system controller is used with the Encore HD with HDLV technology and the Encore XT with venturi technology. The Encore HD and XT controller may be used in the following systems:

- Encore HD and XT Wall Mount Systems
- Encore HD and XT Mobile Systems
- Encore HD and XT Rail Mount Systems
- Encore HD and XT Single and Dual Stand Alone
- Encore HD Color-on-Demand® Systems
- ColorMax® Powder Coating Systems
- Prodigy® to Encore Upgrade Systems

Specifications

Model: Encore HD and XT Interface Controller	
Input voltage rating	24 VDC, 2.75 A
Output voltage rating	+/- 19 VAC, 1A
Input air	6.0–6.9 bar (87–100 psi), <5 μ particulates, dew point <10 °C (50 °F)
Maximum relative humidity	95% non-condensing
Ambient temperature rating	+15 to +40 °C (59–104 °F)
Hazardous location rating	Zone 22 or Class II, Division 2
Enclosure rating	IP6X, Dust ingress protection

Equipment Label

Controller Certification Label



1606122

Section 3

System Setup

Rail Mount Installation

See Figure 3-1. Use the hardware shipped with the mounting kit to mount the controller to the pump cabinet stand as described below. Tighten all hardware securely.

NOTE: Bracket can be oriented top to bottom or bottom to top. Pictured below is the most common system orientation (bottom to top).

1. Install the controller rail mount bracket (2) to the arm on the product stand (1).
2. Install the controller (4) to the universal mounting bracket (3).
3. Install the universal mounting bracket (3) to the controller rail mount bracket (2).

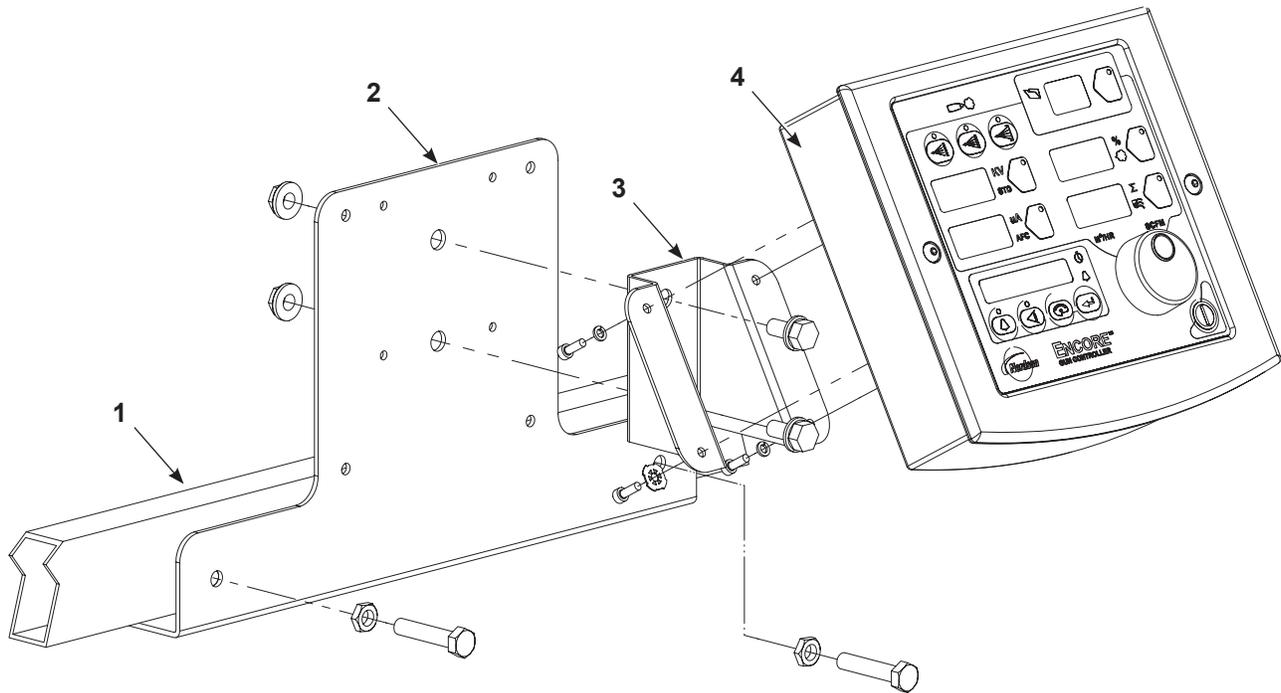


Figure 3-1 Controller Rail Mount Installation (Bottom to Top Orientation)

- | | |
|----------------------------------|-------------------------------|
| 1. Product stand arm | 3. Universal mounting bracket |
| 2. Controller rail mount bracket | 4. Encore HD controller |

System Connections

System Diagram

WARNING: This diagram does not show system grounds. All conductive equipment in the spray area must be connected to a true earth ground. Use the grounding block supplied with the Nordson system.

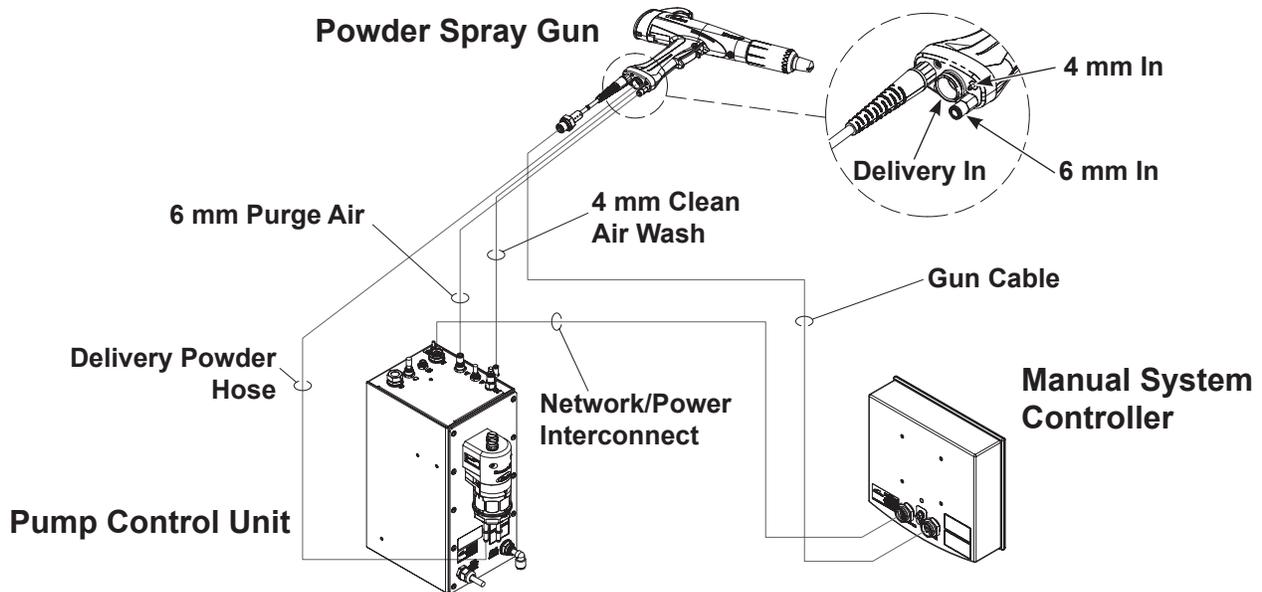


Figure 3-2 Typical HD System Diagram

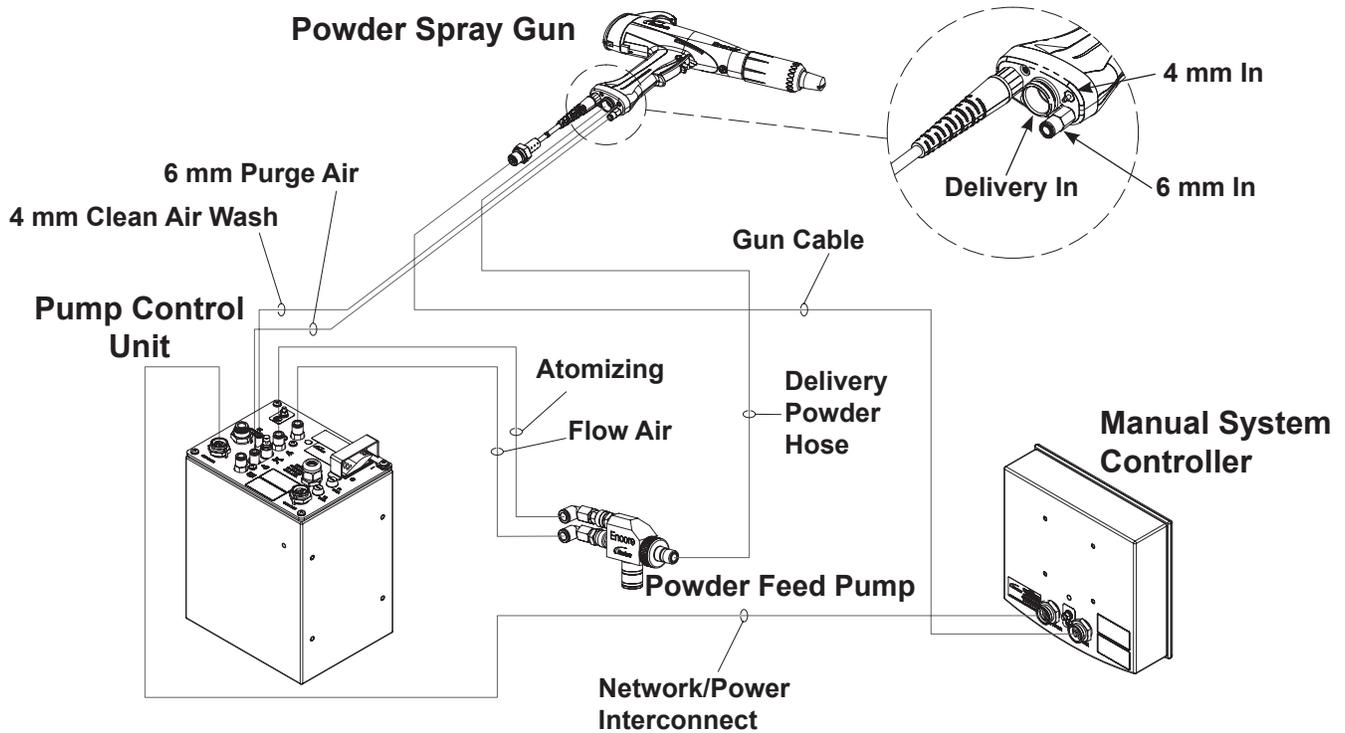


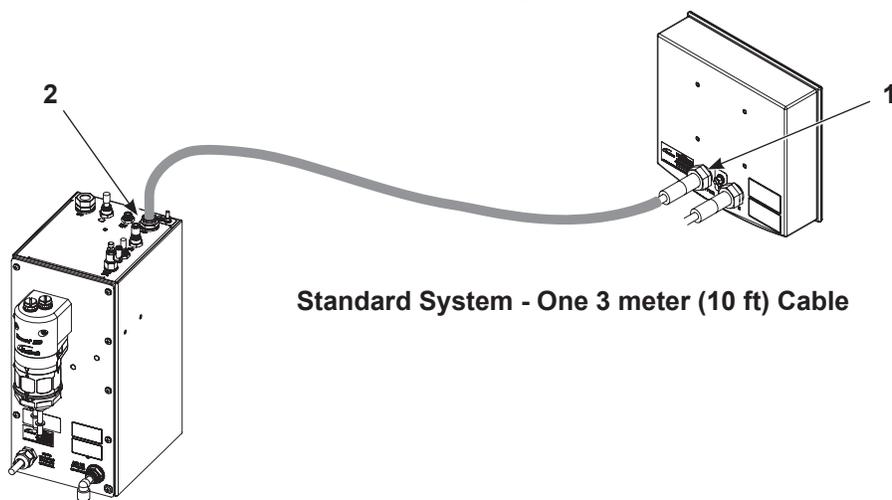
Figure 3-3 Typical XT System Diagram

Controller Connections

The system controller contains the displays and controls used to make controller function settings and spray settings.

See Figure 3-4. Use the network/power interconnect cable to connect the controller to the pump cabinet.

1. Securely attach the socket end of the interconnect cable to the NET/PWR plug (1) in the back of the controller.
2. Securely attach the pin ends of the interconnect cable to the NET/PWR 1 plug (2) in the top of the pump cabinet.
3. Repeat steps 1 and 2 to attach a second controller to the NET/PWR 2 plug at the top of the pump stand for a dual-gun system.



Optional Cable Configuration

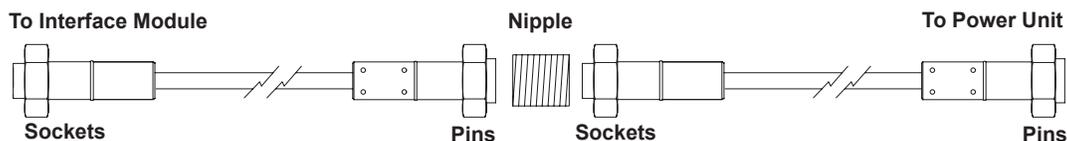


Figure 3-4 Encore Controller Interconnect Cable Connection

Section 4

Operation



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



WARNING: This equipment can be dangerous unless it is used in accordance with the rules laid down in this manual.



WARNING: All electrically conductive equipment in the spray area must be grounded. Ungrounded or poorly grounded equipment can store an electrostatic charge which can give personnel a severe shock or arc and cause a fire or explosion.

European Union, EX, Special Conditions for Safe Use

1. The Encore XT/HD Interface Control Unit and the Encore HD Hybrid Controller Power Unit or a Mobile Powder System shall only be used over the ambient temperature range of +15°C to +40°C with the Encore HD Powder Electrostatic Manual Applicator.
2. Equipment may only be used in areas of low impact risk.
3. Caution should be taken when cleaning external painted and non-metallic surfaces of the controller, interface, applicator, and all accessories. There is a potential for static electricity build up on these components. Follow the manufacturer's instructions to avoid possible electrostatic charging hazards. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in PD CLC/TR 6079-32-1 and IEC TS 60079-32-1.

Daily Operation



WARNING: All conductive equipment in the spray area must be connected to a true earth ground. Failure to observe this warning may result in a severe shock.

NOTE: The controller is shipped with a default configuration that will allow you to start spraying powder as soon as you finish setting up the system. Refer to *Controller Configuration* in this section to reference a list of the defaults and preset change instructions.

Initial Startup

With no parts in front of the gun and the fluidizing and flow rate set to 0%, trigger the gun and record the μA output. Monitor the μA output daily, under the same conditions. A significant increase in μA output indicates a probable short in the gun resistor. A significant decrease indicates a resistor or voltage multiplier requiring service.

Startup

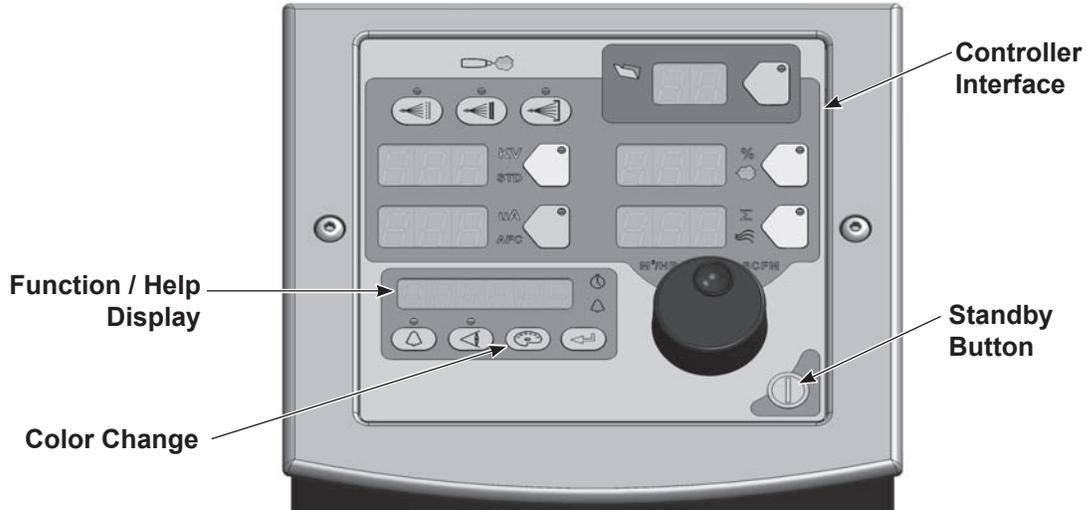


Figure 4-1 System Controls – Mobile System Shown

The following controller functions must be set up before operation:

Table 4-1 Function Settings

Function Number	FunctionName	FunctionValues	Default HDLV Mode
F00	Gun Type	00=Encore XT/HD, 02=Robot	00
F01	Fluidizing	00=Hopper, 01=Box, 02=Disable	02
F18	Pump Type	00=Venturi, 01=HDLV, 02=COD	00
F19	Control Type	00=Local, 01=External	00
F20	Gun Number	1-4	00

When power is activated at the pump cabinet, the controller is turned on.

Upon startup, the function/help display screen will quickly scroll through various function settings, displaying the following information:

Table 4-2 Startup Display

Screen Code		Description
EncoreE	Encore	Controller Type
act	XT	Controller Type
HdLV Unturi, Cod	HDLV or Venturi or COD	System Type
Loc Ext	Locor Ext	Local or External Control
Gun-1	Gun - 1, - 2, ...	Gun Number, 1 - 4
GC-0.00	GC - X.XX	Gun Controller, Software Version
Gd-0.00	Gd - X.XX	Gun Display Module, Software Version
FL-0.00	FL - X.XX	Flow Module, Software Version

Select the desired preset and start production. Refer to *Presets* in this section for preset programming instructions.

The controller interface displays actual output when the gun is spraying, and the current preset setpoints when the gun is off.

Standby Button

Use the Standby button shown in Figure 4-1 to shut off the interface and disable the spray gun during breaks in production. When the controller interface is off, the spray gun cannot be triggered and the spray gun interface is disabled.

To shut off controller power, use the power switch on the pump control unit.

Factory Set Presets

Presets are programmed electrostatic and powder flow setpoints for a particular part or application. Up to 20 presets can be programmed.

The system is shipped with presets 1–3 already programmed. See Table 4-3 and Table 4-4 for default preset values for the both the HD and XT systems. Refer to *Presets* on page 4-5 for programming instructions.

Table 4-3 HD System Factory Set Presets

Preset	Electrostatics, Powder Flow	kV	μA	%	
1	Max kV, 150 g/min (20 lb/hr)	100	30	35	0.7
2	Max kV, 300 g/min (40 lb/hr)	100	30	80	1.0
3	Select Charge 3 (deep recess), 150 g/min (20 lb/hr)	100*	60*	35	0.7

* Select Charge Mode settings are factory set and cannot be changed.

Table 4-4 XT System Factory Set Presets

Preset	Electrostatics, Powder Flow	kV	μA	%	S
1	Max kV, 150 g/min (20 lb/hr)	100	30	45	3.0
2	Max kV, 300 g/min (40 lb/hr)	100	30	75	3.0
3	Select Charge 3 (deep recess), 150 g/min (20 lb/hr)	100*	60*	45	3.0

* Select Charge Mode settings are factory set and cannot be changed.

Using the Controller Interface

Interface Components

Use the controller interface to make preset settings, view help codes, monitor system operation, and configure the controller. See Figure 4-2.

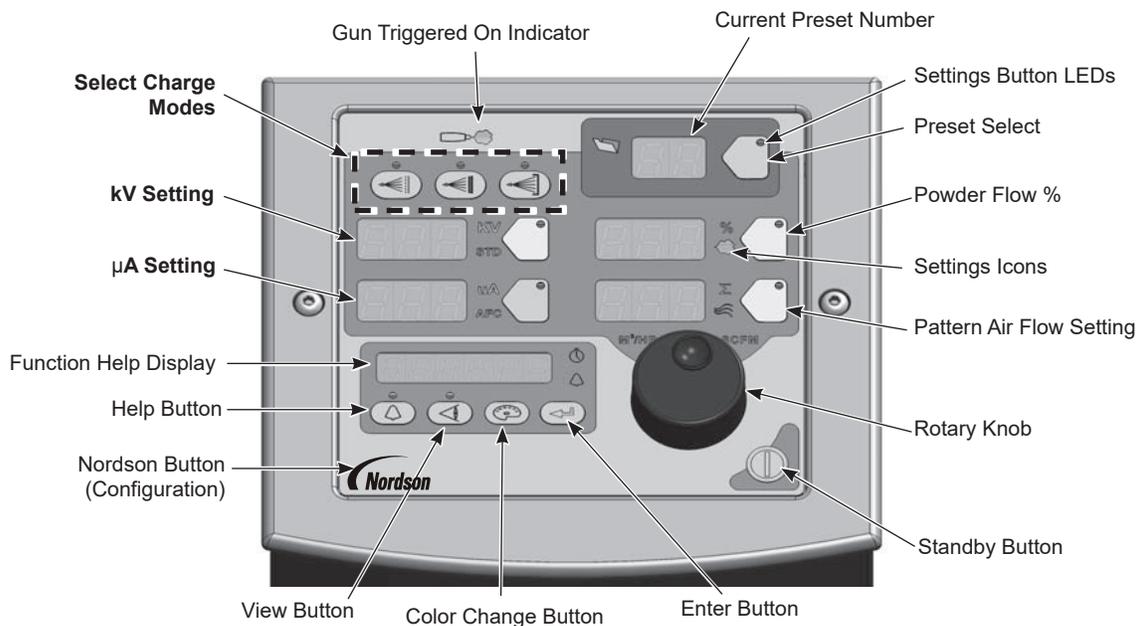


Figure 4-2 Controller Interface

Changing a Factory Configured Preset or Setpoint Value

See Figure 4-3.

Refer to View A. To select a preset or change a preset setpoint, press the **Preset Select** button or any **Setpoint** button. The button LED lights to indicate that it is selected.

The **Setpoint** icons will light to indicate the factory configured or operator selected setpoint values, allowing adjustments to be made to the following flow settings: **Select Charge Mode, kV, μ A, Powder Flow %, and Pattern Air.**

Refer to View B. Use the **Rotary Knob** to change the selected setpoint: clockwise to increase, counter-clockwise to decrease. The setpoints reset to the minimum if increased past their maximum.

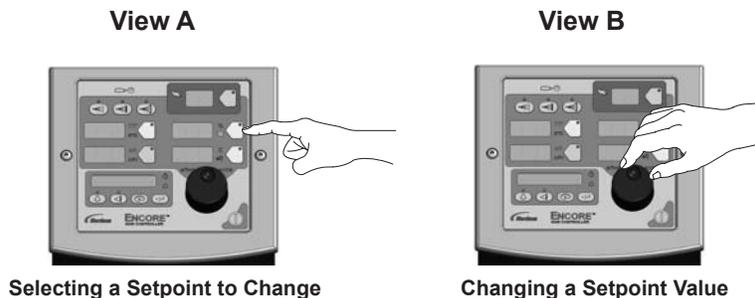


Figure 4-3 Selecting and Changing Setpoint Values

Presets

See Figure 4-4. The preset select button allows the operator to quickly change spray settings simply by changing the preset number. The operator can program the electrostatic and powder flow setpoints depending on the part being sprayed.

The controller can store 20 presets. Presets 1, 2, and 3 are programmed at the factory for the most common applications. Presets 4–20 can be programmed as needed. Refer to page 4-4 for the factory configured preset setpoint values.

Programming or Changing a Preset

1. Press the **Preset** button. The button LED lights.
2. Turn the **Rotary Knob**. The preset number increases from 1 to 20 then resets to 1.
3. With the desired preset selected, begin production. All preset electrostatic and powder flow values will be used.
4. To change a preset value, first choose the desired preset by using the **Rotary Knob**. Once the preset is selected, change the electrostatic and powder flow settings to the desired values.

5. The preset number will begin blinking, indicating a change has been made. **Save immediately** by pressing **Enter**. The preset number will only blink for a 5 second window. If the changes are not saved within this time frame, the change will only be temporary and the preset will switch back to the previous setting.
6. To begin production without saving the new settings, do not press **Enter**. The new values will be used for the current job, but the preset will keep original values for future use.

The setpoints for the selected preset are displayed when the gun is not triggered.

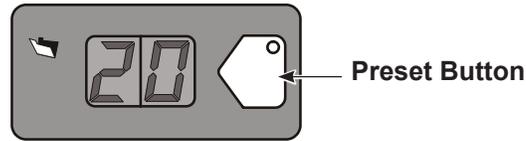


Figure 4-4 Preset Select

Electrostatic Settings

Electrostatic output can be set to Select Charge® mode (preconfigured), Custom mode, or Classic mode. Refer to the *Controller Configuration* in this section to program Custom or Classic mode using the F03 function.

Select Charge® Mode

Select Charge mode provides 3 preconfigured electrostatic settings for common paint applications. The LEDs above the Select Charge mode buttons indicate the selected mode.

The Select Charge Modes and factory settings are:

Mode 1	Re-Coat	100 kV, 15 μ A
Mode 2	Metallics	50 kV, 50 μ A
Mode 3	Deep Recesses	100 kV, 60 μ A

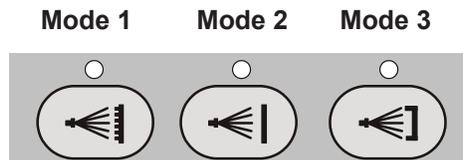


Figure 4-5 Select Charge Mode

NOTE: If the operator tries to adjust kV or μ A values while a Select Charge mode is selected, the controller will switch to Custom or Classic mode.

Custom Mode

Custom Mode is the factory default mode. Custom mode allows the operator to adjust both kV and μA independently. STD and AFC icons are not displayed in Custom mode.

NOTE: Refer to *Controller Configuration* in this section for a list of the mode defaults and configuration instructions.

1. To set or adjust kV, press the **kV** button. The button LED lights to show that kV is selected.
2. Turn the **Rotary Knob** to increase or decrease the kV setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.
3. To set or change the μA setpoint, press the **μA** button. The button LED lights to indicate that μA is selected.
4. Turn the **Rotary Knob** to increase or decrease the μA setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.

NOTE: The default μA range is 10–50 μA . The limits of the range can be adjusted using function code F12 for the lower range and F13 for the upper range. Refer to *Controller Configuration* in this section.

Electrostatic Display:

Refer to View A. When the gun is not triggered the kV and μA setpoints are displayed.

Refer to View B. When the gun is triggered the actual kV and μA outputs are displayed.

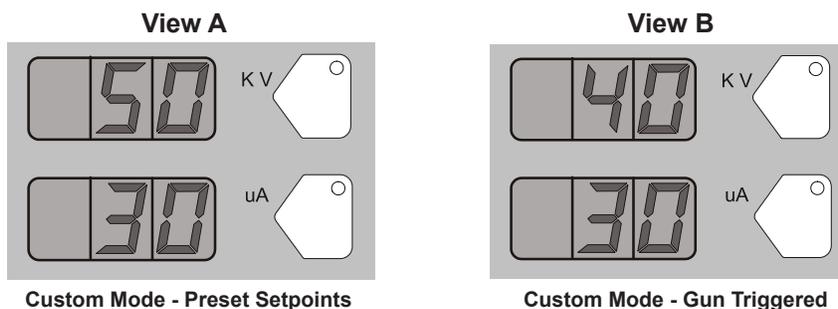


Figure 4-6 Custom Mode – Electrostatic Displays

Encore Nano Feedback Control Mode (NFC)

To configure the controller for the NFC function, set the Electrostatic Control (F03) to the Custom mode (Custom= 00).

Use the NFC mode to adjust and set both kV and μ A in lower value range. See Function Settings on *Controller Configuration* in this section.

μ A NFC Range and Settings

NFC mode allows the user to adjust the μ A setting in increments of 0.1 μ A below the value of 10.0 μ A.

For example, the user can set the μ A settings from 12, 11, 10, 9.9, 9.8, 9.7, through 0.1.

kV NFC Range and Settings

NFC mode allows the user to adjust the kV setting in increments of 1 kV below the value of 25 kV.

For example, the user can set the kV settings from 25, 24, 23, 22, through 0.

Classic Mode

Classic Mode allows you to control kV (STD) output or μ A (AFC) output, but not both at the same time.

NOTE: To use Classic mode, the controller must be configured under function setting F03. Refer to *Controller Configuration* in this section.

Adjust kV: Classic Mode: Standard (STD)

NOTE: Use the Classic Standard mode to adjust and set kV. μ A cannot be adjusted in standard mode.

1. To adjust the kV setpoint, press the **kV** button. The button LED lights to show that kV is selected.
2. Turn the **Rotary Knob** to increase or decrease the kV setpoint. The setpoint automatically saves in 3 seconds or when any button is pressed.

Electrostatic Display:

Refer to View A. When the gun is not triggered the kV setpoint is displayed.

Refer to View B. When the gun is triggered the actual kV and μA outputs are displayed.

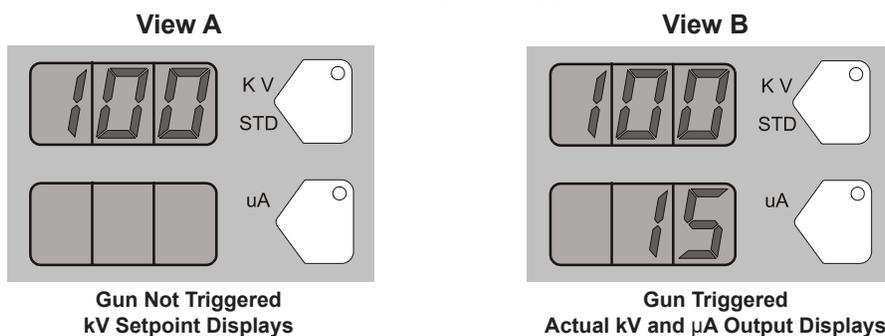


Figure 4-7 STD Mode – Electrostatic Displays

Adjust μA : Classic Mode: AFC

NOTE: Use the AFC mode to adjust and set μA output limits. kV cannot be adjusted in AFC mode. kV setting is automatically set to 100 kV.

1. To adjust μA , press the **μA** button. The button LED lights to show that μA is selected.
2. Turn the **Rotary Knob** to increase or decrease the μA setpoint. The setpoint is automatically saved if it does not change for 3 seconds, or when any button is pressed.

NOTE: The default μA range is 10–50 μA . The limits of the range can be adjusted. Refer to *Controller Configuration* in this section.

Electrostatic Display:

Refer to View A. When the gun is not triggered the μA setpoint is displayed.

Refer to View B. When the gun is triggered the actual kV and μA outputs are displayed.

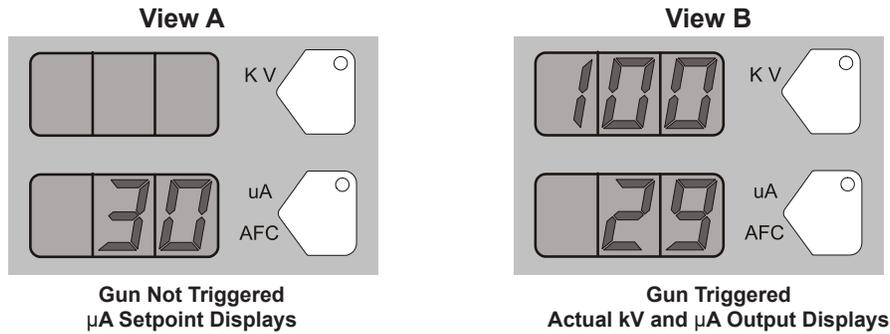


Figure 4-8 AFC Mode – Electrostatic Displays

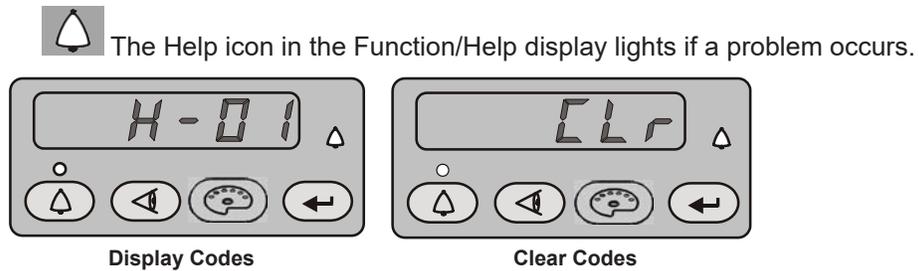
Help Codes

Figure 4-9 Displaying and Clearing Help Codes

 To display the Help codes, press the **Help** button. The controller retains the last 5 codes in memory. Use the **Rotary Knob** to scroll through the codes. The display blanks if there is no activity for 5 seconds.

 To clear the Help codes, scroll through them until **CLr** is displayed, then press the **Enter** button. The Help icon stays lit until the controller clears the codes.

Refer to *Troubleshooting* section for help code troubleshooting, general system troubleshooting, and controller wiring diagram.

Assist Air Setting, Fast Flow Setting, and Software Versions



The **View** button allows the user access to adjust Assist Air, Fast Flow preset values and to view software versions. See Table 4-5 and Table 4-8.

Press the **View** button consecutively to display, in order, the following functions:

Table 4-5 View Button Functions

Function Code	Function Name	Description
AA 00	Assist Air Setting	Allows user to set value between -50% and +50%
FF 0	Fast Flow Setting	Allows user to choose between 0 (Normal) and F (Fast)
GC - X.XX	Gun Controller Software Version	View only
Gd - X.XX	Gun Display Module Software Version	View only
FL - X.XX	Flow Module Software Version	View only
Hd - X.XX	Hardware Version for Main Control Board	View only

To adjust the Assist Air or Fast Flow settings:

1. Press the **View** button until the appropriate code is displayed. The code AA or FF will be blinking.
2. Press the **Enter** button to select. The value will now be blinking.
3. Use the **Rotary Knob** to select the desired setting.
4. Press **Enter** to save.
5. After 5 seconds the display will go blank. If **Enter** is not pressed, the value will automatically save.

NOTE: Adjustments to Assist Air and Fast Flow preset values only affect the preset you are currently viewing. A user can program as many as 20 presets, and each preset must be adjusted individually where required.

Powder Flow Settings

HD Powder Flow Settings

NOTE: Powder flow control modes can only be adjusted for Venturi systems. Refer to the *XT Powder Flow Settings* section for more details.

Powder flow is controlled by a timing sequence that is stored in a software look-up table. The cycle rate of the pump coupled with the suction duration, controls the number of pulses as well as the size of each pulse of powder. Each setpoint from 1–100 has its own recipe for pump operation. As you change the powder flow set point, these parameters change to increase or decrease the mass powder flow. Unlike the venturi technology, the powder mass flow is not affected by the pattern air setting. The pattern air will change the delivery velocity as the powder exits the gun as well as change the atomization of the powder cloud.

- Powder flow output from 0–100%
- Pattern air from 0.20–4.00 cfm in 0.05 increments

Setting Powder Flow Setpoints

To set flow or pattern air:

1. Press the **Flow** or **Pattern** button. The green LED on the selected button lights up.
2. Turn the **Rotary Knob** to increase or decrease the setpoints. The setpoint is automatically saved if it does not change for 3 seconds or when any button is pressed.

Flow or Pattern Setpoint Display:

- When the spray gun is not triggered the setpoints are displayed.
- When the spray gun is triggered the actual flows are displayed.

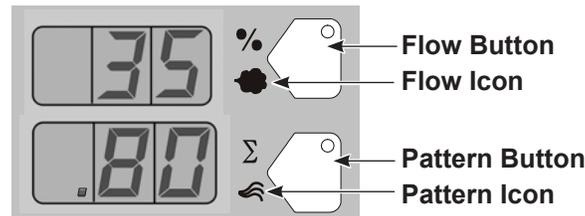


Figure 4-10 Flow or Pattern Setpoints

NOTE: Increasing pattern air will not increase powder flow output.

XT Powder Flow Settings

Two modes of powder flow control are available for XT systems:

Classic Flow – This is the factory default mode. This mode is the standard method of setting powder flow and velocity, by setting flow air and atomizing air flows separately and balancing them manually for optimum results. When the controller is configured for Classic Flow mode, the flow and atomizing air icons are lit.

Smart Flow – In this mode, you set Total Air (powder velocity) and Flow Air % (powder flow) setpoints. The controller automatically adjusts flow and atomizing air to the pump based on the setpoints. When the controller is configured for Smart Flow mode, the % and Σ icons are lit.

NOTE: Refer to *Controller Configuration* in this section for a list of the mode defaults and configuration instructions.



Figure 4-11 Powder Flow Icons

Smart Flow Mode

In Smart Flow mode, Total Flow **S** sets the velocity of the powder flow, while Flow Air % sets the powder flow rate. Powder velocity is inversely related to transfer efficiency; the higher the velocity, the lower the transfer efficiency.

When making Smart Flow settings, set the Total Flow **S** setpoint first to obtain the desired pattern size and penetration, then set the Flow Air % setpoint for the desired powder flow.

Flow Air %: 0–100%. The actual percentage range available varies depending on the total air setpoint and the maximum and minimum outputs for flow and atomizing air.

Total Flow: 2.55–10.2 M³/HR, minimum 0.17 M³/HR increments, or 1.5–6.0 SCFM, minimum 0.1 SCFM increments.

See Table 4-6 and Table 4-7 for examples of possible Smart Flow settings and their equivalents in Atomizing and Flow Air pressures and flows. Figure 4-12 shows the effects of changes in Total Flow and Flow Air % settings.

The Smart Flow tables provide a range of possible Total Flow and Flow Air % setpoints. Read across to the vertical axis for the equivalent atomizing air flow and pressure. Read down to the horizontal axis for the equivalent flow-air flow and pressure.

The tables show that as you increase Total Flow powder velocity increases while the maximum Flow Air % remains the same. Conversely, for a given Total Flow setting, each increase in Flow Air % increases powder flow.

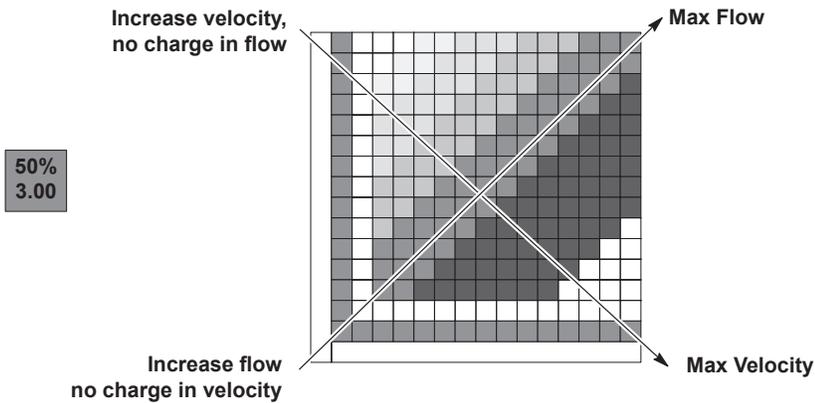


Figure 4-12 Reading the Smart Flow Tables

Setting Smart Flow Setpoints

To set flow air % or total flow **S** :

1. Press the % or Σ button. The LED on the selected button lights.
2. Turn the **Rotary Knob** to increase or decrease the setpoint. The setpoint is automatically saved if it does not change for 3 seconds or when any button is pressed.

NOTE: If Total Flow is set to zero, the Flow Air % setpoint cannot be set to anything but zero, and powder cannot be sprayed. To set Flow Air %, set Total Flow to a value greater than zero.

- When the spray gun is not triggered the setpoints are displayed.
- When the spray gun is triggered the displays show actual flows.

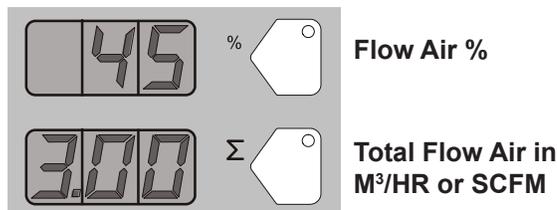


Figure 4-13 Smart Flow Mode – Flow Air % or Total Flow **S**

Smart Flow Settings – Metric Units

Powder Velocity (M ³ /Hr) (Total Flow) S		Air Flow Settings: 1.0 bar Atomizing 2.0 bar Flow Powder Output: 150 g/min. Max. Powder Flow Rate: *
Low	<3.40	
Soft	3.40–4.25	
Medium	4.25–5.53	
Firm	5.53–7.23	
High	>7.23	

Table 4-6 Smart Flow Settings – Metric Units

Atomizing	0.4	0.85	X	X	67%	71%	75%	78%	80%	82%	83%	85%	86%	87%	88%
					2.55	2.97	3.40	3.82	4.25	4.67	5.10	5.52	5.95	6.37	6.80
	0.6	1.27	X	50%	57%	63%	67%	70%	73%	75%	77%	79%	80%	81%	82%
				2.54	2.97	3.39	3.82	4.24	4.67	5.09	5.52	5.94	6.37	6.79	7.22
	0.9	1.70	33%	43%	50%	55%	60%	64%	67%	69%	71%	73%	75%	76%	78%
			2.55	2.97	3.40	3.82	4.25	4.67	5.10	5.52	5.95	6.37	6.80	7.22	7.65
	1.2	2.12	29%	37%	45%	50%	55%	58%	62%	64%	67%	69%	71%	72%	74%
			2.97	3.39	3.82	4.24	4.67	5.09	5.52	5.94	6.37	6.79	7.22	7.64	8.07
	1.6	2.55	25%	33%	40%	45%	50%	54%	57%	60%	63%	65%	67%	68%	70%
			3.40	3.82	4.25	4.67	5.10	5.52	5.95	6.37	6.80	7.22	7.65	8.07	8.50
	1.9	2.97	22%	30%	36%	42%	46%	50%	53%	56%	59%	61%	63%	65%	67%
			3.82	4.24	4.67	5.09	5.52	5.94	6.37	6.79	7.22	7.64	8.07	8.49	8.92
	2.3	3.40	20%	27%	33%	38%	43%	47%	50%	53%	56%	58%	60%	62%	64%
			4.25	4.67	5.10	5.52	5.95	6.37	6.80	7.22	7.65	8.07	8.50	8.92	9.35
	2.7	3.82	18%	25%	31%	36%	40%	44%	47%	50%	53%	55%	57%	59%	61%
		4.67	5.09	5.52	5.94	6.37	6.79	7.22	7.64	8.07	8.49	8.92	9.34	9.77	
3.1	4.25	17%	23%	29%	33%	38%	41%	44%	47%	50%	52%	55%	56%	58%	
		5.10	5.52	5.95	6.37	6.80	7.22	7.65	8.07	8.50	8.92	9.35	9.77	10.20	
3.5	4.67	15%	21%	27%	31%	35%	39%	42%	45%	48%	50%	52%	54%	X	
		5.52	5.94	6.37	6.79	7.22	7.64	8.07	8.49	8.92	9.34	9.77	10.19		
3.6	5.10	14%	20%	25%	29%	33%	37%	40%	43%	45%	48%	50%	X	X	
		5.95	6.37	6.80	7.22	7.65	8.07	8.50	8.92	9.35	9.77	10.20			
	5.52	13%	19%	24%	28%	32%	35%	38%	41%	44%	46%	X	X	X	
		6.37	6.79	7.22	7.64	8.07	8.49	8.92	9.34	9.77	10.19				
	5.95	13%	18%	22%	26%	30%	33%	36%	39%	42%	X	X	X	X	
		6.80	7.22	7.65	8.07	8.50	8.92	9.35	9.77	10.20					
	M ³ /Hr	0.85	1.27	1.70	2.12	2.55	2.97	3.40	3.82	4.25	4.67	5.10	5.52	5.95	
	BAR	0.2	0.3	0.5	0.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.5	
Flow															

Smart Flow Settings – English Units

Powder Velocity (SCFM) (Total Flow) S		Air Flow Setting: 15 psi Atomizing 20 psi Flow Powder Output: 20 lb/hr Max. Powder Flow Rate: *
Low	<2.00	
Soft	2.00–2.50	
Medium	2.75–3.25	
Firm	3.50–4.25	
High	>4.25	

Table 4-7 Smart Flow Settings – English Units

Atomizing	5	0.50	X	X	67%	71%	75%	78%	80%	82%	83%	85%	86%	87%	*88%
					1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00
	9	0.75	X	50%	57%	63%	67%	70%	73%	75%	77%	79%	80%	81%	82%
				1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25
	13	1.00	33%	43%	50%	56%	60%	64%	67%	69%	71%	73%	75%	76%	78%
			1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
	18	1.25	29%	38%	44%	50%	55%	58%	62%	64%	67%	69%	71%	72%	74%
			1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75
	23	1.50	25%	33%	40%	45%	50%	54%	57%	60%	63%	65%	67%	68%	70%
			2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
	28	1.75	22%	30%	36%	42%	46%	50%	53%	56%	59%	61%	63%	65%	67%
			2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25
	34	2.00	20%	27%	33%	38%	43%	47%	50%	53%	56%	58%	60%	62%	64%
			2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50
	40	2.25	18%	25%	31%	36%	40%	44%	47%	50%	53%	55%	57%	59%	61%
		2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	
45	2.50	17%	23%	29%	33%	38%	41%	44%	47%	50%	52%	55%	57%	58%	
		3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00	
51	2.75	15%	21%	27%	31%	35%	39%	42%	45%	48%	50%	52%	54%	X	
		3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00		
52	3.00	14%	20%	25%	29%	33%	37%	40%	43%	45%	48%	50%	X	X	
		3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00			
	3.25	13%	19%	24%	28%	32%	35%	38%	41%	43%	46%	X	X	X	
		3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00				
	3.50	13%	18%	22%	26%	30%	33%	36%	39%	42%	X	X	X	X	
		4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
	SCFM	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	
	PSI	3	5	8	12	16	20	24	29	34	38	42	47	51	
Flow															

Classic Flow Mode Settings

In Classic Flow mode, flow air and atomizing air ranges are:

- Flow air from 0–5.95 M³/HR (0–3.5 SCFM in 0.05 increments).
- Atomizing air from 0–5.95 M³/HR (0–3.5 SCFM in 0.05 increments). To set flow or atomizing air:
 1. Press the **Flow** or **Atomizing button**. The green LED on the selected button lights.
 2. Turn the **Rotary Knob** to increase or decrease the setpoints. The setpoint is automatically saved if it does not change for 3 seconds or when any button is pressed.
- When the spray gun is not triggered the setpoints are displayed.
- When the spray gun is triggered the actual flows are displayed.

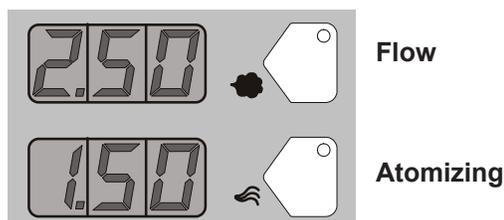


Figure 4-14 Classic Mode – Flow Air or Atomizing Air Flow Setpoints

Color Change Purge

NOTE: Before starting the purge cycle, make sure the guns are aimed into the booth.

NOTE: Always remove the pickup tube from the powder source and place into an appropriate collector before pressing the color change button.

Refer to Figure 4-2 for controller interface illustration.

HDLV System Purge

Purge Choices

For an HDLV system without Color-on-Demand, the purge choices are:

- **SINGLE**- Only the gun connected to this controller is purged when the Color Change key is pressed.
- **DUAL** - Both guns (two gun systems) are purged.
- **DISABLED** - Color Change key is disabled. Automatically selected if the Gun Type is set to HDLV-COD or EXTNAL-COD
- **REMOTE** - Purging is controlled by the iControl system.

HDLV Purge Cycle Instructions



The color change purge button allows the operator to automatically begin the purge cycle.

Press the **Color Change** button on the controller and then press **Enter**. The Automatic Purge Cycle operates as follows:

Cycle 1 – Soft Purge – Assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun). This clears the pump, tubing, and gun of powder.

Cycle 2 – Pulse Purge – Purge air is directed in pulses from the pump to the powder supply (Siphon Pulses), then from the pump to the spray gun (Gun Pulses). Pulse On sets duration of each pulse, Pulse Off sets time between pulses.

HDLV Purge Settings

(F26) SOFT SIPHON: 1.00–10.00 seconds, in 0.25 steps, default is 8 seconds.

(F27) SOFT GUN: 1.00–10.00 seconds, in 0.25 steps, default is 8 seconds.

(F28) PULSE ON: 0.1–1.00 seconds, in 0.05 steps, default is 0.5 seconds.

(F29) PULSE OFF: 0.1–2.00 seconds, in 0.05 steps, default is 1.5 seconds.

(F30) SIPHON PULSES: 1–99 pulses, default is 7.

(F31) GUN PULSES: 1–99 pulses, default is 13.

NOTE: Refer to functions F22 through F33 in the *Controller Configuration* in this section for more information.

Color-on-Demand (COD) System Purge

Press the **Color Change** button on the Color-on-Demand controller and then press **Enter**. Refer to the *Prodigy Color-on-Demand Manual System* manual for more detail.

