

# Vantage<sup>®</sup> Manual Spray Gun Control Unit

Customer Product Manual  
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NORDSON CORPORATION • AMHERST, OHIO • USA



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# Vantage® Manual Spray Gun Control Unit

## Safety

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

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

## Qualified Personnel

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

## Intended Use

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

Some examples of unintended use of equipment include

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

## Regulations and Approvals

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

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

## Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (MSDS) 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 MSDS 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.

All work conducted inside the spray booth or within 1 m (3 ft) of booth openings is considered within a Class 2, Division 1 or 2 Hazardous location and must comply with NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

### **Action in the Event of a Malfunction**

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

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

### **Disposal**

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

## Description

The Vantage Manual Spray Gun Control Unit provides pneumatic and electrostatic controls for Nordson manual spray guns. The control unit provides the voltage output to the spray gun and monitors the feedback current to control the electrostatic charging of the coating material.

Three versions of the control unit are available including a standard unit and 115V and 220V units with vibratory motor control.

The vibratory motor control turns the vibrating motor on whenever the spray gun is triggered and remains running for approximately 30 seconds after the spray gun is triggered off.

## Operating Modes

The Vantage Manual Spray Gun Control Unit has two operating modes:

**kV:** Operator may adjust the voltage output

**AFC:** Operator may adjust the maximum current ( $\mu$ A) output



This key toggles between the two operating modes. LEDs above the key indicate which mode is currently active.

## Specifications

**NOTE:** Because of continuous technological improvements, specifications are subject to change without notice.

Refer to Table 1.

**NOTE:** Supply air must be clean and dry. Use a regenerative desiccant or refrigerated air dryer capable of producing a 3.4 °C (38 °F) or lower dewpoint at the maximum input air pressure. Use a filter system with prefilters and coalescent-type filters capable of removing oil, water, and dirt in the submicron range.

Table 1 Specifications

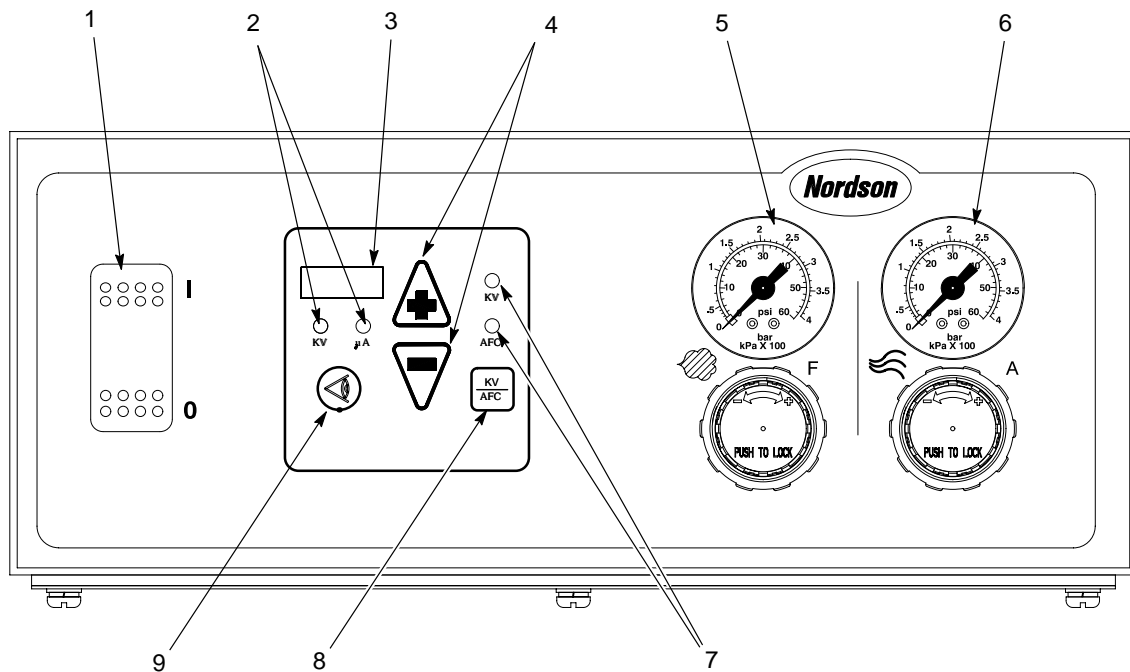
Air Pressures	
Input	5–7 bar (80–100 psi)
Flow Rate	2 bar (30 psi)
Atomizing	0.7 bar (10 psi)
Fluidizing	0.1–0.3 bar (2–5 psi)
Electrical Requirements	
Input Requirements	85–250 Vac, 1 phase, 50–60 Hz, 40 VA
Voltage Output (To Spray Gun)	0–21 Vdc, 0.60 A
Installation Requirements (per ANSI/ISA S82.01)	
Pollution Degree	2
Installation Category	II
Installation Zones for Control Unit	
with Powder Applicators	Zone 22 or Class II, Division 2
kV Output to the Spray Gun	
Gun Type	kV Output
Econo-Coat	25–95
N80	33–80
Vantage	33–80

## Front Panel

Refer to Table 1 and see Figure 1.

Table 1 Front Panel

Item	Description	Function
1	Power Switch	Turns on or off power to the control unit
2	kV / $\mu$ A Display Indicators	Indicate which unit of measure (kV or $\mu$ A) is currently being displayed on the digital display
3	Digital Display	Display depends on current operating state: <b>When Control Unit Is Powered On:</b> Momentarily displays the last, saved kV or $\mu$ A set point <b>When Gun Is Not Triggered:</b> Displays --- <b>When Gun Is Triggered:</b> Displays the spray gun's actual kV or $\mu$ A output
4	Setpoint Adjust Keys	Increase or decrease the spray gun's kV or $\mu$ A set point
5	Flow Rate Air Gauge/Regulator	Controls the flow rate air pressure
6	Atomizing Air Gauge/Regulator	Controls the atomizing air pressure
7	kV / AFC Mode Indicators	Indicate the currently selected operating mode
8	kV / AFC Mode Key	Changes the operating mode between kV and AFC
9	View Key	Switches the unit of measure (kV or $\mu$ A) being displayed on the digital display



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Figure 1 Front Panel

## Back Panel

Refer to Table 2 and see Figure 2.

Table 2 Back Panel

Item	Description	Function
1	Fluidizing Air Valve (10 mm)	Regulates the fluidizing air pressure when used with a powder feed hopper (not used with a vibratory box feeder system)
2	IN Air Connection (10 mm)	Connects the system to an air supply
3	2 Amp, 250 Vac Fuses	Protect the control unit from electrical surges
4	POWER INPUT Cable	Connects the system to a power supply
5	VIBRATORY MOTOR CTL.	Connects the system to a vibratory motor control unit
6	GUN OUTPUT Receptacle	Connects the spray gun to the control unit
7	Gun Air Connection (4 mm)	Supplies air to the gun to keep powder from accumulating on the powder spray gun electrode <b>NOTE:</b> This connection is optional. If it is not used, it will be plugged.
8	Flow Rate Air Connection (8 mm)	Supplies flow rate air
9	Atomizing Air Connection (8 mm)	Supplies atomizing air
10	Ground Stud	Connects the control unit to a true earth ground

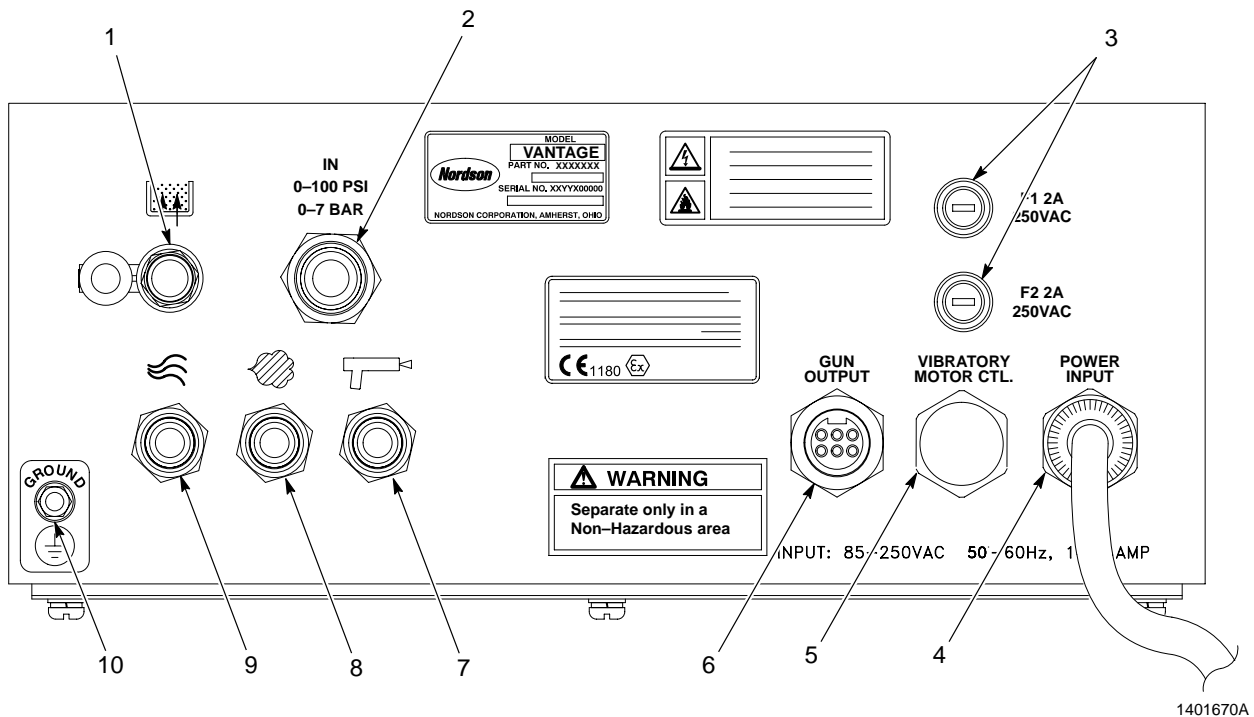


Figure 2 Back Panel

Note: The vibratory motor control (5) and gun air (7) connections are optional. If they are not used, they will be plugged.

