

# **Encore<sup>®</sup> LT**

## **Manual Powder Spray Systems**

Customer Product Manual

Part 1604857-11

Issued 09/16

**For parts and technical support, call the  
Finishing Customer Support Center at (800) 433-9319.**

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

---



NORDSON CORPORATION • AMHERST, OHIO • USA

---

**Contact Us**

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:  
<http://www.nordson.com>.

Address all correspondence to:

Nordson Corporation  
Attn: Customer Service  
555 Jackson Street  
Amherst, OH 44001

**Notice**

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 2013. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

**Trademarks**

Encore, Nordson, and the Nordson logo are registered trademarks of Nordson Corporation.

Betasolv is a registered trademark of Oakite Corporation, Inc.

All other trademarks are the property of their respective owners.





# Table of Contents

<b>Safety</b> .....	<b>1-1</b>
Introduction .....	1-1
Qualified Personnel .....	1-1
Intended Use .....	1-1
Regulations and Approvals .....	1-1
Personal Safety .....	1-2
Fire Safety .....	1-2
Grounding .....	1-3
Action in the Event of a Malfunction .....	1-3
Disposal .....	1-3
 <b>Description</b> .....	 <b>2-1</b>
Introduction .....	2-1
Mobile System Components .....	2-2
Rail-Mount System Components .....	2-2
Wall-Mount System Components .....	2-2
Specifications .....	2-3
Mobile System with VBF .....	2-3
Mobile System with 50Lb. Feed Hopper .....	2-3
Equipment Labels .....	2-4
Powder Spray Gun Certification Labels .....	2-4
Controller Certification Label .....	2-4

<b>System Setup .....</b>	<b>3-1</b>
Controller Rail Mounting .....	3-1
Controller Wall Mounting .....	3-2
System Connections .....	3-3
System Diagram .....	3-3
Controller Connections .....	3-4
VBF System Setup .....	3-5
Feed Hopper and Wall/Rail Mount System Setup .....	3-8
Adapter Kit or Coupling Installation – Wall/Rail Mount Systems .....	3-10
Coupling Installation .....	3-10
Adapter Installation .....	3-10
Spray Gun Connections .....	3-11
Gun Cable .....	3-11
Air Tubing and Powder Hose .....	3-12
Bundling Tubing and Cable .....	3-13
System Air Connections .....	3-13
System Air Supply .....	3-13
Mobile Systems .....	3-13
Wall/Rail Mount Systems .....	3-13
System Electrical Connections .....	3-15
Power Supply .....	3-15
System Ground .....	3-15
Controller Configuration .....	3-16
Power Up Sequence .....	3-16
Entering Configuration Mode .....	3-16
Function Settings .....	3-17
Vibratory Box Feeder Settings .....	3-17
Continuous Operation .....	3-17
Shut Off Delay .....	3-17
Exiting Configuration Mode .....	3-17

<b>Operation</b>	<b>4-1</b>
European Union, ATEX, Special Conditions for Safe Use	4-1
Controller Interface	4-1
Low Power Mode	4-1
Displays and LEDs	4-2
Electrostatic Settings	4-2
Select Charge® Mode	4-2
Custom Electrostatic Mode	4-3
Classic Electrostatic Mode	4-3
Classic Standard (STD) Mode	4-3
Classic AFC Mode	4-4
Encore Nano Feedback Control Mode (NFC)	4-4
Powder Flow Settings	4-4
Smart Flow Mode Settings	4-5
Classic Flow Mode Settings	4-6
Spray Gun Operation	4-7
Electrode Air Wash Operation	4-7
Daily Operation	4-7
Startup	4-7
Purging	4-8
Powder Box Installation	4-8
Vibratory Box Feeder Operation	4-9
Changing Flat Spray Nozzles	4-10
Changing Conical Nozzles and Deflectors	4-11
Installing the Optional Pattern Adjuster Kit	4-12
Shutdown	4-12
Maintenance	4-13
Recommended Cleaning Procedure for Powder Contact Parts	4-13
Maintenance	4-14
 <b>Troubleshooting</b>	 <b>5-1</b>
Controller Faults	5-1
General Troubleshooting Chart	5-2
Spray Gun Power Supply Resistance Test	5-6
Electrode Assembly Resistance Test	5-6
Gun Cable Continuity Test	5-7
 <b>Repair</b>	 <b>6-1</b>
Spray Gun Repair	6-1
Power Supply and Powder Path Replacement	6-1
Gun Disassembly	6-1
Gun Disassembly (contd)	6-2
Power Supply Replacement	6-2
Powder Path Replacement	6-3
Powder Path Installation	6-4
Gun Re-Assembly	6-4
Cable Replacement	6-5
Cable Removal	6-5
Cable Installation	6-6
Trigger Switch Replacement	6-6
Switch Removal	6-6
Switch Installation	6-7
Switch Installation (contd)	6-8
Controller Repair	6-9
Front Panel Components	6-9
Rear Panel Components	6-10
Vibrator Motor Replacement	6-11

<b>Parts .....</b>	<b>7-1</b>
Introduction .....	7-1
System Part Numbers .....	7-1
Spray Gun Parts .....	7-1
Spray Gun Parts Illustration .....	7-2
Spray Gun Parts List .....	7-3
Spray Gun Options .....	7-4
Miscellaneous Spray Gun Options .....	7-4
Flat Spray Nozzles .....	7-5
Cross-Cut Nozzles .....	7-5
45-Degree Corner-Spray Nozzle .....	7-6
45-Degree In-Line Flat-Spray Nozzle .....	7-6
Conical Nozzle, Deflectors and Electrode Assembly Parts ...	7-7
Conical Nozzle and Deflectors .....	7-7
Conical Nozzle Kit .....	7-7
Conical Electrode Assembly .....	7-7
Pattern Adjuster Kit .....	7-8
Lance Extensions .....	7-8
Pattern Adjuster Kit for Lance Extensions .....	7-8
Ion Collector Kit .....	7-9
Ion Collector Components for Lance Extensions .....	7-9
Controller Parts .....	7-10
Front Panel and Internal Cabinet Ground Parts Illustration ..	7-10
Front Panel and Internal Cabinet Ground Parts List .....	7-11
Rear Panel Parts Illustration .....	7-12
Rear Panel Parts List .....	7-13
Manifold Illustration and Parts List .....	7-14
System Components and Parts .....	7-15
Powder Hose and Air Tubing .....	7-16
System Options .....	7-16
Optional Transportable Manual System .....	7-17
 <b>Wiring Diagram .....</b>	 <b>8-1</b>



# *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 all persons operating or servicing equipment.

### **Qualified Personnel**

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

### **Intended Use**

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

Some examples of unintended use of equipment include

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

### **Regulations and Approvals**

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

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

## Personal Safety

To prevent injury follow these instructions.

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

## Fire Safety

To avoid a fire or explosion, follow these instructions.

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

## Grounding



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

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

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

## Action in the Event of a Malfunction

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

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

## Disposal

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



## Section 2

# Description

## Introduction

See Figure 2-1. This manual covers all versions of the Encore LT Manual Powder Spray System:

- Mobile system with vibratory box feeder
- Mobile system with feed hopper
- Rail-mount system
- Wall-mount system



**Mobile System with Hopper**



**Mobile System with Vibratory Box Feeder**

Figure 2-1 Encore LT Mobile Manual Powder Systems

**NOTE:** The Encore LT Manual Powder Spray System is also available as a transportable demonstration system which includes the components listed in *Section 7, Parts*.

## ***Mobile System Components***

Mobile systems include:

- Encore LT manual controller
- Encore LT manual spray gun
- Encore Generation II powder feed pump
- Encore pump pickup tube
- One of the following, based on system version:
  - Vibratory table and motor – fluidizes a 25- or 50-lb box of powder
  - 50-lb Encore round feed hopper – fluidizes powder with low-pressure compressed air
- 11-mm powder hose, air tubing, spiral wrap, Velcro straps

The components are mounted on a sturdy two-wheeled dolly.

## ***Rail-Mount System Components***

Rail-mount systems include:

- Encore LT manual controller
- Encore LT manual spray gun
- Encore Generation II powder feed pump
- Pump adapter kit and coupling for use on HR/NHR feed hoppers
- Rail-mount bracket kit
- Grounding kit
- 11-mm powder hose, air tubing, spiral wrap, Velcro straps
- Air filter kit

**NOTE:** Powder can be also be supplied from an Encore in-line pump mounted in a feed center.

## ***Wall-Mount System Components***

Wall-mount systems include a

- Encore LT manual controller
- Encore LT manual spray gun
- Encore Generation II powder feed pump
- Pump adapter kit and coupling for use on HR/NHR feed hoppers
- Wall-mount bracket kit
- Grounding kit
- 11-mm powder hose, air tubing, spiral wrap, Velcro straps
- Air filter kit

**NOTE:** Powder can be also be supplied from an Encore in-line pump mounted in a feed center.

## Specifications

Model	Input Rating	Output Rating
ENCORE Applicator	+/- 19 VAC, 1 A	100 KV, 100 $\mu$ A
ENCORE Controller	100–250 VAC, 50/60 Hz	N/A
Vibratory Motor 50 Hz	230 VAC, +/- 10%	N/A
Vibratory Motor 60 Hz	115 VAC, +/- 10%	N/A

- Input Air: 4.0–7.6 bar (58–110 psi), <5 $\mu$  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 (EU) or Class II, Division 1, Group F and G
- Hazardous Location Rating for Controller: Zone 22 (EU) or Class II, Division 2, Group F and G
- Dust Ingress Protection: IP6X
- Vibrator Table Capacity: 25 kg (50 lb) box of powder

### ***Mobile System with VBF***



Height:	995 mm (35.2 in.)
Length:	820 mm (32.25 in.)
Wheel Base:	598.5 mm (23.5 in.)
Weight:	46.7 kg (103 lbs)

### ***Mobile System with 50Lb. Feed Hopper***



Height:	995 mm (35.2 in.)
Length:	812 mm (32 in.)
Wheel Base:	598.5 mm (23.5 in.)
Weight:	50.4 kg (111 lbs)

## Equipment Labels



### *Powder Spray Gun Certification Labels*

<b>P/N: XXXXXXXXY</b> 		
<b>S/N: XXXXXXXXXXXXX</b> 		
<b>ENCORE LT</b>		
<b>MAX. OUTPUT: 100KV</b> <b>Ta: +15°C TO +40°C</b>		<b>U.S. PATENT</b> <b>8,726,831</b>
<b>NORDSON CORPORATION, AMHERST, OHIO, U.S.A.</b>		

	<b>For Electro. Fin. Appl.</b> <b>Class II Spray Mat'l.</b>
<b>WHEN CONFIGURED IN ACCORDANCE WITH 1107255</b>	
<b>FM11ATEX0056X</b>	<b>EEx 2mJ</b>
 <b>1180</b>  <b>II 2 D</b>	

### *Controller Certification Label*

<b>ENCORE LT</b> <b>EN 50050 FM11ATEX0057X</b>  <b>II (2) 3 D</b> <b>Ex tc IIIC T60°C Dc</b> <b>Ta = +15 to +40°C</b>	 <b>1180</b>
<b>NORDSON CORP. AMHERST, OH, USA</b> <b>Vn=100-250Vac fn=50-60Hz Pn=100VA</b> <b>OUTPUT: V<sub>(peak)</sub>= ±19V I<sub>(peak)</sub>= ±1.0A</b> <b>WARNING – POTENTIAL ELECTROSTATIC CHARGING</b> <b>HAZARD, SEE INSTRUCTION MANUAL.</b>	



## Section 3

# System Setup

### Controller Rail Mounting

See Figure 3-1. Rail mount systems are shipped with a bracket kit, small parts tray kit, and bus-bar grounding kit.

1. Install the controller bracket (1) on the bottom of the controller with four M5 x 12 black pan head screws (2) and one #10 dished lock washer (9).
2. Install the controller bracket (1) on the rail bracket (5) with two M8 split lock washers (7) and two M8 x 70 hex head cap screws (8).
3. Thread the two M8 jam nuts (4) onto the two M8 x 40 screws (3), then thread the two screws into the holes in the rail bracket.

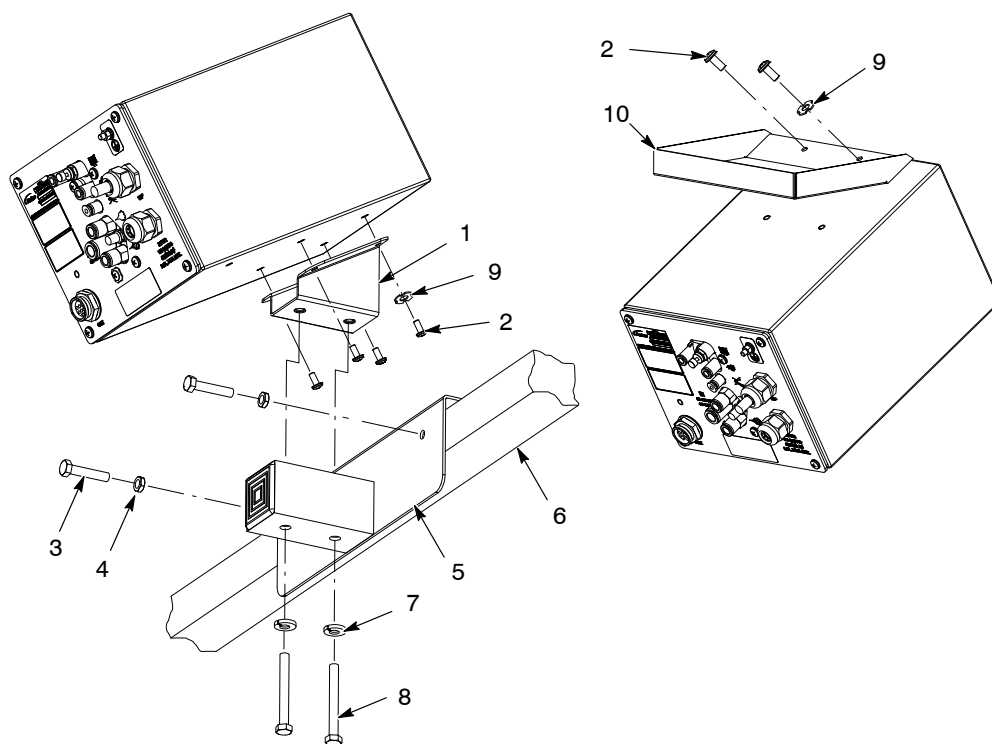


Figure 3-1 Rail Mount Kit and Parts Tray Installation

- |                       |                    |                           |
|-----------------------|--------------------|---------------------------|
| 1. Controller bracket | 5. Rail bracket    | 8. M8 x 70 screws         |
| 2. M5 x 12 screws     | 6. Rail            | 9. #10 dished lock washer |
| 3. M8 x 40 screws     | 7. M8 lock washers | 10. Parts tray            |
| 4. M8 jam nuts        |                    |                           |

## Controller Rail Mounting *(contd)*

4. Install the rail bracket over the operator platform railing (6), tighten the screws (3) against the rail, then tighten the jam nuts (4) up against the rail bracket to prevent the screws from loosening.
5. Install the parts tray (11) in the front two holes on top of the controller using two of the M5 screws (2) in the controller top, and one #10 dished lock washer (9) included in the kit.
6. Use the bus-bar grounding kit to connect the controller ground stud to the booth base, as described in the grounding kit instructions.

## Controller Wall Mounting

See Figure 3-2. Wall-mount systems are shipped with a bracket kit that includes the wall-mount bracket and the fasteners required to secure the controller to the bracket. The bracket allows the controller to be installed perpendicular to the wall or at an angle, in 30 degree increments.

1. Install the bracket on the wall with 3/8-in. fasteners (not included).
2. Install the controller on the bracket with the supplied screws and washers, including the single dished washer. The washer provides a ground connection between the controller and the bracket.
3. Use the bus-bar grounding kit to connect the controller ground stud to the booth base, as described in the grounding kit instructions.

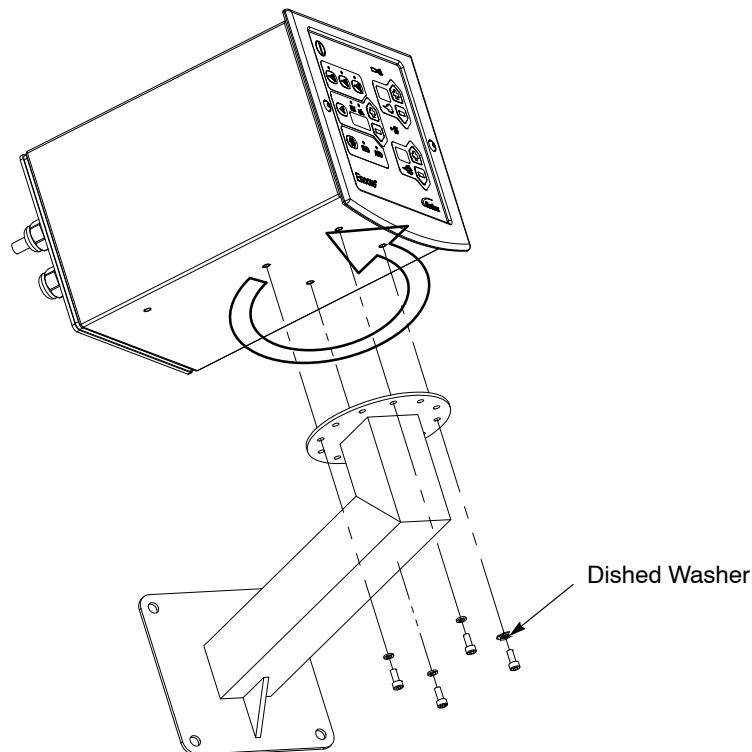


Figure 3-2 Wall-Mount Bracket Installation

# System Connections

## System Diagram



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

**NOTE:** The input air filter shown in this diagram is mounted behind the front panel of mobile systems. For rail- or wall-mount systems, the filter and mounting bracket are shipped in a kit for mounting at the customer's plant.

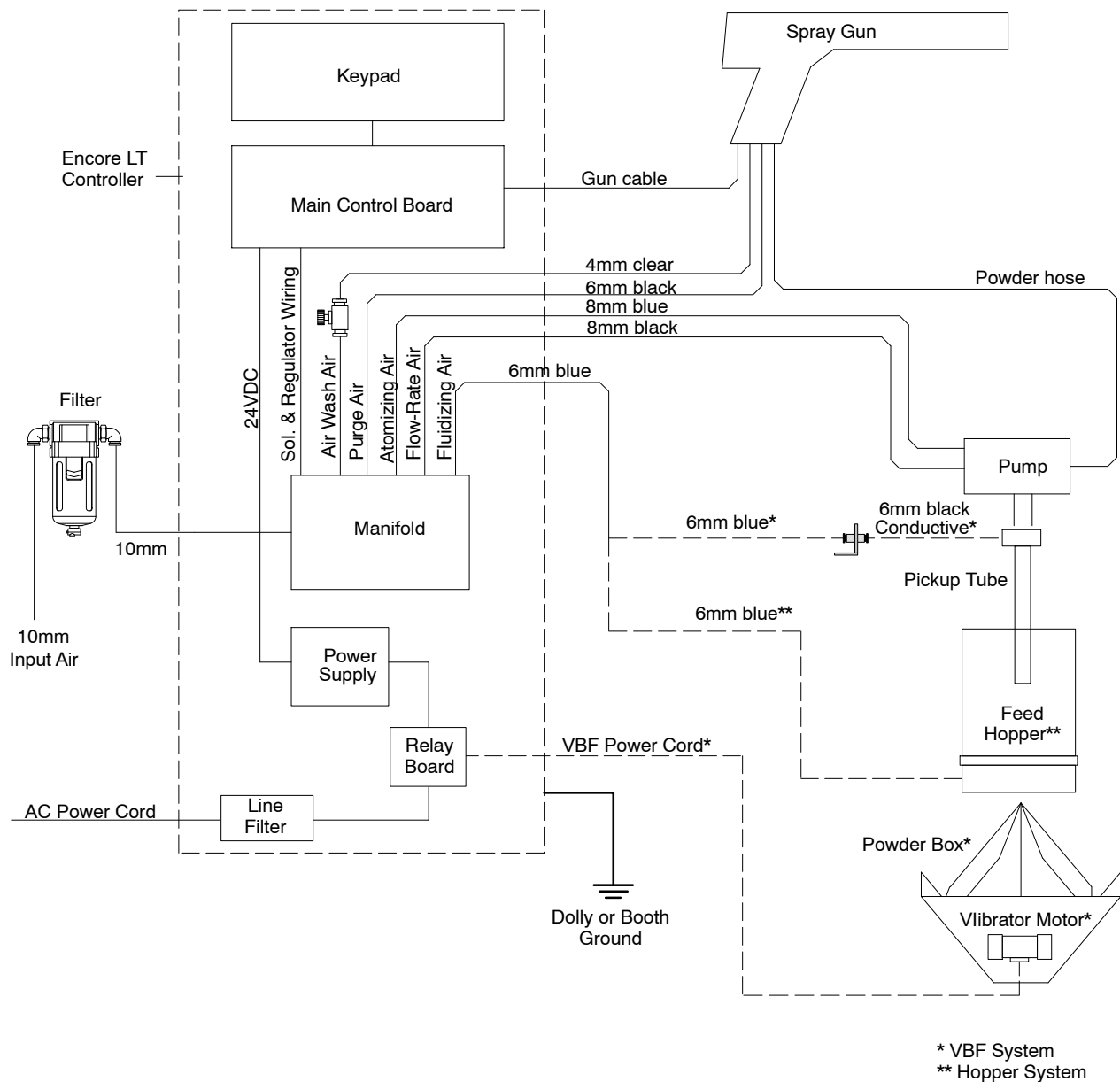


Figure 3-3 Encore LT Manual Powder System Block Diagram

## Controller Connections

The rear panel of the controller provides connections for power, ground, vibrator motor, gun, pump, and fluidizing air.