The Automatic COD Purge Cycle operates as follows:

1. **Manifold Purge** – The dump valve opens. The pump speeds up to 100% of flow to pump the remaining powder out of the manifolds.
2. **Soft Purge** – Assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun). This clears the pump, powder tubing, and gun of powder.
3. **Pulse Purge** – Purge air is directed in pulses from the pump to the powder supply (Siphon Pulses), then from the pump to the spray gun (Gun Pulses). Pulse On sets duration of each pulse, Pulse Off sets time between pulses.
4. **Powder Pre-Load** – The new color powder is pumped to the spray gun for the set time at 100% of flow to load the system for production.

The color change cycle is started by the operator or by a remote signal to the Color-On-Demand controller. The operator starts the color change by selecting a new color and touching the **Start** button on the touch screen, or by pressing a foot pedal then selecting a new color before the powder pre-load begins.

NOTE: Powder type, humidity, tubing length, and other variables can change the effectiveness of these settings. You may have to adjust these settings to avoid color cross-contamination and maintain performance.

COD Purge Settings

(F33) MANIFOLD PURGE: 0–10.00 seconds, in 0.25 steps, default is 2 seconds.

(F26) SOFT SIPHON: 2.00–10.00 seconds, in 0.25 steps, default is 3.5 seconds.

(F27) SOFT GUN: 1–10.00 seconds, in 0.25 steps, default is 2 seconds.

(F28) PULSE ON: 0.1–2.00 seconds, in 0.05 steps, default is 0.5 seconds.

(F29) PULSE OFF: 0.1–2.00 seconds, in 0.05 steps, default is 1.5 seconds.

(F30) SIPHON PULSES: 1–99 pulses, default is 20.

(F31) GUN PULSES: 1–99 pulses, default is 18.

(F32) POWDER PRE-LOAD: 0–99 seconds, default is 4.

NOTE: To return to the factory defaults, manually reset F15 to 02. Refer to the *Controller Configuration* section in this section for more information.

Controller Configuration

Opening the Function Menu and Setting Preferences

 Press and hold the **Nordson** button for 5 seconds. The Function/Help display lights to show the function numbers and values. Use the functions to configure the controller for your application.

The function numbers are in the form F00-00 (Function Number-Function Value).

To scroll through the function numbers rotate the knob. To select the displayed function number, press the **Enter** button.

When the function is selected the function value blinks. To change the function value, rotate the knob. Press the **Enter** button to save the change and exit the value, so that rotating the knob now scrolls through the function numbers.

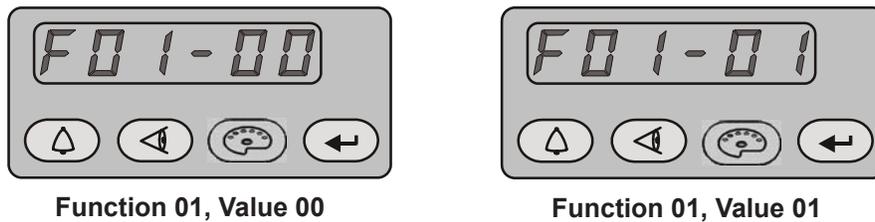


Figure 4-15 Displaying and Changing Configuration Functions

Changing a Password

1. Go to F05-00 and press the **Enter** button
2. Type the default password, which is 4486.
3. Go to F05-04 and press the **Enter** button.
4. Type the new password and press the **Enter** button to store it.

NOTE: 0000 and 4486 are not valid passwords. The Error message will appear if either of these are entered.

5. The system saves the password and 0000 will appear on the screen.

NOTE: If you forget the new password, you must program the controller with software version 3.12 or later to reset the password to the default. Complete these steps again using 4486 as the code.

Table 4-8 Function Settings

Function Number	FunctionName	FunctionValues	Description	Default HDLV Mode(Encore HD)
F00	Gun Type	00=Encore XT/HD 02=Robot	Customize for type of gun being used. Must be programmed during initial setup.	00
F01	Fluidizing	00=Hopper 01=Box 02=Disable	Customize for type of fluidizing system used. Must be programmed during initial setup.	Varies
F02	Display Units	00=SCFM 01=M ³ /HR	Choose standard cubic feet per minute or cubic meters per hour.	00
F03	Electrostatic Control	00=Custom 01=Classic	Choose custom or classic feedback control mode. See page 4-6 for more information.	01
F04	Powder Flow Control	00=Smart 01=Classic	Choose smart or classic mode. See page 4-12 for more information.	N/A
F05	Keypad Lockout	00=Unlocked 01=Preset Only 02=All Locked 03=Preset Locked 04=Reset Password	00 = All keypad functions are unlocked. 01 = All keypad functions are locked except preset functions. 02 = All keypad functions are locked. 03 = All preset functions are locked; other keypad functions can be adjusted. 04 = Reset password.	00
F06	Vibratory Box Delay Off	00-90 Seconds On=Continuous Operation	Sets the number of seconds the vibratory box continues to operate after the gun trigger is released. Choose from 0 to 90 seconds, or choose ON for continuous operation.	30

Continued...

Function Number	FunctionName	FunctionValues	Description	Default HDLV Mode(Encore HD)
F07	Maintenance Timer, Gun	00=View Timer 01=Set Timer (000=Disable through 999) 02=Reset (00, 01)	Sets a timer for when gun maintenance is due. 00 is view only. 01 allows you to choose 000 to disable the timer, or choose from 1 to 999 days. 02 resets the timer to 00.	000
F08	Setting Trigger Function	00=Increase/Decrease 01=Disable 02=Flow 03=Preset 04=Purge 05=Trigger	Sets the desired function for the spray gun trigger.	00
F09	Help Codes	00=Enable 01=Disable	Enable or disable help codes.	00
F10	Zero Reset (Flow)	00=Normal 01=Reset	Refer to page 5-13 for the Zero Reset procedure.	00
F11	Gun Display Errors	00=Flashing 01=Disable	Enable or disable gun display errors. Display will flash when an error occurs if enabled.	00
F12	µA Lower Limit	00=10 µA 01=5µA	See page 4-7 for more information on µA settings.	00
F13	µA Upper Limit	00=50 µA 01=100 µA	See page 4-7 for more information on µA settings.	00
F14	Total Hours	00=Gun Total Hours 01=Pump Total Hours	View total hours the pump and gun have been used. View only.	00
F15	Save/Restore/Reset	00=System Save 01=System Restore 02=Factory Reset	Save new settings, restore to previously saved settings, or return to factory settings.	00
F16	Gun Display Brightness	00=Low 01=Medium 02=Maximum	Sets brightness for gun display.	01
F17	Number of Presets	01-20 Presets	Choose from 1 to 20 presets. See page 4-5 for more information.	20

Continued...

Function Number	Function Name	Function Values	Description	Default HDLV Mode (Encore HD)
F18	Pump Type	00=Venturi 01=HDLV 02=COD	Customize for the pump type being used. Must be programmed during initial setup.	01 or 02
F19	Control Type	00=Local 01=External	Customize for local or external/remote control. Must be programmed during initial setup.	00
F20	Gun Number	1-4	Set number of guns being used. Must be programmed during initial setup.	00
F21	Maintenance Timer, Pump	00=View Timer 01=Set Timer (000=Disable through 999) 02=Reset (00, 01)	Sets a timer for when pump maintenance is due. 00 is view only. 01 allows you to choose 000 to disable the timer, or choose from 1 to 999 days. 02 resets the timer to 00.	00
F22	Purge	00=Disable 01=Single 02=Dual 03=Remote	Sets desired purge functionality. See page 4-18 for more information.	01
F23	Reserved	Reserved		0
F24	Reserved	Reserved		0
F25	Pattern Air Delay	0.00 - 5.00 Seconds in 0.25 Increments	Sets the number of seconds the pattern air continues to operate after the gun trigger is released. Choose from 0 to 5 seconds in 0.25 increments.	0.00
				Continued...

Function Number	Function Name	Function Values	Description	Default HDLV Mode (Encore HD)
F26	Soft Siphon	1–10 Seconds in 0.25 Increments	<p>Sets the number of seconds that assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun).</p> <p>This clears the pump, powder tubing, and gun of powder.</p>	8.00
F27	Soft Gun	1–10 Seconds in 0.25 Increments	<p>Sets the number of seconds that assist air is directed through the pump and siphon tubing back to the powder supply (Soft Siphon), then through the pump and delivery tubing to the spray gun (Soft Gun).</p> <p>This clears the pump, powder tubing, and gun of powder.</p>	8.00
F28	Pulse ON	0.1–0.95 Seconds in 0.05 Increments	<p>Pulse On sets duration of each pulse. Pulse Off sets time between pulses. See F30–F31, below.</p>	0.50
F29	Pulse OFF	0.1–0.95 Seconds in 0.05 Increments		1.50
F30	Siphon Pulses	1–99	<p>Purge air is directed in pulses from the pump to the powder supply (Siphon Pulses), then from the pump to the spray gun (Gun Pulses).</p>	7
F31	Gun Pulses	1–99		13
F32	Powder Pre-Load	1–99	<p>The new color powder is pumped to the spray gun for the set time at 100% of flow to load the system for production.</p>	4
				Continued...

Function Number	Function Name	Function Values	Description	Default HDLV Mode (Encore HD)
F33	Manifold Purge	0–10 Seconds in 0.25 Increments	The dump valve opens and the pump speeds up to 100% of flow to pump the remaining powder out of the manifolds.	2.00
F34	Conveyance Air Constant A	3.500 to 4.500	The calibration constant should match the numbers on the calibration sticker found on the back of the corresponding manifold. Use default values only if the sticker is damaged.	4.000
F35	Conveyance Air Constant C	–0.500 to +0.500		0
F36	Pattern Air Constant A	1.500 to 4.500		4.000
F37	Pattern Air Constant C	–0.500 to +0.500		0

Saving and Loading Preset and Function Settings

To save the current preset and function settings, set F15 to F15–00 and press **Enter**. All current preset and function settings are saved to memory.

To restore the saved preset and function settings, set F15 to F15–01 and press **Enter**. All the previously saved preset and function settings will be restored from memory.

To restore the system to the factory defaults, set F15 to F15–02, then press **Enter**.

Setting the Number of Presets

Custom Function F17 allows the user to set the number of valid presets between 1 and 20. For example, if the function is set to F17–05, then only 5 presets can be set up and toggled between on the interface and gun.

NOTE: If you configure F19=01 External (Robot Gateway), then there are only 10 presets.

NOTE: If the function is set to F17–01, then only 1 preset will be available for use.

HD System Shutdown

For HD systems, complete the following steps:

NOTE: Always remove the pickup tube from the powder source and place into an appropriate collector before pressing the color change button.

NOTE: Before starting the purge cycle, make sure the guns are aimed into the booth.

1. For HD systems, press the **Color Change** button to start cleaning the system of residual powder.
2. Purge the spray gun by pressing the **Purge** button on back of spray gun until no more powder is blown from the gun.
3. Press the **Standby** button to turn off the spray gun and interface.
4. Turn off the system air supply and relieve the system air pressure at the pump cabinet.
5. If shutting down for the night or a longer period of time, shut off system power.
6. Perform the Maintenance procedures in this section.

XT System Shutdown

For XT systems, complete the following steps:

NOTE: Before starting the purge cycle, make sure the guns are aimed into the booth.

1. Purge the spray gun by pressing the **Purge** button until no more powder is blown from the gun.
2. Press the **Standby** button to turn off the spray gun and interface.
3. Turn off the system air supply and relieve the system air pressure.
4. If shutting down for the night or a longer period of time, move the power unit switch to the OFF position to shut off system power.
5. Perform the Maintenance procedures on in this section.

Maintenance



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



WARNING: Before performing the following tasks, turn off the controller and disconnect system power. Relieve system air pressure and disconnect the system from its input air supply. Failure to observe this warning may result in personal injury.

Daily maintenance for the controller should include blowing off the interface module with a blow gun. Wipe any residual powder off the controller with a clean cloth.

Periodically check all system ground connections.

Section 5

Troubleshooting



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



WARNING: Before making repairs to the controller or spray gun, shut off system power and disconnect the power cord. Shut off the compressed air supply to the system and relieve the system pressure. Failure to observe this warning could result in personal injury.

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact Nordson technical support at (800) 433-9319 or your local Nordson representative for help.

Help Code Troubleshooting



The Help icon in the Function/Help display lights if a problem occurs that the controller can sense.

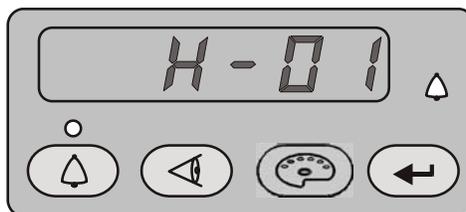


Figure 5-1 Displaying and Clearing Help Codes

Viewing Help Codes



Press the **Help** button to display the Help codes. The controller retains the last 5 codes in memory. Rotate the knob to scroll through the codes. The display will blank if there is no activity for 5 seconds.

Clearing Help Codes



To clear the help codes, press the **Help** button, then scroll through them until CLR is displayed, then press enter. The Help icon will stay lit until the controller clears the codes.

Help Code Troubleshooting Chart

Code	Message	Correction
H00	No Gun Number	Gun cannot be set to 0, must be a number from 1–4. Refer to the Startup section on page 4-2 for more information on setting up gun numbers.
H01	EEPROM Read Failed	Reset the fault (press the Nordson key to open the fault screen). This fault will sometimes occur when the software is upgraded.
H07	Gun Open	Trigger the gun and check the display. If the μ A feedback is 0, check for a loose gun cable connection at the gun receptacle. Check for a loose connection to the power supply inside the gun. Perform Gun Cable Continuity Tests as described in the spray gun manual. If the cable and the connections are okay, check the spray gun high voltage power supply.
H10	Gun Output Stuck Low	With the gun triggered on and the kV set to maximum, use a multimeter set for VRMS to check for voltage between J4 pins 1 and 2 on the main control board. If no voltage is present replace the main control board.
H11	Gun Output Stuck High	Make sure kV is set to 0 and the gun is triggered OFF. The μ A display should read 0. If the μ A display is greater than 0, replace the main control board. Make sure the trigger icon on the interface is not lit.
H12	Communications Fault CAN Bus	<p>Check that the gun number is set correctly. See F20 in the <i>Controller Configuration</i> in the <i>Operation</i> section. Check the DIP switch setting on the pump controller.</p> <p>Check the interface interconnect cable. Make sure the cable connections are secure and the cable is not damaged. Refer to Gun Cable Continuity Tests in your spray gun manual.</p> <p>Check the connections from the cable receptacle to the J1 terminal block on the main control board.</p> <p>If all connections are secure but the fault persists replace the cable. Route the network cable away from sources of electrostatics (hopper, gun cables, powder hose). Verify proper grounding. Verify network terminations are set correctly for non-standard systems.</p>
H15	Over Current Fault (Cable or Gun Short)	<p>This fault can occur if the gun tip touches a grounded part while spraying. This fault turns the electrostatic output off. Release the trigger to reset the fault and resume spraying.</p> <p>If the fault reoccurs, disconnect the spray gun high voltage power supply from the gun cable inside the gun (J2) and trigger the gun on. Refer to the Power Supply Replacement procedure in the spray gun manual.</p> <p>If the H15 code does not reappear, then check the high voltage power supply for issues.</p> <p>If the help code reappears, check the gun cable continuity and replace it if shorted. Perform Gun Cable Continuity Tests as described in your spray gun manual.</p>
H19	Gun Maintenance Timer Expired	<p>The Maintenance Timer has exceeded its setting. Perform the scheduled maintenance, then reset the maintenance timer.</p> <p>See F07 in the <i>Controller Configuration</i> in the <i>Operation</i> section for reset instructions (F07-02).</p>

Continued...

Code	Message	Correction
H20	Pump Maintenance Timer Expired	The Pump Maintenance Timer has exceeded its setting. Perform the scheduled maintenance, then reset the maintenance timer. See F21 in the <i>Controller Configuration</i> section on page 4-20 for reset instructions (F21-02).
H21	Pattern Air Valve Fault	Refer to the controller wiring diagrams in the pump control unit manual. Check the wiring harness connection (J8) to the proportional valve solenoid. Check the solenoid operation. Replace the valve if the solenoid is not working.
H22	Conveyance Air Valve Fault	Refer to the controller wiring diagrams in the pump control unit manual. Check the wiring harness connection (J7) to the proportional valve solenoid. Check the solenoid operation. Replace the valve if the solenoid is not working.
H23(HD)	Conveyance Air Flow Low Fault Flow is lower than setpoint. System cannot reach setpoint.	Check if input pressure is greater than 87 psi (5.9 bar). Make sure and correct H49 or H50 faults if present. Check for blocked powder delivery line to spray gun. Check for blocked powder tubes. Check if internal regulator is set to 85 psi (5.7 bar) with gun triggered ON. Check for blockage in proportional valve. Check for oil/water contamination. Perform the <i>Conveyance Air Flow Verification for HD</i> procedure in this section. Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.
H23(XT)	Flow Air Flow Low Fault	The flow setting may be too high for the system to achieve. Maximum air flow is dependent on factors including air tubing length, diameter, and pump type. Switch to Classic Flow mode. This mode lets you set and view actual flow-rate and atomizing air flow so you can diagnose the problem. Check the tubing from the iFlow module to the powder pump for kinks or blockage. Make sure the check valves are not blocked. Disconnect the air tubing at the pump, clear the help codes, and trigger the gun. If the help code does not reappear, clean or replace the pump venturi nozzle or throat. Check the system air supply pressure. Input pressure must be above 87 psi (5.9 bar). Check the system filter and the tubing from the filter to the power unit for kinks or blockage. Refer to the Repair section in the Encore XT Manual Powder Spray Systems manual for procedures using the iFlow Air Flow Verification Kit (1039881) to check the operation of the iFlow module proportional valves and the output of the precision air pressure regulator.

Continued...

Code	Message	Correction
H24 (HD)	Pattern Air Flow Low Fault	<p>Check if input pressure is greater than 87 psi (5.9 bar). Check for blocked airline to spray gun.</p> <p>Check if internal regulator is set to 85 psi (5.7 bar) with gun triggered ON.</p> <p>Check for blockage in proportional valve. Check for oil/water contamination.</p> <p>Use the flow verification tool (1039881) with its instructions and connect to the pattern air output.</p> <p>Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.</p>
H24 (XT)	Atomizing Air Flow Low Fault	See H23 (XT).
H25 (HD)	<p>Conveyance Air Flow High Fault</p> <p>Flow is higher than setpoint. System unable to turn it down.</p>	<p>Check if input pressure is less than 110 psi (7.6 bar).</p> <p>Check if internal regulator is set to 85 psi (5.7 bar) with the spray gun triggered ON.</p> <p>Check for contamination in the proportional valve. Check for oil/water contamination.</p> <p>Trigger the spray gun OFF and reset the fault. If the fault returns without triggering the spray gun ON, remove the 8 mm tube plug from the pump control unit labeled flow.</p> <p>Check that no air is leaking from the port. If air is leaking, remove the proportional valve and clean it. If air is not leaking, plug the 8 mm port and perform the <i>Re-Zero Procedure</i> in this section.</p> <p>Perform the <i>Conveyance Air Flow Verification for HD</i> procedure in this section.</p> <p>Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.</p>

Continued...

Code	Message	Correction
H25 (XT)	Flow Air Flow High Fault	<p>Switch to Classic Flow mode. This mode lets you set and view actual flow and atomizing air so you can diagnose the problem.</p> <p>If the spray gun is triggered off when the help code appears, disconnect the air tubing from the appropriate air output fitting and plug the fitting. Clear the help codes. If the code does not reappear then the proportional valve is stuck open. Refer to the Repair in the pump control unit manual for cleaning instructions.</p> <p>If the spray gun is triggered on when the help code appears, disconnect the air tubing from the appropriate output fitting and set the flow to zero. If air is still flowing from the fitting then plug the fitting and clear the help codes. If the code does not reoccur then the proportional valve is stuck open. Refer to the Repair section in the pump control unit manual for cleaning instructions.</p> <p>If the help code re-occurs and the controller interface is showing air flow, then check for leaks around the proportional valves or transducers on the iFlow module.</p> <p>If the help code persists, re-zero the module as described in this section.</p> <p>Refer to the Repair section in the Encore XT Manual Powder Spray Systems manual for procedures using the iFlow Air Flow Verification Kit to check the operation of the iFlow module proportional valves and the output of the precision air pressure regulator.</p>
H26 (HD)	Pattern Air Flow High Fault	<p>Check if input pressure is less than 110 psi (7.6 bar).</p> <p>Check if the internal regulator is set to 85 psi (5.7 bar) with the spray gun triggered ON.</p> <p>Check for contamination in the proportional valve. Check for oil/water contamination.</p> <p>Trigger the spray gun OFF and reset the fault. If the fault returns without triggering the spray gun ON, remove the 6 mm blue tubing and check for air leaks. Make sure the system controller is triggered OFF.</p> <p>Check that no air is leaking from the port of the pump control unit. If air is leaking, remove the proportional valve and clean it. If air is not leaking, plug the 6 mm pattern port and perform the <i>Re-Zero Procedure</i> in this section.</p> <p>Perform the <i>Conveyance Air Flow Verification for HD</i> procedure on page 5-13.</p> <p>Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.</p>
H26 (XT)	Atomizing Air Flow High Fault	See H25 (XT)
Continued...		

Code	Message	Correction
H27	Trigger On during Power Up Fault	This code appears if the gun was triggered ON when the interface was turned on. Turn off the interface, wait for several seconds, then turn the interface back on, making sure the spray gun is not triggered on. If the fault reoccurs, check for a bad trigger switch.
H28	EEPROM Data Version Changed	Software version has been changed. This code appears after a software update. Clear the fault. It should not reappear.
H29	System Configuration Mismatch	Main gun control and pump configurations do not match. One is venturi and the other is HDLV/COD. See F18 in the <i>Controller Configuration</i> in the <i>Operation</i> section and confirm settings.
H30	Calibration Invalid	Pump calibration values for A or C are out of range. Refer to your pump control unit manual for more information.
H31	Boost Valve Fault	Check J6 wiring diagram pump board.
H32	Electrode Airwash Fault	Check J4 wiring diagram pump board.
H33	Fluidizing Air Valve Fault	Check J5 wiring diagram pump board.
H34	Purge Air Valve Fault	Check J10 wiring diagram pump board.
H35	Vibratory Motor Relay Fault	Check J9 wiring diagram pump board.
H36	LIN BUS Communication Fault (Gun Cable)	Perform Gun Cable Continuity Tests in the spray gun manual, to check J3 connection. If an open or short is found, replace the cable. If the gun cable is okay, replace the gun display module.
H41	24V Fault	Check the DC power supply located in the pump control unit. If the voltage is less than 22 Vdc replace the power supply in the pump control unit. Turn on the pump control unit for this test.
H42	Main Board Fault (Interface)	Clear the fault and make sure kV is set to maximum 100 kV, then trigger the gun ON. If the code re-appears, check for a defective gun power supply or a gun cable. If the cable and the gun power supply are OK, replace the main board.
H43	μ A Feedback Fault	Make sure kV is set to maximum 100 kV, trigger the gun ON and check the μ A display. If the μ A display always reads $>75 \mu$ A, even when the gun is more than 3 ft from a grounded surface, check the gun cable or the gun high voltage power supply. If the μ A display reads 0 with the gun triggered on and close to a part, check the gun cable or the gun high voltage power supply. When the gun is triggered on and kV is set >0 , the μ A display should always read >0 .
H44	Robot Heartbeat Missing	System controller is configured for External Mode, and cannot detect the Prodigy PLC Gateway heartbeat. Check CAN cable. Make sure Gateway is configured properly. Refer to the Prodigy PLC Gateway manual.

Continued...

Code	Message	Correction
H45	Pinch Valve 1 Fault	Check J11-1 for loose harness connection. Check Valve 1 for loose connection.
H46	Pinch Valve 2 Fault	Check J11-2 for loose harness connection. Check Valve 2 for loose connection.
H47	Pinch Valve 5 Fault	Check J11-5 for loose harness connection. Check Valve 5 for loose connection.
H48	Pinch Valve 6 Fault	Check J11-6 for loose harness connection. Check Valve 6 for loose connection.
H49	Delivery Tube A Valve 3 Fault	Check J11-3 for loose harness connection. Check Valve 3 for loose connection.
H50	Delivery Tube B Valve 4 Fault	Check J11-4 for loose harness connection. Check Valve 4 for loose connection.
H51	Vacuum Valve 7 Fault	Check J11-7 for loose harness connection. Check Valve 7 for loose connection.
H52	Purge Valve 9 Fault	Check J12-3 for loose harness connection. Check Valve 9 for loose connection.
H53	Purge Pinch Pressure Select Valve 8 Fault	Check J12-2 for loose harness connection. Check Valve 8 for loose connection.

General Troubleshooting Chart

Problem	Possible Cause	Corrective Action
1. Uneven pattern	Blockage in spray gun	<ol style="list-style-type: none"> 1. Purge the spray gun. Remove the nozzle and electrode assembly and clean them. 2. Disconnect the powder feed hose from the spray gun and blow out the gun with an air gun. 3. Disassemble the spray gun. Remove the inlet and outlet tubes and elbow and clean them. Replace components as necessary.
	Nozzle, deflector, or electrode assembly worn, affecting pattern	<p>Remove, clean, and inspect the nozzle, deflector, and electrode assembly. Replace worn parts as necessary.</p> <p>If excessive wear or impact fusion is a problem, reduce the flow rate and pattern air flow.</p>
	Damp powder	Check the powder supply, air filters, and dryer. Replace the powder supply if contaminated.
	Low pattern air pressure	Increase the pattern air.
	Improper fluidization of powder in hopper	<p>Increase the fluidizing air pressure.</p> <p>If the problem persists, remove the powder from the hopper. Clean or replace the fluidizing plate if contaminated.</p>
	iFlow module out of calibration	Perform the <i>Re-Zero Procedure</i> in this section
2. Voids in powder pattern	Worn nozzle or deflector	Remove and inspect the nozzle or deflector. Replace worn parts.
	Plugged electrode assembly or powder path	Remove the electrode assembly and clean it. Remove powder path if necessary and clean it.
	Electrode air wash flow too high	Adjust the needle valve at the power unit to decrease the electrode air wash flow.
3. Low powder flow or powder flow surging	Assist air to high/low	Adjust assist air as needed.
	Fluidizing to high/low	Refer to vacuum measurement troubleshooting in the pump control unit manual.
	Air tubing kinked or plugged (H24 or H25)	Check pattern air tubing for kinks.
	Fluidizing air too high	If fluidizing air is set too high the ratio of powder to air will be too low.

Continued...

Problem	Possible Cause	Corrective Action
3. Low powder flow or powder flow surging (continued...)	Fluidizing air too low	If fluidizing air is set too low the pump will not operate at peak efficiency.
	Powder hose plugged	Perform color change
	Powder hose kinked	Checked for a kinked powder hose.
	Gun powder path plugged	Check powder inlet tube, elbow, and electrode support for impact fusion or debris. Clean as necessary with compressed air.
	Pick-up tube blocked	Check for debris or bag (VBF units) blocking pick-up tube.
	Vibratory box feeder disabled (VBF units only)	Set the Custom Function F01 for a box feeder (F01-01). See the <i>Controller Configuration</i> in the <i>Operation</i> section.
	Low supply air pressure	Input air must be greater than 5.86 bar (85 psi).
	Air pressure regulator set too low	Adjust the input regulator so that the pressure is greater than 5.86 bar (85 psi).
	Supply air filter plugged or filter bowl full – water contamination of flow controller	Remove bowl and drain water/dirt. Replace filter element if necessary. Clean system, replace components if necessary.
	Flow valve plugged (H24 or H25)	Refer to Proportional Valve Cleaning in the pump control unit manual.
Continued...		

Problem	Possible Cause	Corrective Action
4. Loss of wrap, poor transfer efficiency	NOTE: Before checking possible causes, check the help code on the system controller and perform the corrective actions recommended in this section.	
	Low electrostatic voltage	Increase the electrostatic voltage.
	Poor electrode connection	Remove the nozzle and electrode assembly. Clean the electrode and check for carbon tracking or damage. Check the electrode resistance. If the electrode assembly is good, remove the gun power supply and check its resistance. Refer to your spray gun product manual for instructions.
Poorly grounded parts	Check the conveyor chain, rollers, and part hangers for powder buildup. The resistance between the parts and ground must be 1 megohm or less. For best results, 500 ohms or less is recommended.	
5. No kV output from the spray gun (display shows 0 kV when gun triggered), but powder is spraying	NOTE: Before checking possible causes, check the help code on the controller and perform the corrective actions recommended in this section.	
	Damaged gun cable	Perform the <i>Gun Cable Continuity Checks</i> as described in your spray gun manual. If an open or short is found, replace the cable.
Spray gun power supply shorted	Perform the <i>Power Supply Resistance Test</i> as described in the pump control unit manual.	
6. Powder build up on the electrode tip	Insufficient electrode air wash flow	Adjust the electrode air wash needle valve on the pump control panel to increase the electrode air wash flow.
7. No kV output from the spray gun (display shows voltage or μA output), but powder is spraying	NOTE: Before checking possible causes, check the help code on the controller and perform the corrective actions recommended in this section.	
	Spray gun power supply open	Perform the <i>Power Supply Resistance Test</i> as described in your spray gun manual.
Damaged gun cable	Perform the <i>Gun Cable Continuity Test</i> as described in your spray gun manual. If an open or short is found, replace the cable.	

Continued...

Problem	Possible Cause	Corrective Action
<p>8. No kV output and no powder output</p>	<p>Malfunctioning trigger switch, display module, or cable</p>	<p>Check the Gun Triggered ON icon at the top center of the controller interface. If the icon is not lit, check for a H36 help code. Check the trigger switch connections to the display module, replace the switch if necessary.</p> <p>Perform the <i>Gun Cable Continuity Test</i> as described in your spray gun manual.</p> <p>NOTE: It may be possible to use the settings trigger as the spray trigger until repairs are made. Set Function F08 to F08-05. Refer to the <i>Controller Configuration</i> section on page 4-20 for more information.</p>
<p>9. No purge air when Purge button is pressed</p>	<p>Malfunctioning spray gun display module, gun cable, or iFlow module purge solenoid valve; no air pressure, or kinked air tubing</p>	<p>If display module does not show PU when Purge button is pressed, then module membrane switch is defective. Replace display module.</p> <p>If display module shows PU:</p> <p>Check the purge air tubing and solenoid valve on the iFlow manifold.</p> <p>Perform the <i>Gun Cable Continuity Test</i> as described in your spray gun manual.</p>
<p>10. Gun display module shows CF</p>	<p>Loose gun display connection</p>	<p>Refer to the system controller manual. Check connector J3 (cable/display module) inside the gun. Check for loose or bent pins.</p>
	<p>Defective gun cable or gun display module (H36 code)</p>	<p>Perform the <i>Gun Cable Continuity Test</i> as described in your spray gun manual. Replace cable if damaged. Replace gun display module if cables and connections are good.</p>
<p>11. Preset cannot be changed from the spray gun</p>	<p>Settings trigger disabled</p>	<p>Check Custom Function F08 and set to enabled (F08-00). Check F05 (lockout) function settings. Refer to the <i>Controller Configuration</i> in the <i>Operation</i> section for more information.</p>
	<p>No programmed preset available</p>	<p>Presets with no set values for flow rate and electrostatics are automatically skipped.</p>
	<p>Loose or defective trigger switch</p>	<p>Check for a loose trigger switch connection. The trigger switch is plugged into the gun display module.</p>

Continued...

Problem	Possible Cause	Corrective Action
12. Powder flow cannot be changed from the spray gun	Settings trigger disabled	Check Custom Function F08 and set to enabled (F08-00). Check F05 (lockout) function settings. Refer to the <i>Controller Configuration</i> section on page 4-20 for more information.
	Loose or defective trigger switch	Refer to spray gun manual. Check for a loose trigger switch connection. The trigger switch is plugged into the gun display module.
13. VBF doesn't turn ON and Off with the gun trigger	VBF turned off	Set the Custom Function F01 for a box feeder (F01-01). Refer to the <i>Controller Configuration</i> in the <i>Operation</i> section for more information. Check for loose cable on pump control unit.
14. Fluidizing Air is on all the time even when the gun is triggered Off	System is setup for a hopper	Set the Custom Function F01 for a box feeder (F01-01). Refer to the <i>Controller Configuration</i> in the <i>Operation</i> section for more information.
15. No kV when gun is triggered ON, powder flow OK	kV set to zero	Set kV to a non-zero value.
	Check for Help Codes and follow the procedures	
16. No powder flow when gun is triggered ON, kV OK	Powder flow set to zero	Change powder flow to a non-zero number.
	Input air turned OFF	Check the gauge on the filter regulator and make sure the air is turned ON.
	Check for Help Codes and follow the procedures	

Re-Zero Procedure

Perform this procedure if the system controller interface indicates air flow when the spray gun is not triggered on, or if a Flow Air or Pattern Air Flow High Help code (H25 or H26) appears.

Before performing a re-zero procedure:

- Make sure the air pressure being supplied to the system is higher than the minimum 5.86 bar (85 psi).
 - Make sure no air is leaking through the module output fittings or from around the solenoid valves or proportional valves. Re-zeroing modules with leaks will result in additional errors.
1. At the pump control panel, disconnect the 6 mm pattern air tubing and install 8 mm plugs in the output fittings.
 2. Press the **Nordson** button for 5 seconds to display the controller functions. F00-00 is displayed.
 3. Rotate the knob until F10-00 is displayed.
 4. Press the **Enter** button, then rotate the knob to display F10-01.
 5. Press the **Enter** button. The system controller will re-zero the flow and pattern air and reset the function display to F10-00.
 6. Remove the plugs from the pattern air output fittings and reconnect the air tubing.

Conveyance Air Flow and Verification for HD

NOTE: Perform a color change and verify that all powder is removed from the pump before starting this procedure.

1. Use the flow verification tool (1039881) and connect to the delivery port of the pump with 10 ft of 8 mm tubing.
2. Set the delivery to 100% and set assist air to 00% and trigger the pump ON. The monometer should read 4.0–5.0 psi (0.2–0.3 bar).
3. Increase the assist air to +50% and trigger the pump ON. The monometer should read 7.0–8.0 psi (0.5–0.6 bar).
4. Decrease the assist air to –50% and trigger the pump ON. The monometer should read 1.0–3.0 psi (0.1–0.2 bar).

Controller Interconnect Cable Test

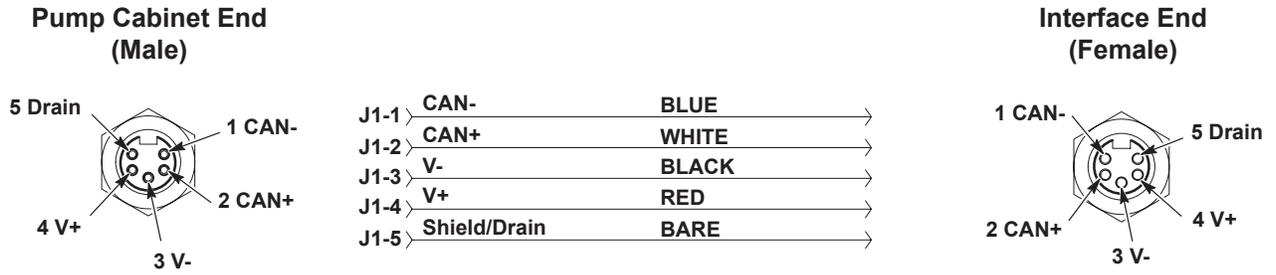


Figure 5-2 Controller Interconnect Cable Wiring

Wiring Diagram

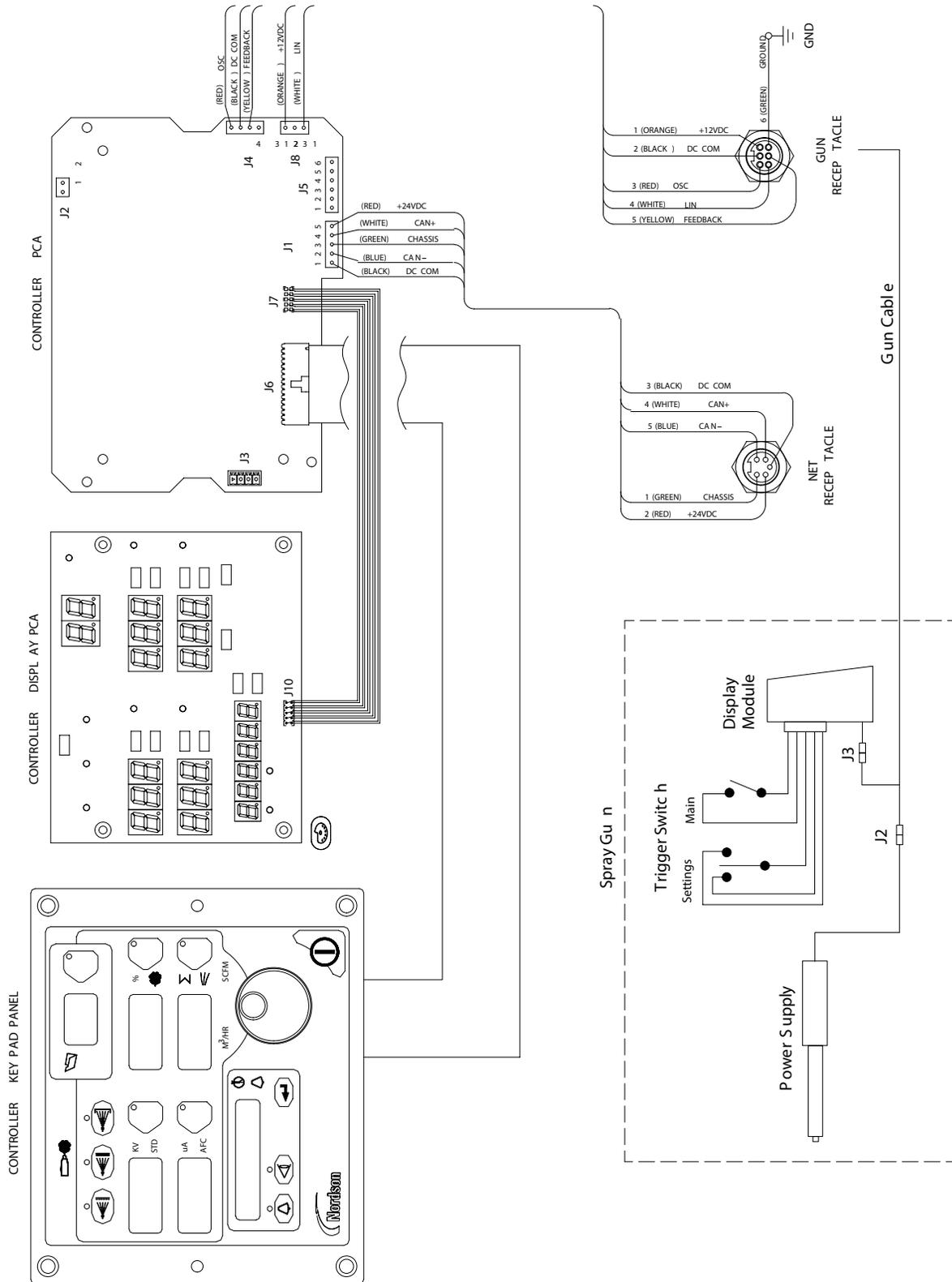


Figure 5-3 Controller Interface Wiring Diagram

Section 6

Repair



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

Interface Module Repair



WARNING: Shut off the controller and disconnect the power cord or disconnect and lock out power at a breaker or disconnect ahead of the controller before opening the controller enclosures. Failure to observe this warning could result in a severe electrical shock and personal injury.



CAUTION: Electrostatic sensitive device. To avoid damaging the controller circuit boards, wear a grounding wrist strap and use proper grounding techniques when making repairs.

See Figure 6-1 for a view of the interface module assembly and repair parts.

Refer to *Troubleshooting* section for the interface electrical schematic and harness connections. Refer to *Parts* section for repair kits.

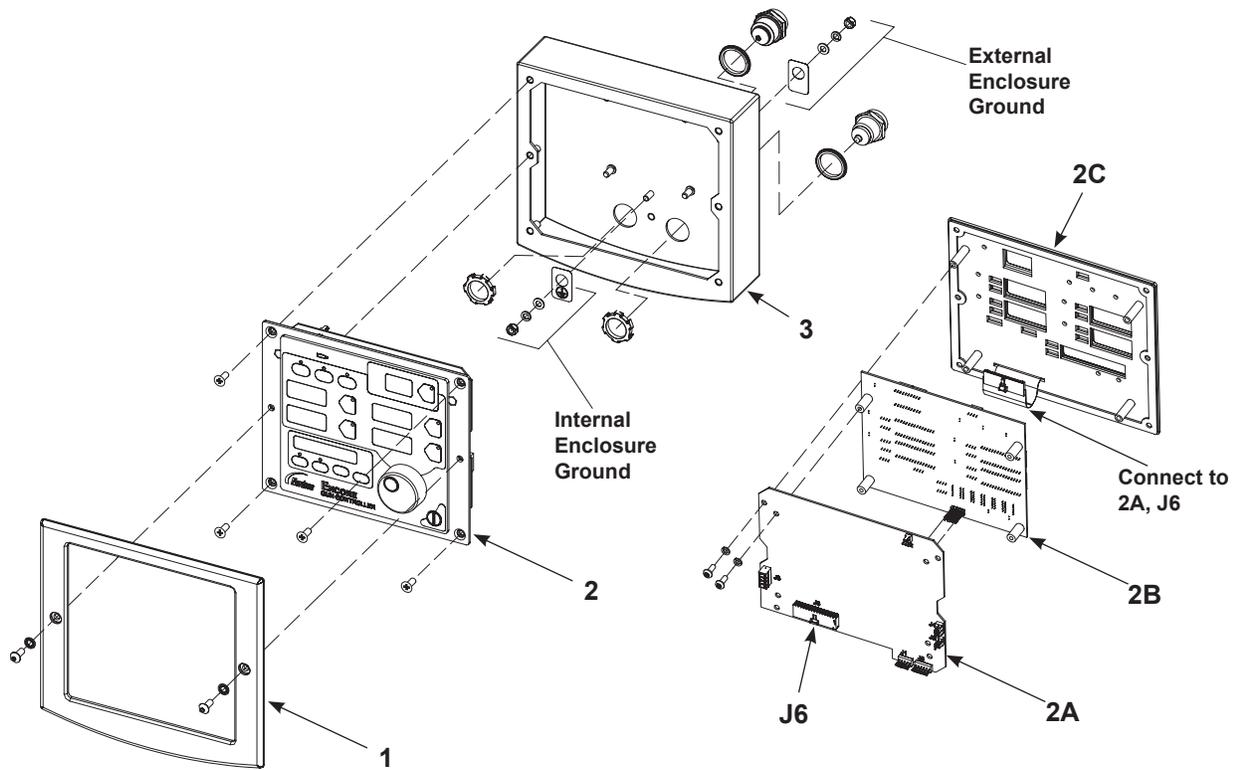


Figure 6-1 Interface Module Assembly

- | | | |
|------------------------|------------------------|------------------|
| 1. Bezel | 2A. Main Control Board | 2C. Keypad Panel |
| 2. Keypad/PCB Assembly | 2B. Main Display Board | 3. Enclosure |

Section 7

Parts

Introduction

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

This section covers components, parts and options for the Encore HD and XT system controller.

Refer to the following manuals for additional information and optional equipment.

Encore HD Mobile Powder Spray System: 1605707

Encore HD Manual System Spray Gun: 1604869

Encore HD Pump Control Unit and Power Supply: 1606783

Encore XT Manual Powder Spray Systems: 1603227

ColorMax 2 Powder Coating System w/ Encore Feed Center: 1605397

Prodigy to Encore HD Upgrade Kit Instruction Sheet: 1604780

Encore HD Manual System with Pump Cabinet: 1612632

Encore HD Color-on-Demand System: 1612313

Encore HD Pump: 1605078

Some system manuals are not listed. All manuals can be downloaded from:

<http://emanuals.nordson.com/finishing/>

(click on **Powder-US**, then navigate to appropriate manual)

Controller Parts

Controller Exploded View

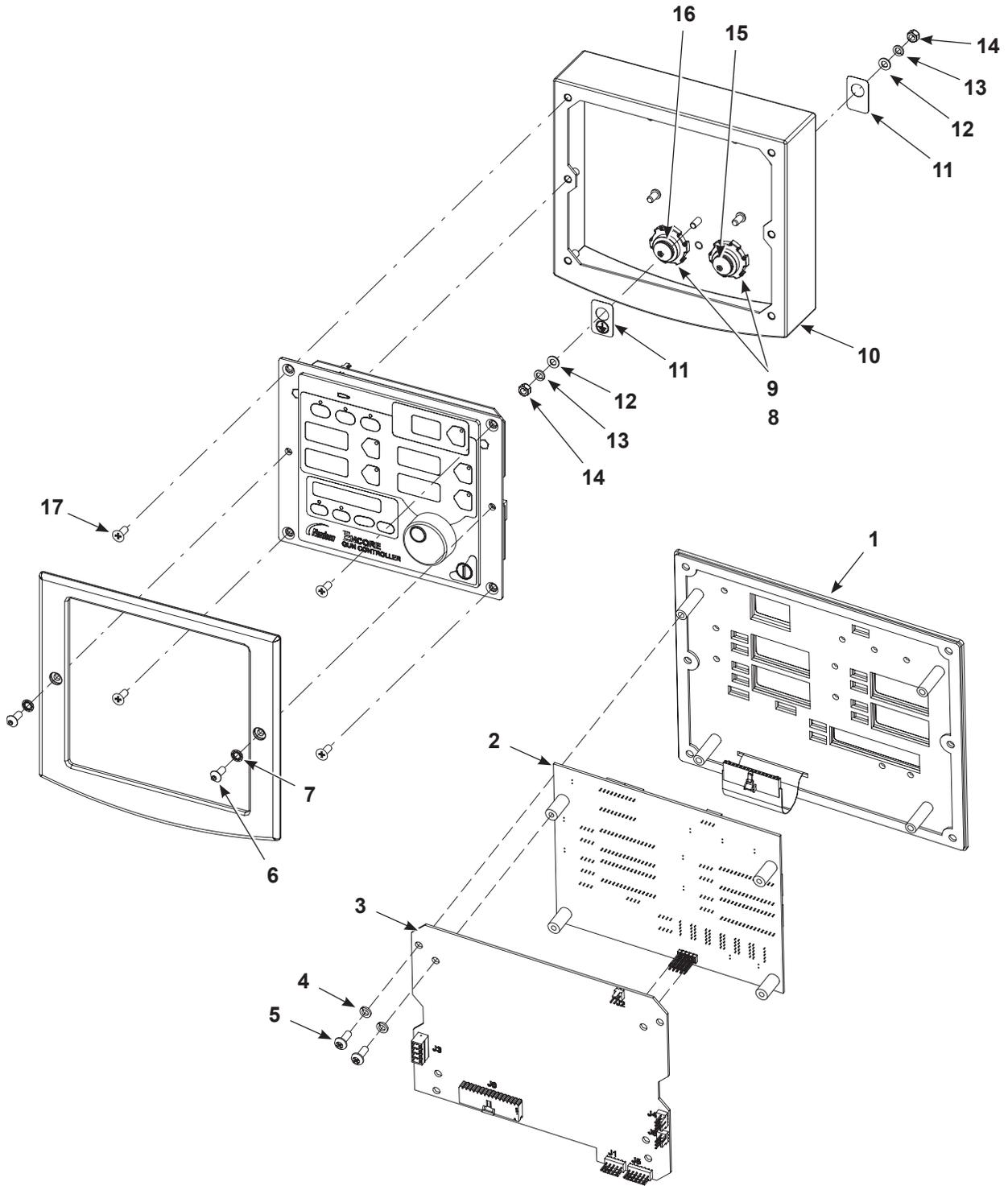


Figure 7-1 Controller Parts

Controller Parts List

Refer to Figure 7-1.

Item	Part	Description	Quantity	Note
–	1604125	CONTROL UNIT, interface, Encore HD/XT	1	
1	1604855	• PANEL, keypad, Encore HD controller	1	
2	1085084	• PCA, main controller display, Encore HD	1	B
3	1601341	• PCA, main control, Encore HD	1	B
4	983403	• WASHER, lock, split, M4, steel, zinc	8	
5	982308	• SCREW, pan head, recessed, M4 x 10, zinc	8	
6	982636	• SCREW, button, socket, M5 x 12, zinc	2	
7	983127	• WASHER, lock, internal, M5, zinc	2	
8	984526	• NUT, lock, 1/2 in. conduit	2	
9	939122	• SEAL, conduit fitting, 1/2 in., blue	2	
10	1082734	• ENCLOSURE, controller interface, Encore HD	1	
11	240674	• TAG, ground	2	
12	983021	• WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
13	983401	• WASHER, lock, split, M5, steel, zinc	2	
14	984702	• NUT, hex, m5, brass	2	
15	1082759	• RECEPTACLE, net, controller interface, Encore HD	1	A
16	1082709	• RECEPTACLE, gun, Encore HD	1	A
17	982286	• SCREW, flat, slotted, M5 x 10, zinc	4	

NOTE: A. Receptacles include harnesses.

