Encore® HD Manual
Powder Spray System

Customer Product Manual

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

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– Original document –

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Change Record

Revision	Date	Change
01	10/15	New release
02	02/18	Added mobile system components to manual.
03	04/18	Added illustrations showing the Encore HD pump.
04	07/18	Added HD, HD+, and HDXD System part numbers, added nLighten information
05	2/21	Updated safety information
06	05/21	Updated specifications. Updated regulator throughout manual and parts list. Converted to new format.
07	01/22	Updated approvals and text references.
08	12/24	Updated Manufacturer Address and Labels

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 all versions of the Encore® HD manual powder spray systems:

- Mobile Dolly System with Vibratory Box Feeder (VBF)
- Mobile Dolly System with Feed Hopper
- Standalone Systems − Single and Dual Configurations
- Rail Mount and Wall Mount Systems

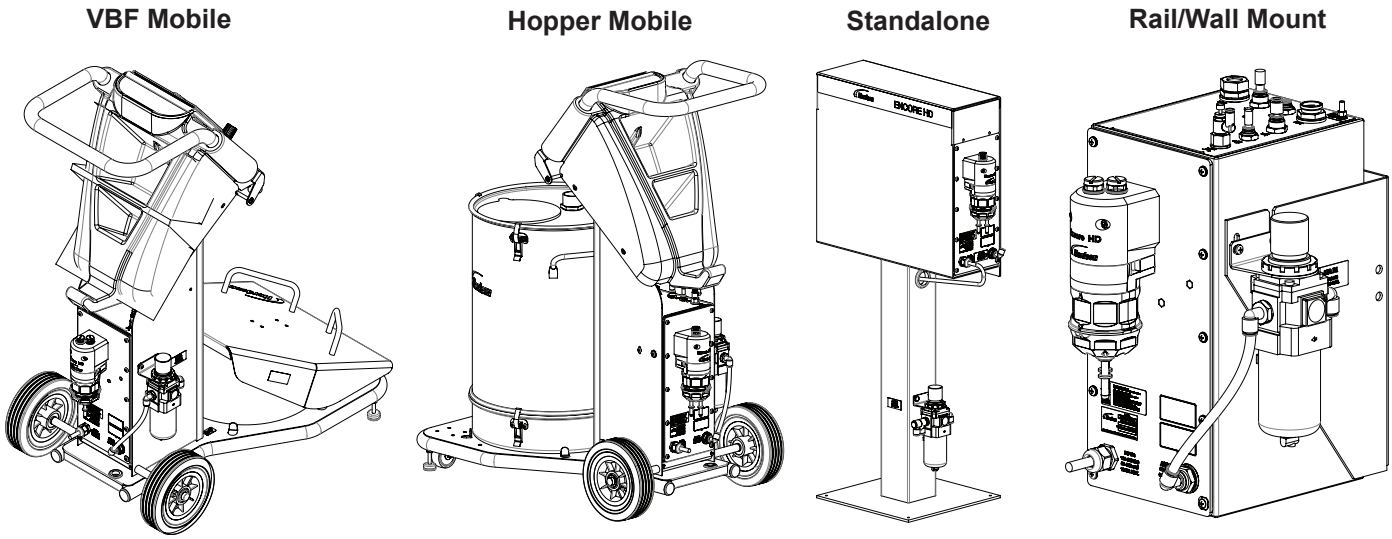


Figure 2-1 Encore HD Manual Powder Systems

Mobile System Components

See Figure 2-2.

Mobile Systems include:

- Encore HD manual system controller
- Encore HD manual spray gun and cable
- Encore HD powder feed pump
- Encore HD pump control unit
- Encore pump pickup tube
- One of the following, based on system version:
  - Vibratory table and motor − up to 50 lb (25.0 kg) box of powder
  - 50 lb (25.0 kg) Encore round feed hopper − fluidizes powder with low-pressure compressed air
- Factory installed powder hose oriented under the base of the dolly.

  NOTE: The powder hose should always be oriented in a 3 ft diameter, horizontal to the ground.
- 8-mm powder hose, 4-mm air tubing, spiral wrap, Velcro® straps, barbed fitting
- Air filter
- Accessories for future use:
  - Bracket
  - Grounding block
  - Adapter

The components are mounted on a sturdy wheeled dolly.

Standalone and Rail/Wall System Components

See Figure 2-2.

Standalone and Rail/Wall Systems include:

- Encore HD manual system controller
- Encore HD manual spray gun and cable
- Encore HD powder feed pump
- Encore HD pump control unit
- Pump adapter kit and coupling for use on HR/NHR feed hoppers

  NOTE: Hoppers are sold separately.
- Stand included with standalone systems
- Rail/Wall mount brackets for rail/wall systems
- Grounding kit
- 8-mm powder hose, 4-mm air tubing, spiral wrap, Velcro straps
- Air filter/regulator

Encore HD Powder Spray Gun

Encore HD Manual System Controller

Pump Control Unit with Powder Feed Pump

Figure 2-2 Common System Components (NOTE: Not all system configuration components shown)

Specifications

Model	Input Rating	Output Rating
Encore HD Applicator	+/− 19 VAC, 1 A	100 KV, 100 µA
Encore HD Interface Control Unit	24 VDC, 2.0 A	+/− 19 VAC, 1A
Encore HD Controller Power Unit	100−240 VAC, 50/60 Hz, 125 VA	24 VDC, 2.5 A
Vibratory Motor 50 Hz	230 VAC, +/− 10%	NA
Vibratory Motor 60 Hz	115 VAC, +/− 10%	NA

Input Air:	6.0−6.9 bar (87−100 psi), <5µ 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
Hazardous Location Ratingfor Controls:	Zone 22 or Class II, Division 2
Dust Ingress Protection:	IP6X
Vibrator Table Capacity:	25 kg (50 lb) box of powder
Hopper Capacity:	11.3 or 22.7 kg (25 or 50 lb)

Mobile System with VBF

Height:	1078 mm (42.5 in.)
Wheel Base:	620 (24.4) L x 511.5 (20.1) W
Weight:	51.8 kg (114 lb)

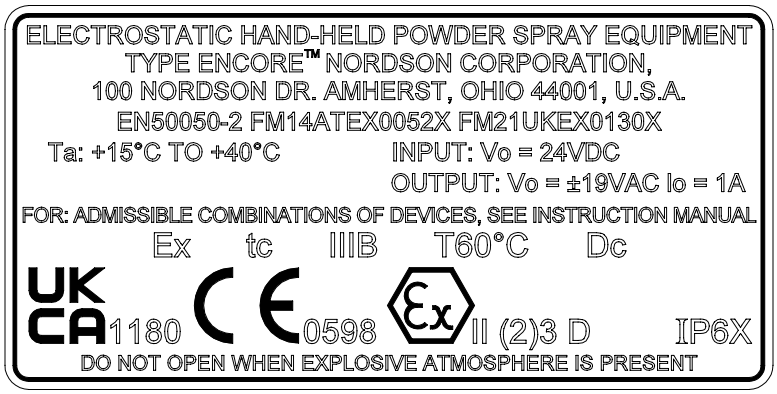
Mobile System with 50 lb. Feed Hopper

Height:	1078 mm (42.5 in.)
Wheel Base:	620 (24.4) L x 511.5 (20.1) W
Weight:	55.4 kg (122 lb)

Applicator Certification Label

1603105

Controller Certification Label



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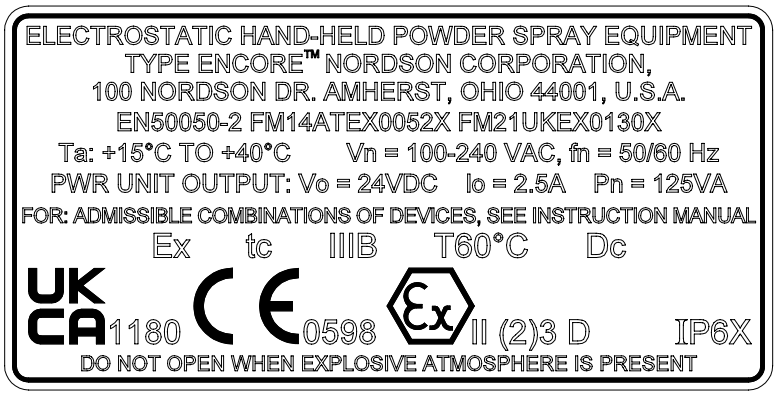
Power Unit Certification Label



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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.

Required Installation Tools

- Flathead screw driver
- Scissors
- Tube cutters
- Wrench
- Pliers
- Drill
- Masonry drill bit included in anchoring kit (Standalone systems only)
- Tapcon® screws included in anchoring kit (Standalone systems only)

Standalone System

Anchoring Stand

NOTE: Masonary bit and Tapcon screws provided with anchoring kit.

1. See Figure 3-1. Using masonary bit, drill holes in platform or floor using the dimensions shown.
2. Anchor the stand to floor or platform using Tapcon screws supplied with kit.

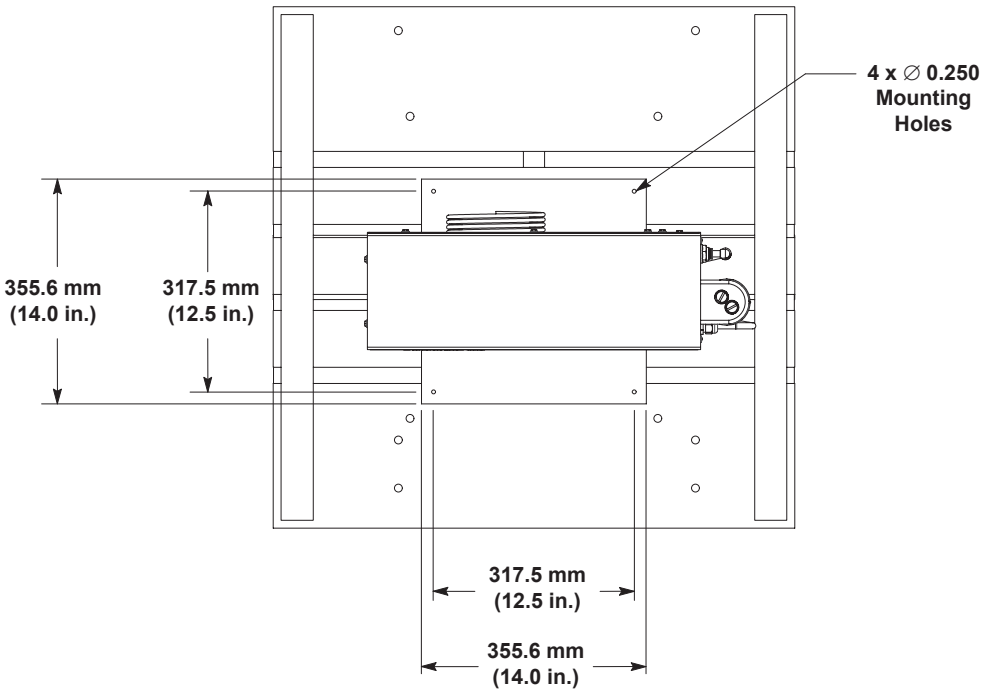

Figure 3-1 Anchoring Stand

Hopper Installation for Feed Hopper System

1. See Figure 3-2. Unclamp the hopper lid and remove the vent hose and hose clamps.
2. Place the hopper on the dolly platform so that the bottom of the fluidizing pan fits into the cutout in the dolly platform.
3. Connect the 10-mm stem x 6-mm tube reducer to the 10-mm elbow fitting on the fluidizing pan.
4. Connect the 6-mm blue fluidizing air tubing to the reducer.
5. Connect the ring-tong terminal on the 1-ft green/yellow ground cable shipped with the system to the ground stud on the side of the fluidizing pan, then plug the cable into the grounding socket on the dolly base.
6. Install the hose clamp over the end of the vent hose and connect the hose to the vent stack on the lid. Tighten the clamp to secure the hose.
7. Route the suction line from the pump to the pickup tube from the hopper.

NOTE: Before turning on the controller interface, route the other end of the vent hose to a vent stub on a color module or into the spray booth. This prevents the very fine powder particles in the vented fluidizing air from contaminating the spray room.

NOTE: On VBF mobile systems, all pneumatic connections are factory installed.

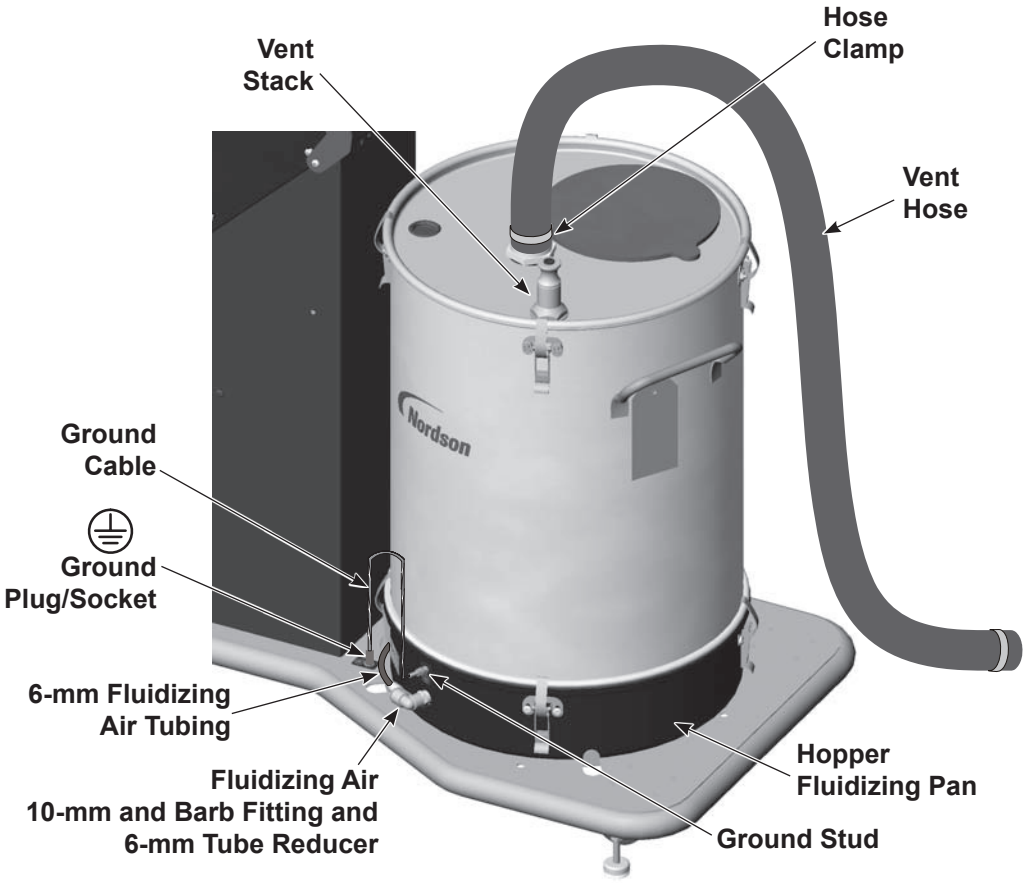

Figure 3-2 Hopper Installation on Mobile System Dolly

Setup Common to All Manual Systems

Controller Connections

See Figure 3-3 and Figure 3-4. The controls for the system consist of a two piece unit connected by a network/power cable.

- Pump control unit: houses a 24Vdc power supply, circuit board, and iFlow® air control manifold.
- Spray System Controller: houses the controller interface panel, which contains the displays and controls used to make controller function settings and spray settings.

Connect the gray 3 m (10 ft) network cable to the net/auxiliary receptacles on the system controller and pump control unit. See the *Spray Gun Connections* section for additional information on the gun cable installation.

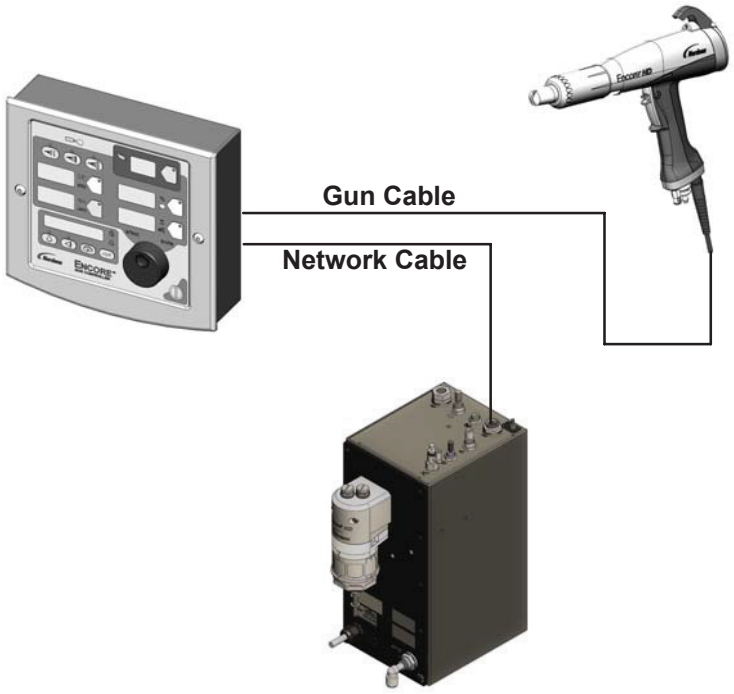

Figure 3-3 Controller Connections

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 3-4. 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.

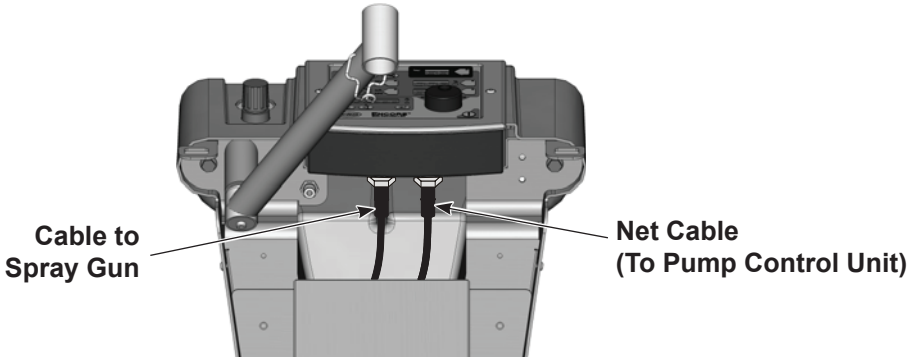

Figure 3-4 Spray Gun Cable Connection to System Controller − Mobile System Shown

Air Tubing and Powder Hose

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

See Figure 3-5.

1. 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. Cut the air tubing to required system length.
2. 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. Cut the air tubing to required system length.
3. Push the barbed hose adapter into the end of the powder hose, then plug the adapter into the powder inlet tube in the bottom of the spray gun handle.
4. For hopper pickup tubes, place barb into push-to-connect fittings on pickup tube. Install the powder hose.

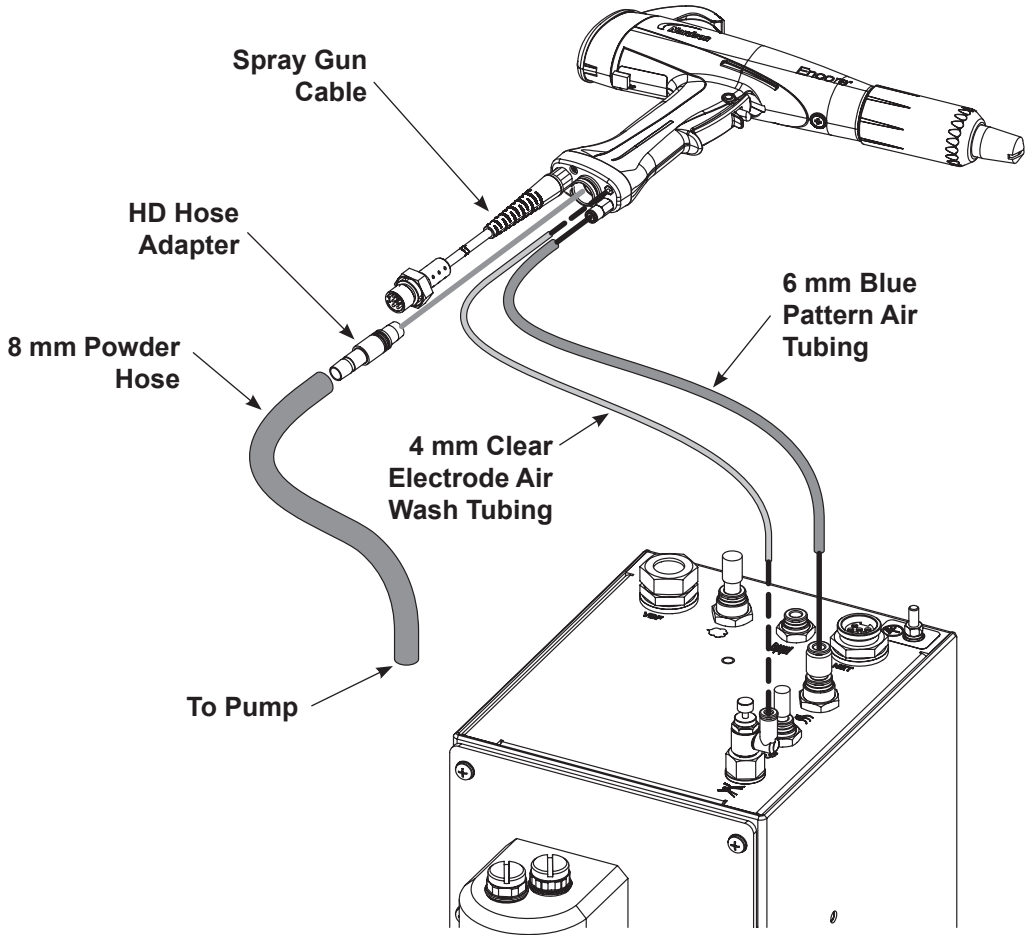

Figure 3-5 Spray Gun Connections

NOTE: See Figure 3-6. The minimum powder hose length is 60 ft.

For the Mobile Systems: The tubing is coiled under the dolly platform. 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.