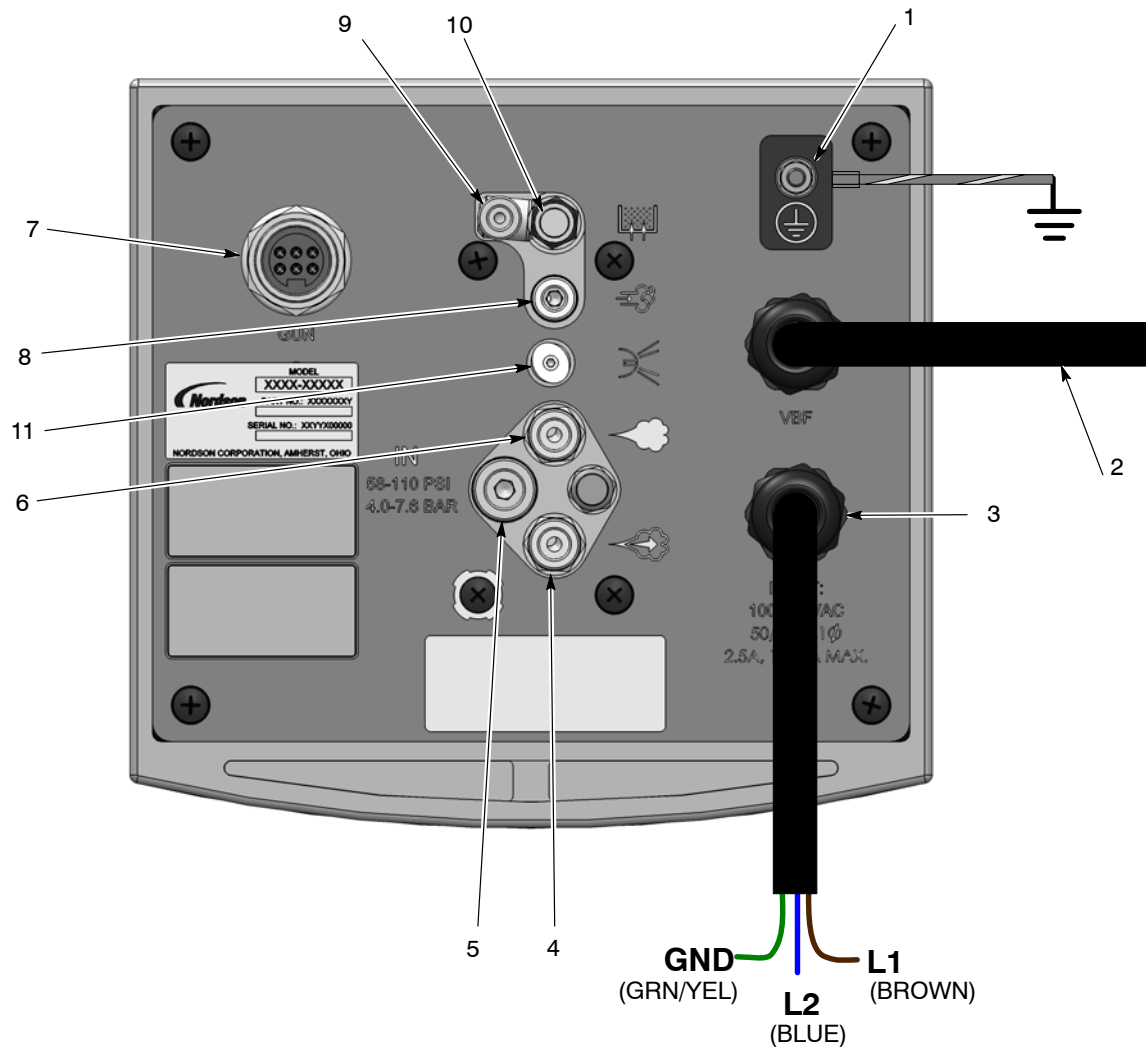


Figure 3-4 Encore LT Gun Controller Connections

- |  |  |   |
|--|--|---|
| 1. Electrostatic ground (to cart or booth) | 5. Air supply (blue, 10mm)             | 9. Fluidizing air (blue, 6mm, to pickup tube or hopper) |
| 2. Vibrator motor power cord               | 6. Flow-rate air (black, 8mm, to pump) | 10. Fluidizing air needle valve                         |
| 3. Power cord (15ft)                       | 7. Gun cable (to gun)                  | 11. Air wash (clear, 4mm, to gun)                       |
| 4. Atomizing air (blue, 8mm, to pump)      | 8. Purge air (black, 6mm, to gun)      |   |

## VBF System Setup

This procedure applies to mobile systems with a vibratory box feeder.

1. Unpack the pickup arm, collar and set screw, pickup tube, and pump.
2. See Figure 3-5. Install the pickup arm as shown, using four M5 x 10 screws with integral washers (3).

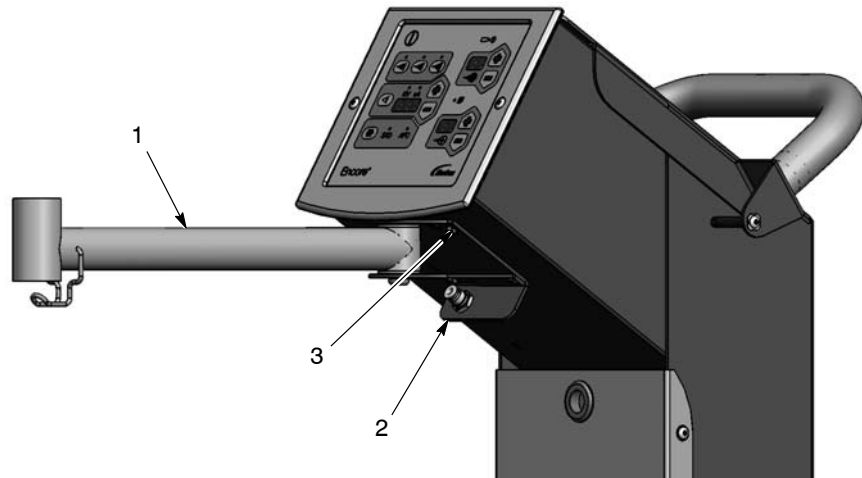


Figure 3-5 Pickup Arm Installation

- |                |                         |
|----------------|-------------------------|
| 1. Arm         | 3. M5 x 10 screws (x 4) |
| 2. Arm bracket |                         |

3. See Figure 3-6. Install the collar (1) on the pickup tube (2) as shown. Tighten the socket-head screw to secure the collar.

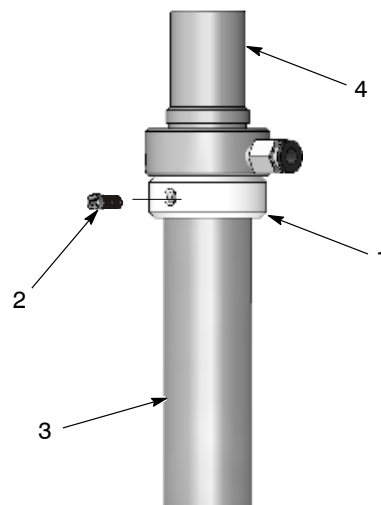


Figure 3-6 Collar Installation on Pickup Tube

- |                                 |                |
|---------------------------------|----------------|
| 1. Collar                       | 3. Pickup tube |
| 2. M5 socket head screw (black) | 4. Pump mount  |

## VBF System Setup (contd)

4. See Figure 3-7. Swing the tube bracket out of the way and install the pickup tube (1) in the arm.
5. Install the pump (3) into the pump mount (2) with a slight twisting motion.

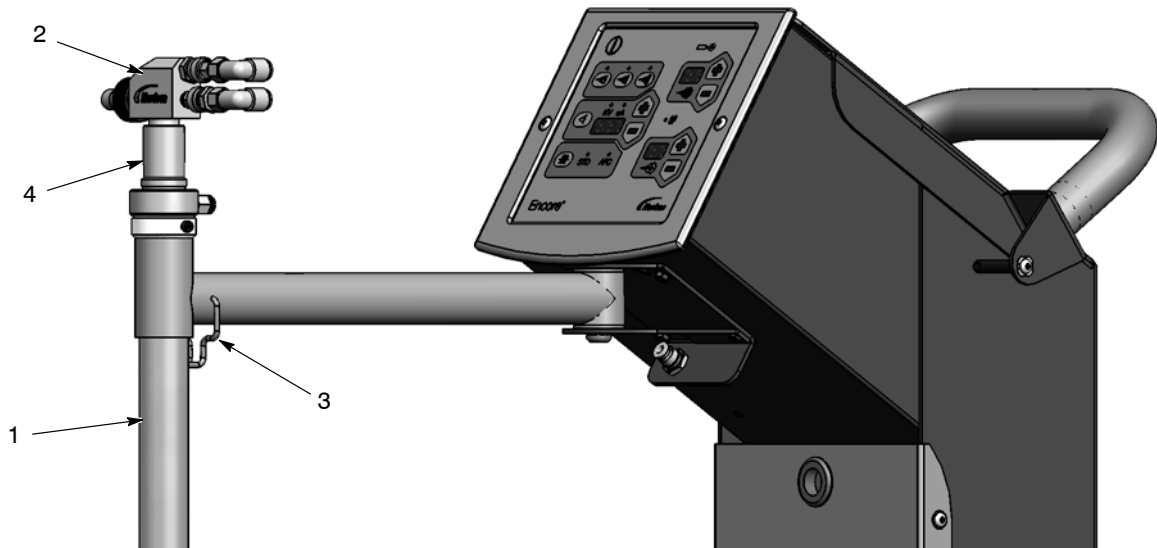


Figure 3-7 Encore LT Gun Pickup Tube and Pump Installation

- |                |                 |               |
|----------------|-----------------|---------------|
| 1. Pickup tube | 3. Tube bracket | 4. Pump mount |
| 2. Pump        |                 |               |

6. Unpack the air tubing, powder hose, clamps, and Velcro straps shipped with the system.
  7. See Figure 3-4. Plug the shorter lengths of the tubing into the controller:
    - 8-mm blue atomizing air tubing (4)
    - 8-mm black flow-rate air tubing (6)
    - 6-mm blue fluidizing air tubing (9)
  8. See Figure 3-8. Route the tubing (4, 6, 9) through the grommet in the front panel of the cart tower as shown.
  9. Connect the tubing and powder hose as shown:
    - 8-mm blue atomizing air tubing (4) to the pump top fitting
    - 8-mm black flow-rate air tubing (6) to the pump bottom fitting
    - 6-mm blue fluidizing air tubing (9) to the bulkhead union (1)
    - 6-mm black fluidizing air tubing (2) to the union and pick-up tube.
    - powder hose (7) to the pump—secure with hose clamp (3)
- NOTE:** Before securing the pump and fluidizing air tubing to the pickup arm, provide a service loop in the tubing to allow for lifting and removing the pickup tube and pump from the arm without disconnecting the tubing.
10. Secure the tubing to the arm with blue Nordson Velcro straps (5).

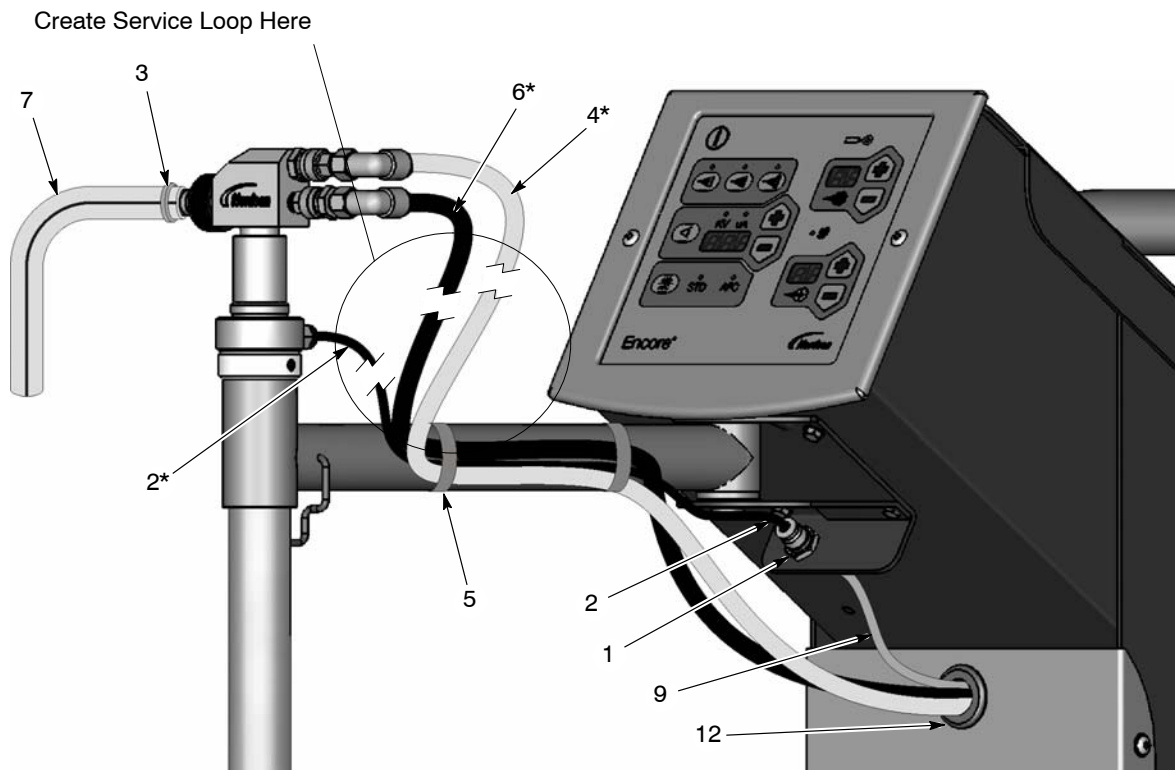


Figure 3-8 Encore LT Gun Pickup Tube and Pump Installation

- |                                      |                                 |                                |
|--------------------------------------|---------------------------------|--------------------------------|
| 1. Bulkhead union                    | 4. Blue 8-mm atomizing tubing*  | 7. Powder hose                 |
| 2. 6-mm black fluidizing air tubing* | 5. Velcro straps                | 9. Blue 6-mm fluidizing tubing |
| 3. Hose clamp                        | 6. Black 8-mm flow-rate tubing* | 12. Grommet                    |

*Note:* \* Create service loop as noted before securing tubing to arm with straps.



**WARNING:** The black fluidizing air tubing (2), the pickup tube connector, and the bulkhead union (1) are conductive and provide a ground path to the cart. Do not replace these components with non-conductive components. Refer to *Parts* for replacement tubing.

**NOTE:** The pump is equipped with quick-connect couplings that allow you to quickly disconnect the air tubing when cleaning or repairing the pump. Pull back on the knurled coupling rings to uncouple them.

## Feed Hopper and Wall/Rail Mount System Setup

This procedure applies to mobile systems, and wall or rail mount systems supplied with powder from a feed hopper.

1. Unclamp the hopper lid and take out the vent hose and hose clamps. Re-clamp the lid.
2. Unpack the pump, powder hose, air tubing, clamps, and Velcro straps shipped with the system.
3. See Figure 3-4. Plug the following into the controller:
  - 8-mm blue atomizing air tubing (4)
  - 8-mm black flow-rate air tubing (6)
  - 6-mm blue fluidizing air tubing (9)
4. See Figure 3-9. Route the atomizing air (4) and flow-rate tubing (6) through the grommet (12) on the front panel of the cart tower.
5. Route the fluidizing air (9) tubing through the tower and out the bottom front.
6. **Mobile systems:** Install the hopper on the cart platform, in between the retainer tabs.
7. Install the pump (7) into the pump mount (5) with a slight twisting motion. Connect the fluidizing and atomizing air tubing to the pump as shown.

**NOTE:** Rail mount systems are shipped with a pump adapter kit and a coupling for use with pickup tubes designed for other pumps. Refer to the installation instructions on page 3-10.

8. Connect the 10-mm x 6-mm reducer (11) to the 10-mm elbow fitting on the hopper fluidizing pan. Connect the fluidizing air tubing (9) to the reducer.
9. Connect the ring-tong terminal on the green/yellow ground wire (10) to the ground stud on the side of the fluidizing pan, then plug the ground wire into the grounding socket on the cart base.
10. Install a hose clamp (8) over the end of the vent hose (1) and connect the hose to the vent stack on the lid. Tighten the clamp to secure the hose.
11. Connect the powder hose (2) to the pump and secure it with a hose clamp (3).

**NOTE:** The pump is equipped with quick-connect couplings that allow you to quickly disconnect the air tubing when cleaning or repairing the pump. Pull back on the knurled coupling rings to uncouple them.





Figure 3-9 Encore LT Mobile System with Hopper – Hopper and Pump Installation

- |                              |                               |                               |
|------------------------------|-------------------------------|-------------------------------|
| 1. Vent hose                 | 5. Pump mount                 | 9. Blue fluidizing air tubing |
| 2. Powder hose               | 6. Black flow-rate air tubing | 10. Ground wire               |
| 3. Hose clamp                | 7. Pump                       | 11. 10 x 6 mm reducer fitting |
| 4. Blue atomizing air tubing | 8. Vent hose clamp            | 12. Grommet                   |

## Adapter Kit or Coupling Installation – Wall/Rail Mount Systems

Rail- and wall-mount systems are shipped with a pump adapter kit and a coupling that allows the Encore pump to be used on HR and NHR hopper pickup tubes that were designed for other types of pumps. The adapter kit provides a permanent mounting and its use is recommended.

### Coupling Installation

The coupling allows you to use the existing pump adapter.

1. Install the pump coupling on the existing pump adapter with a slight twisting motion.
2. Install the Encore pump into the coupling with a slight twisting motion.

### Adapter Installation

The adapter kit replaces existing pump adapters with external O-rings on all threaded 0.360 in. ID pickup tubes.

1. Pull the pump adapter and pickup tube out of the pump mount on the hopper lid.
2. Unscrew the pickup tube from the existing adapter.
3. Screw the pickup tube into the Encore pump adapter shipped with the system.
4. Install the pump adapter and pickup tube into the pump mount.
5. Install the Encore pump into the pump adapter with a slight twisting motion.

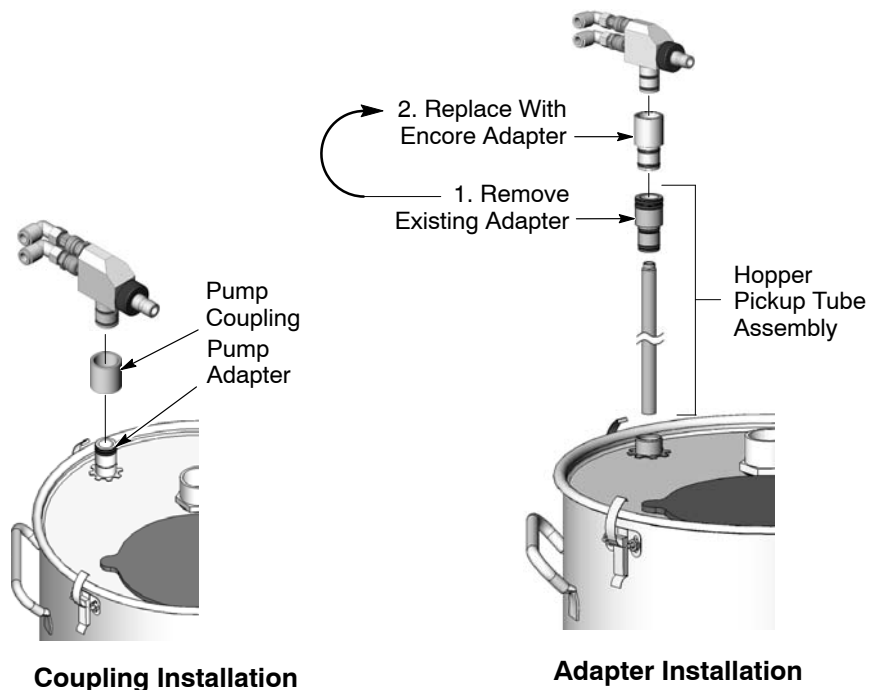


Figure 3-10 Pump Mounting

# Spray Gun Connections

Unpack the spray gun. Uncoil the cable, the 4-mm clear and 6-mm black air tubing, and the 11-mm powder hose. Make the following connections:

## Gun Cable

See Figure 3-11.

1. Connect the gun cable to the GUN receptacle on the rear panel of the controller. The cable plug and receptacle are keyed.
2. Thread the cable nut onto the receptacle and tighten the nut securely.
3. Secure the cable strain relief to the rear panel with one of the existing panel screws.

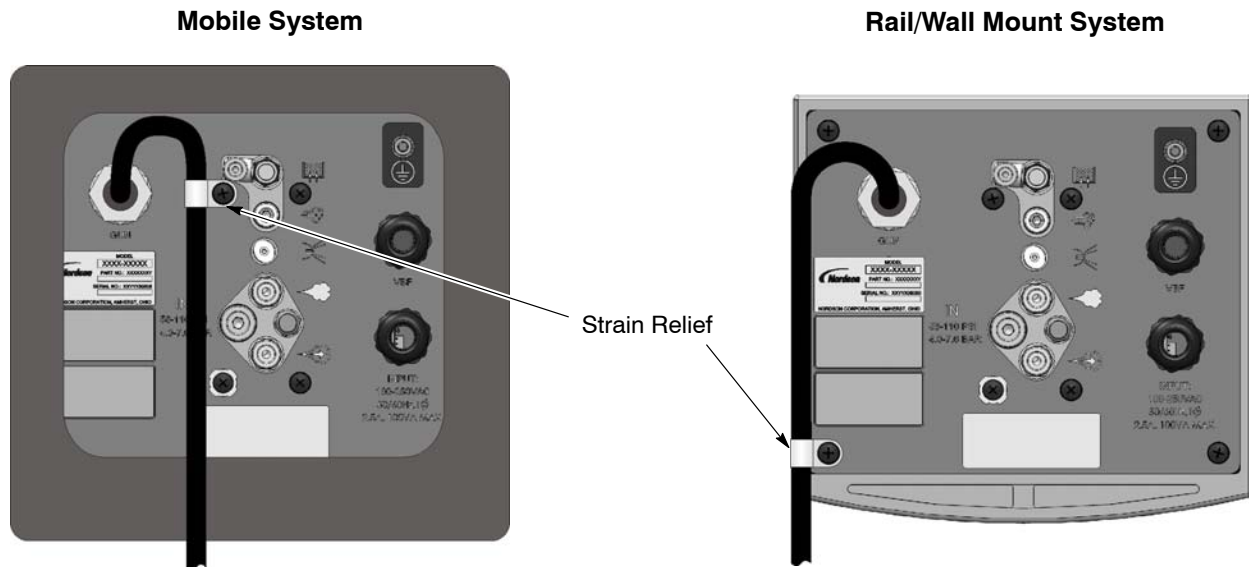


Figure 3-11 Gun Cable Connection and Strain Relief Mounting

## Air Tubing and Powder Hose

1. See Figure 3-12. Connect the 6-mm black air tubing to the quick-disconnect fitting in the gun handle.
2. Connect the 4-mm clear electrode air wash tubing to the barbed fitting in the gun handle.

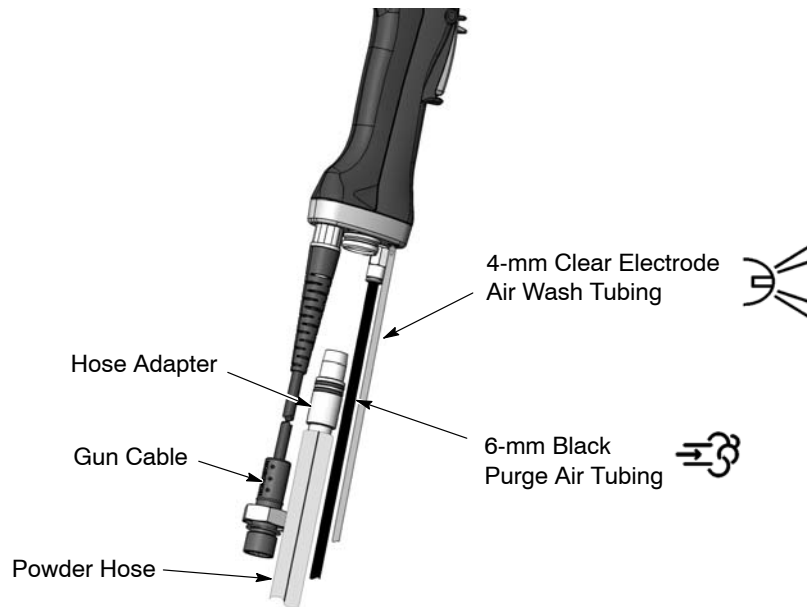


Figure 3-12 Gun Connections

3. Connect the powder hose to the hose adapter, then plug the hose adapter into the handle.

**NOTE:** 6 meters (20 ft) of 11 mm ID powder hose is shipped with the system. If you must use a longer hose, switch to 1/2 inch ID powder hose. Refer to *Parts* for hose part numbers.

4. Route the air tubing to the rear panel of the gun controller.
5. See Figure 3-4. Connect the 6-mm black tubing to the purge air quick-disconnect fitting (8).
6. See Figure 3-13. Connect the 4-mm clear tubing and the flow control valve supplied with the system to the air wash connector on the rear panel as shown. The flow control valve can be located anywhere desired. Use a tubing cutter to make sure the tube ends are square.