B. Items 2 and 3 are sold together as kit 1604025.

Rail Mount Exploded View

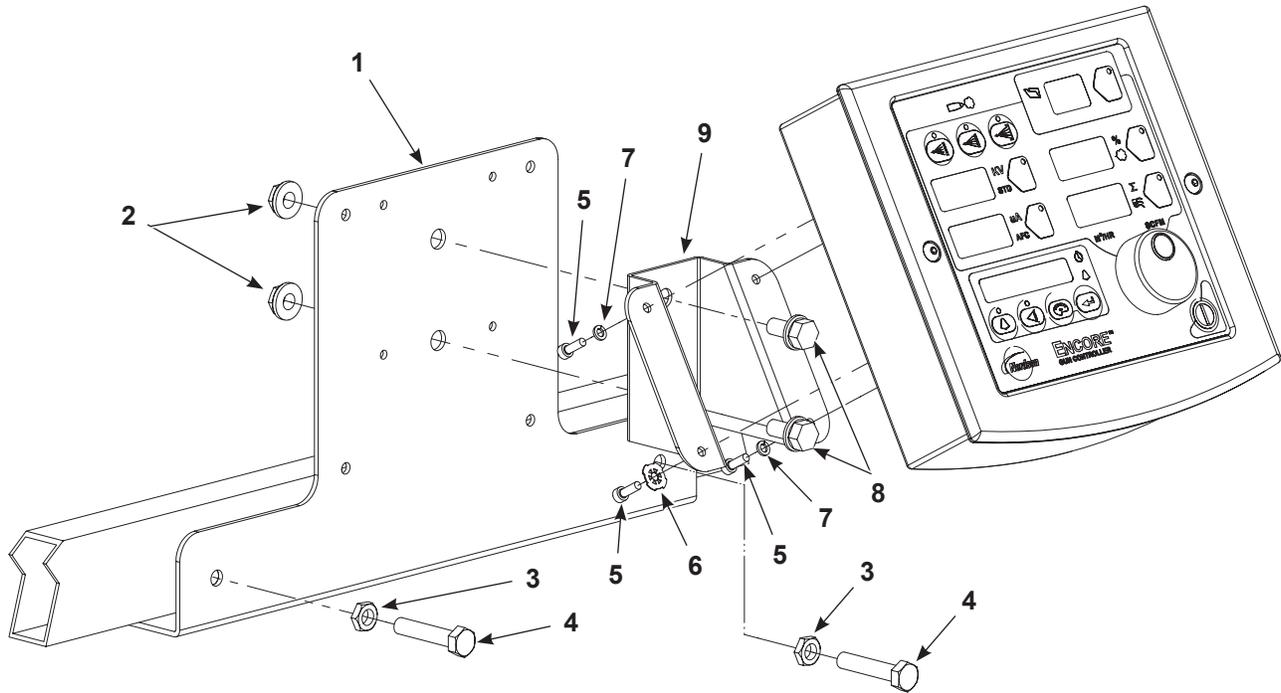


Figure 7-2 Rail Mount System Parts

Rail Mount Parts List

Refer to Figure 7-2.

Item	Part	Description	Quantity	Note
1	1604881	BRACKET, controller rail mount	1	
2	336281	NUT, hex, serrated, 0.5/16 – 18	2	
3	1091006	NUT, hex, flanged, serrated, M8	2	
4	1103115	SCREW, hex, serrated, M8 x 16mm, zinc	2	
5	982448	SCREW, skt, cap, M4 x 12mm	4	
6	1084121	WASHER, lock, dished #8	1	
7	983403	WASHER, lock, M4	3	
8	981346	SCREW, hex, 0.5/16 – 8 x 2.500	2	
9	1082732	BRACKET, universal mount	1	

EU DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

Description: These are electrostatic, powder spray systems, including applicator, control cables and associated controllers. The Encore XT Manual system uses venturi style pump technology for supplying powder to the spray gun. While the Encore HD Manual system uses high density pump technology for supplying powder to the spray gun.

Applicable Directives:

2006/42/EC - Machinery Directive

2014/30/EU - EMC Directive

2014/34/EU - ATEX Directive

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) FM 7260 (2018) EN50050-2 (2013)

EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2016) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C

- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)

- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)

- Ex II 2 D / 2mJ = (Encore Auto Applicator and Encore Select HD Robot Applicator)

Certificates:

- FM14ATEX0051X = Encore XT/HD Manual Appl. And Encore Select HD Robot Appl. (Dublin, Ireland)

- FM14ATEX0052X = Controls (Dublin, Ireland)

- FM11ATEX0056X = Encore Automatic Applicator (Dublin, Ireland)

ATEX Surveillance

- 0598 SGS Fimko Oy (Helsinki, Finland)



Date: 20NOV20

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UK DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

Description: These are electrostatic, powder spray systems, including applicator, control cables and associated controllers. The Encore XT Manual system uses venturi style pump technology for supplying powder to the spray gun. While the Encore HD Manual system uses high density pump technology for supplying powder to the spray gun.

Applicable UK Regulations:

Supply Machinery Safety 2008

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

Electromagnetic Compatibility Regulation 2016

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) FM 7260 (2018) EN50050-2 (2013)
EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2009) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C
- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)
- Ex II 2 D / 2mJ = (Encore Select HD Robot Applicator)

Certificates:

- FM21UKEX0129X = Encore XT/HD Manual App & Select HD Robot Appl. (Maidenhead, Berkshire, UK)
- FM21UKEX0130X = Controls (Maidenhead, Berkshire, UK)
- FM22UKEX0006X = Encore Automatic Applicator (Maidenhead, Berkshire, UK)

EX Quality System Certificate

- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)



Date: 22Sept21

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England



Encore[®] HD Manual Powder Spray Gun

Customer Product Manual

Document Number 1604869-19

Issued 12/24

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

This document is subject to change without notice.
Check <http://emanuals.nordson.com> for the latest version.



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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>.

<http://www.nordson.com/en/global-directory>

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Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding



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

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

Disposal

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

Description

See Figure 1. This manual covers the Encore® HD manual powder spray gun with 6 meter power cable and tubing.

The Encore HD manual powder spray gun should be used with the Encore HD manual controller, which provides electrostatic voltage control, electrode air-wash air, and powder pump air. It is compatible with the following systems:

- Encore HD Mobile Systems
- Encore HD Manual Wall or Rail Mount Systems
- Encore Single and Dual Stand Alone
- Encore Color-on-Demand® Systems
- ColorMax® Powder Coating Systems
- Prodigy® Dual Pump HDLV® Systems



Figure 1 Encore HD Manual Powder Spray Gun

Flat spray nozzles with 3-mm and 4-mm slots are shipped with the gun, as well as a conical nozzle kit that contains a conical nozzle, a 26-mm deflector and a conical electrode holder. Use the conical nozzle kit to convert from flat spray to conical spray applications.

Optional equipment is available for the Encore HD manual spray gun including the following:

- Additional flat, conical and cross-cut nozzles options
- 6-meter cable extension
- 150 and 300-mm lance extensions
- Pattern adjuster for use with lance extensions
- Ion collector

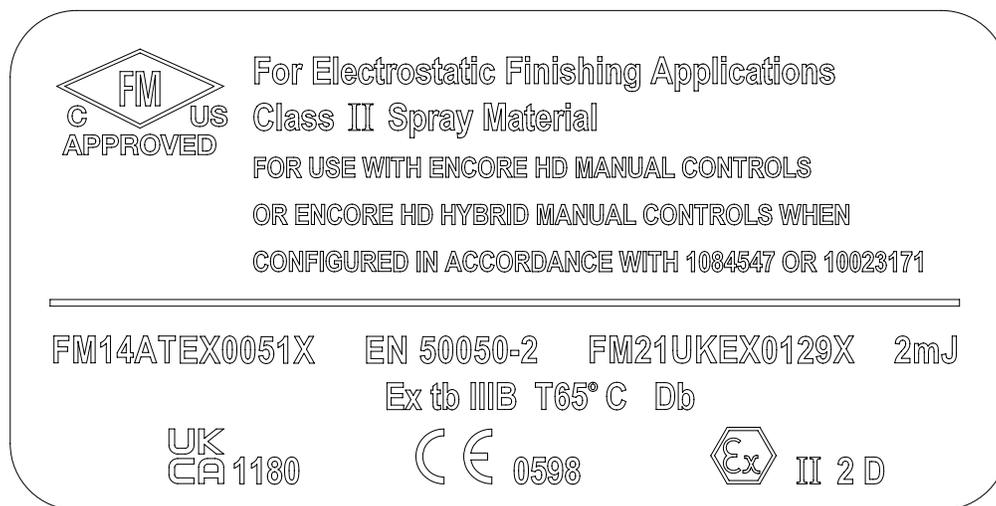
See *Spray Gun Operation* section beginning on page 36 for information on additional options.

Specifications

Model: Encore Applicator	
Input Rating:	+/- 19 VAC, 1 A
Output Rating:	100 KV, 100 μ A
Input Air:	6.0–6.9 bar (87–100 psi), <5 μ particulates, dew point <10 °C (50 °F)
Max Relative Humidity:	95% non-Condensing
Ambient Temperature Rating:	+15 to +40 °C (59–104 °F)
Hazardous Location Rating for Applicator:	Zone 21 or Class II, Division 1
Dust Ingress Protection:	IP6X

Equipment Labels

Applicator Certification Label



1603105-04

Setup

Spray Gun Connections



WARNING: This diagram does not show system grounds. All conductive equipment in the spray area must be connected to a true earth ground.

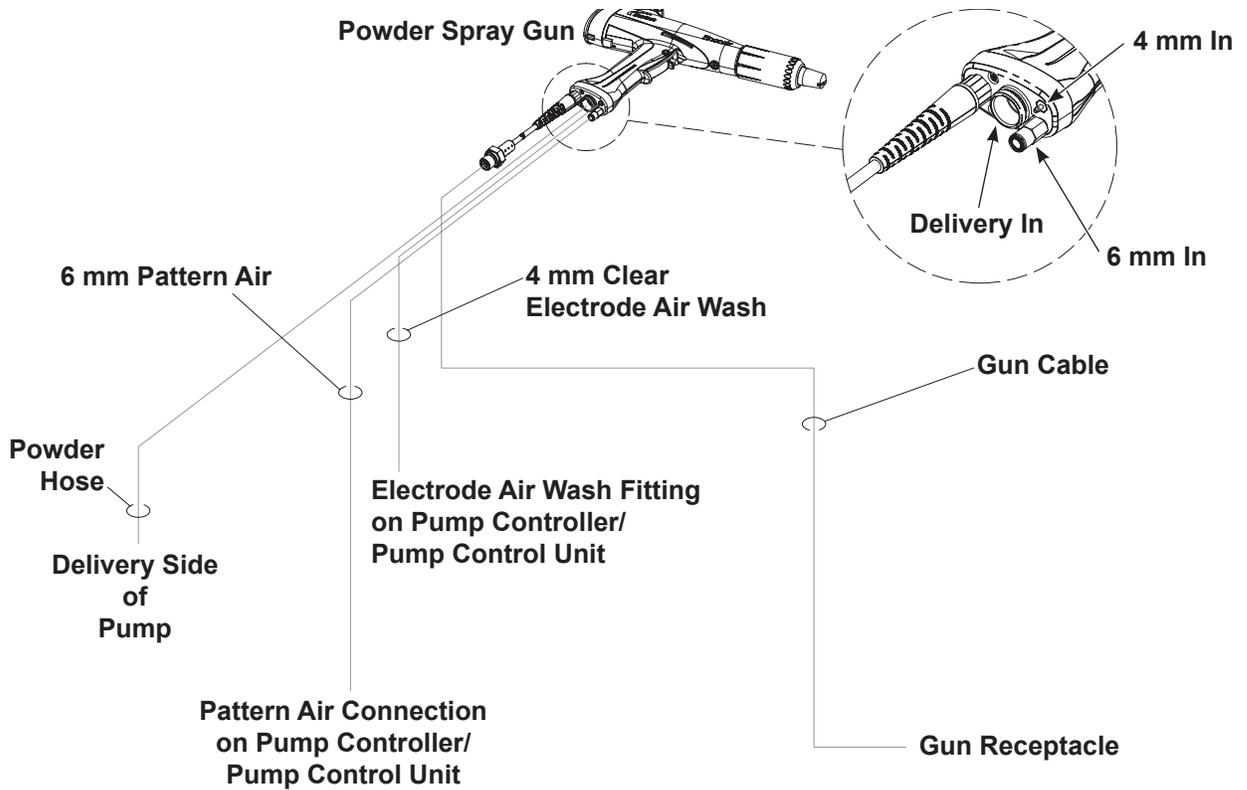


Figure 2 Spray Gun Connections

Spray Gun Installation

See Figure 2 and Figure 3 for gun connection illustrations.

1. Connect the 6-mm pattern air tubing to the quick-disconnect fitting (1) in the bottom of the gun handle. Connect the other end to the pattern air tubing on the fitting located on the pump controller/pump control unit.
2. Connect the 4-mm clear electrode air wash tubing to the barbed fitting (2) in the bottom of the gun handle. Connect the other end to the electrode air wash tubing on the electrode air wash fitting on pump controller/pump control unit.
3. Seat the O-rings (4) onto the barbed hose adapter (3). Push the barbed end of the hose adapter into the end of the powder hose, then plug the adapter into the powder inlet tube (5) in the bottom of the spray gun handle.

NOTE: Arrow on powder hose should point toward the gun.

4. Connect the gun cable (6) to the gun receptacle.

NOTE: The gun receptacle location is dependent on type of system. Refer to system documentation for location.

5. Use the sections of black spiral wrap supplied with the system to bundle together the spray gun cable, all air tubing, and powder hose. Take care not to smash, squish, kink, bind, or deform the powder tubing.

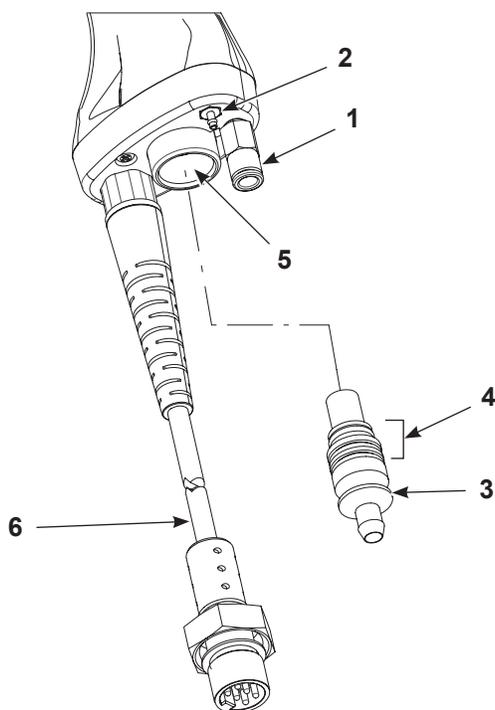


Figure 3 Spray Gun Connections

- | | | |
|---------------------|------------------------|----------------------|
| 1. Quick disconnect | 3. Barbed hose adapter | 5. Powder inlet tube |
| 2. Barbed fitting | 4. O-rings | 6. Gun cable |

Operation



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



WARNING: This equipment can be dangerous unless it is used accordance with the rules laid down in this manual.



WARNING: All electrically conductive equipment in the spray area must be grounded. Ungrounded or poorly grounded equipment can store an electrostatic charge which can give personnel a severe shock or arc and cause a fire or explosion.

European Union, EX, Special Conditions for Safe Use

1. The Encore HD manual applicator shall only be used with the associated Encore XT/HD interface control unit and Encore HD controller power unit, or the associated Encore HD Manual and Mobile Systems, over the ambient temperature range of +15°C to +40°C.
2. Equipment may only be used in areas of low impact risk.
3. Caution should be taken when cleaning external painted and non-metallic surfaces of the controller, interface, applicator, and all accessories. There is a potential for static electricity build up on these components. Follow the manufacturer's instructions to avoid possible electrostatic charging hazards. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in PD CLC/TR 60079-32-1 and IEC TS 60079-32-1.

System Operation

This manual includes information on the Encore HD Manual Powder Spray Gun. Refer to appropriate system, controller and control panel manuals for information on system components.

Spray Gun Operation

The spray gun interface and settings trigger allow you to change the preset or the powder flow settings, or purge the gun as needed, without using the controller interface.

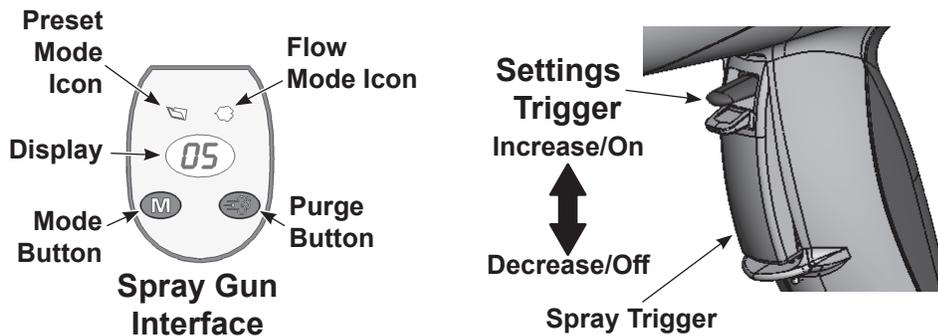


Figure 4 Gun Controls

Changing Presets with the Settings Trigger

1. See Figure 4. Release the spray trigger. Presets cannot be changed while the gun is triggered on.
2. Press and hold the Mode button until the Preset Mode icon is lit. The display shows the current preset number.
3. Push the settings trigger up or down until the desired preset number is displayed on the spray gun interface.

NOTE: Unprogrammed preset numbers (presets where all setpoints are zero) are automatically skipped. Refer to your controller manual for preset programming instructions.

4. Press the spray trigger. The system sprays with the new preset. See controller configuration F08 for more settings.

Changing Powder Flow with the Settings Trigger

1. See Figure 4. Press and hold the **Mode** button until the **Flow Mode** icon is lit.
2. Push the settings trigger up or down to change the flow setpoint. This can be done without releasing the spray trigger.

The powder flow immediately changes. The new flow setpoint is displayed on both the spray gun interface and the controller interface.

Purging the Spray Gun

1. See Figure 4. Point the gun into the booth and release the spray trigger.
2. Press and hold the **Purge** button. The purge will continue as long as you hold the **Purge** button.

NOTE: If the settings trigger is configured for Purge, then pressing up or down on the settings trigger purges the gun. Refer to Controller Configuration in your controller manual for setting trigger configuration.

For optimal performance, purge the gun periodically to keep the powder path inside the spray gun clean. The purge length and frequency required will depend on the application.

NOTE: The purge air only cleans the spray gun powder path. Refer to the system controller manual for additional HDLV purge information.

Electrode Air Wash Operation

Electrode air wash air continually washes the spray gun electrode to prevent powder from collecting on it. Electrode air wash air turns on and off automatically when the spray gun is triggered on and off.

Refer to the pump control unit manual for instructions on adjusting electrode air wash flow.

Daily Operation



WARNING: All conductive equipment in the spray area must be connected to a true earth ground. Failure to observe this warning may result in a severe shock.

Initial Startup

With the fluidizing and powder flow set to zero, and no parts in front of the gun, trigger the gun and record the μA output. Monitor the μA output daily, under the same conditions. A significant increase in μA output indicates a probable short in the gun resistor. A significant decrease indicates a resistor or voltage multiplier requiring service.

Startup

1. Turn on the spray booth exhaust fan.
2. Turn on the system air supply.
3. Make sure the spray gun is not triggered, then turn on controller power. The displays and icons on the controller interface and gun interface should light.

Standby Button

Use the **Standby** button on the Encore HD controller to shut off the interface and disable the spray gun during breaks in production. When the controller interface is off the spray gun cannot be triggered, and the spray gun interface is disabled.

To turn off controller power, shut system power off at power unit or control panel.

Changing Flat Spray Nozzles



WARNING: Release the spray gun trigger, turn off the interface, and ground the electrode before performing this procedure. Failure to observe this warning could result in a severe electrical shock.

NOTE: The tapered electrode holder of the electrode assembly has been designed for optimized cleaning during color changes on systems using flat spray nozzles. This tapered electrode holder will not accept conical deflectors.

1. Purge the spray gun and turn off the interface in order to prevent accidentally triggering the gun on.
2. See Figure 5. Unscrew the nozzle nut counterclockwise.
3. Pull the flat spray nozzle off the electrode assembly.

NOTE: Re-install the electrode if it comes out of the powder outlet tube.

4. See Figure 6. Install a new nozzle on the electrode assembly. The nozzle is keyed to the electrode assembly. Do not bend the antenna wire.

5. Screw the nozzle nut onto the gun body clockwise until finger-tight.

NOTE: To clean nozzles, use the *Recommended Cleaning Procedure for Powder Contact Parts* on page 16.

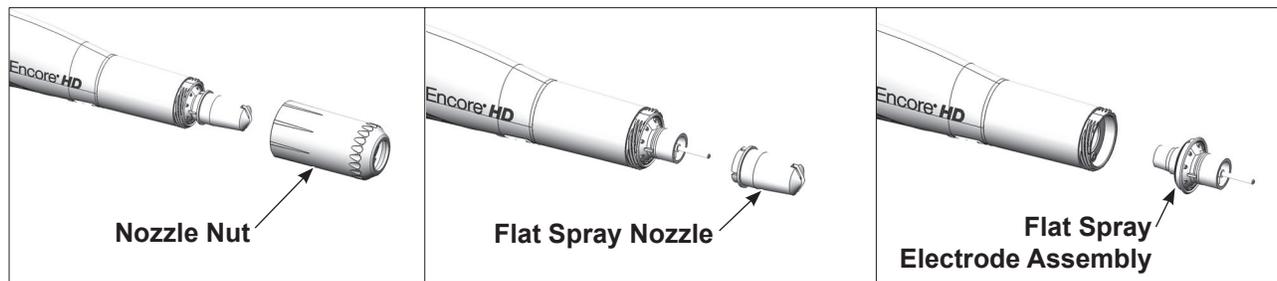


Figure 5 Changing a Flat Spray Nozzle



Figure 6 Correct Nozzle Orientation

Converting from Flat Spray Nozzles to Conical Nozzles



WARNING: Release the spray gun trigger, turn off the interface, and ground the electrode before performing this procedure. Failure to observe this warning could result in a severe electrical shock.

NOTE: The tapered flat spray electrode holder shipped with the gun will need to be changed in order to accept the conical nozzles and deflectors. The conical nozzle kit shipped with the gun is required for this conversion.

1. Purge the spray gun and turn off the interface in order to prevent accidentally triggering the gun on.
2. Convert the electrode holder and the nozzle. See Figure 7.
 - a. Unscrew the nozzle nut counterclockwise and remove it. Pull the flat spray nozzle off the electrode assembly.
 - b. Remove the tapered flat spray electrode holder. Do not bend the antenna wire.
 - c. Install the non-tapered conical spray electrode holder over the electrode.
 - d. Install the conical spray nozzle on the electrode assembly. The nozzle is keyed to the electrode assembly. Screw the nozzle nut onto the gun body clockwise until finger-tight. Install a deflector on the electrode assembly. Do not bend the electrode wire.

NOTE: To clean nozzles, use the *Recommended Cleaning Procedure for Powder Contact Parts* on page 16.

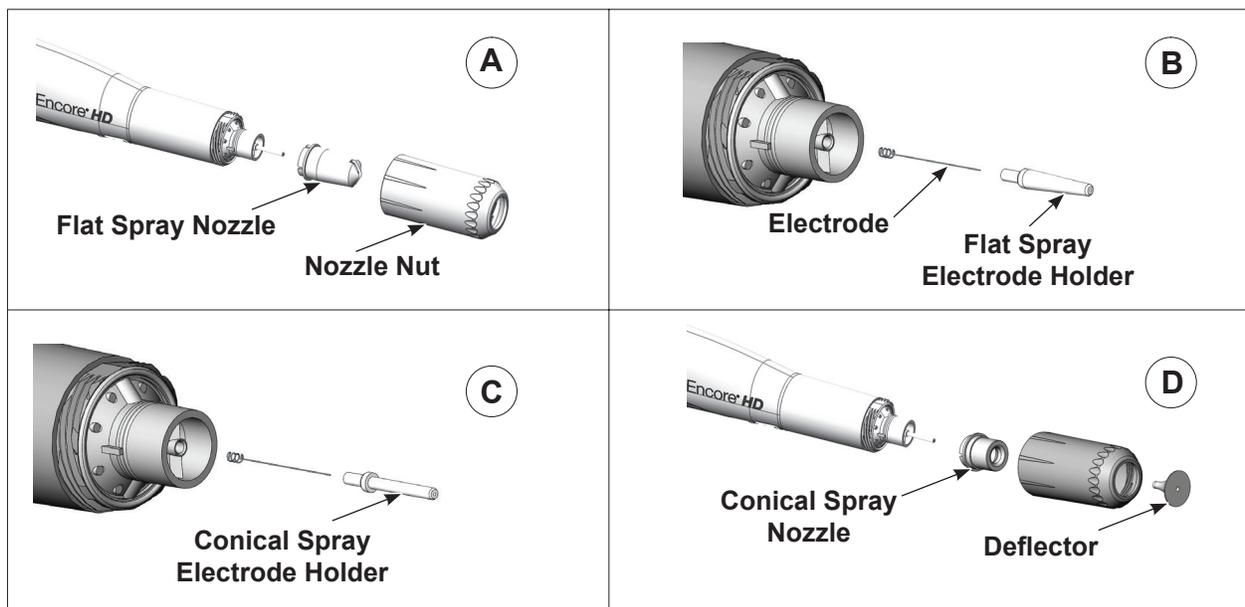


Figure 7 Converting from a Flat Spray Nozzle to a Conical Spray Nozzle

Changing Deflectors or Conical Nozzles



WARNING: Release the spray gun trigger, turn off the interface, and ground the electrode before performing this procedure. Failure to observe this warning could result in a severe electrical shock.

NOTE: The tapered flat spray electrode holder shipped with the gun will need to be changed in order to accept the conical nozzles and deflectors. The conical nozzle kit shipped with the gun is required for this conversion. See page 13 for conversion instructions.

1. Purge the spray gun and turn off the interface to prevent accidentally triggering the gun on.
2. Gently pull the deflector off the electrode holder. If only changing the deflector, install the new one on the electrode holder, being careful not to bend the electrode wire.
3. To change the entire nozzle, unscrew the nozzle nut counterclockwise.
4. Pull the conical nozzle off the electrode assembly.

NOTE: If the electrode assembly comes out of the powder outlet tube, re-install it.

5. Install a new conical nozzle on the electrode assembly. The nozzle is keyed to the electrode assembly.
6. Screw the nozzle nut onto the gun body clockwise until finger-tight.
7. Install a new deflector on the electrode assembly. Do not bend the electrode wire.

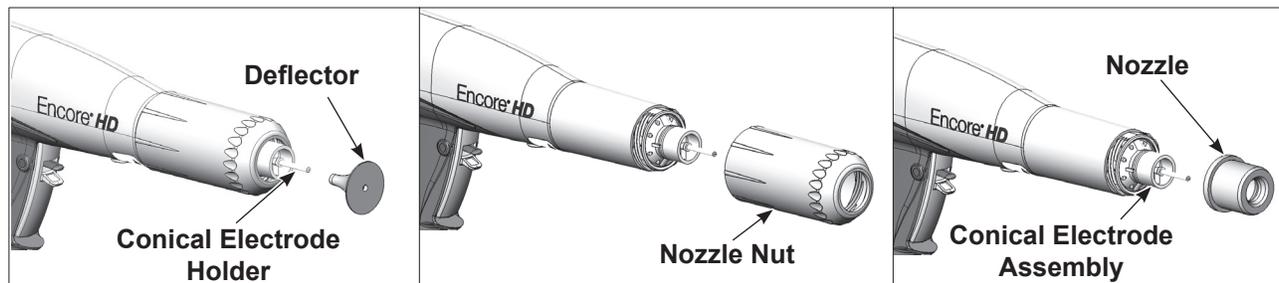


Figure 8 Changing a Conical Nozzle

Installing the Optional Pattern Adjuster Kit

An optional pattern adjuster kit with integral conical nozzle can be installed in place of a standard flat spray or conical nozzle.

NOTE: Deflectors are not included with the pattern adjuster kit; they must be ordered separately. The 38-mm deflector cannot be used with the kit.

1. Remove the deflector, nozzle nut, and conical nozzle, or the nozzle nut and flat spray nozzle.
2. Blow off the electrode assembly.
3. Install the integral conical nozzle onto the electrode assembly and screw the nozzle nut clockwise until finger-tight
4. Install a 16, 19, or 26-mm deflector onto the electrode holder.

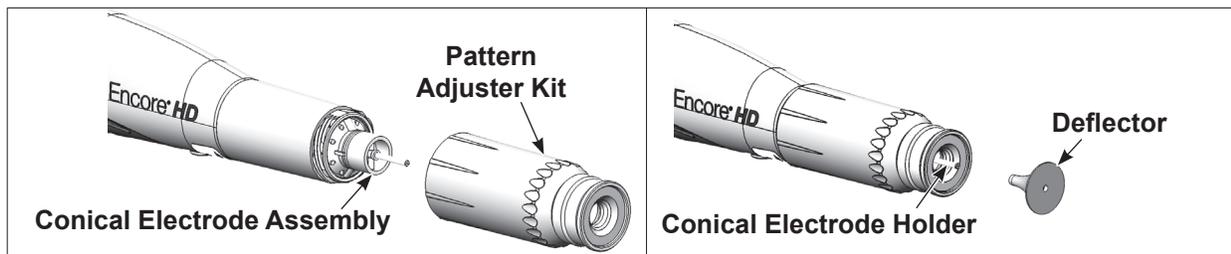


Figure 9 Pattern Adjuster Kit Installation

Shutdown

1. Purge the spray gun by pressing the Purge button until no more powder is blown from the gun.
2. Press the Standby button to turn off the spray gun and interface.
3. Turn off the system air supply and relieve the system air pressure.
4. If shutting down for the night or a longer period of time, shut off the system power.

Maintenance



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



WARNING: Before performing the following tasks, turn off the controller and disconnect system power. Relieve system air pressure and disconnect the system from its input air supply. Failure to observe this warning may result in personal injury.

Recommended Cleaning Procedure for Powder Contact Parts

Nordson Corporation recommends using an ultrasonic cleaning machine and Oakite® BetaSolv emulsion cleaner to clean spray gun nozzles and powder path parts.

NOTE: Do not immerse the electrode assembly in solvent. It cannot be disassembled; cleaning solution and rinse water will remain inside the assembly.

1. Fill an ultrasonic cleaner with BetaSolv or an equivalent emulsion cleaning solution at room temperature. Do not heat the cleaning solution.
2. Remove the parts to be cleaned from the gun. Remove the O-rings. Blow off the parts with low-pressure compressed air.

NOTE: Do not allow the O-rings to come in contact with the cleaning solution.

3. Place the parts in the ultrasonic cleaner and run the cleaner until all parts are clean and free of impact fusion.
4. Rinse all parts in clean water and dry before re-assembling the spray gun. Inspect the O-rings and replace any that are damaged.

NOTE: Do not use sharp or hard tools that will scratch or gouge the smooth surfaces of powder contact parts. Scratches will cause impact fusion.

Maintenance Procedures

Component	Procedure
Spray Gun (Daily)	<ol style="list-style-type: none"> 1. Point the spray gun into the booth. Remove the suction line from the hopper or box feeder and point them in the booth, as well. Push the <i>Color Change</i> button on the system controller and purge the powder delivery system. 2. Remove the nozzle and electrode assembly and clean them with low pressure compressed air and clean cloths. Check them for wear, and replace them if necessary. 3. Clean the gun face surface (where the electrode assembly attaches) with low pressure compressed air and a clean cloth. 4. Blow off the gun and wipe it down with a clean cloth.
System Grounds	<p>Daily: Make sure the system is securely connected to a true earth ground before spraying powder.</p> <p>Periodically: Check all system ground connections.</p>

Repair



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

Spray Gun Repair

Item numbers in this section match the item numbers in the parts lists.

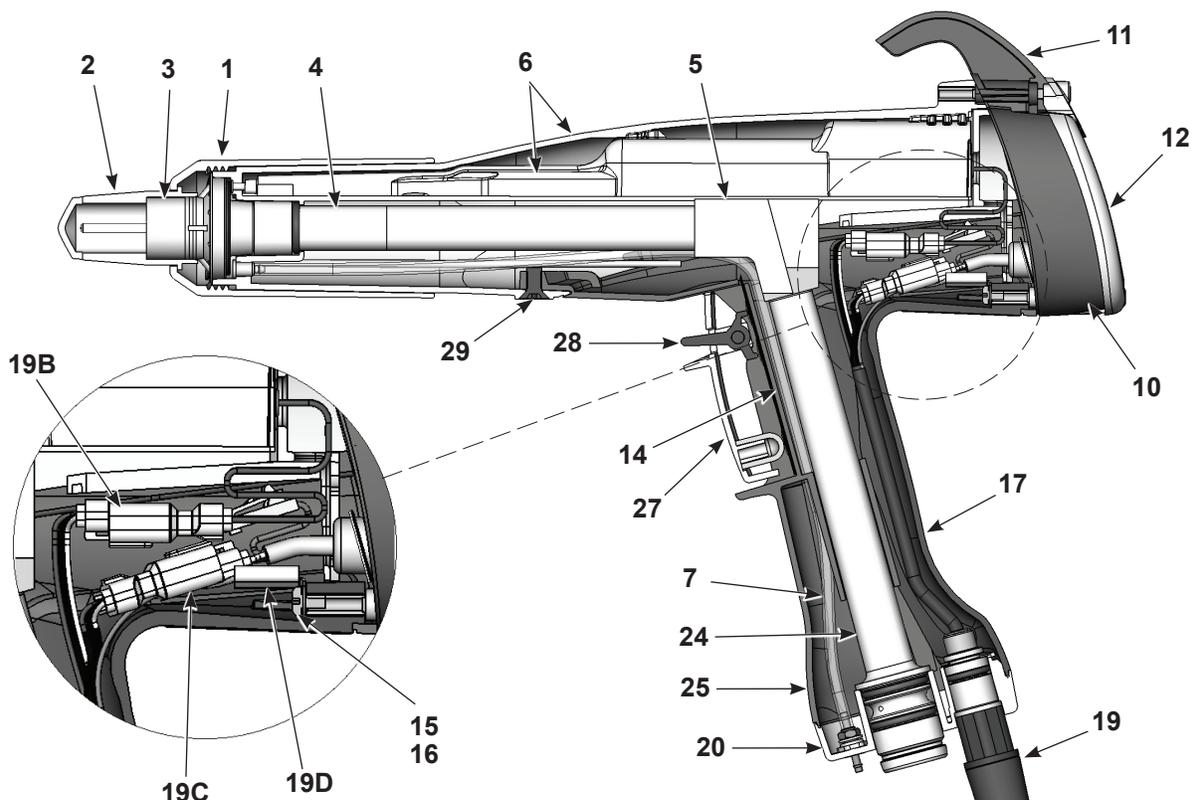


Figure 10 Section View of Spray Gun (item numbers in this section match item numbers in parts list)

- | | | |
|-----------------------------------|----------------------------------|---------------------------------|
| 1. Nozzle nut | 11. Hook | 19C. Display connector (J3) |
| 2. Nozzle, flat spray | 12. Bezel | 19D. Ground terminal (J1) |
| 3. Electrode assembly, flat spray | 14. Trigger switch | 20. Handle base |
| 4. Outlet tube kit | 15. Lock washer | 24. Inlet tube/hose adapter kit |
| 5. Elbow | 16. Ground screw | 25. Handle |
| 6. Power supply/body kit | 17. Ground pad | 27. Spray trigger |
| 7. Filter assembly | 19. Cable assembly | 28. Setting/purge trigger |
| 10. Display module | 19B. Power supply connector (J2) | 29. Screw (handle to gun body) |

NOTE: Ground terminal (19D) must always be connected to the ground screw (16).

Display Module Replacement

Display Module Removal

1. See Figure 10 and Figure 11. Unscrew the top and bottom screws (13) holding the bezel (12), hook (11) and display module (10) onto the gun body.
2. Remove the bezel and slide the hook off the display module.
3. Carefully pull the display module away from the gun.
4. Insert a small screwdriver into the recess in the J3 gun cable/display module connectors to release the catch and disconnect them.
5. Carefully remove the adhesive support pad and the trigger switch header from the display module.
6. If the adhesive support pad remains stuck to the trigger switch header, carefully peel the pad off. Both the display module kit and trigger switch kit include new adhesive support pads.

Display Module Installation

1. On the display module (10), carefully clean the trigger switch header mounting surface and surrounding area with isopropyl alcohol. Allow the surface to dry completely before proceeding.
2. If you are installing a new trigger switch, remove the two liners from the connector side of the trigger switch header as shown in Figure 11.
3. Align the trigger switch header with the display module receptacle and push on the header to connect it. Apply even pressure on the header to seal it tightly against the display module.
4. Remove the liner from the new adhesive support pad and install it over the trigger switch header. Apply even pressure on the support pad to seal it to the display module.
5. Connect the J3 display module and cable connector together. The ground wire connector (A) is not used for this version of the gun.
6. Gently fold the trigger switch ribbon cable and display module cable into the gun, and install the display module onto the gun.
7. Slide the hook (11) onto the display module, then install the bezel (12).
8. Install and tighten the screws (13).

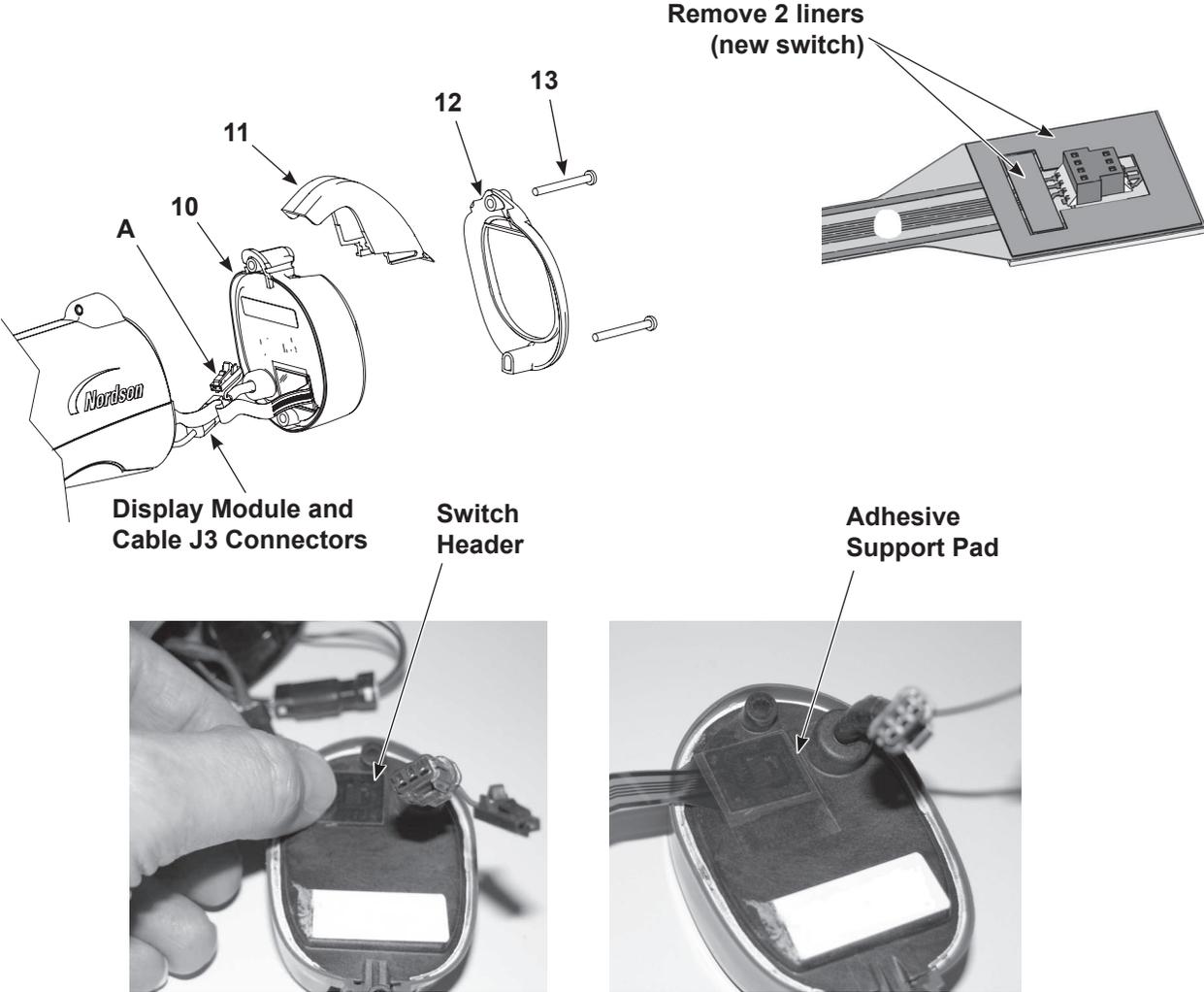


Figure 11 Display Module Replacement

- 10. Display module
- 11. Hook

- 12. Bezel
- 13. M3 x 35 screws

A. Ground wire connector

Power Supply and Powder Path Replacement

Gun Disassembly

1. Remove the display module from the spray gun as described in *Display Module Replacement* on page 18.
2. See Figure 10. Unscrew the nozzle nut and remove the nozzle and electrode assembly from the spray gun.
3. Insert a small screwdriver into the recess in the J2 gun cable/power supply connectors to release the catch and disconnect them.
4. See Figure 12. Remove the black nylon screw (29) from the gun body.
5. Grasp the handle in one hand and the gun body in the other. Press the thumbs of each hand together while pulling carefully in opposite directions to separate the gun body from the handle. The air wash tubing will prevent a complete separation; leave it connected unless it must be replaced.

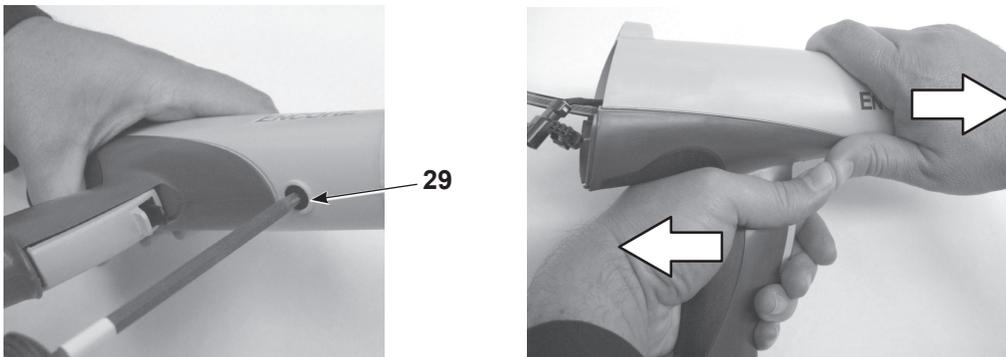


Figure 12 Removing the Gun Body from the Handle

Power Supply Replacement

NOTE: If replacing the powder path, skip this procedure.

1. See Figure 13. Slide the power supply (6A) out of the gun body (6B).
2. Check the gasket (8) on the back of the bulkhead (9). Replace it if it is damaged. The gasket is stuck to the bulkhead with pressure-sensitive adhesive.

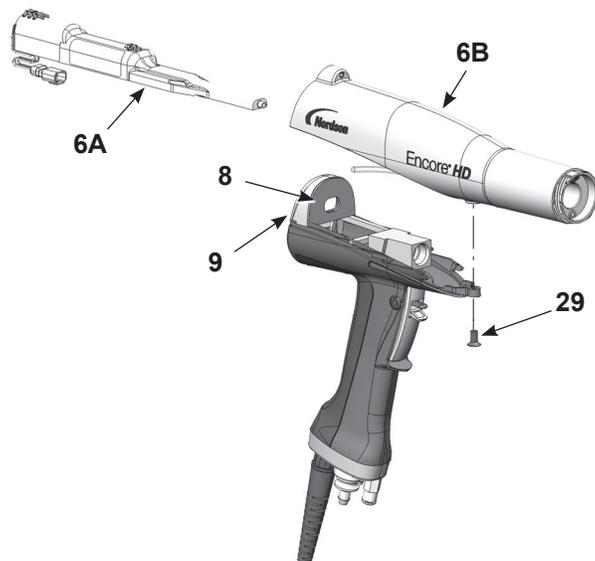


Figure 13 Removing the Power Supply from the Gun Body

3. Slide the new power supply into the upper cavity of the gun body, guiding the gun body ribs between the raised grooves on the top of the power supply.
4. Press on the end of the power supply to ensure that the power supply contact tip is firmly seated against the brass contact inside the gun body.
5. Route the power supply harness connector through the top hole in the bulkhead.

Powder Path Removal

NOTE: Skip these steps if not replacing the powder path. Go to page 24 to reassemble the spray gun.

1. Perform the Gun Disassembly procedure on page 20.
2. See Figure 14. Remove the elbow (5) from the inlet tube (24).
3. Remove the two M3 x 20 screws (21) from the handle base (20).
4. Pull the base away from the handle, then swing the bottom of the ground pad (17) up and away from the handle, then remove it. Leave the ground wire connected to the ground pad.
5. Push the inlet tube (24) up and out of the base, then move the base out of the way and pull the inlet tube out of the handle.
6. Push the outlet tube (4) out of the front of the gun body (6B).
7. Blow off the inlet tube, outlet tube, and elbow, and replace them if the interiors are worn or coated with impact-fused powder. If re-using the tubes, make sure the O-rings are undamaged.

Powder Path Installation

1. See Figure 14. Install the outlet tube (4) into the gun body (6B), with the end of the tube flush with the end of the gun body.
2. Install the inlet tube (24) into the handle (25), then install the end of the tube into the handle base (20).
3. Push the handle base close to the handle, then hook the top end of the ground pad (17) into the body and rotate it onto the handle. Make sure the cable wires are not pinched or trapped during re-assembly.
4. Install the handle base onto the handle and ground pad and secure it with the two M3 x 20 screws (21).
5. Install the elbow (5) onto the inlet tube, with the end oriented toward the front of the gun as shown.

NOTE: To verify proper installation, place a flashlight inside the bottom of the inlet adapter and verify the internal connections by looking through the outlet tube from the front of the powder spray gun.

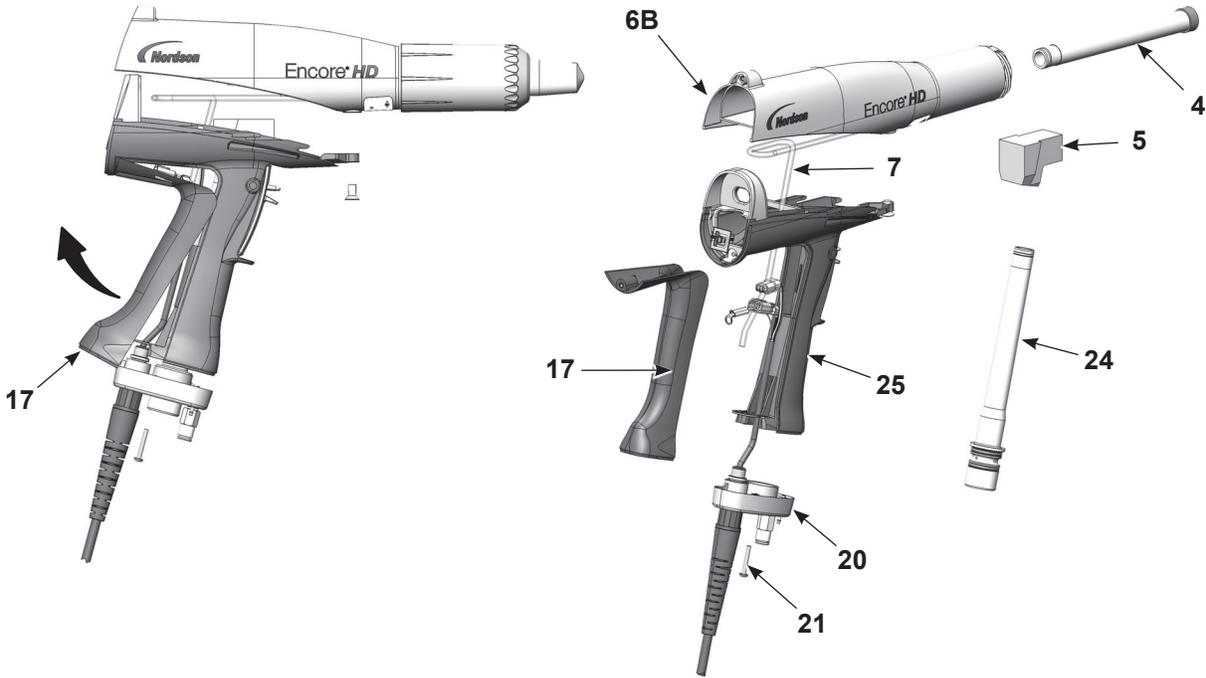


Figure 14 Powder Path Replacement

- 4. Outlet tube kit
- 5. Elbow
- 6. B - Gun body
- 7. Filter assembly
- 17. Ground pad
- 20. Handle base
- 21. M3 x 20 screws
- 24. Inlet tube/hose adapter kit
- 25. Handle

Gun Re-Assembly

1. See Figure 15. Align the gun body with the handle and slide them together, engaging the internal ribs of the gun body with the handle tabs.