## Installation



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

### ***Circuit Board Configuration***



**CAUTION:** Electrostatic sensitive device. To avoid damaging the circuit board wear an ESD wriststrap and use proper grounding techniques.

**NOTE:** Follow these guidelines when you first put the control unit into service or when you replace the circuit board.

Before you install the control unit, make sure that it is configured to suit your application.

See Figure 3 to locate the jumpers and identify their settings. If the default settings do not suit your application, remove the control unit cover and change the jumper settings as appropriate.



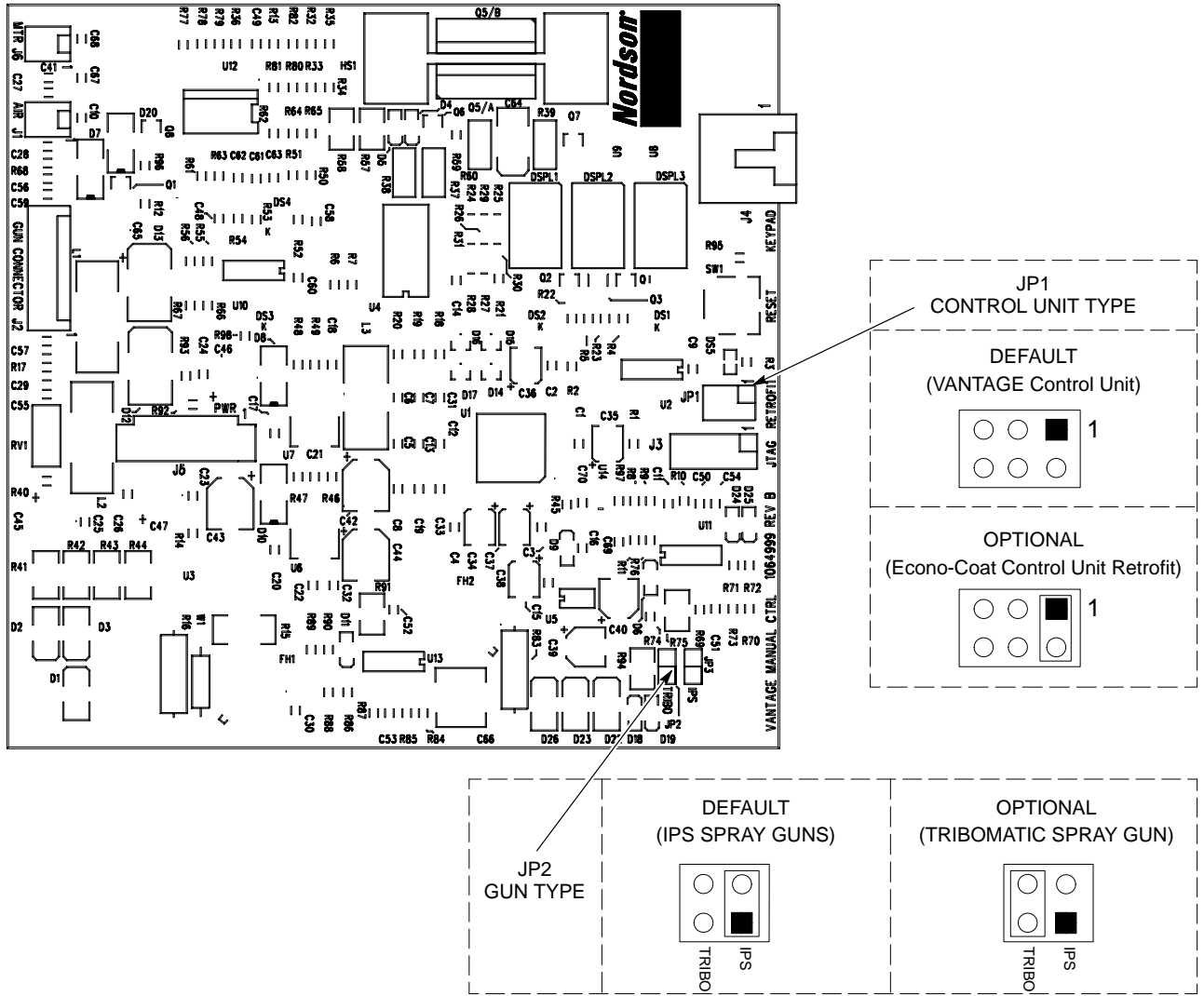


Figure 3 Circuit Board Configuration

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## Mounting Brackets

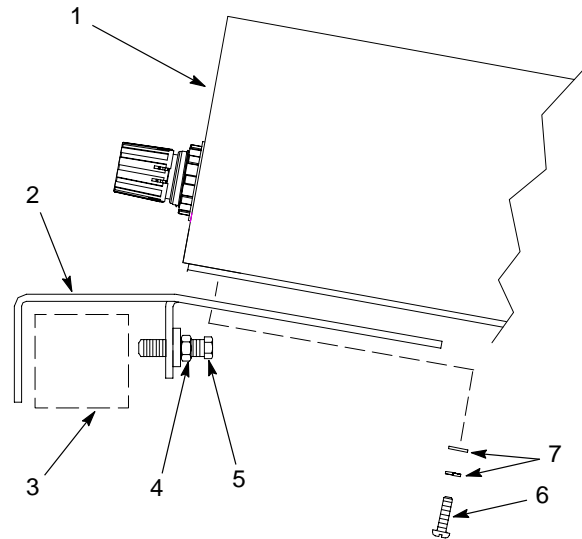
Use the following procedures to mount the control unit using one of the optional mounting brackets listed on pages 28–29. If your control unit is part of a mobile spray system, disregard these procedures and refer to the installation instructions provided with the system.

### Rail-Mounting Bracket

1. See Figure 4. Remove the three M5 pan-head screws (6) and washers (7) from the bottom, front edge of the control unit (1).
2. Line up the holes on the bracket (2) with the holes on the control unit.
3. Use the washers and the three longer M5 pan-head screws (6) included with the bracket to secure the bracket to the control unit.

**NOTE:** Two pairs of M8 machine screws are included to secure the bracket to the rail. Use the appropriate length screws and discard the other two.

4. Thread the jam nuts (4) onto two of the M8 machine screws (5). Thread the screws through the back of the bracket.
5. Place the controller and bracket on the booth's operator platform railing (3).
6. Tighten the machine screws until the bracket is secured to the rail. Tighten the jam nuts against the bracket to lock the machine screws in place.



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Figure 4 Rail-Mounting Bracket

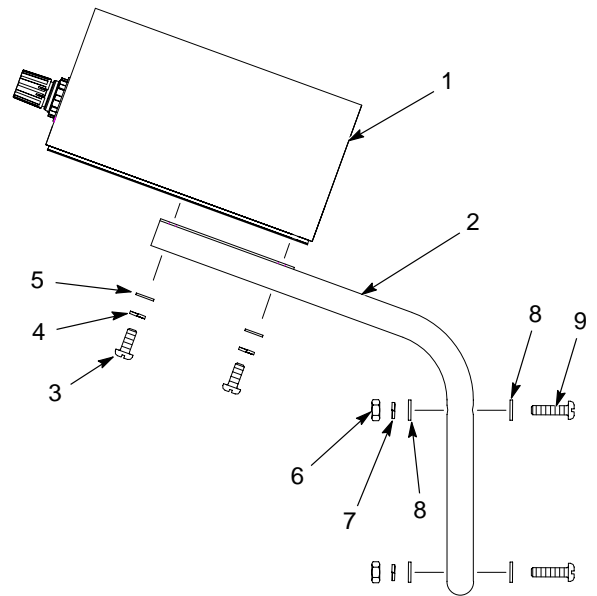
- |                          |                          |
|--------------------------|--------------------------|
| 1. Control unit          | 5. M8 Machine screw      |
| 2. Rail-mounting bracket | 6. M5 Pan-head screw     |
| 3. Railing               | 7. Lock and flat washers |
| 4. Jam nut               |                          |

## Wall-Mounting Bracket

1. See Figure 5. Using the wall-mounting bracket (2) as a template, drill four 9-mm (0.354-in.) holes in the booth wall.

**NOTE:** The screws' heads must be on the inside of the booth wall.

2. Secure the wall-mounting bracket to the booth wall using the M8 pan-head screws (9), washers (7, 8), and nuts (6) included with the bracket.
3. Remove the five M5 pan-head screws (3) and washers (4, 5) from the bottom, rear of the control unit (1). Discard the screws, but save the washers.
4. Line up the holes on the bracket with the holes on the control unit.
5. Secure the control unit to the bracket using the washers you removed in step 3 and the five M5 pan-head screws included with the bracket.



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Figure 5 Wall-Mounting Bracket

- |                          |                       |
|--------------------------|-----------------------|
| 1. Control unit          | 6. Hex nuts           |
| 2. Wall-mounting bracket | 7. Lock washers       |
| 3. M5 Pan-head screws    | 8. Flat washers       |
| 4. Lock washers          | 9. M8 Pan-head screws |
| 5. Flat washers          |                       |

## Connections





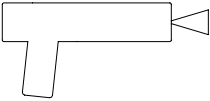
If your control unit is part of a mobile spray system, refer to the installation instructions provided with the system. The installation instructions included in this manual are for installing a standalone control unit.

## Typical Powder Spray System

See Figure 6 and refer to Table 3 for a description of the control unit connections.