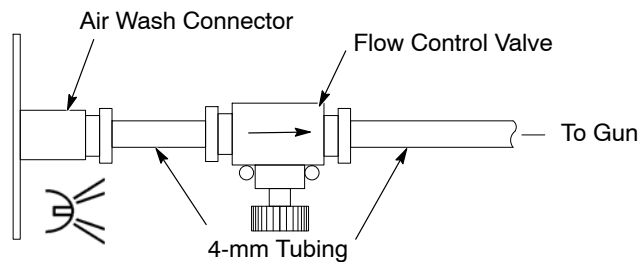


Figure 3-13 Flow Control Valve and Air Wash Tubing Connection

## ***Bundling Tubing and Cable***

Use the sections of black spiral-cut tubing supplied with the system to bundle together the spray gun cable, air tubing, and powder hose. Coil the bundled tubing and cable and hang the coil on the hook at the back of the cart tower.

## **System Air Connections**

### ***System Air Supply***

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.

All systems are shipped with a 0.3-micron air filter. It is important that the filter be used to prevent contamination of the system pneumatic components and the powder supply.

Supply air pressure should be 4.0–7.6 bar (58–110 psi).

To provide air to your system, an input air kit with connectors, couplings, and 10-mm air tubing (15-ft for dolly systems, 25-ft for wall/rail mount systems) is available.

Refer to the *Parts* section for filter kits, replacement elements, and input air kit part numbers and ordering information.

### **Mobile Systems**

Connect 10-mm air tubing from your compressed air supply to the air input fitting on the rear panel of the dolly.

### **Wall/Rail Mount Systems**

See Figure 3-14.

1. Use the mounting bracket (4) as a template to mark and drill mounting holes in the selected mounting surface. Make sure there is sufficient clearance to connect air tubing and change the filter element.
2. Install the two male connectors (2) included in the kit in the filter input and output ports.
3. Install the mounting bracket on the filter, using the included M5 screws (3), on the side of the filter opposite the release latch (6).
4. Mount the filter with customer-supplied fasteners (7).
5. Note the orientation of the flow indicator (5) on the top of the filter. Cut 10-mm blue air tubing to the required lengths to connect the air supply to the filter and the filter to the controller, then connect the tubing.

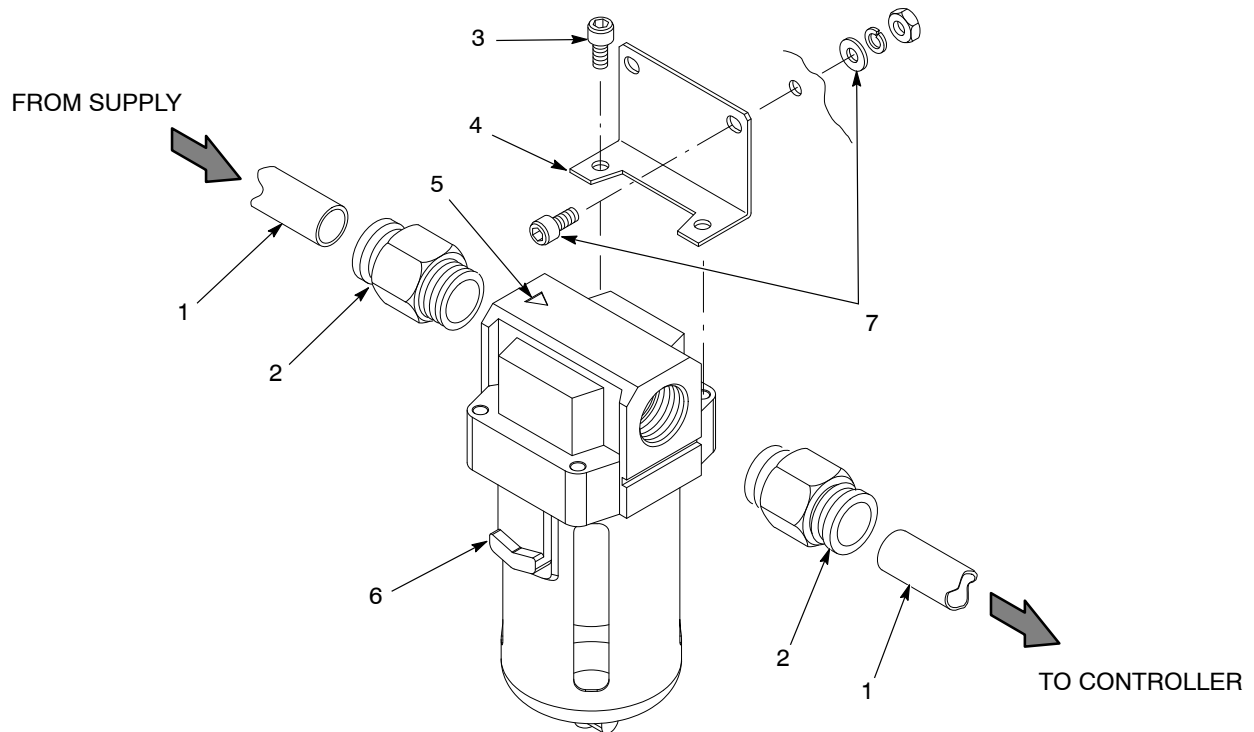


Figure 3-14 Air Filter Installation – Wall and Rail Mount Systems

- |                                     |                   |                                |
|-------------------------------------|-------------------|--------------------------------|
| 1. 10-mm air tubing (blue)          | 4. Bracket        | 6. Release latch               |
| 2. 10-mm tube x 1/2 male connectors | 5. Flow indicator | 7. Customer-supplied fasteners |
| 3. M5 screws                        |                   |                                |

# System Electrical Connections

## Power Supply



**CAUTION:** If you have a mobile system with a vibratory box feeder, check the system identification plate for the correct voltage. Connecting a system with a 115 Vac vibrator motor to 220 Vac could damage the vibrator motor.

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

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

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

## System Ground

**Mobile Systems:** See Figure 3-15. Connect the ground cable attached to the controller ground stud to a true earth ground.

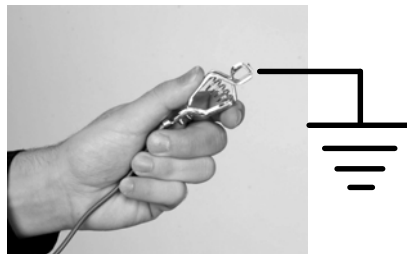


Figure 3-15 System Ground Connection

**Rail Mount Systems:** Locate the ESD grounding block kit. Follow the kit instructions to install the grounding block to the grounded spray booth base. Connect the flat braided ground cable from the controller ground stud to the grounding block.

# Controller Configuration

## Power Up Sequence

When power is applied to the system, the controller goes through the following sequence:

1. All displays and LEDs light for 3 seconds.
2. The main control board configuration is displayed on the KV/ $\mu$ A panel:  
**A:** Auto (refer to troubleshooting to change the jumper if A is displayed)  
**H:** Manual
3. The controller software and hardware version are displayed on the KV/ $\mu$ A panel in the form **N.NN** for 1 second.

**NOTE:** If the spray gun is triggered on during power-up or wake up from disable, the trigger LED blinks at a fast rate. Release the trigger and repeat the sleep/wake up cycle.

## Entering Configuration Mode

To enter configuration mode, press and hold the Plus and Minus buttons on the kV/ $\mu$ A panel while either turning on power or pressing the Enable/Disable button (if the controller is already powered up). After 1 second all panels flash **CF** for 3 seconds. After 3 seconds the kV/ $\mu$ A panel displays **F – 1** for function 1. The controller is now in configuration mode.

To save your settings and exit Configuration Mode, press the Enable/Disable button.

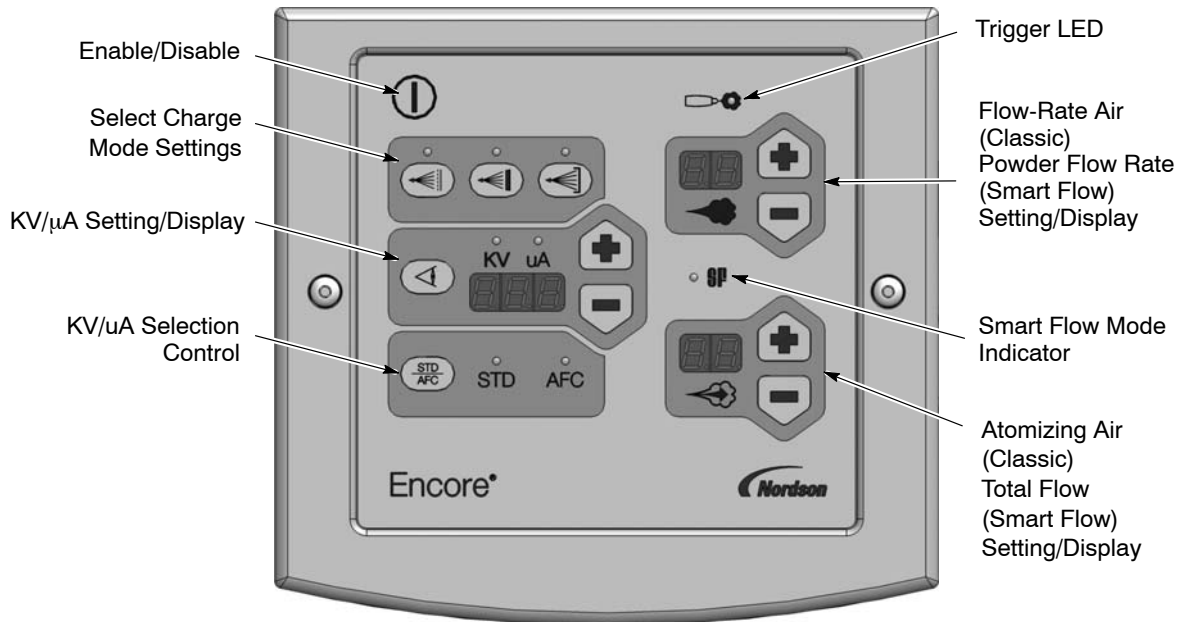


Figure 3-16 Controller Interface



## Function Settings

To change functions, press the Plus or Minus buttons on the kV/ $\mu$ A panel.  
To change function values press the Plus or Minus buttons on the Flow Air panel.

Function No.	Name	Settings	Default
1	Gun Type	0 = Encore	0
2	Fluidizing	0 = Hopper, 1 = Box, 3 = Disable	0
3	Electrostatic Control	0 = Custom, 1 = Classic	0
4	Powder Flow Control	0 = Smart, 1 = Classic	0
5	Cable Length	0 = 6 meters, 1 = 12 meters, 2 = 18 meters	0
6	Vibratory Box Delay	on, 0–90 seconds	30

**NOTE:** Refer to the Operation section for explanations of the differences in Electrostatic Control and Powder Flow Control modes.

## Vibratory Box Feeder Settings

### Continuous Operation

To set the vibrator motor to continuous operation, choose the “on” setting. In this mode, the vibrator motor turns on when the gun is first triggered and stays on until you press the Enable/Disable button or turn off system power.

### Shut Off Delay

If you set a delay time, the vibrator motor turns on when the gun is triggered and stays on for the delay time after the trigger is released. This setting is designed to prevent chattering (rapid on/off cycling) of the vibrator motor during production and extends the life of the motor. Adjust the delay as required for your application.

## Exiting Configuration Mode

To accept all function values and exit Configuration Mode, press the Enable/Disable button. The controller can now be operated normally.



## 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, ATEX, Special Conditions for Safe Use

1. The Encore LT Controllers and Mobile Powder Systems shall be used over the ambient temperature range of +15°C to +40°C with the Encore LT Powder Electrostatic Manual Applicators.
2. The Encore LT Manual Controller can be installed in a non-hazardous area or in a hazardous area defined as a Zone 22.
3. Caution should be taken when cleaning plastic surfaces on the controller. There is a potential for static electricity build up on these components.

## Controller Interface

See Figure 4-1. Use the controller interface to make spray settings and monitor system operation. Refer to *Setup* for configuration settings.

### Low Power Mode

Pressing the **Enable/Disable** button for three seconds puts the controller to sleep (low power mode). The displays and LEDs turn off. To wake the controller press the button again.

The system hibernates automatically if no activity is detected for approximately 15 minutes. Pulling the gun trigger, pressing the purge switch, or pressing a button on the controller interface wakes the controller.

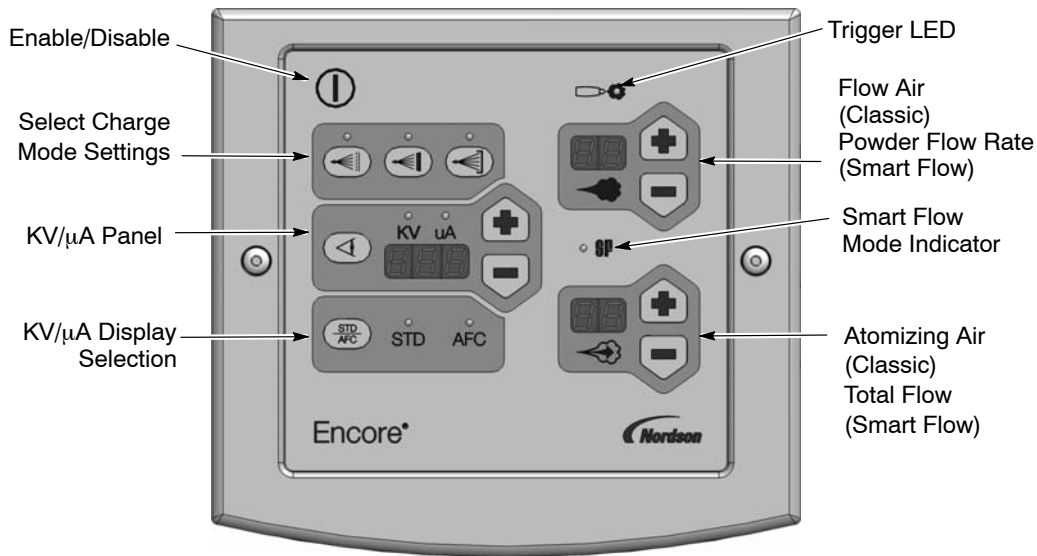
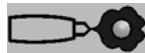


Figure 4-1 Controller Interface

## Displays and LEDs



When the gun is triggered the Trigger LED lights. Actual kV/μA outputs are displayed. When the gun is not triggered the kV/μA setpoints are displayed.



When the controller is configured for Smart Flow mode, the Smart Flow LED is lit.

The air flow displays always show the setpoints.

## Electrostatic Settings

Electrostatic output can set in Select Charge mode, Custom mode, or Classic mode. Custom or Classic mode is chosen when the controller is configured. Set the electrostatic output depending on the shape and type of product being coated and the type of powder used.

### Select Charge® Mode

The Select Charge modes are non-adjustable electrostatic settings. The LEDs above the Select Charge mode buttons indicate the selected mode.

The electrostatic setpoints for the Select Charge Modes are:

Re-Coat	100 kV, 15 μA
Metallics	50 kV, 50 μA
Deep Recesses	100 kV, 60 μA

**NOTE:** Pressing the + or – keys have no effect when a Select Charge mode is selected.

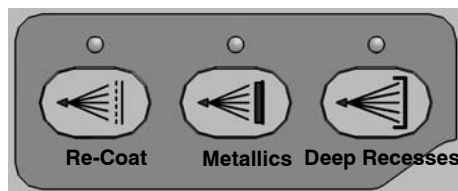



Figure 4-2 Select Charge Modes

**NOTE:** If you press the STD/AFC selection button while using a Select Charge mode, the controller switches to Classic or Custom mode.

## Custom Electrostatic Mode

**Custom Mode** is the factory default electrostatic mode.

In Custom mode, both kV output and microampere ( $\mu\text{A}$ ) output limits can be adjusted independently. Both the kV and AFC LEDs light to indicate that the controller is in this mode.

Use the View button  to toggle the display between kV and  $\mu\text{A}$ . Press the + or – buttons to select the desired setpoints. The longer a button is pressed the faster the units change.

- The valid AFC range is 5–100  $\mu\text{A}$
- The valid STD range is 0 or 25–100 kV

## Encore Nano Feedback Control Mode (NFC)

**NFC Mode** controls the electrostatic lower-limit range output for both kV and  $\mu\text{A}$ . NFC allows the user to control both kV and  $\mu\text{A}$  independently.

- The valid kV range is 0–25 (increments of 1 kV)
- The valid  $\mu\text{A}$  range is 0–10 (increments of 0.1  $\mu\text{A}$ )

To configure the controller for the NFC function, set the Electrostatic Control (Function 3) to the custom mode (Custom = 0).

See Function Settings on page 3–17 of the System Setup section.

### $\mu\text{A}$ NFC Range and Settings

NFC mode allows the user to adjust the  $\mu\text{A}$  setting in increments of 0.1  $\mu\text{A}$  below the value of 10.0  $\mu\text{A}$ . Adjusting  $\mu\text{A}$  in NFC modes allows the user to control the current when using powders that tend to charge hot, such as metallics.

For example, the user can set the  $\mu\text{A}$  settings from 12, 11, 10, 9.9, 9.8, 9.7, ..... through 0.1.

## **Custom Electrostatic Mode** (contd)

### **kV NFC Range and Settings**

NFC mode allows the user to adjust the kV setting in increments of 1 kV below the value of 25 kV without changing the  $\mu\text{A}$  setting.

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



## **Classic Electrostatic Mode**

**Classic Mode** is the optional electrostatic mode. The controller must be configured to use this mode; refer to page 3-16 for configuration instructions.

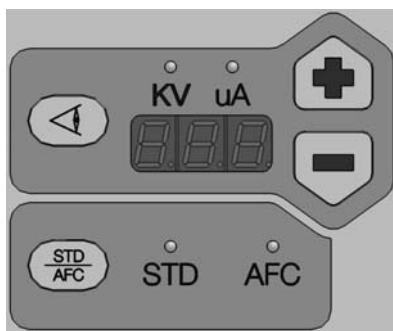
In Classic mode you can choose to control kV (STD) output or  $\mu\text{A}$  (AFC) output, but not both at the same time.

### **Classic Standard (STD) Mode**


See Figure 4-3. Use the **STD** mode to set the no-load output voltage (kV).

1. Press the STD/AFC button  to toggle between STD and AFC. The LEDs light to show which is selected. Select STD. The STD LED will light.
2. Press the View button  to toggle the display between kV and  $\mu\text{A}$ . Press the + or – buttons to select the desired kV setpoint. The longer a button is pressed the faster the units change.

The valid STD range is 0 or 25–100 kV.

**Classic Electrostatic Mode** (contd)Figure 4-3 kV/  $\mu$ A Display and STD/AFC Selection for Classic Mode**Classic AFC Mode**

See Figure 4-3. Use the **AFC** mode to set  $\mu$ A output limits. In AFC mode, kV automatically defaults to 100 kV. When current output increases, kV output and electrostatic charging decreases. The closer the gun comes to the part, the greater the current draw.

1. Press the STD/AFC button to toggle between STD and AFC. The AFC LED lights when AFC is selected.
2. Press the View button  to toggle the display between kV and  $\mu$ A. Select  $\mu$ A, then press the + or - buttons to select the desired  $\mu$ A setpoint. The longer a button is pressed the faster the units change.

The valid AFC range is 5–100  $\mu$ A.

**Powder Flow Settings**

The controller varies the flow and atomizing air to a venturi-type powder pump depending on the settings. Flow air controls the amount and velocity of the powder; atomizing air dilutes the powder flow and increases the velocity. Since the air flow values are continuously monitored and adjusted, a slight high frequency pulsation in the air lines is normal.

Two modes of pump air control are available:

**Smart Flow** – This is the factory default mode. In this mode, you set Total Flow and Flow Air %. If you decrease the flow air %, the flow air pressure decreases, but the atomizing air pressure increases, so that the result is that the powder velocity remains the same. The Smart Flow LED lights when the controller is configured for Smart Flow mode.

**Classic Flow** – This is the traditional method of controlling powder flow and velocity. In this mode you set flow and atomizing air separately and balance them manually for optimum results. When the controller is configured for Classic Flow mode, the Smart Flow LED is off.

**NOTE:** Refer to page 3-16 for a list of the mode defaults and configuration instructions.

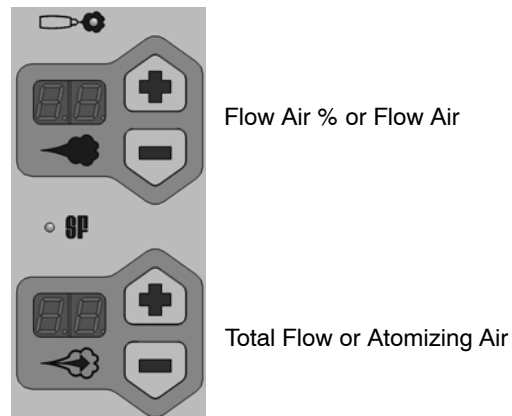


Figure 4-4 Flow Setting Panels

## Smart Flow Mode Settings



sets the powder flow rate (Flow Air %).



sets the powder velocity (Total Flow).

Setting values for both are 0–99% of maximum output. Press the + and – buttons to enter the desired setpoint. The longer a button is pressed the faster the units change.

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

At 7 bar (100 psi) supply pressure:

Total Flow Setting %	Flow Air Setting %	Flow Air Pressure bar (psi)	Atomizing Air Pressure bar (psi)
50	50	1.7 (25)	1.7 (25)
50	25	0.86 (12.5)	2.6 (37.5)



## Smart Flow Mode Settings *(contd)*

In other words,

If Total Flow = 50%, Flow Air = 50%, then  
Flow air = 1.7 bar (25 psi) or 1/2 of 3.4 bar (50 psi), and  
Atomizing air = 1.7 bar (25 psi) or 1/2 of 3.4 bar (50 psi).

If Total Flow = 50%, Flow Air = 25%, then  
Flow air = 0.86 bar (12.5 psi) or 1/4 of 3.4 bar (50 psi), and  
Atomizing air = 2.6 bar (37.5 psi) or 3/4 of 3.4 bar (50 psi).

**NOTE:** If either Total Flow or Flow Air % are set to 0% then the controller will not output any air when triggered and no powder will be pumped.

Powder velocity is inversely related to transfer efficiency; the higher the velocity the lower the transfer efficiency. High powder flow rates can result in faster wear of powder contact parts.

Use this chart as a starting point making changes for powder volume or delivery velocity as required. The data in this table was collected using 20 feet of 11mm ID powder tubing and a typical white epoxy powder. For higher output use 12.7mm ID powder tubing. Powder output values in g/min are typical, your results may vary.

Total Air Setting % ►	20	40	60	80	100
Flow Output Setting % ▼	Powder Output in g/min.				
20	45	26	20	27	45
40	79	128	105	138	100
60	118	176	215	220	235
80	168	240	288	300	318
100	168	284	375	408	430

## Classic Flow Mode Settings

To use Classic Flow mode, the controller must be configured for it. Refer to page 3-16 for a list of the mode defaults and configuration instructions.



sets the flow air pressure



sets the atomizing air pressure.

Setting values for both are 0–99% of maximum air pressure. Press the + and – buttons to enter the desired setpoint. The longer a button is pressed the faster the units change.

At 7 bar (100 psi) supply pressure:

Flow Setting %	Atomizing Setting %	Flow Air Pressure bar (psi)	Atomizing Air Pressure bar (psi)
25	25	1.7 (25)	1.7 (25)
40	10	2.7 (40)	0.689 (10)

In other words,

If Flow air = 25%, Atomizing air = 25%, then  
Flow air = 1.7 bar (25 psi), Atomizing air = 1.7 bar (25 psi).

If Flow air = 40%, Atomizing = 10%, then  
Flow air = 2.7 bar (40 psi), Atomizing air = 0.689 bar (10 psi).