NOTE: Make sure that the power supply harness is not pinched between the bulkhead and the power supply.

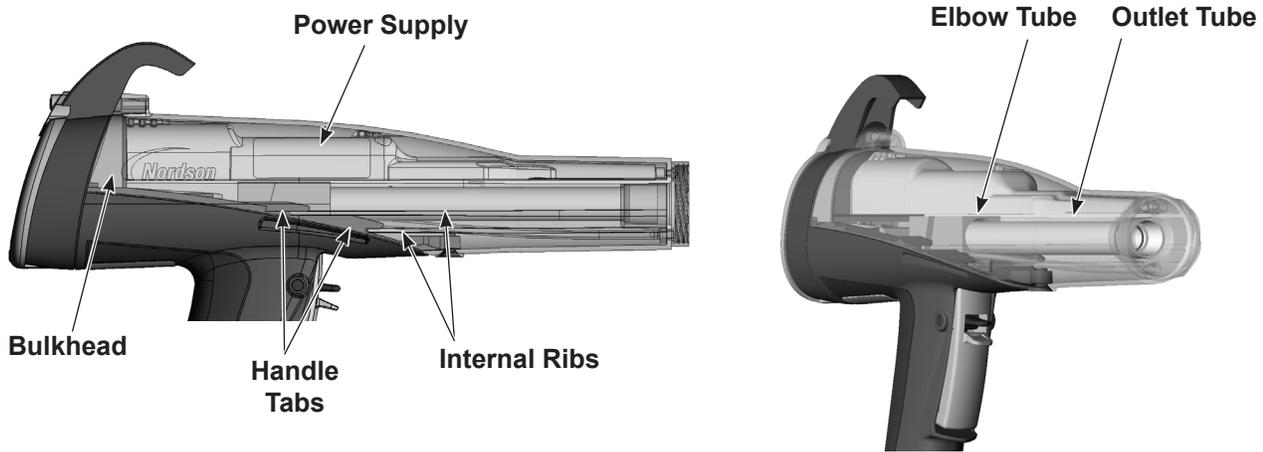


Figure 15 Gun Re-assembly

2. Insert your finger into the outlet tube at the front of the gun and align the inside end of the tube with the elbow, then push on the tube to seat it in the elbow.
3. Connect the power supply harness to the gun cable, then tuck both through the bottom hole in the bulkhead, into the gun body.
4. See Figure 11. Install the display module as described in Display Module Installation on page 18.
5. Install the electrode assembly (3) into the the end of the outlet tube at the front of the gun body. Make sure the wire electrode is not bent or broken.

NOTE: The flat spray and conical nozzles each have their own respective electrode holders.

6. Install the nozzle (2) on the electrode assembly, making sure the keys in the electrode assembly slide into the slots on the nozzle.
7. Install the nozzle nut (1) over the nozzle and rotate clockwise to secure.

Cable Replacement

Cable Removal

1. Disconnect the gun cable from the controller.
2. See Figure 16, View A. Remove the two M3 x 20 screws (21) securing the handle base (20) to the handle.
3. Remove the lower M3 x 35 screw (13) from the display module.
4. Pull the base away from the handle enough to free the bottom edge of the ground pad (17) from the base.
5. Pull the bottom edge of the ground pad out and away from the handle.
6. See Figure 16, View B. Remove the M3 x 8 screw, lock washer (16, 15), and ground terminal from the ground pad.
7. Remove the retaining ring (18) from the cable.
8. See Figure 16, View C. Pull the cable connectors out of the handle. Insert a small flat-bladed screw driver in the slots of the power supply and display connectors to release the catch and disconnect them.
9. Pull the cable out of the handle base, feeding the connectors through the base one at a time.

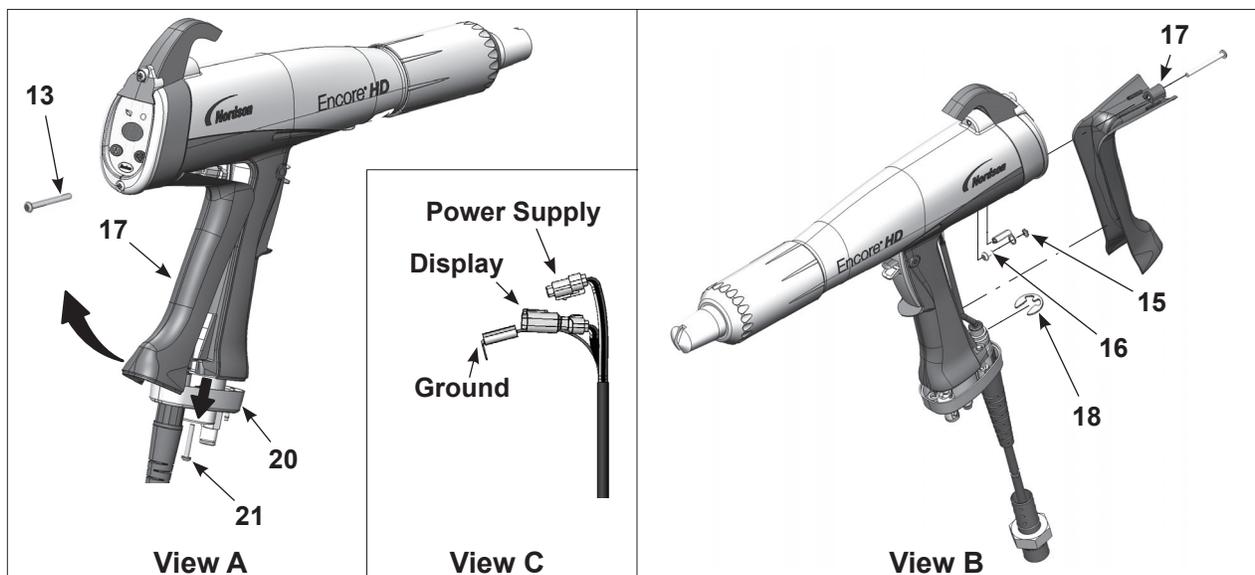


Figure 16 Cable Replacement

13. M3 x 35 screw
 15. Lock washer
 16. M3 x 6 screw

17. Ground pad
 18. Retaining ring
 20. Handle base

21. M3 x 20 screws

Cable Installation

1. See Figure 16. Feed a new cable through the handle base, then install the retaining ring (18) on the cable to hold it in place.
2. Connect the cable to the display module and power supply connectors.
3. Connect the cable terminal to the ground pad (17) with the M3 x 6 screw and lock washer (16, 15).
4. Tuck the cable connectors and ground wire into the gun, below the multiplier.
5. Hook the top of the ground pad into the gun body, then rotate it into position on the handle.
6. Push the handle base (20) up against the handle and ground pad, and tighten securely the two M3 x 20 screws (21) in the base.
7. Re-install the M3 x 35 screw (13) in the bottom of the display module.

Trigger Switch Replacement

Switch Removal

1. Remove the display module and disconnect the trigger switch ribbon cable from the module as described in *Display Module Replacement* on page 18.
2. Remove the gun body from the handle as described in *Gun Disassembly* on page 20.
3. See page 27. Pull out the elbow (5) off the inlet tube.
4. Push the small diameter end of the axle (30) out of the handle with a small, flat-ended punch or other tool.
5. Remove the spray trigger (27), actuator (26), and purge trigger (28) from the handle.
6. Use a tool to pry and pull the trigger switch (14) off the handle, then pull it up and out of the handle.

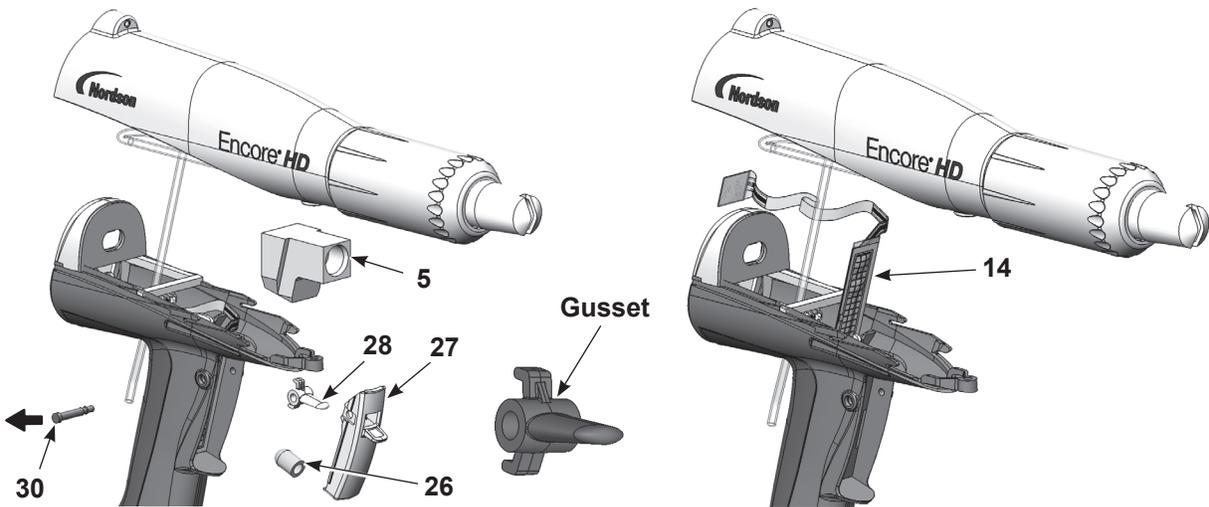


Figure 17 Trigger Switch Replacement

Switch Installation

1. See Figure 17. Orient the new switch (14) with the grid facing the front of the gun, then carefully feed the square, bottom end of the switch through the slot in the handle.
2. Peel the adhesive release liner from the back of the switch.
3. Carefully install the switch against the bottom and left edges of the trigger recess, pressing the switch against the back of the recess. Run your finger up and down on the switch to ensure it is securely adhered to the handle.
4. Install the purge trigger (28) into the spray trigger (27) with the gusset oriented upward as shown. **Do not install the purge trigger upside down.**
5. Position the triggers in the handle and hold them in place while pressing the axle (30) through the handle and triggers until the head of the axle is flush with the handle. The axle will snap into place when properly installed.
6. Feed the trigger switch ribbon cable through the bottom of the bulkhead and connect the ribbon cable connector to the display module as described in *Display Module Installation* on page 18.
7. Re-assemble the gun as described in *Gun Re-Assembly* on page 24.

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Troubleshooting



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



WARNING: Before making repairs to the controller or spray gun, shut off system power and disconnect the power cord. Shut off the compressed air supply to the system and relieve the system pressure. Failure to observe this warning could result in personal injury.

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact Nordson technical support at (800) 433-9319 or your local Nordson representative for help.

Spray Gun Power Supply Resistance Test

Use a megohm meter to check the resistance of the power supply, from the J2-3 feedback terminal at the connector to the contact pin inside the front end. The resistance should be between 225–335 megohms. If the reading is infinite, switch the meter probes. If the resistance falls outside this range, replace the power supply.

NOTE: There are multiple variables that can affect the Meg-Ohm readings of your meter (temperature and measurement voltage). If the Meg-Ohm meter output voltage differs from the 500 VDC setting, it will have a direct impact on the measurement accuracy. Measurements should also be taken at room temperature 22°C or 72°F. Allow time for the multiplier to cool to room temperature for repeatable results.

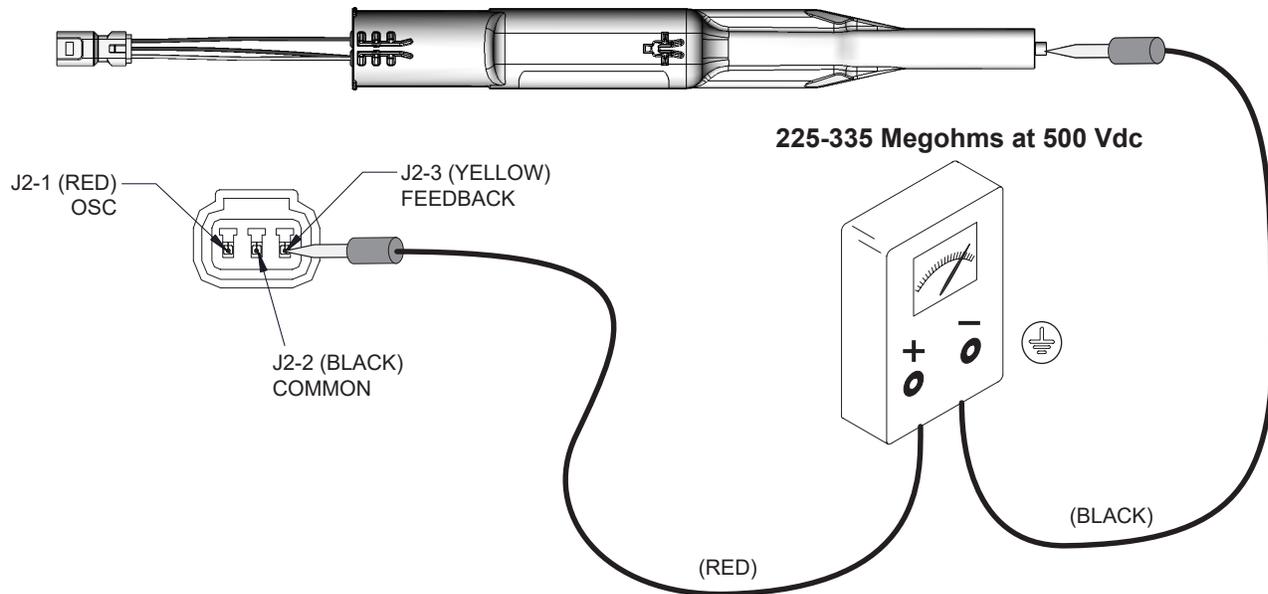


Figure 18 Power Supply Resistance Test

Electrode Assembly Resistance Test

Use a megohm meter to measure the resistance of the electrode assembly from the contact ring on the back to the antenna wire in the front. The resistance should be 19–23 megohms. If the resistance is out of this range replace the electrode assembly.

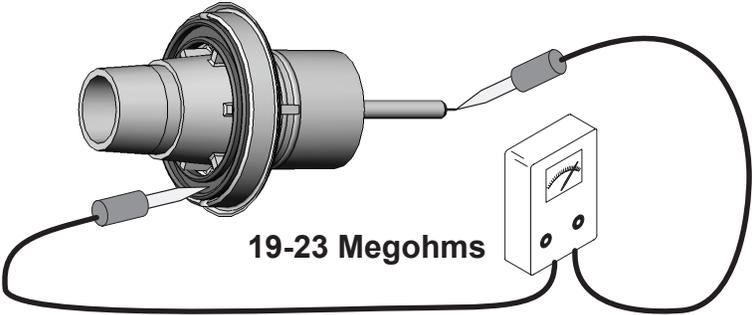


Figure 19 Electrode Assembly Resistance Test

Gun Cable Continuity Test

Test for continuity as follows:

- J1-1 and J3-3
- J1-2 and J2-2
- J1-2 and J3-2
- J1-3 and J2-1
- J1-4 and J3-1
- J1-5 and J2-3
- J1-6 and Ring-tong terminal on gun end.

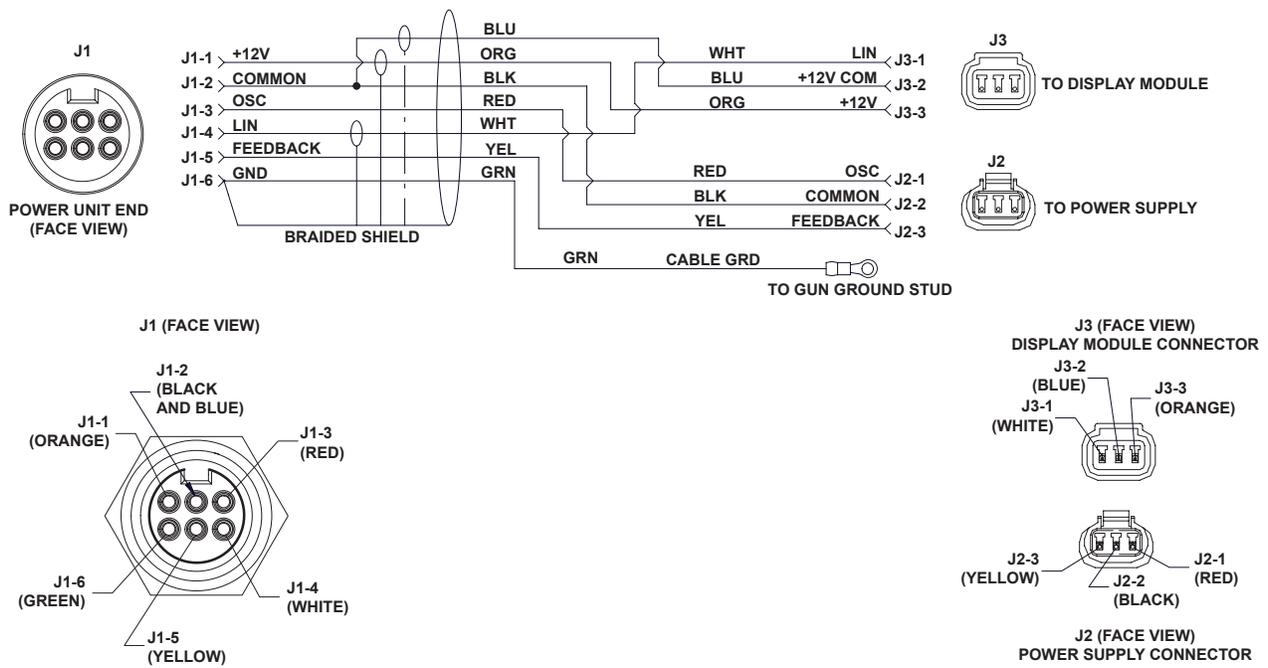


Figure 20 Gun Cable Wiring

Parts

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

This section covers parts and options for the Encore HD manual powder spray gun.

Reference Documentation

For additional information related to other components in the system, reference the following documentation:

Document Title	Document Part Number
Encore HD/XT System Controller Manual	1604870
Encore Cup Gun Kit	1102764
Encore HD Powder Spray Gun Lance Extensions	1604971
Pattern Adjuster Kit for Lance Extensions	1100013
Pattern Adjuster Kit for Encore Manual Spray Guns	1098440

Using the Illustrated Parts List

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

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

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

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

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

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

Item	Part	Part	Part	Description	Quantity	Note
—	-----	—	—		—	
1	-----					
2						
						<i>Continued...</i>
NOTE: A.						
B.						
NS: Not Shown						
AR: As Required						

Spray Gun Parts

See Figure 21 and the parts list on the following pages.

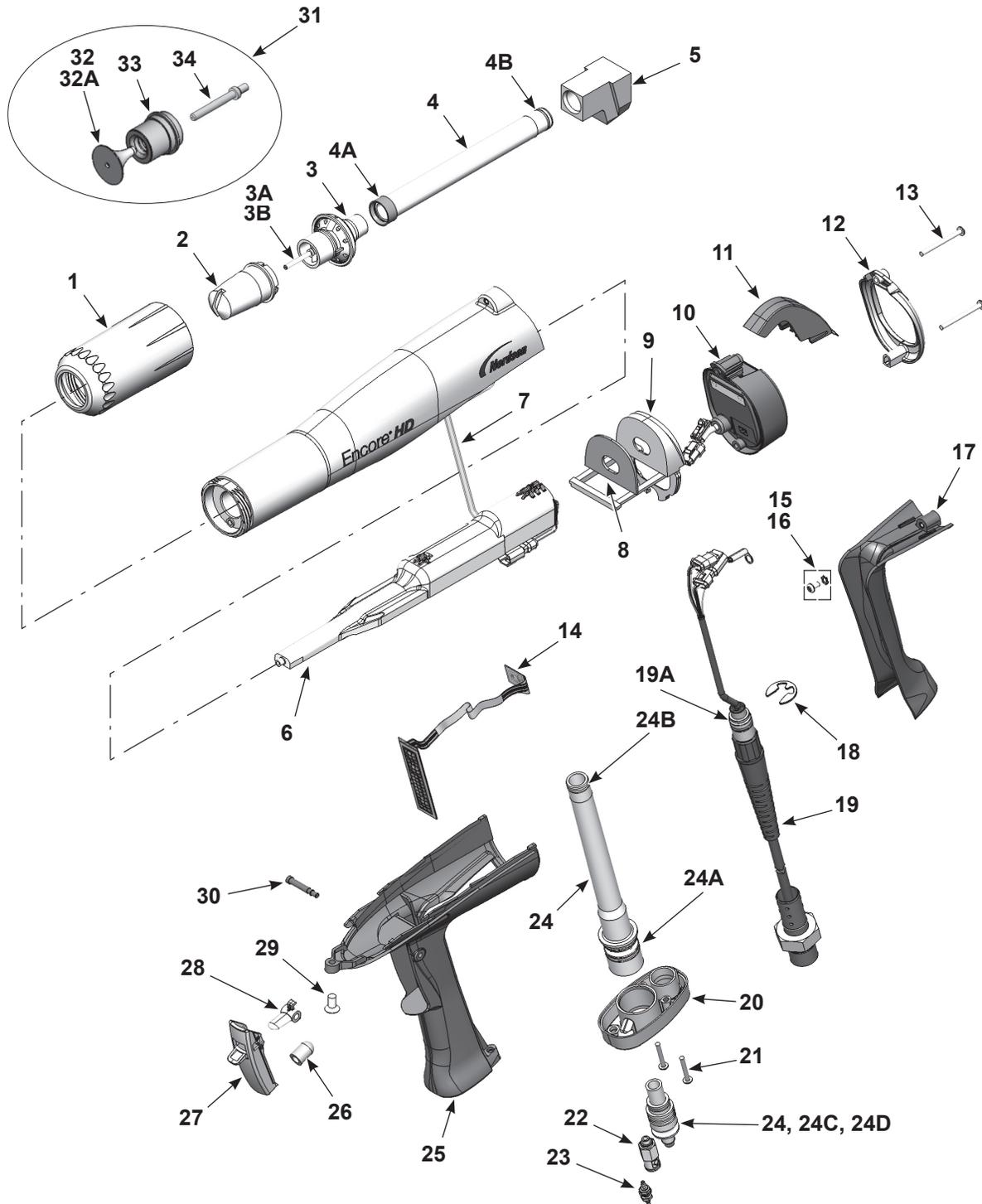


Figure 21 Encore HD Manual Spray Gun and Accessories Parts

Item	Part	Description	Quantity	Note
-	1603160	GUN ASSEMBLY, manual, Encore HD	1	
1	1081638	• NUT, nozzle, handgun	1	
2	1081657	• NOZZLE, flat spray, 3 mm	1	A
3	1604824	• ELECTRODE ASSEMBLY, Encore, flat spray	1	F
3A	1106078	• • ELECTRODE, spring contact	1	
3B	1605863	• • HOLDER, electrode, M3, flat spray, Encore	1	F
4	1606082	• KIT, powder outlet tube, Encore HD	1	D
4A	1097527	• • SEAL, tube, powder	1	
4B	1081785	• • O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
5	1096695	• ELBOW, powder tube, handgun	1	D
6	1608280	• KIT, neg power supply/manual body, Encore	1	H
7	1088558	• • FILTER ASSEMBLY, handgun		
8	1088502	• GASKET, multiplier cover, handgun	1	
9	1106872	• BULKHEAD, multiplier, handgun, Encore HD	1	
10	1100986	• KIT, handgun display module, Encore	1	
NS	1085631	• • SUPPORT, adhesive, handgun, Encore	1	
11	1087760	• HOOK, handgun	1	
12	1102648	• BEZEL, shield, plated	1	
13	345071	• SCREW, pan head, recessed, M3 x 35, BZN	2	
14	1101872	• KIT, trigger switch, Encore HD	1	
NS	1085631	• • SUPPORT, adhesive, handgun, Encore	1	
15	983520	• WASHER, lock, internal, M3, zinc	1	
16	982427	• MACHINE SCREW, pan head, recessed, M3 x 6, zinc	1	
17	1106871	• HANDLE, ground pad, handgun, Encore HD	1	
18	1081777	• RETAINING RING, external, 10 mm	1	
19	1600745	• CABLE ASSY, handgun, 6 meter, Encore HD	1	E
19A	940129	• • O-RING, silicone, conductive, 0.375 x 0.50in.	1	
20	1087762	• BASE, handle, handgun	1	
21	760580	• SCREW, Philips head, M3 x 20, zinc	2	
22	1081617	• CHECK VALVE, male, M5 x 6 mm	1	
23	1081616	• FITTING, bulkhead, barb, dual, 10-32 x 4 mm	1	
24	1608282	• KIT, inlet tube and hose adapter, Encore HD, Gen 2	1	
24A	1084773	• • O-RING, silicone, 18 mm ID x 2 mm wide	2	
24B	1081785	• • O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
24C	1606709	• • O-RING, PUR, 0.551 x 0.07 x 0.7	2	
24D	940137	• • O-RING, silicone, 0.437 x 0.562 x 0.063	1	
25	1600819	• HANDLE, handgun, Encore HD/XT	1	
26	1106892	• ACTUATOR, switch, trigger, Encore HD	1	
27	1606999	• KIT, service, Encore trigger axle/trigger	1	
28	1081540	• TRIGGER, setting, handgun	1	
29	1088601	• SCREW, flat head, recess, M5x 10, nylon	1	

Continued...

Item	Part	Description	Quantity	Note
30	1606998	• AXLE, trigger, spray gun, Encore	1	G
31	1604828	• KIT, conical nozzle, Encore	1	
32	1083205	• DEFLECTOR assembly, conical, 19 mm	1	A
32A	1098306	• • O-RING, Viton, 3 mm x 1.1 mm wide	1	B
32	1083206	• DEFLECTOR assembly, conical, 26 mm	1	A
32A	1098306	• • O-RING, Viton, 3 mm x 1.1 mm wide	1	B
33	1082060	• NOZZLE, conical	1	A
34	1605861	• HOLDER, electrode, M3, conical, Encore	1	
NS	900617	• TUBE, polyurethane, 4 mm OD, clear	AR	C
NS	900741	• TUBING, polyurethane, 6/4 mm, black	AR	C
NS	900620	• TUBING, poly, spiral cut, 3/8 in. ID	AR	C
NS	1081658	• NOZZLE, flat spray, 4 mm	1	A

NOTE: A. 3- and 4-mm flat spray nozzles, conical nozzles, and deflectors are shipped with the spray gun. Refer to the following pages for optional nozzles.

B. This O-ring is a component of all deflectors.

C. Order in increments of one foot or one meter.

D. Also available in wear resistant material. Refer to *Spray Gun Options*.

E. Optional 6 meter extension available; refer to *Spray Gun Options*.

F. For flat spray nozzle use only. Use kit item 32 to convert for conical nozzle and deflector use.

G. Included with trigger switch kit 1101872.

H. Application Specific: Order part number 1609053 if a positive power supply is needed. The positive power supply is sold separately from the gun body.

Spray Gun Options

Miscellaneous Spray Gun Options

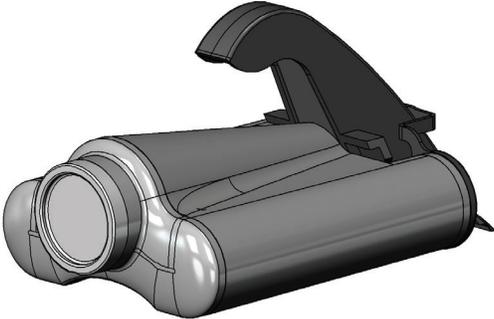
See Figure 21.

Item	Part	Description	Quantity	Note
4	1096698	KIT, powder outlet tube, wear resistant	1	
4A	1081785	• O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
4B	941113	• O-RING, silicone, 0.438 x 0.625 x 0.094 in.	1	
5	1096696	ELBOW, powder tube, Encore, impact resistant	1	
NS	1085168	CABLE, 6-wire, shielded, handgun, 6 meter extension	1	

NS: Not Shown

nLighten™

nLighten is an LED inspection kit that helps powder coaters improve quality by effectively illuminating hard to see surface areas. Any imperfection or missed area is quickly identified and corrected. Find out more at: nordsoncoating.com/nLighten.



**1611977
nLighten**

Figure 22 LED Inspection Kit

Flat Spray Nozzles

3- and 4-mm flat spray nozzles are shipped with the spray gun. All other flat spray nozzles are optional.

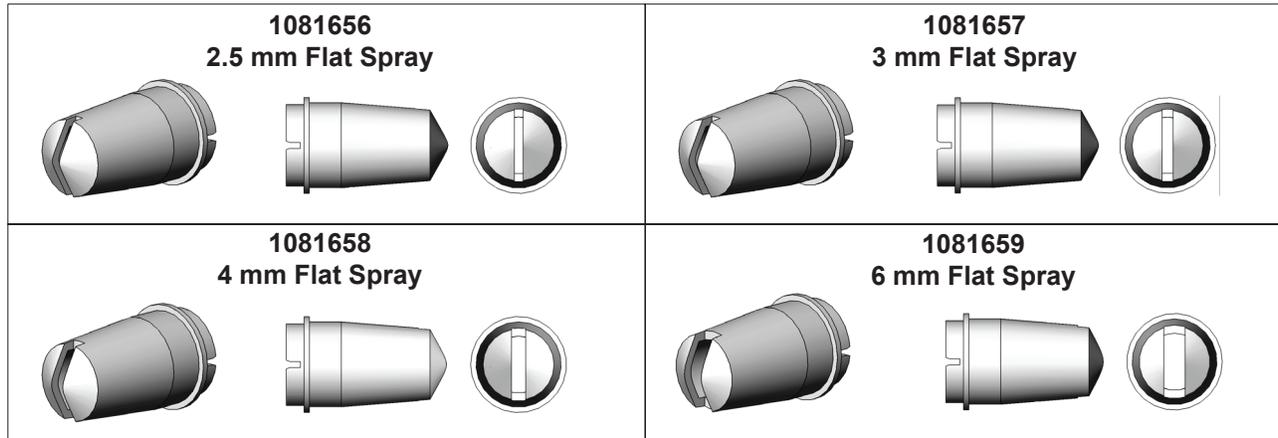


Figure 23 Flat Spray Nozzles

Cross Cut Nozzles

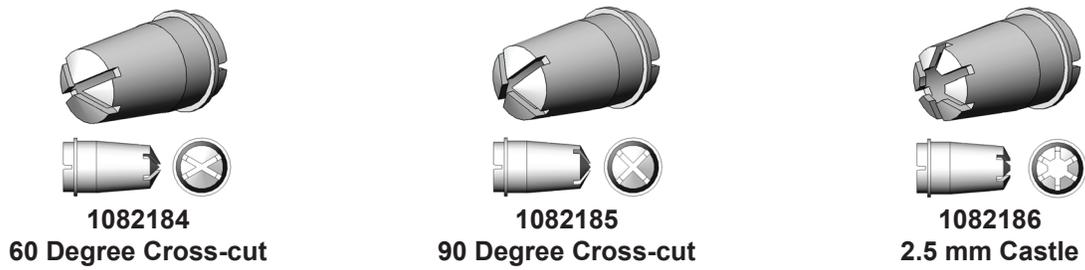


Figure 24 Cross-cut Nozzles

45-Degree Corner-Spray Nozzle

See Figure 25.

Spray Pattern	Wide fan pattern perpendicular to the spray gun axis
Slot Type	Angled, cross slot
Application	Flanges and recesses

Part	Description	Note
1102872	NOZZLE, corner spray, Encore	

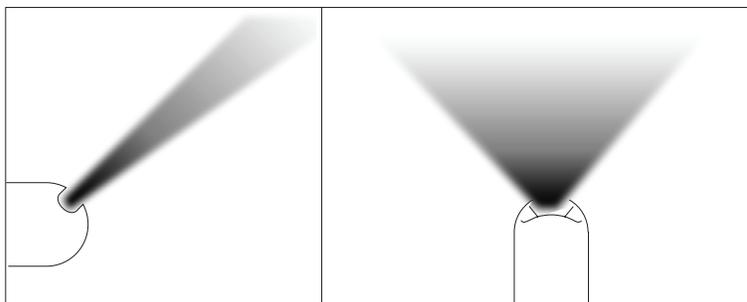


Figure 25 45-Degree Corner Spray Nozzle

45-Degree In-Line Flat-Spray Nozzle

Spray Pattern	Narrow fan pattern in-line with spray gun axis
Slot Type	Three angled slots in-line with spray gun axis
Application	Top and bottom coating; typically no in/out part positioning

Part	Description	Note
1102871	NOZZLE, 45 degree, flat spray, Encore	

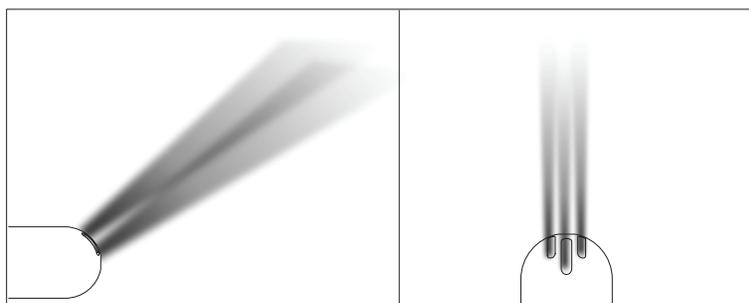


Figure 26 45-Degree Flat Spray Nozzle

Conical Nozzle, Deflectors and Electrode Assembly Parts

See Figure 7, Figure 8, and Figure 9. The conical nozzle and deflectors must be used with the conical electrode holder. One conical nozzle kit (1604828) and one 19 mm deflector (1083205) are shipped with the gun. Other parts shown here are optional and must be ordered separately.

Conical Nozzle and Deflectors

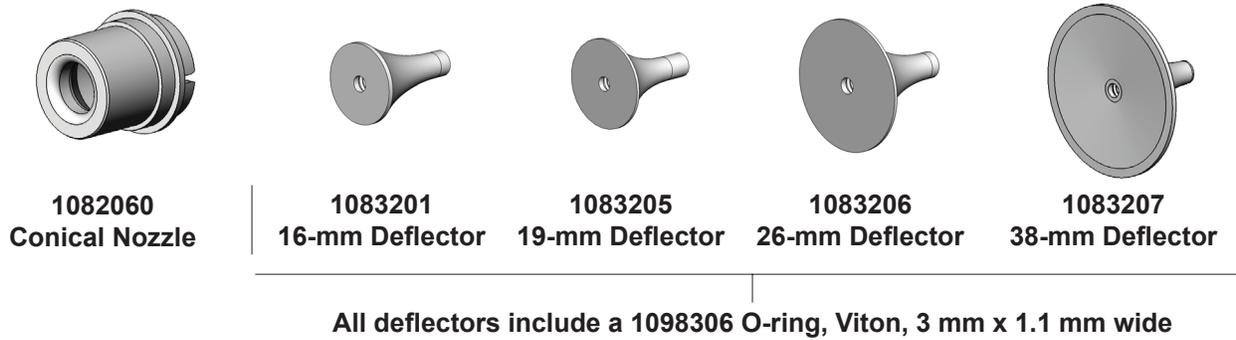


Figure 27 Conical Nozzle and Deflectors

Conical Nozzle Kit (shipped with gun)



Figure 28 Conical Nozzle Conversion Kit

Part	Description	Quantity	Note
1604828	KIT, conical nozzle, Encore	1	
1083206	• DEFLECTOR, 26 mm	1	
1082060	• NOZZLE, conical	1	
1605861	• ELECTRODE HOLDER, conical	1	A

NOTE: A. The conical nozzle requires a different style electrode holder than what is used in the flat spray nozzle electrode assembly.

Conical Nozzle, Deflectors and Electrode Assembly Parts (contd)

Conical Electrode Assembly

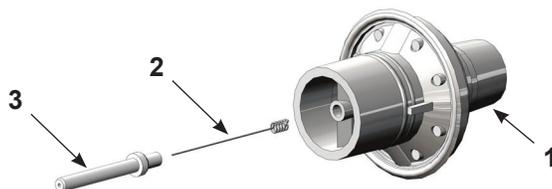


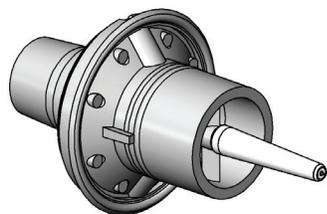
Figure 29 Conical Electrode Assembly

Item	Part	Description	Quantity	Note
—	1106076	ELECTRODE ASSEMBLY, conical, Encore	1	
1	-----	• ELECTRODE SUPPORT	1	
2	1106078	• ELECTRODE	1	
3	1605861	• ELECTRODE HOLDER, Conical	1	A

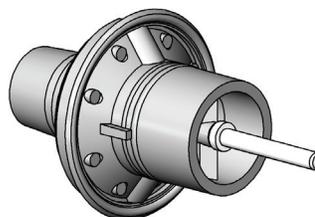
NOTE: A. The conical nozzle requires a different style electrode holder than what is used in the flat spray nozzle electrode assembly.

XD Electrode Support

The XD (extended duty) Electrode Support provides 2 to 3 times longer wear life than that of the standard duty electrode support.



1613834
XD Flat Spray Electrode Support

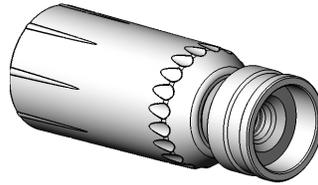


1613835
XD Conical Spray Electrode Support

Figure 30 Conical Spray and Flat Spray Electrode Supports

Pattern Adjuster Kit

The pattern adjuster kit includes an integral conical nozzle. 16, 19, and 26-mm deflectors can be used with the kit. The deflectors are not included with the kit and must be ordered separately.



1098417

Encore HD Manual Gun Pattern Adjuster Kit

Figure 31 Pattern Adjuster Kit

Lance Extensions

The nozzles listed on the preceding pages install directly on the lance extensions. Refer to the instruction sheet shipped with the lance extensions for installation instructions and repair parts.

NOTE: A conical electrode holder is required for use with conical deflectors and lance extensions. See page 40.

Part	Description	Note
1604965	EXTENSION, lance, 150 mm, Encore HD	A
1604970	EXTENSION, lance, 300 mm, Encore HD	A

NOTE: A. If a longer lance extension is required, contact your Nordson representative.

Ion Collector Kit

This kit installs on the standard length gun. Refer to the instruction sheet shipped with the spray gun for installation instructions and repair parts.

Part	Description	Note
1603854	KIT, ion collector assembly, manual, Encore (std length gun)	

Ion Collector Components for Lance Extensions

To use the ion collector kit listed above with 150-mm or 300-mm Lance Extensions, order one of the rods and the bracket listed below. Refer to the instruction sheet shipped with the kit for installation instructions.

Item	Part	Description	Quantity	Note
—	189483	ROD, ion collector, 15 in.	1	A
—	189484	ROD, ion collector, 21 in.	1	B

NOTE: A. Use for 150-mm lance extension.

B. Use for 300-mm lance extension.

Powder Hose and Air Tubing

Powder hose and air tubing must be ordered in increments of one foot.

Part	Description	Note
1081783	Powder hose, 6 mm ID x 8 mm OD, polyolefin (by 100 ft)	B, E
1080388	Powder hose, 6 mm ID x 8 mm OD, polyolefin (by 500 ft)	C, E
1606690	Clear powder hose, 6 mm ID x 8 mm OD, polyurethane (by 100 ft)	A, F
1606695	Clear powder hose, 6 mm ID x 8 mm OD, polyurethane (by 500 ft)	C, F
900617	Air tubing, polyurethane, 4 mm, clear, electrode air wash	A
900742	Air tubing, polyurethane, 6 mm, blue, pattern air	A
1096789	Air tubing, antistatic, 6/4 mm, black (conductive air tubing), VBF pickup tube to controller	D
900741	Air tubing, polyurethane, 6 mm, black	
900618	Air tubing, polyurethane, 8 mm, blue	A
900619	Air tubing, polyurethane, 8 mm, black	A
900740	Air tubing, polyurethane, 10 mm, blue, main air IN	A
900517	Tubing, poly, spiral cut, 0.62 in. ID, dress out	
301841	Strap, Velcro, w/buckle, 25 x 3 cm, dress out	
226690	Tubing, polyurethane, 12/8 mm, blue	

NOTE: A. Minimum order quantity is 50 ft.

B. Minimum order quantity is 100 ft.

C. Minimum order quantity is 500 ft.

D. This tubing is used on VBF systems to provide fluidizing air from the bulkhead union to the pickup tube. It is conductive and grounds the pickup tube to the cart body. Do not replace with non-conductive tubing.

E. Standard powder hose delivered with system.

F. Optional powder hose to use in place of the standard polyolefin.

EU DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

Description: These are electrostatic, powder spray systems, including applicator, control cables and associated controllers. The Encore XT Manual system uses venturi style pump technology for supplying powder to the spray gun. While the Encore HD Manual system uses high density pump technology for supplying powder to the spray gun.

Applicable Directives:

2006/42/EC - Machinery Directive

2014/30/EU - EMC Directive

2014/34/EU - ATEX Directive

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) EN50050-2 (2013)

EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2016) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C

- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)

- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)

- Ex II 2 D / 2mJ = (Encore Auto Applicator and Encore Select HD Robot Applicator)

Certificates:

- FM14ATEX0051X = Encore XT/HD Manual Appl. And Encore Select HD Robot Appl. (Dublin, Ireland)

- FM14ATEX0052X = Controls (Dublin, Ireland)

- FM11ATEX0056X = Encore Automatic Applicator (Dublin, Ireland)

ATEX Surveillance

- 0598 SGS Fimko Oy (Helsinki, Finland)



Date: 05NOV24

Jeremy Krone

Supervisor Product Development Engineering

Industrial Coating Systems

Amherst, Ohio, USA

Nordson Authorized Representative in the EU

Contact: Operations Manager

Industrial Coating Systems

Nordson Deutschland GmbH

Heinrich-Hertz-Straße 42-44

D-40699 Erkrath



UK DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

Description: These are electrostatic, powder spray systems, including applicator, control cables and associated controllers. The Encore XT Manual system uses venturi style pump technology for supplying powder to the spray gun. While the Encore HD Manual system uses high density pump technology for supplying powder to the spray gun.