**NOTE:** Refer to the spray gun, pump, and hopper manuals for more detailed installation instructions.

Table 3 Typical Powder Spray System Connections

Item	Description	Size	Control Unit Back Panel Connection	Other Equipment Connection
1	Ground Wire with Clamp	—		True Earth Ground
2	Fluidizing Air Tubing (Blue)	10-mm OD		Powder Feed Hopper Fluidizing Air Fitting
3	Atomizing Air Tubing (Blue)	8-mm OD		Powder Pump Connector <b>A</b>
4	Flow Rate Air Tubing (Black)	8-mm OD		Powder Pump Connector <b>F</b>
5	Gun Air—Optional (Clear)	4-mm OD		Spray Gun
6	VIBRATORY MOTOR CTL	—	<b>VIBRATORY MOTOR CTL</b>	Vibratory motor control unit
7	Feed Hose	12.7-mm (1/2-in.) ID	(not connected to control unit)	Powder Pump Outlet; Spray Gun Inlet
8	Spray Gun Cable	—	<b>GUN OUTPUT</b> (See Note)	Spray Gun Handle (prewired)
9	POWER INPUT Cable	—	<b>POWER INPUT</b> (prewired)	Refer to <i>Power Input Cord</i> on page 11.
10	Air Supply Tubing (Blue)	10-mm OD	<b>IN</b> <b>0–100 PSI</b> <b>0–7 BAR</b>	Main Air Supply

**NOTE:** Tighten the gun cable retaining nut to 6 N•m (4.4 ft-lb). An optional 4-meter extension cable is available. Do not add more than two extension cables to the gun cable.

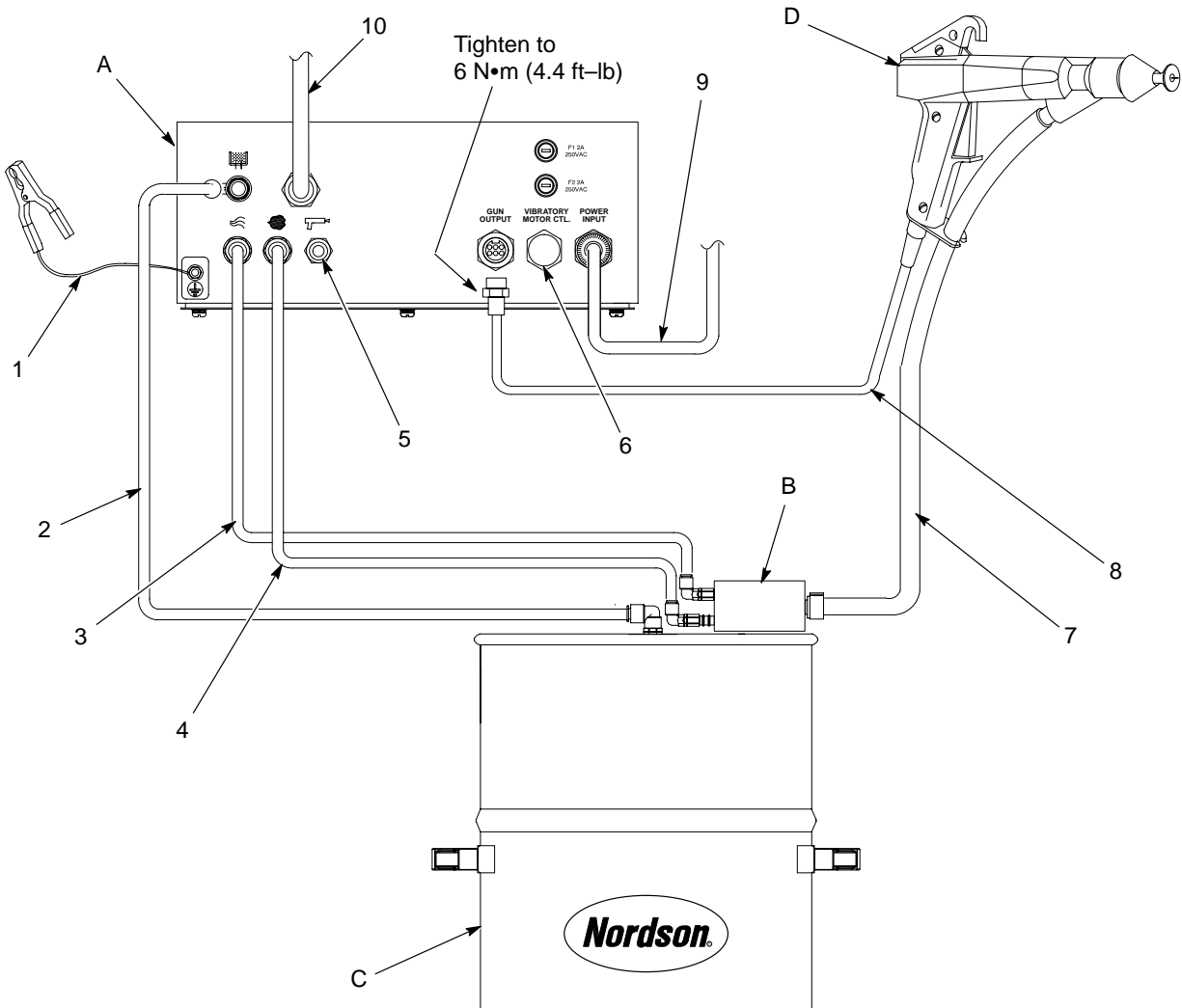


Figure 6 Connections

- |                     |   |                                 |
|---------------------|---|---------------------------------|
| A. Control unit     | 1. Ground wire with clamp                 | 6. VIBRATORY MOTOR CTL          |
| B. Powder pump      | 2. Blue, 10-mm air tubing (fluidizing)    | 7. Powder feed hose             |
| C. Hopper           | 3. Blue, 8-mm air tubing (atomizing)      | 8. POWER INPUT cable            |
| D. Powder spray gun | 4. Black, 8-mm air tubing (flow rate)     | 9. GUN OUTPUT cable             |
|                     | 5. Clear, 4-mm gun air fitting (optional) | 10. Blue, 10-mm air tubing (IN) |

*Note:* Typical powder pump and hopper shown. Connections for a vibratory box feeder system are slightly different than those shown.

## Power Input Cord

Connect the power input cord to a plug or electrical panel using these guidelines:

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

## Operation



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



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



**WARNING:** This apparatus shall be used only in spraying areas according to EN 50050 or under equivalent conditions.



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

### Gun Type Configuration

Use this procedure to configure which type of spray gun will be controlled by the control unit. This will only need to be done when the control unit is first installed, the circuit board is replaced, or a new type of spray gun is connected.

1. See Figure 7. Make sure that the power switch (1) is in the off position.
2. While holding down the kV/AFC key (6), turn the power switch to the on position. A code will appear, identifying the currently selected gun type.
3. Use the +/- keys (3) to select the appropriate gun type code.

Spray Gun	Code
Econo-Coat	C-1
Not Used	C-2
Not Used	C-3
Not Used	C-4
Not Used	C-5
N80	C-6
Vantage	
Econo-Coat (output Voltage limited to 80 kV)	C-7

4. Press the kV/AFC key to save the gun type and begin operation.

## Startup

Make sure that the following conditions have been met before operating the control unit:

- All of the *Connections* on page 10 have been completed.
  - The air supply system's filters and dryer are working properly.
  - The booth exhaust fans are operating.
1. See Figure 7. Make sure the fluidizing air valve (8) is turned fully clockwise.
  2. Set the supply air pressure to 5–7 bar (80–100 psi).
  3. Install the appropriate coating material source.
  4. Fluidize the powder supply.

<b>Powder Feed Hopper</b>	Turn the fluidizing air valve (8) counterclockwise $\frac{1}{2}$ turn. Allow the powder in the hopper to fluidize for at least 5 minutes.
<b>Vibratory Box Feeder</b>	The vibratory motor will turn on as the spray gun is triggered. The motor will remain on until approximately 30 seconds after the trigger is released.

5. Turn the control unit power switch (1) to the on position.

**NOTE:** The following air pressure settings are average starting points. Experimentation will be necessary to achieve the desired results.

**NOTE:** The flow rate and atomizing air pressures can only be adjusted while the gun is spraying.



6. Point the spray gun into the booth and hold down the trigger. Set the flow rate (4) and atomizing (5) air pressures to the following specifications:

**Flow Rate Air:** 2 bar (30 psi)

**Atomizing Air:** 0.7 bar (10 psi)

- Select the operating mode and adjust the kV or  $\mu$ A setpoints as desired using the +/- keys (3).

**NOTE:** The recommended starting point in AFC mode is 30  $\mu$ A.

Key	Function
	Selects which unit of measure (kV or $\mu$ A) is currently displayed
	Selects which operating mode (kV or AFC) is currently active

**NOTE:** The kV increments in multiples of 1. The  $\mu$ A increments in multiples of 5.

**NOTE:** To reset the kV setpoint to 0, press and hold the +/- keys at the same time until 0 appears on the display.

- Pull the spray gun trigger to test the spray pattern. Adjust the kV or  $\mu$ A setpoint and the flow rate and atomizing air pressures to obtain the desired spray pattern.

**NOTE:** The kV and  $\mu$ A setpoints are saved in the control unit's memory if the control unit remains on for longer than 10 minutes.

## Shutdown

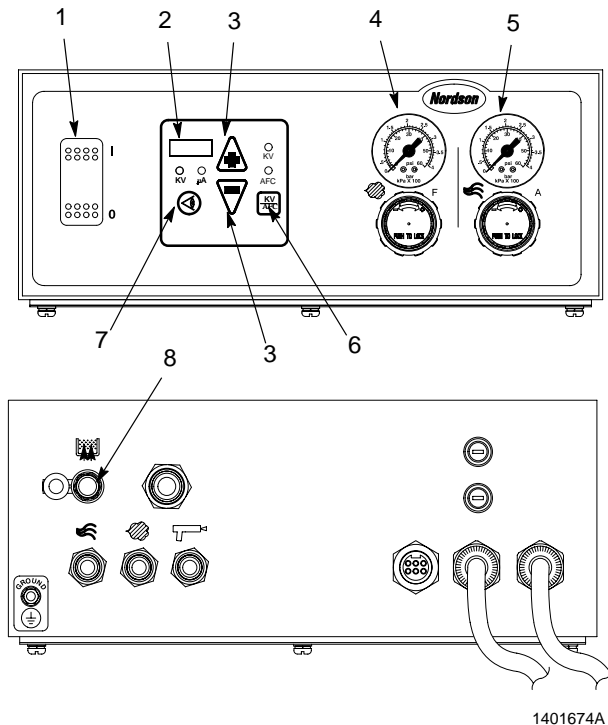
See Figure 7.