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

Bundling Tubing and Cable

See Figure 3-6. Use the sections of black spiral wrap supplied with the system to bundle together the spray gun cable, air tubing, and powder hose.

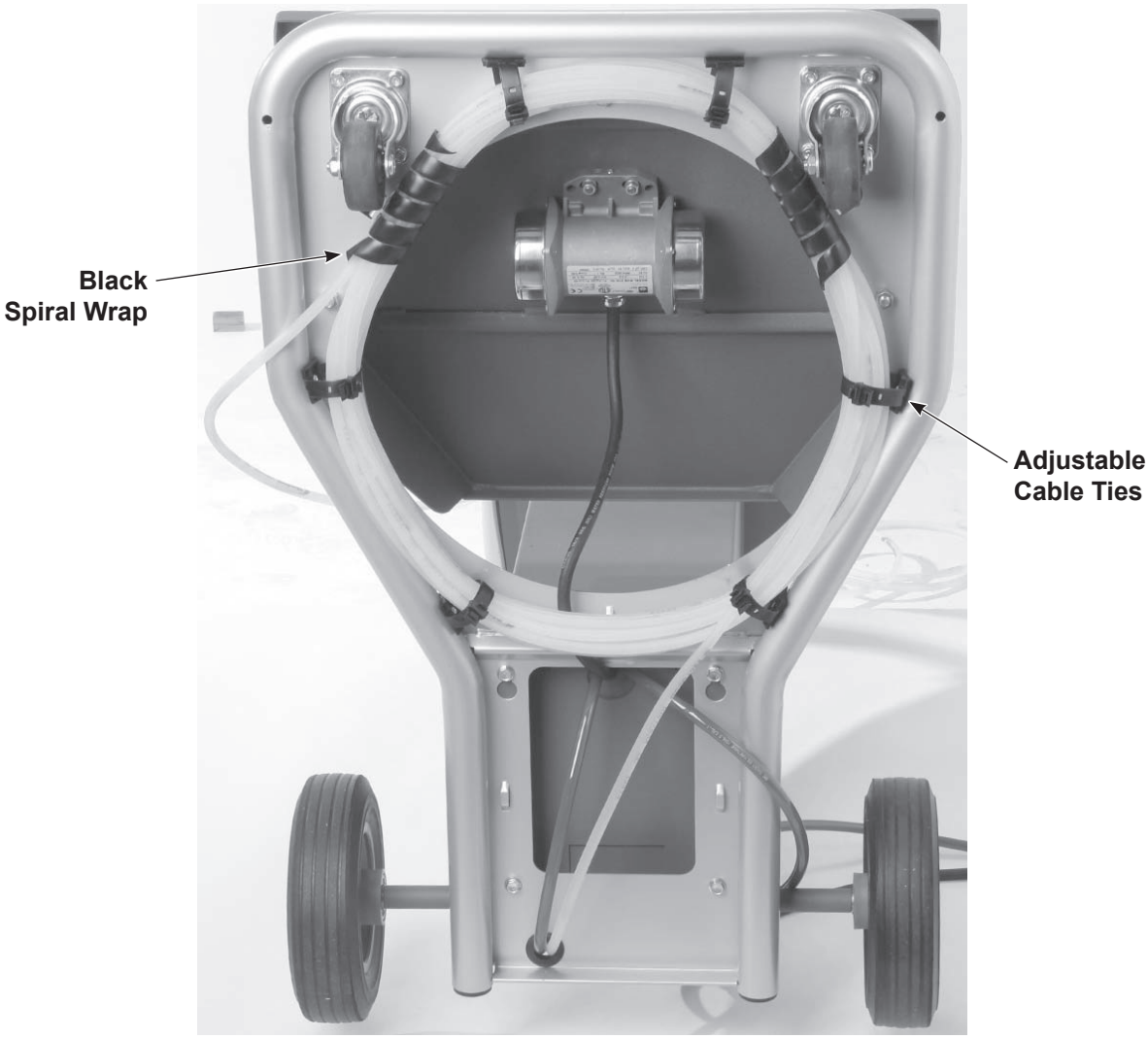

Figure 3-6 Bundling Tubing (Shown with Mobile System)

Main System Air and Electrical Connections

Main System Air Supply

See Figure 3-7. The air supply pressure should be 6.0−6.9 bar (87−100 psi).

The recommended set point for the 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.

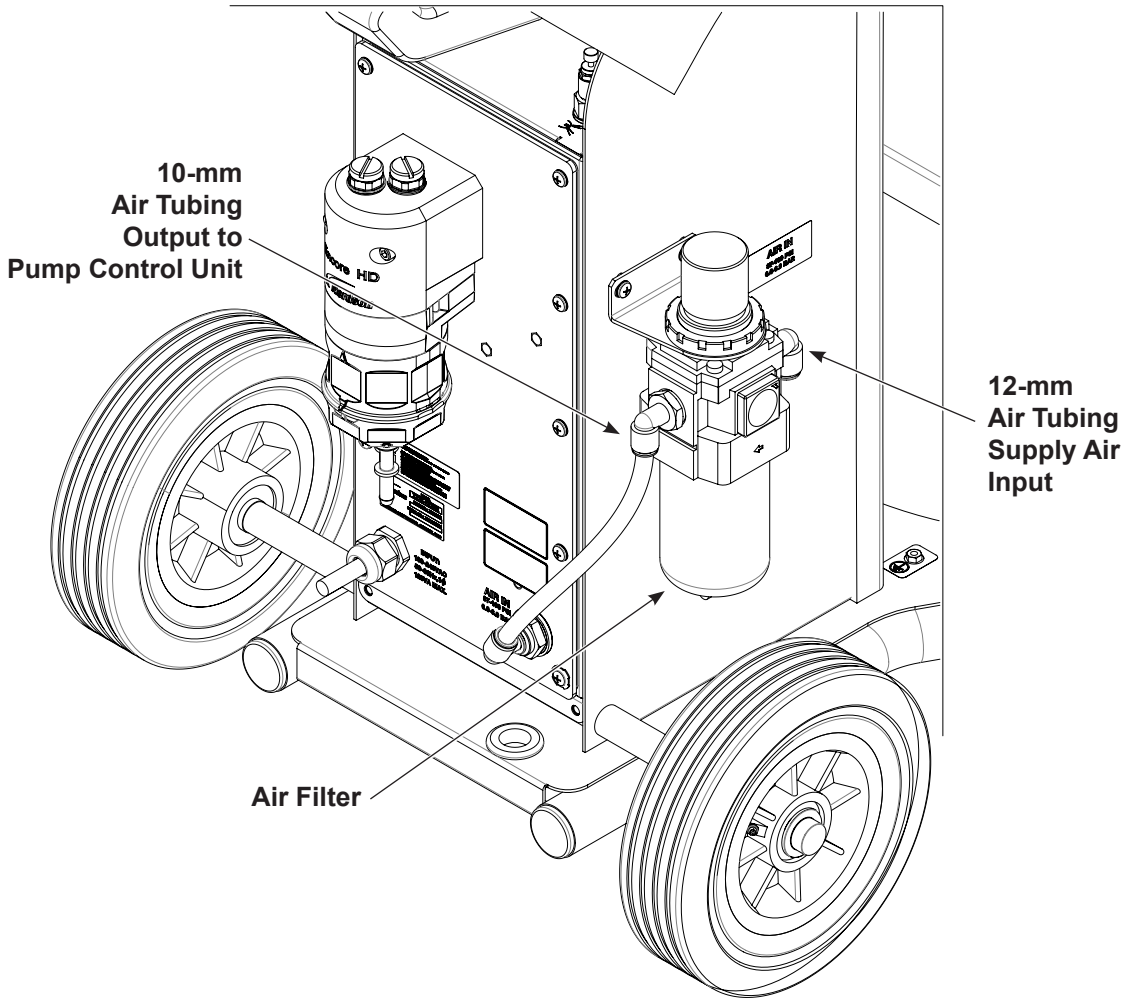

Figure 3-7 System Air Supply Connection (Shown with Mobile System)

Standalone, Rail Mount, and Wall Mount System Air Supply

See Figure 3-8.

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

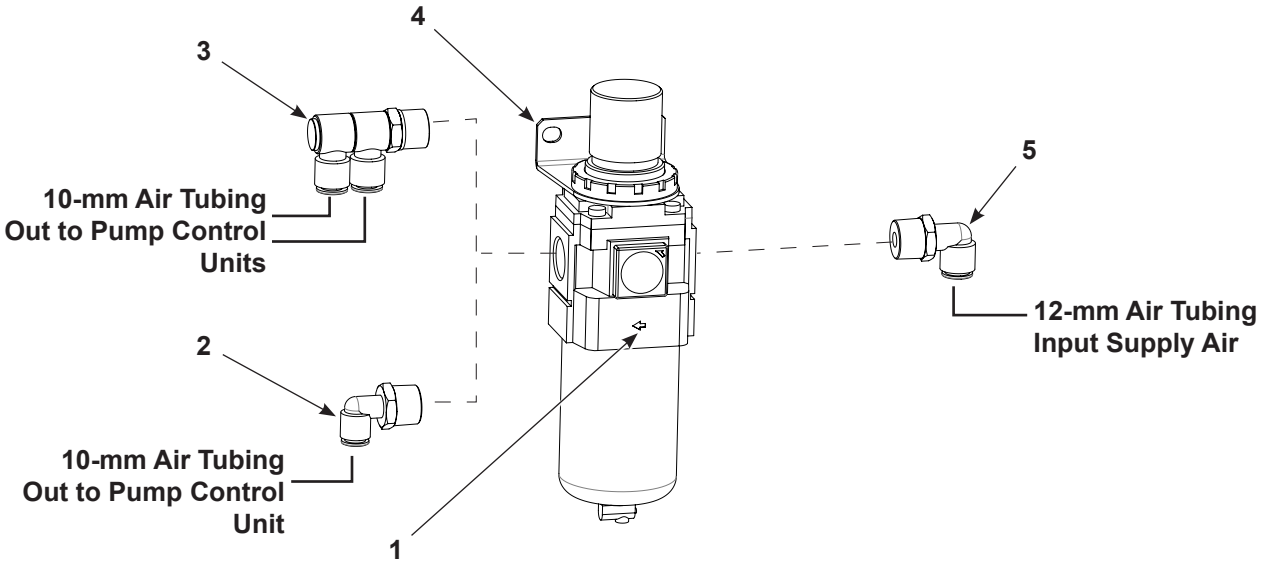

Figure 3-8 Air Filter Installation − Standalone and Rail/Wall Mount Systems

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

Main Electrical Connection

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 system 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 3-9. Connect the ground cable attached to the pump control unit ground stud to a true earth ground.

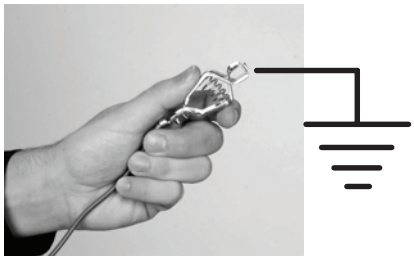

Figure 3-9 System Ground Connection

Standalone and Rail/Wall Mount Systems

Use the ESD ground bus bar kit included with the system to connect the pump control 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 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, or with the Encore Powder Electrostatic Automatic (bar mount) 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.

VBF Powder Box Installation

NOTE: The vibrator table can hold a maximum 25 kg (50 lb) box of powder.

WARNING: The fluidizing tubing supplied with this system is conductive and also supplies the grounding path. Use only the tubing supplied with this system. Use of non-conductive tubing could lead to a shock hazard, fire, or serious injury.

1. See Figure 4-1. Lift the pickup tube up and swing the tube catch down and under the pickup tube end to hold it in place on the arm.
2. See Figure 4-2. Place a box of powder on the vibrator table.
3. Fold back the box flaps and open the plastic bag containing the powder coating. Fold the bag over the box flaps to keep the flaps out of the way.

NOTE: Do not force the end of the pickup tube into the powder. Vibration and gravity will cause the pickup tube to sink into the powder.

4. Swing the pickup tube catch out from under the pickup tube and slide the tube down into the powder.
5. To prevent accidental powder spills, wrap the plastic bag around the pickup tube and loosely secure the bag with a tie wrap.

NOTE: See page 4-4 for recommended pressure at startup.

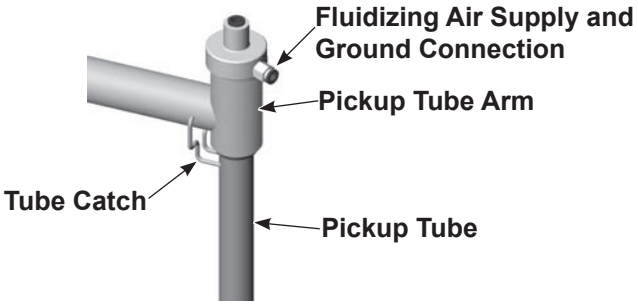

Figure 4-1 Pickup Tube Bracket Use

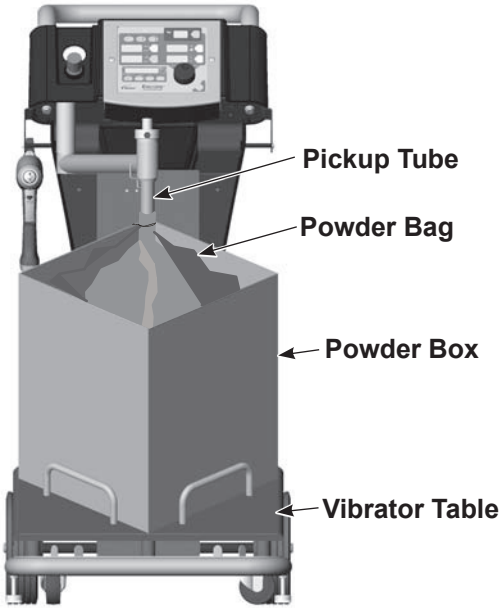

Figure 4-2 Powder Box Startup

Feed Hopper Filling Startup

Remove the rubber plug from the hopper lid and fill the hopper 1/2 full of powder. Do not overfill, as the powder volume will increase when fluidizing air is turned on. Make sure the vent hose is connected to the powder booth, so that vented fine powder dust does not contaminate the spray room.

NOTE: See page 4-4 for recommended pressure at startup.

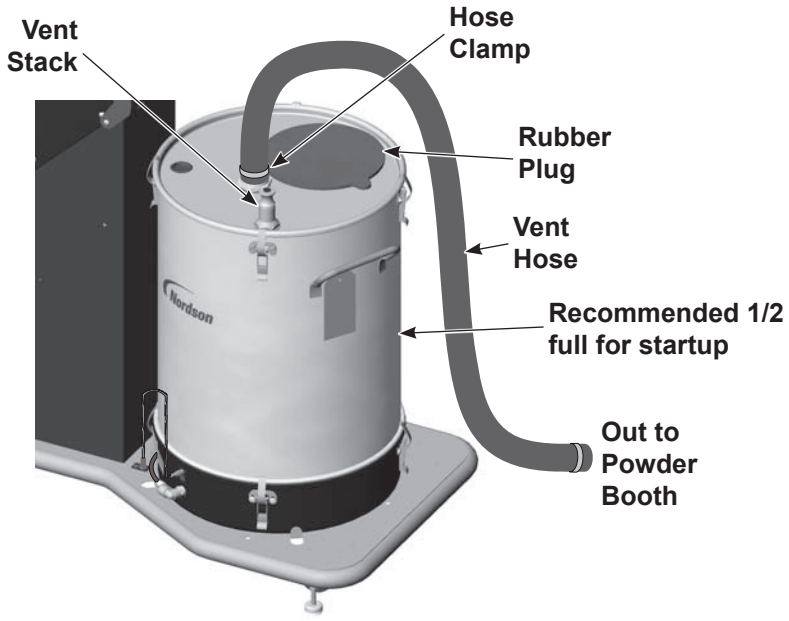

Figure 4-3 Powder Feed Hopper Startup

Fluidizing Air Operation

Powder Feed Hopper

If the system controller is configured for a powder feed hopper, then turning on the interface power turns on fluidizing air to the hopper. Adjust the fluidizing air pressure to 0.3−0.7 bar (5−10 psi). The pressure should be just enough so the powder in the hopper “boils” gently. The fluidizing air causes the powder to increase in volume.

Fluidize the powder for 5−10 minutes to make sure it is evenly fluidized and no clumps are left before spraying.

NOTE: Over or under fluidization is a common cause of inconsistent delivery.

Vibratory Box Feeder

If the controller is configured for a vibratory box feeder, then the fluidizing air is turned on and off when the spray gun is triggered on and off.

Adjust the fluidizing air pressure to 0.3−0.7 bar (psi − as low as possible; approximately 1 psi). The pressure should fluidize the powder just around the pickup tube. The powder should not boil violently or fountain out of the box. Over fluidization can cause loss of powder flow.

When the spray gun is triggered off, the vibrator motor remains on for a configurable delay. This delay prevents rapid on/off motor cycling every time you trigger the gun off and on and prolongs the life of the motor. The default delay time is 30 seconds.

The vibrator motor can also be set to continuous operation. If set this way, press and release the spray gun trigger to start the motor. To turn off the motor, set the interface to Standby or turn off the system controller power.

To configure the system for a vibratory box feeder, change the VBF delay time, or set the vibrator motor to continuous operation, refer to *Controller Configuration* in the system controller operator manual.

NOTE: Over or under fluidization is a common cause of inconsistent delivery.

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.

The air flow needle valve on the power unit is set at the factory for the most common applications (11/2 turns CCW from fully closed position), but can be adjusted if needed.

NOTE: Excessive electrode air wash will create a void in the center of the spray pattern.

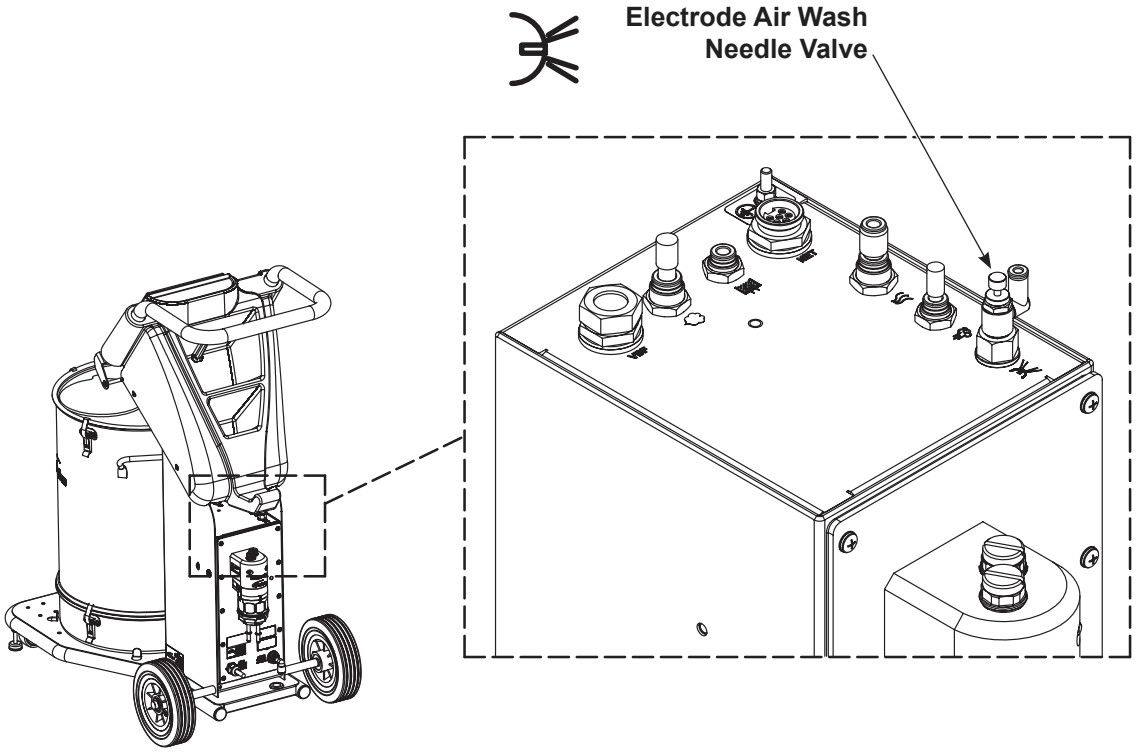

Figure 4-4 Electrode Air Wash Valve Location

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 the user to start spraying powder as soon as the user finishes setting up the system. Refer to *Controller Configuration* in the system controller operator manual for a list of the defaults and instructions on how to change them.

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.

System Startup

1. Turn on the spray booth exhaust fan.
2. Turn on the system air supply.
3. Install a box of powder or a hopper filled with powder on the cart. Refer to *VBF Powder Box Installation* on page 4-2 for instructions.
4. See page 4-7. Make sure the spray gun is not triggered, then turn on system controller power. The displays and icons on the controller interface and gun interface should light.

   Feed hoppers: Turning on the controller power turns on the fluidizing air. Adjust the fluidizing air pressure to 0.3−0.7 bar (5−10 psi). The pressure should be just enough so the powder in the hopper “boils” gently. Fluidize the powder for 5−10 minutes before spraying powder.
5. Point the spray gun into the booth and press the spray trigger to start spraying powder.

   Vibratory box feeders: Adjust the fluidizing air so that the powder around the pickup tube is being fluidized without blowing powder out of the box. Triggering the spray gun turns on the vibrator motor. Depending on the vibrator motor function setting, the motor will:

   - turn off after a delay when the trigger is released, or
   - continue to operate until the Standby button is pressed or system controller power is turned off.

   Refer to *Controller Configuration* in the system controller operator manual for information on changing the motor function setting.
6. Select the desired preset and start production. Refer to *Presets* in the system controller operator manual for preset programming instructions.

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

Figure 4-5 System Controls

Standby Button

Use the **Standby** button shown in Figure 4-5 to shut off the interface and disable the spray gun during breaks in production. When the system controller interface is off the spray gun cannot be triggered, and the spray gun interface is disabled.

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, turn off the power disconnect to the unit.
5. Perform the appropriate maintenance steps listed in *Maintenance Procedures* on page 5-2.

Section 5

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 system 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.

Refer to the individual component manuals for more information, and for spare parts.