Applicable UK Regulations:

Supply Machinery Safety 2008

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

Electromagnetic Compatibility Regulation 2016

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) EN50050-2 (2013)

EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2009) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C

- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)

- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)

- Ex II 2 D / 2mJ = (Encore Select HD Robot Applicator)

Certificates:

- FM21UKEX0129X = Encore XT/HD Manual App & Select HD Robot Appl. (Maidenhead, Berkshire, UK)

- FM21UKEX0130X = Controls (Maidenhead, Berkshire, UK)

- FM22UKEX0006X = Encore Automatic Applicator (Maidenhead, Berkshire, UK)

EX Quality System Certificate

- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)



Date: 05Nov24

Jeremy Krone

Supervisor Product Development Engineering

Industrial Coating Systems

Amherst, Ohio, USA

Nordson Authorized Representative in the UK

Contact: Technical Support Engineer

Nordson UK Ltd.; Unit 10 Longstone Road

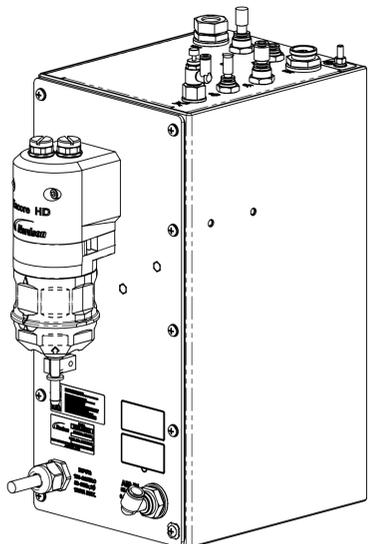
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England

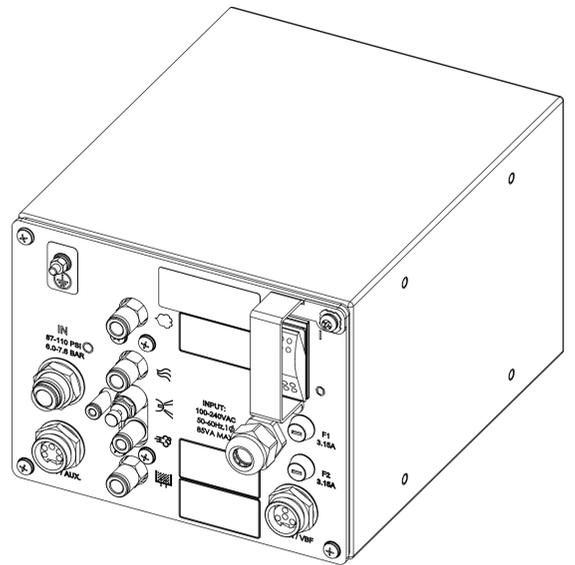


8 7
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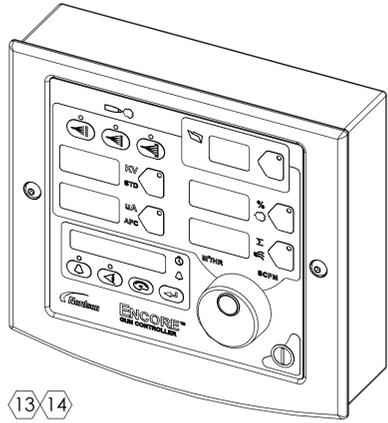
MATERIAL NO. 1084547		REVISION 25		REVISIONS			
ZONE	REV.	DESCRIPTION	BY	CHK	ECO NO.	DATE	
	A00	00) PRELIMINARY.				11JAN08	
	A01	01) RELEASED FOR PRODUCTION.	DRJ	RJF	PE600468	14JAN08	
	A02	02) ADDED ZONES 21 & 22, & MOBILE SYSTEM SPECS.	DRJ	RJF	PE600575	01FEB08	
	A03	03) ADDED 6M CABLE EXTENSION (SHEET 1); ADDED MOBILE SYSTEM WITH 25-LB. HOPPER (SHEET 2).	DC	DY	PE600552	21FEB08	
	A04	04) REDRAWN IN CURRENT FORMAT; ADDED ATEX-APPROVED VERSIONS OF INTERFACE CONTROL UNIT, HANDGUN, 115V & 220V VBF SYSTEMS, AND 50- AND 25-LB HOPPER SYSTEMS; REDESIGNED APPROVED EQUIPMENT SPECIFICATIONS TABLES (SHEETS 1 & 2); REMOVED MOTORS FROM SPECIFICATION TABLES & ADDED MFR'S CERTIFICATION NO.	DC	RJF	PE600806	30MAY08	
	A05	05) REMOVED FM-APPROVED HANDGUN ASSY 1083120 FROM APPROVED EQUIPMENT LISTING (SHEETS 1 & 2).	DC	RJF	PE601120	30JUL08	
	A06	06) PART NUMBER ERROR CORRECTION (SHEET 2).	DC	RJF	PE601509	12MAR09	
	A07	07) REMOVED 1082819, 1082843, 1082844, 1084512, 1084514, 1084517, 1087272, 1087273, 1087274, & 1087275; ADDED 1097072, 1097073, 1097074, & 1097075; UPDATED MPS PICTORIALS.	DRJ	RJF	PE601681	04AUG09	
	A08	08) UPDATED ENCORE HD PICTORIALS, NEW ENCORE HANDGUN PART NUMBERS UPDATED IN APPROVED EQUIPMENT TABLES.	BB	BDM	PE602105	24JUN10	
	10	09) UPDATE PG.1 & 2 FOR NEW 230V P/N					
		10) UPDATE VIBRATORY MOTOR VIEW, PG.2	DM	DU	PE602591	05AUG11	
	11	1600745 WAS 1102625	DM	BP	PE602297	28NOV11	
	12	12) RES'D DESCRPTN, TABLES AND ASSEMBLIES TO REFLECT 'XT' VERSION (SHEETS 1 & 2)	MHH	BDM	PE602609	07FEB12	
	13	13) REMOVED ENCORE XT CONTROLLER 1087276 & ADDED 1604125; UPDATED MOBILE SYSTEM VIEWS.	DC	RJF	PE603075	22OCT13	
	14	14) ADDED 'HD' PRODUCTS & 'XT' DESIGNATIONS, UPDATE TABLES, MOTOR CERT # WAS TUUSATEXZ72768X(PG.2)	MB	RJF	PE603483	05MAR15	
	15	15) ADDED ITEM 1609709, CHANGED PART# 1606272 TO 1606978 AND PART# 1606271 TO 1606977	NHY	TF	PE604849	24MAY16	
	16	16) ADDED POS KV MULTIPLIER (1609048)	RF	RJF	PE605057	01NOV16	
	17	SHT 1 - CORRECTED TABLE ENTRIES FOR 1606978 AND 1606977; BOTH SHEETS; ADDED TABLE ROWS FOR HD+ PUMP, ADDED NOTES FOR HD+ OPTION;	EW	BF	PE605057	21NOV17	
	19	ADDED: 18) OPTIONAL LED LIGHT; 19) BOM P/N/S W/LED	TAL	BDM	PE-100225	22MAY18	
	20	20) UPDATES FOR NLIGHTEN ATEX CERTIFICATION	BDM	BDM	PE-100765	22AUG18	
	21	SHT 1 - REMOVED VIEWS OF GUNS, CABLES AND OPTIONS, MOVED INFO TO TABLE. ADDED ENCORE HD ROBOT GUN AND CABLES, ADDED 60 AND 45 DEGREE EXTENSIONS.	BDM	RF	PE-103650	16OCT20	
	22	SHT 1 - 15.11977 WAS CFMUS; SHT 1 & 2 - REVISED TABLE HEADINGS FOR PROPER ATEX RATING TEXT.	BDM	RF	PE-103868	05FEB21	
	23	REMOVED ENCORE HD HYBRID & OBS PARTS	DG	FM	PE-104601	13OCT21	
	24	UPDATED HOPPER VERSION MOBILE SYSTEM VIEW	CG	RM	PE-105860	21MAR23	
	25	ADDED GEN3 APPLICATOR & OPTIONAL KITS	TAL	CG	PE-107163	15MAR24	



14) **ENCORE HD CONTROLLER POWER UNIT W/HD OR HD+ PUMP WITH HD PUMP**
 1605586 FOR 230V VBF
 1605584 FOR 115V VBF WITH HD+ PUMP
 1611089 FOR 230 VBF
 1611086 FOR 115 VBF



13) **ENCORE XT CONTROLLER POWER UNIT**
 1082815 FOR 230V VBF
 1600468 FOR 115V VBF



13) 14) **ENCORE XT/HD INTERFACE CONTROL UNIT**
 1604125

22) 15) 12) A 07 09

General Table

THE FOLLOWING EQUIPMENT AND ASSOCIATED CABLES ARE FOR USE IN CLASS II, DIV 2 HAZARDOUS (CLASSIFIED) LOCATIONS OR <Ex> II (2)3D EXPLOSIVE ATMOSPHERES:

PART NUMBER	DESCRIPTION	CFMus	CFMus / ATEX	NOTE
1604125	ENCORE XT/HD INTERFACE CONTROL UNIT		X	XT & HD
1082815	ENCORE XT CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 230V, 50HZ, VBF OPTION		X	XT
1600468	ENCORE XT CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 115V, 60HZ, VBF OPTION	X		XT
1605586	ENCORE HD CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 230V, 50HZ, VBF OPTION		X	HD WITH HD PUMP
1605584	ENCORE HD CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 115V, 60HZ, VBF OPTION	X		HD WITH HD PUMP
1611086	ENCORE HD CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 115V, 60HZ VBF OPTION	X		HD WITH HD+ PUMP
1611089	ENCORE HD CONTROLLER POWER UNIT, RELAY BOARD SET UP FOR 230V, 50HZ OPTION		X	HD WITH HD+ PUMP
1609709	CONTROLLER INTERFACE CABLE 50 FT		X	XT & HD
1080718	CONTROLLER INTERFACE CABLE 10 FT		X	XT & HD
1080719	CONTROLLER INTERFACE CABLE 30 INCH		X	XT & HD

A 05 A 08
 22) 21) 14) 13)

THE FOLLOWING APPLICATORS AND CABLES ARE SUITABLE FOR CLASS II, DIV 1, GROUP F & G HAZARDOUS (CLASSIFIED) LOCATIONS, OR <Ex> II 2 D EXPLOSIVE ATMOSPHERES:

PART NUMBER	DESCRIPTION	CFMus	CFMus / ATEX	NOTE
GUNS				
1600818	ENCORE XT HANDGUN		X	XT
1603160	ENCORE HD HANDGUN		X	HD
1097489	ENCORE AUTOMATIC GUN BAR MOUNT (CAN BE USED IN ROBOT APPLICATIONS)		X	WITH XT CONTROLS
1620076	ENCORE SELECT HD ROBOT GUN		X	WITH HD CONTROLS
1624523	APPLICATOR,AUTO,ENCORE,GEN3 (CAN BE USED IN ROBOT APPLICATIONS)		X	APPLICATOR,GEN3
CABLES				
1600745	ENCORE XT/HD 6 METER HANDGUN CABLE		X	XT & HD
1085168	6 METER HANDGUN CABLE EXTENSION		X	XT & HD
1605436	CABLE,SPRAY GUN,ROBOT,AUTO,ENCORE,8M		X	WITH XT & HD CONTROLS
1620523	CABLE,SPRAY GUN,ROBOT,AUTO,ENCORE,20M		X	WITH XT & HD CONTROLS
1601344	CABLE,EXTENSION,ENCORE,AUTO AND ROBOT,4M		X	WITH XT & HD CONTROLS
1620466	CABLE,EXTENSION,ROBOT,ENCORE,10M		X	WITH XT & HD CONTROLS
OPTIONS				
1604084	EXTENSION,SPRAY,90 DEGREE,ENCORE		X	AUTO GUNS
1605614	EXTENSION,SPRAY,60 DEGREE,ENCORE		X	AUTO GUNS
1605703	EXTENSION,SPRAY,45 DEGREE,ENCORE		X	AUTO GUNS
1609048	POSITIVE MULTIPLIER		X	
1611977	NLIGHTEN LED LIGHT KIT		X	XT & HD
1625279	DIFFUSER,ENCORE HD AUTO,GEN3,PKG			APPLICATOR,GEN3
1625160	KIT,BAR MOUNT,APPL,AUTO,ENCORE,GEN3 (CAN BE USED IN ROBOT APPLICATIONS)			APPLICATOR,GEN3
1625161	KIT,COLLECTOR,ION,AUTO,ENCORE,GEN3			APPLICATOR,GEN3

CRITICAL
 No revisions permitted without approval of the proper agency.

ALL DIMENSIONS IN MM EXCEPT AS NOTED

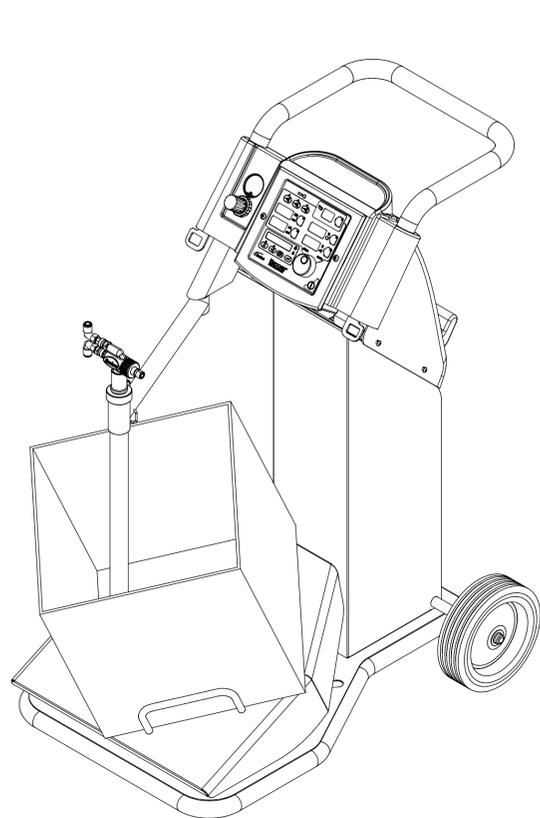
X90.8 X340.25 X330.13
 MACHINED SURFACES L4
 BREAK INSIDE/OUTSIDE CORNERS R1/0.8
 THREAD LENGTH DIMENSIONS ARE FULL THREAD
 INTERPRET DRAWINGS PER ASME Y14.5-1994
 PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES
 THIRD ANGLE PROJECTION

DESCRIPTION: REF DWG,APVD EQUIP,MANUAL ENCORE XT HD

NORDSON CORPORATION
 WESTLAKE, OH, U.S.A. 44145

DRAWN BY: DRJ DATE: 11JAN08
 CHECKED BY: RJF APPROVED BY: RJF
 MATERIAL NO.: 1084547 SHEET: 1 OF 2

SCALE: NOT TO SCALE SOLIDWORKS GENERATED DWG.

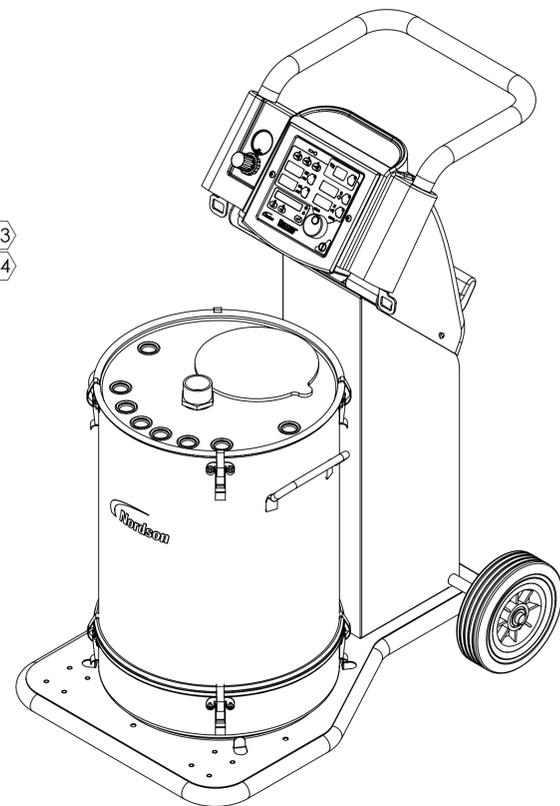


ENCORE 115V 60Hz & 230V 50Hz VBF MOBILE POWDER SYSTEMS 1613882 OR 1613884 (W/nLIGHTEN)

HEIGHT: 1078 [42.5]
WEIGHT: 50.8kg [112lbs]
wheel base: 620 [24.4] L X 511.5 [20.1] W

ENCORE HD 115V & 230V VBF MOBILE POWDER SYSTEMS 1613900 OR 1613901 FOR HD PUMP (W/nLIGHTEN)

HEIGHT: 1078 [42.5]
WEIGHT: 50.8kg [112lbs]
wheel base: 620 [24.4] L X 511.5 [20.1] W



ENCORE XT 50LB HOPPER MOBILE POWDER SYSTEM 1613885 (W/nLIGHTEN)

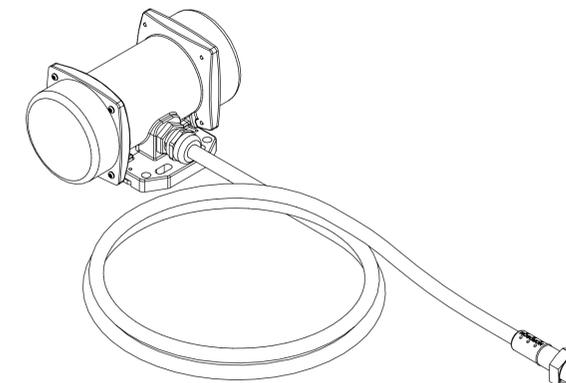
HEIGHT: 1078 [42.5]
WEIGHT: 54.4kg [120lbs]
wheel base: 620 [24.4] L X 511.5 [20.1] W

ENCORE HD 50LB HOPPER MOBILE POWDER SYSTEMS 1613899 FOR HD PUMP (W/nLIGHTEN) 1613910 FOR HD+ PUMP (W/nLIGHTEN)

HEIGHT: 1078 [42.5]
WEIGHT: 54.4kg [120lbs]
wheel base: 620 [24.4] L X 511.5 [20.1] W



CONTROLLER INTERFACE CABLE 1080718-10 FT. 1609709-50FT. 1080719-30 IN.



115V VIBRATOR MOTOR 1604511 230V VIBRATOR MOTOR 1080950

WITH EXTRA-HARD USAGE ELECTRICAL CORD UL/CSA APPROVED 18 AWG 90°C

MANUFACTURER'S CERT. #: TUV12ATEX094817 ALSO: ETL CERTIFIED FOR U.S & CANADA

	PART NUMBER	DESCRIPTION	cFMus	ATEX	cFMus / ATEX
THE FOLLOWING MOBILE SYSTEMS ARE SUITABLE FOR CLASS II, DIV 2 HAZARDOUS (CLASSIFIED) LOCATIONS OR <Ex> II (2)3D EXPLOSIVE ATMOSPHERES.	1613882	SYS,MOBILE POWDER,115V VBF,ENCORE XT,LED	X		
	1613884	SYS,MOBILE POWDER,230V VBF,ENCORE XT,LED		X	
	1613900	SYS,MOBILE POWDER,115V VBF,ENCORE HD,LED	X		
THE MANUAL GUNS AND GUN CABLES ATTACHED TO THE MOBILE SYSTEM, ARE SUITABLE FOR USE IN A CLASS II, DIV 1, GROUP F & G HAZARDOUS (CLASSIFIED) LOCATIONS OR <Ex> II 2 D EXPLOSIVE ATMOSPHERES.	1613901	SYS,MOBILE POWDER,230V VBF,ENCORE HD,LED		X	
	1613885	SYS,MOBILE PWDR,50-LB HOP,ENCORE XT,LED			X
	1613899	SYS,MOBILE PWDR,50 LB HOPR,ENCORE HD,LED			X
	1613910	SYS,MBL PWDR,50 LB HOP,ENCORE HDXD,LED			X

CRITICAL
No revisions permitted without approval of the proper agency.

ALL DIMENSIONS IN MM EXCEPT AS NOTED		NORDSON CORPORATION WESTLAKE, OH, U.S.A. 44145	
DESCRIPTION		REF DWG,APVD EQUIP,MANUAL ENCORE XT HD	
DRAWN BY	DATE	RELEASE NO.	
DRJ	11 JAN 08	PE600468	
CHECKED BY	APPROVED BY		
RJF	RJF		
SIZE	FILE NAME	MATERIAL NO.	REVISION
D	1084547	1084547	25
SCALE	NOT TO SCALE	SOLIDWORKS GENERATED DWG.	SHEET 2 OF 2

Encore® HD Pump Control Unit and Power Supply

Customer Product Manual
Document Number 1606783-09
Issued 01/22

**For parts and technical support, call the Industrial Coating
Systems Customer Support Center at (800) 433-9319 or
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Section 1

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding



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

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

Disposal

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

Section 2

Overview

Introduction

See Figure 2-1. This manual covers the Encore® HD pump control unit, which is used to supply power and to operate Encore HD manual powder spray systems.

The pump control unit comes equipped with a Encore HD powder feed pump. The unit contains the pneumatic circuit, which controls all pump, color change, and vibratory box feed (VBF) functions.

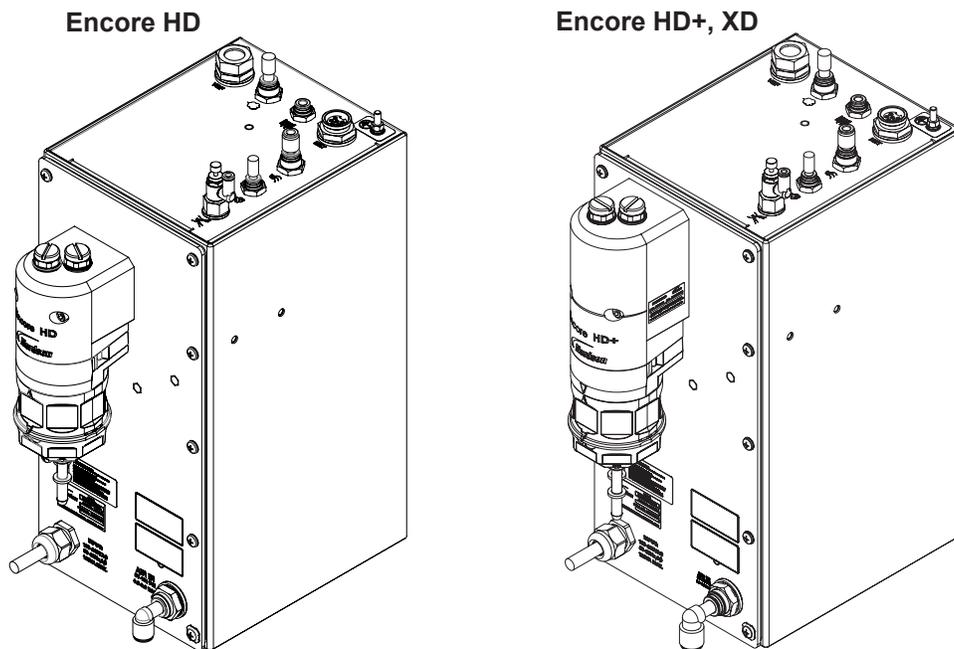


Figure 2-1 Encore HD Pump Control Unit

Specifications

Model: Encore HD Controller Power Unit	
Input Rating:	100–240 VAC, 50/60 Hz, 125 VA
Output Rating:	24 VDC, 2.5 A
Input Air:	6.0–6.9 bar (87–100 psi), <5 μ particulates, dew point <10 °C (50 °F)
Max Relative Humidity:	95% non-Condensing
Ambient Temperature Rating:	+15 to +40 °C (59–104 °F)
Hazardous Location Rating for Controls:	Zone 22 or Class II, Division 2
Dust Ingress Protection:	IP6X
Dimensions – See Figure 2-2 and Figure 2-3.	

Model: Encore HD, HD+, XD Pump	
Maximum Output HD:	80 lb/hour (600 g/min.)
Maximum Output HD+, XD:	100 lb/hour (750 g/min.)
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:	37 psi (2.6 bar) Do Not Adjust
Flow Control (to pattern air/pump assist):	85 psi (5.9 bar) Do Not Adjust
Vacuum Generator:	80 psi (5.5 bar) Do Not Adjust
Powder Tubing	
Size:	8 mm OD x 6 mm ID
Length:	Output: 18.3 m (60 ft) Input 1–3 m (3.5–12 ft)
Dimensions – See Figure 2-4.	

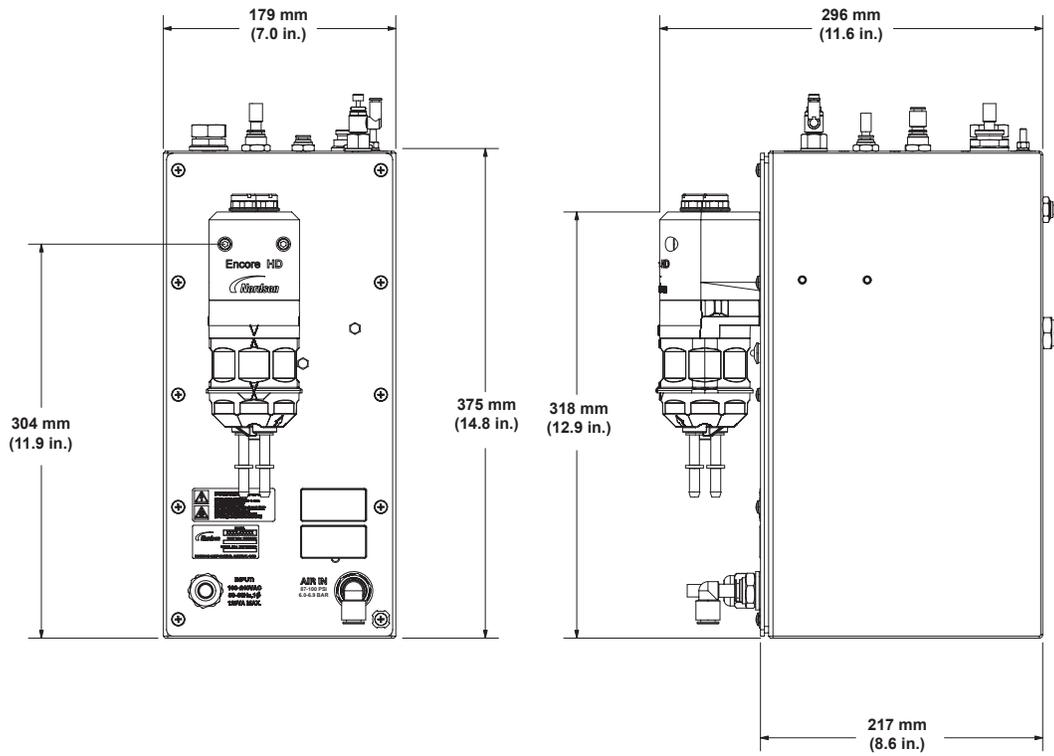


Figure 2-2 Encore HD Controller Power Unit Dimensions

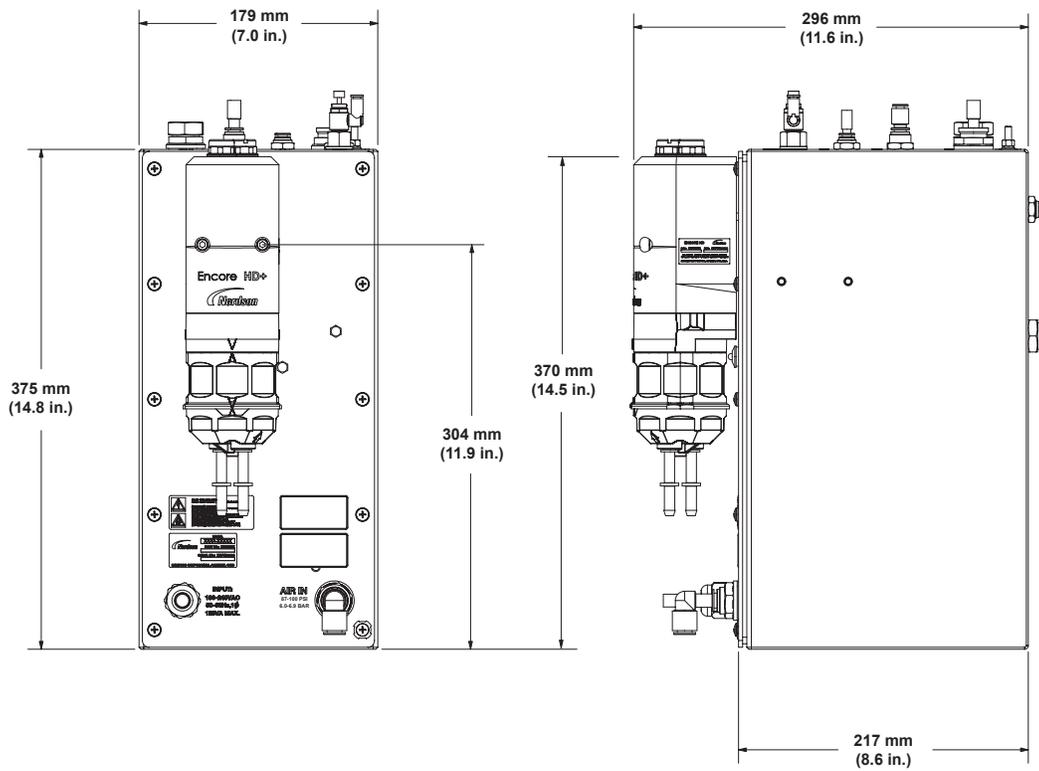
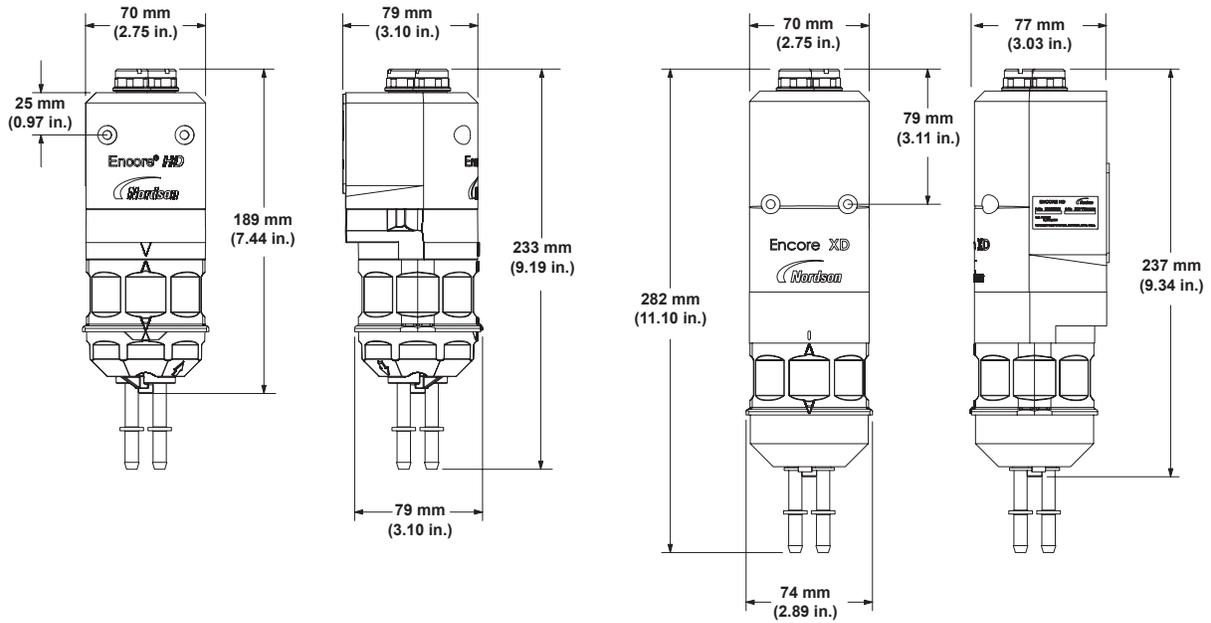


Figure 2-3 Encore HD+, XD Controller Power Unit Dimensions



Encore HD

Encore HD+ and XD
(HD+ Stamped on Encore HD+)

Figure 2-4 Encore Pump Dimensions

Pump Control Unit Certification Label



1606121

Encore HD Pump

See Figure Figure 2-5. The Encore HD (High-Density powder, Low-Velocity air) 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 a very little amount of air is used to operate the pump and carry the powder to the spray gun.

The standard-flow pump is designed to deliver approximately 550 grams/ minute (72 lb/ hour). For applications requiring higher flow rates, install a high flow pump for additional capacity up to 750 grams/minute (100 lb/hour). Refer to *Parts* section for kit part number.

NOTE: The total powder output may vary depending on fluidized density and powder specific gravity.

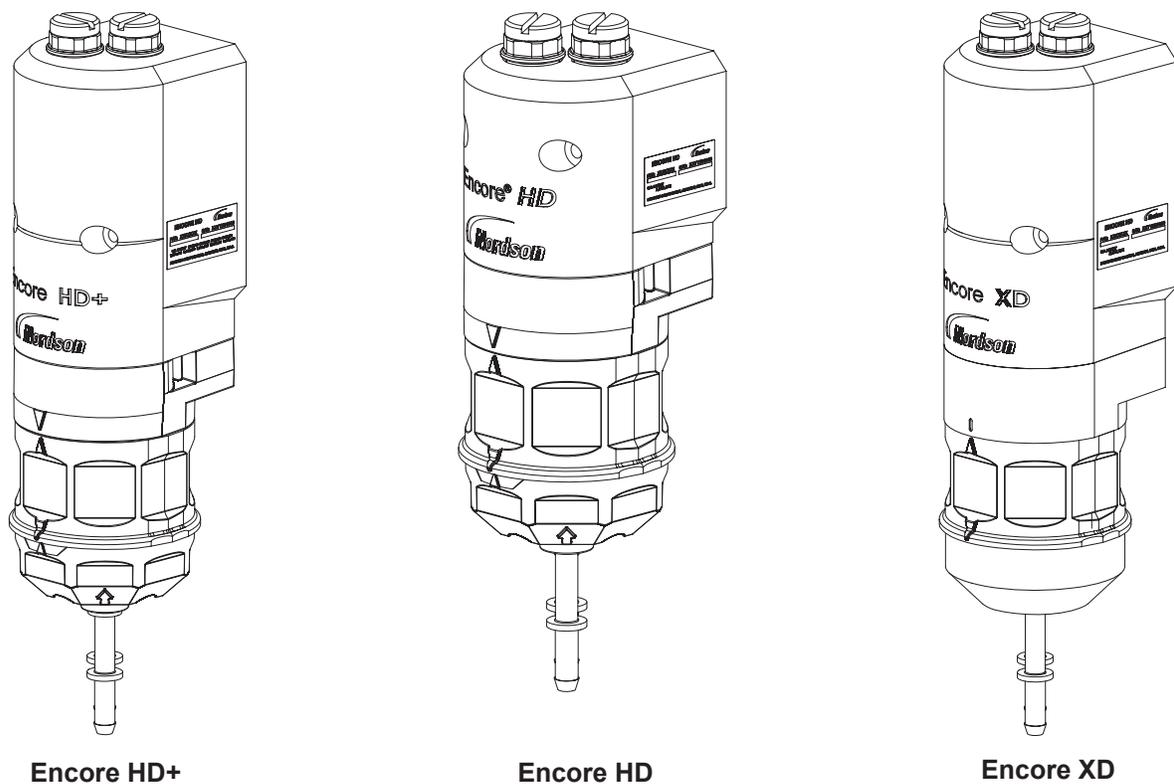


Figure 2-5 Encore HD Pump

HD Pump Components

See Figure 2-6.

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	Purge Manifold	Contains the fluidizing tubes, check valves, and air passages.
4	Upper Y Block	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	Pinch Valves	Open and close to allow powder to be drawn in or dispensed out of the fluidizing tubes.
6	Pinch Valve Body	Houses the pinch valves. Made from clear plastic to easily inspect the pinch valves for wear and tear.
7	Lower Y Block	Connect the inlet and outlet fittings to the pinch valves on either half of the pump.
8	Inlet Fitting	Connects to the tubing leading from the power source
9	Outlet Fitting	Connects to the tubing leading to the powder spray gun

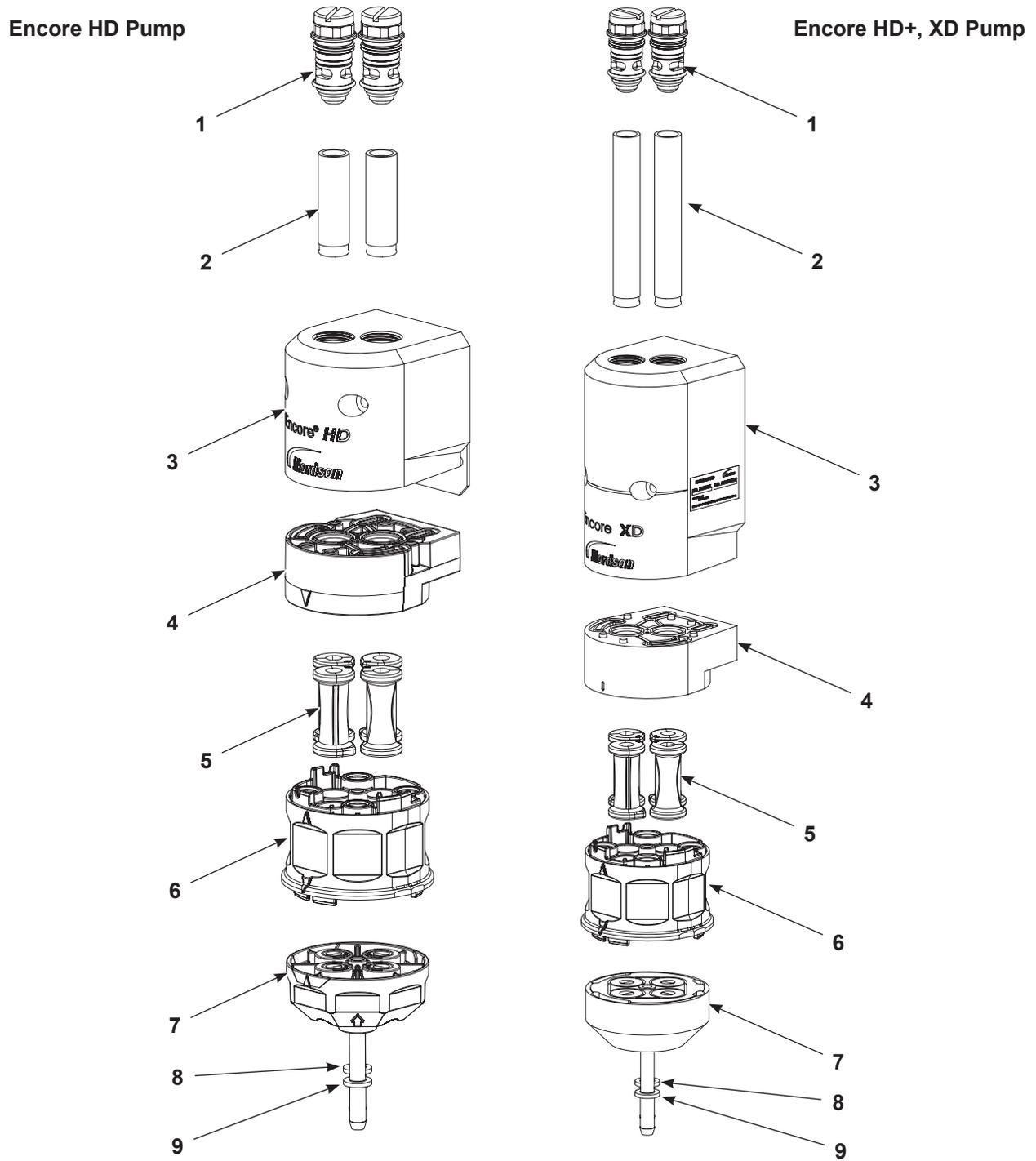


Figure 2-6 Encore Pump Components

Theory of Operation

Pumping

The Encore HD 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 2-7 View A.

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 2-7 View B.

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.

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.

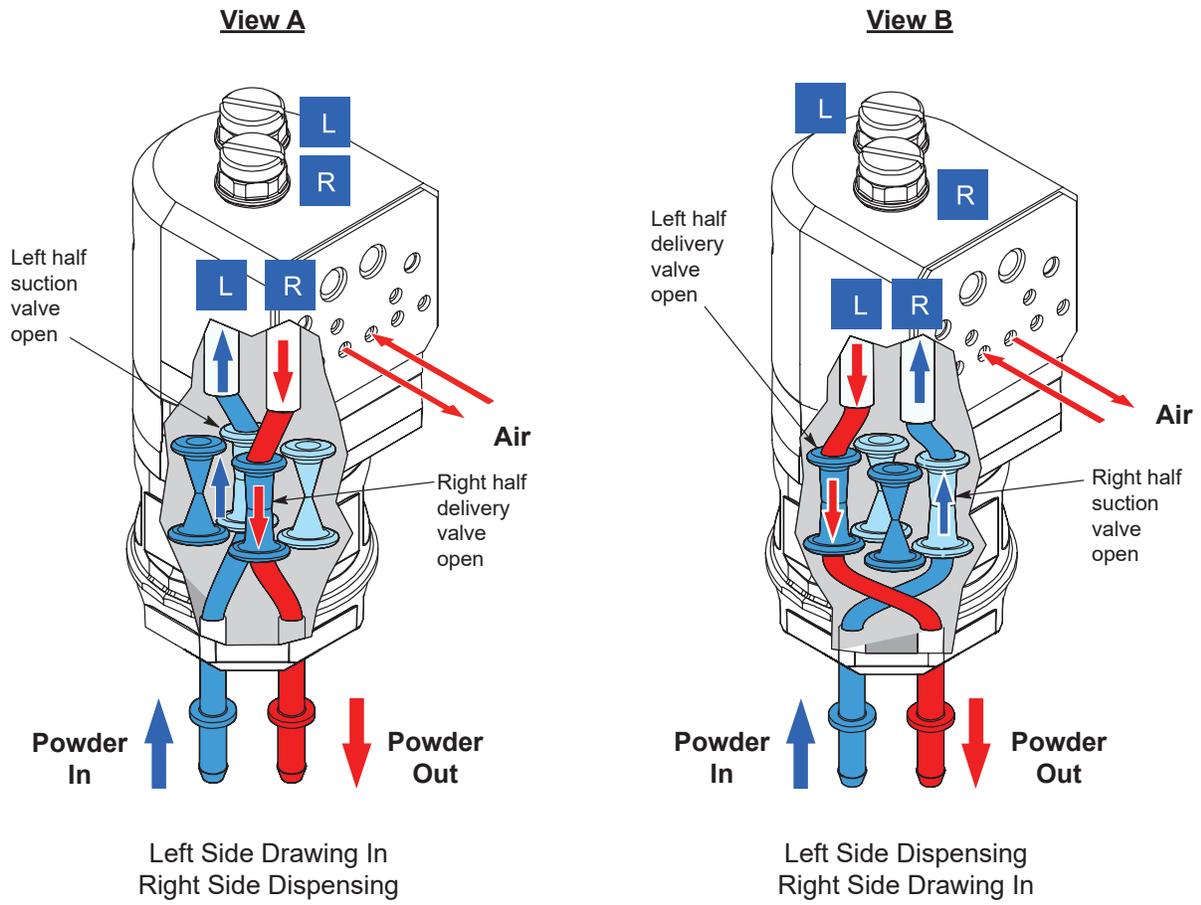


Figure 2-7 Operation of Pump (Shown as rear, right view of the pump)

Purging

See Figure 2-8. 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.

Stage 3: 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.

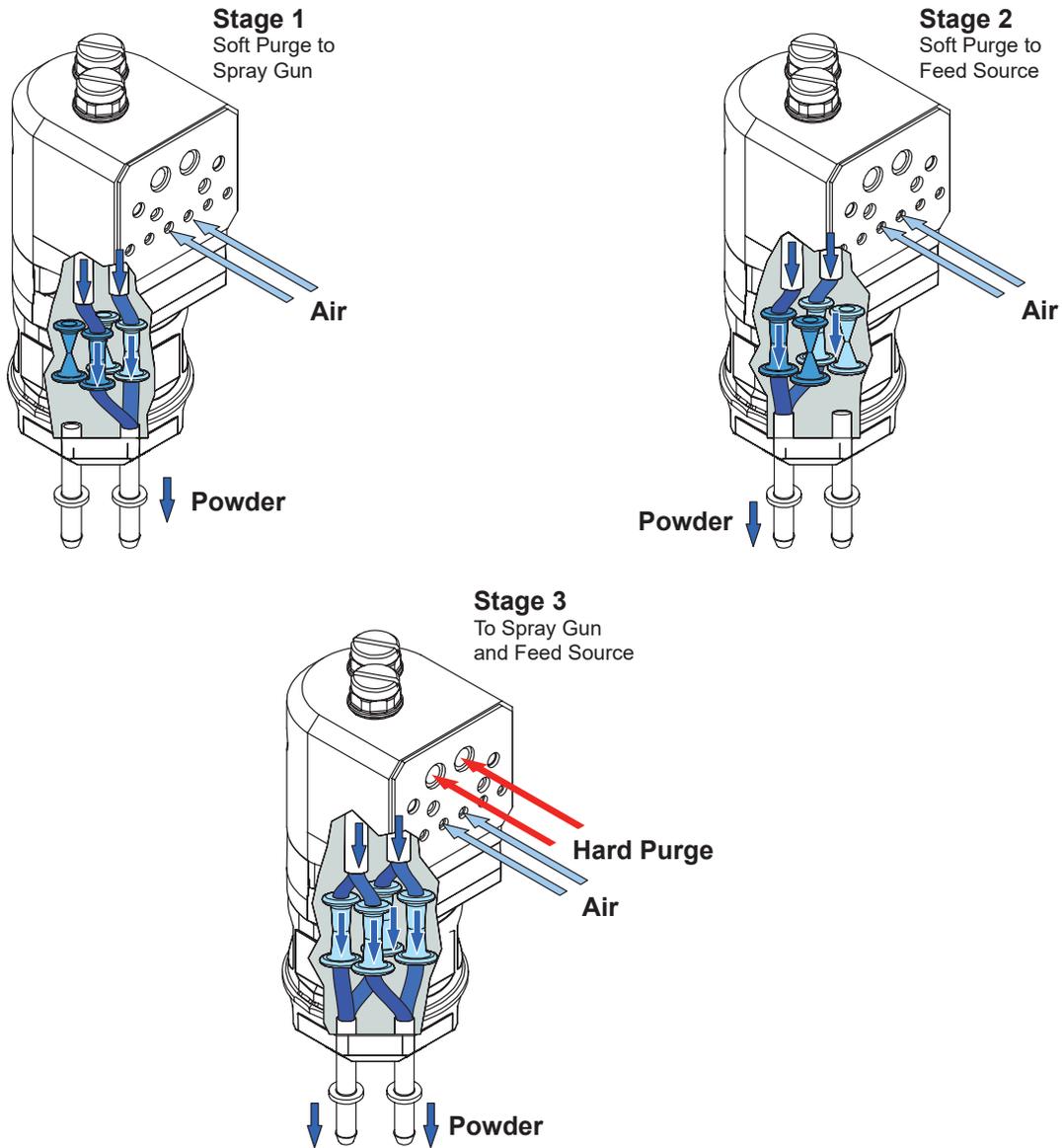


Figure 2-8 Purging Operation

Pump Control Manifold Components

See Figure 2-9. The Encore High-Density powder, Low-Volume air (HD) 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.

Position	Description	Function	Set Points (psi-static)
1	Right Side Suction Pinch Valve	Open and closes pinch valve	---
2	Right Side Delivery Pinch Valve	Open and closes pinch valve	---
3	Right Side Fluidizing Tube	Alternates negative and positive air pressure to the pump chamber	---
4	Left Side Fluidizing Tube	Alternates negative and positive air pressure to the pump chamber	---
5	Left Side Delivery Pinch Valve	Open and close pinch valve	---
6	Left Side Suction Pinch Valve	Open and close pinch valve	---
7	Vacuum Generator	Works on the venturi principal to generate the negative air pressure required to draw powder into the tubes	---
8	High Pinch Valve	Regulates the high pinch valve pressure	80 psi
9	Low Pinch Valve	Regulates the low pinch valve pressure	37 psi
10	Vacuum Generator Regulator	Regulates the supply from the vacuum generator	80 psi

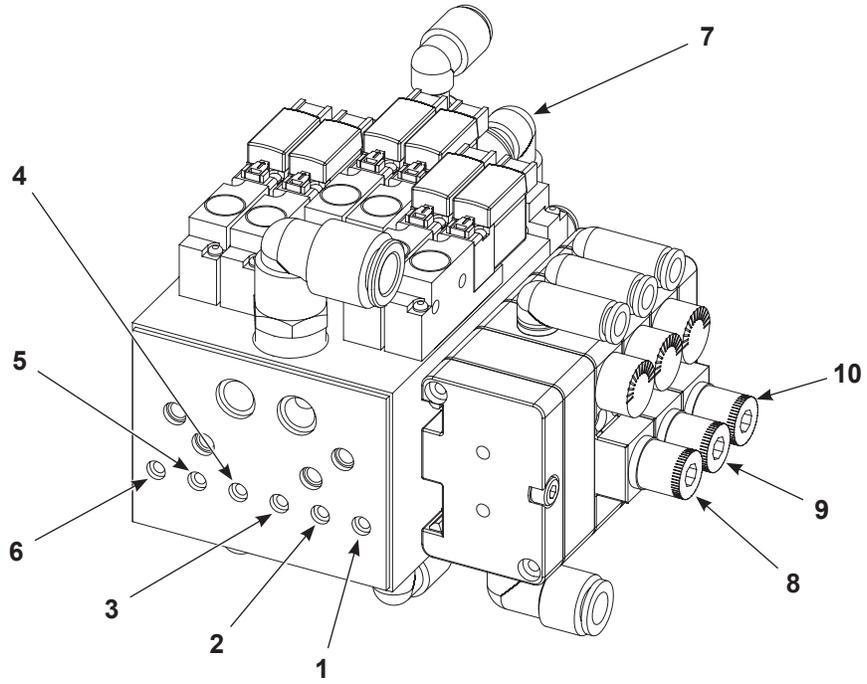


Figure 2-9 Pump Control Manifold

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Section 3

Installation

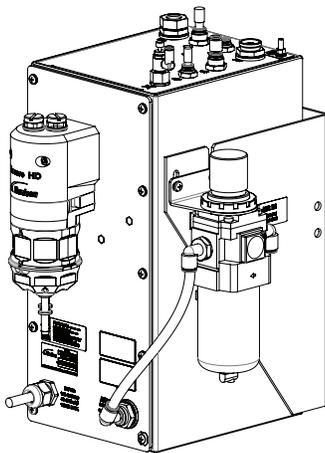


WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

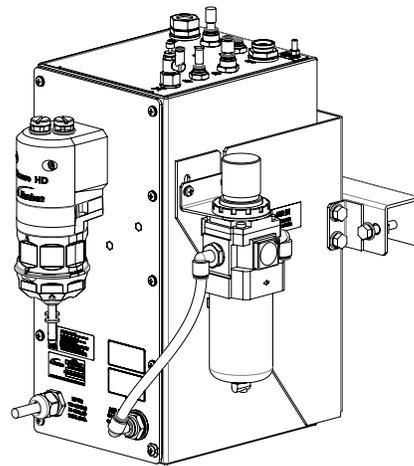
Wall/Rail Mount Systems

Pump Control Unit Mount

See Figure 3-1 and Figure 3-2. Using the supplied brackets, the power unit can be mounted to a wall or rail, as desired.



Wall Mount Configuration



Rail Mount Configuration

Figure 3-1 Controller with Mounting Brackets

Pump Control Unit Mount (contd)

Fasteners shown are provided with the controller. Make sure to provide clearance for the connections to both the power unit and the interface module.

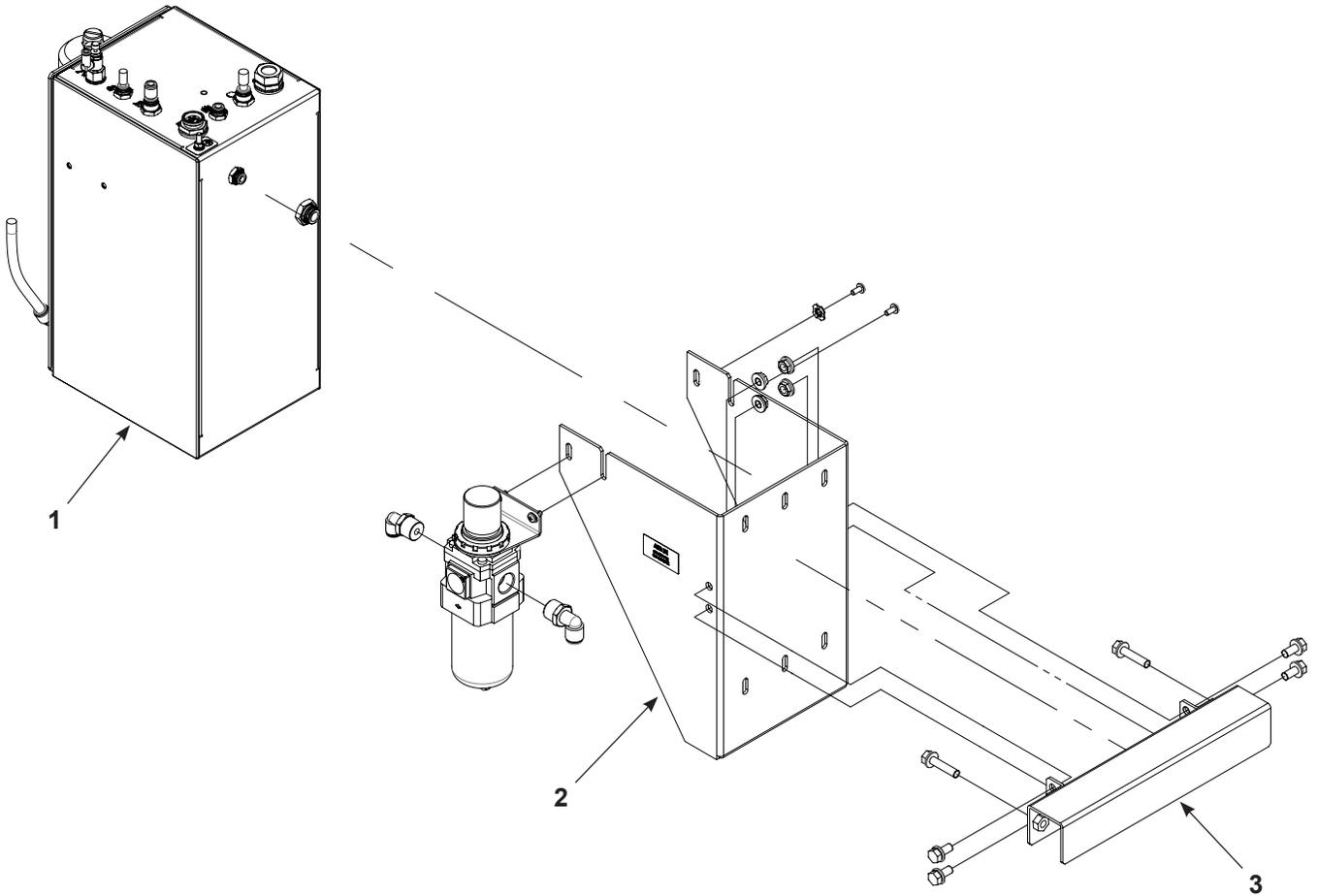


Figure 3-2 Pump Control Unit Wall Mounting Brackets

1. Pump control unit

2. Wall mount bracket

3. Rail mount bracket

Interconnect Cable Connection

See Figure 3-3. Connect the gray, 3 meter (10 ft) interconnect cable to the net/auxiliary receptacles on Encore HD system controller to the pump control unit.