Refer to your pump manual for typical operating values for Flow and Atomizing air.

## Spray Gun Operation

To spray powder, pull the spray trigger.

To purge the spray gun, release the spray trigger and press down on the purge trigger. If using a vibratory box feeder, fluidizing air is shut off while the gun is being purged. **P** is displayed on the flow display.

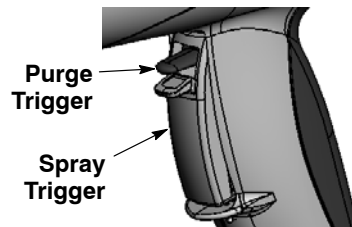


Figure 4-5    Gun Controls

## 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 is turned on and off automatically when the spray gun is triggered on and off.

## Daily Operation

### Startup

1. Turn on the spray booth exhaust fan.
2. Turn on the system air supply and power.
3. Install a box of powder or a hopper filled with powder on the cart.
  - **Box:** Lower the pickup tube into the powder, wrap the plastic bag around the pickup tube and secure it with a tie wrap.
  - **Hopper:** Connect the hopper ground cable and fluidizing air. Install the pump on the pickup tube or connect the air tubing to the pump.
4. Make sure the spray gun is not triggered, then turn on controller power. The displays and icons on the controller interface should light.

## **Startup** (contd)

**NOTE:** If the spray gun is triggered on when the controller is powered up, a fault will occur and the Trigger LED will blink fast. To clear the fault, release the trigger and press the Disable/Enable button to put the controller to sleep, then press the button again to wake it up.

5. Point the spray gun into the booth and press the trigger to start spraying powder.
6. Adjust fluidizing air pressure if necessary, using the needle valve on the rear panel of the controller:
  - **Box Feeder:** Fluidizing air only turns on when the gun is triggered. The air flow should just fluidize the powder around the pickup tube. The powder should not boil violently or fountain out of the box.
  - **Feed Hopper:** Fluidizing air is on continuously as long as the controller is on. The powder should boil gently, without any fountains.
7. Adjust the controller to achieve the desired spray pattern and powder flow rate.

The controller interface displays actual kV or  $\mu$ A output when the gun is spraying and setpoints when the gun is off. The air flow displays always show the setpoints.

**On Initial Startup:** With the gun triggered, air set to zero, and no parts in front of the gun, record the  $\mu$ A output for each gun in the system. Monitor the  $\mu$ A output daily, under the same conditions. A significant increase in  $\mu$ A output indicates a probable short in the gun resistor. A significant decrease indicates a resistor or voltage multiplier requiring service.

## **Purging**

When purge air is turned on, the electrostatic voltage and pump air is turned off and **P** appears on the flow display.

Purge the gun periodically to keep the powder path inside the spray gun clean. The purge length and frequency needed depend on the application and powder.

**NOTE:** The purge air only cleans the spray gun powder path. To purge the powder hose, disconnect it from the pump and the gun, place the gun end inside the booth, and blow it out from the pump end with compressed air.

## ***Powder Box Installation***

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

1. See Figure 4-6. Lift the pickup tube up and swing the tube bracket down and under the pickup tube end to hold it in place on the arm.

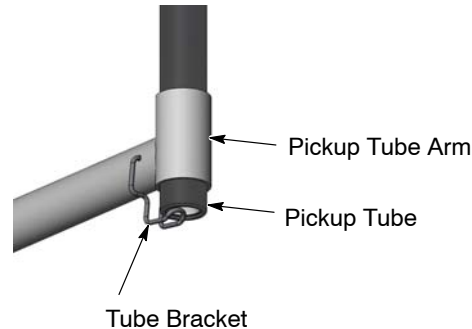


Figure 4-6 Pickup Tube Bracket Use

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 tube bracket 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.

## ***Vibratory Box Feeder Operation***

When the controller is configured for a vibratory feed system, the vibratory box feeder relay control is enabled. The relay turns on the vibrator motor when the spray gun is triggered.

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, press the Enable/Disable button or turn off 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 page 3-16.

## Changing Flat Spray Nozzles



**WARNING:** Release the spray gun trigger, put the controller to sleep, 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 press the Enable/Disable button to put the controller to sleep in order to prevent accidental gun triggering.
2. See Figure 4-7. Unscrew the nozzle nut counterclockwise.
3. Pull the flat spray nozzle off the electrode assembly.

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

4. 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.
6. Press the Enable/Disable button to wake up the controller.

**NOTE:** To clean nozzles, use the *Recommended Cleaning Procedure for Powder Contact Parts* on page 4-14.

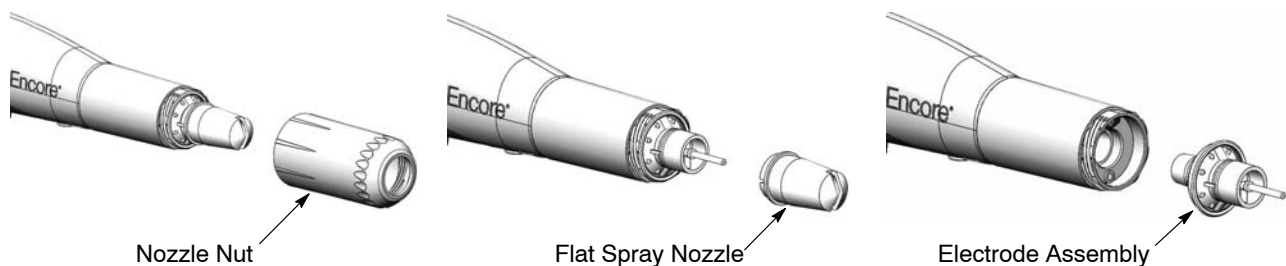


Figure 4-7 Changing a Flat Spray Nozzle

## Changing Conical Nozzles and Deflectors



**WARNING:** Release the spray gun trigger, put the controller to sleep, and ground the electrode before performing this procedure. Failure to observe this warning could result in a severe electrical shock.

**NOTE:** The electrode assembly shipped with the gun is fitted with a tapered electrode holder that will not accept a conical deflector and must be changed prior to using the conical nozzle and deflector. Follow the instructions in the conical nozzle kit shipped with the gun for this conversion.

1. Purge the spray gun and press the Enable/Disable button to put the controller to sleep in order to prevent accidental gun triggering.
2. See Figure 4-8. Gently pull the deflector off the electrode assembly. If only changing the deflector, install the new one on the electrode assembly, 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:** Re-install the electrode assembly if it comes out of the powder outlet tube.

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.
8. Press the Enable/Disable button to wake up the controller.

**NOTE:** To clean nozzles, use the *Recommended Cleaning Procedure for Powder Contact Parts* on page 4-14.

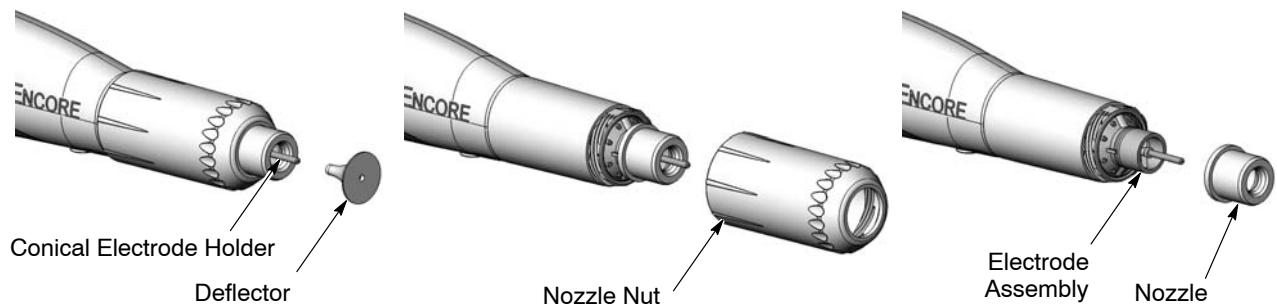


Figure 4-8 Changing a Conical Nozzle

## 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. See Figure 4-9. 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.

**NOTE:** To clean the pattern adjuster, use the *Recommended Cleaning Procedure for Powder Contact Parts* on page 4-14.

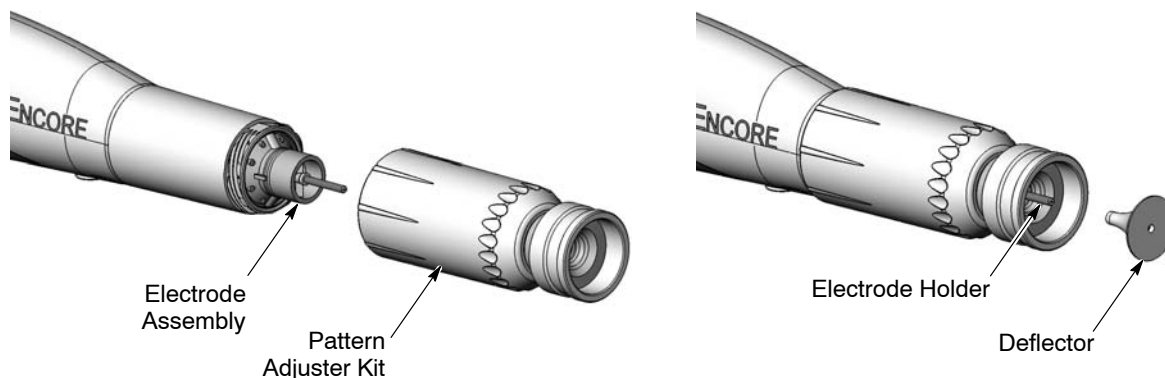


Figure 4-9 Pattern Adjuster Kit Installation

## Shutdown

1. Purge the spray gun by pressing the Purge button until no more powder is blown from the gun.
2. Press the Enable/Disable button to turn off the spray gun and put the controller to sleep.
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, disconnect power to the controller.
5. Perform the *Daily Maintenance* procedures on page 4-14.

## 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

Perform the *Shutdown* procedure before performing these procedures.

Component	Procedure
Pump (Daily)	<ol style="list-style-type: none"> <li>1. Disconnect the pump air hoses and remove the pump from the pickup tube.</li> <li>2. Disassemble the pump and clean all parts using low-pressure compressed air. If impact fusion is present on the parts, use the Recommended Cleaning Procedure for Powder Contact Parts to remove it.</li> <li>3. Replace any worn or damaged parts.</li> </ol> <p>Refer to the Encore Powder Pump manual for instructions and spare parts.</p>
Spray Gun (Daily)	<ol style="list-style-type: none"> <li>1. Point the spray gun into the booth and purge the spray gun.</li> <li>2. Shut off the system air supply and power.</li> <li>3. Disconnect the powder hose adapter and blow out the spray gun powder path.</li> <li>4. Disconnect the powder hose at the pump. Place the gun end of the hose inside the booth and blow out the hose from the pump end.</li> <li>5. Remove the nozzle and electrode assembly and clean them with low-pressure compressed air and clean cloths. If impact fusion is present on the nozzle parts, clean them using the <i>Recommended Cleaning Procedure for Powder Contact Parts</i> on page 4-14. Check the parts for wear and replace if necessary.</li> <li>6. Clean the gun face surface (where the electrode assembly attaches) with low pressure compressed air and a clean cloth.</li> <li>7. Blow off the gun and wipe it down with a clean cloth.</li> </ol>
Vibratory Box Feeder Pickup Tube (Daily)	Disconnect the fluidizing air tubing. Pull the pickup tube out of the powder box and move it into the booth. Blow powder off all outer and inner surfaces using low-pressure compressed air.
Controller (Daily)	Blow off the cart and controller with a blow gun. Wipe powder off the controller with a clean cloth.
System Air Filter (Periodically)	Check the system air filter. Drain the filter and change the filter element as needed. Refer to <i>Parts</i> for the replacement filter element part number.
System Grounds	<p>Daily: Make sure the system is securely connected to a true earth ground before spraying powder.</p> <p>Periodically: Check all system ground connections.</p>



## Section 5

# Troubleshooting



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



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

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

## Controller Faults

Problem	Possible Cause	Corrective Action
1. Trigger LED blinks, gun does not spray	Gun was triggered on when the controller was powered up or woken up	Release the trigger. Press the Enable/Disable button to put the controller to sleep, then press the button again to wake it up.
	Shorted trigger switch or cable	Check the gun cable and trigger switch.
2. KV/ $\mu$ A display blinks, no KV when gun is triggered	Gun is shorted	Check gun cable, cable extension, and gun power supply.

## General Troubleshooting Chart

Problem	Possible Cause	Corrective Action
<b>1. Uneven pattern, unsteady or inadequate powder flow</b>	Blockage in spray gun, powder hose, or pump	<ol style="list-style-type: none"> <li>1. Purge the spray gun. Remove and clean the nozzle and electrode assembly.</li> <li>2. Disconnect the powder hose from the spray gun. Blow out the spray gun with an air gun.</li> <li>3. Disconnect the powder hose from the pump and gun and blow out the hose. Replace the hose if it is clogged with powder.</li> <li>4. Disassemble and clean the pump.</li> <li>5. Disassemble the spray gun. Remove and clean the inlet and outlet tubes and elbow. Replace components as necessary.</li> </ol>
	Nozzle, deflector, or electrode assembly worn, affecting pattern	Remove and clean the nozzle, deflector, and electrode assembly. Replace worn parts as necessary. If excessive wear or impact fusion is a problem, reduce the flow and atomizing air.
	Damp powder	Check the powder supply, air filters, and dryer. Replace the powder supply if contaminated.
	Low atomizing or flow air pressure	Increase the atomizing and/or flow air flow.
	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.
<b>2. Voids in powder pattern</b>	Worn nozzle or deflector	Remove and inspect the nozzle or deflector. Replace worn parts.
	Plugged electrode assembly or powder path	Remove and clean the electrode assembly. Remove and clean the spray gun powder path (inlet tube, elbow, and outlet tube) if necessary.
Continued...		

Problem	Possible Cause	Corrective Action
<b>3. Loss of wrap, poor transfer efficiency</b>	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 as shown on page 5-6. If the electrode assembly is good, remove the gun power supply and check its resistance as shown on page 5-6.
	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.
<b>4. No kV output from the spray gun (kV=0), powder is spraying</b>	Damaged gun cable	Perform the <i>Gun Cable Continuity Checks</i> on page 5-7. If an open or short is found, replace the cable.
	Spray gun power supply shorted	Perform the <i>Power Supply Resistance Test</i> on page 5-6.
<b>5. No kV output from the spray gun (<math>\mu</math>A=0), powder is spraying</b>	Spray gun power supply open	Perform the <i>Power Supply Resistance Test</i> on page 5-6.
	Damaged gun cable	Perform the <i>Gun Cable Continuity Test</i> on page 5-7. If an open or short is found, replace the cable.
<b>6. No kV output and no powder output</b>	Malfunctioning trigger switch or cable	Check the trigger LED on the controller interface. If the LED is not lit, check the switch connection to the gun cable.  Perform the <i>Gun Cable Continuity Test</i> on page 5-7. If the cable and connections are good, replace the switch.
	Controller configured for automatic operation	Cycle controller power. If <b>A</b> appears on the kV/uA display, remove the main control board and move the JP1 jumper to the Manual position.
<b>7. Powder build up on the electrode tip</b>	Insufficient electrode air wash flow due to low input pressure or blockage in manifold orifice	Check input air pressure. Remove electrode air wash connector and check manifold orifice for blockage. Orifice size is .25–.3 mm. Clean with an appropriate tool.
Continued...		

Problem	Possible Cause	Corrective Action
8. No purge air when gun purge switch is pressed down	Malfunctioning spray gun trigger switch or cable, or controller manifold purge solenoid valve; no air pressure, or kinked air tubing	If the controller interface does not display <b>P</b> when the purge switch is pressed, the gun trigger switch may be defective.  Perform the <i>Gun Cable Continuity Test</i> on page 5-7. If the cable is good, replace the trigger switch.  If the interface displays <b>P</b> when the purge switch is pressed, check the purge air tubing and purge manifold solenoid valve.
9. Low powder flow or powder flow surging	Low supply air pressure	Input air must be greater than 4.1 bar (60 psi).
	Supply air filter plugged or filter bowl full—water contamination of controller	Remove the filter bowl and drain water/dirt. Replace the filter element if necessary. Clean the system, replace components as necessary.
	Flow air valve plugged	Remove the valve and check the manifold passages. If the manifold is clean, replace the valve.
	Air tubing kinked or plugged	Check the flow and atomizing air tubing for kinks.
	Pump throat worn	Replace the pump throat.
	Pump not assembled correctly	Check the pump.
	Pick-up tube blocked	Check for debris or bag (VBF units) blocking pick-up tube.
	Vibratory box feeder disabled (VBF units only)	Make sure the controller is configured for a VBF system. Refer to the <i>Setup</i> section.
	Fluidizing air too high	If fluidizing air is set too high the ratio of powder to air will 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 or kinked	Check for kinks in hose, blow out with compressed air.
	Powder hose too long or diameter too small	25-ft of 11-mm ID hose is shipped with the system. If using a longer hose, switch to 1/2 in. ID hose. Shorten the hose if necessary.
	Gun powder path plugged	Check the inlet tube, elbow, outlet tube, and electrode support for impact fusion or debris. Clean as necessary with compressed air.
	Flow and atomizing air tubing connections reversed	Check flow and atomizing air tubing routing and switch if incorrect.
Continued...		

Problem	Possible Cause	Corrective Action
<b>10. Vibrator doesn't turn On and Off with the gun trigger</b>	Controller configured for a hopper system	Make sure sure controller is configured for a VBF system. Refer to Configuration in the <i>Setup</i> section.
<b>11. VBF system—fluidizing air is on when the gun is triggered Off</b>	Controller configured for a hopper system	Make sure sure controller is configured for a VBF system. Refer to Configuration in the <i>Setup</i> section.
<b>12. No KV when gun is triggered On, powder flow OK</b>	KV set to zero	Set KV to a non-zero value.
<b>13. No powder flow when gun is triggered On, kV OK</b>	Flow Air or Total Flow set to zero	Change settings to a non-zero number.
	Input air turned OFF	Make sure air is being supplied to the controller.
<b>14. More than one key on the keypad quits working when pressed</b>	Flex connection from the keypad to the main board is not seated properly	<p>Loosen and re-seat the flex circuit on the main board, making sure the flex cable is fully inserted into the connector.</p> <p>To loosen the flex circuit, gently pull the black bar on the cable connector away from the white connector. This will allow you to adjust the flex cable to ensure proper seating. The cable should be inserted past the white line marked towards the end of the cable.</p> <p>Push the black bar back into the white connector to secure.</p>

## 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 280–320 megohms. If the reading is infinite, switch the meter probes. If the resistance falls outside this range, replace the power supply.

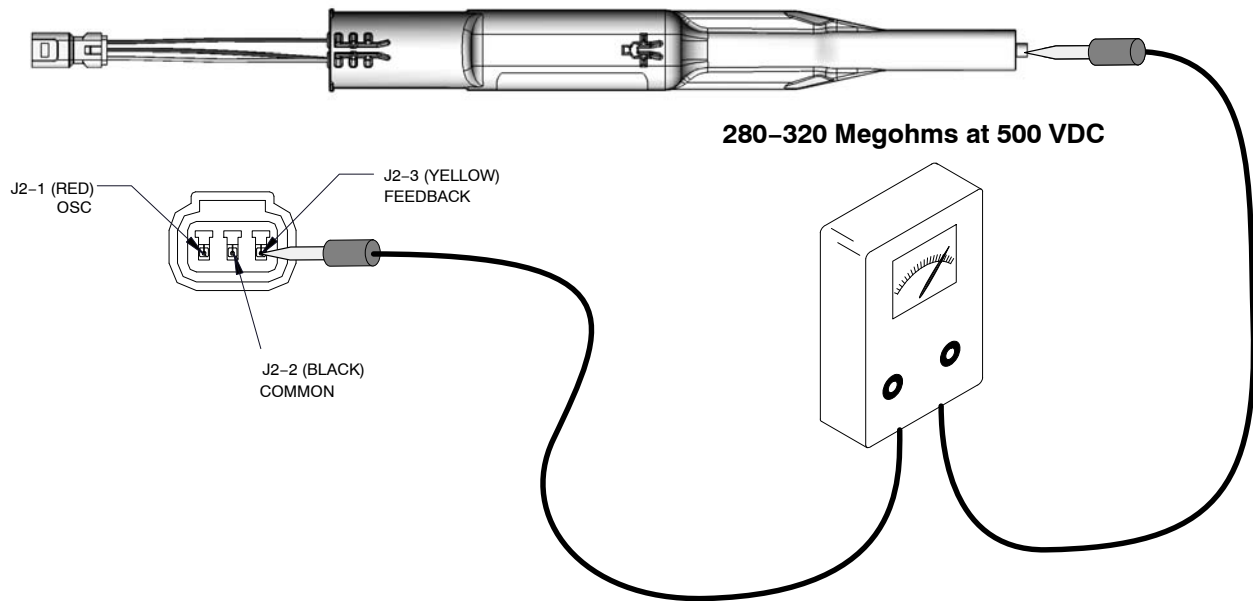


Figure 5-10 Power Supply Resistance Test

## 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 19–21 megohms. If the resistance is out of this range replace the electrode assembly.

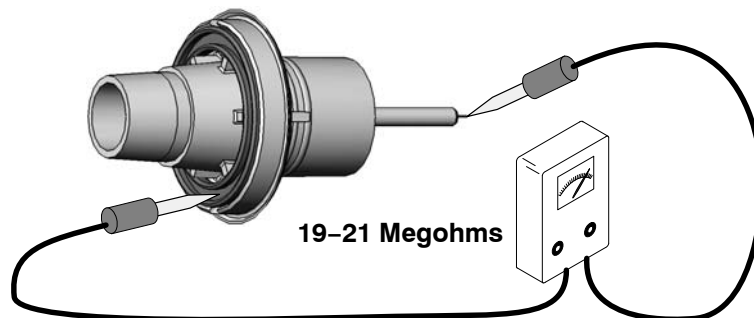


Figure 5-11 Electrode Assembly Resistance Test



# Gun Cable Continuity Test

Test for continuity as follows:

- J1-1 and J3-2
- J1-2 and J2-2, J3-5
- J1-3 and J2-1
- J1-4 and J3-4
- J1-5 and J2-3
- J1-6 and J3-3, ground terminal

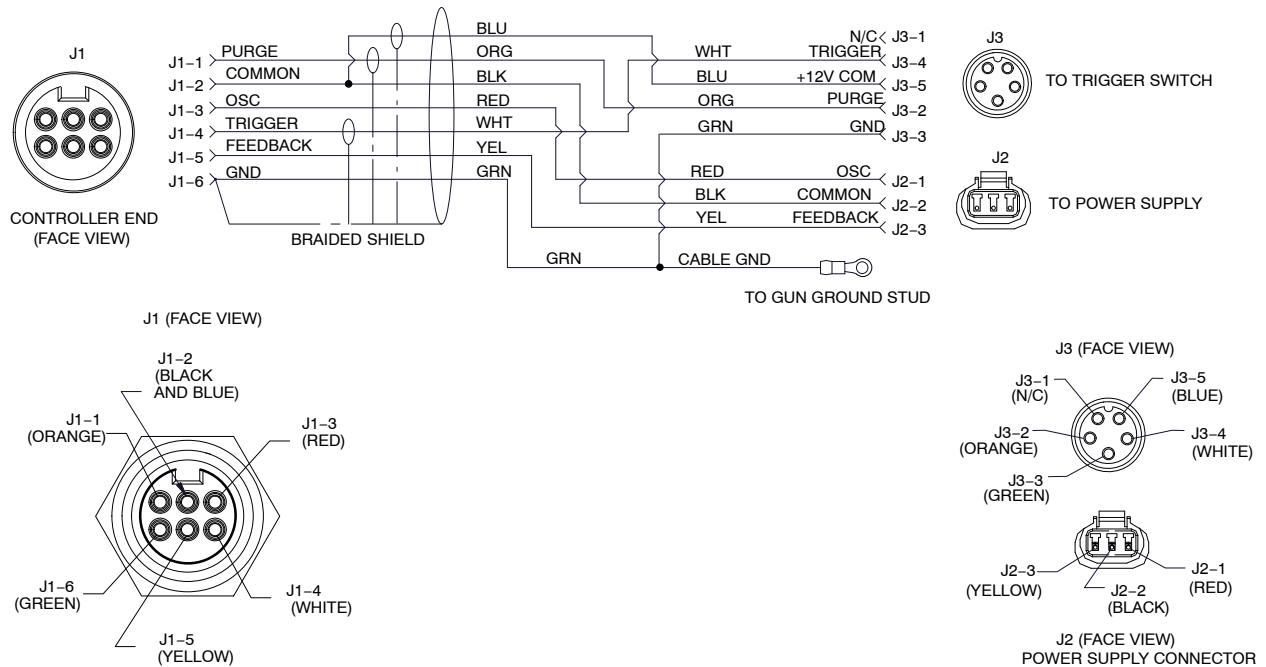


Figure 5-12 Gun Cable Wiring



## Section 6

# Repair



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

## Spray Gun Repair

**NOTE:** All item numbers in the spray gun repair illustrations are the same as the item numbers in the spray gun parts list.