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)	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 Color Change 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. Blow off the gun and wipe it down with a clean cloth.
Pump (Daily)	1. Visually inspect pinch valves through the clear housing. 2. Replace any worn or damaged parts if the powder is present in the the housing.
System Controller and Pump Control Unit (Daily)	Blow off the pump control unit and system controller with a blow gun. Wipe powder off the system controller with a clean cloth.
System Air Filter (Periodically)	Check the system air filter/regulator. Drain the filter and change the filter element as needed.
System Grounds	Daily: Make sure the system is securely connected to a true earth ground before spraying powder. Periodically: Check all system ground connections.

Section 6

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 system 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 system controller can sense.

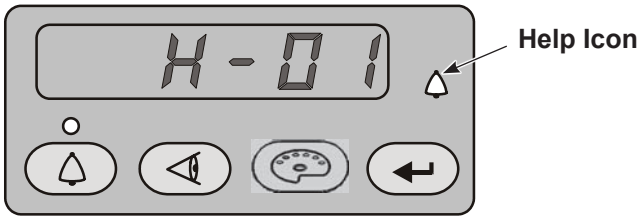

Figure 6-1 Displaying and Clearing Help Codes

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 go 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 the **Enter** button. 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 Setup for more information on 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 µA 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 µA display should read 0. If the µA 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	Check that the gun number is set correctly. See F20 in the *Configuration* section of the controller manual. Check the DIP switch setting. 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. Check the connections from the cable receptacle to the J1 terminal block on the main control board. 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.
H15	Over Current Fault (Cable or Gun Short)	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. 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. If the H15 code does not reappear, then check the high voltage power supply for issues. 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.
H19	Gun Maintenance Timer Expired	The Maintenance Timer has exceeded its setting. Perform the scheduled maintenance, then reset the maintenance timer. Refer to the system controller manual for reset instructions (F07-02).

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. Refer to the system controller manual 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	Conveyance Air Flow Low Fault Flow is lower than setpoint. System cannot reach setpoint.	Check if input pressure is greater than 90 psi (6.2 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 *Conveyance Air Flow Verification* procedure on page 6-12. Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.
H24	Pattern Airflow Low Fault	Check if input pressure is greater than 90 psi (6.2 bar). Check for blocked airline to spray gun. 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. Use the flow verification tool (1039881) with its instructions and connect to the pattern air output. Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.

Continued...

Code	Message	Correction
H25	Conveyance Air Flow High Fault Flow is higher than setpoint. System unable to turn it down.	Check if input pressure is less than 110 psi (7.6 bar). Check if internal regulator is set to 85 psi (5.7 bar) with the spray gun triggered ON. Check for contamination in the proportional valve. Check for oil/water contamination. 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. 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 *Re-Zero Procedure* on page 6-12. Perform the *Conveyance Air Flow Verification* procedure on page 6-12. Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.
H26	Pattern Air Flow High Fault	Check if input pressure is less than 110 psi (7.6 bar). Check if the internal regulator is set to 85 psi (5.7 bar) with the spray gun triggered ON. Check for contamination in the proportional valve. Check for oil/water contamination. 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. 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 *Re-Zero Procedure* on page 6-12. Use the flow verification tool 1039881. Check for water and/or oil contamination in the transducer filters by removing the board from the flow manifold. Replace filters with 1604436.

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. Check F18 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	µA Feedback Fault	Make sure KV is set to maximum 100 kV, trigger the gun ON and check the µA display. If the µA display always reads >75 µA, 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 µA 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 µA 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 8 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	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	Remove, clean, and inspect the nozzle, deflector, and electrode assembly. Replace worn parts as necessary. If excessive wear or impact fusion is a problem, reduce the flow rate and pattern air flow.
	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	Increase the fluidizing air pressure. If the problem persists, remove the powder from the hopper. Clean or replace the fluidizing plate if contaminated.
	iFlow module out of calibration	Perform the *Re-Zero Procedure* on page 6-12.
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.

Continued...

Problem	Possible Cause	Corrective Action
3. Low powder flow or powder flow surging	Assist air too high/low	Adjust assist air as needed.
	Fluidizing too 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 be too low.
	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 *Controller Configuration* in the system controller operator manual.
	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.

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 *Gun Cable Continuity Checks* as described in your spray gun manual. If an open or short is found, replace the cable.
	Spray gun power supply shorted	Perform the *Power Supply Resistance Test* 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 *Power Supply Resistance Test* as described in your spray gun manual.
	Damaged gun cable	Perform the *Gun Cable Continuity Test* as described in your spray gun manual. If an open or short is found, replace the cable.

Continued...

Problem	Possible Cause	Corrective Action
8. No kV output and no powder output	Malfunctioning trigger switch, display module, or cable	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. Perform the *Gun Cable Continuity Test* as described in your spray gun manual. **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 system controller manual.
9. No purge air when Purge button is pressed	Malfunctioning spray gun display module, gun cable, or iFlow module purge solenoid valve; no air pressure, or kinked air tubing	If display module does not show PU when Purge button is pressed, then module membrane switch is defective. Replace display module. If display module shows PU: Check the purge air tubing and solenoid valve on the iFlow manifold. Perform the *Gun Cable Continuity Test* as described in your spray gun manual.
10. Gun display module shows CF	Loose gun display connection	Refer to the system controller manual. Check connector J3 (cable/display module) inside the gun. Check for loose or bent pins.
	Defective gun cable or gun display module (H36 code)	Perform the *Gun Cable Continuity Test* as described in your spray gun manual. Replace cable if damaged. Replace gun display module if cables and connections are good.
11. Preset 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 Controller Configuration in the system controller manual.
	No programmed preset available	Presets with no set values for flow rate and electrostatics are automatically skipped.
	Loose or defective trigger switch	Check for a loose trigger switch connection. The trigger switch is plugged into the gun display module.

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 Controller Configuration in the system controller manual.
	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). See Controller Configuration in the system controller manual. 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 *Controller Configuration* in the system controller manual.
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 Verification

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).

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.

Reference Documentation

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

Document Title	Document Part Number
Encore HD Pump	1605708
Encore HD Pump Control Unit	1606783
Encore HD Spray Gun	1604869
Encore HD System Controller	1604870
NHR-X-XX Encore Feed Hopper	1609826

Encore HD Manual Powder Spray Systems

With nLighten™	System Description
1613900	Encore HD 115 V VBF Mobile
1613901	Encore HD 230 V VBF Mobile
1613899	Encore HD 50 lb Hopper Mobile
1613902	Encore HD Single Stand Alone
1613904	Encore HD Dual Stand Alone
1613903	Encore HD Rail/Wall Mount

Encore HD+ Manual Powder Spray Systems

Contact your Nordson representative to order HD+ Systems

With nLighten	System Description
—	Encore HD+ 115 V VBF Mobile
—	Encore HD+ 230 V VBF Mobile
—	Encore HD+ 50 lb. Hopper Mobile
—	Encore HD+ Single Stand Alone
—	Encore HD+ Dual Stand Alone
—	Encore HD+ Rail/Wall Mount

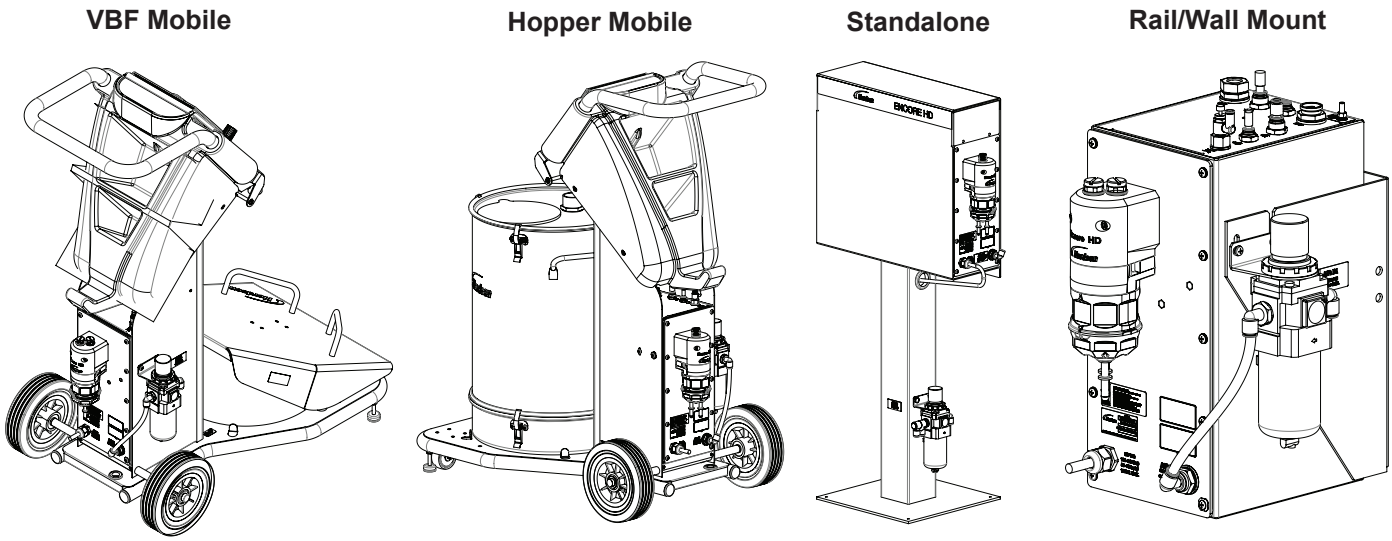

Figure 7-1 Encore HD Manual Powder Systems

Mobile System Components

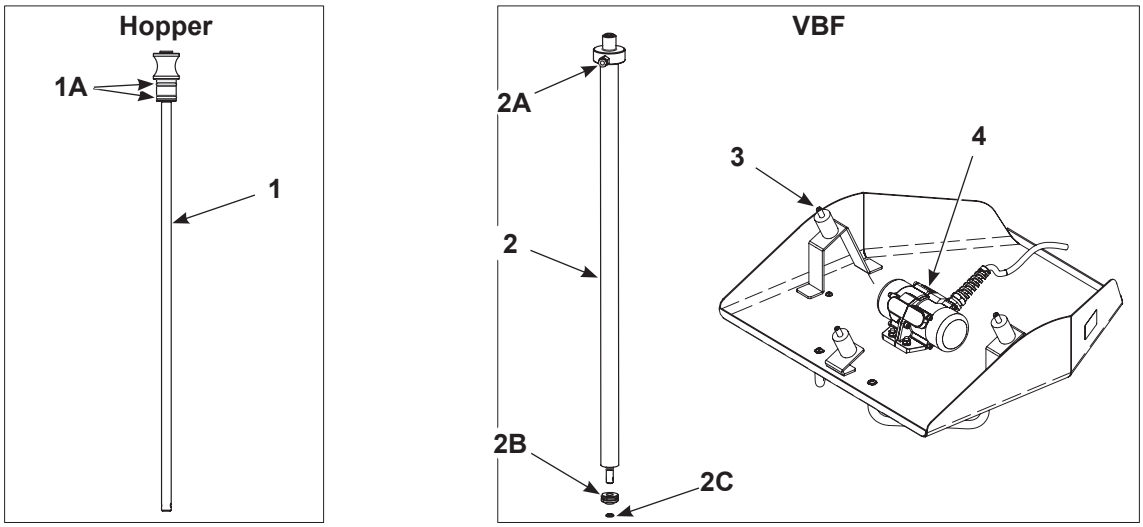

Figure 7-2 Miscellaneous Mobile System Parts

See Figure 7-2.

Item	Part	Description	Quantity	Note
Hopper				
1	1608300	TUBE, pickup, HDLV hopper	1	
1A	941145	• O-RING, silicone, cond, 0.625 x 0.812	2	
VBF				
2	1606300	TUBE, Encore powder pickup, VBF	1	
2A	1096788	• CONNECTOR, 6mm tube x R 1/8, dia 0.7mm orifice	1	E
2B	1606230	• DISC, fluidizing, powder box lance	1	
2C	940117	• O-RING, silicone, 0.312 x 0.438 x 0.063	1	
NS	1103081	ARM ASSEMBLY, pickup tube, Encore MPS, packaged	1	
3	1084760	ISOLATOR, vibration, 1.0 dia x 1.5 x 5/16 studs	3	
4	1080952	VIBRATOR, electric, 115V, 60 Hz, w/connector	1	A, B
4	1080950	VIBRATOR, electric, 230V, 50 Hz, w/connector	1	A
NS	1620763	• FILTER ELEMENT, air, 5 micron, AW40, SMC	1	
NS	972286	REDUCER, 8 mm stem x 6 mm tube	1	C
NS	148256	PLUG, 10 mm, tubing	1	D
NS	1096787	UNION, bulkhead, conductive, 6 mm tube	1	E
NS	1067694	KIT, ground bus bar, ESD, 6 position, with hardware	1	
NS	1080718	CABLE, interface/controller, 10 ft.	1	

NOTE: A. Order the correct vibrator motor for your system.

B. For motors with a model number of MVE21M, a 4.0 µF capacitor (1600471) must be used in the controller power unit. If the motor model number is MVE20, then a 2.0 µF capacitor (1083021) is acceptable.

C. Installed in power unit fluidizing air output fitting.

D. Plugs unused port in system air filter/regulator output fitting.

E. Conductive fitting. Do not replace this fitting with a non-conductive fitting.

NS: Not Shown

Filter/Regulator

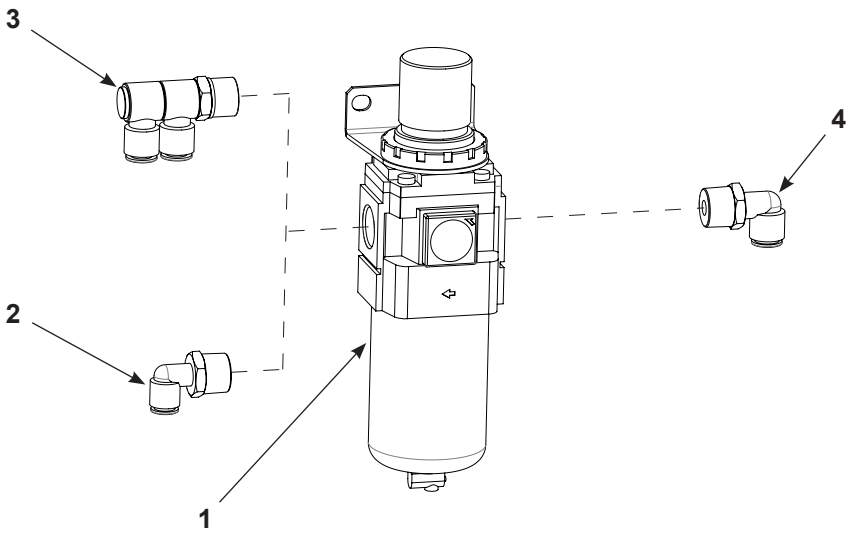

Figure 7-3 Filter/Regulator

Item	Part	Description	Quantity	Note
1	1620461	REGULATOR, air, with bracket, and gage, 8-123 psi, R1/2	1	
2	1607246	CONNECTOR, male, elbow,10 mm T X R1/2	1	A
3	1608398	ELBOW, swivel, pushin, 2 x 10T x 0.5R	1	B
4	1605531	CONNECTOR, male, elbow,12 mm T X R1/2	1	
NS	1103115	SCREW, hex, serrated, M8 X 16 mm, zinc	2	C
NS	1091006	NUT, hex, flanged, serrated, M8	2	C
NS	1045837	SCREW, pan, recessed, M5 x 12, with internal lockwasher, bronze	2	D

NOTE: A. Not included on dual standalone system.

B. Only included on dual standalone system.

C. Filter/regulator mounting hardware for standalone systems.

D. Filter/regulator mounting hardware for VBF, hopper, and rail/wall mount systems.

NS: Not Shown

AR: As Required

Grounding Equipment

Part	Description
1067694	KIT, grounding block

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: +15ºC to +40ºC
- Ex tb IIIB T60ºC / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60ºC / 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

_____

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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)	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: +15ºC to +40ºC
- Ex tb IIIB T60ºC / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60ºC / 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

_____
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England

Encore® HD/XD Pump

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

For parts and technical support, call the Industrial Coating Systems 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.

NORDSON CORPORATION • 100 NORDSON DRIVE AMHERST, OHIO 44001• USA

Table of Contents

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

Change Record

Revision	Date	Change
01	11/17	Initial Release
02	03/18	Added CE mark and new DOC14045-01.
02_update	12/18	1093557 was 1903557.
03	06/19	Added repair and parts information on gaskets 1608603 and 1613013. Updated parts lists with 940175, 940137, 983401, 1616440.
04	09/19	Removed washer from assembly and corrected part number for fluidizing tube kit and check valve kit. Updated torque for pump screw.
05	09/20	Replacing screw.
06	03/21	Added anti-static tubing kit (1620023)
07	05/21	Updated specifications and gasket.
08	06/22	Updated approval information.
09	10/23	Removed P/N 1620004 & P/N 768181, Added P/N 7035356 per tubing consolidation
10	04/24	Updating parts and service kits. Removed HD+ references. Updated lower Y-block.
11	08/24	Updated parts section for clarification on kits and available parts.
12	04/25	Added delivery and suction notations to installation section. Added lower Y block assembly part number to parts list.

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.

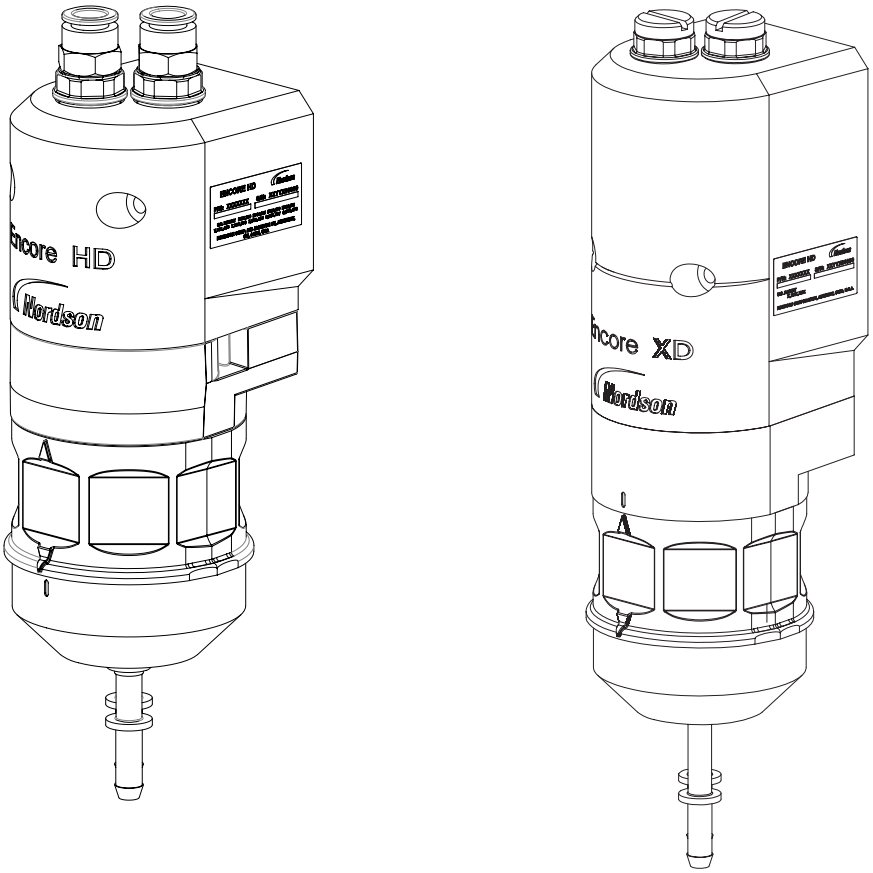
Disposal

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

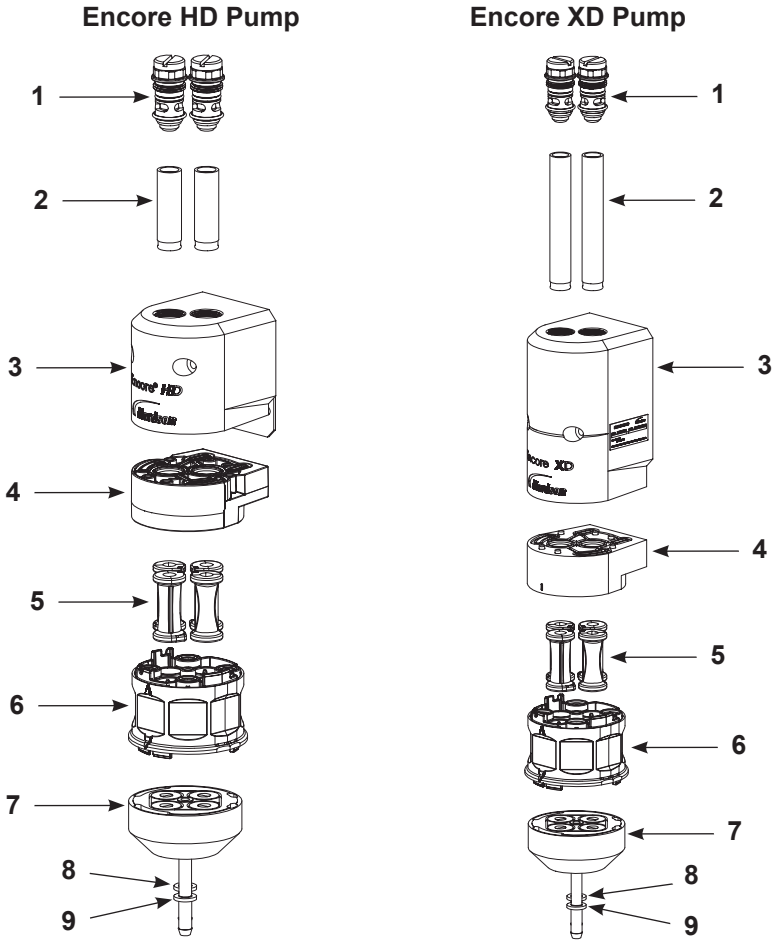


Figure 2 Encore HD/XD Pump Components

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.