- Turn off the main air supply and relieve system air pressure.
- Close the fluidizing air valve (8).
- Turn the power switch (1) to the off position.

## Maintenance

Perform these tasks daily:

- Check all ground connections, including part grounds. Ungrounded or poorly grounded parts will affect transfer efficiency, electrostatic wrap, and the quality of the finish. Ungrounded equipment and parts may accumulate a charge that could arc and cause a fire or explosion.
- Check power and gun cable connections.
- Make sure that the air being supplied to the control unit is clean and dry.
- Wipe off the control unit with a clean, dry cloth.



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Figure 7 Control Unit Operation

- |                            |                            |
|----------------------------|----------------------------|
| 1. Power switch            | 5. Atomizing air regulator |
| 2. Digital display         | 6. KV/AFC Mode Key         |
| 3. +/- Keys                | 7. View key                |
| 4. Flow rate air regulator | 8. Fluidizing air valve    |

# Troubleshooting



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

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

Problem	Possible Cause	Corrective Action
<p><b>1. Uneven spray pattern; unsteady or inadequate powder flow</b></p>	<p>Blockage in spray gun, feed hose, or pump</p> <p>Poor fluidization of powder in hopper</p> <p>Moisture in powder</p> <p>Worn nozzle</p> <p>Low atomizing or flow rate air pressure</p>	<p>Disconnect the feed hose from the pump and blow out the feed hose. Disassemble and clean the pump and spray gun.</p> <p>Replace the feed hose if it is clogged with fused powder.</p> <p>Disassemble and clean the pump.</p> <p>Increase the fluidizing air pressure.</p> <p><b>Hopper Systems:</b> Remove the powder from the hopper. Clean or replace the fluidizing plate if it is contaminated.</p> <p><b>Box Feeder Systems:</b> Replace the fluidizing disk insert at the end of the pickup tube. Refer to your mobile powder spray system instructions.</p> <p>Check the powder supply, air filters, and dryer.</p> <p>Replace the powder supply if it is contaminated.</p> <p>Remove, clean, and inspect the nozzle. Replace the nozzle if necessary.</p> <p>If excessive wear or impact fusion is present, reduce the flow rate and atomizing air pressures.</p> <p>Increase the atomizing and/or flow rate air pressures.</p>

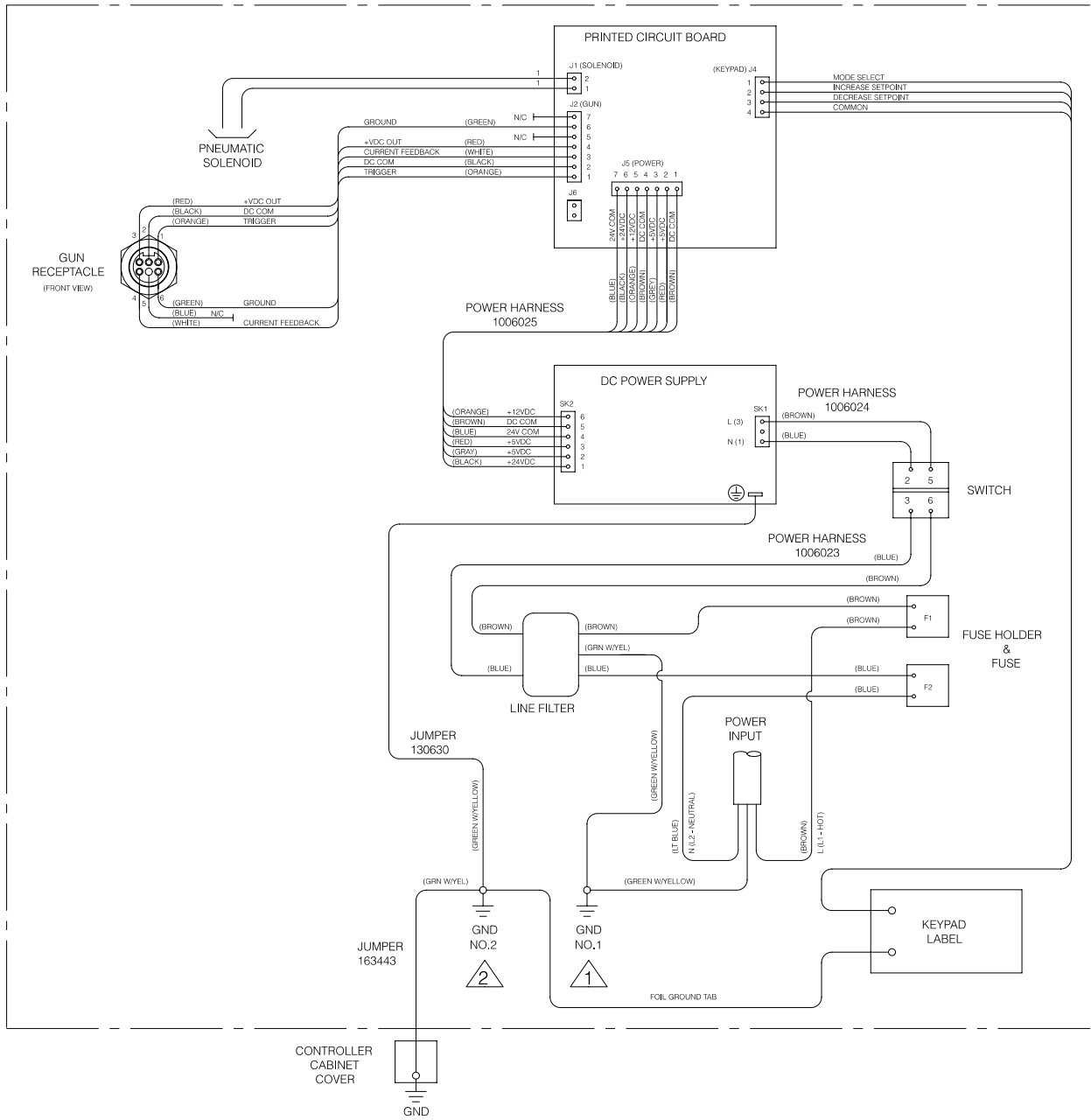
*Continued...*



Problem	Possible Cause	Corrective Action
<b>2. Loss of wrap; poor transfer efficiency</b>	Low electrostatic voltage  Poor electrode connection  Poorly grounded parts	Increase the electrostatic voltage.  Check the resistance of the gun electrode assembly. Refer to your spray gun manual for instructions.  Check the part hangers for powder buildup. The resistance between the parts and the ground must be 1 megohm or less. For best results, the resistance should be 500 ohms or less.
<b>3. No kV output from the spray gun</b>	Damaged spray gun cable  Malfunctioning trigger switch  Malfunctioning voltage multiplier  Poor electrode connection  Circuit board not configured correctly  Malfunctioning power supply	Test the continuity of the spray gun cable. If an open or short circuit is found, replace the cable. Refer to your spray gun manual for instructions.  Test the continuity of the spray gun cable and trigger switch. If there is no continuity, replace the cable. Refer to your spray gun manual for instructions.  Check the resistance of the spray gun's voltage multiplier. Refer to your spray gun manual for instructions.  Check the resistance of the spray gun's electrode assembly as described in your spray gun manual.  Refer to <i>Circuit Board Configuration</i> on page 6. Make sure that JP1 is set to the appropriate setting.  Unplug the gun end of the cable from the voltage multiplier. With the trigger switch actuated, check for 21 Vdc between pins 2 and 3 of the gun end of the gun cable. If the reading is not 21 Vdc, contact your Nordson representative.
<b>4. No kV output and no powder output</b>	Malfunctioning solenoid valve  Malfunctioning trigger switch or cable	Replace the solenoid valve.  Check the resistance of the spray gun's cable. If no short or open circuit is found in the trigger switch, replace the cable. Refer to your spray gun manual for instructions.
<b>5. Gun will not trigger; --- flashing on display</b>	Gun trigger shorted	Replace the gun cable. Refer to your spray gun manual for more information.
<b>6. Keypad will not work</b>	Circuit board not configured correctly	Refer to <i>Circuit Board Configuration</i> on page 6. Make sure that JP1 is set to the default setting.

# Electrical Schematic

See Figure 8.



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Figure 8 Electrical Schematic for Vantage Controller without Vibratory Motor Control

