

Sure Coat® Manual Gun Control Unit

Customer Product Manual
Part 237395H03

Issued 6/07

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

Safety

Introduction

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

Make sure all equipment documentation, including these instructions, is accessible to 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.

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.

The Sure Coat manual gun control unit provides pneumatic and electrostatic controls, dc power, and monitoring functions for Sure Coat and Versa-Spray manual powder spray guns.

The control unit provides the voltage output to the Integral Power Supply (IPS) and monitors the feedback current from the spray gun to control the electrostatic charging of the powder.

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

The units with 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.

The control status information and parameters are adjusted and viewed from a front panel keypad and the liquid crystal display (LCD). The LCD provides status information to the operator to identify the mode of operation, the control parameter set point values, and the status of the control unit's output. The front panel keys allow the operator to choose between the different control modes and to set the electrostatic output levels.

The control unit provides low-voltage dc power to the spray gun voltage multiplier. The multiplier produces the electrostatic voltage used to charge the powder as it is sprayed.

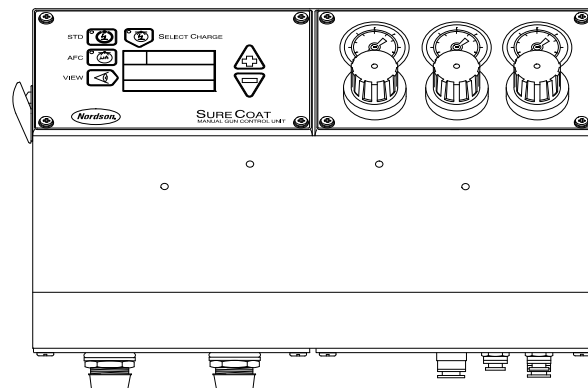


Figure 2-1 Sure Coat Manual Gun Control Unit

Modes

The control unit provides several modes of operation.

Standard Mode

The standard mode (STD) provides maximum transfer efficiency when coating large objects with a gun-to-part distance of 0.2–0.3 m (8–12 in.). Only kV can be controlled in standard mode.

Automatic Feedback Current Function

The Automatic Feedback Current (AFC) is a function that is available in the standard mode. The spray gun's maximum current output is controlled according to the operator adjusted set point. The μA output is called the set point. This allows the operator to limit the maximum output current of the spray gun and prevents excess charging of the powder. AFC provides for an optimum combination of kV and electric field strength for coating parts with interior corners and deep recesses at close range.

Select Charge Mode

The Select Charge mode allows the operator to select different electrostatic charging values from the controller, to optimize the coating of parts with different shapes.

Select Charge Mode #1

This mode is for recoating. It is specifically designed for recoating operations to delay back-ionization and to minimize picture-framing.

Select Charge Mode #2

This mode is for touch-up work. It is optimized for touch-up operations to facilitate Faraday penetration.

Select Charge Mode #3

This mode is for deep cavities. It is designed to coat deep cavities from the inside to minimize back ionization on the edges while providing high transfer efficiency inside the cavities.

Select Charge Mode #4

This mode is custom-programmable. It allows both the kV and AFC set points to be adjusted to specific application requirements.

NOTE: Select Charge mode #4 is only available with software version 4.0.

Front Panel Controls and Indicators

See Figure 2-2.

The controller's front panel is separated into two sections. The left section contains a keypad and display. The right section contains regulators and gauges for the adjustment of flow rate, atomizing, and auxiliary air pressures. The auxiliary air regulator and gauge typically are used to provide fluidizing air to either a feed hopper or fluidizing adapter used with a vibratory box feeder.

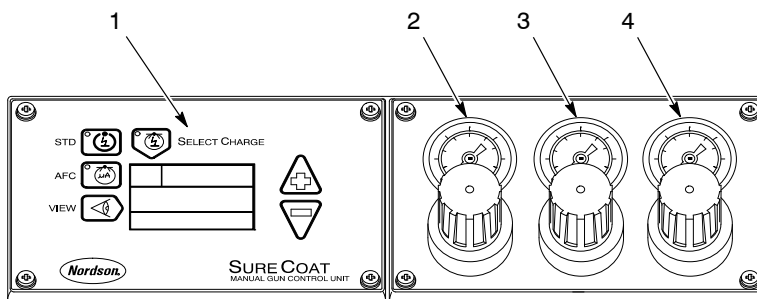


Figure 2-2 Front Panel Controls and Indicators

1. Front panel keypad and display
2. Flow rate air regulator and gauge
3. Atomizing air regulator and gauge
4. Auxiliary air regulator and gauge

Keypad

Refer to Figure 2-3 and Table 2-1. The front panel keys are grouped around the display.