### Power Supply and Powder Path Replacement

#### Gun Disassembly

1. See Figure 6-1. Remove the nozzle nut, nozzle, and electrode assembly (1, 2, 3).
2. Remove the screws (11, 12) and hook, cover, and housing (8, 9, 10).
3. Pull the power supply harness out of the bulkhead, then insert a small flat-bladed screwdriver into the recess in the harness connector to release the catch. Disconnect the gun cable from the power supply harness.

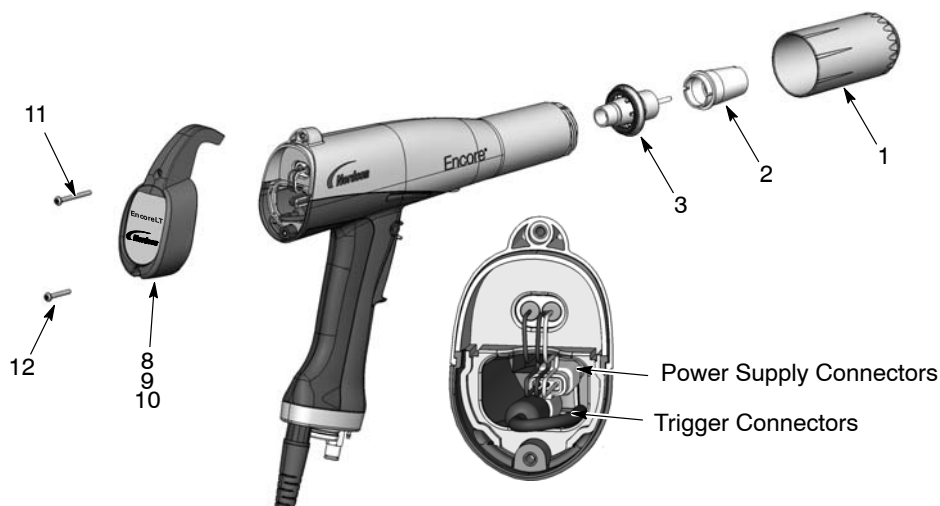


Figure 6-1 Gun Disassembly

- |                       |            |                   |
|-----------------------|------------|-------------------|
| 1. Nozzle nut         | 8. Cover   | 11. M3 x 30 screw |
| 2. Nozzle             | 9. Housing | 12. M3 x 20 screw |
| 3. Electrode assembly | 10. Hook   |                   |

### Gun Disassembly (contd)

4. See Figure 6-2. Remove the black nylon screw (22) 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 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.

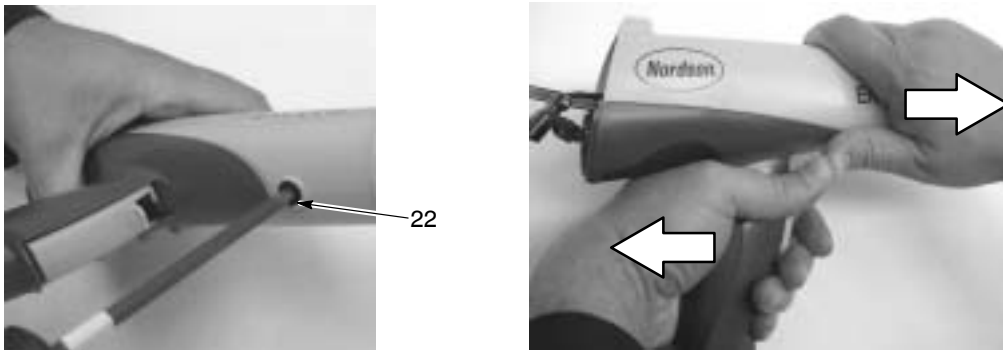


Figure 6-2 Removing the Gun Body from the Handle

### Power Supply Replacement

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

1. Slide the power supply (5) out of the gun body.
2. Check the gasket (6) on the back of the bulkhead (7). Replace it if it is damaged. The gasket is stuck to the bulkhead with pressure-sensitive adhesive.

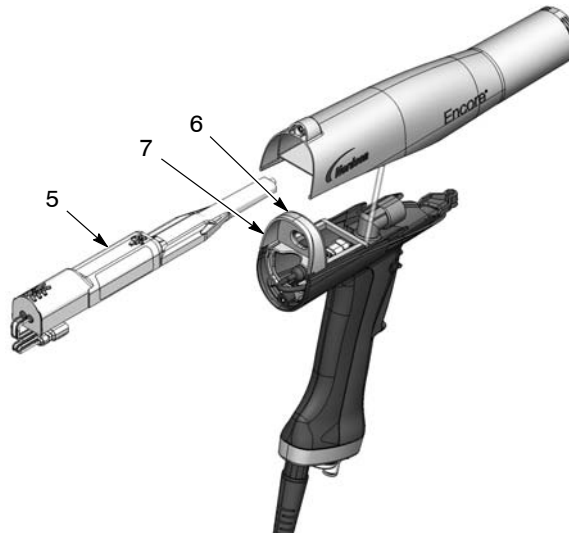


Figure 6-3 Removing the Power Supply from the Gun Body

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 Replacement

**NOTE:** Skip these steps if not replacing the powder path. Go to page 6-4 to reassemble the spray gun.

1. See Figure 6-4. Remove the elbow (18) from the inlet tube (25).
2. Remove the two M3 x 20 screws (12) from the handle base (27). Pull the base away from the handle, swinging the bottom of the ground pad (15) up and away from the handle, then remove it. Leave the ground wire connected to the ground pad.
3. Push the inlet tube (25) up and out of the base, then move the base out of the way and pull the inlet tube out of the handle.
4. Push the outlet tube (4) out of the front of the gun body (13).
5. 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.

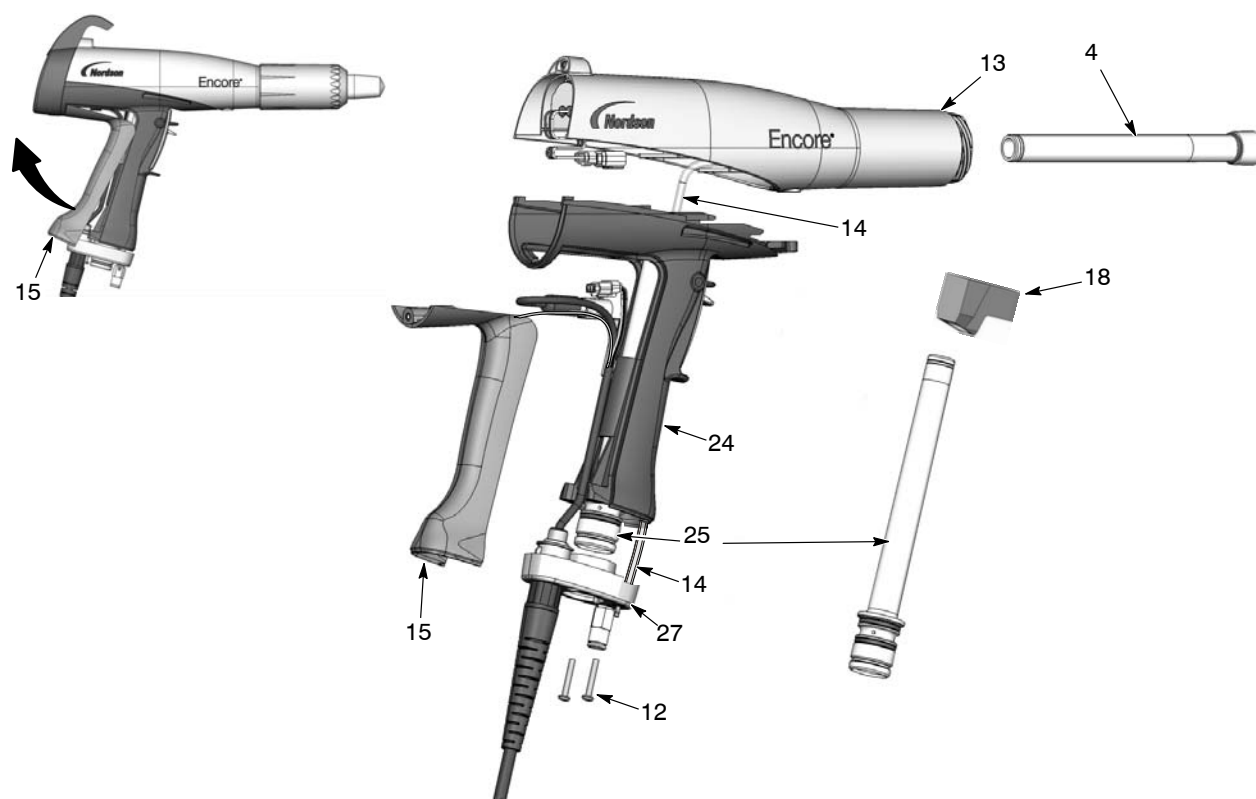


Figure 6-4 Powder Path Replacement

- 4. Outlet tube
- 12. M3 x 20 screws
- 13. Gun body

- 14. Air wash tubing
- 15. Ground pad
- 18. Elbow

- 24. Handle
- 25. Inlet tube
- 27. Handle base

### Powder Path Installation

1. See Figure 6-4. Install the outlet tube (4) into the gun body (13), with the end of the tube flush with the end of the gun.
2. Install the inlet tube (25) into the handle (24), then install the end of the tube into the handle base (27).
3. Push the handle base close to the handle, then hook the top end of the ground pad (15) 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 (12).
5. Install the elbow onto the inlet tube, with the end oriented toward the front of the gun as shown.

### Gun Re-Assembly

1. See Figure 6-5. 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.

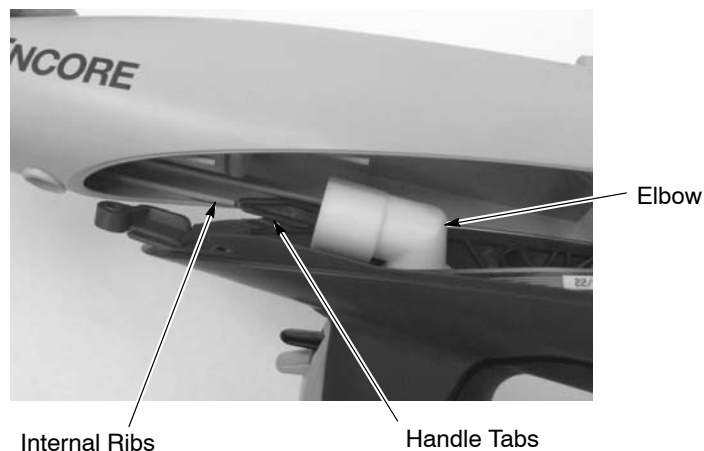


Figure 6-5 Installing the Gun Body on the Handle

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 6-1. Install the cover, housing, and hook as shown.
5. Install the electrode assembly (3) into the front of the gun body. Make sure the wire electrode is not bent or broken.
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 6-1. Remove the bottom screw (12) from the housing (9).
3. See Figure 6-6, View A. Loosen the two M3 x 20 screws (12) securing the handle base (27) to the handle.
4. Pull the base away from the handle enough to free the bottom edge of the ground pad (15) from the base.
5. Pull the bottom edge of the ground pad out and away from the handle.
6. See Figure 6-6, View B. Remove the M3 x 8 screw, lock washer (16, 17), and ground terminal from the ground pad.
7. Remove the E-ring (30) from the cable.
8. See Figure 6-6, View C. Pull the cable connectors out of the handle. Disconnect the power supply harness from the gun cable by inserting a small flat-bladed screw driver in the slot of the power supply harness connector to release the catch.
9. Carefully disconnect the round trigger connector from the trigger switch connector.
10. Pull the cable out of the handle base, feeding the connectors through the base one at a time.

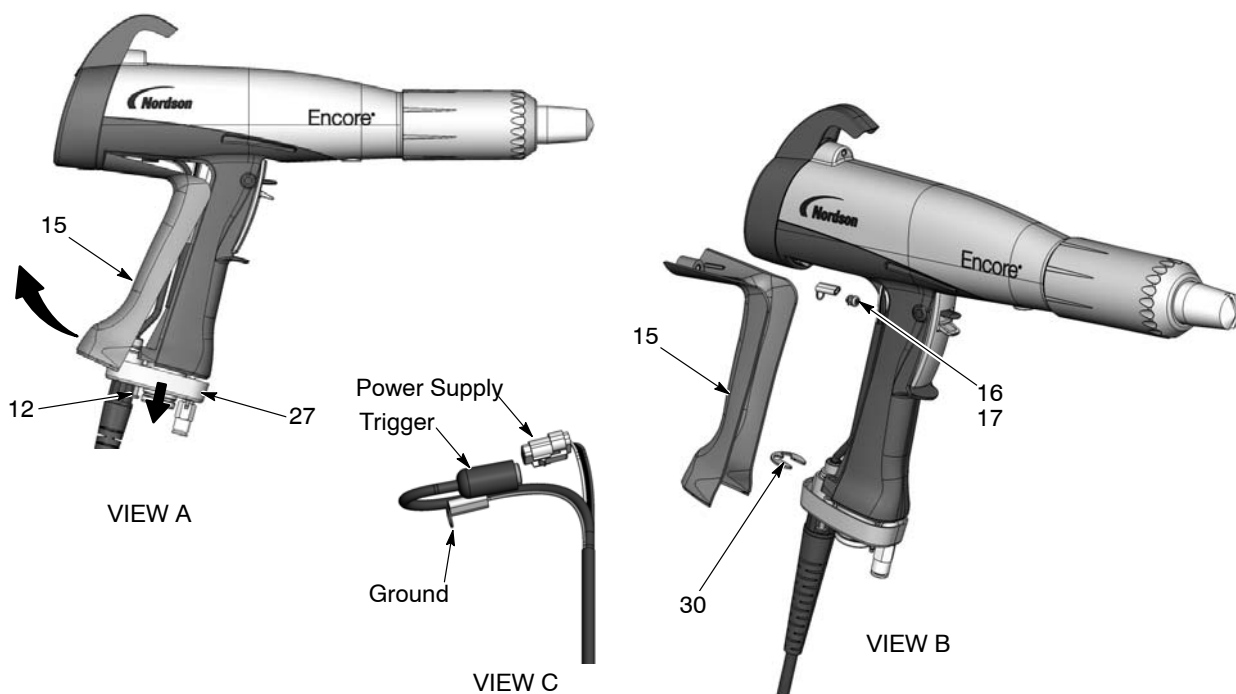


Figure 6-6 Cable Replacement

- 12. M3 x 20 screws
- 15. Ground pad

- 16. M3 x 6 screw
- 17. Lock washer

- 27. Handle base
- 30. E-ring

### Cable Installation

1. See Figure 6-6. Feed a new cable through the handle base, then install the E-ring (30) on the cable to hold it in place.
2. Connect the cable to the trigger switch and power supply.
3. Connect the cable terminal to the ground pad (15) with the M3 x 6 screw and lock washer (16, 17).
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 (27) up against the handle and ground pad, and tighten securely the two M3 x 20 screws (12) in the base.
7. See Figure 6-1. Install the bottom M3 x 20 screw (12) in the housing (9) and tighten it securely.

## Trigger Switch Replacement

### Switch Removal

1. See Figure 6-6. Remove the ground pad as described in *Cable Removal* steps 1–5. You do not have to disconnect the ground cable from the ground pad.
2. Pull out the round trigger connectors out of the handle and disconnect them.
3. See Figure 6-7. Place the spray gun on a solid surface so the small diameter end of the trigger axle (20A) is oriented upward.
4. Using a small, flat-ended punch or Allen key, apply light downward pressure to the small diameter end of the trigger axle (20A) and lightly tap to remove.
5. Remove the spray trigger (20), actuator (21, not shown), and purge trigger (19) from the handle.

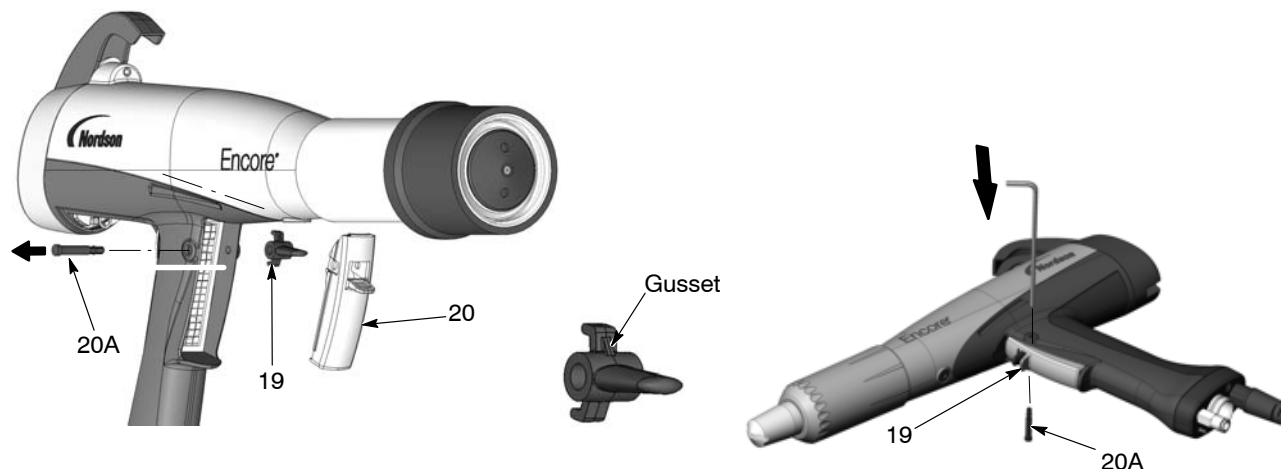


Figure 6-7 Removing the Axle and Trigger from the Handle



6. See Figure 6-8. Insert a small flat-bladed screwdriver behind the clear pull tab at the top of the switch, then grasp the pull tab with a finger and gently pull it away from the handle.



Figure 6-8 Removing the Trigger Switch from the Handle

7. To remove the switch, cut the ribbon cable, or feed the bottom of the switch through the slot in the trigger recess and remove it from the handle.

### Switch Installation

1. See Figure 6-9. Orient the new switch with the grid facing away from the inlet tube, then carefully feed the square, bottom end of the switch (23) around the left side of the inlet tube (25) and through the slot in the trigger recess.
2. Peel off the small piece of tape holding the ribbon cable against switch.

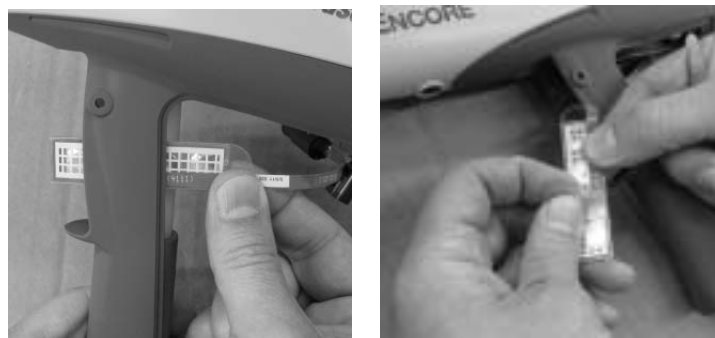


Figure 6-9 Installing the Trigger Switch – Steps 1 and 2

3. See Figure 6-10. Straighten the ribbon cable, then bend the pull tab at the top of the switch so that it is perpendicular to the switch.

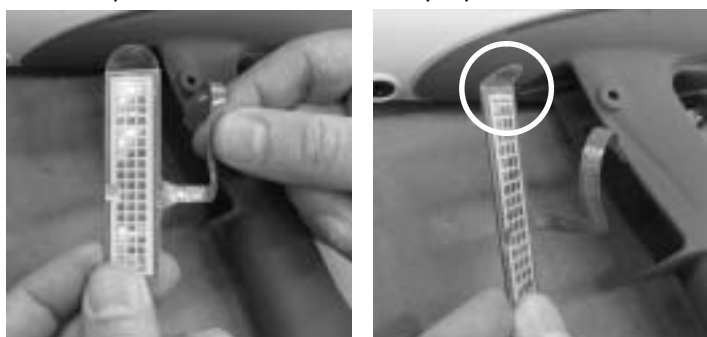


Figure 6-10 Installing the Trigger Switch – Step 3

**Switch Installation** (contd)

4. See Figure 6-11. Peel the adhesive release liner from the switch.
5. Carefully install the switch, pull tab up, against the bottom and right edges of the trigger recess.
6. Make sure the ribbon cable is not trapped or pinched, then press 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.

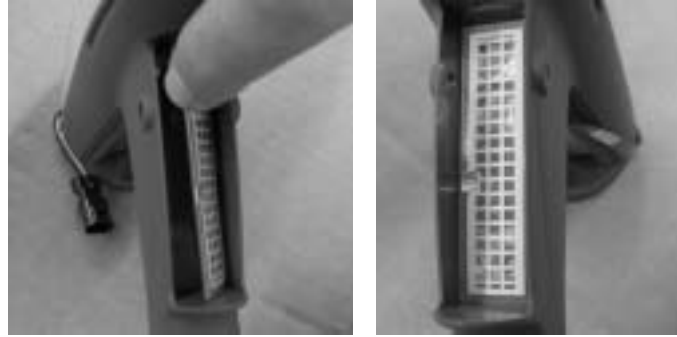


Figure 6-11 Installing the Trigger Switch – Step 4

7. See Figure 6-12. Install the purge trigger (19) into the spray trigger (20) with the gusset oriented upward as shown. **Do not install the purge trigger upside down.**
8. Verify that the actuator (21) is installed over the post.
9. Position the triggers in the handle and hold them in place while pressing the axle (20A) through the handle and triggers until the head of the axle is flushed with the handle. The axle will snap into place when properly installed.