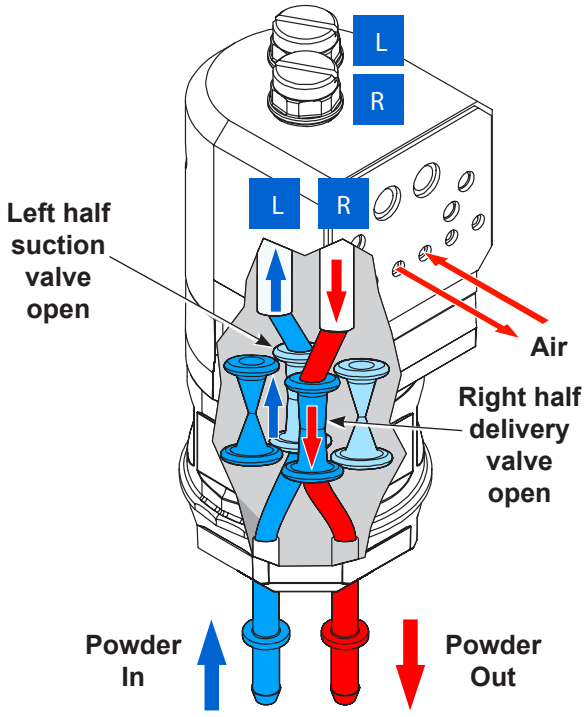


Figure 3 Left Side Drawing In, Right Side Dispensing

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

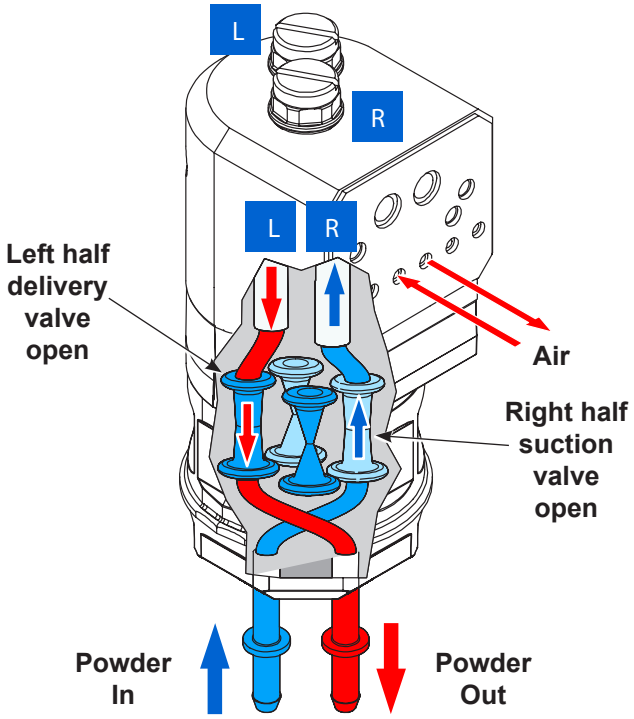


Figure 4 Left Side Dispensing, Right Side Drawing In

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.

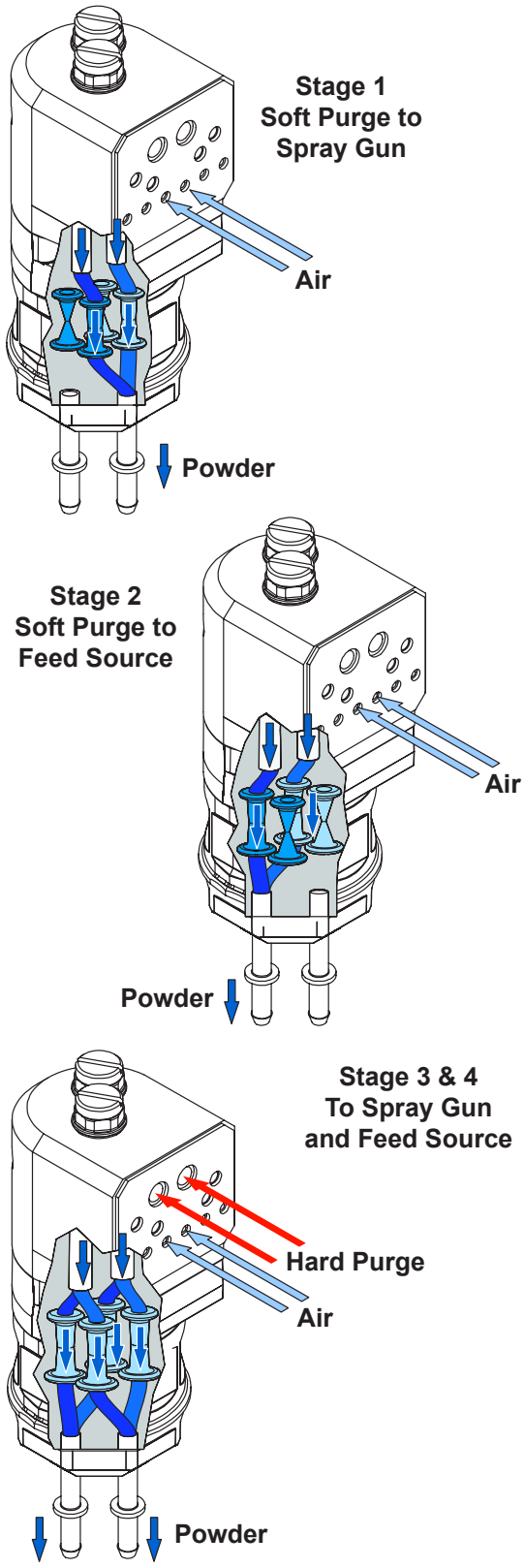


Figure 5 Purging Operation

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

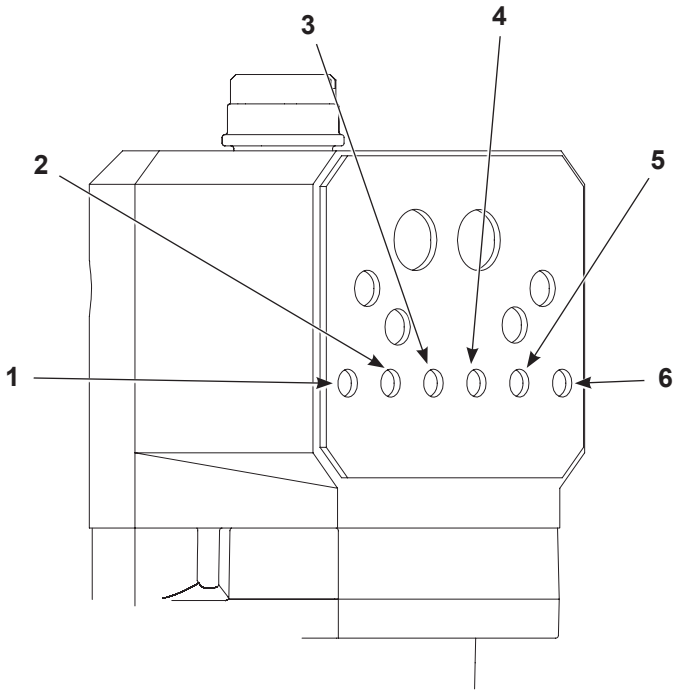


Figure 6 Pump Port Functions

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)

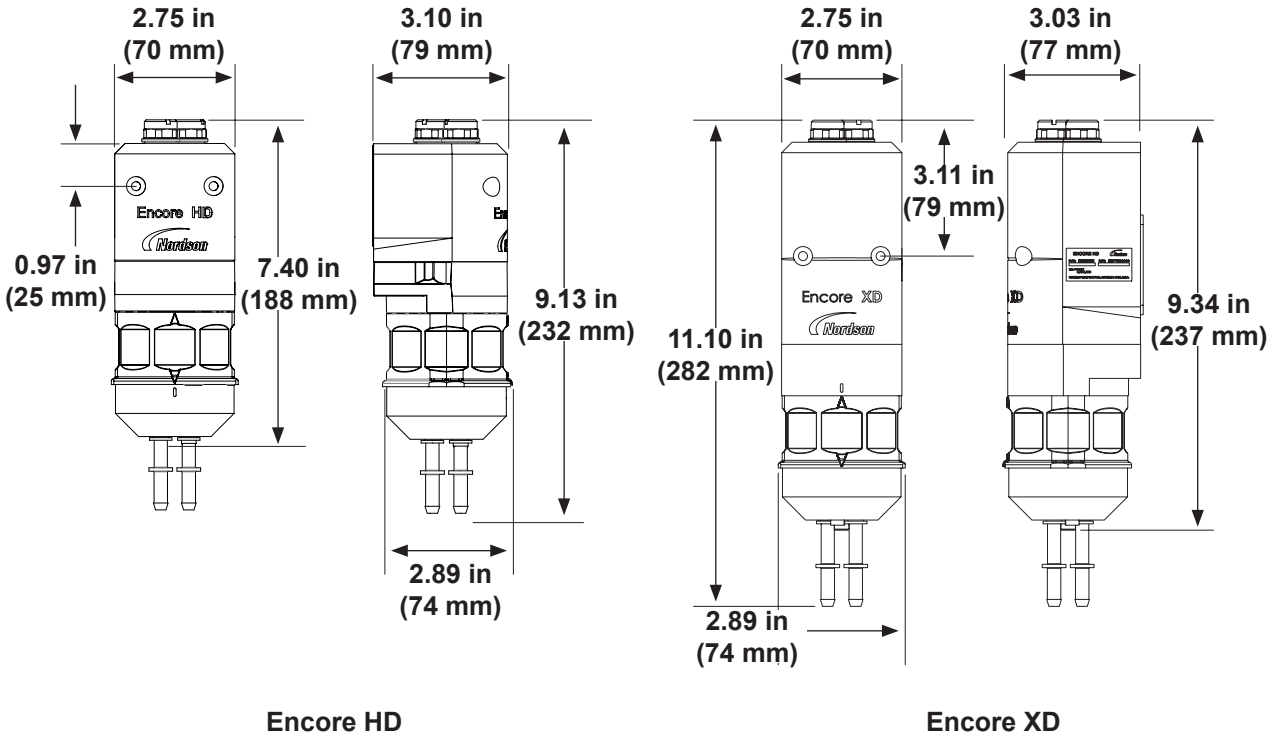


Figure 7 Encore Pump Dimensions

Installation

Pump Tubing Installation

See Figure 8.

Standard 8 mm OD Poly (Semi-Rigid) Tubing

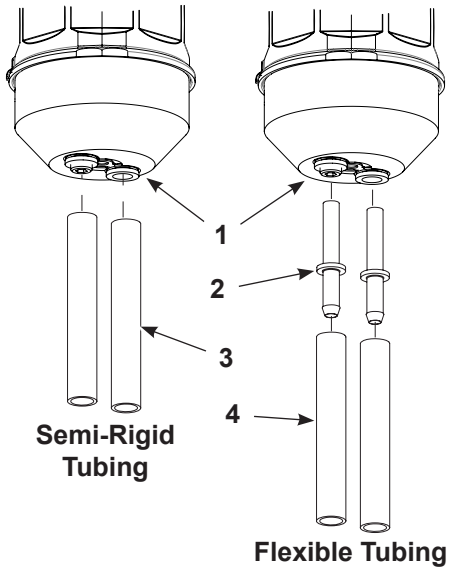
NOTE: Cut the semi-rigid tubing with a tubing cutter. Powder cross-contamination may result if the powder tubing is cut unevenly.

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).



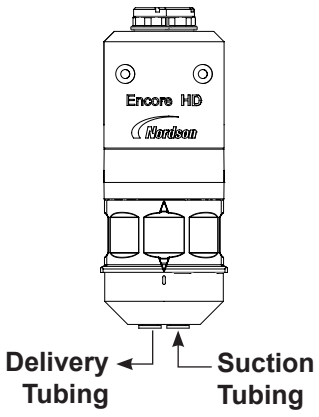


Figure 8 Powder Tubing Installation

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.

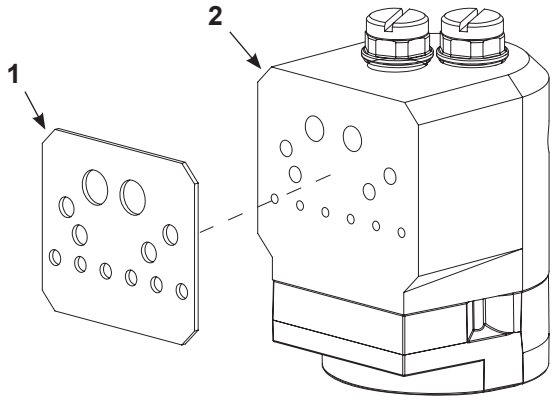


Figure 9 Replacing the Pump Gasket

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.

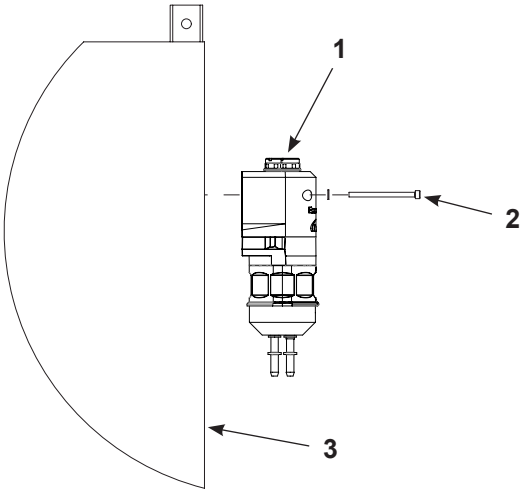


Figure 10 Pump Mounting to Cabinet

Pump Ground Check

NOTE: This procedure requires a multimeter.

See Figure 11

Perform a resistence 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 resistence 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.

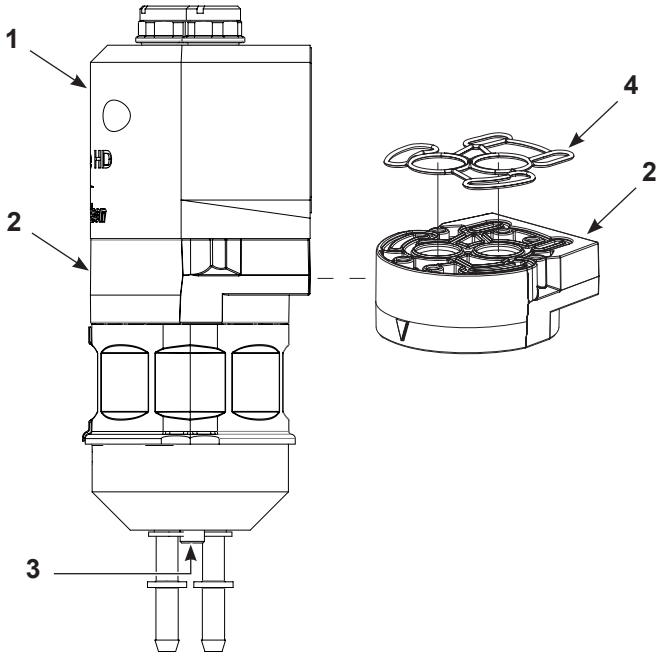


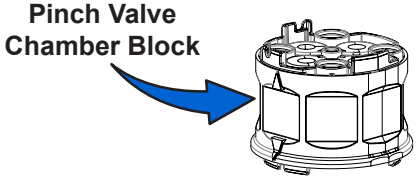
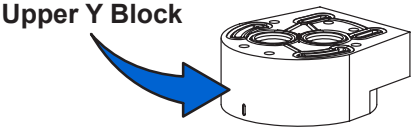
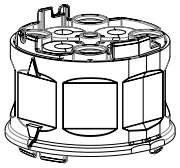
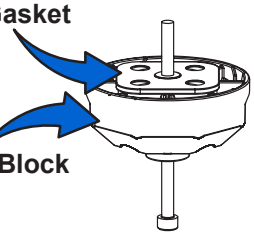
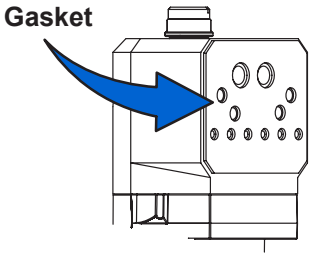
Figure 11 Pump Ground Check

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	**Pinch Valve Chamber Block** 	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.
Every Six Months **or** **Each Time the Pump Is Disassembled**	**Upper Y Block**   **Y Block Gasket** **Lower Y Block** 	**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. 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. Replace the Y block gasket. **NOTE:** Y block gasket must be replaced any time the pump is disassembled. **NOTE:** Torque screw to 25-30 in.-lb (2.8-3.4 N●m) for assembly.
	Gasket 	Inspect the gasket for damage. Replace if necessary.

Troubleshooting

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

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

Problem	Possible Cause	Corrective Action
1. Reduced powder output (pinch valves are opening and closing)	Blockage in the powder tubing to the spray gun.	Check the tubing for blockages. Purge the pump and spray gun.
	Defective pump air flow control valve.	Clean the pump air flow control valve. 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 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.

Continued...

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 *Delivery Check* in *Troubleshooting* 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 *Vacuum Check* procedure in *Troubleshooting* 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.

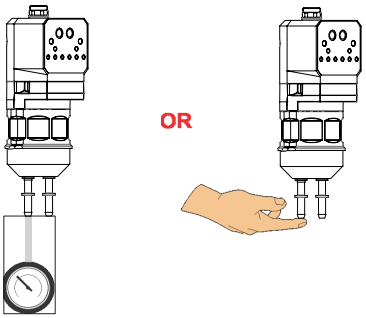


Figure 12 Vacuum Check Options

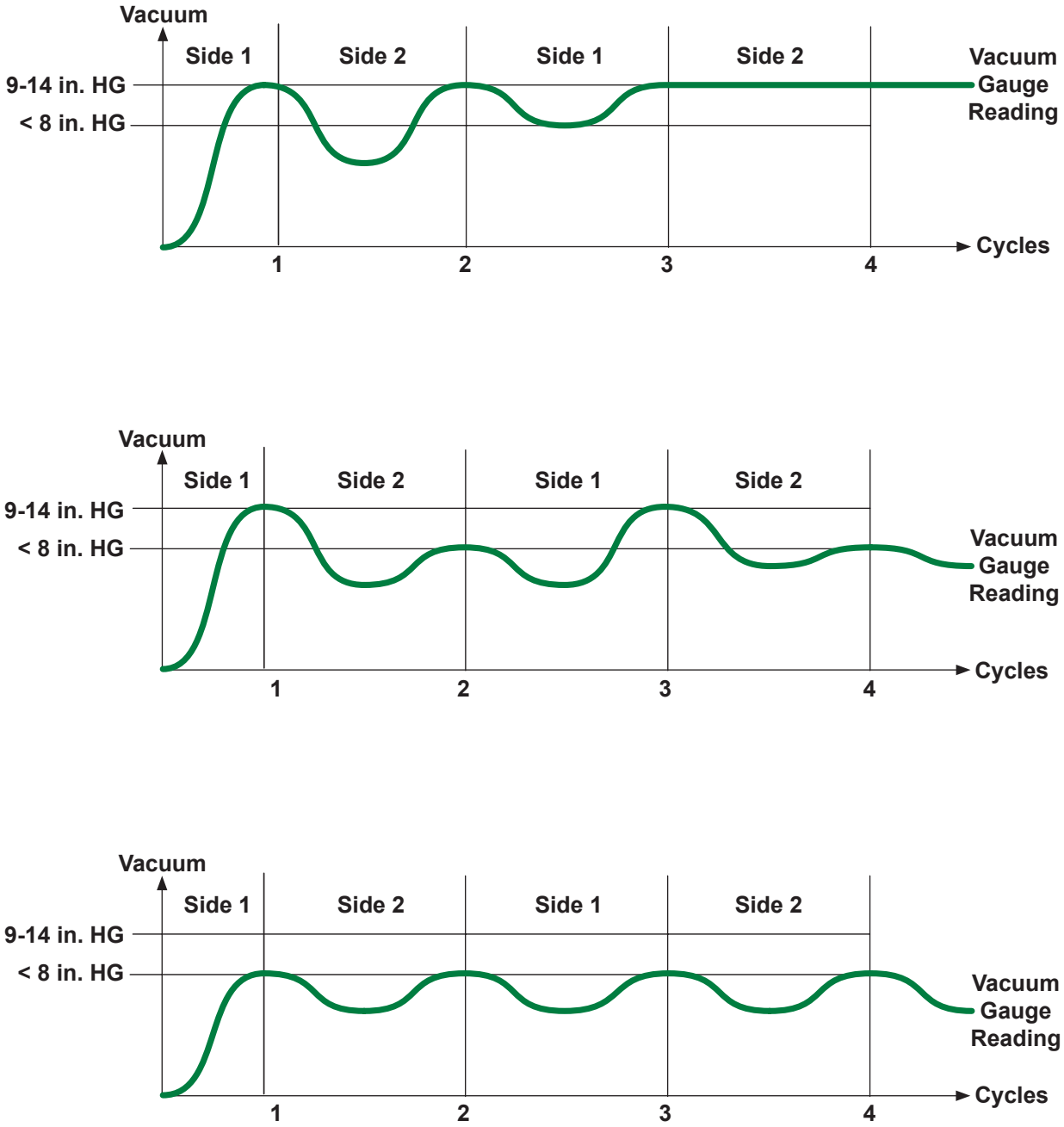


Figure 13 Vacuum Readings

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*.