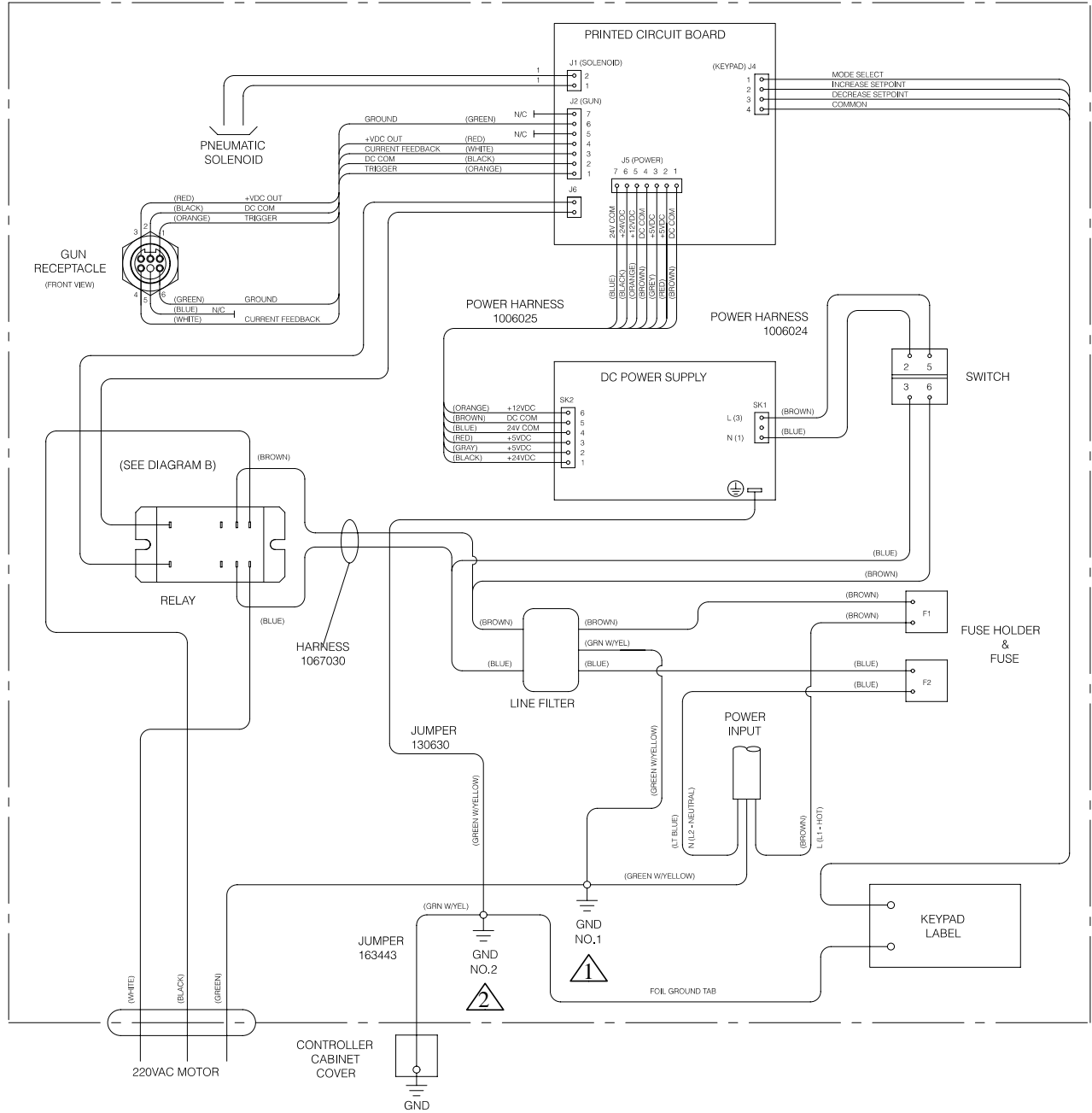


Figure 9 Electrical Schematic for 220Vac Vantage Controller with Vibratory Motor Control

**Electrical Schematic(contd)**

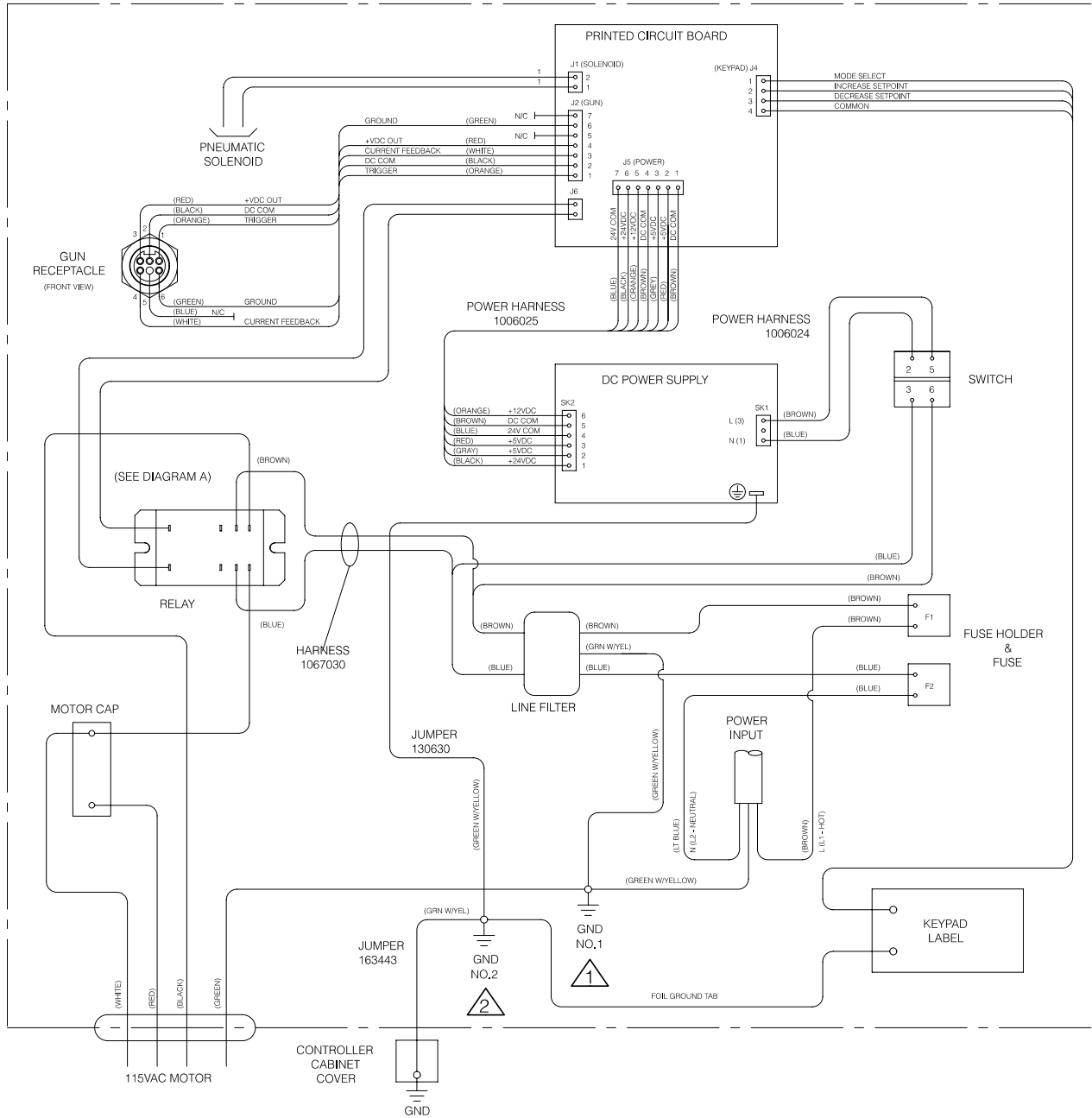
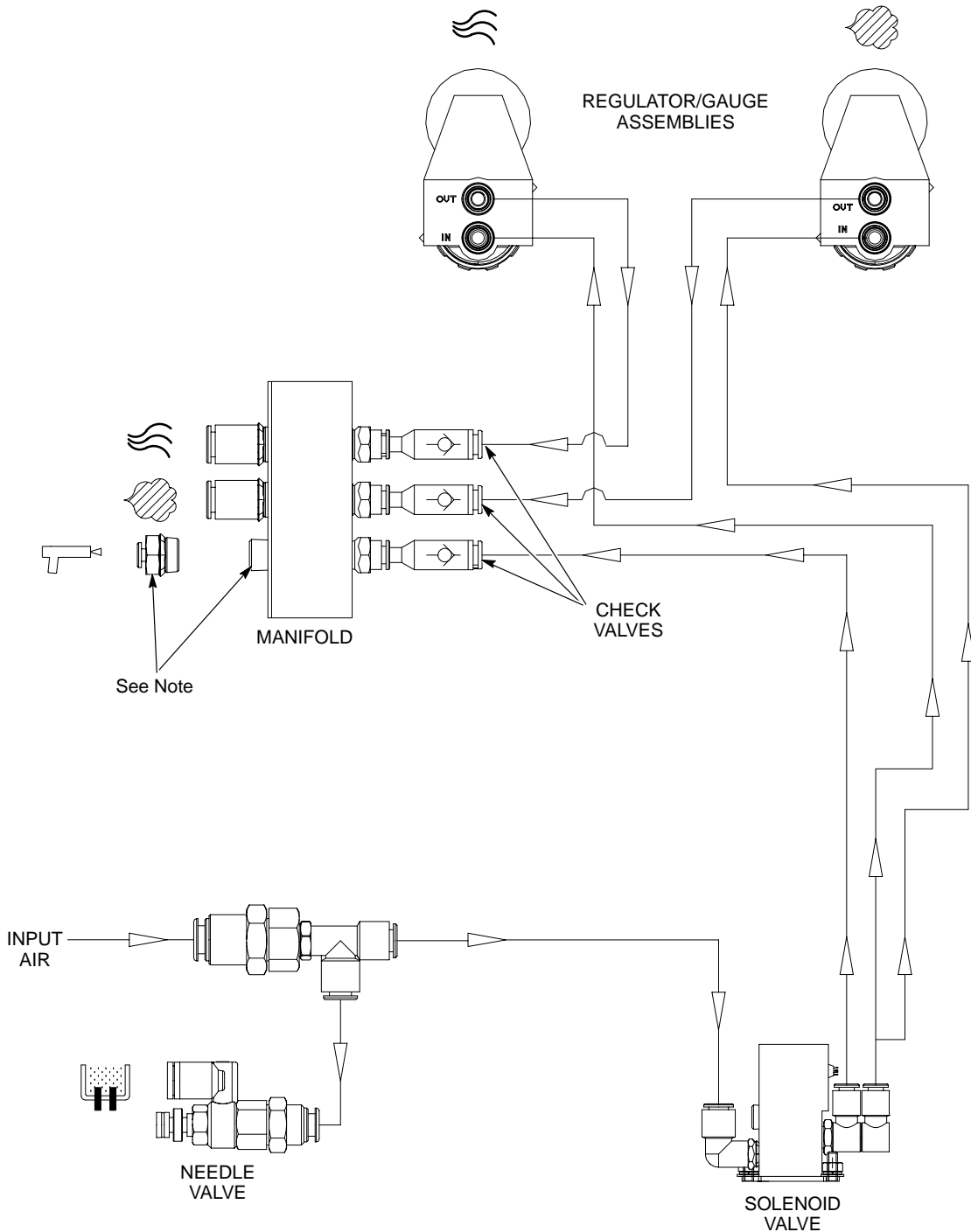


Figure 10 Electrical Schematic for 115 Vac Vantage Controller with Vibratory Motor Control

## Pneumatic Schematic

See Figure 11.



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Figure 11 Pneumatic Schematic

*Note:* If a Sure Coat gun is used with this control unit, order a 4-mm air fitting, part 288822, to install in place of the manifold's gun air pipe plug, part 1043873.