NOTE: The interconnect cable shipped with the system is 3 meters (10 ft) long. If a longer length is desired, you must order additional cables. Two or more cables can be connected as needed.

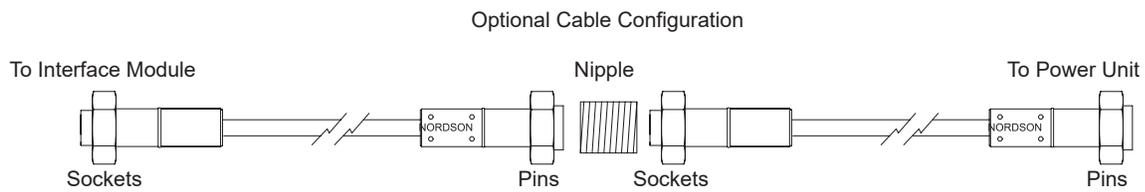
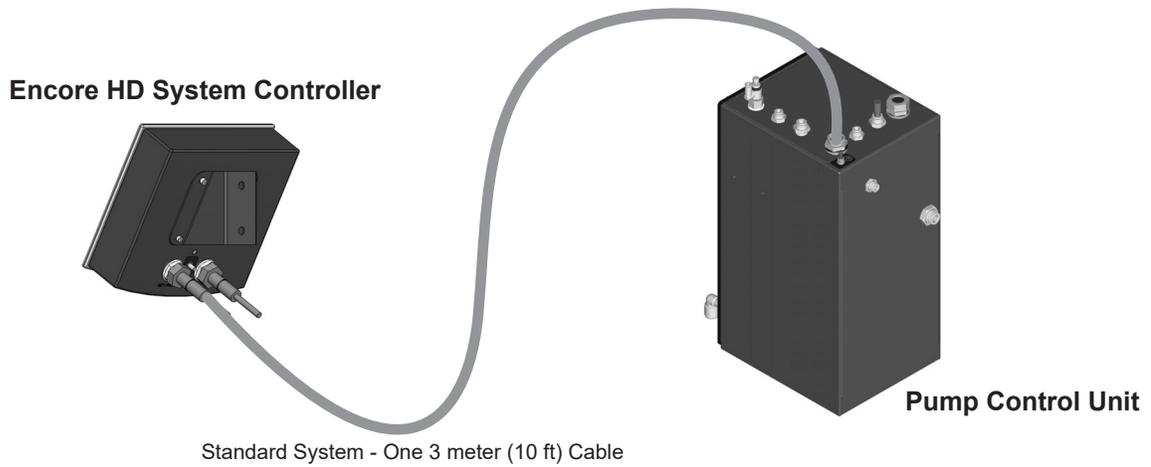


Figure 3-3 Pump Control Unit Interconnect Cable Connections

System Connections

System Diagram



WARNING: This diagram does not show all system grounds. All conductive equipment in the spray area must be connected to a true earth ground.

For additional information, see the *Wiring Diagrams* section.

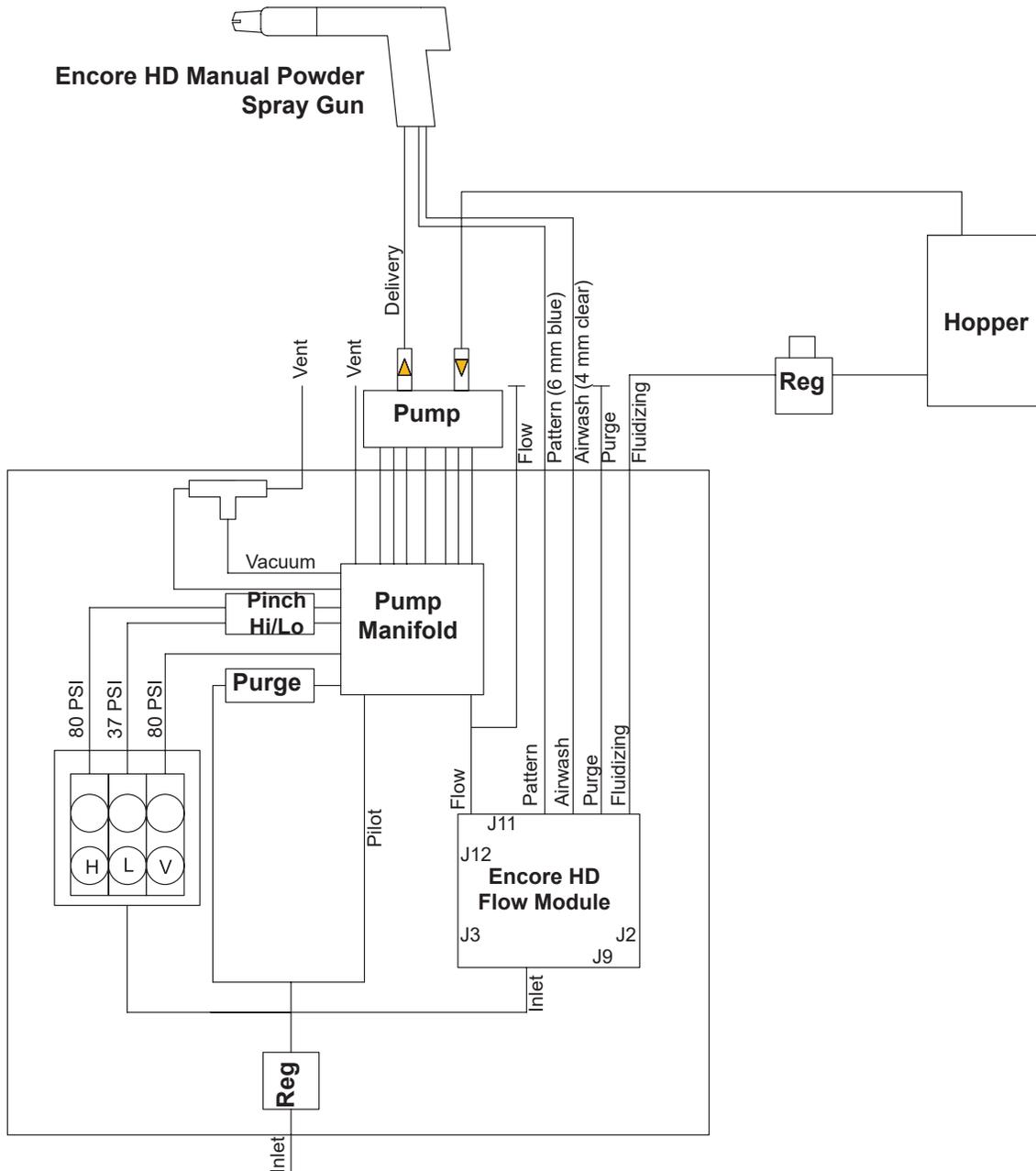


Figure 3-4 Encore HD Pump Control Unit Pneumatic Diagram

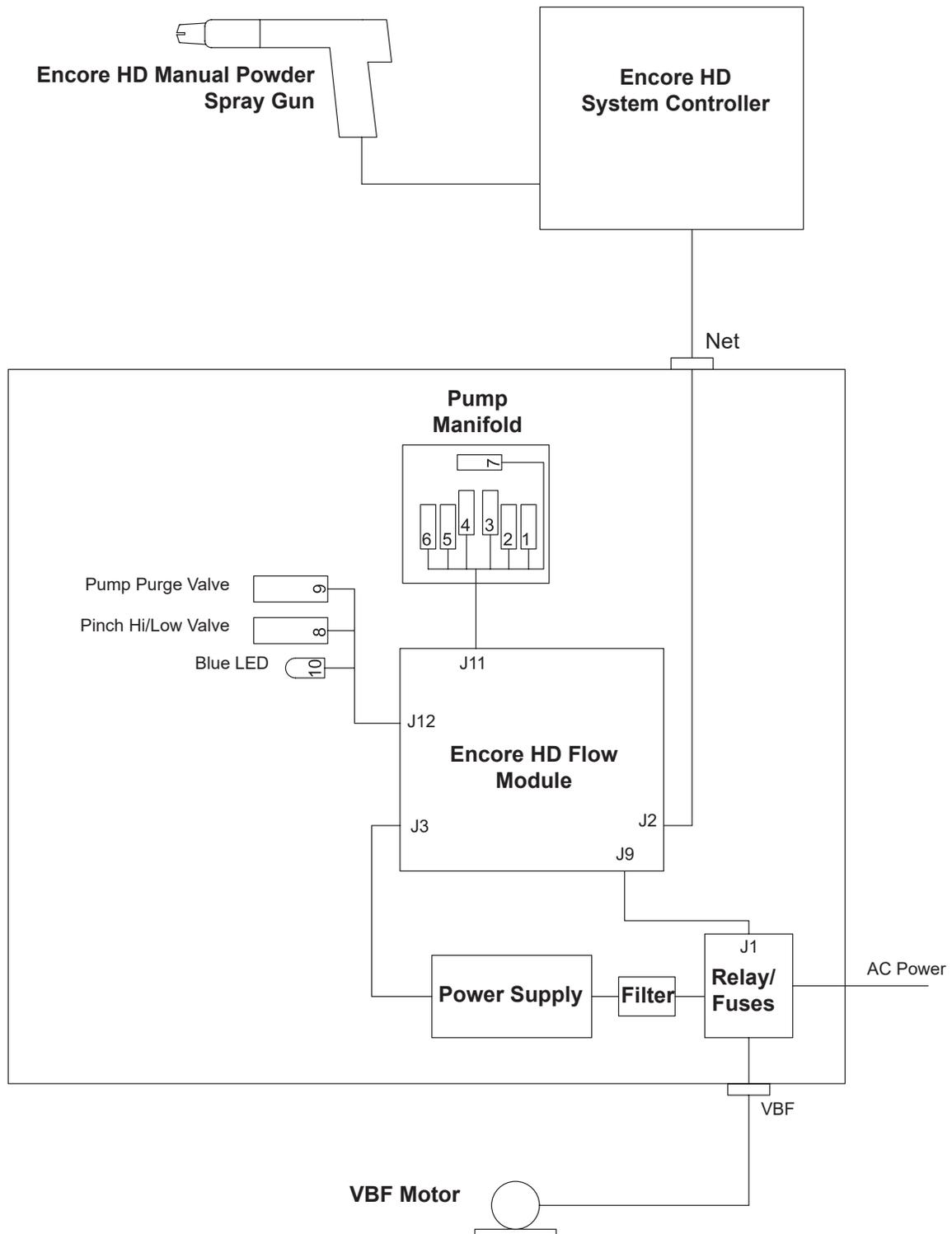


Figure 3-5 Encore HD Pump Control Unit Electrical Diagram

Pump Control Unit Connections

The Encore HD spray gun is controlled by the system controller and pump control unit connected by a network/power cable.

The pump control unit houses a 24Vdc power supply, circuit board, and iFlow® air controller and valves used to control the Encore HD pump.

The system controller houses the controller interface panel, which contains the displays and controls used to set and adjust electrostatic and flow settings delivered to the spray gun.

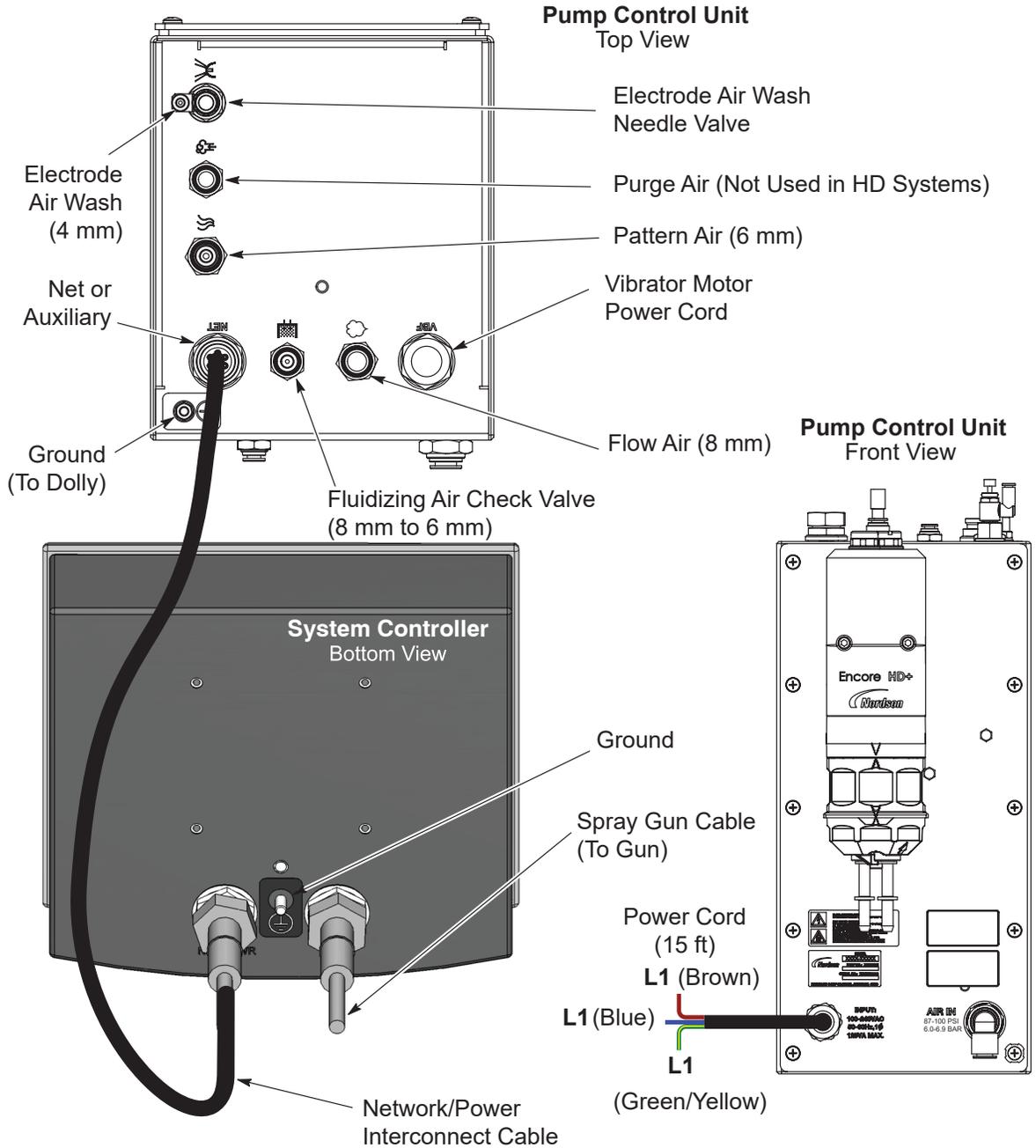


Figure 3-6 Encore HD System Controller Connections

Spray Gun Connections

Unpack the spray gun. Uncoil the spray gun cable and the included clear 4-mm and blue 6-mm air tubing. Connect the gun cable and air tubing as described in the following procedures.

Spray Gun Cable

1. Mobile System: See Figure 3-7. Feed the spray gun cable into the back of the dolly tower and up through the top front. This will allow the user to bundle the cable with the pattern and electrode air wash tubing.
2. Connect the cable to the spray system controller receptacle labeled *GUN*. The cable plug and receptacle are keyed.
3. Thread the cable nut onto the receptacle and tighten the nut securely.

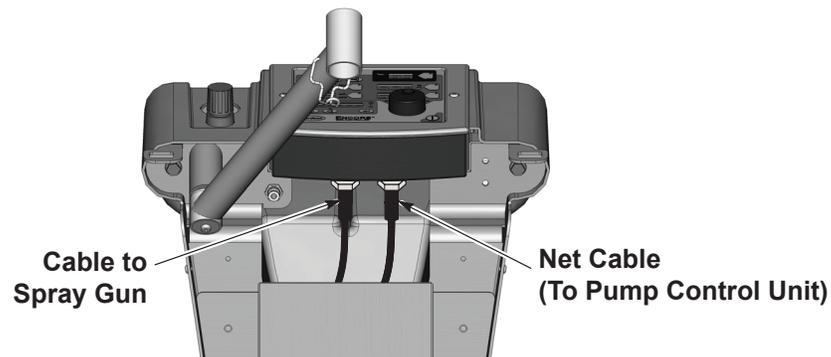


Figure 3-7 Spray Gun Cable Connection to System Controller – Mobile System Shown

Air Tubing and Powder Tube

NOTE: Prior to cutting tubing to length, measure to the same length as the spray gun cable.

See Figure 3-8.

1. Measure and connect the 6-mm blue pattern air tubing to the quick-disconnect fitting in the gun handle. Connect the other end to the pattern air fitting on the pump control unit. Measure and cut the air tubing to required system length.
2. Measure and connect the 4-mm clear electrode air wash tubing to the barbed fitting in the gun handle. Connect the other end to the gun air fitting on the pump control unit. Measure and cut the air tubing to required system length.
3. Push the barbed tube adapter into the end of the powder tube, then plug the adapter into the powder inlet tube in the bottom of the spray gun handle.
4. For hopper pickup tube, install the powder tube onto the barbed adapter. Then insert the adapter into the push-to-connect fitting on the pump adapter on top of the pickup tube assembly.

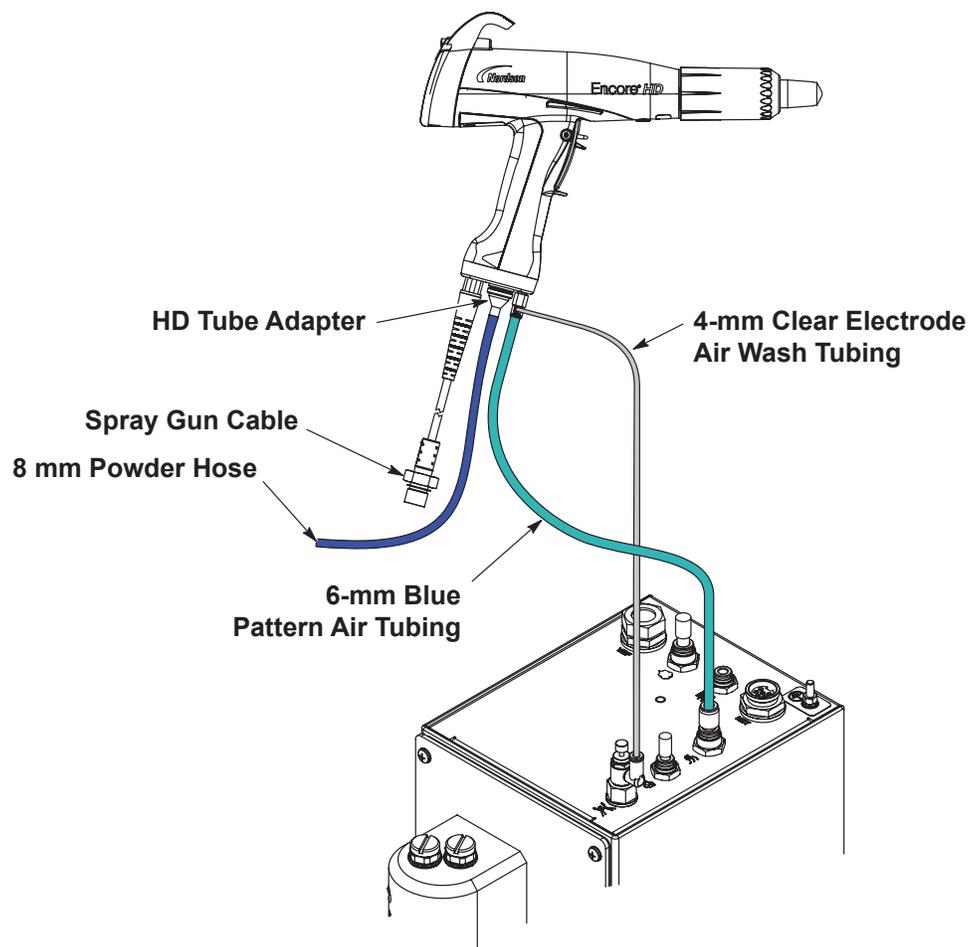


Figure 3-8 Spray Gun Connections

Bundling Tubing and Cable

See Figure 3-9. Use the sections of black spiral wrap supplied with the system to bundle together the spray gun cable, air tubing, and powder hose.

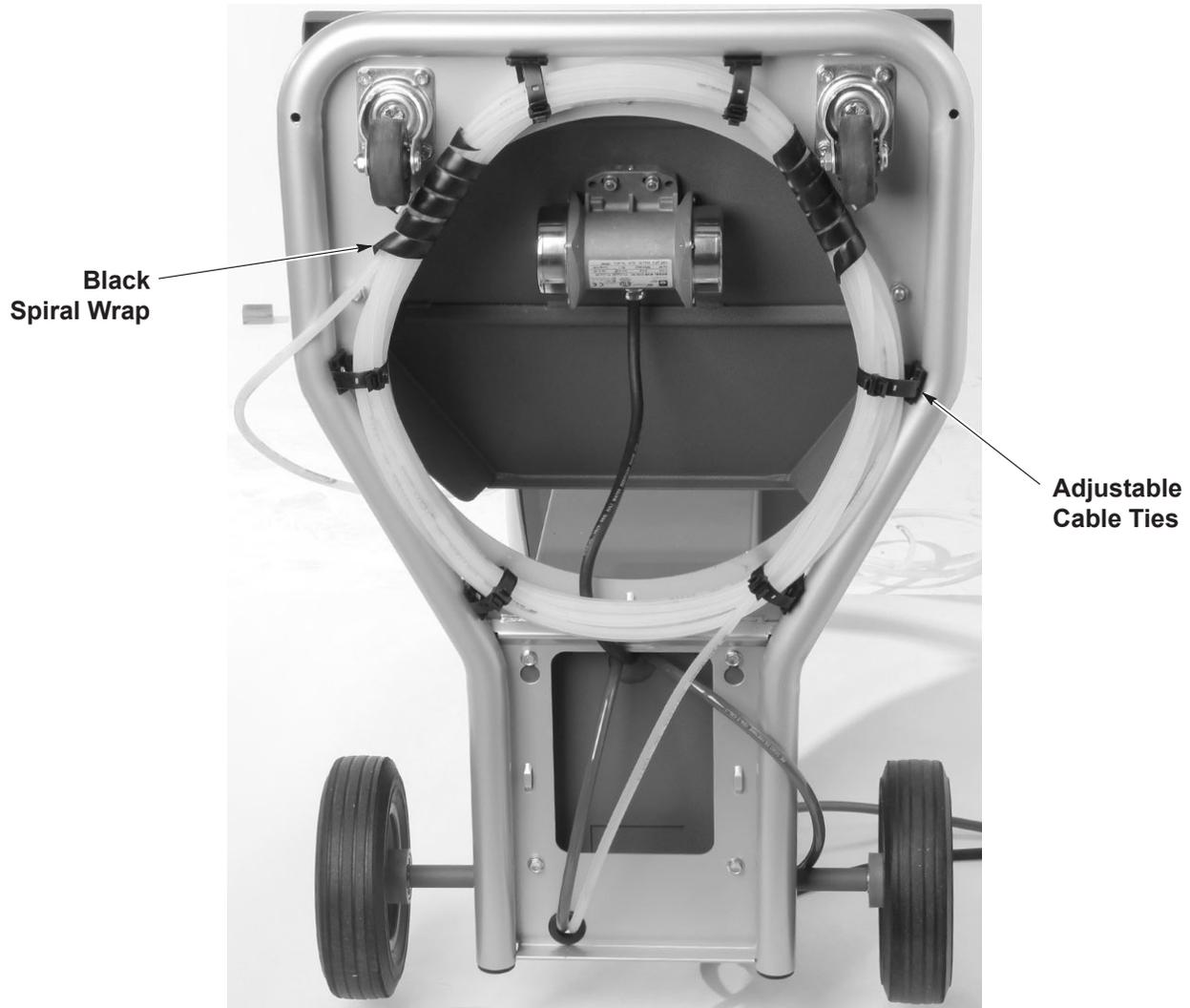


Figure 3-9 Bundling Tubing (Shown with Mobile System)

NOTE: See Figure 3-9. The minimum powder hose length is 60 ft.

For the Mobile Systems: The tubing is coiled under the dolly platform from the factory. If additional distance from dolly is required, open the tube holders and uncoil to the required length. Close the tube holders, being careful not to over tighten.

Spiral wrap is used to protect the tubing from the swivel castors.

For Standalone and Rail/Wall systems: The tubing must be coiled in a 3 ft diameter in a horizontal orientation.

Main System Air and Electrical Connections

Main System Air Supply

See Figure 3-10. The air supply pressure should be 6.0–6.9 bar (87–100 psi).

Recommended setpoint for included air filter/regulator is 6.5 bar (95 psi).

NOTE: Compressed air should be supplied from an air drop equipped with a self-relieving shutoff valve. The air must be clean and dry. A refrigerant or desiccant-type air drier and air filters are recommended.

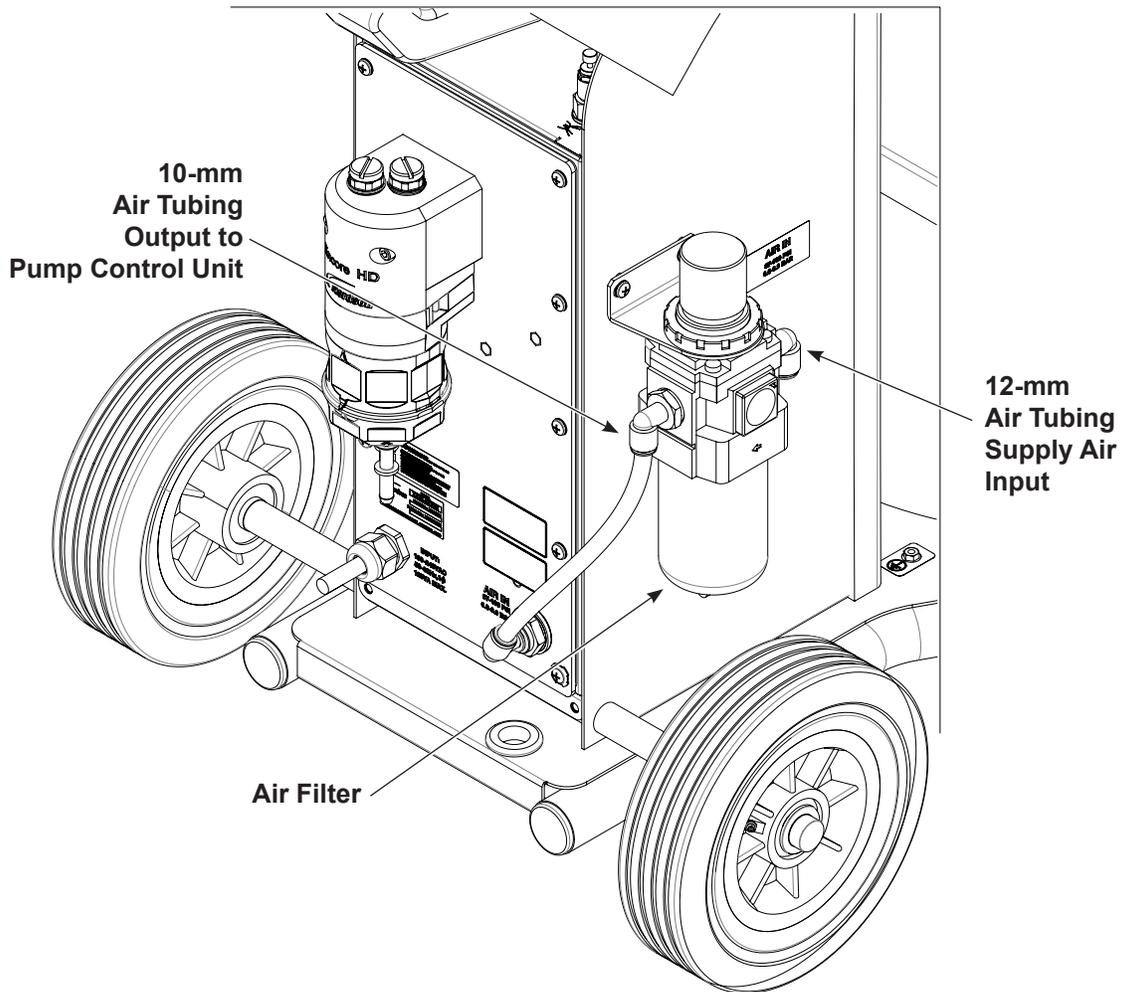


Figure 3-10 System Air Supply Connection (Shown with Mobile System)

Standalone, Rail Mount, and Wall Mount System Air Supply

See Figure 3-11.

1. Note the orientation of the flow indicator (1) on the top of the filter.

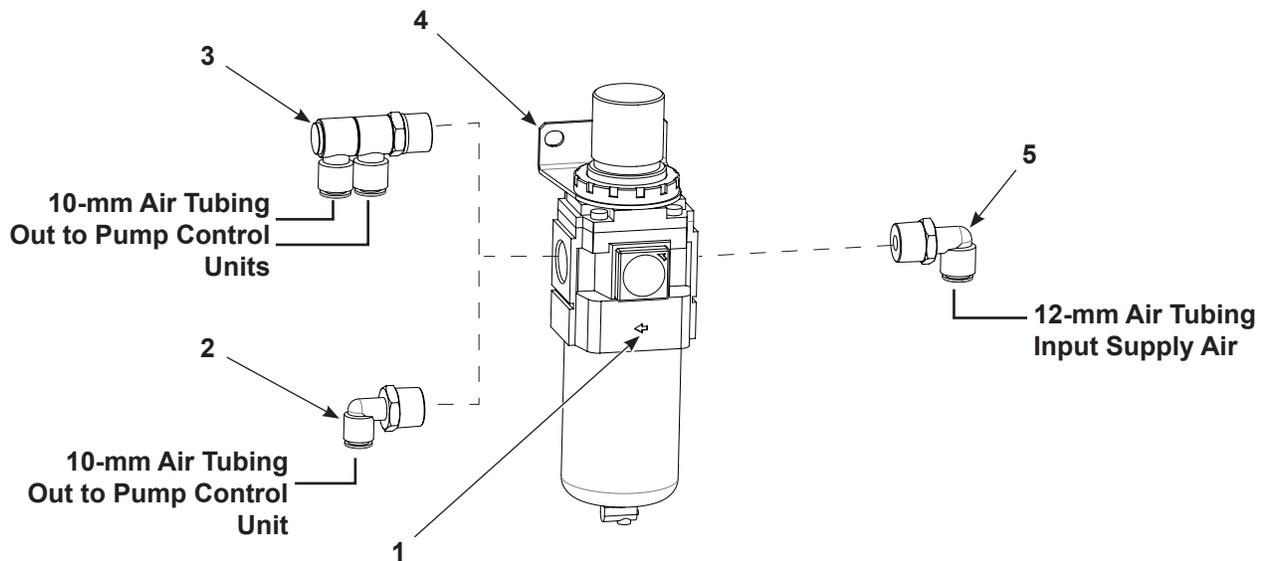


Figure 3-11 Air Filter Installation – Standalone and Rail/Wall Mount Systems

- | | | |
|--------------------------|-------------------------|--------------------------|
| 1. Flow indicator | 3. 10-mm dual connector | 5. 12-mm elbow connector |
| 2. 10-mm elbow connector | 4. Bracket | |

Encore HD Powder Pump Hose

See Figure 3-12.

Standard 8-mm OD Poly Tubing

1. Cut the poly tubing with a tubing cutter. Powder cross-contamination may result if the powder tubing is cut unevenly.
2. Install the poly tubing (3) into the lower Y block (1) and push to internal connector fitting (not shown)

Flexible 8-mm OD Tubing

1. The barbed adapters used to connect flexible tubing to the pump are shipped with the pump.
2. Install the end of the adapter (2) into the lower Y block (1). Push to internal connect fitting.
3. Push the flexible powder tubing (4) over the barbed ending of the adapter (2).

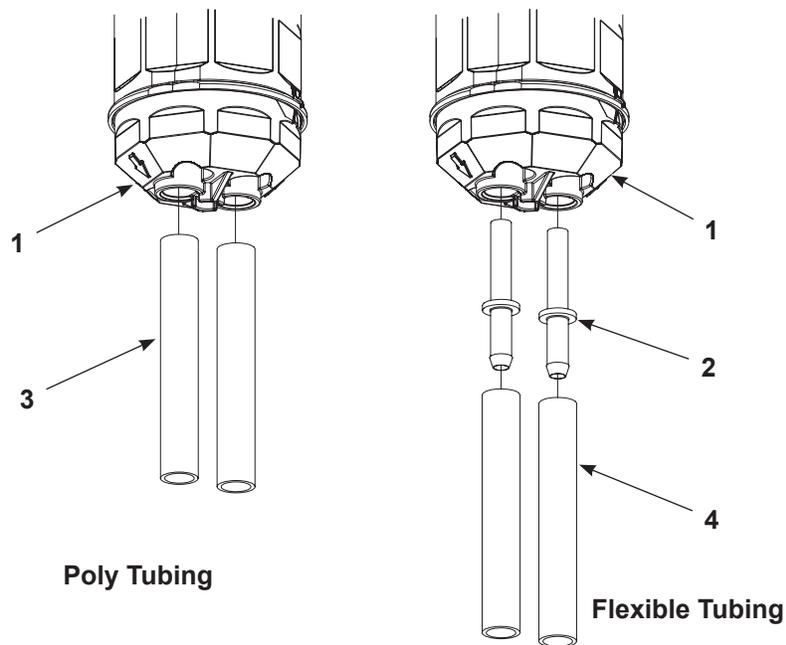


Figure 3-12 Encore HD Pump Tubing Installation

- | | |
|--------------------------|--------------------|
| 1. Lower Y block | 3. Poly tubing |
| 2. Barbed tubing adapter | 4. Flexible tubing |

Pump Adapter Installation

See Figure 3-13. The pump adapter allows you to connect the Encore HD pump to your powder source. Install the tubing onto the barbed hose adapter. Then, plug the barbed hose adapter into the pump adapter.



Figure 3-13 Pump Mounting with Adapter on HR or NHR Hoppers

Electrical Connections



CAUTION: If you are setting up a vibratory box feeder system, check the system identification plate for the correct voltage. Connecting a system with a 115 Vac vibrator motor to 230 Vac could damage the vibrator motor.

NOTE: The spray gun controller is rated for 100–240 Vac at 50/60 Hz, single phase, and is marked as such, but the power supplied to the system must match the vibrator motor rating.

Wire the system power cord to a customer-supplied three-prong plug. Connect the plug to a receptacle that will supply the system with the correct voltage.

Wire Color	Function
Blue	N (neutral)
Brown	L (hot)
Green/Yellow	GND (ground)

System Ground



WARNING: All conductive system components in the spray area must be connected to a true earth ground. Failure to observe this warning could result in an electrostatic discharge strong enough to cause a fire or explosion.

Mobile Systems

See Figure 3-14. Connect the ground cable attached to the pump control unit ground stud to a true earth ground.

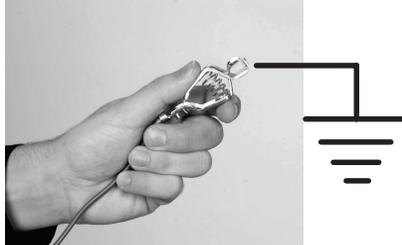


Figure 3-14 System Ground Connection

Wall / Rail Mount Systems

Use the ESD ground bus bar kit included with the system to connect the power unit ground stud to the grounded spray booth or a true earth ground. Refer to the instructions included with the kit.

Section 4

Operation



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



WARNING: This equipment can be dangerous unless it is used accordance with the rules laid down in this manual.



WARNING: All electrically conductive equipment in the spray area must be grounded. Ungrounded or poorly grounded equipment can store an electrostatic charge which can give personnel a severe shock or arc and cause a fire or explosion.

European Union, EX, Special Conditions for Safe Use

1. The Encore XT/HD Interface Control Unit and the Encore HD Controller Power Unit or a Mobile Powder Systems shall only be used over the ambient temperature range of +15°C to +40°C with the Encore HD Powder Electrostatic Manual Applicator or with the Encore HD Select Powder Electrostatic Robot Applicator.
2. Equipment may only be used in areas of low impact risk.
3. Caution should be taken when cleaning external painted and non-metallic surfaces of the controller, interface, applicator, and all accessories. There is a potential for static electricity build up on these components. Follow the manufacturer's instructions to avoid possible electrostatic charging hazards. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in PD CLC/TR 60079-32-1 and IEC TS 60079-32-1.

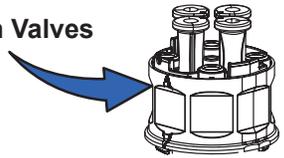
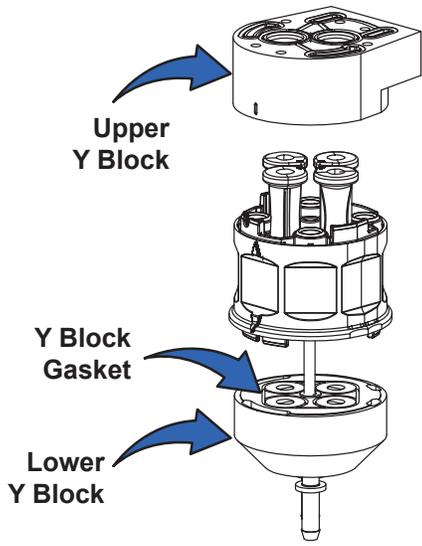
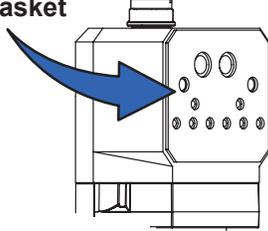
Maintenance

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 Visual Inspection	<p>Pinch Valves</p> 	<p>Inspect the pinch valve body for signs of powder leakage. If powder is seen in the pinch valve body or there are stress cracks in the pinch valves, replace the pinch valves and filter discs.</p>
Every Six Months or Each Time You Disassemble the Pump	 <p>Upper Y Block</p> <p>Y Block Gasket</p> <p>Lower Y Block</p>	<p>NOTE: To reduce downtime, keep a spare upper manifold and set of lower wear blocks in stock to install while the other set is being cleaned.</p> <p>Disassemble the pump and inspect the lower Y block and upper Y block for signs of wear or impact fusion. Clean these parts in an ultrasonic cleaner if necessary.</p> <p>NOTE: Replace the Y block gasket each time the pump is disassembled.</p>
	<p>Gasket</p> 	<p>Inspect the gasket for damage. Replace if necessary.</p>

Section 5

Troubleshooting



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



WARNING: Before making repairs to the controller or spray gun, shut off system power and disconnect the power cord. Shut off the compressed air supply to the system and relieve the system pressure. Failure to observe this warning could result in personal injury.

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact Nordson technical support at (800) 433-9319 or your local Nordson representative for help.

Pump Troubleshooting

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 5-1 identifies the functions of the ports on the rear face of the pump.

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

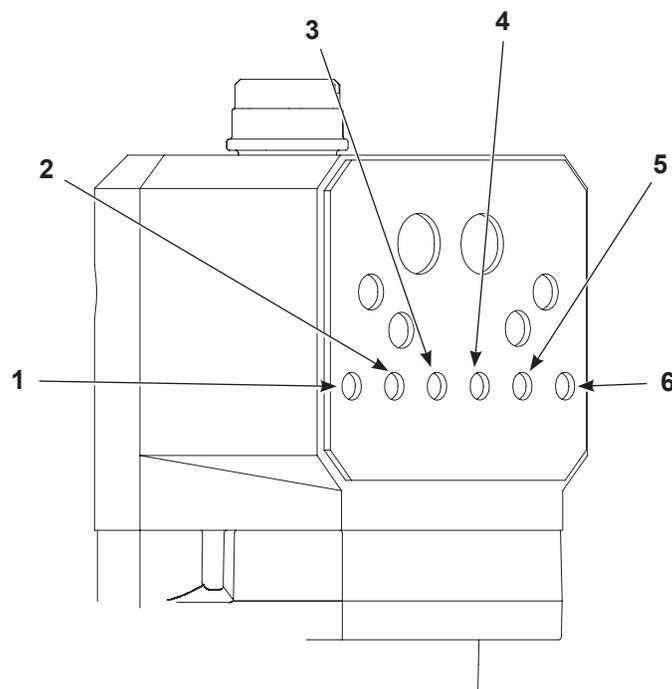


Figure 5-1 Pump Port Functions

Manifold Troubleshooting

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 <i>iFlow Module Repair</i> on page 6-4 for instructions. If the problem persists, replace the pump air flow control valve. Refer to <i>iFlow Module Repair</i> on page 6-4 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 <i>Solenoid and Flow Control Valve Functions</i> on page 5-5 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 <i>iFlow Module Repair</i> on page 6-4 for instructions. If the problem persists, replace the pump air flow control valve. Refer to <i>iFlow Module Repair</i> on page 6-4 for instructions.
4. Spray gun fan pattern changes	Defective pattern air flow control valve	Clean the pattern air flow control valve. Refer to <i>iFlow Module Repair</i> on page 6-4 for instructions. If the problem persists, replace the pattern air flow control valve. Refer to <i>iFlow Module Repair</i> on page 6-4 for instructions.

Solenoid and Flow Control Valve Functions

Figure 5-2 identifies the solenoid and flow control valve functions and the corresponding ports on the manifold.

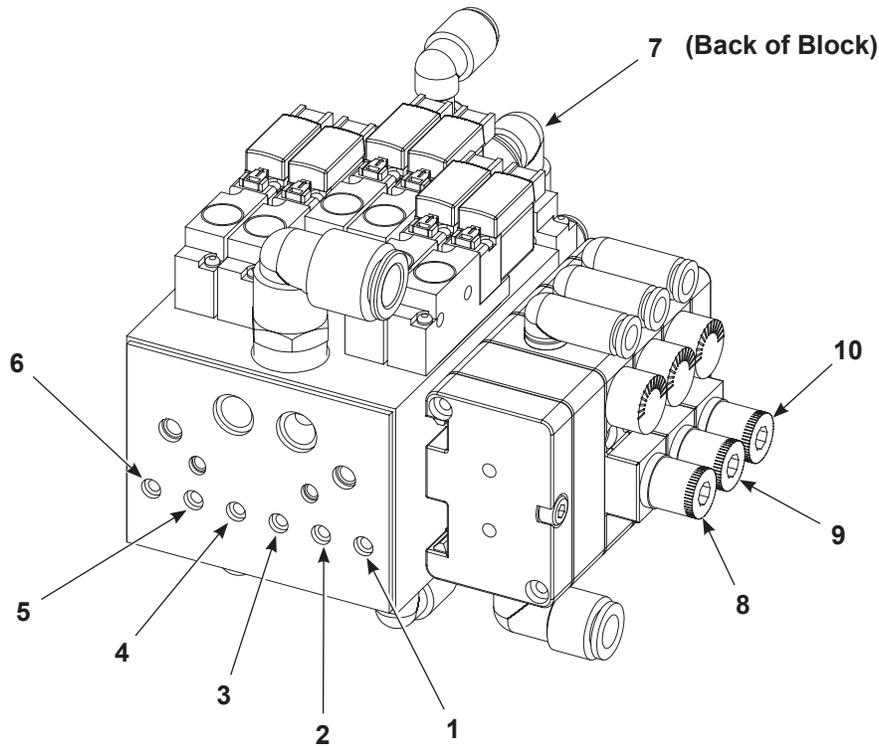


Figure 5-2 Solenoid and Flow Control Valve Functions

Position	Function	Position	Function
1	Right Side Suction Pinch Valve	6	Left Side Suction Pinch Valve
2	Right Side Delivery Pinch Valve	7	Vacuum Generator
3	Right Side Fluidizing Tube	8	High Pinch Valve (80 psi)
4	Left Side Fluidizing Tube	9	Low Pinch Valve (37 psi)
5	Left Side Delivery Tube	10	Vacuum Generator Regulator (80 psi)

Re-Zero Procedure

Perform this procedure if the system controller interface indicates air flow when the spray gun is not triggered on, or if a Flow Air or Atomizing Air Flow High Help code (H25 or H26) appears. See the system manual for additional information on help codes.

Before performing a re-zero procedure:

- Make sure the air pressure being supplied to the system is higher than the minimum 5.86 bar (85 psi).
 - Make sure no air is leaking through the module output fittings or from around the solenoid valves or proportional valves. Re-zeroing modules with leaks will result in additional errors.
1. At the pump control panel, disconnect the 6 mm pattern air tubing and install 8-mm plugs in the output fittings.
 2. Press the Nordson button for 5 seconds to display the controller functions. F00-00 is displayed.
 3. Rotate the knob until F10-00 is displayed.
 4. Press the **Enter** button, then rotate the knob to display F10-01.
 5. Press the **Enter** button. The system controller will re-zero the flow and pattern air and reset the function display to F10-00.
 6. Remove the plugs from the pattern air output fittings and reconnect the air tubing.

Controller Interconnect Cable Test

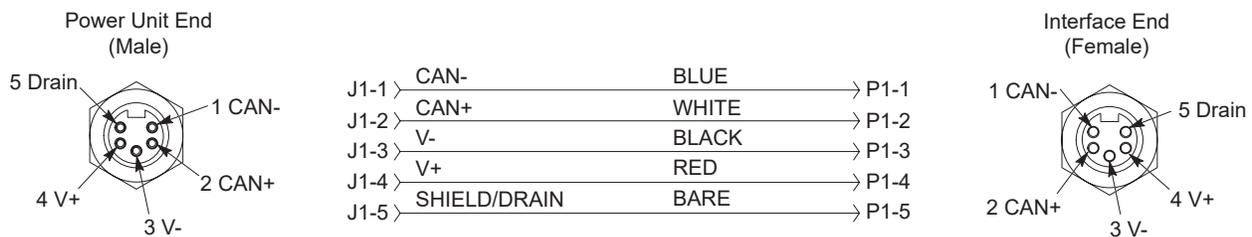


Figure 5-3 Controller Interconnect Cable Wiring

Section 6

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 the controller and disconnect the power cord or disconnect and lock out power at a breaker or disconnect ahead of the controller before opening the controller enclosures. Failure to observe this warning could result in a severe electrical shock and personal injury.



CAUTION: Electrostatic sensitive device. To avoid damaging the controller circuit boards, wear a grounding wrist strap and use proper grounding techniques when making repairs.

Refer to the *Wiring Diagram* section for the pump control unit electrical schematic and harness connections.

Removing Panel Assembly

1. Disconnect the main power and air.
2. Remove the ten screws (2) securing the panel assembly (3) to the enclosure (1).
3. Slowly remove panel assembly



CAUTION: Handle cable and connectors with care. When reassembling, do not allow cables or air lines to become pinched or twisted at the back of the cabinet wall.