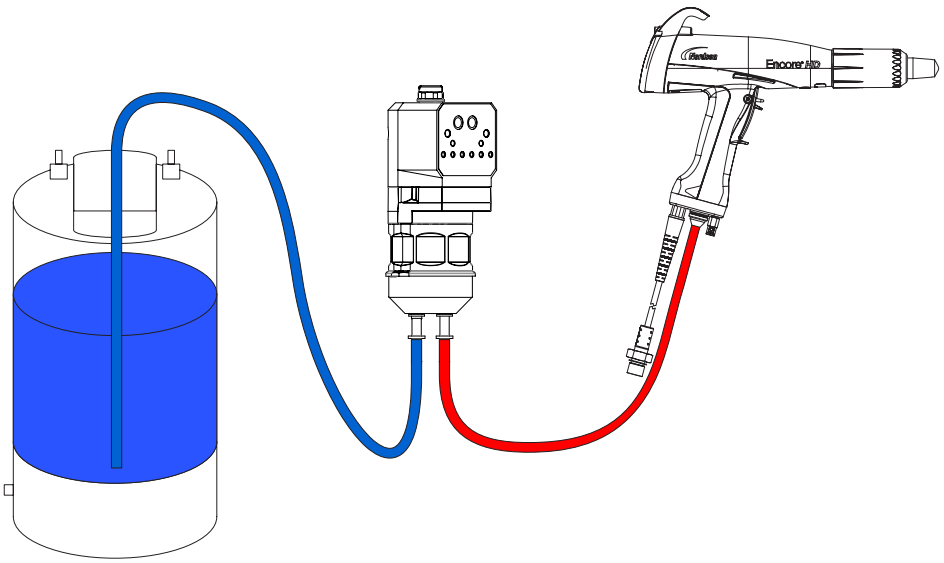


Figure 14 Tubing Connections

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.

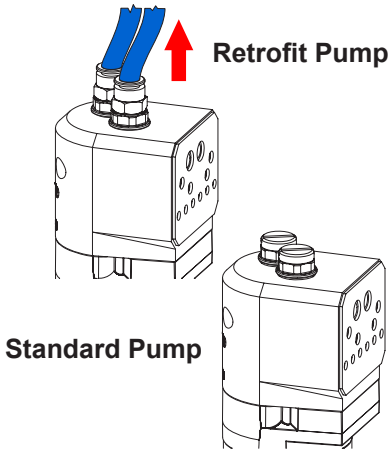


Figure 15 Removing the Purge Air Tubing

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

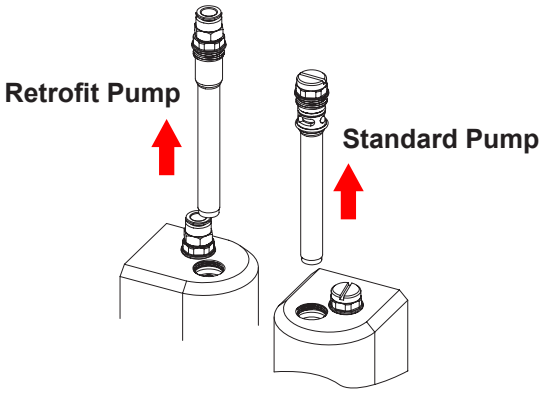


Figure 16 Loosening the Fluidizing Tubes

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

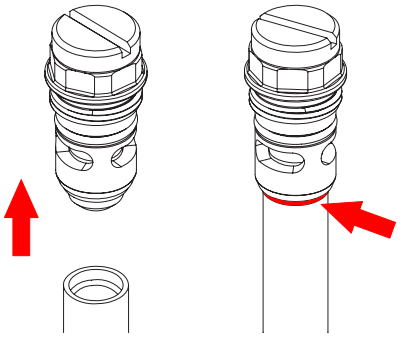


Figure 17 Removing the Tube from the Access Plugs

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

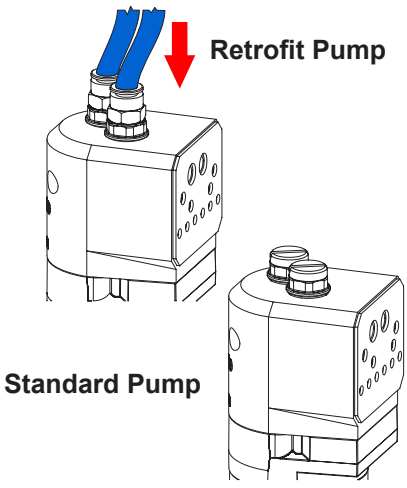


Figure 18 Reinstalling the Purge Air Tubing

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.

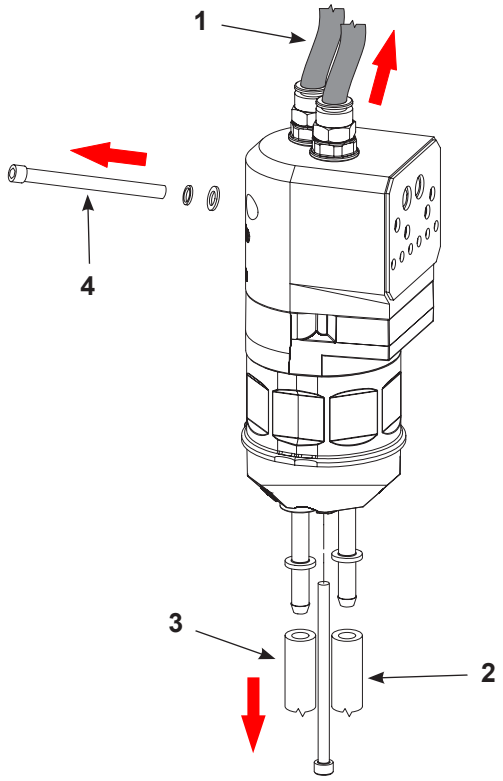


Figure 19 Retrofit Pump Disassemble Preparation

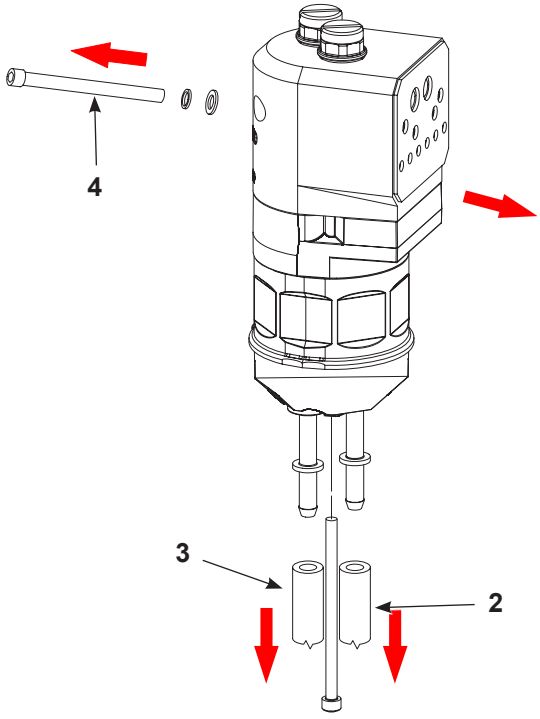


Figure 20 Standard Pump Disassemble Preparation

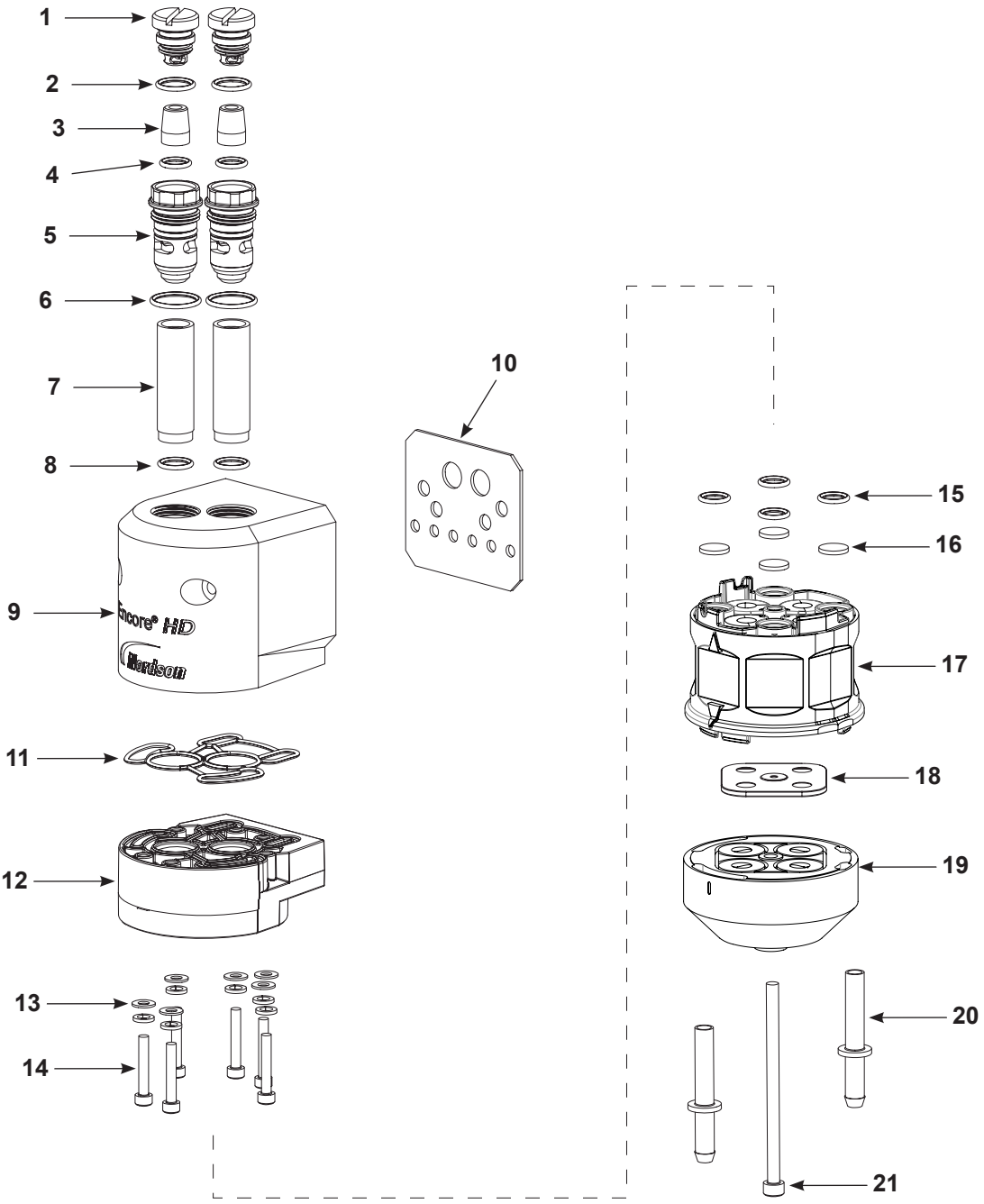


Figure 21 Pump Disassembly (Encore HD Shown)

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

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.

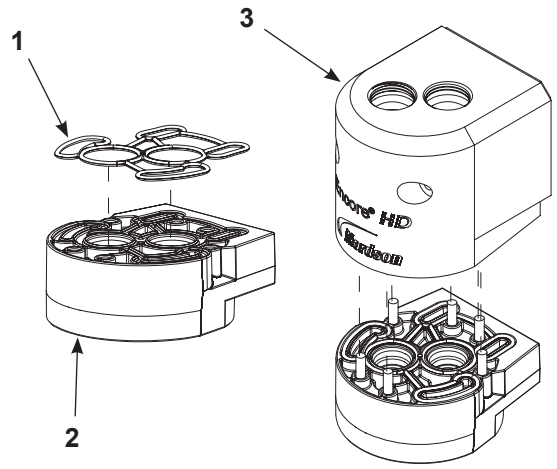


Figure 22 Assemble the Lower Y Block to Purge Manifold

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

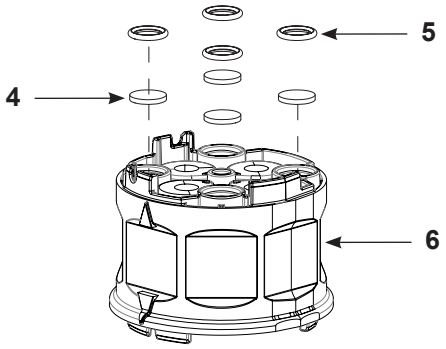


Figure 23 Assemble the Pinch Valve Housing

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).

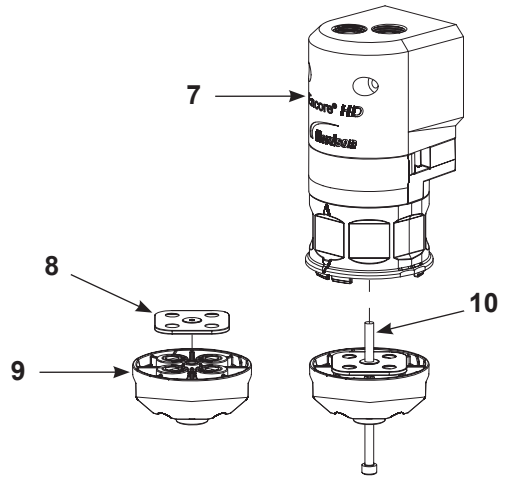


Figure 24 Assemble Gasket and Lower Y Block

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).

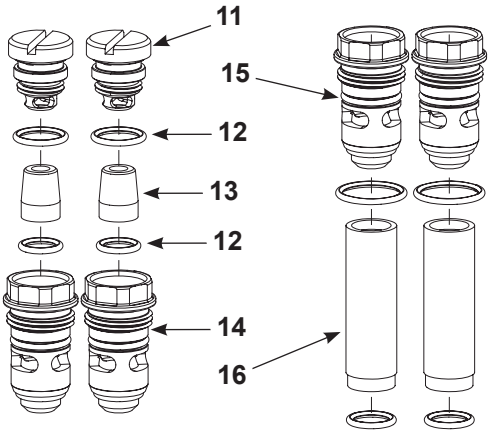


Figure 25 Assemble Fittings to Fluidizing Tubes

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

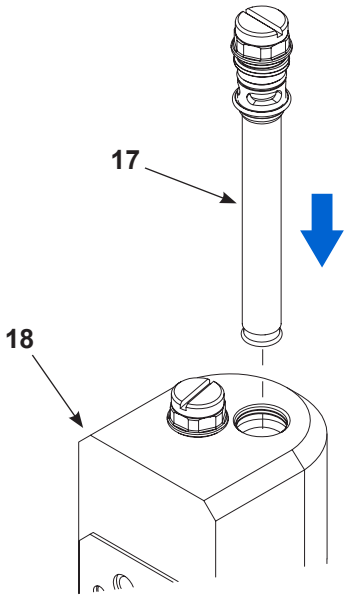


Figure 26 Fasten Fluidizing Tubes into Manifold

6. See Figure 24. After the pump is assembled, completely tighten the long screw (10) to fit all components together completely.
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 10 for more information.

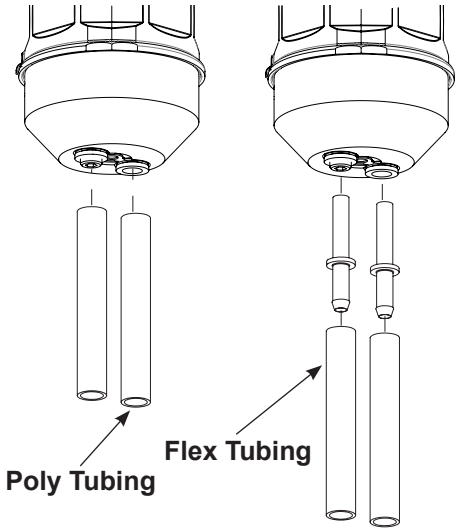


Figure 27 Assemble Tubing into Lower Y Block

Replacing Pump Gasket

1. See Figure 28. Remove pump gasket from the pump.
2. 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.
3. 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.

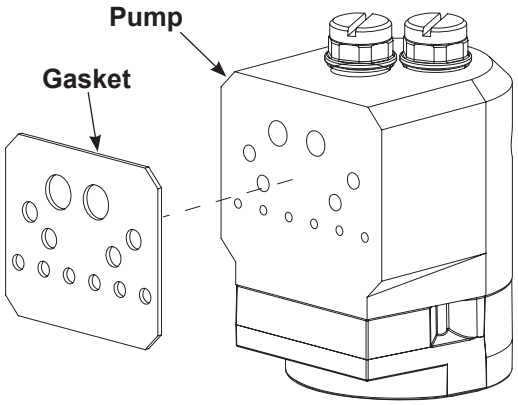


Figure 28 Replacing Pump Gasket

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.

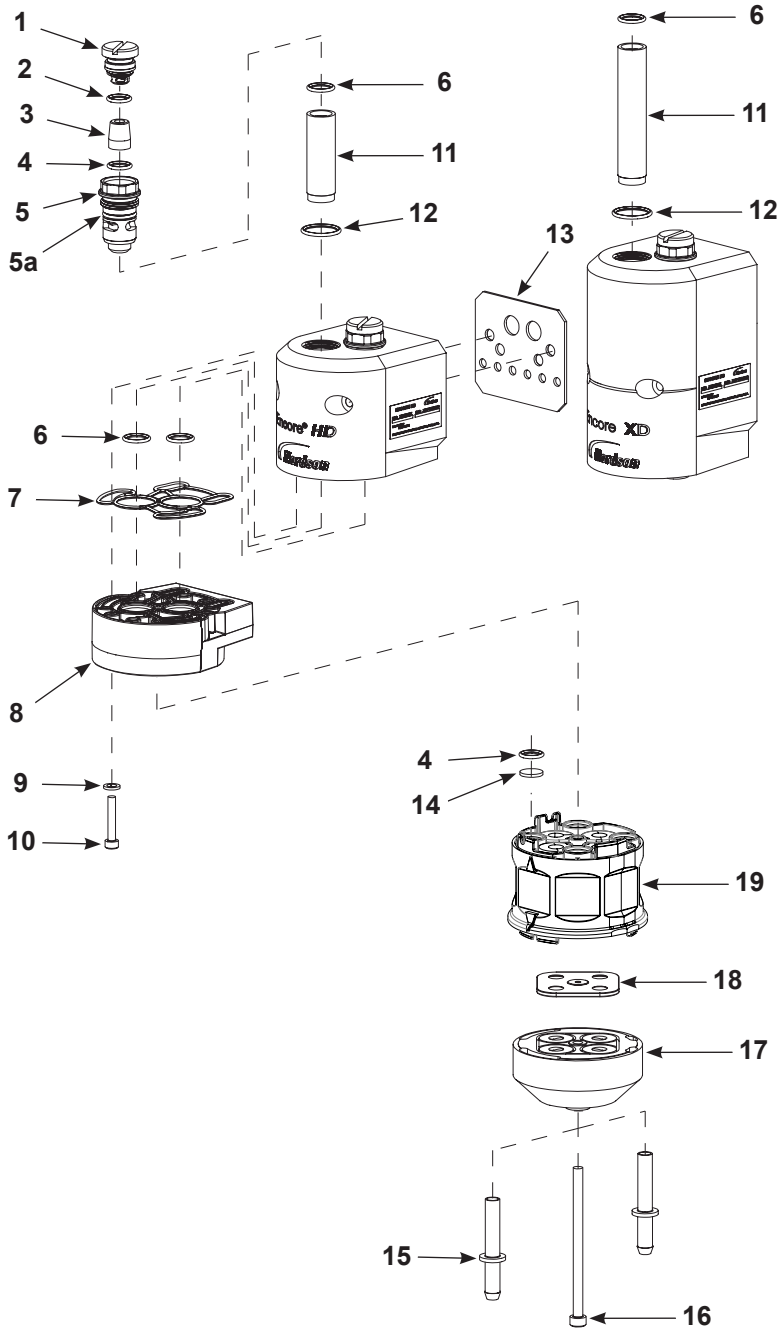


Figure 29 Encore HD and XD Standard Parts (shown with manual system pumps)

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.

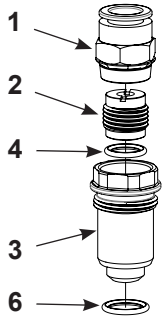


Figure 30 Retrofit Fluid Tube and Plug Kit

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	

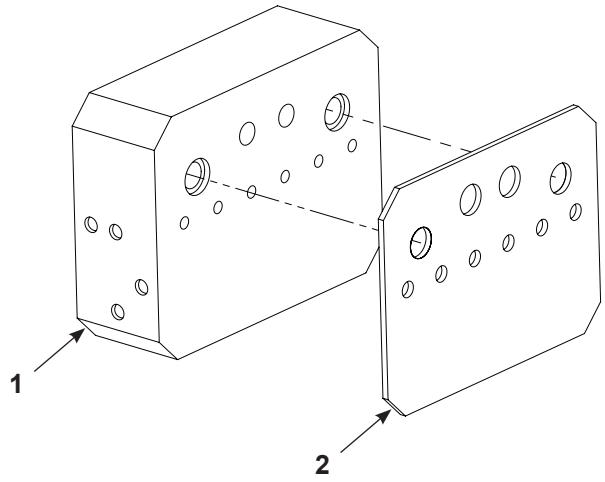


Figure 31 Manifold Kit

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	

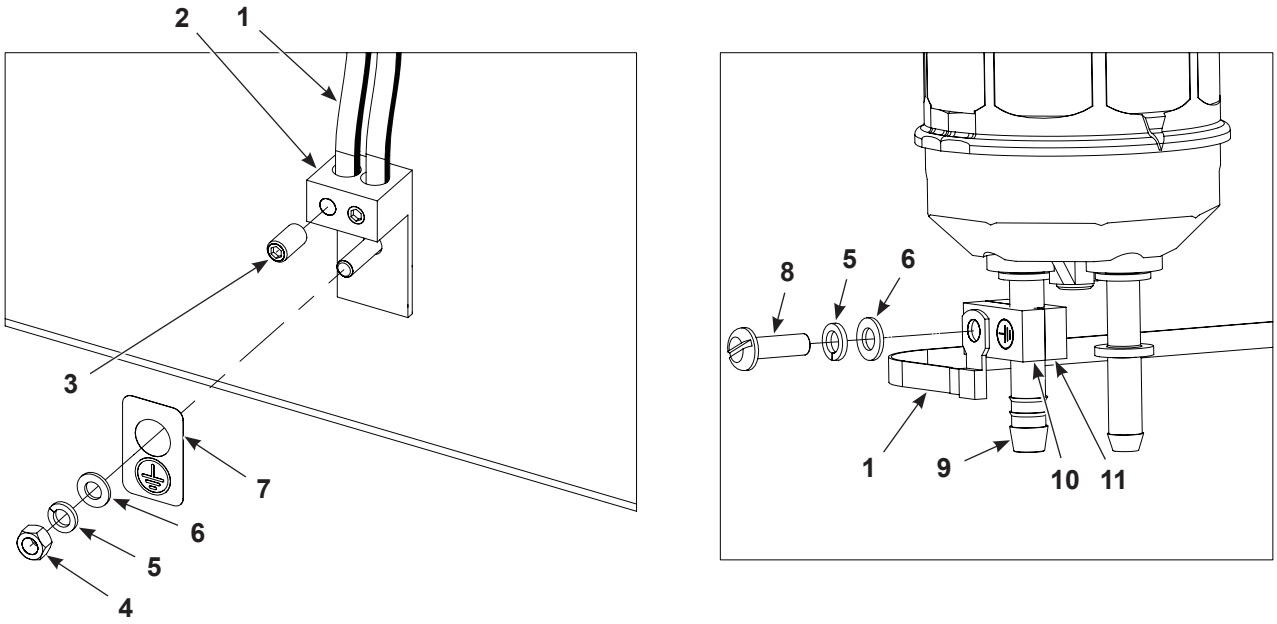


Figure 32 Grounding Kits

Air and Powder Tubing Part Numbers

See Figure 33 and the following parts list..