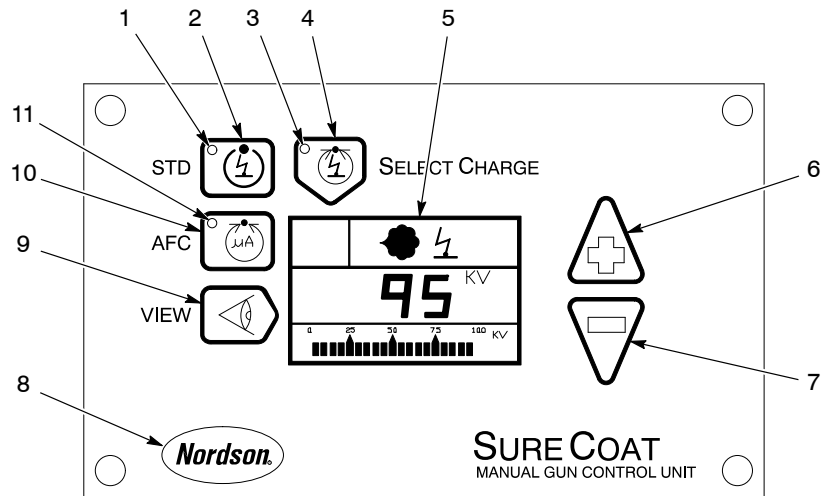


Figure 2-3 Front Panel Keypad and Display

Table 2-1 Front Panel Keypad and Display

Item	Component	Function
1	STD light	STD mode green indicator light.
2	STD key	Turns on the standard electrostatic operating mode (kV control mode).
3	SELECT CHARGE light	Select Charge mode green indicator light.
4	SELECT CHARGE key	Turns on the Select Charge mode. The Select Charge mode number is shown on the display. Pressing the SELECT CHARGE key repeatedly cycles through the modes.
5	Display	Refer to <i>Display</i> on page 2-5.
6	Up arrow key	Increases the set point value. Pressing the key continuously causes the value to increase quickly until the maximum value is reached.
7	Down arrow key	Decreases the set point value. Pressing the key continuously causes the value to decrease quickly until the minimum value is reached. If viewing the spray timer, the timer is cleared. Pressing this key while in the diagnostics mode clears faults.
8	Nordson (diagnostics) logo key	Puts the controller into the diagnostics mode. The unit enters the CONFIG mode if this key is pressed during power up.
9	VIEW key	Toggles through various display options on the digital display and the bar graph.
10	AFC key	Turns on and off the AFC function and the corresponding indicator light.
11	AFC light	AFC function yellow indicator light.

Display

Refer to Figure 2-4 and Table 2-2. The display contains the status of the powder spray, electrostatics, and the set point. A bar graph is also present for a visual representation of the digital display.

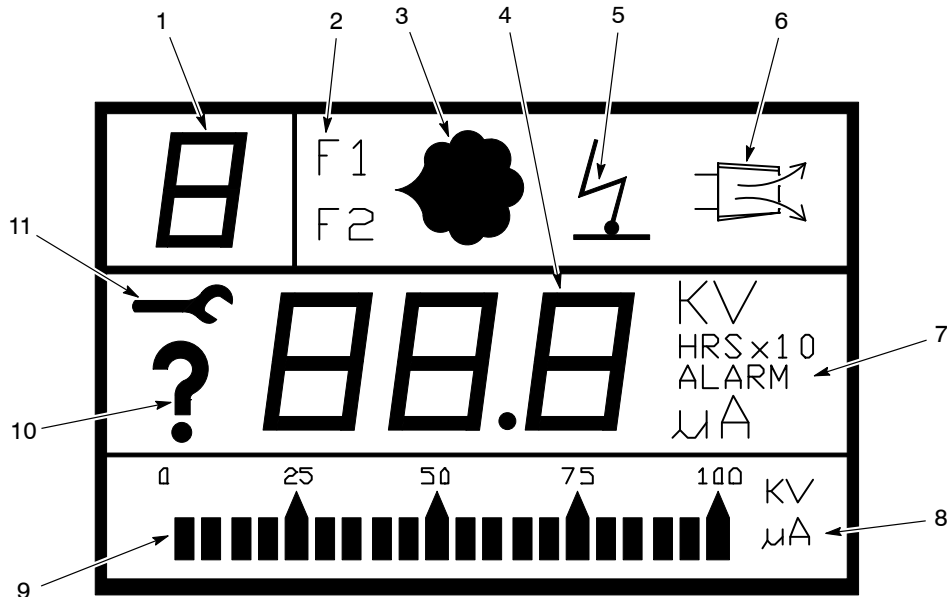


Figure 2-4 Display Indicators

Table 2-2 Display Indicators

Item	Component	Description
1	Select Charge mode	Indicates which Select Charge mode is currently active. Number range is from 1 to 3.
2	F1 F2	Not an active function.
3	Powder icon	Indicates that the spray gun is triggered and powder flow is on.
4	Digital display	Shows a digital number of the set point and actual parameter information (kV, μ A, and HRS).
5	Electrostatics icon	Lights to indicate that the spray gun is triggered and the electrostatics are on.
6	Purge icon	Lights to indicate that the purge function is activated.
7	Unit indicator	Lights to indicate the selection of kV, μ A, HRS, type of timer, or if an alarm is present.
8	Bar graph units	Shows the units of the bar graph indicator.
9	Bar graph	Shows the parameter displayed on the digital display as a bar graph.
10	Alarm icon	Lights when there is an alarm or error condition.
11	Diagnostics icon	Lights to indicate that the controller is in the diagnostics mode.