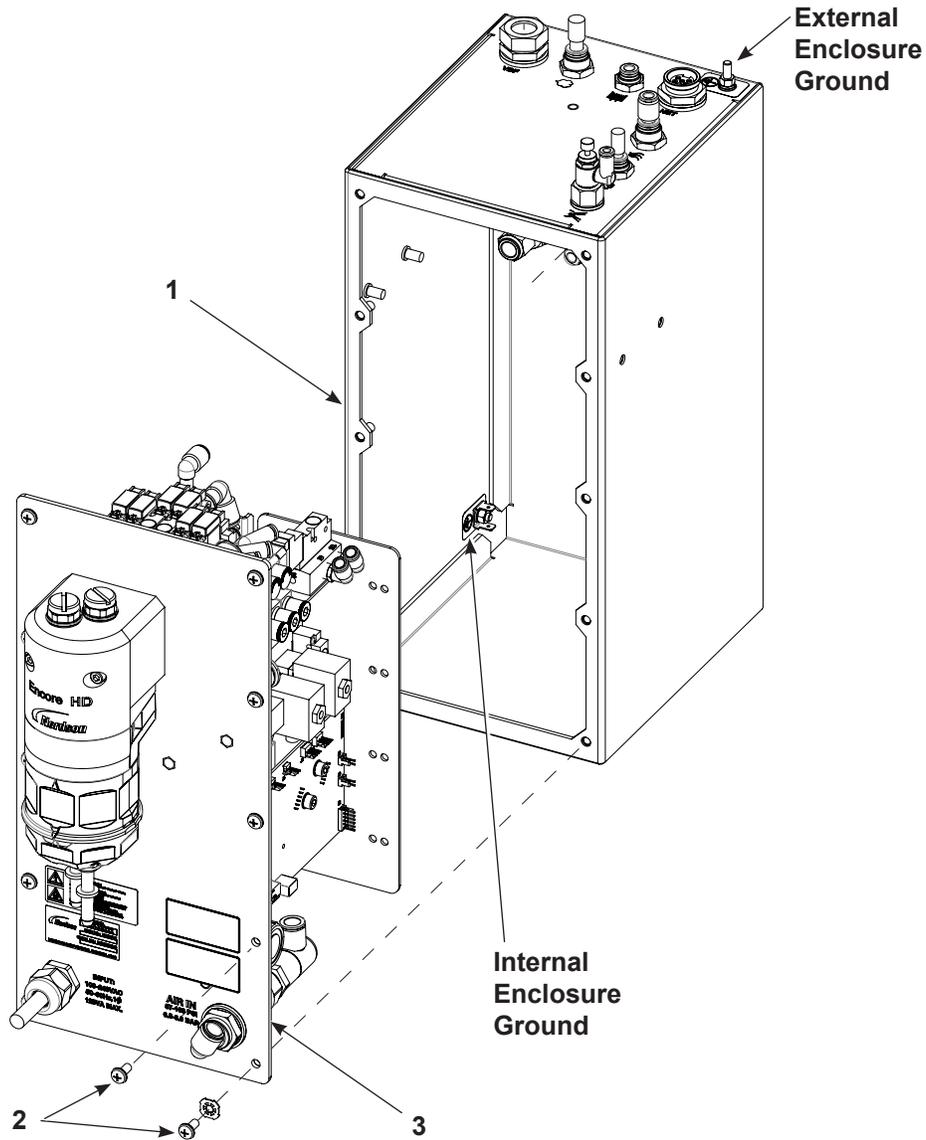


Figure 6-1 Sub-Panel Removal

1. Enclosure

2. Screws

3. Panel assembly

Sub-Panel Components

Refer to the following when making repairs:

- *Parts* section for parts and service kits.
- *Wiring Diagrams* for wiring diagrams and circuit board connections.
- *Regulator Adjustment* and *iFlow Module Repair* for repair procedures.

Regulator Adjustment

See Figure 6-2.

Use the iFlow Air Verification Kit and this procedure to adjust the regulator that supplies air to the iFlow module after replacing.

NOTE: The plugs and connectors in the regulator ports are not supplied with a replacement regulator. Re-use the plugs and connectors from the old regulator in the replacement regulator.

1. Unplug one of the fittings from the regulator and plug the gauge into the fitting.
2. Set the regulator to 85 psi.
3. Remove the gauge and replace the plug in the regulator fitting.
4. Push the regulator knob to lock the setting.

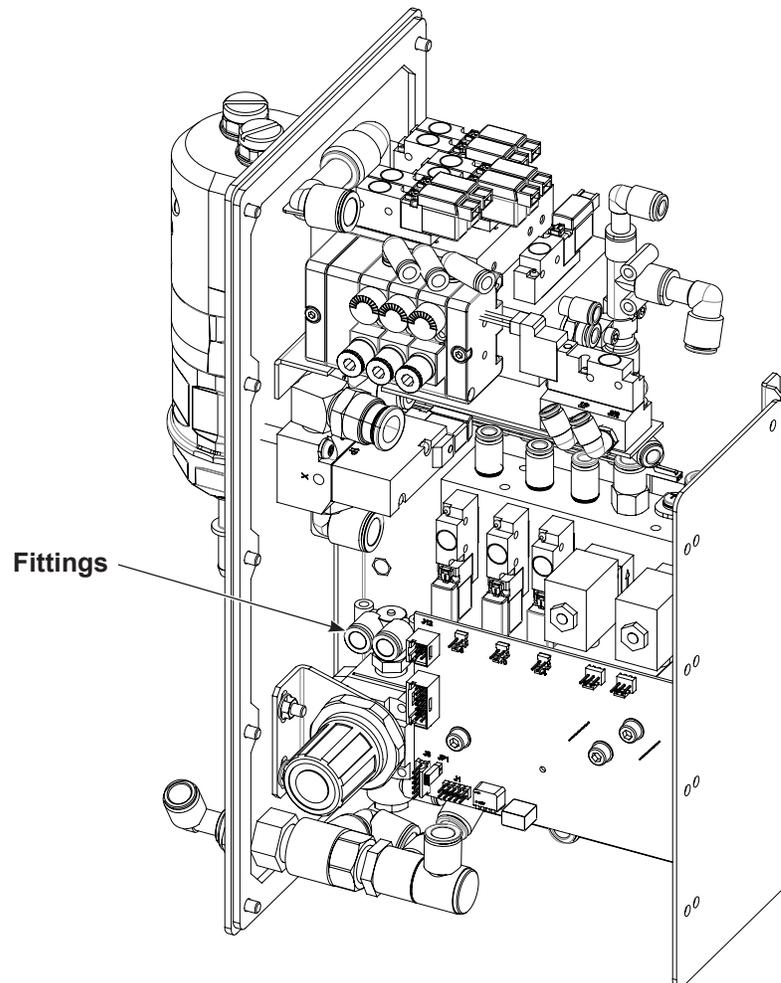


Figure 6-2 Regulator Adjustment

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iFlow Module Repair

The iFlow module consists of a circuit board and air manifold, on which are mounted two proportional valves, transducers, and four solenoid valves. Repair of the flow module is limited to cleaning or replacing the proportional valves, and replacing the solenoid valves, check valves, and fittings.



CAUTION: The module circuit board is an electrostatic sensitive device (ESD). To prevent damage to the board when handling it, wear a grounding wrist strap connected to ground. Handle the board only by its edges.

Testing iFlow Modules



CAUTION: Handle the orifice assembly with care. Rough handling can damage the orifice and affect the manometer reading.

Conveyance Air Flow

NOTE: Perform a color change and verify that all powder is removed from the pump before starting this procedure.

1. Use the flow verification tool (1039881) and connect to the delivery port of the pump with 10 ft of 8 mm tubing.
2. Set the delivery to 100% and set assist air to 00% and trigger the pump ON. The monometer should read 4.0–5.0 psi (0.2–0.3 bar).
3. Increase the assist air to +50% and trigger the pump ON. The monometer should read 7.0–8.0 psi (0.5–0.6 bar).
4. Decrease the assist air to –50% and trigger the pump ON. The monometer should read 1.0–3.0 psi (0.1–0.2 bar).

Pattern Air

Use the flow verification tool (1039881) with its instructions and connect to the pattern air output.

Solenoid Valve Replacement

See Figure 6-3. To remove the solenoid valves (13), remove the two screws in the valve body and lift the valve off the manifold.

Make sure the O-rings furnished with the new valves are in place before installing the new valve on the manifold.

Proportional Valve Cleaning

See Figure 6-3. A dirty air supply can cause the proportional valve (6) to malfunction. Follow these instructions to disassemble and clean the valve.

1. Disconnect the coil (3) wiring from the circuit board (1). Remove the nut (2) and coil from the proportional valve (6).
2. Remove the two long screws (4) and two short screws (5) to remove the proportional valve from the manifold.

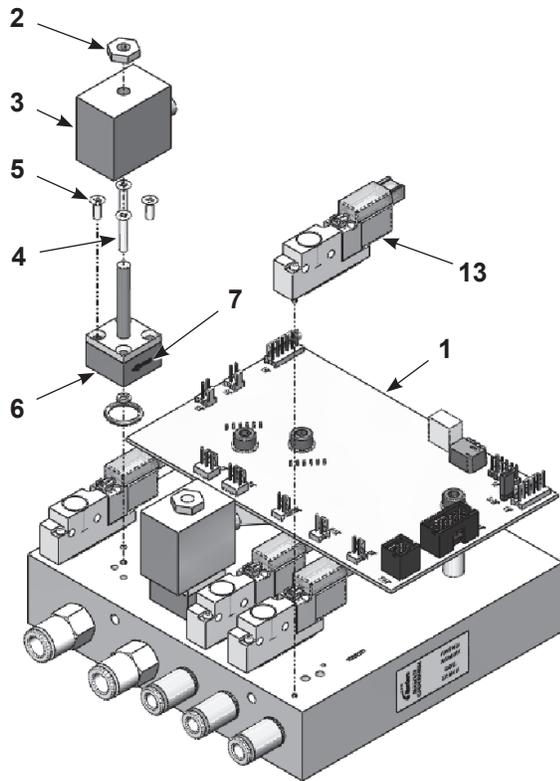


CAUTION: The valve parts are very small; be careful not to lose any. Do not mix the springs from one valve with those from another. The valves are calibrated for different springs.

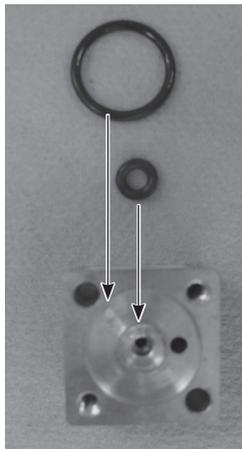
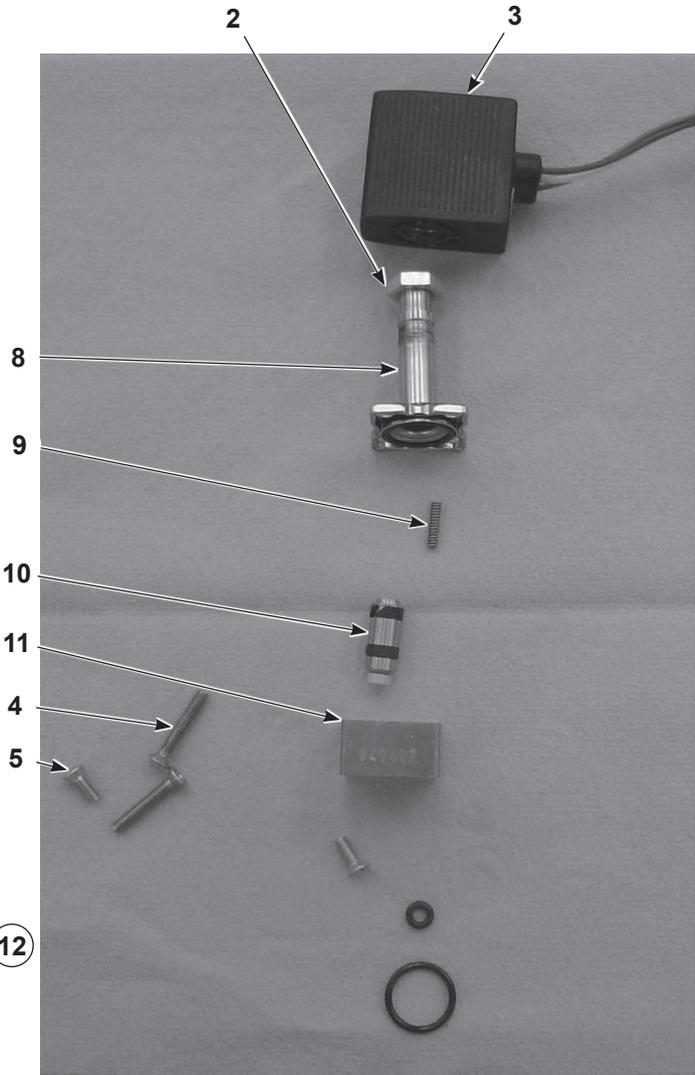
3. Remove the valve stem (8) from the valve body (11).
4. Remove the valve cartridge (10) and spring (9) from the stem.
5. Clean the cartridge seat and seals, and the orifice in the valve body. Use low-pressure compressed air. Do not use sharp metal tools to clean the cartridge or valve body.
6. Install the spring and then the cartridge in the stem, with the plastic seat on the end of the cartridge 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 side of the body points toward the outlet fittings.
9. Install the coil over the valve stem, with the coil wiring pointing toward the circuit board. Secure the coil with the nut and connect the coil wiring to the circuit board.

Proportional Valve Replacement

See Figure 6-3. If cleaning the proportional valve does not correct the flow problem then replace the valve. Before installing a new valve, remove the protective cover from the bottom of the valve body. Be careful to not lose the O-rings under the cover.



Proportional Valve Cleaning



Valve Body Bottom



Valve Body Top

Figure 6-3 iFlow Module Repair – Solenoid Valve Replacement and Proportional Valve Cleaning or Replacement

- | | | |
|--|----------------------------|---------------------|
| 1. Circuit board | 6. Proportional valve (2) | 10. Cartridge |
| 2. Nut-coil to proportional valve (2) | 7. Direction of flow arrow | 11. Valve body |
| 3. Coil-proportional valve (2) | 8. Stem | 12. Orifice |
| 4. Long screws-valve to manifold (2) | 9. Spring | 13. Solenoid valves |
| 5. Short screws-valve stem to body (2) | | |

Vibrator Motor Replacement

When replacing the vibrator motor, make sure you order the correct motor for your voltage. Check the ID plate on the power unit. Replacement motors include the power cable.

Refer to the *Power Unit Wiring Diagram* in the *Troubleshooting* section of this manual for internal VBF wiring.

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. Perform a color change to remove old powder from the pump, then relieve the system air pressure and disconnect the purge air tubing.

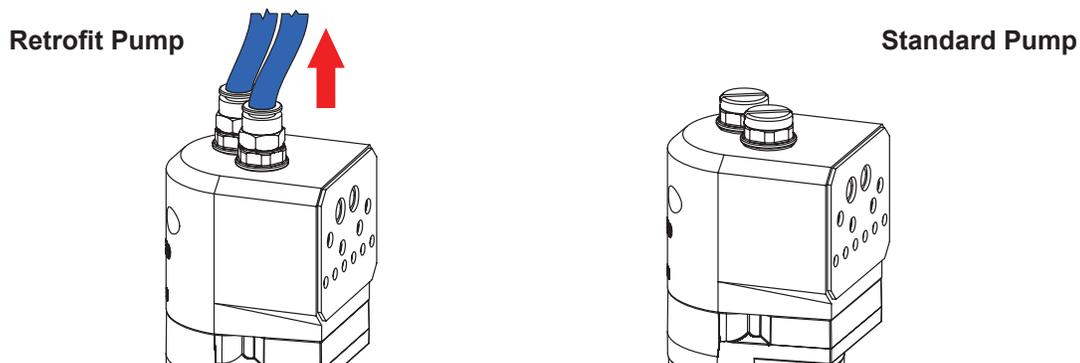


Figure 6-4 Removing the purge air tubing

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

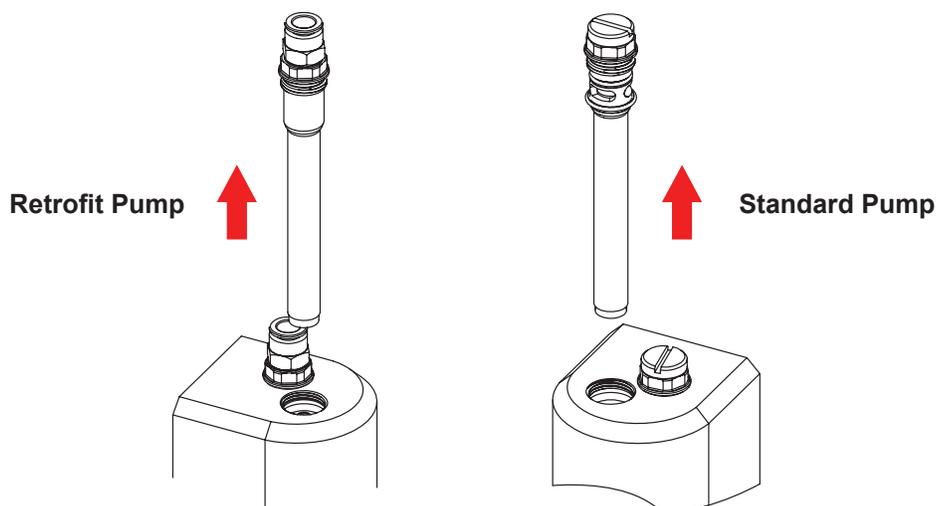


Figure 6-5 Loosening the fluidizing tubes

3. Pull the old fluidizing tube off the access plug, then seat the new fluidizing tube against the red o-ring.

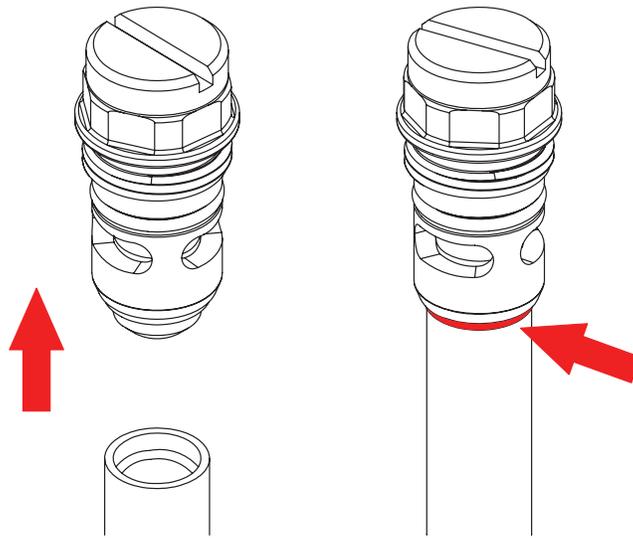


Figure 6-6 Replacing the Access Plugs to the Fluidizing Tubes

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

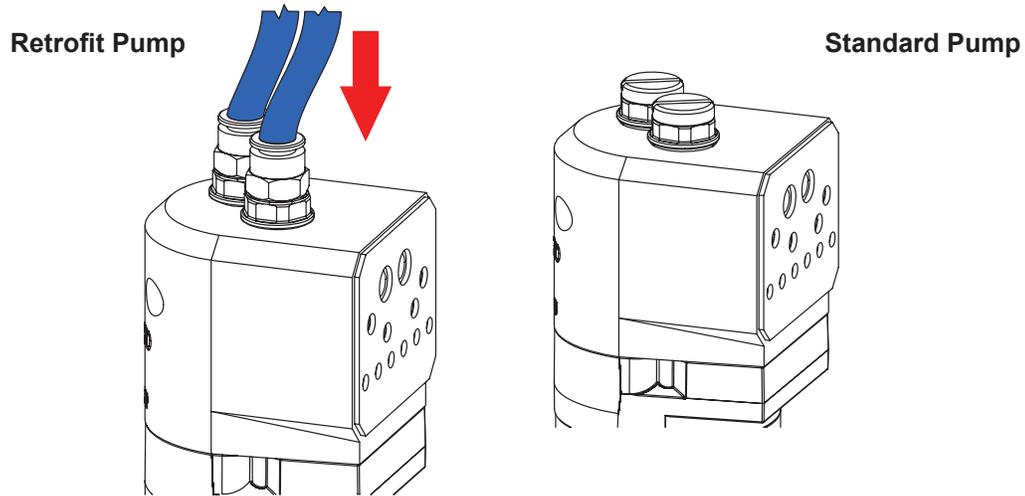


Figure 6-7 Reinstalling the Purge Air Tubing

Pump Disassembly

To reduce downtime, keep a spare pump in stock to replace a pump that is being repaired. Refer to *Parts* section 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 6-8. Disconnect the purge air lines (1) from the top of the pump.
2. Disconnect the inlet and outlet powder tubing (2) from the bottom of the pump.
3. Remove the two screws, lock washers, and flat washers (3) securing the pump to the pump panel and move the pump to a clean work surface.
4. See Figure 6-9. 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. Discard the Y block gasket (19).

NOTE: Refer to *Pinch Valve Replacement* on page 6-16 for instructions on removing the pinch valves from the pinch valve body.

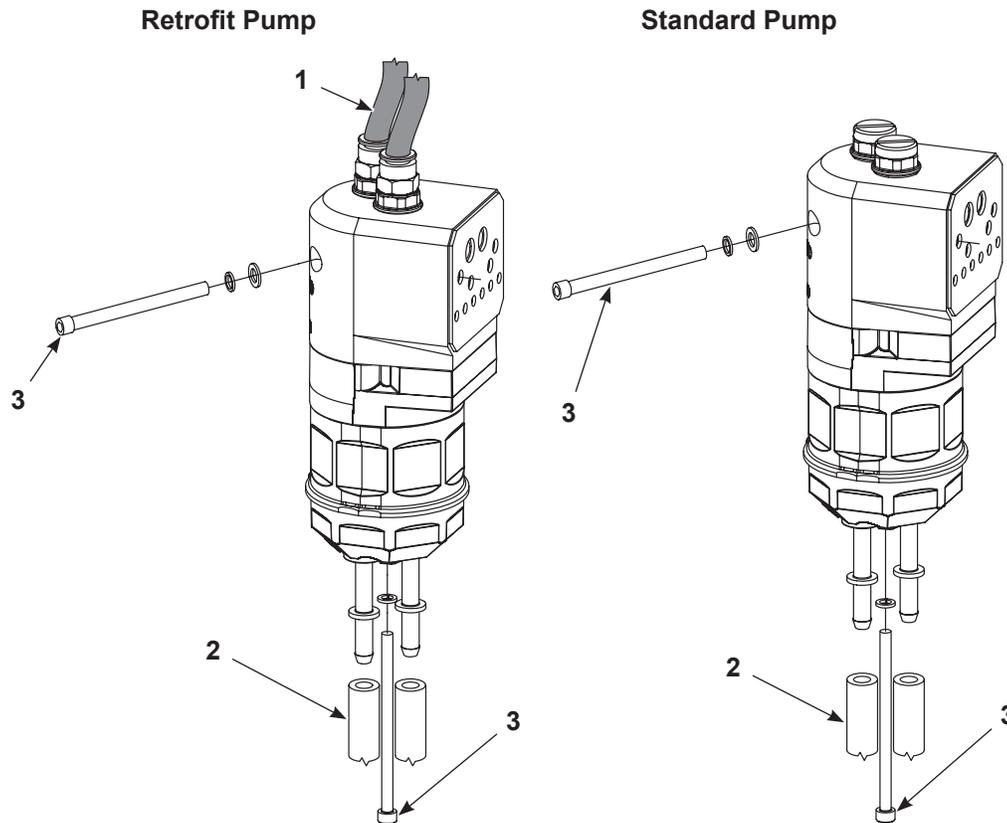


Figure 6-8 Disassembly Preparation

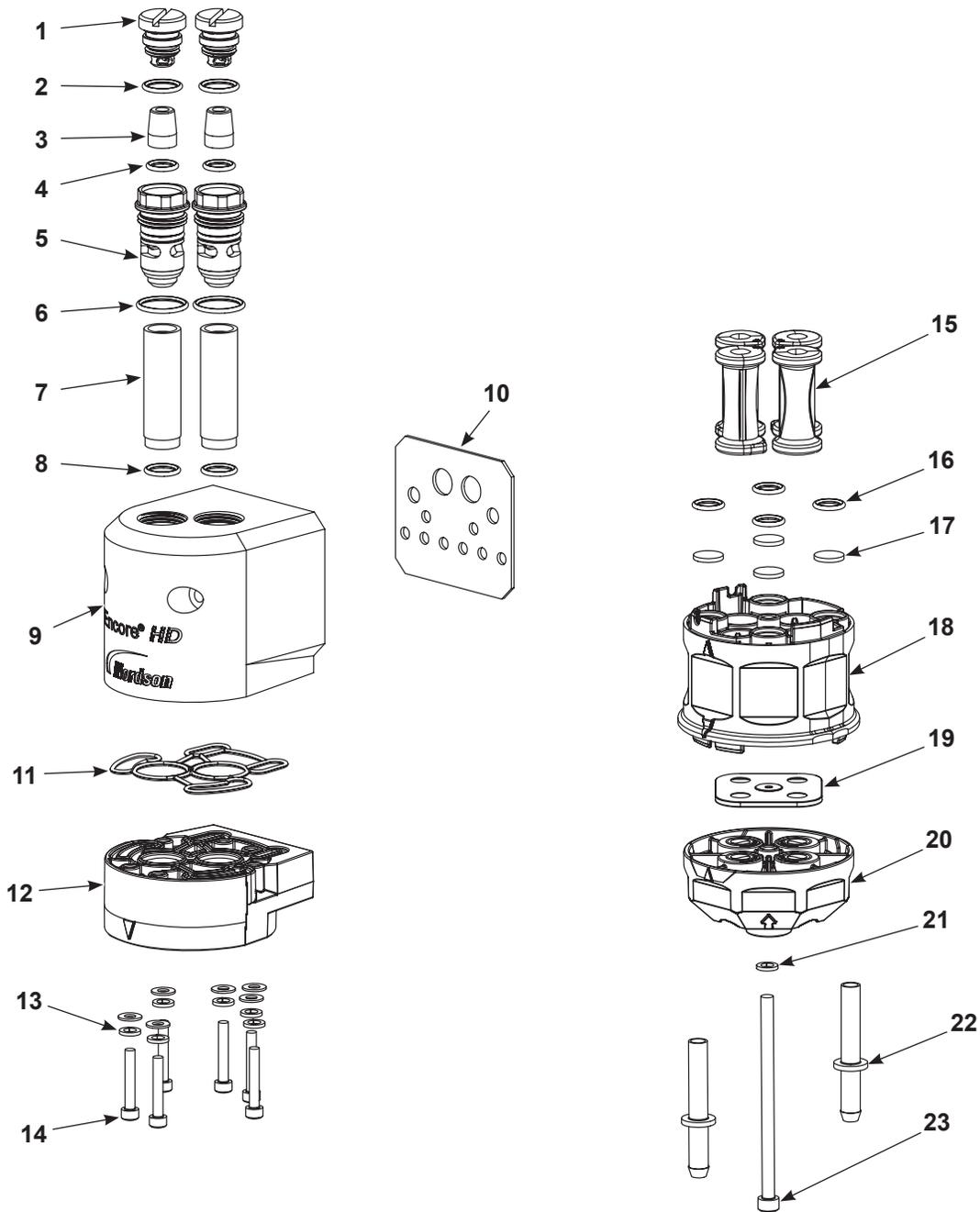


Figure 6-9 Pump Disassembly (Encore HD Shown)

- | | | |
|-------------------------|------------------------|-----------------------|
| 1. Fitting caps (2) | 9. Purge manifold | 17. Filter discs (4) |
| 2. O-rings (2) | 10. Manifold gasket | 18. Pinch valve block |
| 3. Check valves (2) | 11. Block seal | 19. Y block gasket |
| 4. O-rings (2) | 12. Upper Y block | 20. Lower Y block |
| 5. Access plugs (2) | 13. Lock washers (12) | 21. Lock washer |
| 6. O-rings (2) | 14. Screws M5 x 25 (6) | 22. Hose barbs (2) |
| 7. Fluidizing tubes (2) | 15. Pinch valves (4) | 23. Screws M5 x 85 |
| 8. O-rings (2) | 16. O-rings (2) | |

Pump Assembly



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

1. Place the customized O-ring (1) into the upper Y block (2) as shown, then fasten the upper Y block to the purge manifold housing (3) with the provided hardware (4).

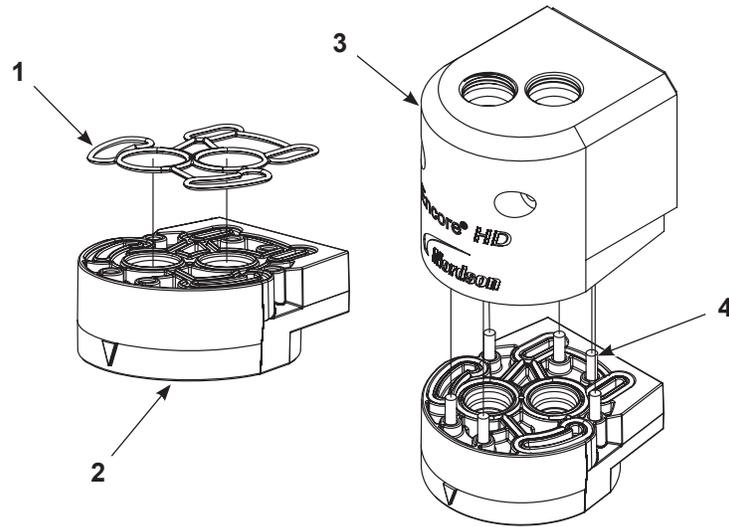


Figure 6-10 Assemble Lower Y Block to Purge Manifold

2. Assemble pinch valves (5), filter discs (6), and O-rings (7) into pinch valve housing (8). Refer to *Pinch Valve Replacement* on page 6-16 for assembly procedure.

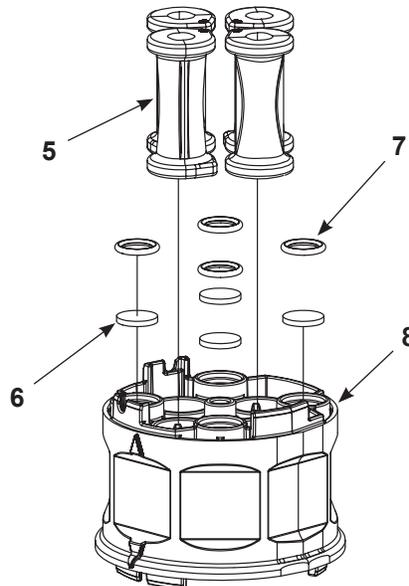


Figure 6-11 Assemble the Pinch Valve Housing

3. Install a new Y block gasket (10) over lower Y block (11), then thread long screw and lock washer (12) through the lower Y block and into the pinch valve housing, upper Y block and purge manifold. Hand tighten the screw.

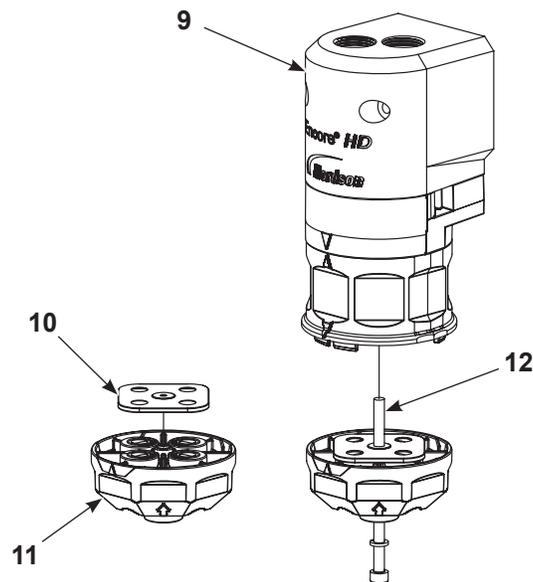


Figure 6-12 Assemble Gasket and Lower Y Block

4. Assemble the check valves (15) O-rings (14) access plugs (16), and fitting caps (13) together before replacing the fluidizing tubes (18). Then, once that is complete, assemble the complete access plugs (17) and additional O-rings onto the fluidizing tubes (18).

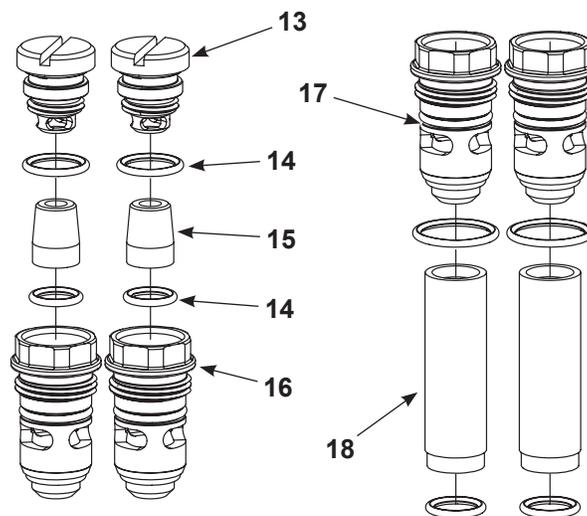


Figure 6-13 Assemble Fittings to Fluidizing Tubes

5. After the pump is assembled, completely tighten the long screw to fit all components together securely.

6. Insert the assembled fluidizing tube (19) into the top of the purge manifold (20). Snug fit tubes to manifold.

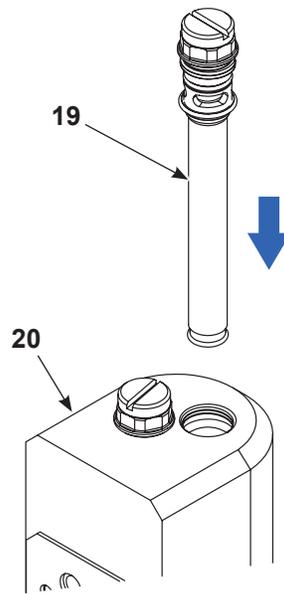


Figure 6-14 Fasten Fluidizing Tubes into Manifold

7. Mount the pump to the cabinet before assembling the feed tubing to the ports in the bottom of the pump. Refer to *Installation* on page 3-12 for more information.

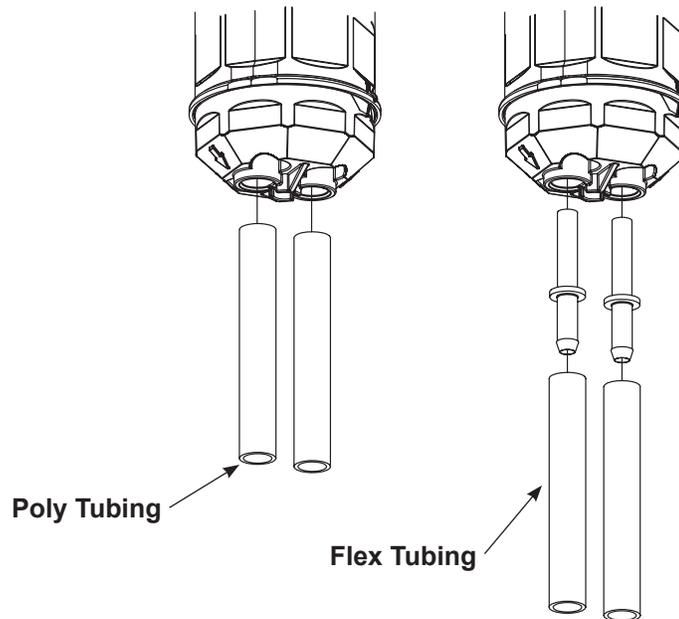


Figure 6-15 Assemble Tubing into Lower Y Block

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.

Figure 6-16 shows the top of a pinch valve body.

- The top of the pinch valve body has the word “UP” molded on surface.
- The top side of the valve body has four air passages sealed with filter discs and o-rings.

NOTE: Always replace the Y block gasket and the filter discs included in the pinch valve kit when replacing the pinch valves.

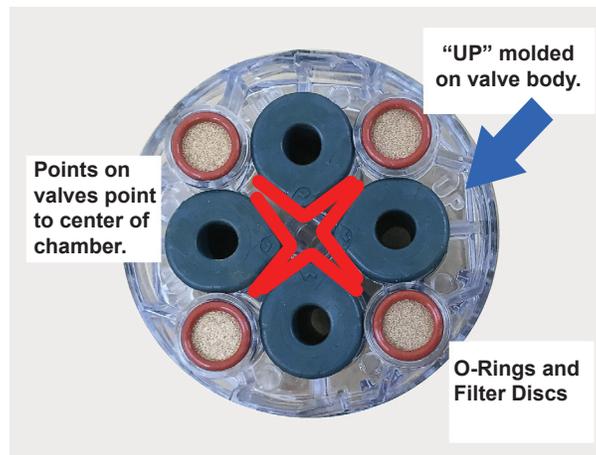


Figure 6-16 Top of Pinch Valve Body

Pinch Valve Removal

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



Figure 6-17 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.

See inset on Figure 6-18 to properly align the pinch valve

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

Align the pinch valve point to the center of the pinch valve housing.

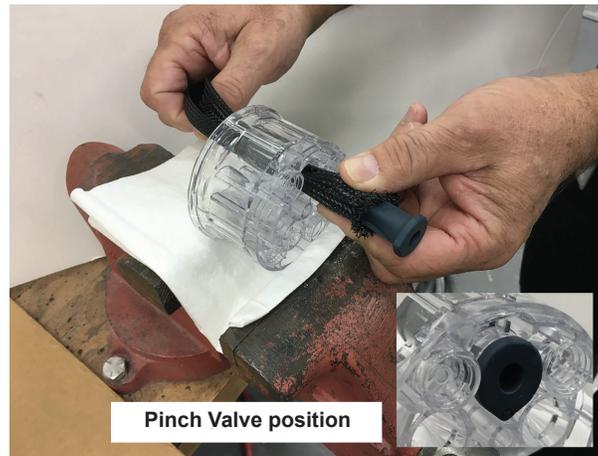


Figure 6-18 Inserting Pinch Valve into Insertion Tool

2. Drag the valve through the chamber and check the alignment of the pinch valve in the housing.

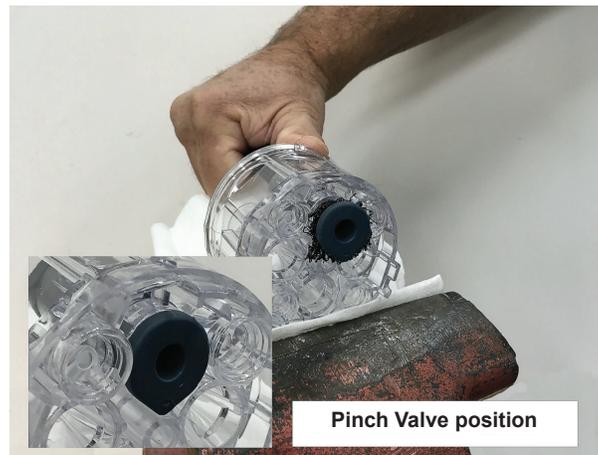


Figure 6-19 Pull Insertion Tube through Chamber

3. Pull on the insertion tool until the end of the pinch valve is inside the valve body. Continue pulling on the insertion tool until the pinch valve pops through the valve body and the tool comes loose.



Figure 6-20 Pulling Pinch Valve into Valve Body

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



Figure 6-21 Checking Rib and Groove Alignment

Section 7

Parts

Parts

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

Using the Illustrated Parts List

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

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

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

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

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

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

Item	Part	Part	Part	Description	Quantity	Note
—	-----	—	—		—	
1	-----					
2						
<i>Continued...</i>						
NOTE: A.						
B.						
NS: Not Shown						
AR: As Required						

Pump Control Unit

Refer to Figure 7-1 Pump Control Unit. If ordering a new pump control unit, order the correct voltage.

Item	Part	Description	Quantity	Note
—	1605584	PUMP CONTROL UNIT, 115 V, Encore HD		
—	1605586	PUMP CONTROL UNIT, 230 V, Encore HD		
1	-----	• PANEL, controller, power/pneumatic	1	
2	1045837	• SCREW, pan, recessed, M5 x 12, with internal lock washer bronze	10	
3	1068715	• WASHER, lock, dished, #10	1	
4	1108673	• CONNECTOR, elbow, plug-in, 6 mm T	1	
5	972126	• CONNECTOR, male, elbow, 6 mm T x 1/8 uni	3	
6	1082612	• VALVE, flow control, 4 mm x 1/8 uni	1	
7	984526	• NUT, lock, 1/2 conduit	2	
8	939122	• SEAL, conduit fitting, 1/2, blue	3	
9	1605823	• HARNESS, receptacle out, VBF, controller, Encore HD	1	
10	1023695	• SEAL, bulkhead, 7/8-16 thread	1	
11	972930	• PLUG, push-in, 8 mm T, plastic	1	
12	1603928	• CONNECTOR, male, 8 mm x 1/4 RPT	2	
13	1005067	• UNION, F bulkhead, 8 mm T x 1/4 RPT	2	
14	1605763	• WASHER, sealing, M16, buna-N and steel, zinc	3	
15	955063	• RING, sealing, 1/4	4	
16	309488	• UNION, F bulkhead, 6 mm T x 1/8 RPT	4	
17	984702	• NUT, hex, M5, brass	3	
18	983401	• WASHER, lock, M, split, M5, steel, zinc	3	
19	983021	• WASHER, flat, E, 0.203 x 0.406 x 0.040, bronze	3	
20	240674	• TAG, ground	3	
21	1005068	• UNION, F bulkhead, 10 mm T x 1/4 RPT	1	
22	1604303	• CONNECTOR, male, 10 mm T x 1/4 RPT, with seal	1	
23	972286	• REDUCER, 8 mm stem x 6 mm T	1	
24	1605982	• RECEPTACLE, network, Encore HD controller	1	
25	183804	• PLUG, blanking, 6 mm T	1	
26	933469	• LUG, 90, double, 0.250 x 0.438	1	
NS	939110	• CABLETIE, 3.9 in, 185F/85C, nylon, natural	10	
NS: Not Shown				

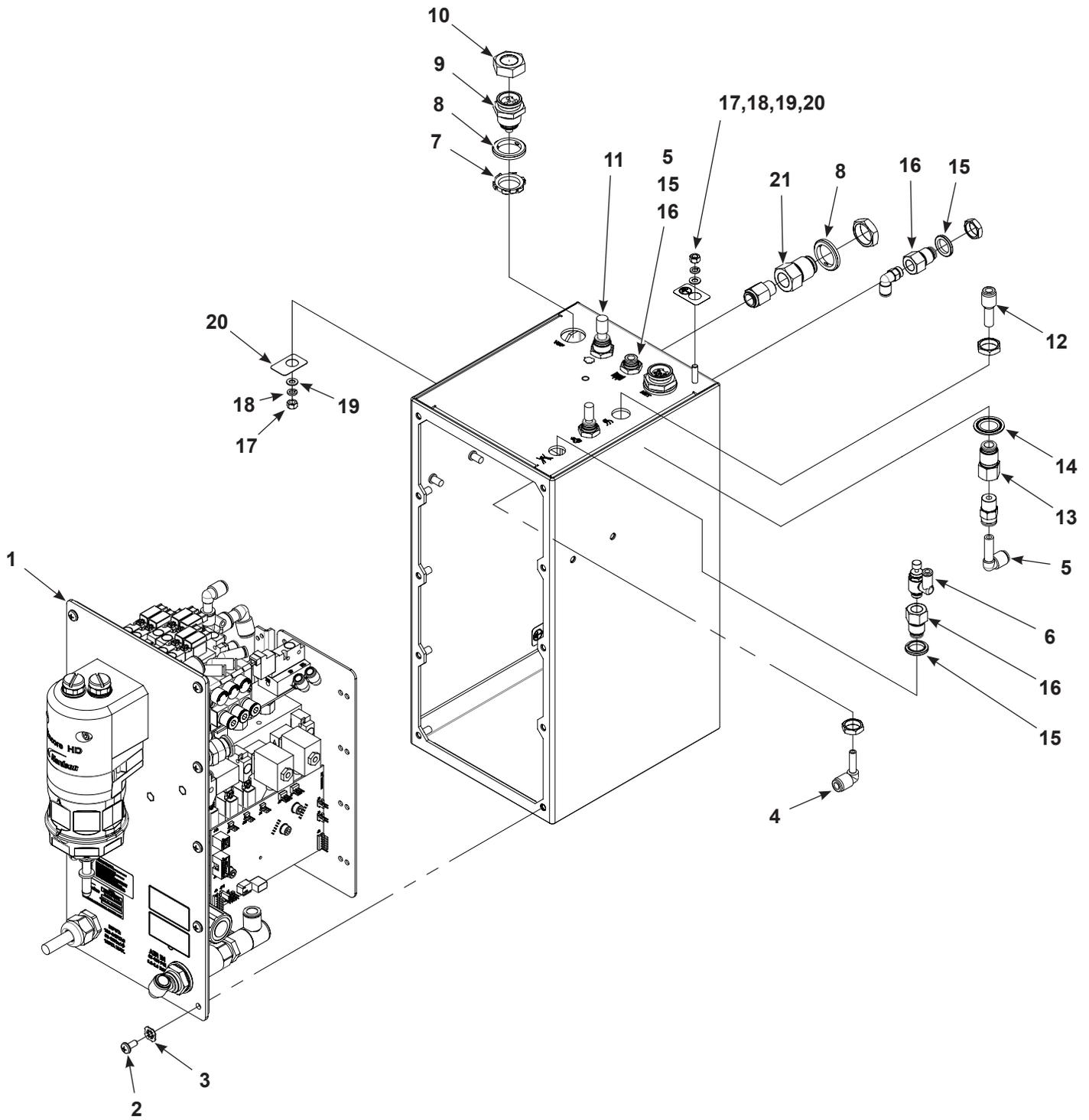


Figure 7-1 Pump Control Unit

Panel Assembly

See Figure 7-2.

Item	Part	Description	Quantity	Note
—	-----	PANEL, Encore controller power/pneumatic	1	
1	345536	• SCREW, socket, M5 x 80, bl	2	
2	983401	• WASHER, lock, M, split, M5, steel, zinc	2	
3	-----	• PUMP ASSEMBLY, Encore HD	1	A
4	1027585	• VALVE, solenoid, 3-way, sub base	1	
5	1605442	• MODULE, digital air flow, manual system, Encore HD	1	
6	1604082	• VALVE, solenoid, 3-port, 24 vdc, ¼ NPTF	1	
7	1100310	• REGULATOR, 1/8 , 1/4 NPT, 7-125 psi, pneumatic panel	1	
8	1052893	• ELBOW, plug-in, 10 mm T x 10 mm stem, plastic	3	
9	1605376	• HARNESS, blue LED, with housing, Encore HD	1	

NOTE: A. Refer to the Pump section on page 7-6 to order parts.

Continued...

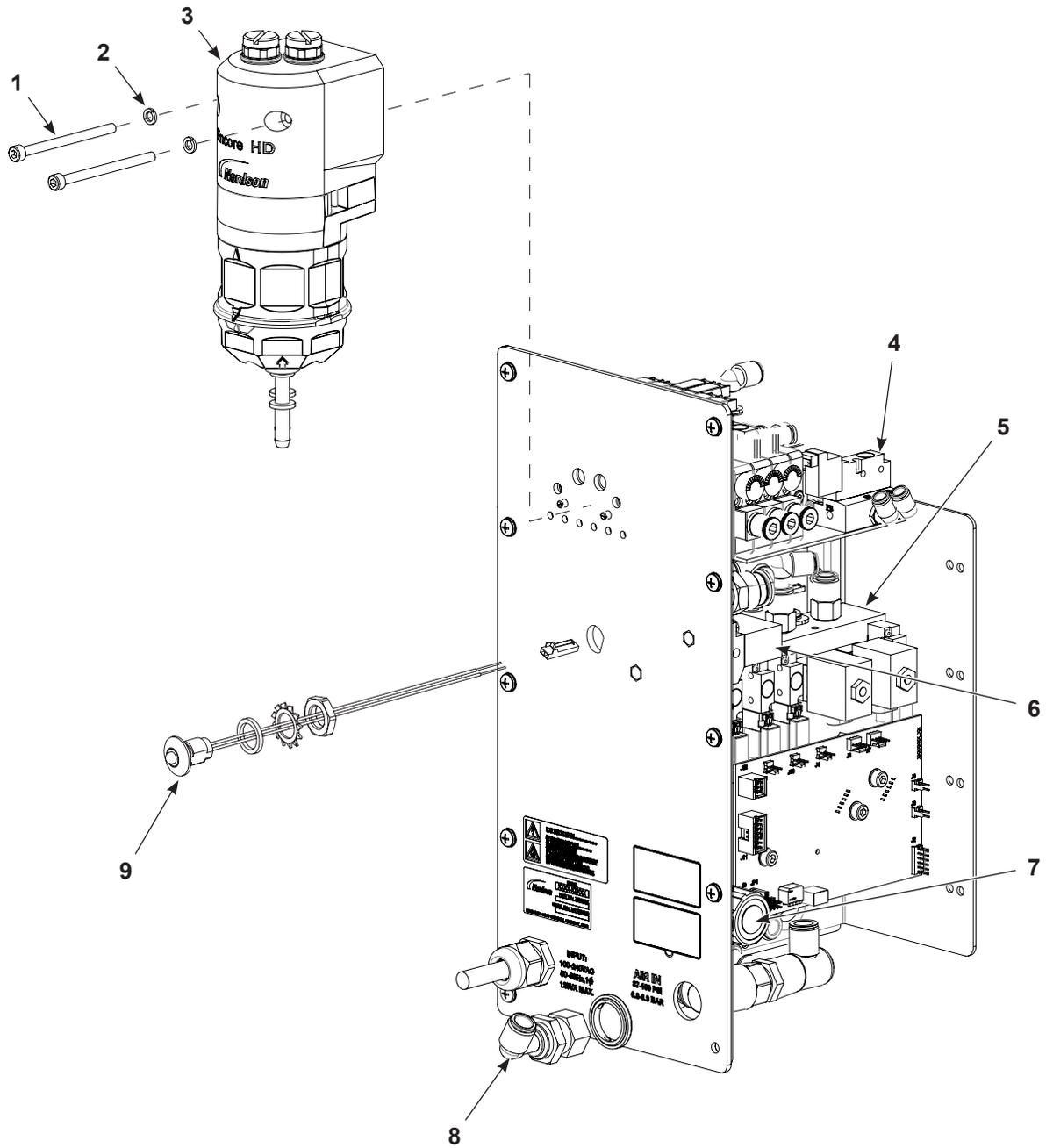


Figure 7-2 Panel Assembly Parts (1 of 2)

Panel Assembly (contd)

See Figure 7-3.