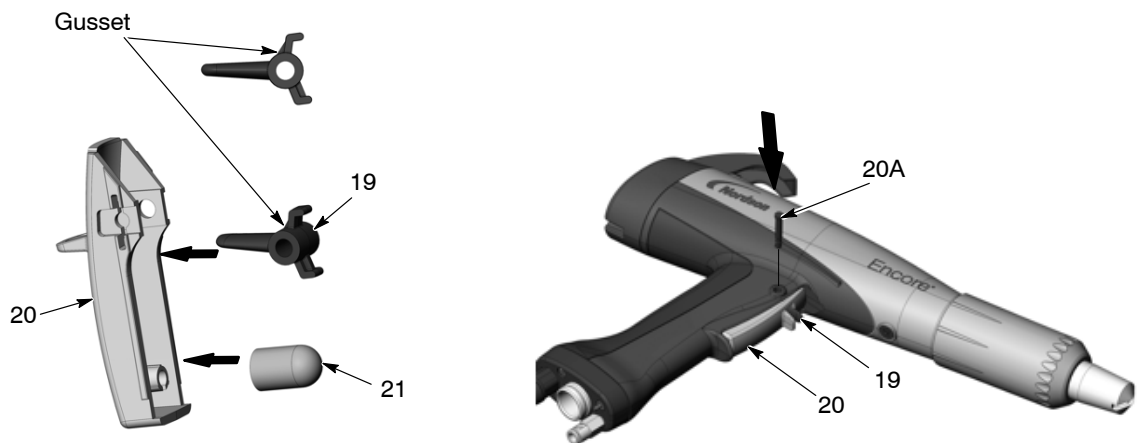


Figure 6-12 Reinstalling the Trigger and Axle

10. Reconnect the trigger switch connector to the round cable connector, then tuck the connectors back up to the handle.
11. Reinstall the ground cover as described in *Cable Installation* steps 5–7 on page 6-6.

## Controller Repair



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



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

### Front Panel Components

Refer to *Section 5, Troubleshooting*, for the controller electrical schematic and harness connections. Refer to *Section 7, Parts* for repair kits.

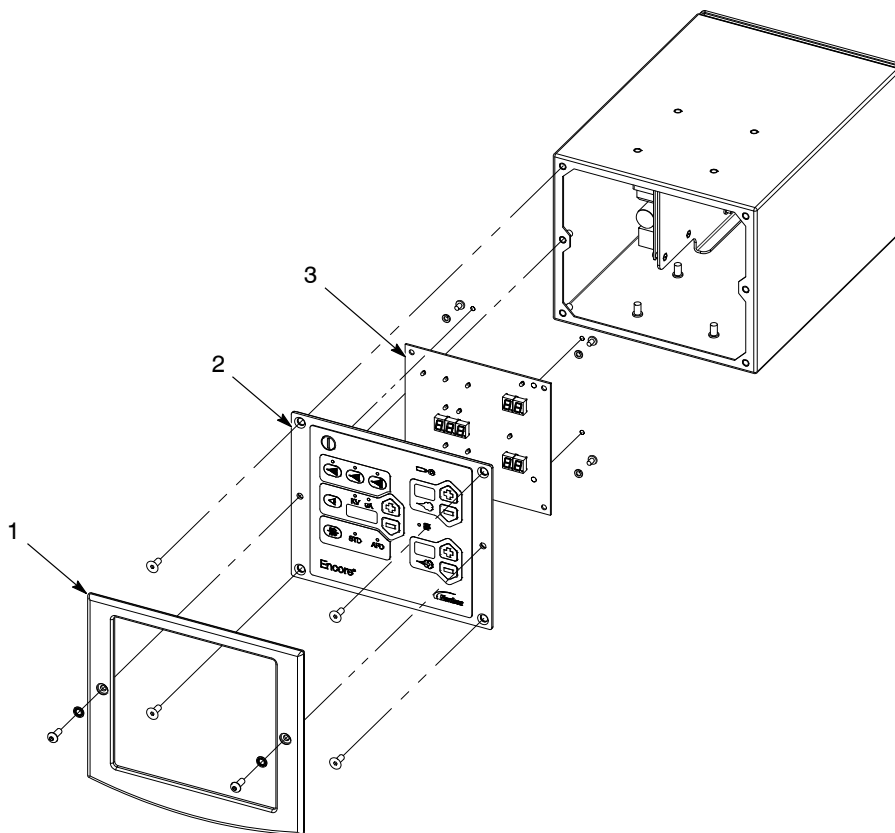


Figure 6-13 Controller Front Panel

1. Bezel

2. Keypad

3. Main control board

## Rear Panel Components

Figure 6-14 is an exploded view of the components of the rear panel. Refer to the following when making repairs:

- *Section 7, Parts* for parts and service kits.
- *Section 5, Troubleshooting*, for wiring diagrams and circuit board connections.

**NOTE:** If replacing the relay board (2), JP1 must be jumped for a 115V vibrator motor. For a 230V vibrator motor, remove the jumper.

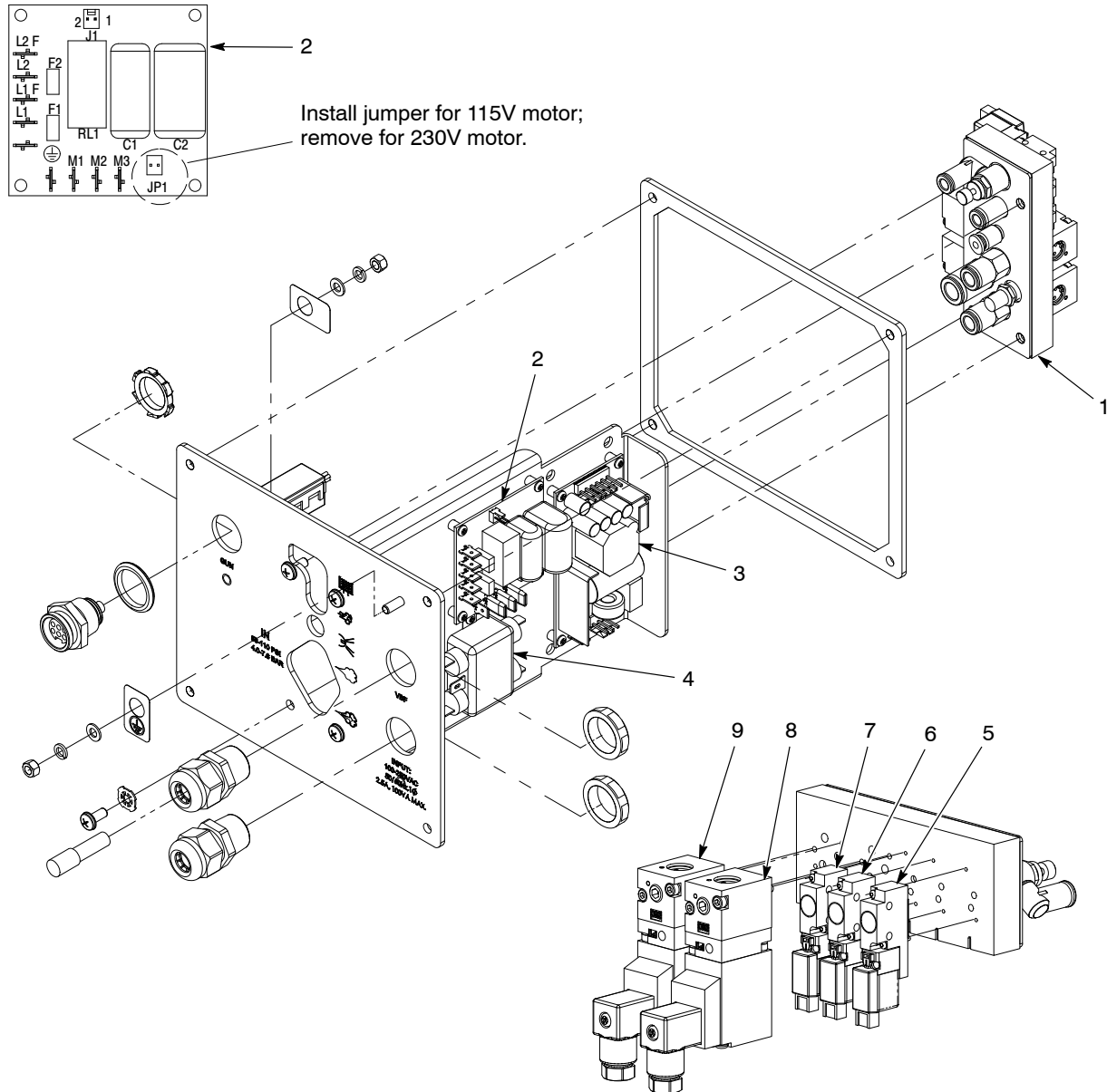


Figure 6-14 Sub Panel Parts Replacement

- |                      |                                  |                                |
|----------------------|----------------------------------|--------------------------------|
| 1. Manifold assembly | 4. Line filter                   | 7. Air wash air solenoid valve |
| 2. Relay board       | 5. Fluidizing air solenoid valve | 8. Flow-rate air regulator     |
| 3. Power supply      | 6. Purge air solenoid valve      | 9. Atomizing air regulator     |

## Vibrator Motor Replacement

When replacing the motor, make sure you order the correct motor for your voltage. Vibrator motors include the power cable.

1. Remove the front panel from the dolly tower, then dismount the controller.
2. Remove the screws securing the rear panel to the controller enclosure, then carefully slide the rear panel out of the enclosure.
3. Disconnect the vibrator motor cable from the relay board, then loosen the cord grip and pull the cable out of the panel.
4. Route the new motor cable through the cord grip, then connect the cable leads to the relay board as shown below. Make sure the relay board jumper is set for the correct voltage.

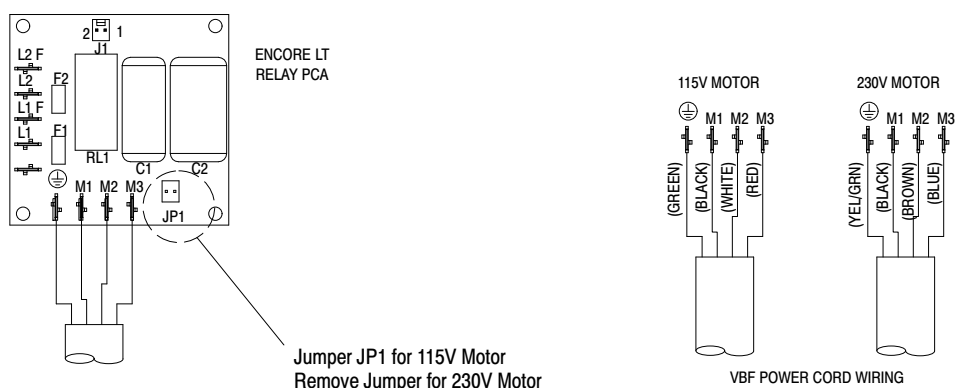


Figure 6-15 Vibrator Motor Connections



## Section 7

# Parts

## Introduction

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

This section covers parts for the Encore LT spray gun, controller, system components and parts, powder and air tubing, and options.

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

**Encore LT Manual System Operator Card:** 1108213  
**Encore Generation II Powder Feed Pump:** 1095927  
**Encore 150, 300, 450, and 600-mm Lance Extensions:** 1606796  
**Pattern Adjuster Kit for Lance Extensions:** 1100013  
**Pattern Adjuster Kit for Encore Manual Spray Guns:** 10984490

These manuals can be downloaded from:  
<http://emanuals.nordson.com/finishing/>  
 (click on Powder-US, then Encore Systems)

## System Part Numbers

Use these part numbers to order complete systems.

Part	Description	Note
1107897	SYSTEM, dolly with vibratory box feeder, 115 V, VBF, Encore LT	
1107898	SYSTEM, dolly with vibratory box feeder, 220 V, VBF, Encore LT	
1107901	SYSTEM, dolly with hopper, 50 lb, Encore LT	
1108212	SYSTEM, rail mount, Encore LT	
1609080	SYSTEM, rail mount, Encore LT, inline	
1600438	SYSTEM, wall mount, Encore LT	
1609081	SYSTEM, wall mount, Encore LT, inline	

## Spray Gun Parts

See Figure 7-1 and the parts list on the following pages.

## Spray Gun Parts Illustration

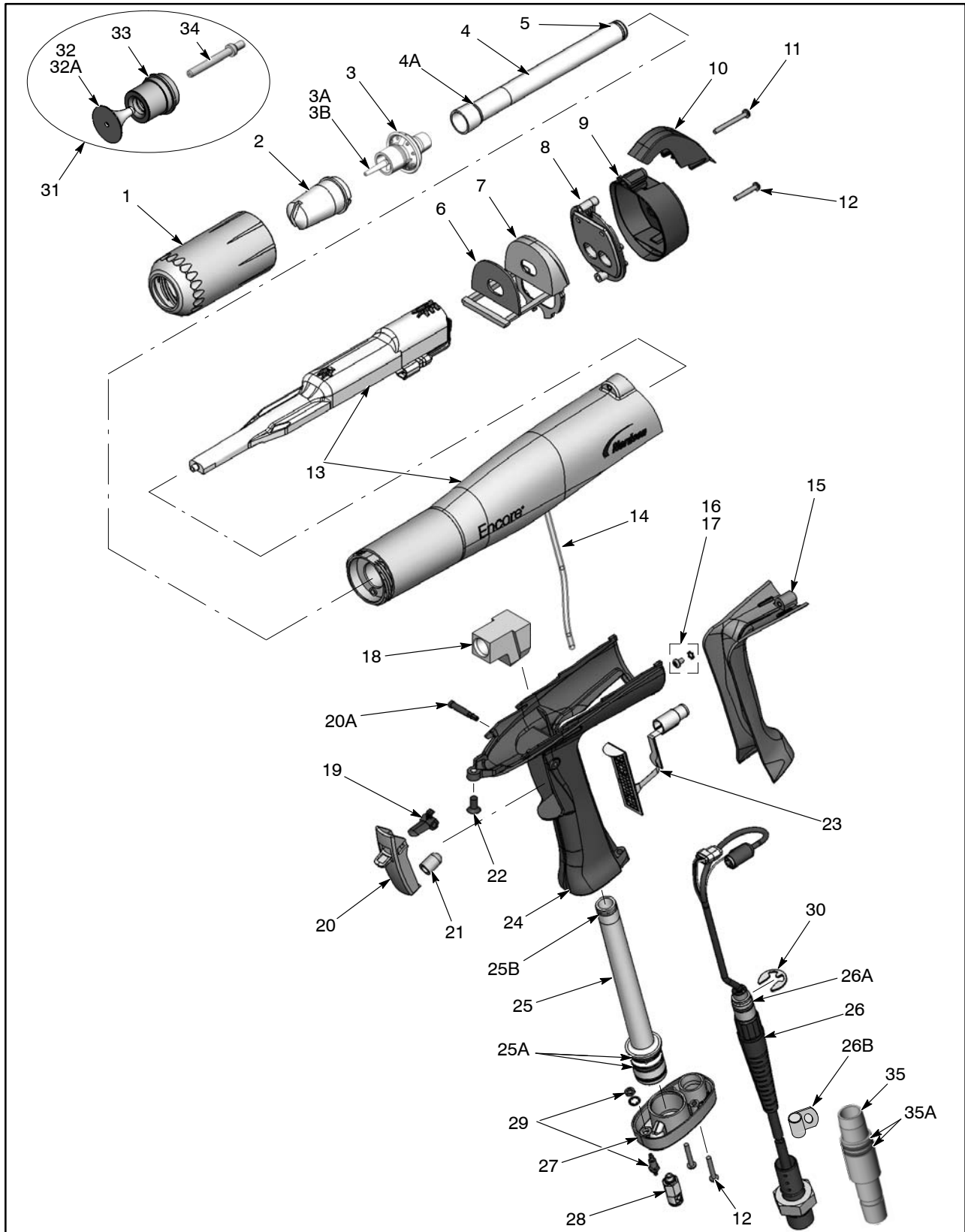


Figure 7-1 Exploded View of Encore LT Manual Spray Gun and Accessories



## Spray Gun Parts List

See Figure 7-1.

Item	Part	Description	Quantity	Note
–	1106893	HANDGUN assembly, Encore LT	1	
1	1081638	• NUT, nozzle, handgun	1	
2	1081658	• NOZZLE, flat spray, 4 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	1085024	• KIT, powder outlet tube, Encore	1	D
4A	941113	• • O-RING, silicone, 0.438 x 0.625 x 0.094 in.	1	
5	1081785	• • O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
6	1088502	• GASKET, multiplier cover, handgun	1	
7	1106872	• BULKHEAD, multiplier, handgun, Encore LT/XT	1	
8	1087559	• COVER, housing, Encore	1	
9	1087558	• HOUSING, gun, Encore	1	
10	1087760	• HOOK, handgun	1	
11	1078075	• SCREW, pan head, recessed, M3 x 30, zinc	1	
12	760580	• SCREW, Philips head, M3 x 20, zinc	3	
13	1608280	• KIT, negative power supply/manual body, Encore	1	G
14	1088558	• • FILTER ASSEMBLY, handgun	1	
15	1106871	• HANDLE, ground pad, handgun, Encore LT/XT	1	
16	983520	• WASHER, lock, internal, M3, zinc	1	
17	982427	• MACHINE SCREW, pan head, recessed, M3 x 6, zinc	1	
18	1096695	• ELBOW, powder tube, handgun	1	D
19	1081540	• TRIGGER, purge, setting, handgun	1	
20	1606999	• KIT, trigger w/ axle, Encore	1	
20A	– – – – –	• • AXLE, trigger, solid, spray gun, Encore	1	
21	1106892	• • ACTUATOR, switch, trigger, Encore LT/XT	1	
22	1088601	• SCREW, flat head, recess, M5x 10, nylon	1	
23	1108095	• KIT, trigger switch, Encore LT	1	
24	1106870	• HANDLE, handgun, Encore LT/XT	1	
25	1085026	• KIT, powder inlet tube, Encore	1	
25A	1084773	• • O-RING, silicone, 18 mm ID x 2 mm wide	2	
25B	1081785	• • O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
26	1106756	• CABLE ASSEMBLY, spray gun, manual, Encore LT, 6 meter	1	E
26A	940129	• • O-RING, silicone, conductive, 0.375 x 0.50in.	1	
26B	1604500	• • CLAMP, cable, 0.25 ID x 0.05 thick, white	1	
27	1087762	• BASE, handle, handgun	1	
28	1081617	• CHECK VALVE, male, M5 x 6 mm	1	
29	1081616	• FITTING, bulkhead, barb, dual, 10–32 x 4 mm	1	
30	1081777	• RETAINING RING, external, 10 mm	1	
31	1604828	• KIT, conical nozzle, Encore		
32	1083206	• • DEFLECTOR ASSEMBLY, conical, 26 mm	1	A

Item	Part	Description	Quantity	Note
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	
35	1106200	• KIT, hose adapter, hose, handgun, Encore	1	
35A	940157	• • O-RING, Viton, black, 0.563 x 0.688, 10415	2	
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, $\frac{3}{8}$ in. ID	AR	C
<p>NOTE A: 4-mm flat spray nozzle, conical nozzle and 26 mm deflector are shipped with the spray gun. Refer to the following pages for optional nozzles.</p> <p>B: This O-ring is a component of all deflectors.</p> <p>C: Order in increments of one foot or one meter.</p> <p>D: Also available in wear resistant material. Refer to Spray Gun Options.</p> <p>E: Optional 6 meter extension available, refer to Spray Gun Options.</p> <p>F: For flat spray nozzle use only. Use kit item 31 to convert for conical nozzle and deflector use.</p> <p>G: Application Specific: Order part number 1609053 if a positive power supply is needed. The positive power supply is sold separately from the gun body (1088506).</p> <p>AR: As Required</p> <p>NS: Not Shown</p>				

## Spray Gun Options

### Miscellaneous Spray Gun Options

See Figure 7-1.

Item	Part	Description	Quantity	Note
4	1096698	KIT, powder outlet tube, wear resistant	1	
4A	941113	• O-RING, silicone, 0.438 x 0.625 x 0.094 in.	1	
4B	1081785	• O-RING, silicone, 0.468 x 0.568 x 0.05 in.	1	
18	1096696	ELBOW, powder tube, Encore, impact resistant	1	
NS	1100012	KIT, pattern adjuster, Encore lance extensions	1	A
NS	1085168	CABLE, 6 meter extension, shielded, Encore manual	1	
NS	1100777	KIT, cup gun, Encore	1	B
<p>NOTE A: This pattern adjuster kit is only for use with a lance extension. See page 7-8 for the standard pattern adjuster kit.</p> <p>B: Refer to the instruction sheet 1102764 shipped with the kit for instructions.</p> <p>NS: Not Shown</p>				

## Flat Spray Nozzles

The 4-mm flat spray nozzle is shipped with the spray gun. All other flat spray nozzles are optional.

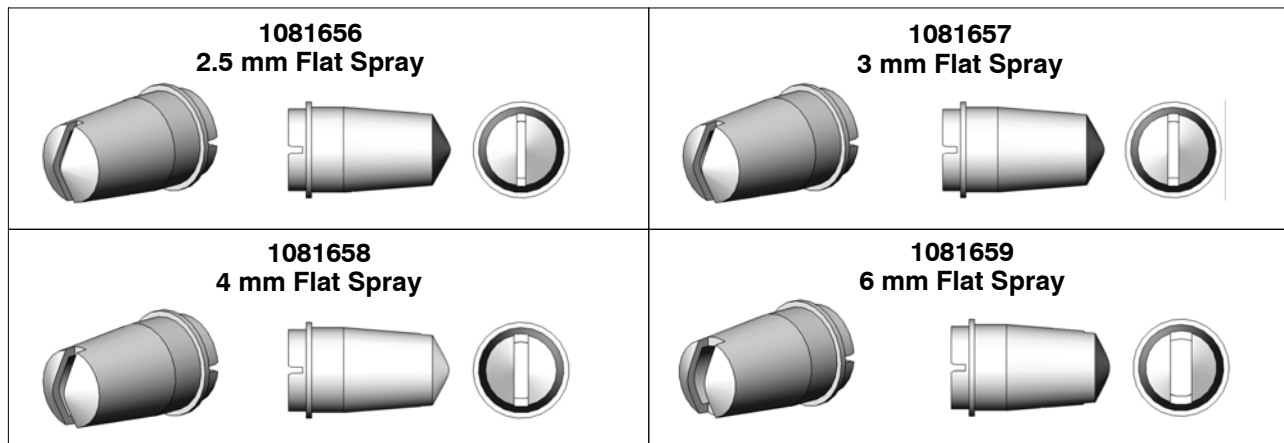


Figure 7-2 Flat Spray Nozzles

## Cross-Cut Nozzles

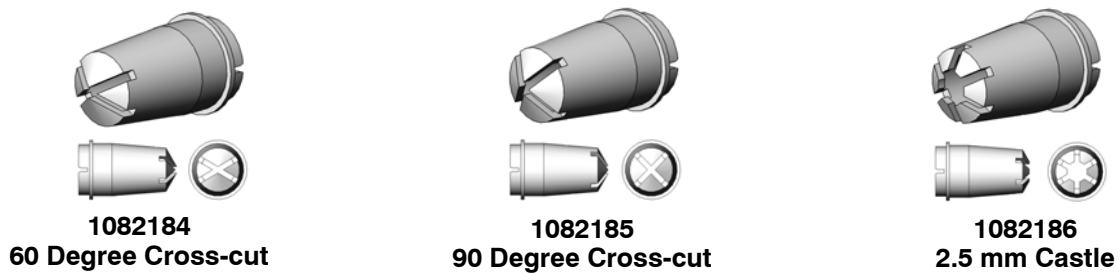


Figure 7-3 Cross-cut Nozzles

### 45-Degree Corner-Spray Nozzle

See Figure 7-4.