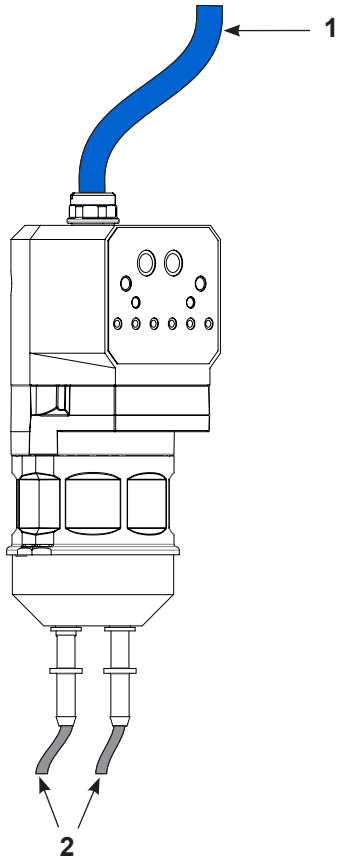


Figure 33 Air and Powder Tubing Part Numbers

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 T40ºC Dc
Tech File: Notified Body #2813, Sira CSA Group, Netherlands B.V.
DNV ISO9001
ATEX Quality Notification – Baseefa Fimko Oy, Helsinki Finland

Date: 16March2021

Jeremy Krone
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Nordson Authorized Representative in the EU
Contact: Operations Manager
Industrial Coating Systems
Nordson Deutschland GmbH
Heinrich-Hertz-StraBe 42-44
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 T40ºC Dc
Tech File: Notified Body #2813, Sira CSA Group, Netherlands B.V.
DNV ISO9001
- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)

Date: 08FEB22

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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.

NORDSON CORPORATION • 100 NORDSON DR., AMHERST, OHIO 44001 • USA

Table of Contents

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

Change Record

Revision	Date	Change
01	01/2014	New release
02	04/2014	New flat spray electrode holder and assembly, new conical nozzle kit and conical electrode assembly
03	05/2014	Page 7−3, new trigger axle P/N 1605713 Page 7−5, new nozzle P/N's
04	07/2014	New flat and conical electrode holders
05	09/2014	Re-zero procedure revised
06	12/2014	New powder inlet tube; 3mm and 4mm nozzles to ship with gun
07	10/2015	Revised equipment labels and parts
08	03/16	Added cleaning procedure
09	09/16	Nozzle part number change and positive power supply added
10	03/18	Added 1083205, Deflector to parts list and some callout and nomenclature changes
11	04/18	Updated system setup images, updated certification label
12	03/18	Changed description for gun labels
13	07/18	Added nLighten LED inspection kit, added XD electrode support, new reference document links and updated description for part number 1600819. Added power supply resistance test nomenclature changes
14	02/21	Updated safety information
15	05/21	Update input air specifications, labels, and air tubing part. Converted to new formatting.
16	01/22	Updated approvals information and power supply resistence test figure.
17	12/23	Updated range for resistence test.
18	11/24	Updated manufacturing address.
19	12/24	Updated approval label, Conditions for Safe Use, and Spray Gun Connections.

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

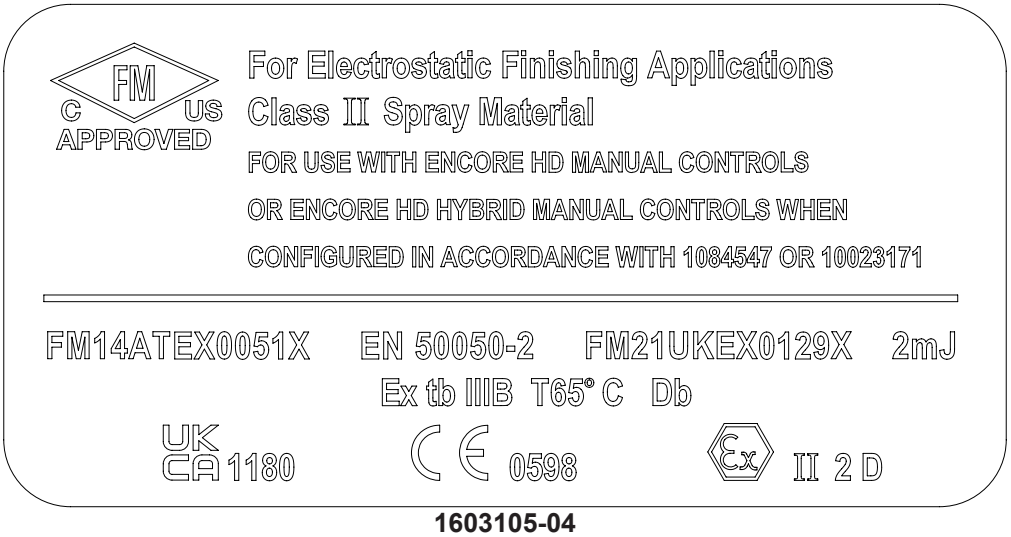
See *Spray Gun Operation* section beginning on page 36 for information on additional options.

Specifications

Model: Encore Applicator	
Input Rating:	+/− 19 VAC, 1 A
Output Rating:	100 KV, 100 μA
Input Air:	6.0−6.9 bar (87−100 psi), <5μ 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.

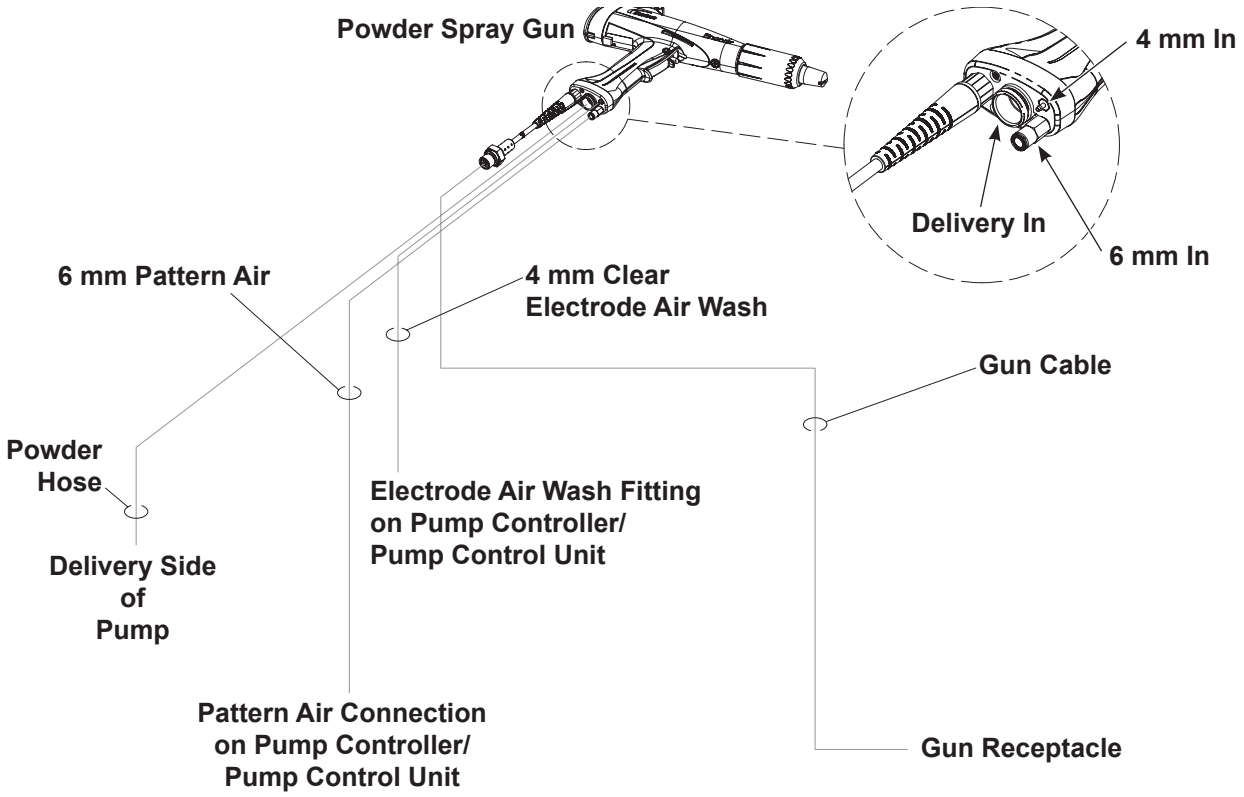


Figure 2 Spray Gun Connections

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.

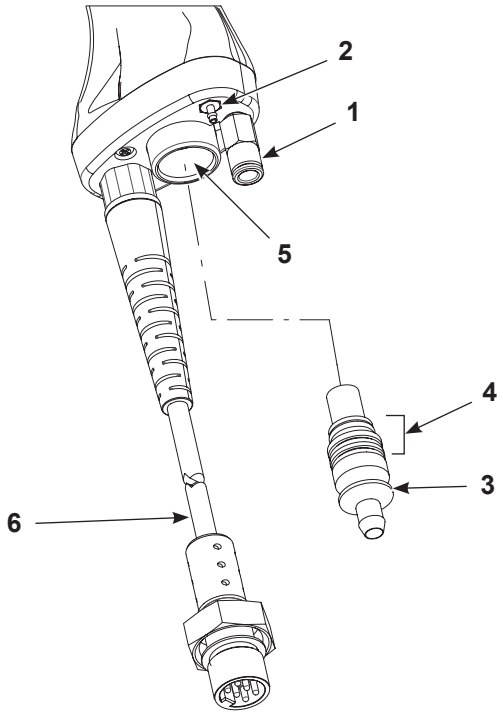


Figure 3 Spray Gun Connections

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

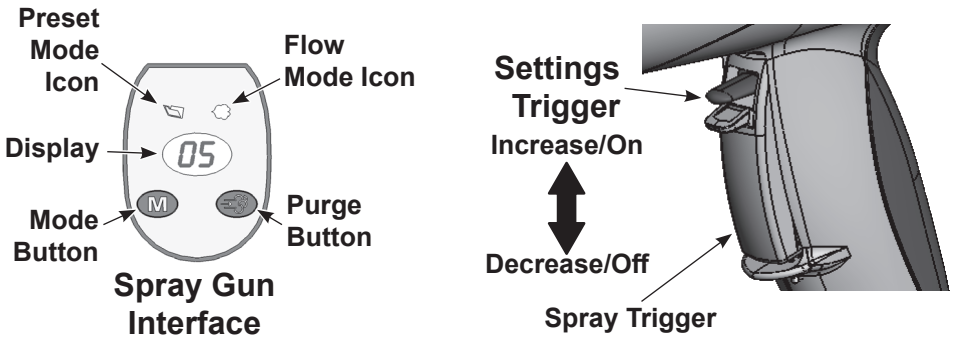


Figure 4 Gun Controls

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.

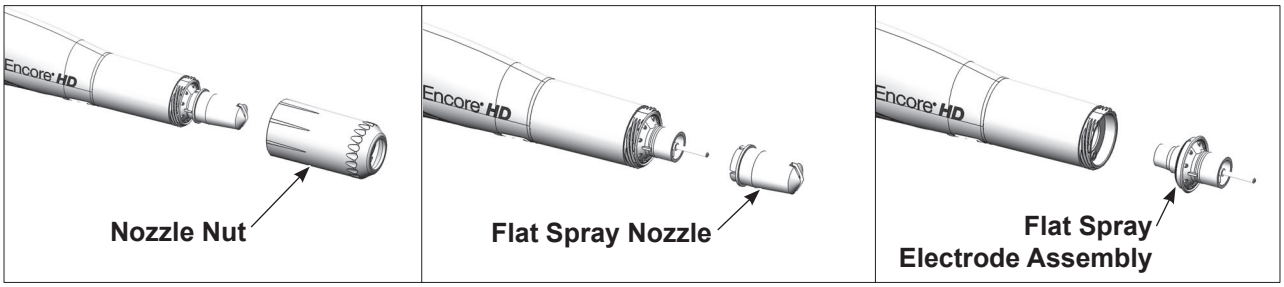


Figure 5 Changing a Flat Spray Nozzle

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.

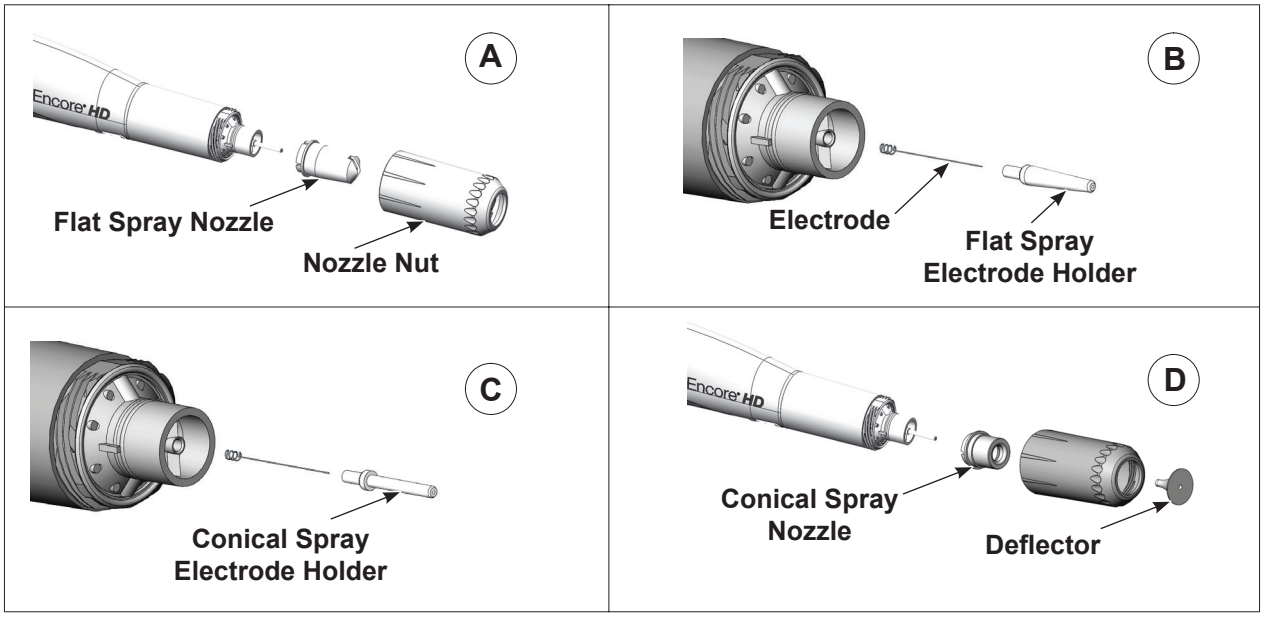


Figure 7 Converting from a Flat Spray Nozzle to a Conical Spray Nozzle

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.

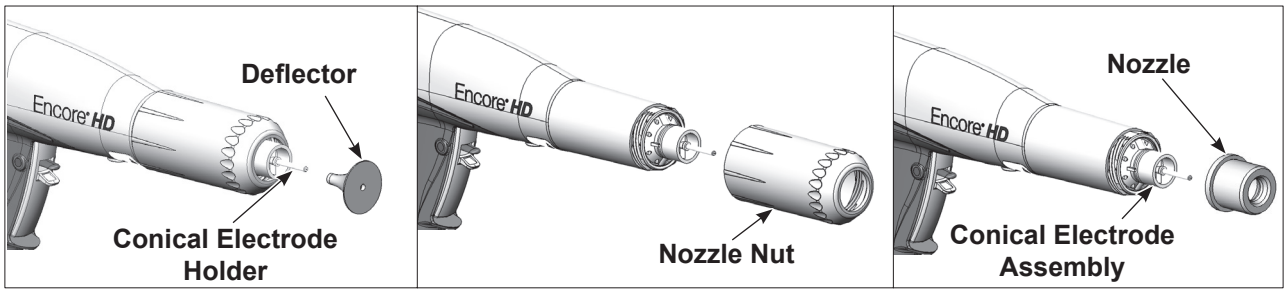


Figure 8 Changing a Conical Nozzle

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.

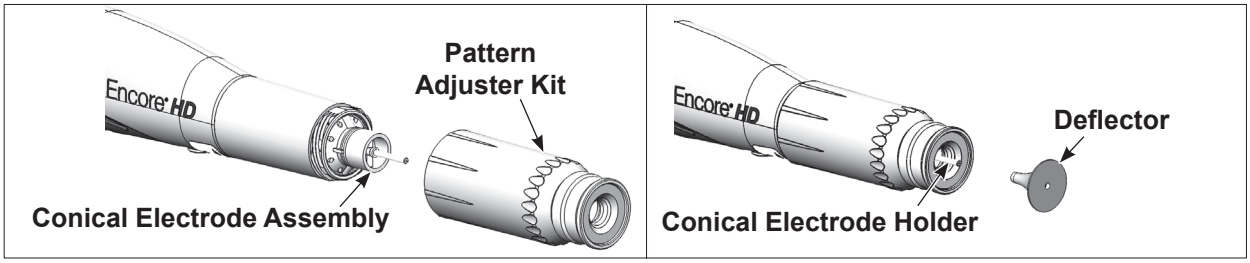


Figure 9 Pattern Adjuster Kit Installation

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)	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 *Color Change* button on the system controller and purge the powder delivery system. 2. Remove the nozzle and electrode assembly and clean them with low pressurecompressed 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 lowpressure compressed air and a clean cloth. 4. Blow off the gun and wipe it down with a clean cloth.
System Grounds	Daily: Make sure the system is securely connected to a true earth ground before spraying powder. Periodically: Check all system ground connections.

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.

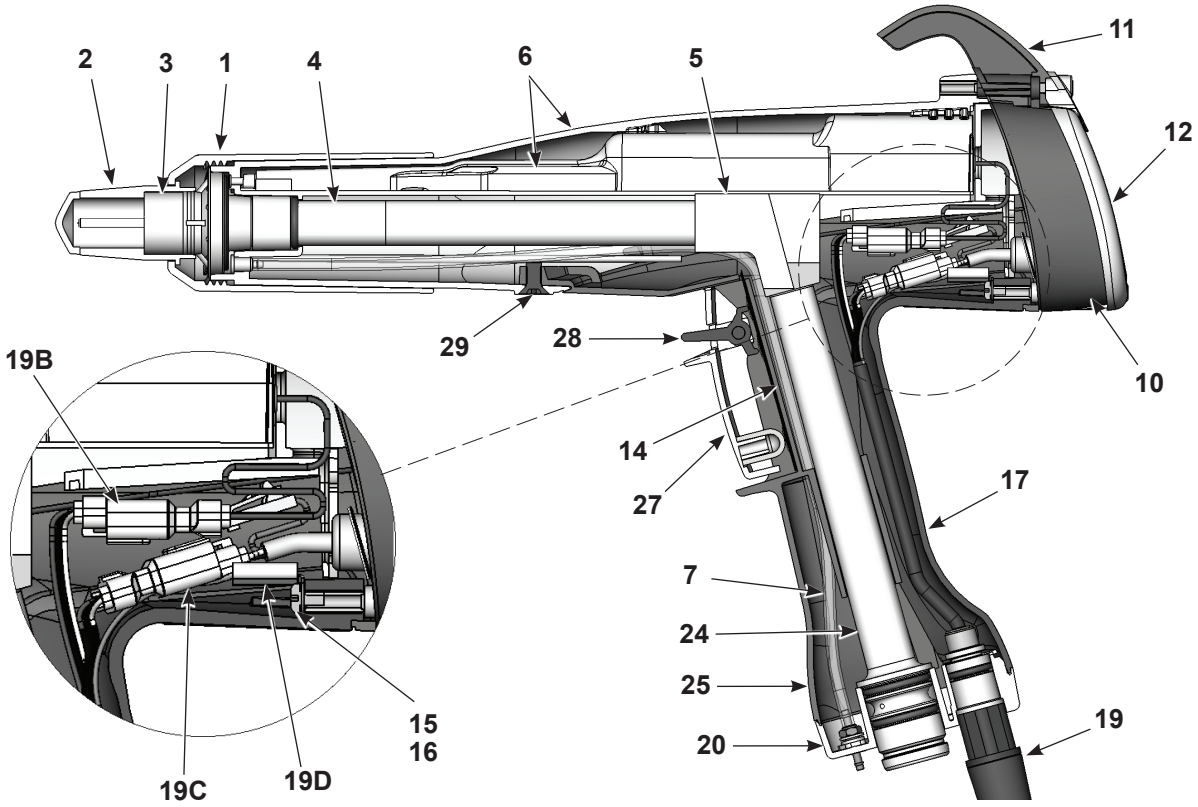


Figure 10 Section View of Spray Gun (item numbers in this section match item numbers in parts list)

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

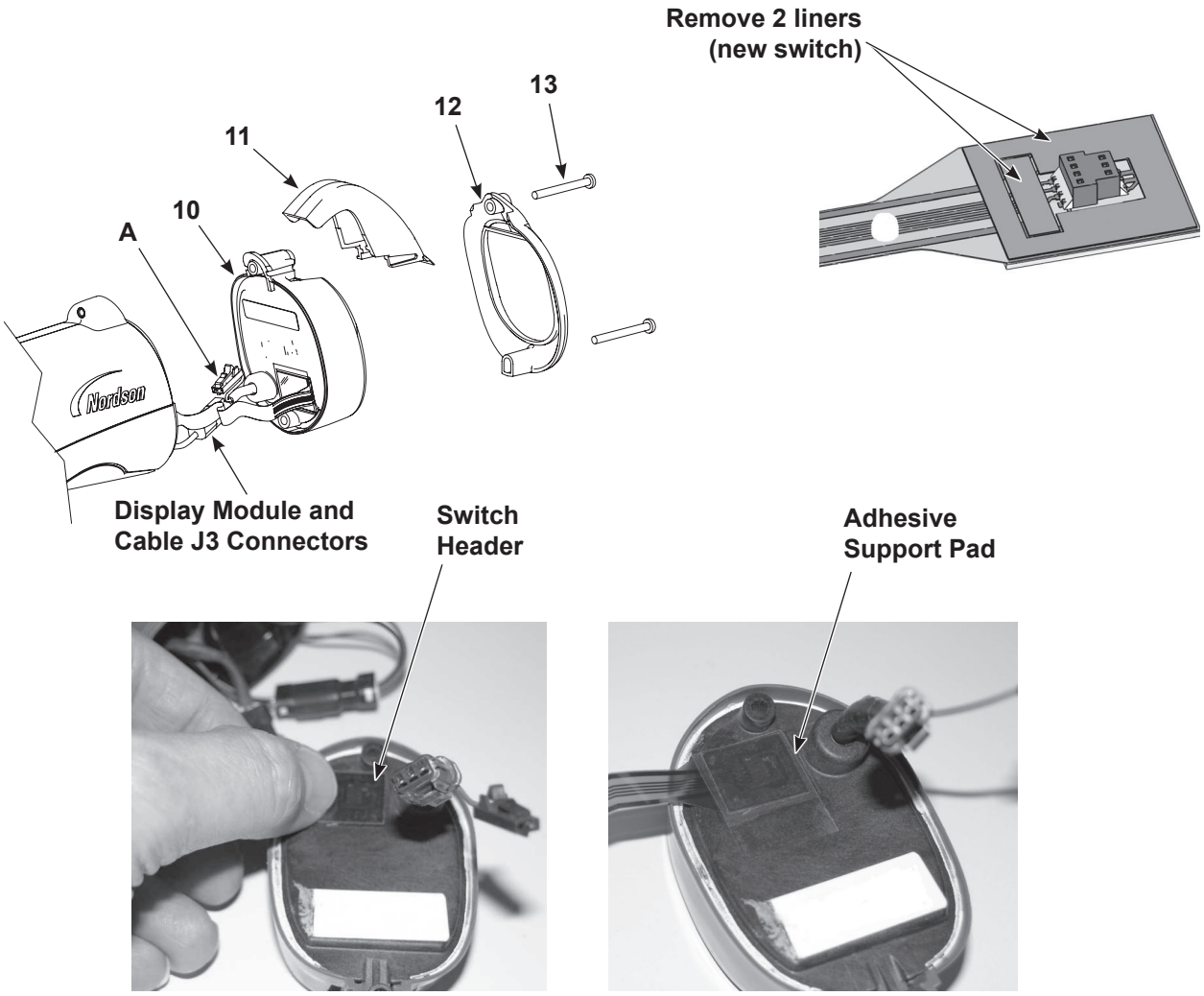


Figure 11 Display Module Replacement

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.