Item	Part	Description	Quantity	Note
2	983401	• WASHER, lock, M, split, M5, steel, zinc	4	
10	1606835	• PCA, replay board, Encore LT-HD	1	
11	1107695	• POWER SUPPLY, 24 Vdc, 60 W	1	
12	1604518	• CONNECTOR, male, elbow, 6 mm T x 1/8 RPT	3	
14	1604804	• MANIFOLD ASSEMBLY, pump control, Encore HD	1	
15	1605754	• FILTER, line, with terminals, Encore HD	1	
16	984702	• NUT, hex, M5, brass	4	
17	983021	• WASHER, flat, E, 0.203 x 0.406 x 0.040, br	4	
18	240674	• TAG, ground	2	

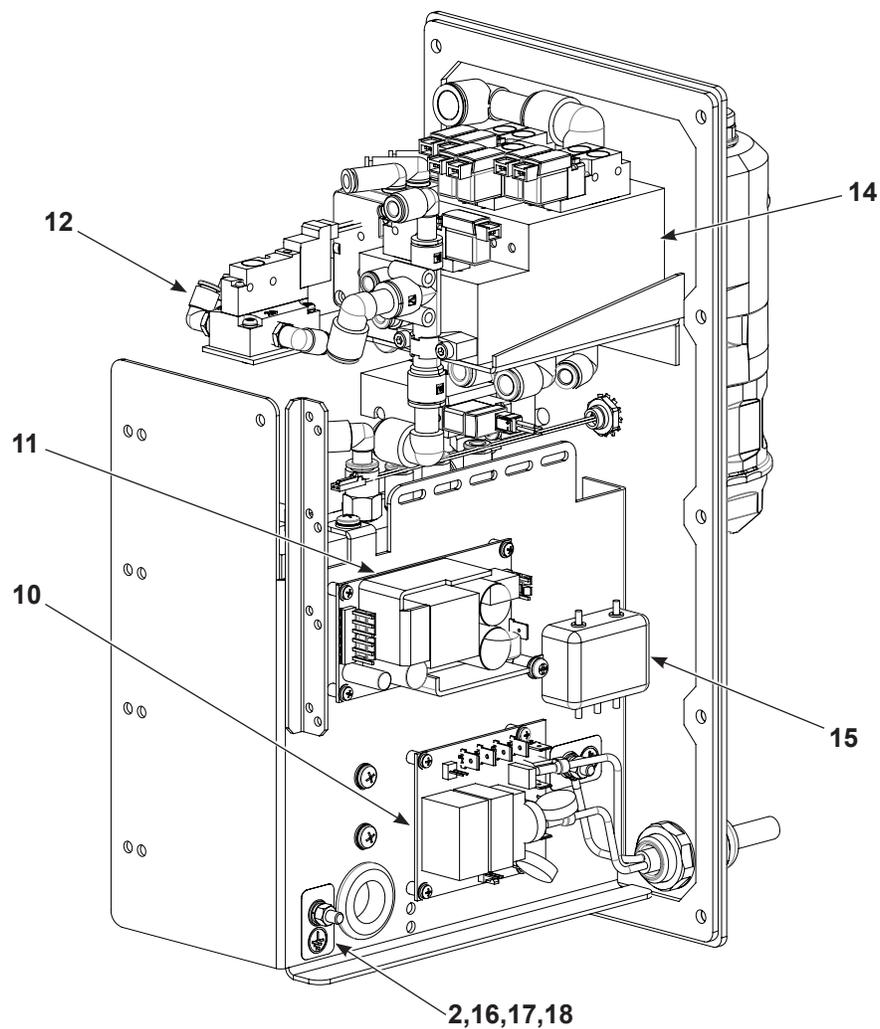


Figure 7-3 Panel Assembly Parts (2 of 2)

iFlow Module

See Figure 7-4.

Item	Part	Description	Quantity	Note
—	1605443	MODULE, digital airflow, manual system, Encore HD	1	
1	1099288	• VALVE, solenoid, 3-way, w/connector	4	
2	1027547	• VALVE, proportional, solenoid, sub-base	2	
3	-----	• PCA, Encore HD flow node, 1 channel	1	
4	972277	• CONNECTOR, male, elbow, 8 mm T x 1/4 uni	1	
5	972399	• CONNECTOR, male, with/int hex, 6 mm T x 1/8 uni	3	
6	1030873	• VALVE, check, M8 TXR 1/8, M input	2	

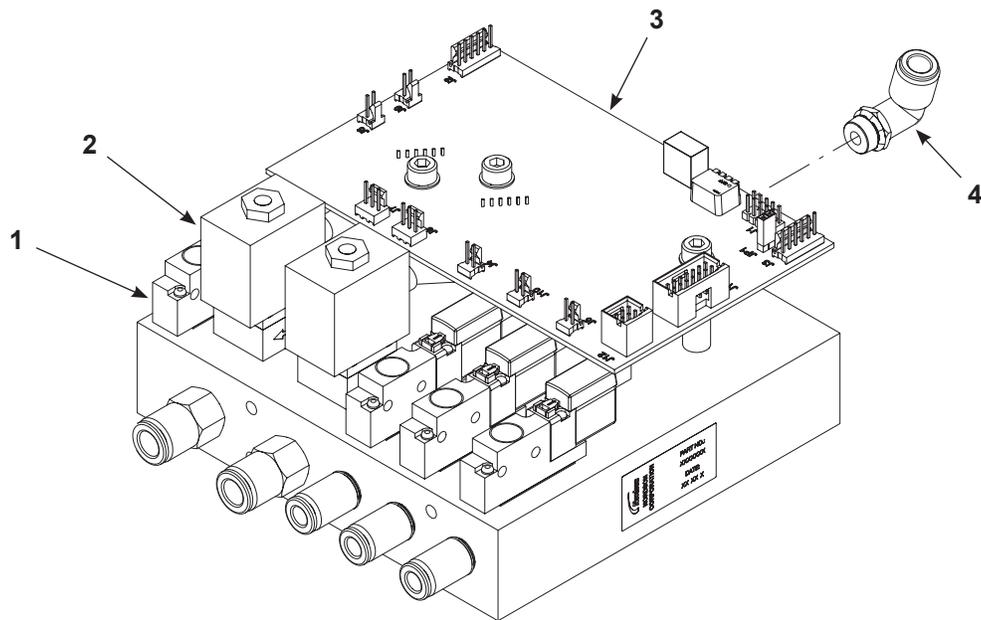


Figure 7-4 iFlow Module Parts

Manifold Assembly

See Figure 7-5.

Item	Part	Description	Quantity	Note
—	1620531	MANIFOLD ASSEMBLY, pump control, Encore HD		
1	1620533	• GASKET, pump control manifold, Encore HD	1	A
2	972094	• CONNECTOR, male, 90 elbow, 12 mm T x 3/8 UNI	1	
3	1099281	• VALVE, solenoid, 3 port, 24 V, 0.35 W	7	
4	-----	• MANIFOLD, pump control, Encore HD	1	
5	328524	• CONNECTOR, male, with internal hex, 6 mm T x M5	1	
6	1604335	• CONNECTOR, male, 6 mm T x 1/4 RPT, with seal		
7	1603927	• CONNECTOR, male elbow, 8 mm x 1/8 RPT	3	
8	1605530	• CONNECTOR, male, elbow, 6 mm T x 1/8 RPT. with sealant	2	
9	1605567	• MANIFOLD/REGULATOR, compact, in/8 mm, 3 x out/6 mm	1	
10	983136	• WASHER, lock, M, internal, 4 mm, black zinc	2	
11	982453	• SCREW, socket, M4 x 35, black oxide	2	
12	1601413	• ELBOW, plug in, 6 mm T x 8 mm stem, plastic	1	
13	1052920	• PUMP, vacuum generator	1	
14	1601412	• ELBOW, plug in, 8 mm T x 10 mm stem, plastic	1	
15	-----	• SCREW, socket, M4 x 18, zinc	2	
16	1052893	• ELBOW, plug in, 10 mm T x 10 mm stem, plastic	1	
17	1620477	ELBOW, extended, plugin, 12 mm X 12 mm stem, plastic	1	
NOTE: A. When replacing gasket, make sure all residual adhesive has been removed from the manifold.				

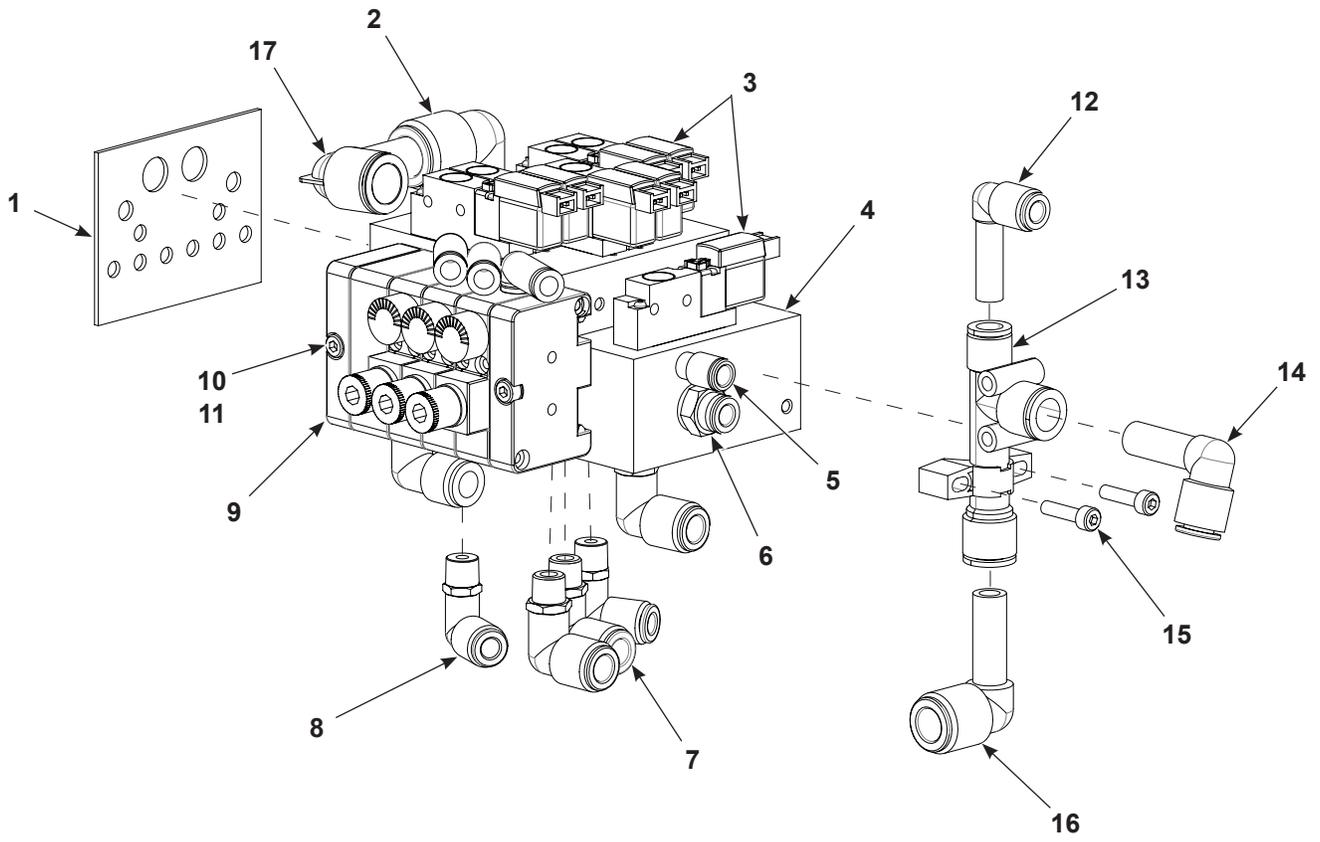


Figure 7-5 Manifold Assembly Parts

Pump

See Figure 7-6.

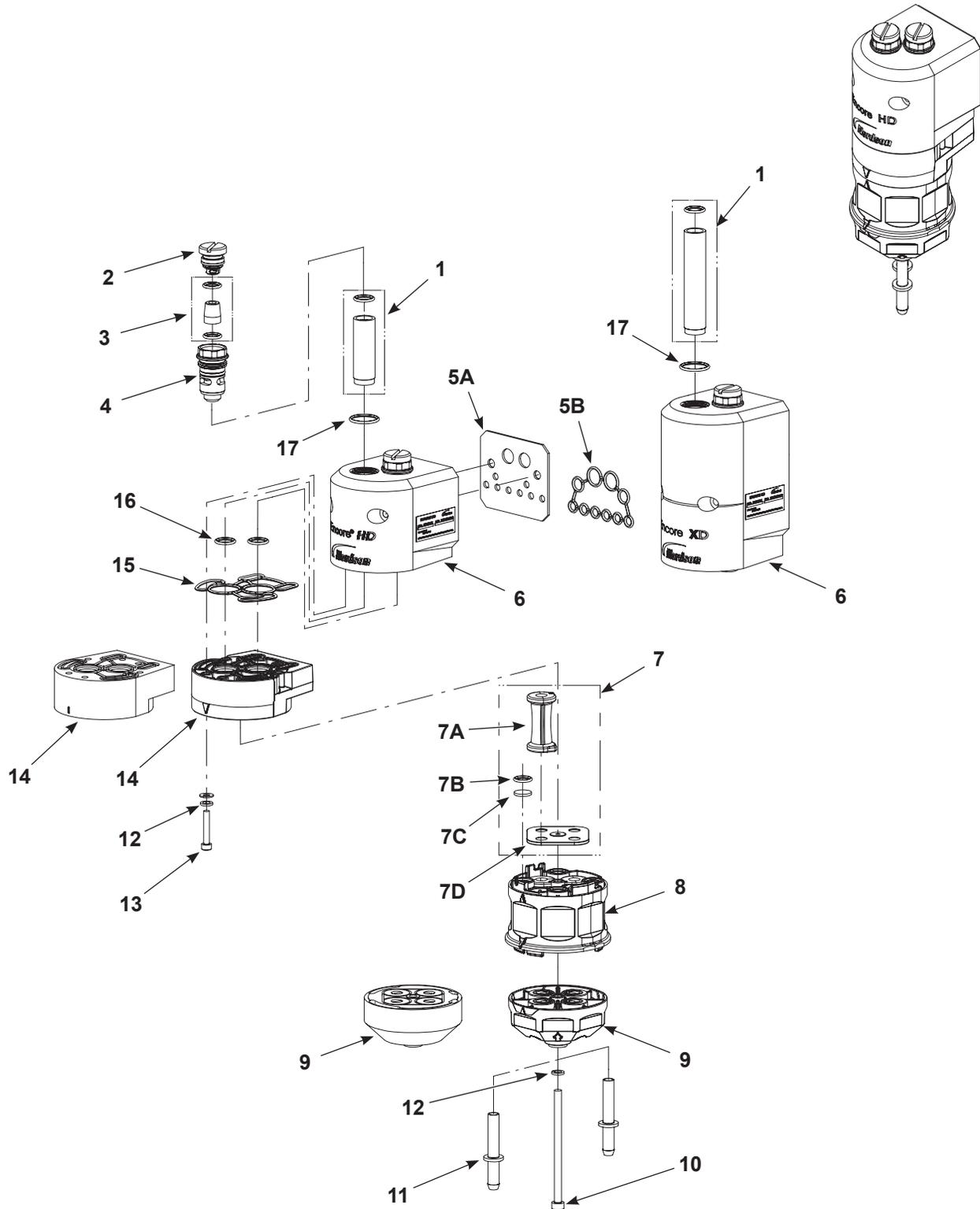


Figure 7-6 Encore HD, HD+ and XD Standard Parts

Item	Part	Part	Part	Description	Quantity	Note
—	1605940			PUMP ASSEMBLY, Encore HD	1	
—		1610978		PUMP ASSEMBLY, Encore HD+	1	
—			1611247	PUMP ASSEMBLY, Encore XD	1	
1	1057258	1093557	1093557	• KIT, fluidizing tube	1	A
2	-----	-----	-----	• PLUG, fluid	—	
3	1605570	1605570	1605570	• KIT, check valve	1	A, B
4	-----	-----	-----	• PLUG, fluid access	—	
5A	-----	1620646	1620646	• GASKET, manifold	2	
5B	1613013	-----	-----	• GASKET, manifold	1	C
6	1604058	1610980	1612222	• MANIFOLD, internal purge	1	
7	1612217	1612217	1612218	• KIT, pinch valve	1	A
7A				• • VALVE, pinch, rib	8	
7B				• • DISC, filter, pump	10	
7C				• • O-RING, silicone, 0.375 x 0.500 x 0.063	8	
7D	1608603	1608603	1608603	• • GASKET, lower Y block	2	D
8	1604060	1604060	1604060	• BLOCK, pinch valve chamber	1	
9	1605568	1605568	1611092	• BLOCK, lower Y	1	
10	1604057	1604057	1604057	• SCREW, socket M5 x 85	1	
11	1078006	1078006	1078006	• TUBE, adapter, barb	2	
12	983401	983401	983401	• WASHER, lock, split M5	6	
13	1040003	1040003	1040003	• SCREW, socket M4 x 25	6	
14	1604059	1604059	1612223	• BLOCK, upper Y	1	
15	1604072	1604072	1604072	• CUSTOM O-RING, upper Y block	1	
16	940126	940126	940126	• O-RING, silicone, 0.375 x 0.500 x 0.063	6	
17	940175	940175	940175	• O-RING, silicone, 0.688 x 0.813 x 0.062	2	

NOTE: A. These parts are available in service kits listed on page 7-12.

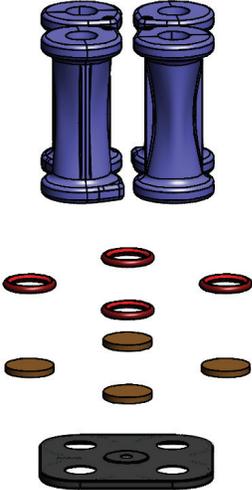
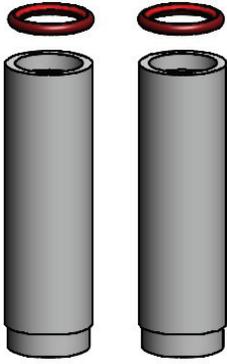
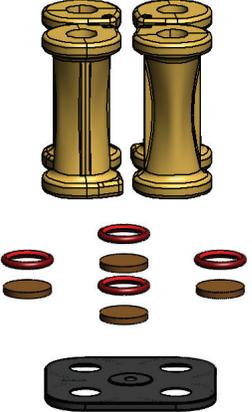
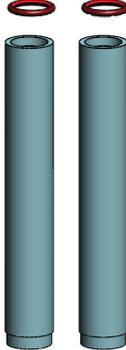
B. If the purge lines enter the top of the pump, use Check Valve Kit 1078161 (Includes 2 check valves).

C. Use gasket 1613013 instead of 1612795 on applications with the Encore HD pump module.

D. Replace the gasket each time the pump is disassembled.

Spare Parts

Keep one of each of these kits in stock for each pump in the system.

	<p>Blue Pinch Valve Kit Standard Pump 1612217</p> <p>Includes the following 8 Pinch Valves 8 O-Rings 10 Filter Discs 2 Gaskets</p> <p>NOTE: Replace the gasket each time the pump is disassembled.</p>		<p>Fluidizing Tube Kit HD Pump 1057258</p>
	<p>Amber Pinch Valve Kit Extreme Duty Pump 1612218</p> <p>Includes the following 8 Pinch Valves 8 O-Rings 10 Filter Discs 2 Gaskets</p>		<p>Fluidizing Tube Kit HD+, XD Pump 1093557</p>
	<p>Check Valve Service Kit (Retrofit) 1078161</p>		<p>Barbed Tubing Adapter for Flexible Tubing 1078006</p>
	<p>Check Valve Service Kit 1605570</p>		

Wall/Rail Mount System

Part	Description	Quantity	Note
1620461	REGULATOR, air, with bracket and gage, 8-123 psi, R1/2	1	
1620763	• ELEMENT, filter, air, 5 micron, AW40, SMC	1	
1605531	CONNECTOR, male, elbow, 12 mm T x R1/2	1	
1600607	CONNECTOR Y branch, 10 mm tube x 1/2 in. unithread	1	
972286	REDUCER, 8 mm stem x 6 mm tube	1	A
1067694	KIT, ground bus bar, ESD, 6 position, with hardware	1	
1080718	CABLE, interface/controller, 10 ft.	1	

NOTE: A. Installed in power unit fluidizing air output fitting.

Powder Hose and Air Tubing

Powder hose and air tubing must be ordered in increments of one foot.

Part	Description	Note
1613849	Powder hose, 6 mm ID x 8 mm OD, polyolefin (by 40 m)	B, F
1613850	Powder hose, 6 mm ID x 8 mm OD, polyolefin (by 160 m)	C, F
1615026	Clear powder hose, 6 mm ID x 8 mm OD, polyurethane (by 60 ft)	G
1606695	Clear powder hose, 6 mm ID x 8 mm OD, polyurethane (by 500 ft)	D, G
900617	Air tubing, polyurethane, 4 mm, clear, electrode air wash	A
900742	Air tubing, polyurethane, 6 mm, blue, pattern air	A
1096789	Air tubing, antistatic, 6/4 mm, black (conductive air tubing), VBF pickup tube to controller	E
900741	Air tubing, polyurethane, 6 mm, black	
900618	Air tubing, polyurethane, 8 mm, blue	A
900619	Air tubing, polyurethane, 8 mm, black	A
900740	Air tubing, polyurethane, 10 mm, blue, main air IN	A
900517	Tubing, poly, spiral cut, 0.62 in. ID, dress out	
301841	Strap, Velcro, w/buckle, 25 x 3 cm, dress out	

NOTE: A. Minimum order quantity is 50 ft.
 B. Minimum order quantity is 40 m.
 C. Minimum order is 160 m.
 D. Minimum order quantity is 500 ft.
 E. This tubing is used on VBF systems to provide fluidizing air from the bulkhead union to the pickup tube. It is conductive and grounds the pickup tube to the cart body. Do not replace with non-conductive tubing.
 F. Standard powder hose delivered with system.
 G. Optional powder hose to use in place of the standard polyolefin.

Miscellaneous Options

Part	Description	Quantity	Note
1091429	KIT, input air, Encore HD manual systems	1	
972841	• CONNECTOR, male, 10 mm tube x 1/4 in. unithread	1	
971102	• CONNECTOR, male, 10 mm tube x 3/8 in. unithread	1	
973500	• COUPLING, pipe, hydraulic, 1/4 in., steel, zinc	1	
973520	• COUPLING, pipe, hydraulic, 3/8 in., steel, zinc	1	
900740	• TUBING, polyurethane, 10 mm, blue	20 ft	A

NOTE: A. Order replacement tubing in increments of one foot.

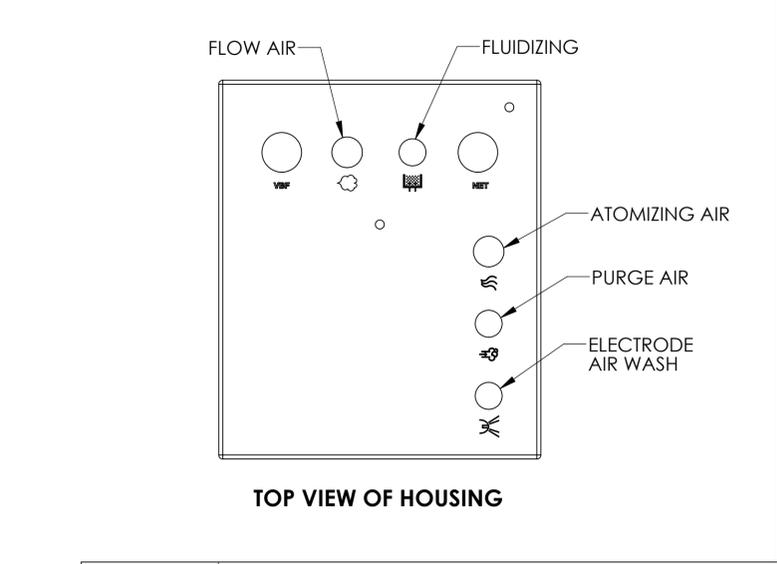
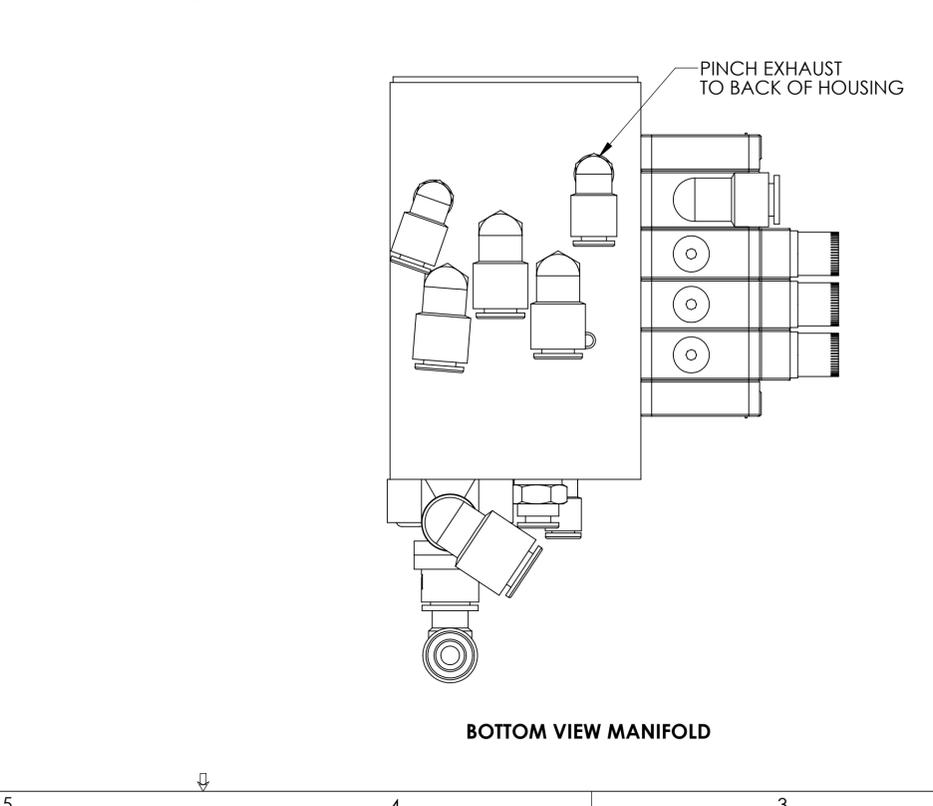
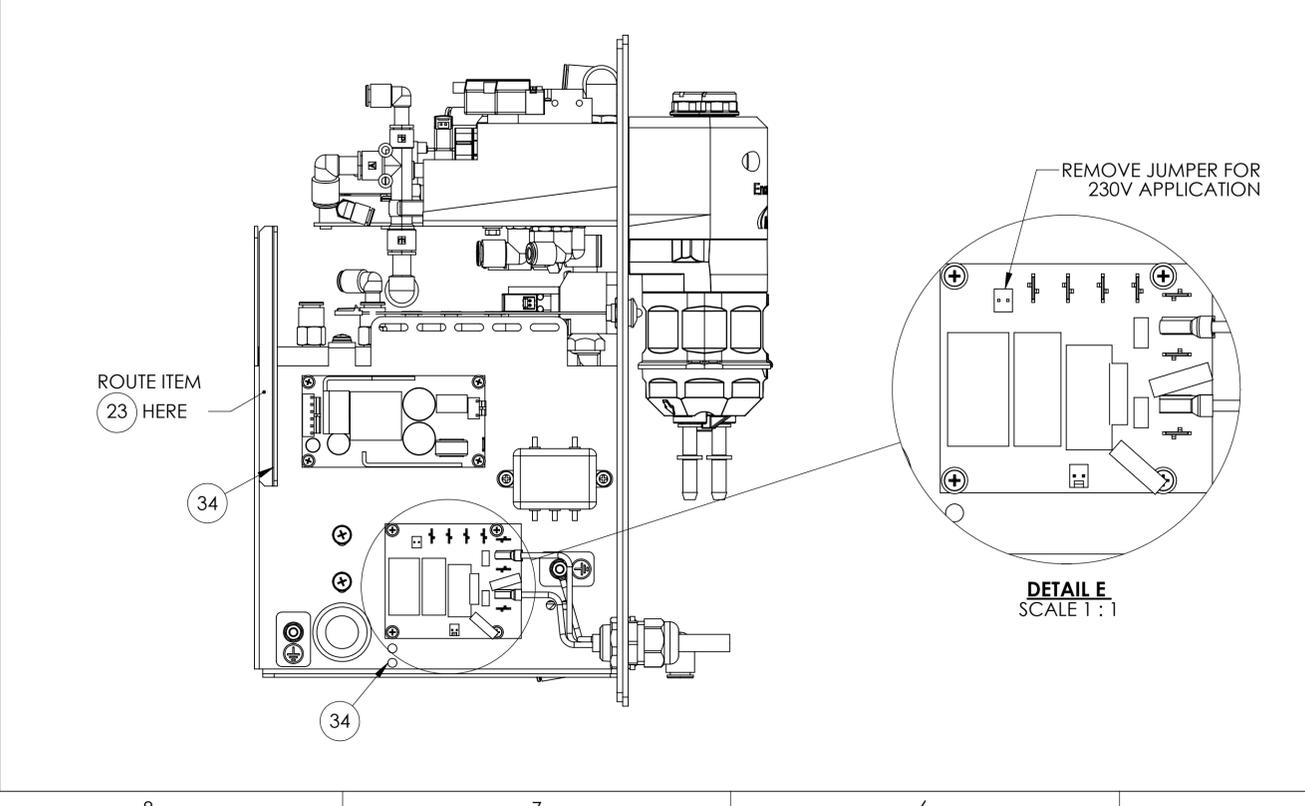
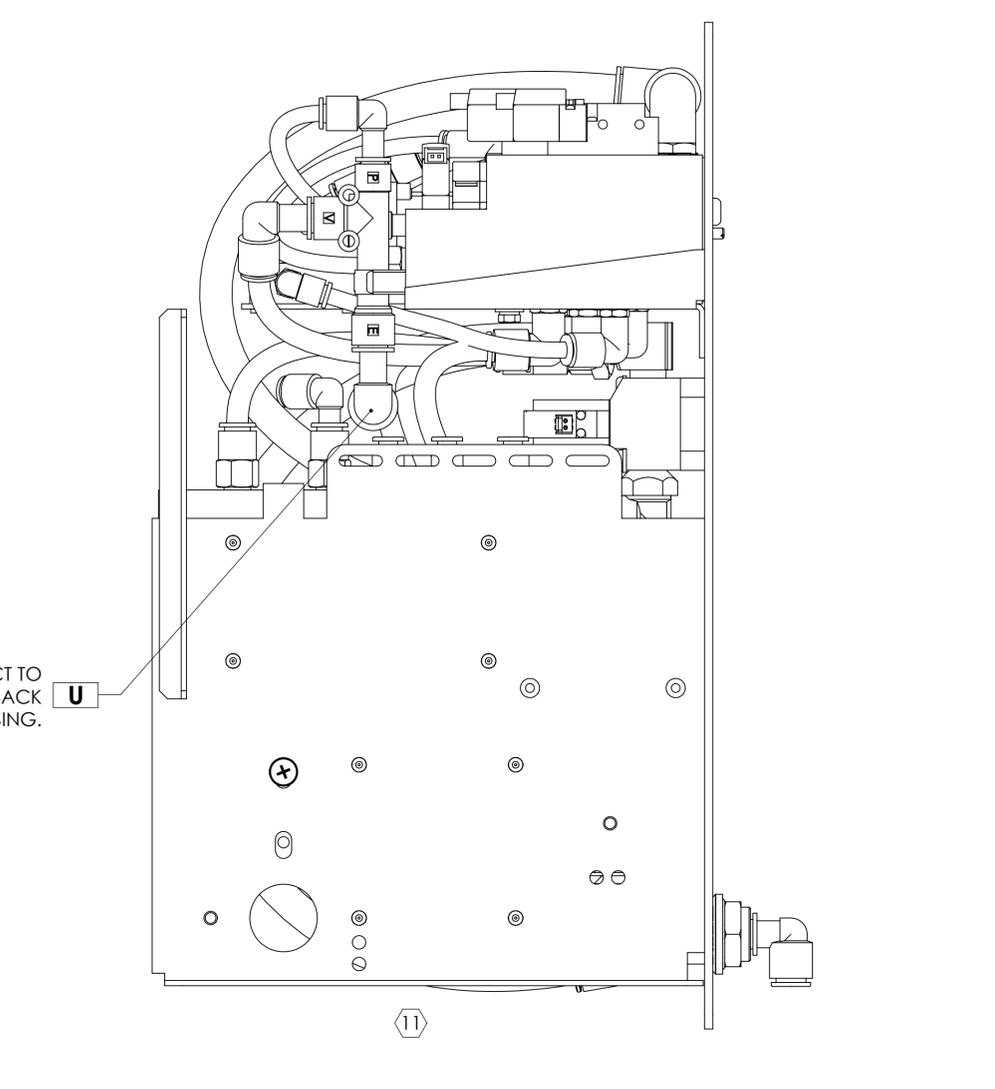
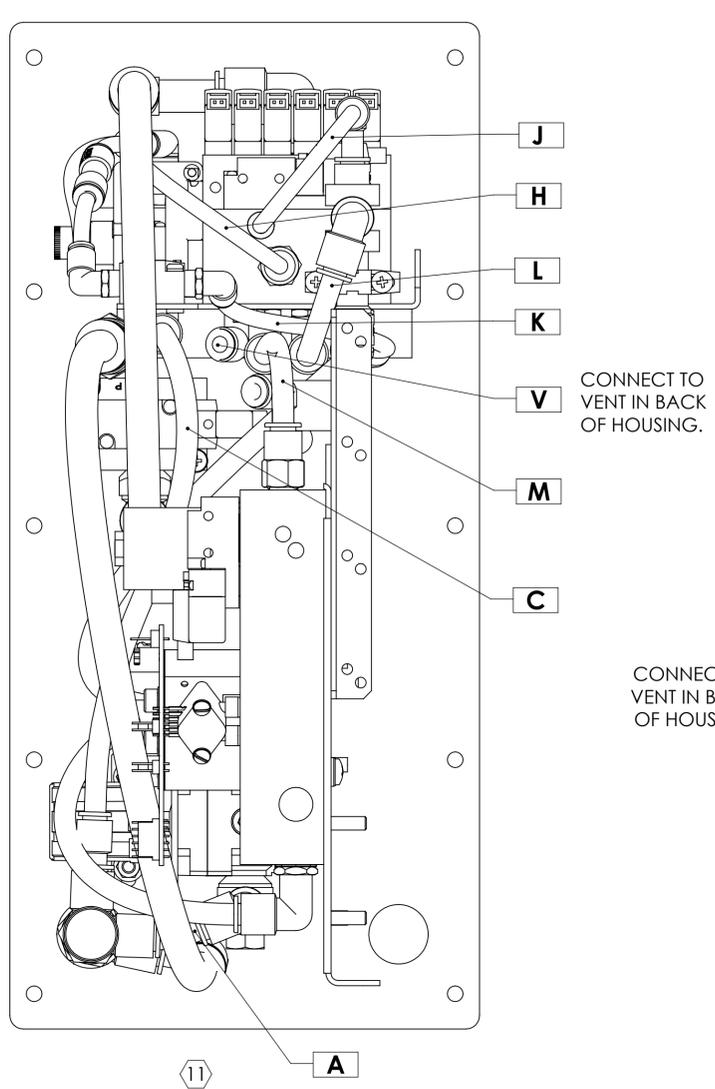
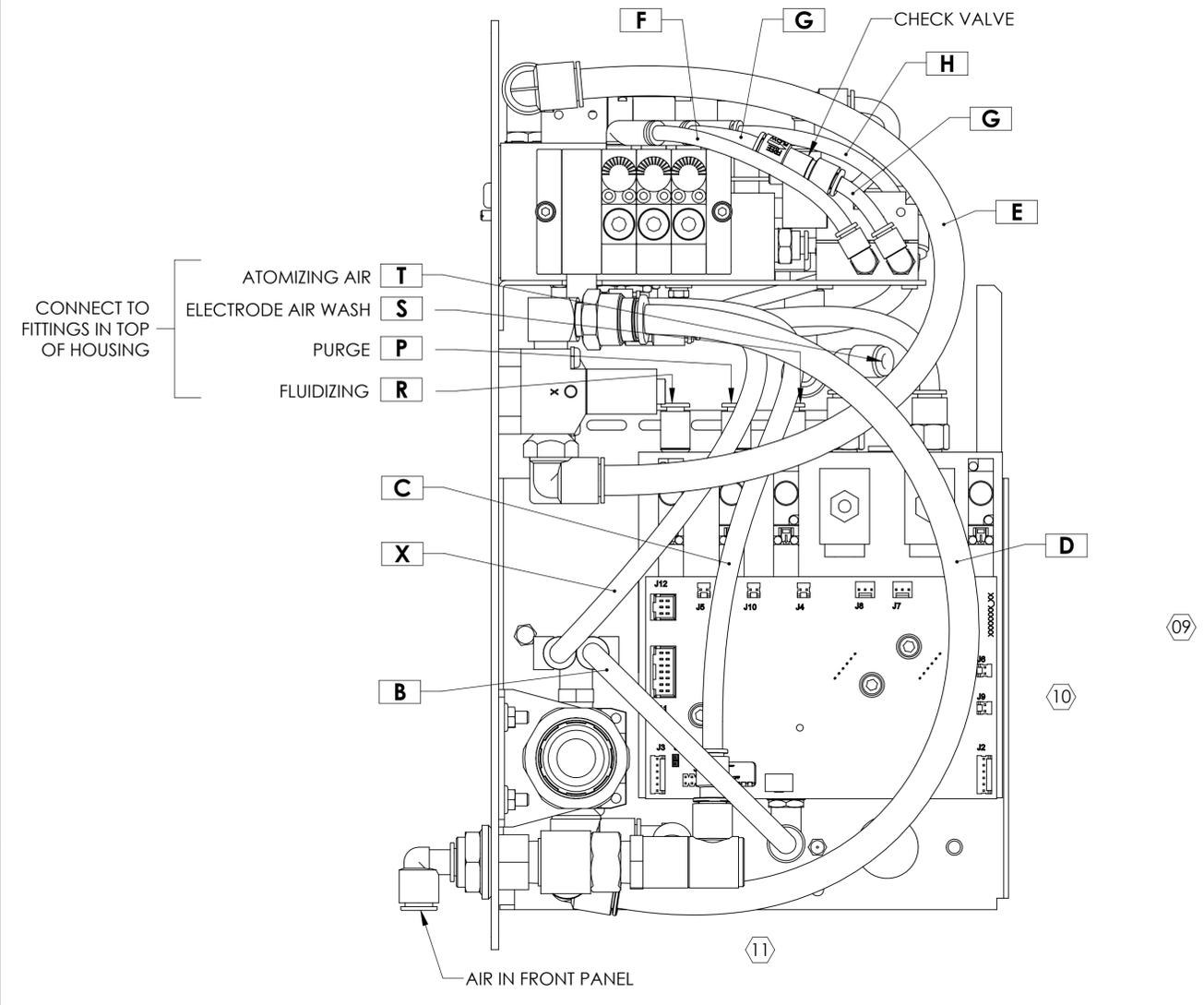
Section 8
Wiring Diagrams

Description	Part Number
Encore HD Power/PneumaticController Assembly	10013427

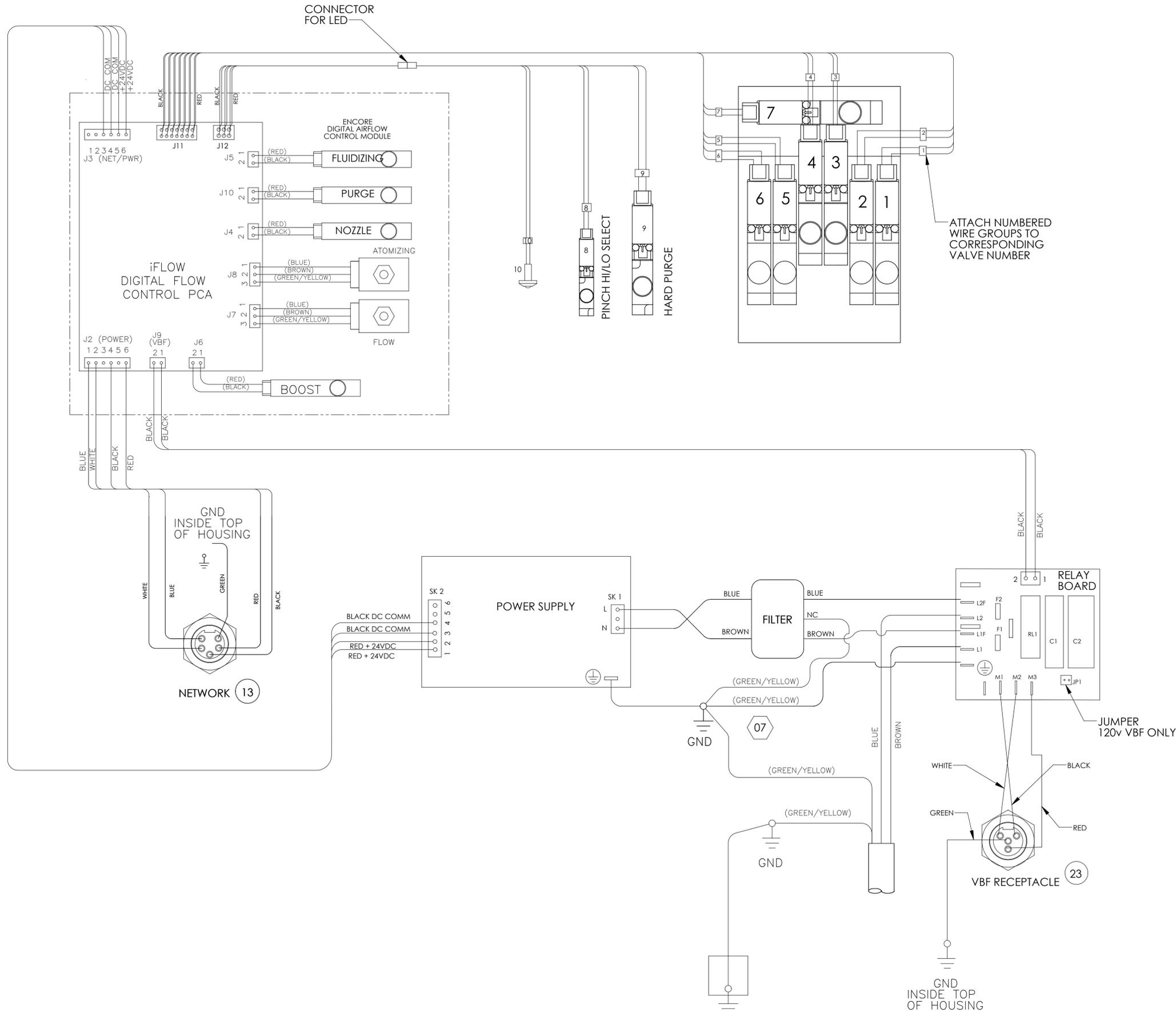
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MATERIAL NO.	10013427	REVISION	11	BY	CHK	RELEASE NO.	DATE
ZONE	REV	DESCRIPTION					
	SEE SHEET 1						



ALL DIMENSIONS IN MM EXCEPT AS NOTED		NORDSON CORPORATION WESTLAKE, OH, U.S.A. 44145	
X20.8 X340.25 X3X40.13		DESCRIPTION REF DWG, PWR/PNEU CTRLR ASSY, ENCORE HD	
MACHINED SURFACES L4		DRAWN BY DC	
RIGID INSIDE/OUTSIDE CORNERS 0.1/0.8		DATE 12AUG13	
THREAD LENGTH DIMENSIONS ARE FULL THREAD		CHECKED BY TMF	
INTERPRET DRAWINGS PER ASME Y14.5-2009		APPROVED BY PE603483	
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES		MATERIAL NO. 10013427	
THIRD ANGLE PROJECTION		REVISION 11	
SCALE 1:2		CADD GENERATED DWG.	
		SHEET 2 OF 3	



ALL DIMENSIONS IN MM EXCEPT AS NOTED		NORDSON CORPORATION WESTLAKE, OH, U.S.A. 44145	
X20.0 X340.25 X.XX10.13		DESCRIPTION REF DWG,PWR/PNEU CTRLR ASSY,ENCORE HD	
MACHINED SURFACES L4		DRAWN BY DC	DATE 12AUG13
BREAK INSIDE/OUTSIDE CORNERS 0.1/0.8		CHECKED BY TMF	APPROVED BY PE603483
THREAD LENGTH DIMENSIONS ARE FULL THREAD		SIZE D	FILE NAME PD16096
INTERPRET DRAWINGS PER ASME Y14.5-2009		MATERIAL NO. 10013427	REVISION 11
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES		SCALE 1:2	CADD GENERATED DWG.
THIRD ANGLE PROJECTION		SHEET 3	OF 3

EU DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

Description: These are electrostatic, powder spray systems, including applicator, control cables and associated controllers. The Encore XT Manual system uses venturi style pump technology for supplying powder to the spray gun. While the Encore HD Manual system uses high density pump technology for supplying powder to the spray gun.

Applicable Directives:

2006/42/EC - Machinery Directive

2014/30/EU - EMC Directive

2014/34/EU - ATEX Directive

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) FM 7260 (2018) EN50050-2 (2013)

EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2016) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C

- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)

- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)

- Ex II 2 D / 2mJ = (Encore Auto Applicator and Encore Select HD Robot Applicator)

Certificates:

- FM14ATEX0051X = Encore XT/HD Manual Appl. And Encore Select HD Robot Appl. (Dublin, Ireland)

- FM14ATEX0052X = Controls (Dublin, Ireland)

- FM11ATEX0056X = Encore Automatic Applicator (Dublin, Ireland)

ATEX Surveillance

- 0598 SGS Fimko Oy (Helsinki, Finland)



Date: 20NOV20

Jeremy Krone

Supervisor Product Development Engineering

Industrial Coating Systems

Amherst, Ohio, USA

Nordson Authorized Representative in the EU

Contact:

Operations Manager

Industrial Coating Systems

Nordson Deutschland GmbH

Heinrich-Hertz-Straße 42-44

D-40699 Erkrath



UK DECLARATION of Conformity

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

Product: Encore XT / HD Manual Powder Spray Systems

Models: Encore XT Manual, Fixed Mount or Mobile Dolly unit.

Encore Auto Applicator with Encore XT controls for a single gun, automatic systems.

Encore HD Manual, Fixed Mount or Mobile Dolly unit.

Encore Select HD Robot Applicator with Encore HD controls for robot systems.

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Applicable UK Regulations:

Supply Machinery Safety 2008

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

Electromagnetic Compatibility Regulation 2016

Standards Used for Compliance:

EN/ISO12100 (2010) ISEN60079-0 (2014) EN61000-6-3 (2007) FM 7260 (2018) EN50050-2 (2013)
EN1953 (2013) EN60079-31 (2014) EN61000-6-2 (2005) EN55011 (2009) EN60204-1 (2018)

Principles:

This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:

- Ambient Temperature: +15°C to +40°C
- Ex tb IIIB T60°C / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60°C / EX II (2) 3 D = (Controllers)
- Ex II 2 D / 2mJ = (Encore Select HD Robot Applicator)

Certificates:

- FM21UKEX0129X = Encore XT/HD Manual App & Select HD Robot Appl. (Maidenhead, Berkshire, UK)
- FM21UKEX0130X = Controls (Maidenhead, Berkshire, UK)
- FM22UKEX0006X = Encore Automatic Applicator (Maidenhead, Berkshire, UK)

EX Quality System Certificate

- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)



Date: 22Sept21

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