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

Part	Description	Note
1102872	NOZZLE, corner spray, Encore	

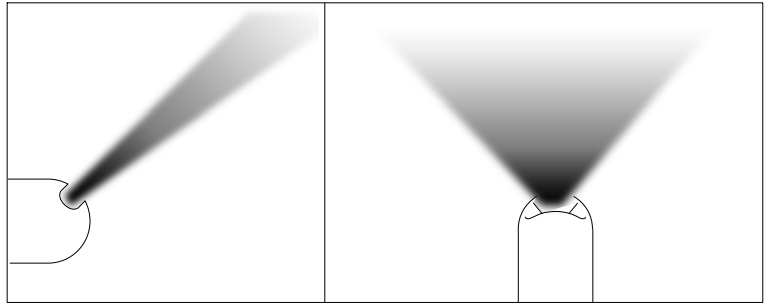


Figure 7-4 45-Degree Corner Spray Nozzle

### 45-Degree In-Line Flat-Spray Nozzle

See Figure 7-5.

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

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

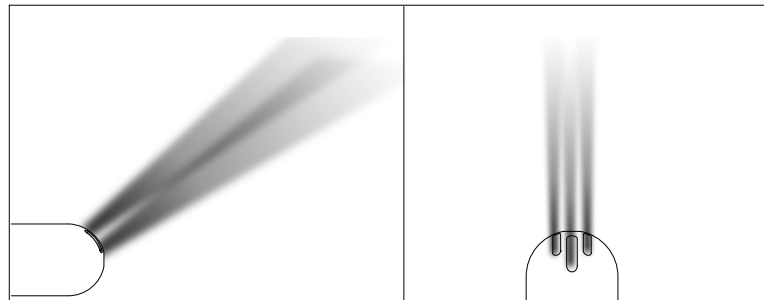


Figure 7-5 45-Degree Flat Spray Nozzle

## Conical Nozzle, Deflectors and Electrode Assembly Parts

See Figures 7-6, 7-7, and 7-8. The conical nozzle and deflectors must be used with the conical electrode holder. A conical nozzle kit is shipped with the gun. All other parts are optional and must be ordered separately.

### Conical Nozzle and Deflectors



All deflectors include a 1098306 O-ring, Viton, 3 mm x 1.1 mm wide

Figure 7-6 Conical Nozzle and Deflectors

### Conical Nozzle Kit

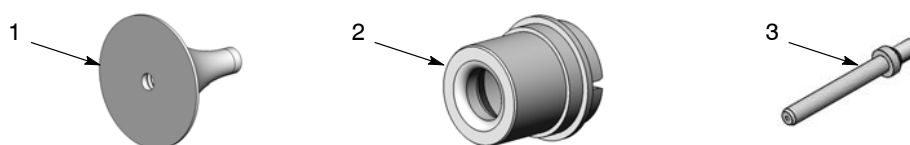


Figure 7-7 Conical Nozzle Kit

Item	Part	Description	Quantity	Note
—	1604828	KIT, conical nozzle, Encore	1	
1	1083206	• DEFLECTOR, 26 mm	1	
2	1082060	• NOZZLE, conical	1	
3	1605861	• ELECTRODE HOLDER, Conical	1	

### Conical Electrode Assembly

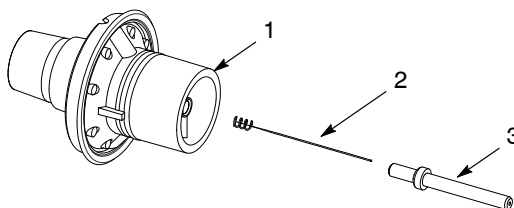
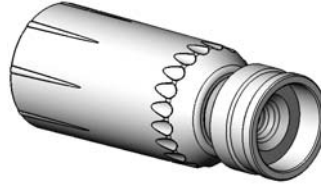


Figure 7-8 Conical Electrode Assembly

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	

## 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; they must be ordered separately.



**1098417**  
**Kit, Pattern Adjuster, Manual Gun, Encore**

Figure 7-9 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.

Part	Description	Note
1609888	EXTENSION, lance, 150 mm, Encore	
1609889	EXTENSION, lance, 300 mm, Encore	
1609896	EXTENSION, lance, 450 mm, Encore	
1609897	EXTENSION, lance, 600 mm, Encore	

**NOTE:** The electrode support/holder for use with conical nozzles and deflectors must be used with a lance extension.

## Pattern Adjuster Kit for Lance Extensions

Use this pattern adjuster with the lance extensions listed above and 16, 19, and 26-mm conical nozzle deflectors listed on the preceding pages. Refer to the instruction sheet shipped with the pattern adjuster for installation instructions and repair parts.

Part	Description	Note
1100012	KIT, pattern adjuster, Encore lance extension.	

## ***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.

Item	Part	Description	Quantity	Note
—	1603854	KIT, ion collector assembly, manual, Encore (std length gun)	1	

## ***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
—	1603939	BRACKET, lance extension, ion collector, Encore	1	A, B
NOTE A: Use for 150-mm lance extension. B: Use for 300-mm lance extension.				

## Controller Parts

### *Front Panel and Internal Cabinet Ground Parts Illustration*

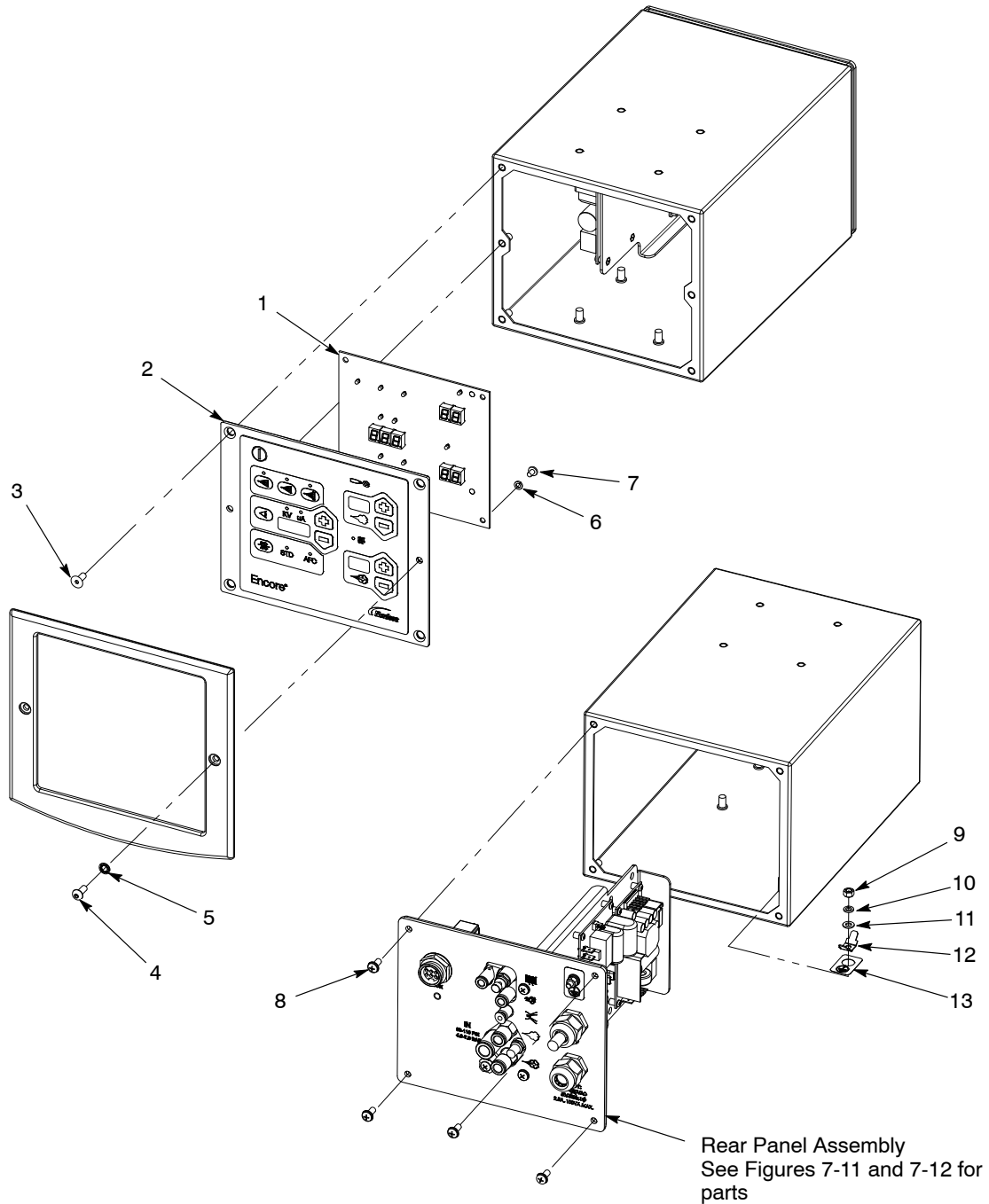


Figure 7-10 Controller Parts



## Front Panel and Internal Cabinet Ground Parts List

Refer to Figure 7-10.

Item	Part	Description	Quantity	Note
–	1107552	CONTROLLER ASSY, manual, Encore LT, packaged	1	
1	1108279	• KIT, PCA, control, Encore LT	1	
2	1108312	• PANEL, keypad, Encore LT/auto controller, packaged	1	
3	982916	• SCREW, flat, socket, M5 x 10, black	4	
4	982636	• SCREW, button, socket, M5 x 12, zinc	2	
5	983127	• WASHER, lock, internal, M5, zinc	2	
6	983403	• WASHER, lock, split, M4, steel, zinc	4	
7	982881	• SCREW, pan head, recessed, M4 x 6, zinc	2	
8	1045837	• SCREW, pan head, recessed, M5 x 12 w/lockwasher, black	2	
9	984702	• NUT, hex, M5, brass	1	
10	983401	• WASHER, lock, split, M5, steel, zinc	1	
11	983021	• WASHER, flat, 0.203 x 0.406 x 0.040, brass	1	
12	933469	• LUG, 90, double, 0.250, 0.438 in.	1	
13	240674	• TAG, ground	1	

## Rear Panel Parts Illustration

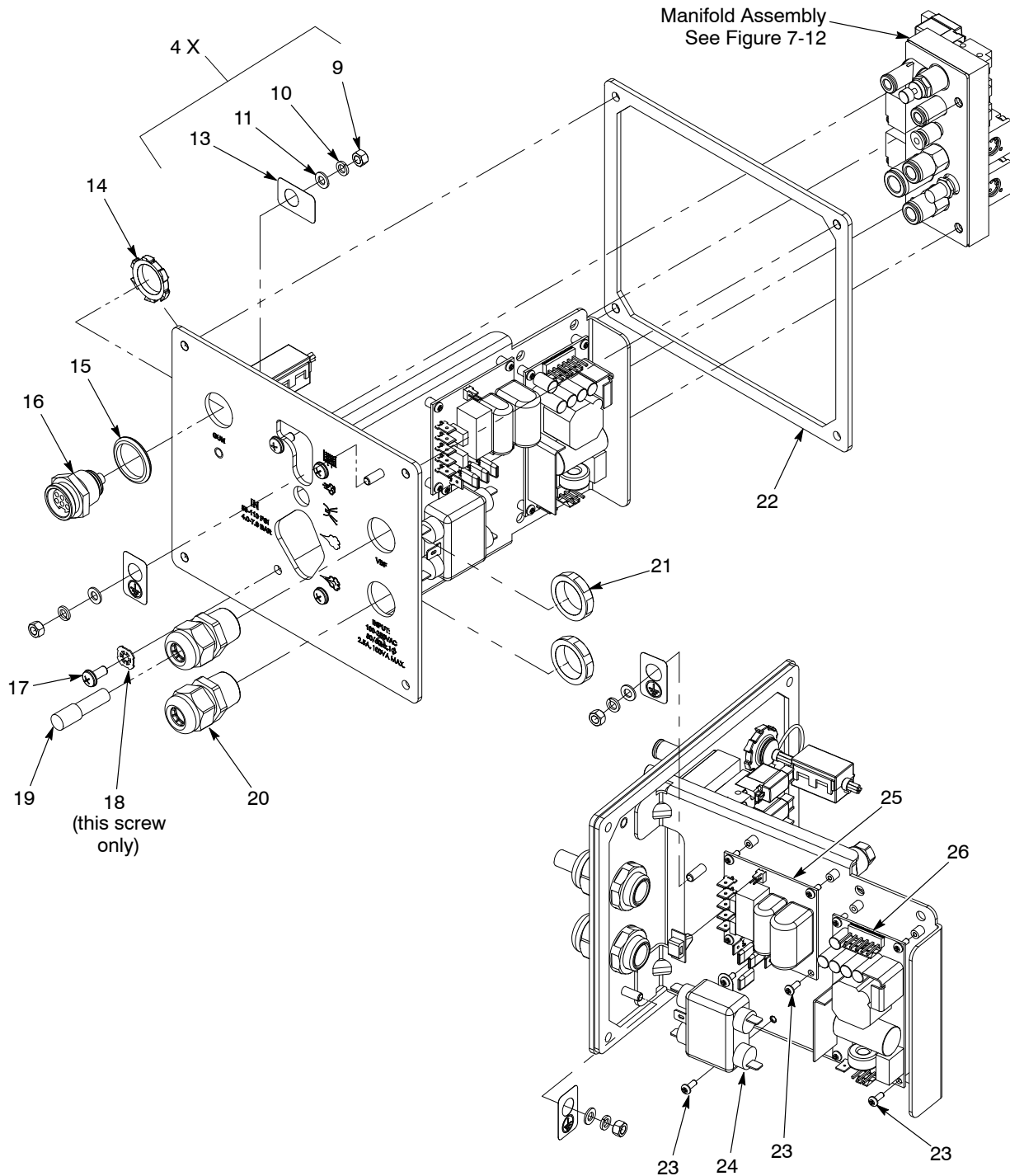


Figure 7-11 Rear Panel Parts

**Rear Panel Parts List**

Refer to Figure 7-11.

Item	Part	Description	Quantity	Note
14	984526	• NUT, lock, 1/2 in. conduit	1	
15	939122	• SEAL, conduit fitting, 1/2 in., blue	1	
16	1107539	• RECEPTACLE, gun, Encore LT	1	
17	1045837	• SCREW, pan head, recessed, M5 x 12, with lockwasher, black	4	
18	1068715	• WASHER, lock, dished, #10	1	
19	972930	• PLUG, push in, 8 mm tubing, plastic	1	
20	972808	• CONNECTOR, strain relief, 1/2 in. NPT	2	
21	984192	• NUT, lock, 1/2 in. NPT, nylon	2	
22	117549	• GASKET, panel, rear, Encore LT controller	1	
23	982824	• SCREW, pan head, recessed, M3 x 8, with lockwasher, black	10	
24	1107696	• FILTER, line, RFI power, 3A, with 0.250 QD	1	
25	1606835	• KIT, PCA, relay board, Encore LT-HD	1	
26	1107695	• POWER SUPPLY, 24VDC, 60W	1	

## Manifold Illustration and Parts List

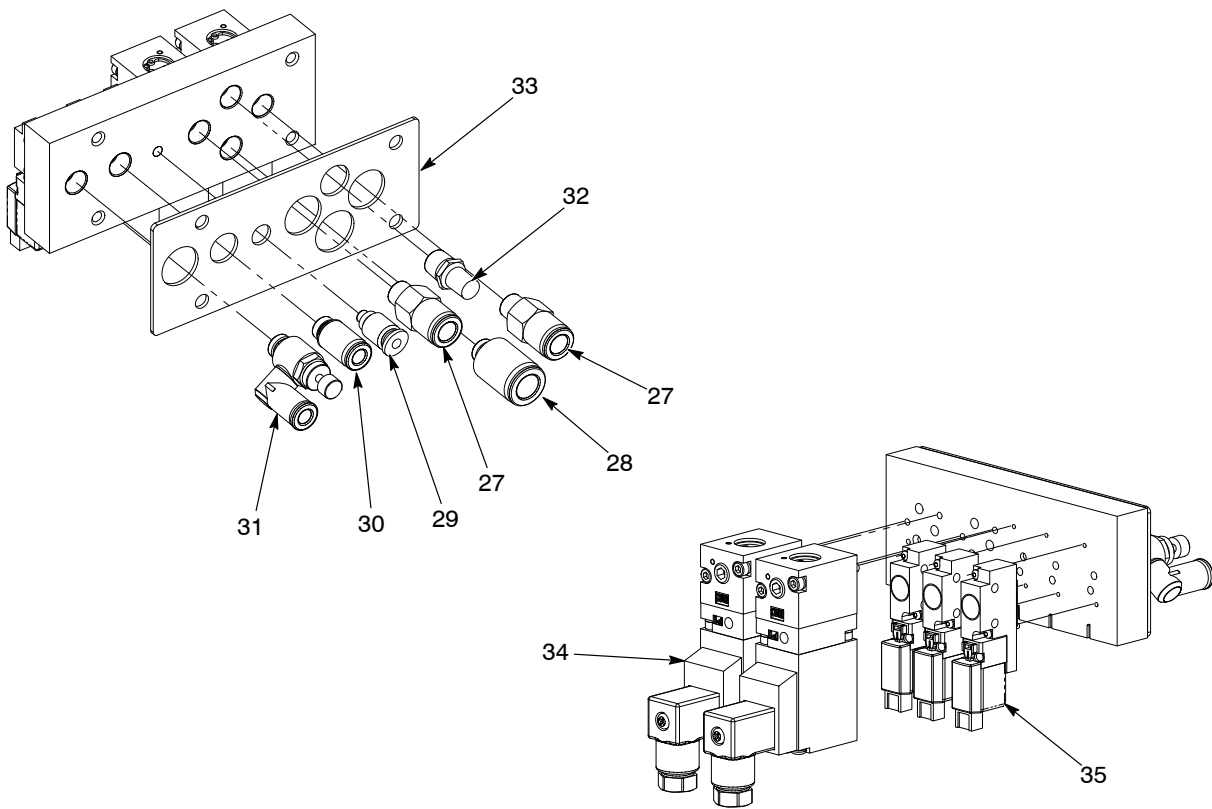


Figure 7-12 Manifold Parts

Item	Part	Description	Quantity	Note
27	1030873	• VALVE, check, M8 x R1/8, M input	2	
28	1107596	• CONNECTOR, male, with internal hex, 10 mm tube x 1/8 unithread	1	
29	1062009	• CONNECTOR, male, with internal hex, oval collar, 4 mm tube x M5	1	
30	972399	• CONNECTOR, male, with internal hex, 6 mm tube x 1/8 unithread	1	
31	1604486	• VALVE, flow control, 6 mm x 1/8 R	1	
32	1108313	• MUFFLER, exhaust, 1/8 R	1	
33	1107593	• GASKET, manifold, controller, Encore LT	1	
34	1107597	• REGULATOR, electro-pneumatic	2	
35	1099281	• VALVE, solenoid, 3 port, 24V, 0.35W	3	

## System Components and Parts

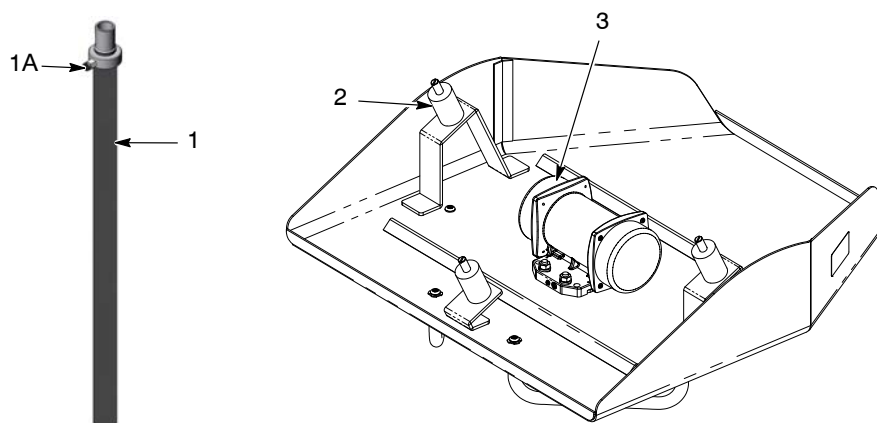


Figure 7-13 Miscellaneous System Parts

Item	Part	Description	Quantity	Note
1	1097809	TUBE, fluid, pickup, w/cond. fitting, VBF, Encore	1	
1A	1096788	• CONN, 6mm tube x R 1/8, dia 0.7mm orifice	1	D
2	1084760	ISOLATOR, vibration, 1.0 dia x 1.5 x 5/16 studs	3	A
3	1604512	VIBRATOR, electric, 115V, 60 Hz, w/cord grip	1	A
3	1108091	VIBRATOR, electric, 230V, 50 Hz, w/cord grip	1	A
NS	1107552	CONTROLLER, manual, Encore LT, packaged	1	
NS	1095922	PUMP assembly, corona, Encore Gen II	1	
NS	1106893	HANDGUN ASSY, Encore LT	1	
NS	1107949	HOPPER, NHR Encore, 50-lb	1	B
NS	972841	CONN, male, 10 mm tubing x 1/4 unithread	1	
NS	1093708	GROMMET, 0.719 ID x 1.281 OD x 0.093 GR	1	
NS	134575	WIRE, ground (with ground clamp)	1	
NS	1107895	KIT, VBF pickup tube arm assembly, Encore LT	1	A
NS	1107903	• KIT, pickup tube collar, Encore LT	1	A
NS	1107913	KIT, rail mount, Encore LT	1	
NS	1600437	KIT, wall mount, Encore LT		
NS	1067694	KIT, ground bus bar, ESD, 6 position, w/hardware	1	C
NS	1085679	KIT, pump adapter, hopper, Encore	1	C
NS	1082204	COUPLING, pump, Encore	1	C
NS	972262	REDUCER, 10 mm stem x 6 mm tubing	1	F
NS	1600658	HANGER, gun, Encore LT	1	
NS	1600566	KIT, filter, Encore LT	1	E
NS	1600608	• FILTER, mist separator, 0.3 micron, 1/2 in. NPT	1	E
NS	1600609	• • FILTER ELEMENT, separator, 0.3 micron	1	
NS	1604487	VALVE, flow control, 4-mm tube x 4-mm tube	1	G

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

B: Hopper systems only. Hopper includes pickup tube.

C: Included with both wall- and rail-mount systems.

D: Conductive fitting. Do not replace with a non-conductive fitting.

E: Filter kit includes fittings and mounting bracket. Order filter only to replace mobile system filter.

F: Install in hopper plenum elbow.

G: Connect to air wash connector on controller rear panel to control air flow.

NS: Not Shown

## Powder Hose and Air Tubing

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

Part	Description	Note
768176	Powder hose, 11 mm antistatic	A, E
768178	Powder hose, 12.7 mm ( $\frac{1}{2}$ in.) antistatic	A, E
900648	Powder hose, 11 mm blue	D
900650	Powder hose, 12.7 mm ( $\frac{1}{2}$ in.) blue	D
900617	Air tubing, polyurethane, 4 mm, clear	B
900742	Air tubing, polyurethane, 6 mm, blue	B
1096789	Air tubing, antistatic, 6/4 mm, black (conductive air tubing)	C
900741	Air tubing, polyurethane, 6 mm, black	
900618	Air tubing, polyurethane, 8 mm, blue	B
900619	Air tubing, polyurethane, 8 mm, black	B
900740	Air tubing, polyurethane, 10 mm, blue	B
900517	Tubing, poly, spiral cut, 0.62 in. ID	
301841	Strap, Velcro, w/buckle, 25 x 3 cm	
<p>NOTE A: Twenty feet of 11-mm antistatic hose is provided with the systems. If you need to use a longer length, you must switch to the 1/2 inch hose to prevent powder delivery issues.</p> <p>B: Minimum order quantity is 50 ft.</p> <p>C: 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.</p> <p>D: Minimum order quantity is 25 ft.</p> <p>E: Minimum order quantity is 100 ft.</p>		

## System Options

Part	Description	Quantity	Note
1091429	KIT, input air, Encore manual systems	1	
972841	• CONNECTOR, male, 10 mm tube x $\frac{1}{4}$ in. unithread	1	
971102	• CONNECTOR, male, 10 mm tube x $\frac{3}{8}$ in. unithread	1	
973500	• COUPLING, pipe, hydraulic, $\frac{1}{4}$ in., steel, zinc	1	
973520	• COUPLING, pipe, hydraulic, $\frac{3}{8}$ in., steel, zinc	1	
900740	• TUBING, polyurethane, 10 mm, blue	20 ft	A
1086131	BRACKET, adapter, dual pickup tube	1	B
1600188	KIT, small parts tray	1	C
<p>NOTE A: Replacement tubing has a minimum order quantity of 50 ft.</p> <p>B: Use this bracket to install two pickup tubes on the arm assembly.</p> <p>C: For mobile systems only. To install the tray, remove the 2 top screws from the controller tower, install the #10 dished lock washer in the kit on one screw, then use the screws to install the tray.</p>			

## Optional Transportable Manual System

This system consists of an Encore LT manual powder spray system packed into a case for transportation. The following parts list consists of replacements for the components in the system.