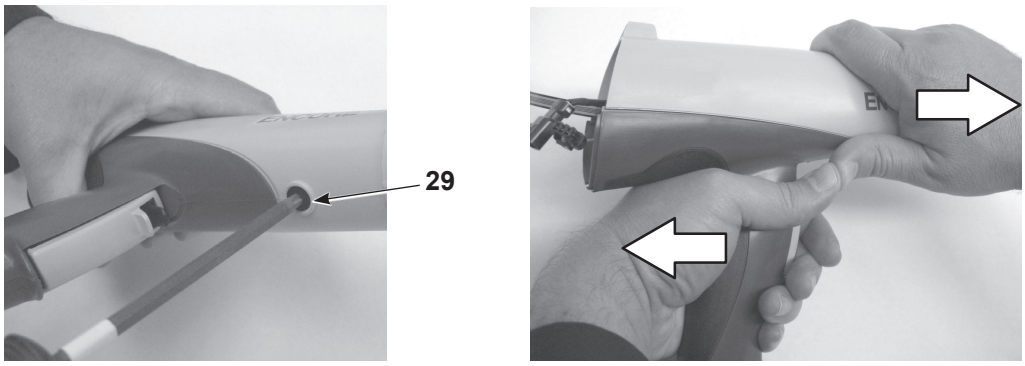


Figure 12 Removing the Gun Body from the Handle

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.

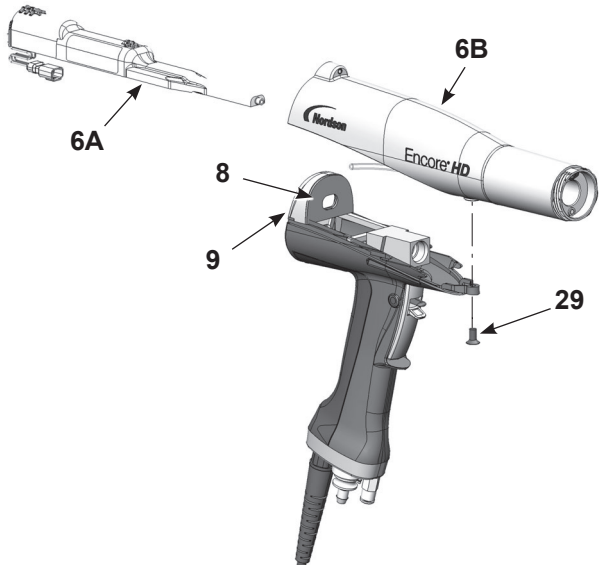


Figure 13 Removing the Power Supply from the Gun Body

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.

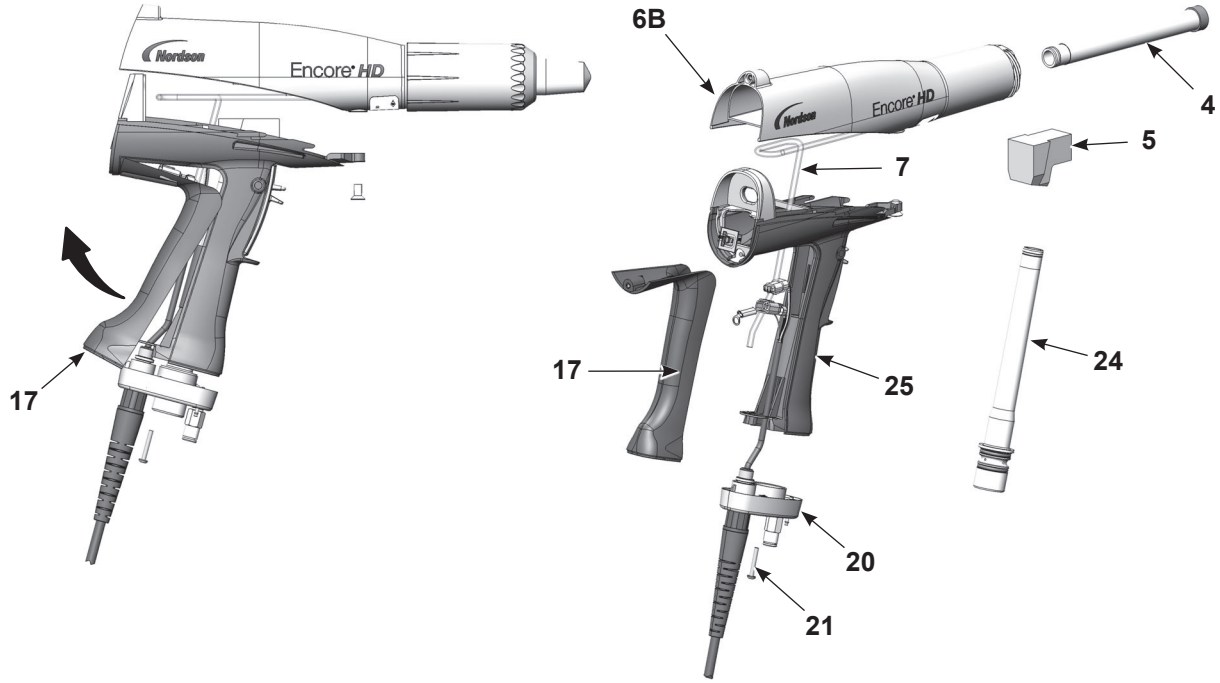


Figure 14 Powder Path Replacement

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.

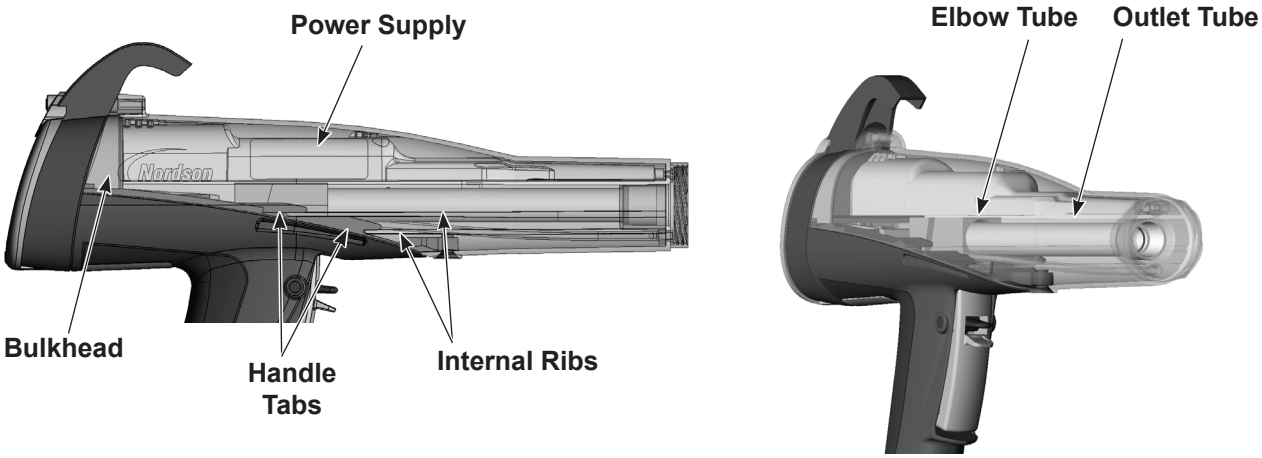


Figure 15 Gun Re-assembly

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.

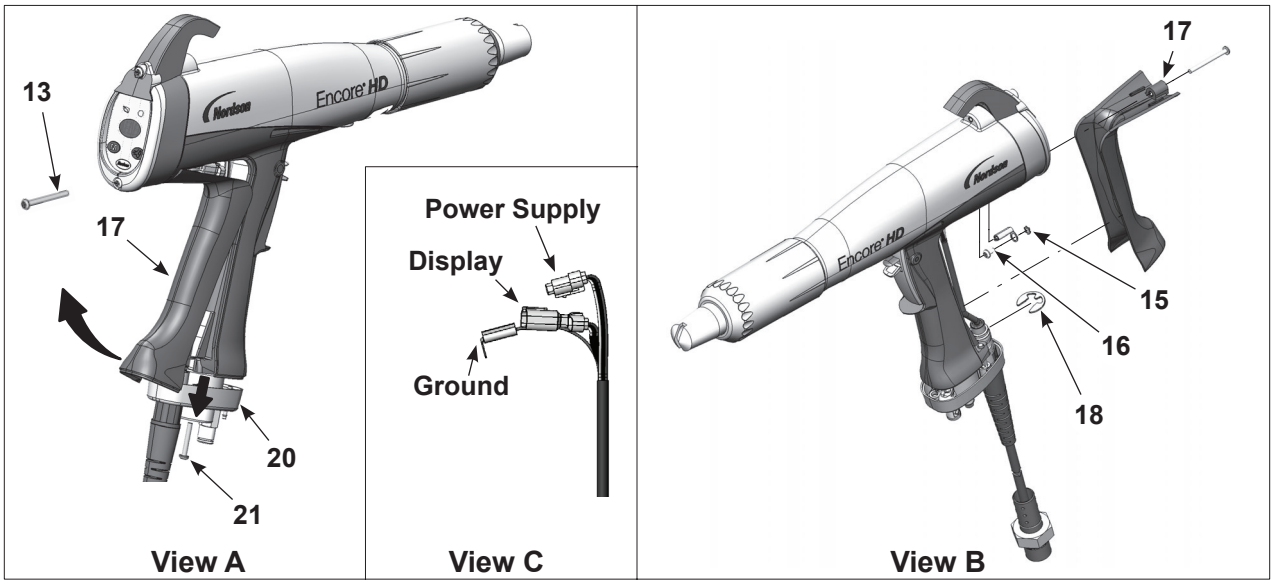


Figure 16 Cable Replacement

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.

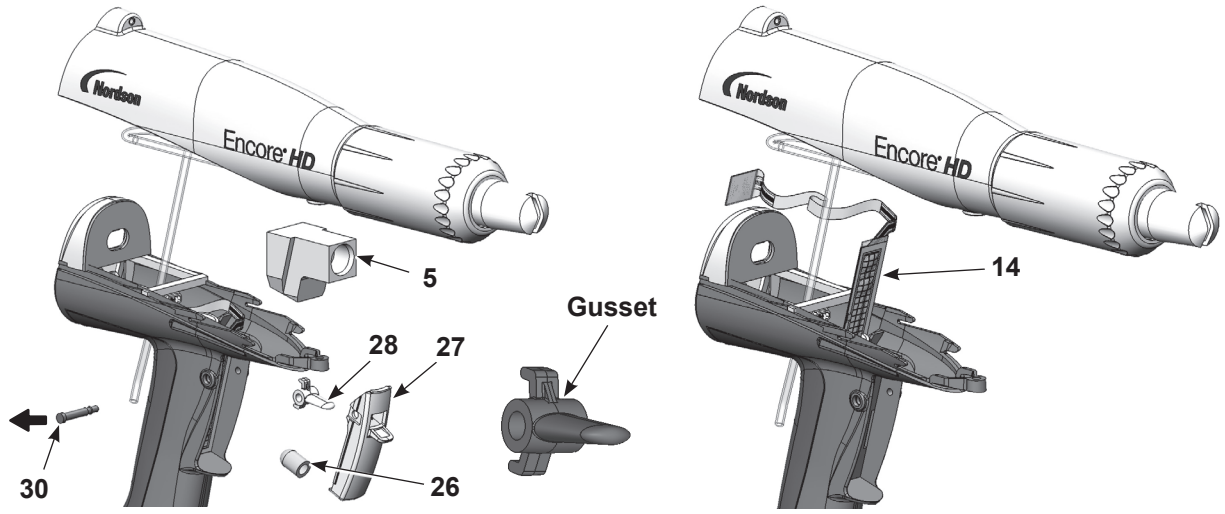


Figure 17 Trigger Switch Replacement

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.

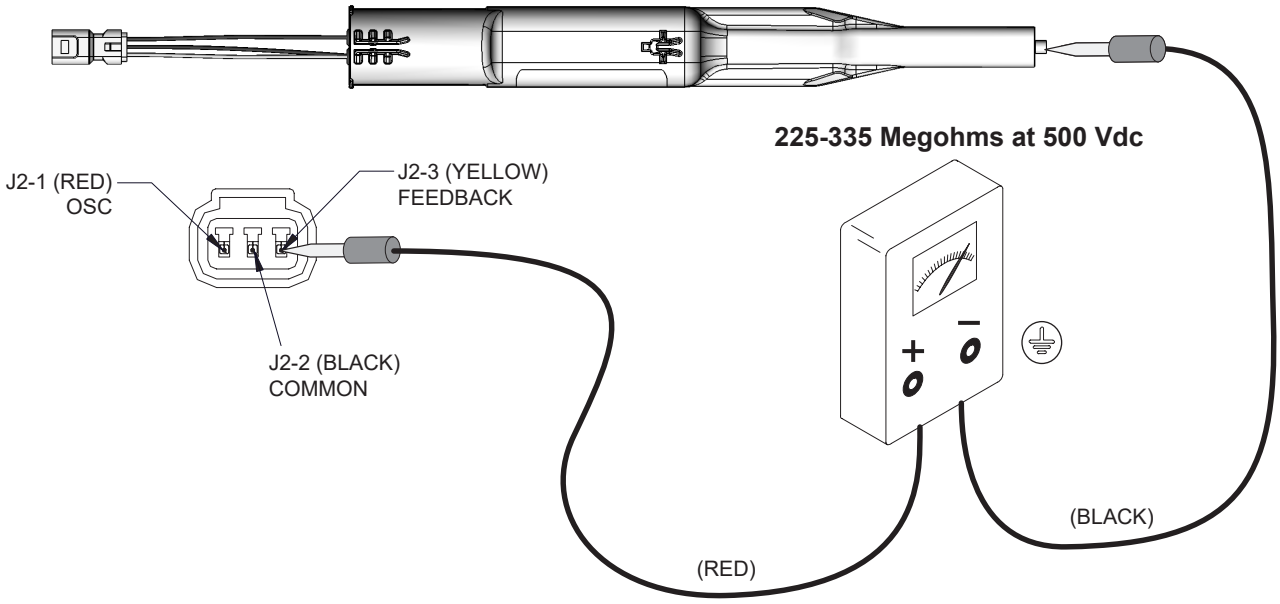


Figure 18 Power Supply Resistance Test

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.

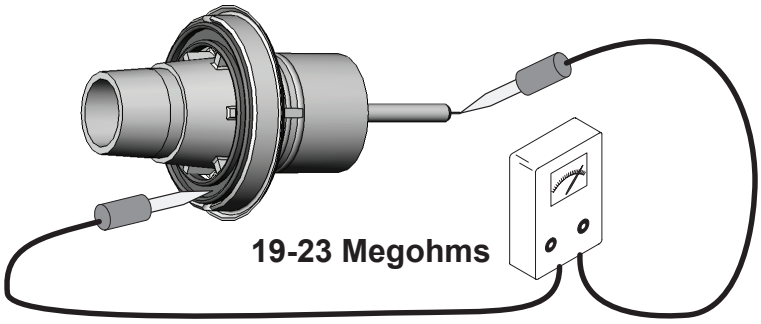


Figure 19 Electrode Assembly Resistance Test

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.

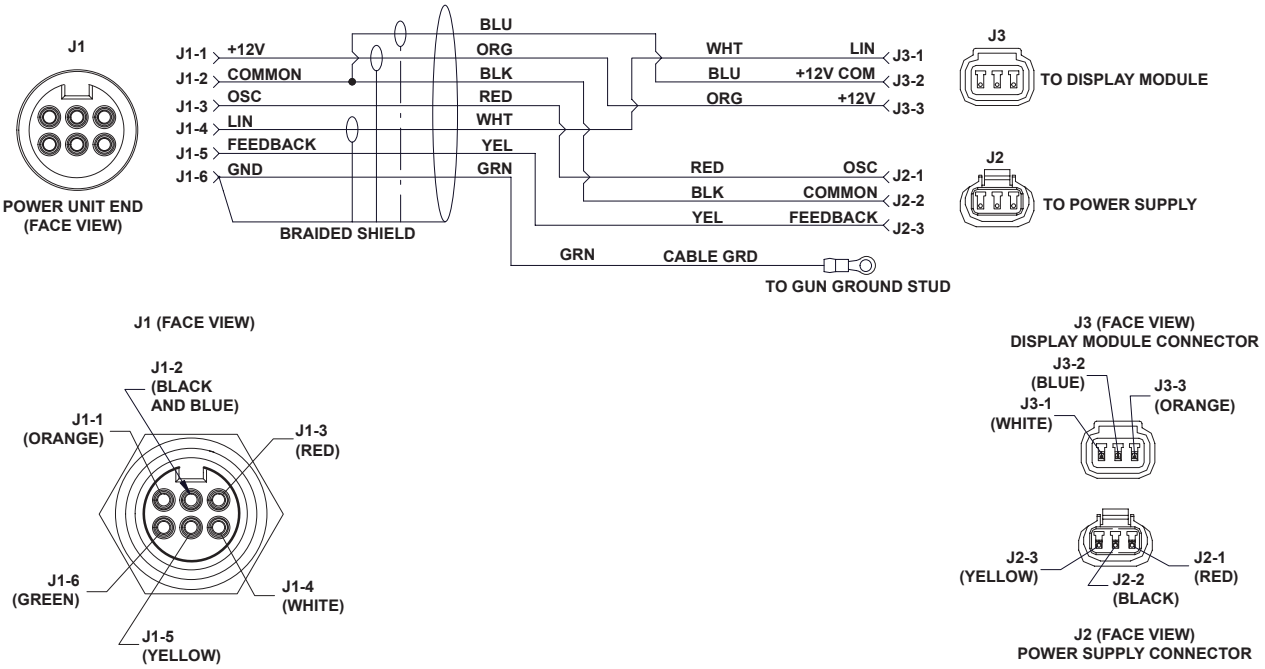


Figure 20 Gun Cable Wiring

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						
						Continued...

NOTE: A.

B.