## Repair



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



**WARNING:** Turn off the control unit and disconnect the system from its input power source before performing any of the following tasks. Failure to observe this warning may result in a severe shock.

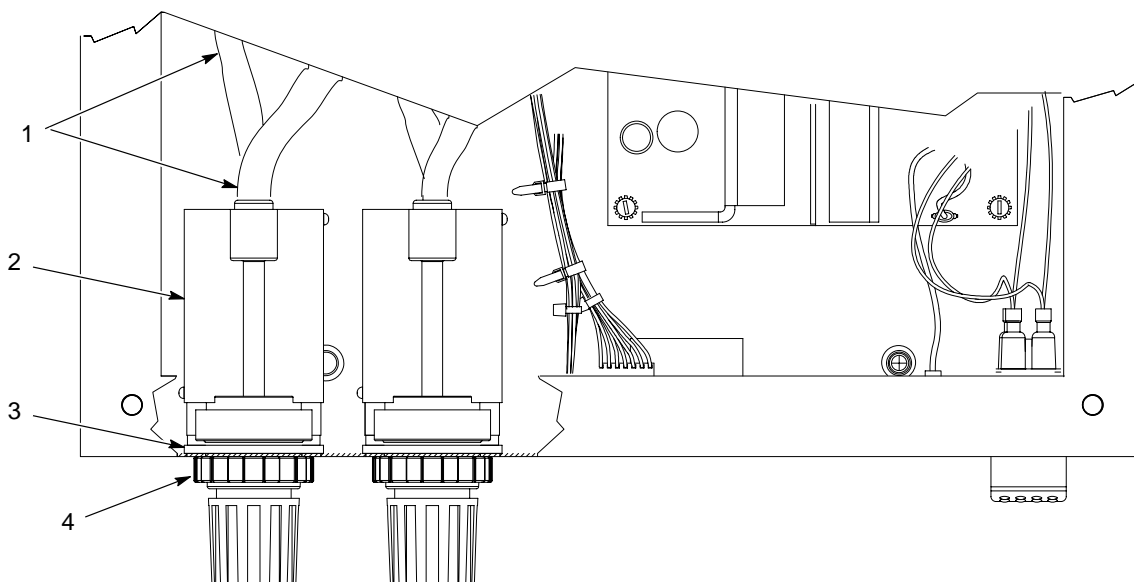


**WARNING:** Relieve system air pressure and disconnect the system from its input air supply before performing any of the following tasks. Failure to observe this warning may result in personal injury.

## Regulator Assembly Replacement

See Figure 12.

1. Turn off the control unit and disconnect it from its input power source.
2. Relieve supply air pressure and disconnect the control unit from its input air supply.
3. Remove the control unit's cover.
4. Disconnect the air tubing (1) from the regulator assembly (2).
5. Unscrew the mounting nut (4). Remove the regulator assembly and seal (3) from inside of the control unit.
6. Install the new regulator assembly and seal by performing steps 3–5 in reverse. See the *Pneumatic Schematic* on page 19 for air tubing connections.



1400061B

Figure 12 Regulator Assembly Replacement

- |                       |                   |                 |
|-----------------------|-------------------|-----------------|
| 1. Air tubing         | 3. Regulator seal | 4. Mounting nut |
| 2. Regulator assembly |                   |                 |

## Circuit Board Replacement



**CAUTION:** Electrostatic sensitive device. To avoid damaging the circuit board, wear a grounding wrist strap and use proper grounding techniques.

1. Turn off the control unit and disconnect it from its input power source.
2. Relieve supply air pressure and disconnect the control unit from its input air supply.
3. Remove the control unit's cover.
4. See Figure 13. Disconnect all wiring harness from the printed circuit board (5).
5. Remove the four screws and washers securing the circuit board to the control unit, then remove the circuit board.
6. Make sure the jumpers at JP1 and JP2 are in the appropriate locations. Refer to *Circuit Board Configuration* on page 6 for more information.
7. Secure the new circuit board to the control unit using the screws and washers you removed in step 5.
8. Connect the wiring harnesses to the circuit board as shown in Figure 8.
9. Install the cover and connect the control unit to its air and power supplies.
10. Perform the *Gun Type Configuration* procedure on page 12 to select which type of gun will be connected to the control unit.

## Solenoid Valve Replacement

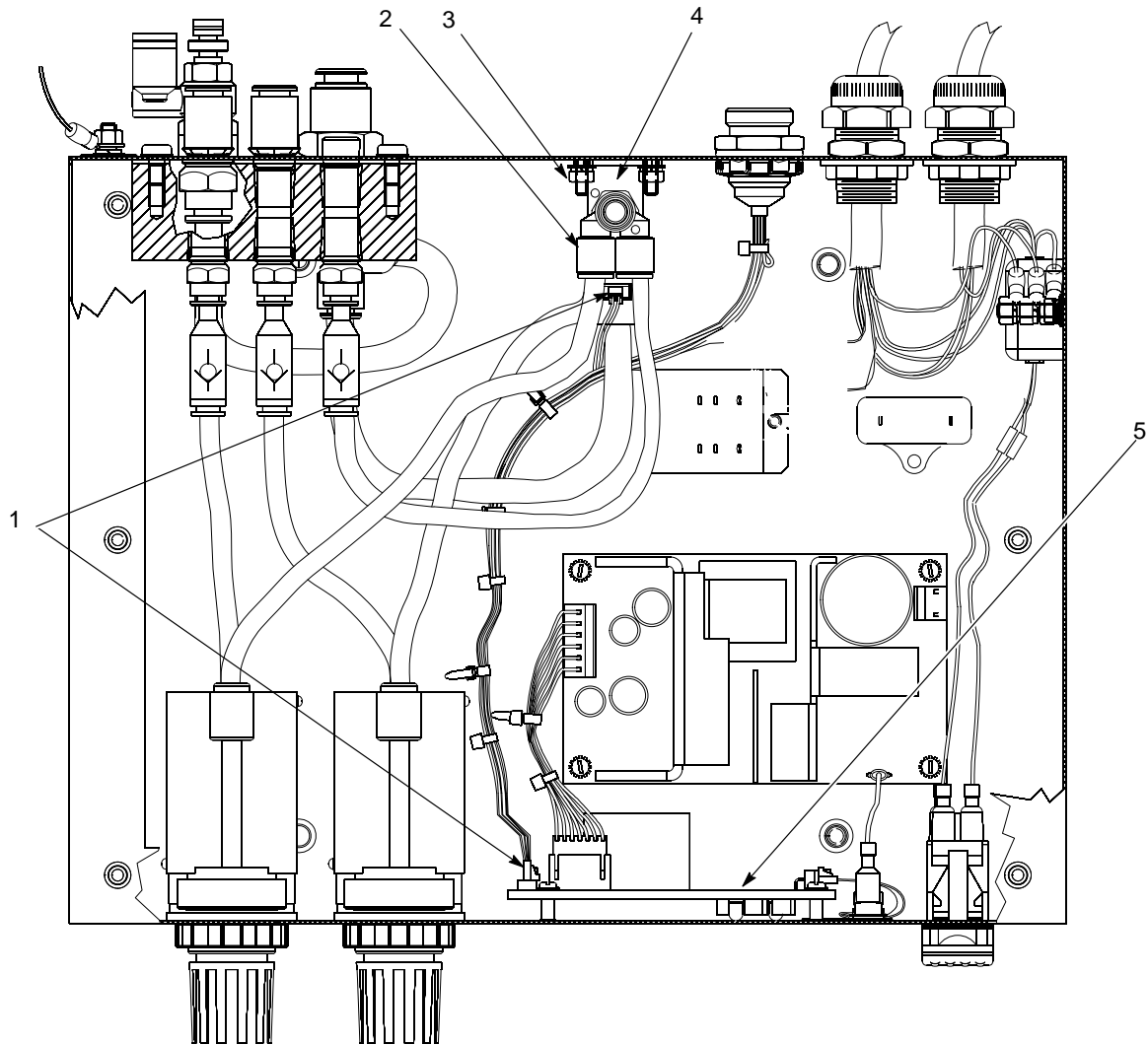
1. Turn off the control unit and disconnect it from its input power source.
2. Relieve supply air pressure and disconnect the control unit from its input air supply.
3. Remove the control unit's cover.
4. See Figure 13. Disconnect the air tubing from the four-way connector (2) and 8-mm elbow on the underside of the solenoid.
5. Disconnect the solenoid wiring harness (1) from the printed circuit board.



**CAUTION:** Be careful not to cut any wires when you cut off the cable straps.

6. Carefully cut the four cable ties securing the solenoid wiring harness to the gun input and power supply wiring harnesses.
7. Remove the solenoid valve assembly (4) from the control unit by removing the hex nuts and washers (3).
8. Remove the four-way connector and 8-mm elbow and pipe plug from the underside of the old solenoid valve assembly and clean their threads. Wrap the threads in Teflon tape and install the pipe plug and connectors onto the new solenoid valve assembly.
9. Install the new solenoid valve assembly by performing this procedure in reverse.

## Solenoid Valve Replacement (contd)



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Figure 13 Solenoid Valve Replacement

- |                            |                         |                  |
|----------------------------|-------------------------|------------------|
| 1. Solenoid wiring harness | 3. Hex nuts and washers | 5. Circuit board |
| 2. Triple elbow            | 4. Solenoid valve       |                  |

Note: The pipe plug and 8-mm elbow are on the underside of the solenoid valve (4).



## Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use this five-column parts list, and the accompanying illustration, to describe and locate parts correctly.

### *Using the Illustrated Parts List*

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

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

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

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

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

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

Item	Part	Description	Quantity	Note
—	0000000	Assembly	1	
1	000000	• Subassembly	2	A
2	000000	• • Part	1	

## External Control Unit Parts

See Figure 14.