Part	Description	Quantity	Note
1602351	SYSTEM, transportable, Encore LT	1	
1602463	• CASE, transportable, Encore LT	1	
1106893	• HANDGUN assembly, manual, Encore LT	1	
1107552	• CONTROLLER ASSY, manual, Encore LT, packaged	1	
1095922	• PUMP assembly, corona, Encore Gen II, packaged	1	
1100777	• KIT, cup gun, Encore	1	
1082060	• NOZZLE, conical, Encore	1	
1083206	• DEFLECTOR assembly, conical, 26 mm, Encore	1	
1083201	• DEFLECTOR assembly, conical, 16 mm, Encore	1	
1082185	• NOZZLE, cross-cut, 2.5 mm, 90 degree, Encore	1	
1081656	• NOZZLE, flat spray, 2.5 mm, Encore	1	
1081659	• NOZZLE, flat spray, 6 mm, Encore	1	
1085679	• KIT, pump adapter, hopper, Encore	1	
1082204	• COUPLING, pump, Encore	1	
768176	• TUBING, powder, antistatic, 11 mm (.43 in)	6 ft	A
900740	• TUBING, polyurethane, 10/6.5–7 mm	6 ft	B
900517	• TUBING, spiral cut, .62 in. ID	1.5 ft	C
900742	• TUBING, polyurethane, 6/4 mm, blue	6 ft	B
972262	• REDUCER, 10 mm stem	1	
1081658	• NOZZLE, flat spray, 4 mm, Encore	1	D
NOTE A: Minimum order quantity is 100 ft. B: Minimum order quantity is 50 ft. C: Order in increments of one foot. D: 4-mm flat spray nozzle is shipped with the spray gun.			



Figure 7-14 Encore LT Transportable System





## *Section 8*

# **Wiring Diagram**



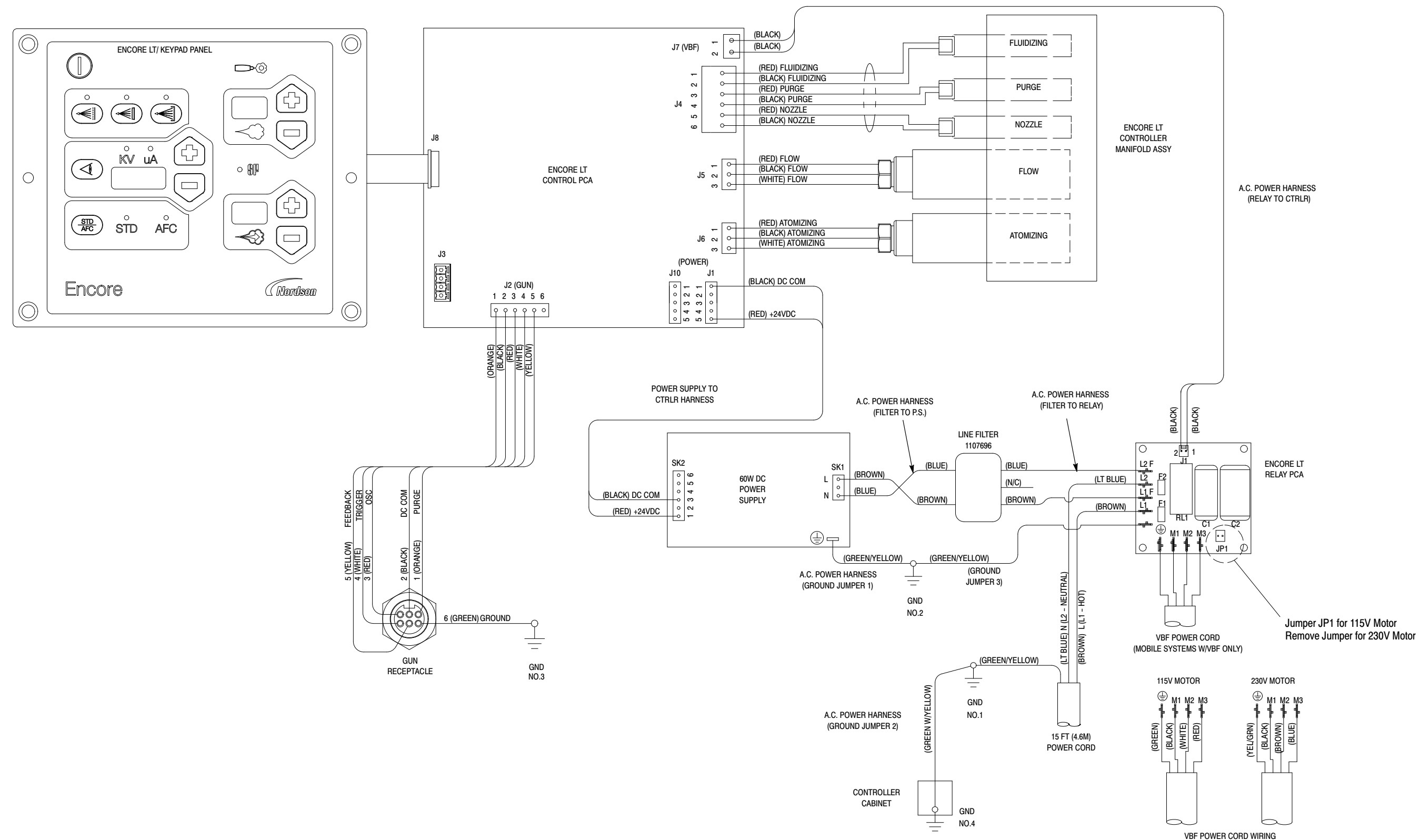


Figure 8-1 Encore LT Manual Controller Wiring Diagram

# DECLARATION of CONFORMITY

## PRODUCT: Encore LT Automatic and Manual Powder Spray Systems

**Models:** Encore Automatic Applicator and Encore LT Automatic Controllers  
Encore LT Manual Applicator with Encore LT Manual Controller

**Description:** The automatic electrostatic powder spray system includes applicator, control cable, and associated controllers. These controllers are available in a one applicator, dual applicator, or 4–8 applicator system. The 4–8 applicator system is available with or without Axis control for movement of the applicators in and out of the booth. The manual powder electrostatic powder spray system includes applicator, control cable, and associated controls. This is available in a stationary system, or in a mobile system.

### Applicable Directives:

2006/42/EC – Machinery Directive  
2014/30/EU – EMC Directive  
2014/34/EU – ATEX Directive

### Standards Used for Compliance:

EN/ISO12100-1 (2010)	EN60204-1 (2006)	EN61000-6-3 (2007)	FM7260 (1996)
EN60079-0 (2009)	EN50050 (2006)	EN61000-6-2 (2005)	
EN60079-31 (2009)	EN50177 (2009)	EN55011 (2009)	

### Type of Protection:

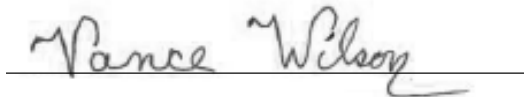
- Ambient Temperature: +15°C to 40°C
- Ex II 2 D / 2mJ = Manual and Automatic Applicators / Automatic Applicators are Type: A-P per EN50177
- EX II (2) 3 D = Manual and Automatic Controllers
- EX II (2) D = Automatic 4–8 Applicator Controller with Axis Control

### ATEX Product Certificates:

- FM11ATEX0056X (Applicators) (Norwood, Mass. USA)
- FM11ATEX0057X (Controllers) (Norwood, Mass. USA)

### ATEX Quality System Certificate:

- 1180 Baseefa (Buxton, Derbyshire, UK)



Vance Wilson  
Engineering Manager  
Industrial Coating Systems

Date: 16 Aug 2016

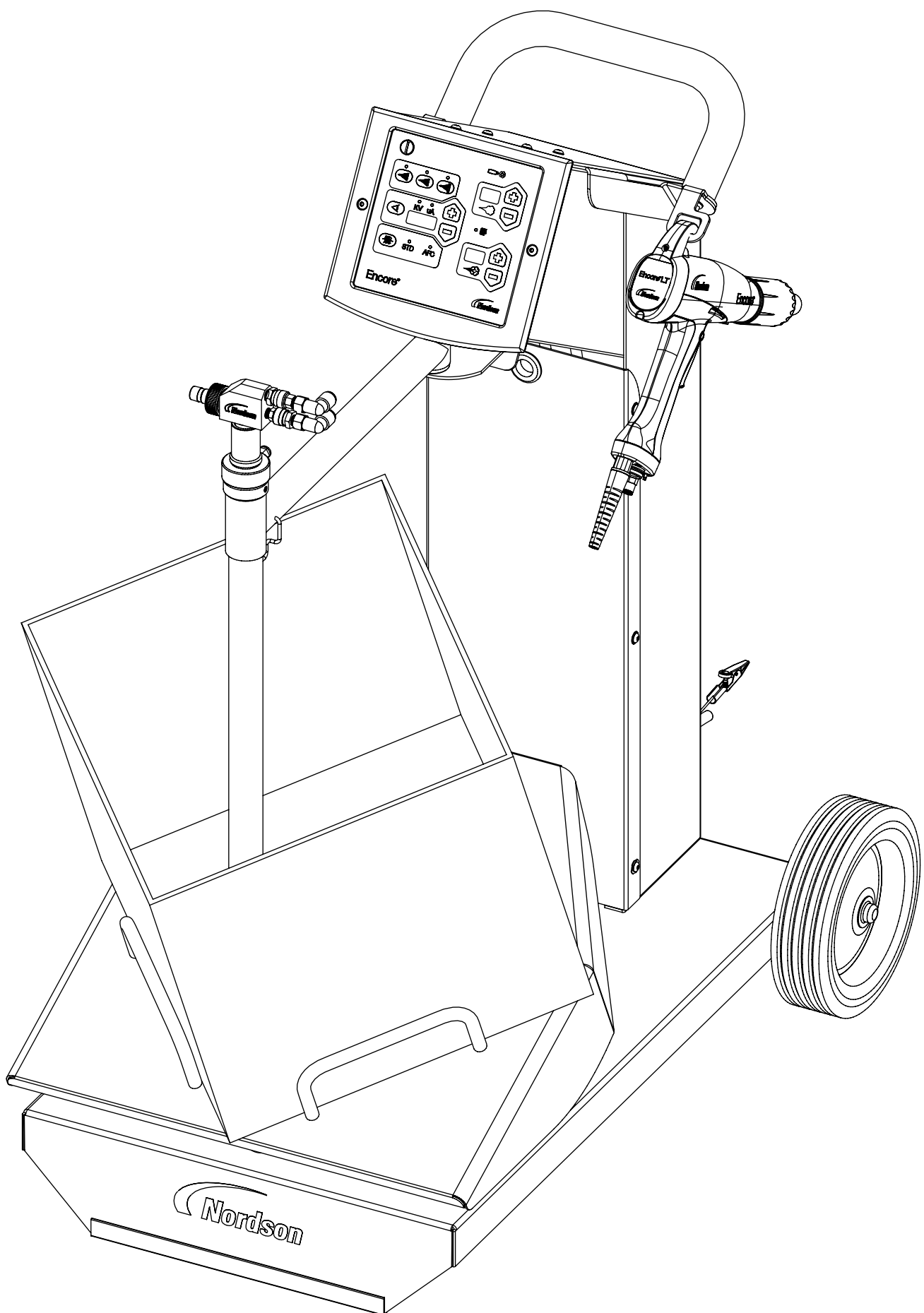
### Nordson Authorized Representative in the EU

Person authorized to compile the relevant technical documentation.

**Contact:** Operations Manager  
Industrial Coating Systems  
Nordson Deutschland GmbH  
Heinrich-Hertz-Straße 42–44  
D-40699 Erkrath

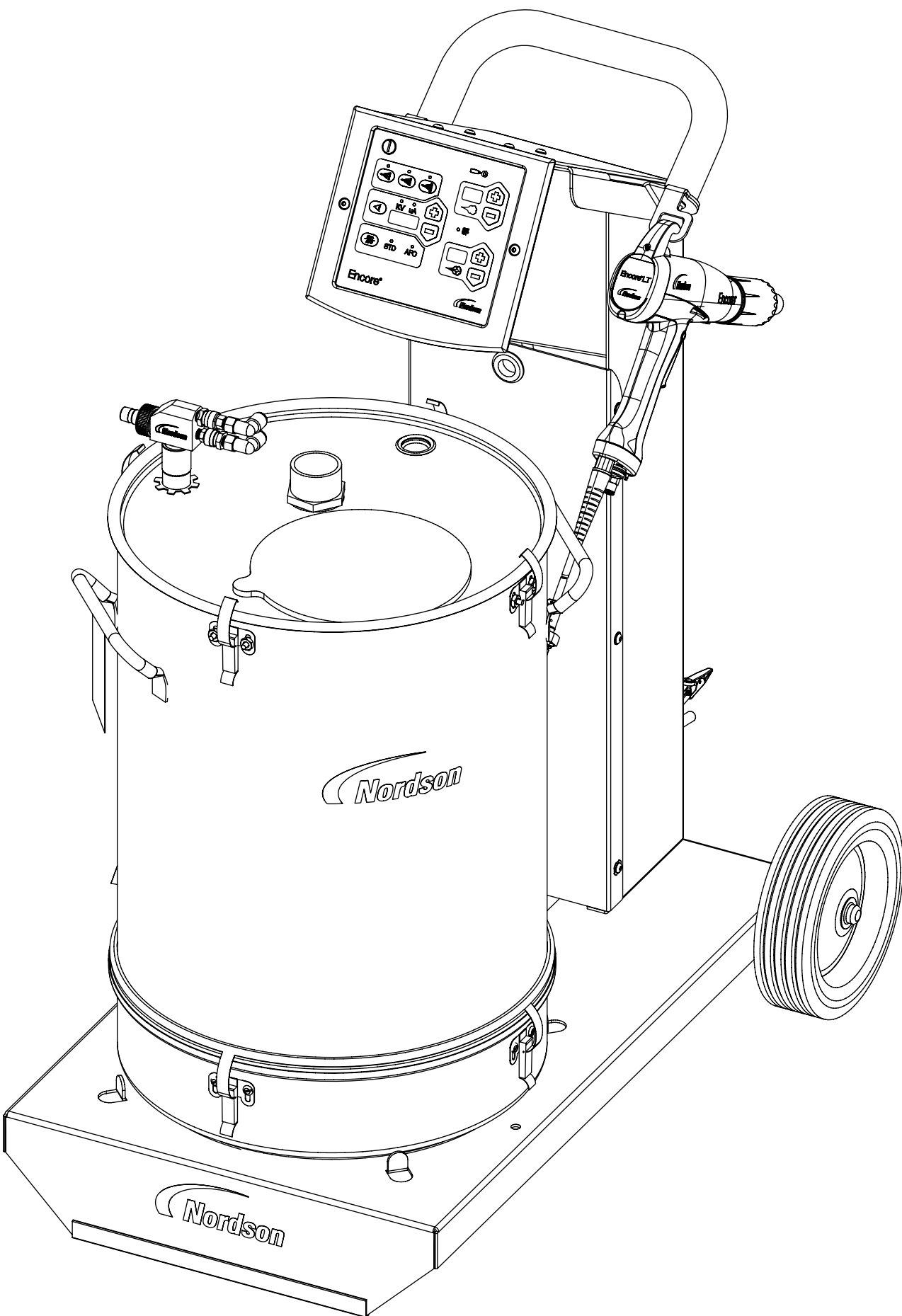






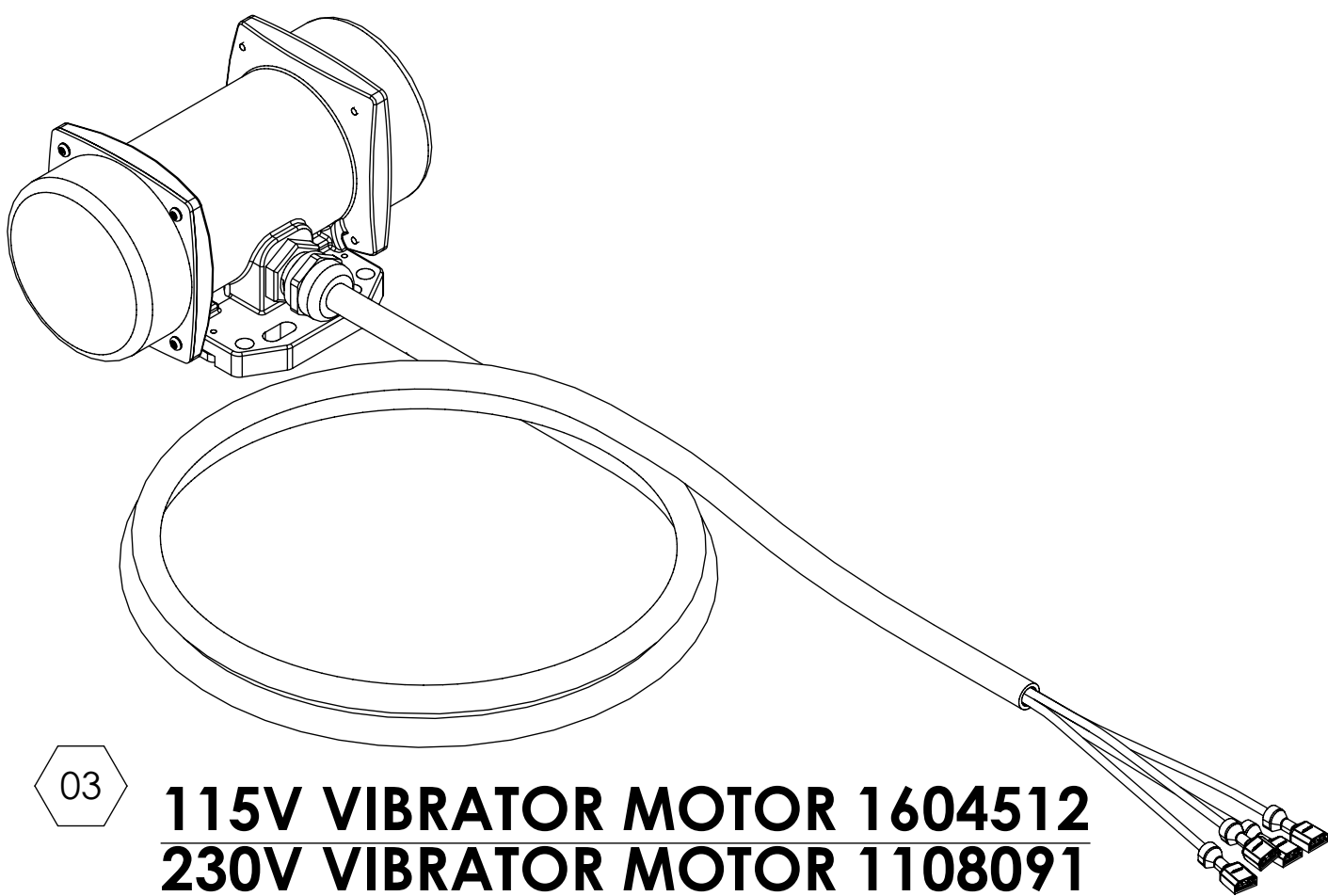
**ENCORE 115V & 220V VBF  
MOBILE POWDER SYSTEMS  
1107897 OR 1107898**

HEIGHT: 995 mm [35.2 in]  
LENGTH: 820 mm [32.25 in]  
WHEEL BASE: 598.5 mm [23.5 in]  
WEIGHT: 46.7 kg [103 lbs]



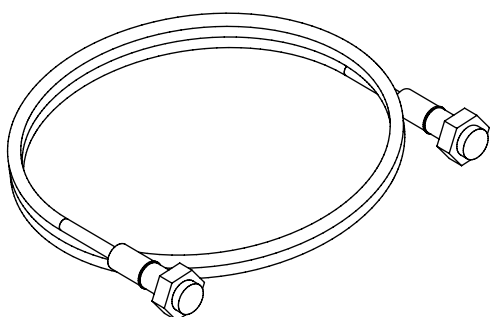
**ENCORE 50LB HOPPER  
MOBILE POWDER SYSTEM  
1107901**

HEIGHT: 995 mm [35.2 in]  
LENGTH: 812 mm [32 in]  
WHEEL BASE: 598.5 mm [23.5 in]  
WEIGHT: 50.4 kg [111 lbs]



**115V VIBRATOR MOTOR 1604512  
230V VIBRATOR MOTOR 1108091**

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



**6M MANUAL GUN CABLE EXTENSION,  
6-CONDUCTOR, SHIELDED.  
1085168**

03

04

230V = VIBRATOR MANUFACTURER'S CERT. #: TUV12ATEX094817  
115V = VIBRATOR MANUFACTURER'S CERT. #: ETL CERTIFIED US & CANADA

	PART NUMBER	DESCRIPTION	cFMus	ATEX	cFMus & ATEX
APPROVED EQUIPMENT FOR THE FOLLOWING MOBILE POWDER SYSTEMS:	1107897	SYSTEM,DOLLY W/VBF,115V,ENCORE LT	X		
	1107898	SYSTEM,DOLLY W/VBF,220V,ENCORE LT		X	
	1107901	SYSTEM,DOLLY W/HOPPER,ENCORE LT			X
THE FOLLOWING CONTROLLER IS SUITABLE FOR CLASS II, DIV 2, GROUP F & G HAZARDOUS (CLASSIFIED) LOCATIONS OR ZONE 22 (EU):	1107552	CONTROL UNIT,MANUAL,ENCORE LT,PKGD			X
THE APPLICATOR AND CABLES OF THESE UNITS ARE SUITABLE FOR IN A CLASS II, DIV 1, GROUP F & G HAZARDOUS (CLASSIFIED) LOCATION OR ZONE 21 (EU):	1106893	HANDGUN ASSY,ENCORE LT			X
	01 1106756	CABLE ASSY,HANDGUN,ENCORE LT/XT,6M			X
	1085168	CABLE,6-WIRE SHIELDED,HANDGUN,6M EXT			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±0.35   X,X±0.13			DESCRIPTION REF DWG,APPROVED EQUIPMENT,MANUAL,ENCORE		
MACHINED SURFACES BREAK INSIDE/OUTSIDE CORNERS R1/0.8			DRAWN BY DC	DATE 07APR11	RELEASE NO. PE602493
THREAD LENGTH DIMENSIONS ARE FULL THREAD			CHECKED BY RJF	APPROVED BY RJF	
INTERPRET DRAWINGS PER ASME Y14.5-1994			SIZE D	FILE NAME 1107255	MATERIAL NO. 1107255
PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES			REVISION 04		
THIRD ANGLE PROJECTION			SCALE NOT TO SCALE	SOLIDWORKS GENERATED DWG.	SHEET 2 OF 2