NS: Not Shown

AR: As Required

Spray Gun Parts

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

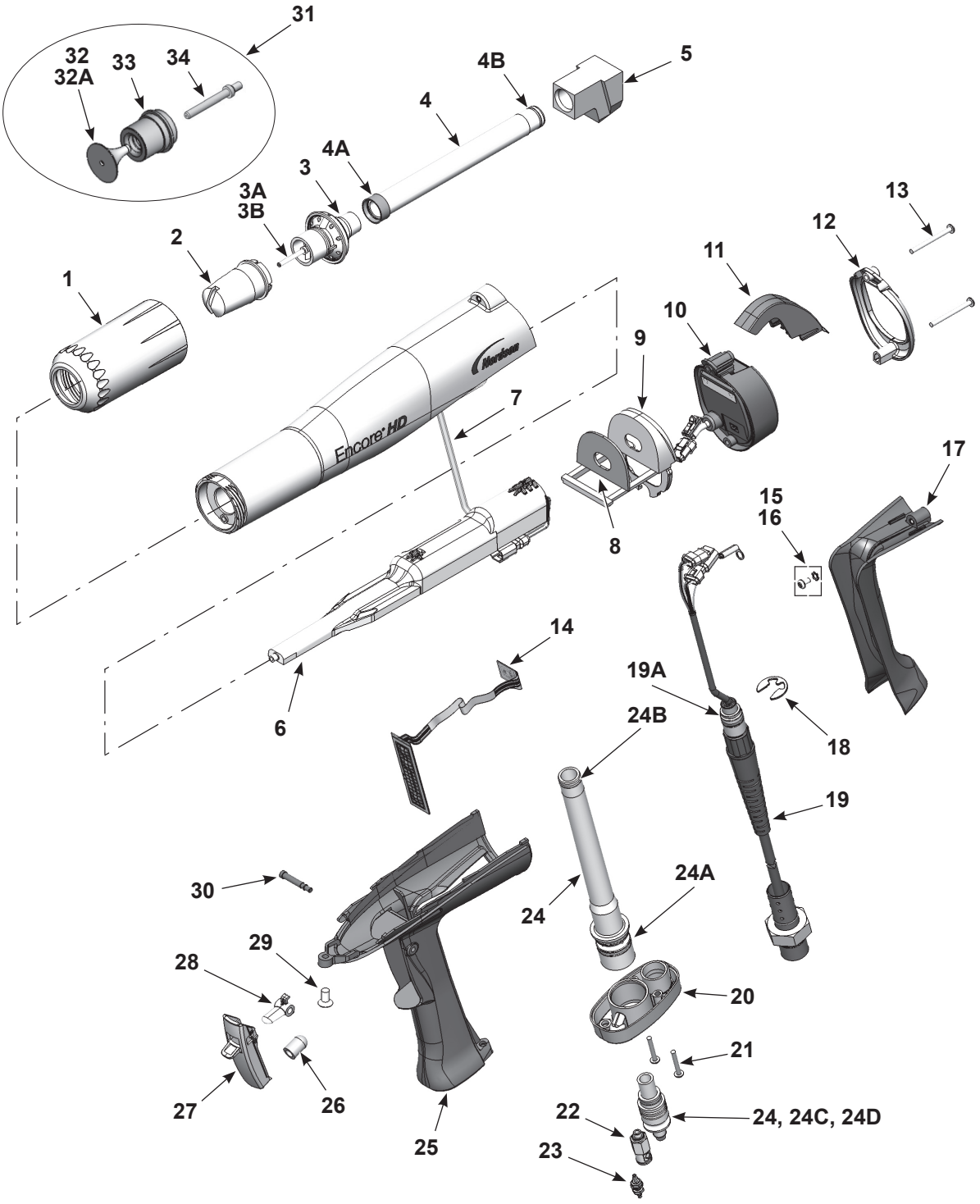


Figure 21 Encore HD Manual Spray Gun and Accessories Parts

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

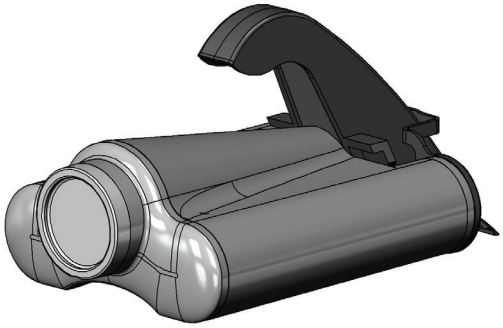
See Figure 21.

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.

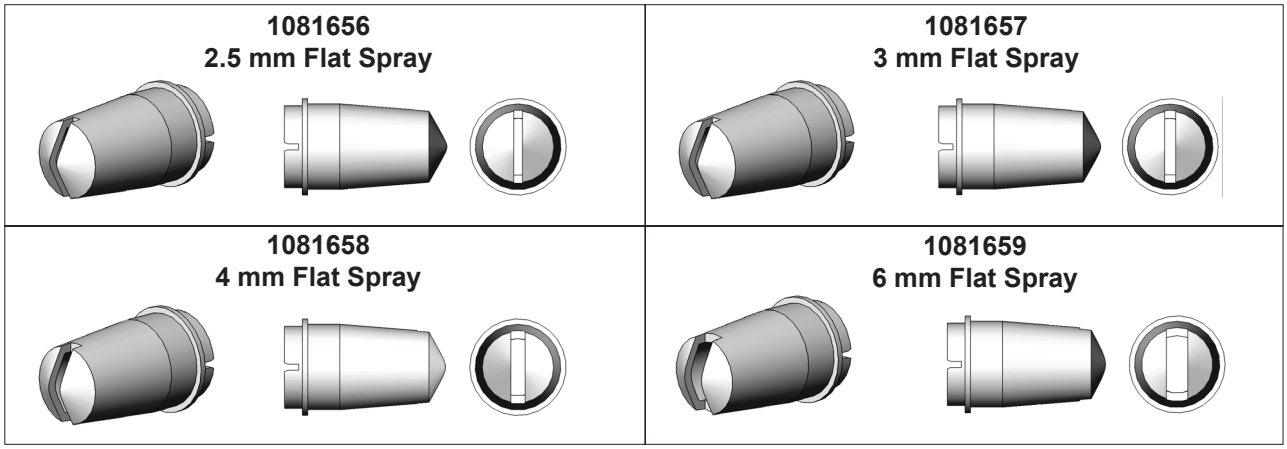


Figure 23 Flat Spray Nozzles

Cross Cut Nozzles

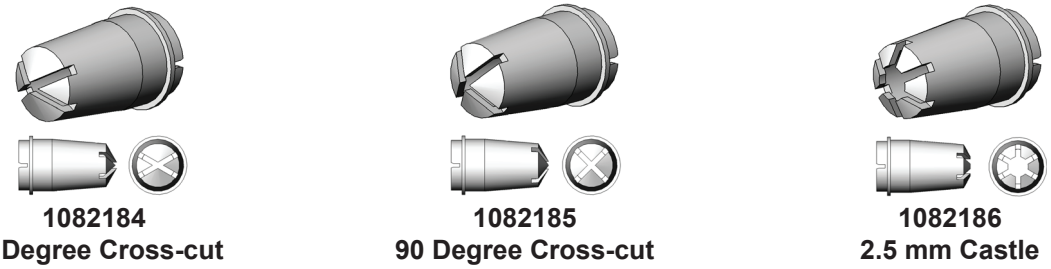


Figure 24 Cross-cut Nozzles

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	

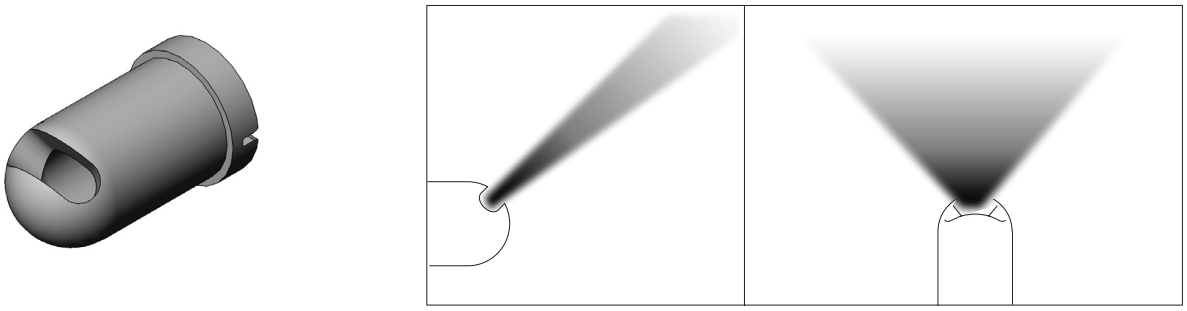


Figure 25 45-Degree Corner Spray Nozzle

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	

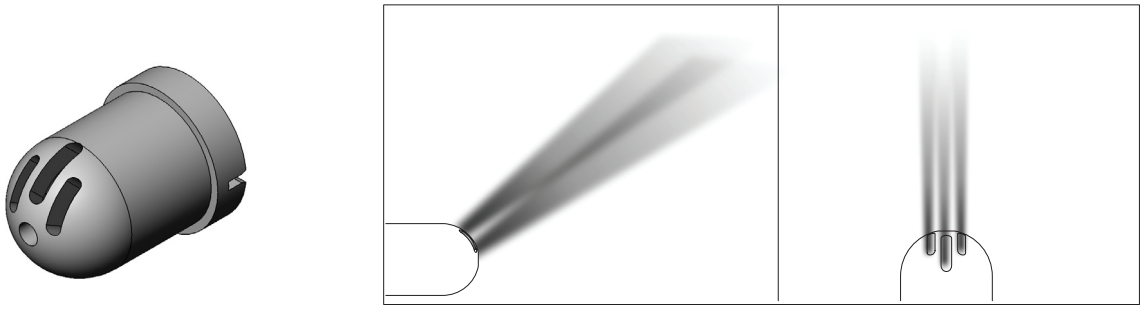


Figure 26 45-Degree Flat Spray Nozzle

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

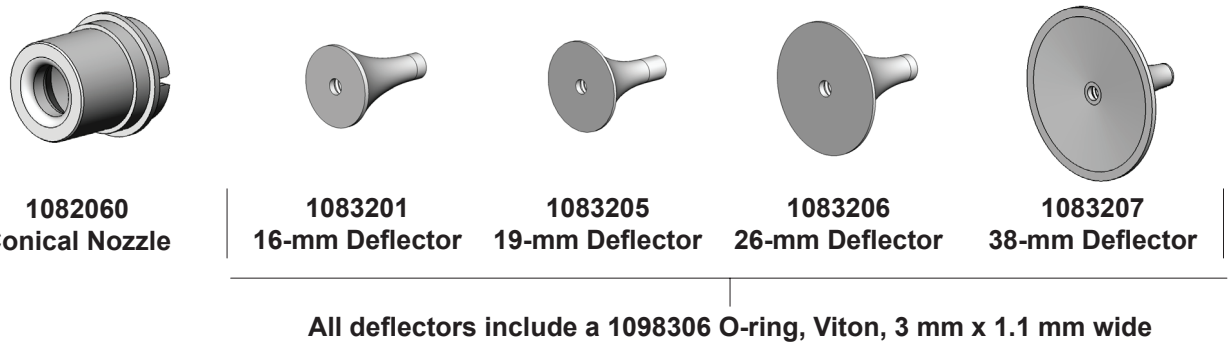


Figure 27 Conical Nozzle and Deflectors

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

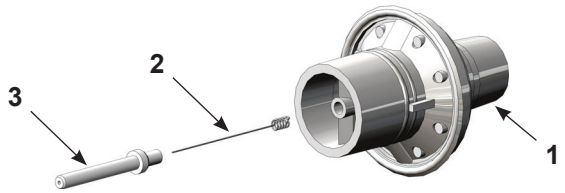
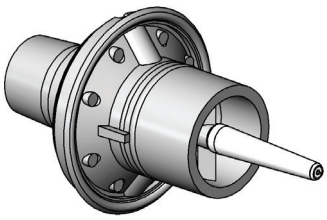


Figure 29 Conical Electrode Assembly

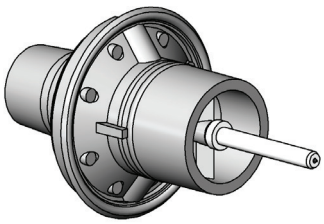
Item	Part	Description	Quantity	Note
—	1106076	ELECTRODE ASSEMBLY, conical, Encore	1	
1	------	• ELECTRODE SUPPORT	1	
2	1106078	• ELECTRODE	1	
3	1605861	• ELECTRODE HOLDER, Conical	1	A
NOTE: A. The conical nozzle requires a different style electrode holder than what is used in the flat spray nozzle electrode 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

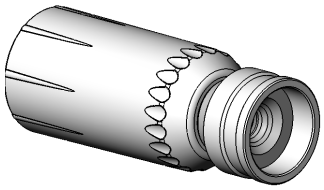


1613835
XD Conical Spray Electrode Support

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: +15ºC to +40ºC
- Ex tb IIIB T60ºC / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60ºC / 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-Straβe 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: +15ºC to +40ºC
- Ex tb IIIB T60ºC / Ex II 2 D / 2mJ = (Encore XT and HD Applicators)
- Ex tc IIIB T60ºC / 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

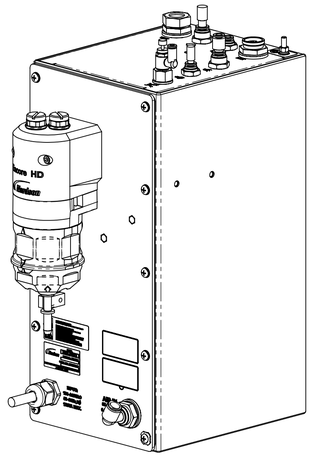
_____
Jeremy Krone
Supervisor Product Development Engineering
Industrial Coating Systems
Amherst, Ohio, USA

Nordson Authorized Representative in the UK
Contact: Technical Support Engineer
Nordson UK Ltd.; Unit 10 Longstone Road
Heald Green; Manchester, M22 5LB.
England

MATERIAL NO. 1084547 REVISION 25

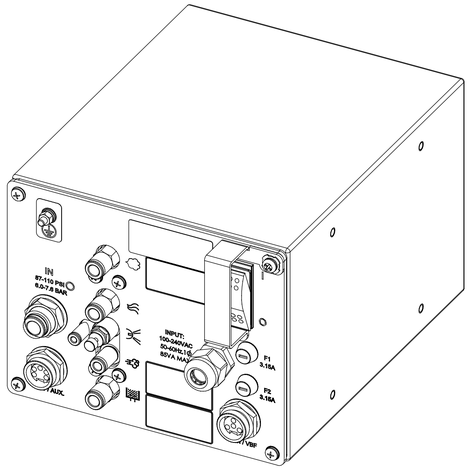
REVISIONS

ZONE	REV.	DESCRIPTION	BY	CHK	ECO NO.	DATE
	A00	00) PRELIMINARY.	DRJ			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	DC	DY	PE600552	21FEB08
		MOBILE SYSTEM WITH 25-LB. HOPPER (SHEET 2).				
	A04	04) REDRAWN IN CURRENT FORMAT; ADDED ATEX-	DC	RJF	PE600806	30MAY08
		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.				
	A05	05) REMOVED FM-APPROVED HANDGUN ASSY 1083120	DC	RJF	PE601120	30JUL08
		FROM APPROVED EQUIPMENT LISTING (SHEETS 1 & 2).				
	A06	06) PART NUMBER ERROR CORRECTION (SHEET 2).	DC	RJF	PE601509	12MAR09
	A07	07) REMOVED 1082819, 1082843, 1082844, 1084512,	DRJ	RJF	PE601681	04AUG09
		1084514, 1084517, 1087272, 1087273, 1087274, &				
		1087275; ADDED 1097072, 1097073, 1097074, & 1097075;				
		UPDATED MPS PICTORIALS.				
	A08	08) UPDATED ENCORE HANDGUN PICTORIALLY. NEW	BB	BDM	PE602105	24JUN10
		ENCORE HANDGUN PART NUMBERS UPDATED IN				
		APPROVED EQUIPMENT TABLES.				
	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) RESVD DESCRPTN, TABLES AND ASSEMBLIES TO	MHH	BDM	PE602609	07FEB12
		REFLECT 'XT' VERSION (SHEETS 1 & 2)				
	13	13) REMOVED ENCORE XT CONROLLER 1087276 &	DC	RJF	PE603075	22OCT13
		ADDED 1604125; UPDATED MOBILE SYSTEM VIEWS.				
	14	14)ADDED "HD" PRODUCTS & "XT" DESIGNATIONS,UPDATE TABLES, MOTOR CERT # WAS TUV05ATEX2768X(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/NS 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 - 1611977 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



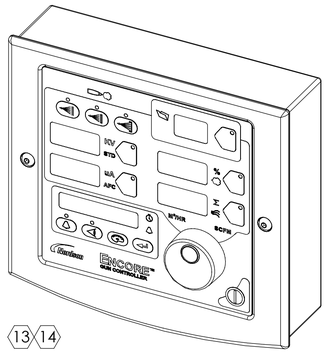
ENCORE HD CONTROLLER
POWER UNIT W/HD OR HD+ PUMP
WITH HD PUMP
1605586 FOR 230V VBF
1605584 FOR 115V VBF
WITH HD+ PUMP
1611089 FOR 230 VBF 17
1611086 FOR 115 VBF

14 15 23



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

13 10



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

23 17 — 17

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
21 1620076	ENCORE SELECT HD ROBOT GUN		X	WITH HD CONTROLS
25 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 CONTROLLS
21 1620523	CABLE,SPRAY GUN,ROBOT,AUTO,ENCORE,20M		X	WITH XT & HD CONTROLLS
1601344	CABLE,EXTENSION,ENCORE,AUTO AND ROBOT,4M		X	WITH XT & HD CONTROLLS
1620466	CABLE,EXTENSION,ROBOT,ENCORE,10M		X	WITH XT & HD CONTROLLS
OPTIONS				
1604084	EXTENSION,SPRAY,90 DEGREE,ENCORE		X	AUTO GUNS
1605614	EXTENSION,SPRAY,60 DEGREE,ENCORE		X	AUTO GUNS
21 1605703	EXTENSION,SPRAY,45 DEGREE,ENCORE		X	AUTO GUNS
1609048	POSITIVE MULTIPLIER		X	
22 18 1611977	NLIGHTEN LED LIGHT KIT		X	XT & HD
1625279	DIFFUSER,ENCORE HD AUTO,GEN3,PKG			APPLICATOR,GEN3
25 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
X±0.8 | X.X±0.25 | X.XX±0.13
MACHINED SURFACES 1.6
BREAK INSIDE/OUTSIDE CORNERS 0.1/0.8
THREAD LENGTH DIMENSIONS ARE FULL THREAD
INTERPRET DRAWINGS PER ASME Y14.5-1994
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES
THIRD ANGLE PROJECTION

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

DESCRIPTION: REF DWG,APVD EQUIP,MANUAL ENCORE XT HD 12 14

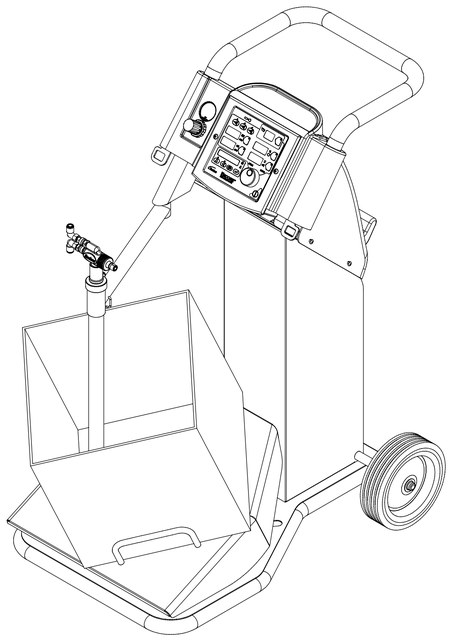
DRAWN BY	DATE	RELEASE NO.
DRJ	11JAN08	PE600468
CHECKED BY	APPROVED BY	
RJF	RJF	

SIZE	FILE NAME	MATERIAL NO.	REVISION
D	1084547	1084547	25

SCALE NOT TO SCALE | SOLIDWORKS GENERATED DWG. | SHEET 1 OF 2

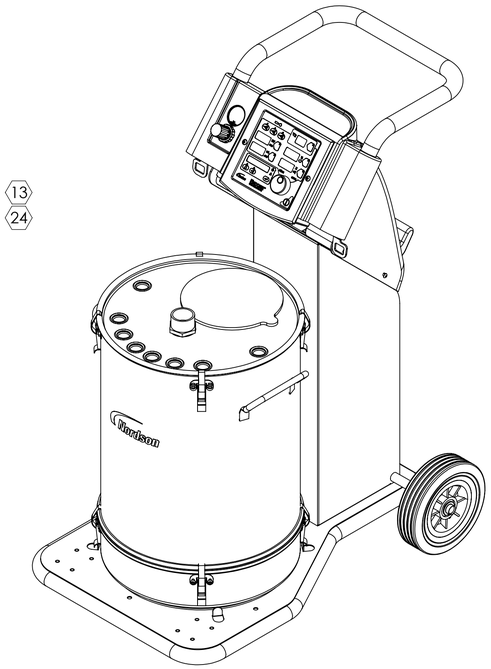
MATERIAL NO. 1084547 REVISION 25

ZONE	REV	DESCRIPTION	BY	CHK	RELEASE NO.	DATE
		(SEE SHEET 1 FOR REVISION HISTORY.)				



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 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

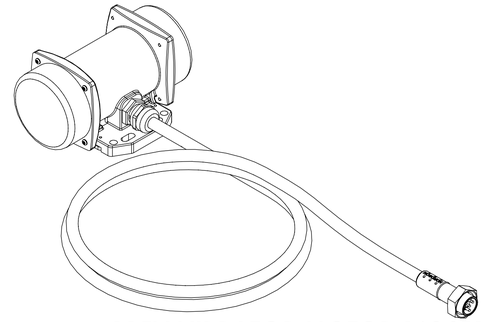
ENCORE HD 115V & 230V VBF MOBILE POWDER SYSTEMS 1613900 OR 1613901 FOR HD PUMP (W/nLIGHTEN)

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

ENCORE 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. 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.	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		
	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		
X±0.8 X.X±0.25 X.XX±0.13	DESCRIPTION: REF DWG,APVD EQUIP,MANUAL ENCORE XT HD (12)		
MACHINED SURFACES 1.6	DRAWN BY: DRJ	DATE: 11JAN08	RELEASE NO.: PE600468
BREAK INSIDE/OUTSIDE CORNERS 0.1/0.8	CHECKED BY: RJF	APPROVED BY: RJF	
THREAD LENGTH DIMENSIONS ARE FULL THREAD	SIZE: D	FILE NAME: 1084547	MATERIAL NO.: 1084547 REVISION: 25
INTERPRET DRAWINGS PER ASME Y14.5-1994			
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES			
THIRD ANGLE PROJECTION	SCALE: NOT TO SCALE	SOLIDWORKS GENERATED DWG.	SHEET 2 OF 2