Item	Part	Description	Quantity	Note
—	1067964	CONTROLLER, manual, Vantage, packaged	1	
—	1067929	CONTROLLER, manual, Vantage, 220V, with vibratory motor control, packaged		
—	1067925	CONTROLLER, manual, Vantage, 115V, with vibratory motor control, packaged		
1	1017673	• NEEDLE VALVE, straight, 1/4-in. RPT x 10-mm tube	1	
NS	148256	• PLUG, 10-mm tubing	1	A
2	1005067	• UNION, female, bulkhead, 10-mm tube x 1/4-in. RPT	1	
3	941131	• O-RING, silicone, 0.563 x 0.750 x 0.94 in.	2	
4	1005068	• CONNECTOR, bulkhead, 10-mm tube x 1/4-in. RPT	1	
5	131477	• FUSE, 2.00, fast-acting, 250 V, 5 x 20	2	
6	288804	• FUSE HOLDER, panel mount, 5 x 20	2	
7	-----	• CABINET, controller	1	
8	984192	• NUT, lock, 1/2-in. NPT, nylon	1	B
9	972808	• CONNECTOR, strain relief, 1/2-in. NPT	1	B
10	1027067	• CORD, power, long, 15 ft (4.6 m)	1	
11	939122	• SEAL, conduit fitting, 1/2 in., blue	1	C
12	984526	• NUT, lock, 1/2-in. conduit	1	C
13	334800	• PLUG, 1/2-in. pipe, hex	1	C, D
14	-----	• RECEPTACLE, handgun output	1	
15	1043873	• PLUG, pipe, socket, standard, 1/4 RPT, steel, zinc	1	E
16	972282	• CONNECTOR, male, with internal hex, 8-mm tube x 1/4 universal	2	
17	240674	• TAG, ground	3	
18	-----	• WASHER, flat, m, regular, M5, stainless steel	18	
19	134575	• WIRE, ground	2	
20	-----	• WASHER, lock, m, split, M5, steel, zinc	10	
21	-----	• NUT, hex, M5, brass	5	
22	322404	• SWITCH, rocker, DPST, dust tight	1	
23	288821	• REGULATOR, assembly, 0–60 psi, 0–4 bar	2	
24	1068458	• LABEL, controller keypad, Vantage	1	
25	-----	• SCREW, pan head, slotted, M5 x 12, steel, zinc	8	
26	-----	• COVER, controller cabinet	1	
27	1005671	• GASKET, cover, controller cabinet	1	
NS	-----	• SCREW, pan head, slotted, M6 x 12, zinc	4	F
NS	-----	• WASHER, lock, M, internal, M6, steel, zinc	4	F

NOTE A: This plug is installed in the needle valve (item 1) outlet when the control unit does not need to regulate fluidizing air.

B: Use these parts with the vibratory motor control versions of the control unit, parts 1067925 and 1067929.

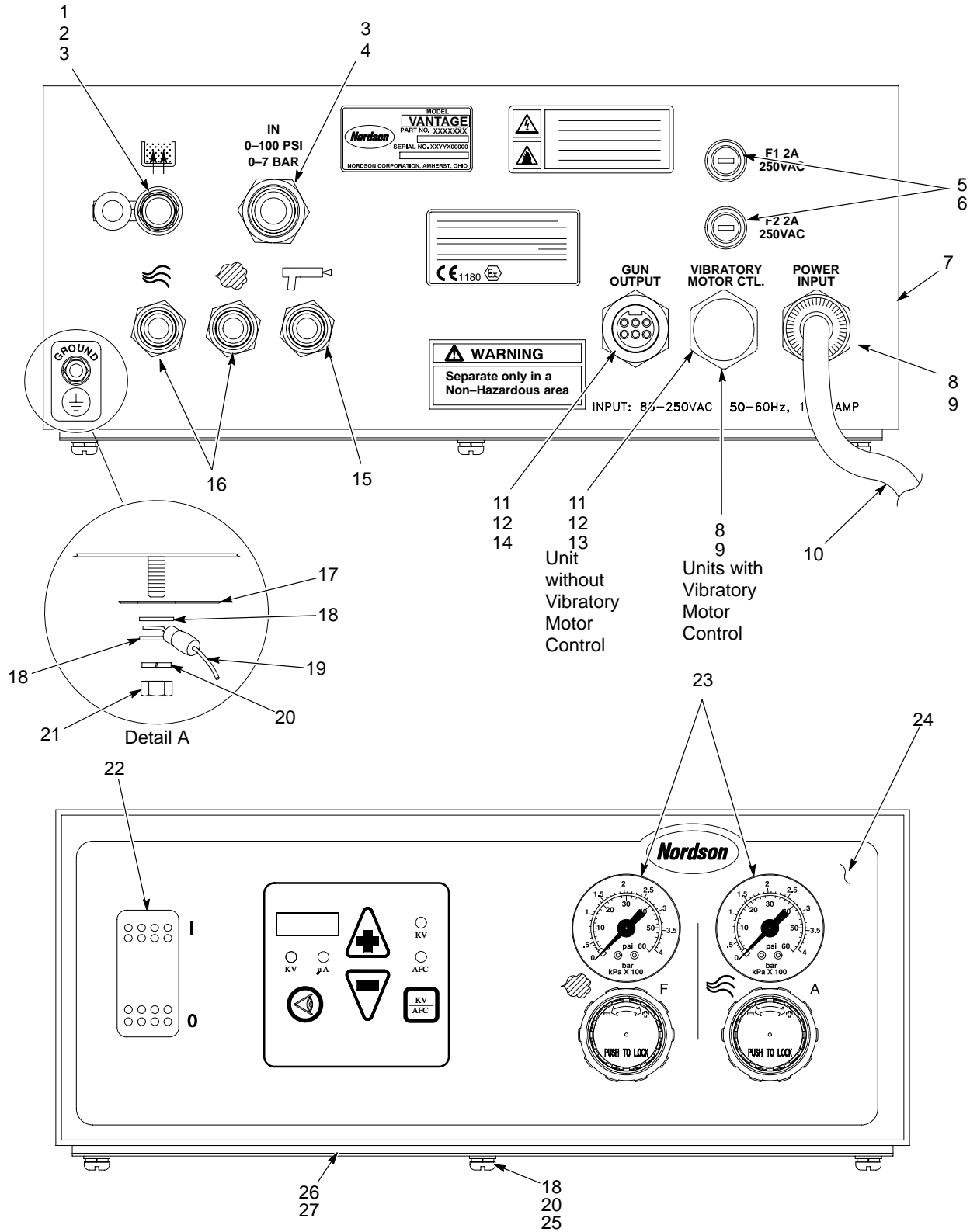
C: Use these parts for the standard control unit, part 1067964.

D: This plug is installed on control units that do not have vibratory motor control.

E: If you use this control unit with a Sure Coat manual powder spray gun, order a 4-mm fitting, part 288822, to use in place of this pipe plug. Contact your Nordson representative for more information about using a Sure Coat gun with the Vantage control unit.

F: Use these screws and washers to secure the control unit to a dolly.

NS: Not Shown



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Figure 14 External Control Unit Parts

Note: The ground assembly shown in Detail A is also on the inside of the control unit cabinet cover.

## Internal Control Unit Parts

See Figure 15.

Item	Part	Description	Quantity	Note
28	1067030	• FILTER, line, with butt-splice	1	
29	-----	• NUT, hex, M4, steel, zinc	4	
30	-----	• WASHER, lock, m, split, M4, steel, zinc	4	
31	-----	• WASHER, flat, M4, narrow, steel, zinc	4	
32	-----	• SCREW, pan head, slotted, M3 x 8, zinc	8	
33	-----	• WASHER, lock, m, external, M3, steel, zinc	8	
34	288803	• POWER SUPPLY, 24, 5, 12 Vdc, 40 W	1	
35	1006024	• HARNESS, power, switch to power supply	1	
36	130630	• JUMPER, ground, cabinet	1	
37	1006025	• HARNESS, power, power supply to PCB	1	
38	1068603	• PRINTED CIRCUIT BOARD, gun control, Vantage	1	
39	141603	• SEAL, panel, regulator	2	
40	900742	• TUBING, polyurethane, 6-mm OD, blue	AR	
41	900619	• TUBING, polyurethane, 8-mm OD, black	AR	
42	1045839	• VALVE, check, adapter, 6-mm tube x 1/8-in. universal	3	
43	971100	• CONNECTOR, male, 6-mm tube x 1/4 universal	3	
44	972931	• TEE, male run, 8-mm tube x 1/4-in. universal	1	
45	1016211	• SOLENOID VALVE, 3 way, 24 Vdc, 2 W	1	
46	972276	• ELBOW, male, 8-mm tube x 1/8-in. universal	1	
47	1043925	• PLUG, pipe, socket, standard, 1/8 RPT, steel, zinc	1	
48	1042065	• FITTING, double branch, 6-mm tube x 1/8 RPT	1	
49	933469	• LUG, 90, double, 0.250, 0.438 in.	1	
50	163443	• JUMPER, ground, cabinet, lid, 15 in.	1	
51	1068173	• RELAY, two-pole	1	G
52	1068172	• CAPACITOR, film	1	H
53	1067022	• HARNESS, Vantage, PCB to motor relay	1	G
NS	939110	• STRAP, cable, 0.875-in. dia	8	
NS	1070844	KIT, plug seal with 1/2-in. conduit nut.	1	I

G: Use only with control units with vibratory motor control.

H: Use only with the 115Vac Vantage control unit with vibratory motor control.

I: Use this kit with the 115V and 220V control units with vibratory motor control. If you are not going to use the vibratory motor control option, the plug kit will help maintain a dust tight control box.

AR: As Required

NS: Not Shown

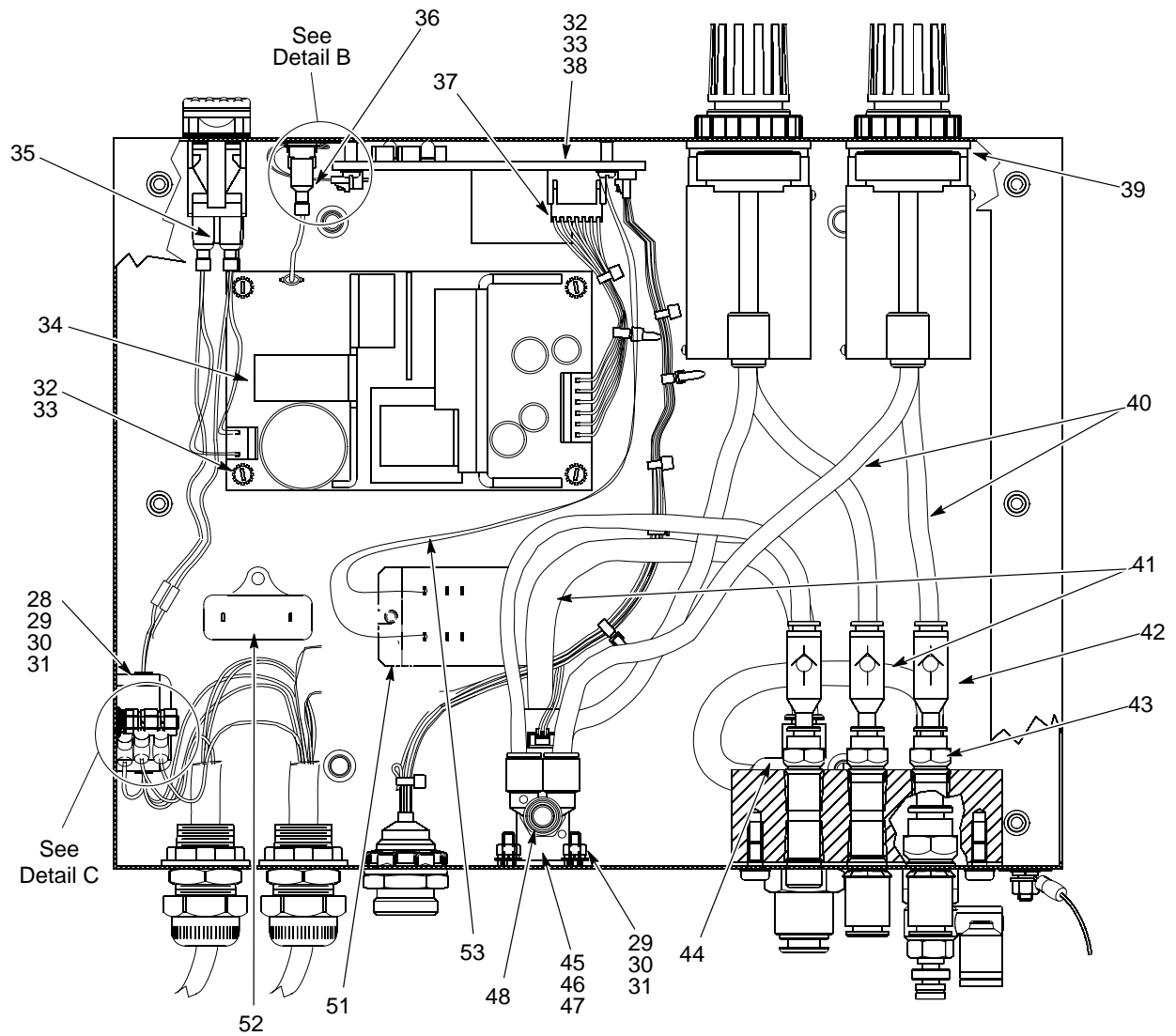


Figure 15 Internal Control Unit Parts

## Optional Mounting Brackets

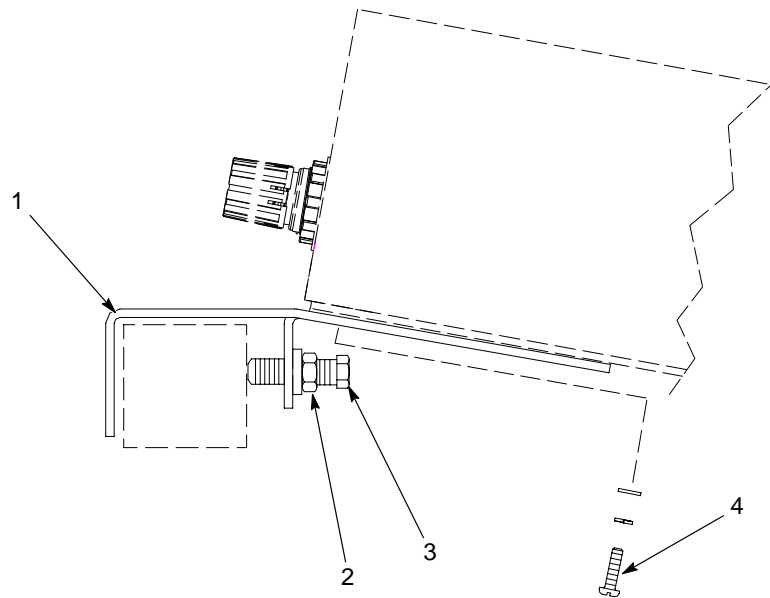
### Rail-Mounting Bracket

See Figure 16.

Use this bracket to mount the control unit to the spray booth's operator platform railing.

Item	Part	Description	Quantity	Note
—	1023687	KIT, railmount bracket	1	
1	-----	• BRACKET, railmount	1	
2	125112	• NUT, hex, jam, M8, steel, zinc	2	
3	982417	• SCREW, machine, hex, M8 x 25, zinc	2	A
3	345492	• SCREW, machine, hex, M8 x 55, zinc	2	A
4	982214	• SCREW, pan head, slotted, M5 x 20, zinc	3	B

NOTE A: One pair of these screws will not be used. Two pairs are included to accommodate different rail sizes.  
 B: These screws replace three of the screws in the control unit's access cover.



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Figure 16 Rail-Mounting Bracket

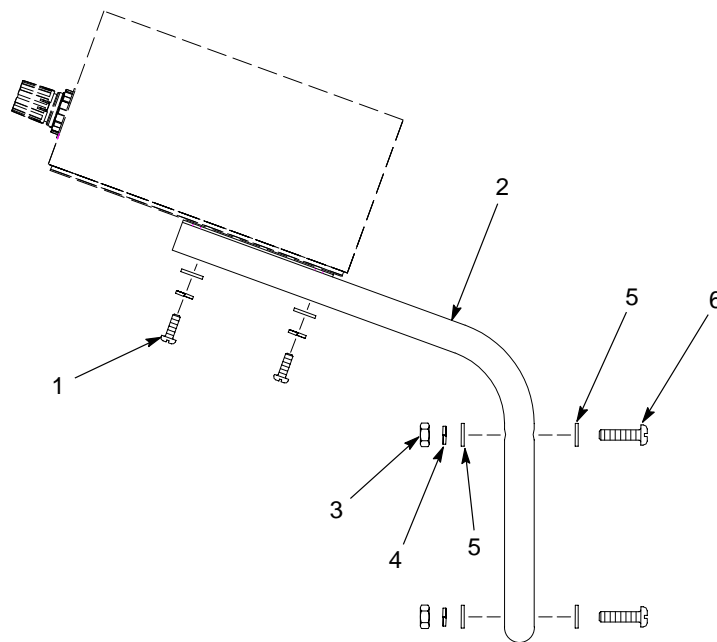
## Wall-Mounting Bracket

See Figure 17.

Use this bracket to mount the control unit to the spray booth wall.

Item	Part	Description	Quantity	Note
—	1021035	KIT, wallmount bracket	1	
1	126336	• SCREW, pan head, slotted, M5 x 12	5	A
2	-----	• BRACKET, wallmount	1	
3	984707	• NUT, hex, M8, steel, zinc	4	
4	983404	• WASHER, lock, M, split, M8, steel, zinc	4	
5	983013	• WASHER, flat, regular, 8, steel, zinc	8	
6	982563	• SCREW, pan head, slotted, M8 x 40	4	

NOTE A: Use these screws in place of the M5 x 10 screws that are installed in the control unit.



1400713B

Figure 17 Wall-Mounting Bracket

## ***Air Tubing, Powder Tubing, and Fittings***

Order tubing in increments of one foot.

<b>Part</b>	<b>Description</b>	<b>Note</b>
900740	AIR TUBING, 10-mm OD, blue, polyurethane	
900618	AIR TUBING, 8-mm OD, blue, polyurethane	
900619	AIR TUBING, 8-mm OD, black, polyurethane	
900650	POWDER TUBING, 12.7-mm ( $\frac{1}{2}$ -in.) ID blue	
900648	POWDER TUBING, 11-mm ID, blue	A
900649	POWDER TUBING, 9.5-mm ( $\frac{3}{8}$ -in.) ID, blue	A
1045098	REDUCER, 10-mm stem x 8-mm tube	B
288822	CONNECTOR, orifice, 4 mm x $\frac{1}{4}$ universal, dia 0.012	C
<p>NOTE A: These optional powder feed hose sizes may improve powder flow and pattern, depending on your application.</p> <p>B: Order this reducer fitting if you need to reduce the 10-mm fluidizing air needle valve to 8-mm.</p> <p>C: If a Sure Coat gun is used with this control unit, order this 4-mm connector to install in place of the manifold's gun air pipe plug, part 1043873. Contact your Nordson representative for more information about using a Sure Coat gun with the Vantage control unit.</p>		



# DECLARATION of CONFORMITY

*Nordson Corporation*  
declare under our sole responsibility that the products

## **ECONO-COAT Powder Electrostatic applicators including control cables used with Vantage Manual Controllers**

*to which this declaration relates complies with the following Directives:*

- **Machinery Directive 89/37/EEC**
- **EMC Directive 89/336/EEC**
- **ATEX Directive 94/9/EC**

*The conformity is under observance of the following standards or standards documents:*

EN292	EN50014	EN50081-1
EN1953	EN50050	EN50082-2
IEC 417L	EN50281-1-1	EN55011
	FM7260	

*Type of protection:*

- **II 2 D EEx 2 mJ, Ambient temperature: 0 °C to +40 °C**

*No of EC type Certificate:*

- **FTZU 02 ATEX 0280**

*No of notified body (ATEX surveillance)*

- **1180**

*ISO9000 certificate*

**DNV**



Joseph Schroeder  
Engineering Manager,  
Finishing Product Development

Date: 01 March 2006