Power Switch

See Figure 2-5.

The side panel contains the main power switch that turns on and off the ac power to the control unit.

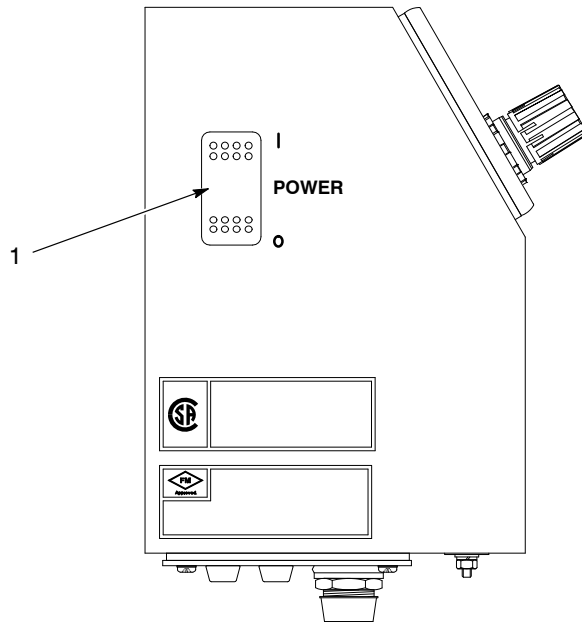


Figure 2-5 Control Unit Power Switch (Side Panel)

1. Control unit power switch

Bottom Panel Components

Refer to Figure 2-6 and Table 2-3. Flip the control unit on its back to access the components on the bottom panel.

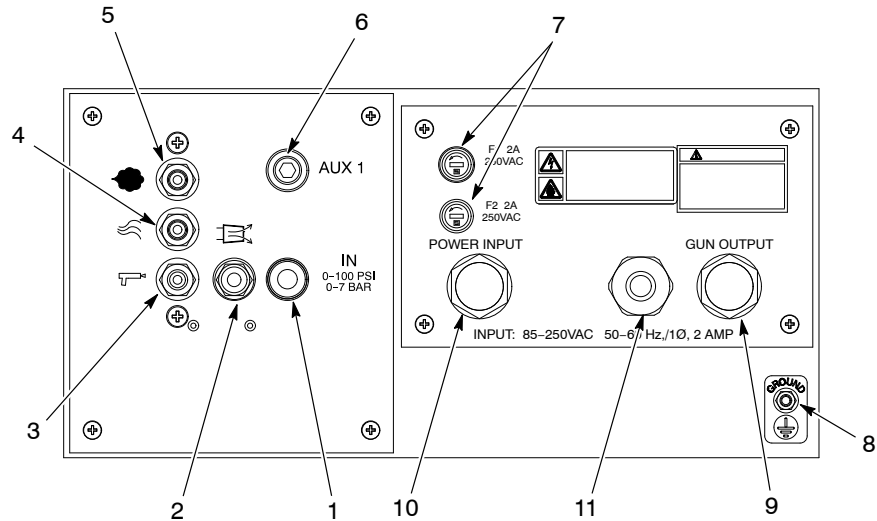


Figure 2-6 Bottom Panel Components

Table 2-3 Bottom Panel Components

Item	Component	Function
1	IN air connector	10-mm tubing connector for supply air input. 7 bar (100 psi) maximum.
2	Purge air connector	6-mm tubing connector for purge air output to the spray gun. Air pressure is unregulated at full supply pressure.
3	Gun air connector	4-mm tubing connector for gun air output. Air pressure is unregulated. A restrictor is supplied to reduce the air pressure to the spray gun for the electrode air wash function.
4	Atomizing air connector	8-mm tubing connector for the powder pump atomizing air supply from the atomizing air regulator.
5	Flow rate air connector	8-mm tubing connector for the powder pump flow rate air supply from the flow air regulator.
6	AUX air connector	10-mm tubing connector for unswitched auxiliary air output from the AUX regulator. Typically used for fluidizing air for a feed hopper.
7	Fuses	Protect the control unit from power surges.
8	Cabinet ground stud	Ground wire connection. The control unit must be connected to a true earth ground.
9	GUN OUTPUT receptacle	6-pin receptacle for the gun cable.
10	POWER INPUT receptacle	5-pin receptacle for the ac power input to the controller.
11	Vibratory motor control	Connection for the vibratory motor control unit
Not Shown	Small air holes	Small holes through the panel by the air fittings are the solenoid exhaust air holes. They should not be plugged.

Timers

The control unit is equipped with three different timer functions.

Spray Timer

The spray timer is indicated in hours (HRS) and keeps track of how long the spray gun has been triggered. This is a cumulative total that can be reset. The spray timer can be viewed by pressing the VIEW key while the spray gun is not triggered. The system can be reset by pressing the down arrow while viewing the spray hours.

This feature is used for preventive maintenance.

Service Timer

The service timer keeps track of how long the controller has been in service. This timer can be viewed by pressing the Nordson key and going into the diagnostics mode. Time is shown as HRS x 10. The number displayed must be multiplied by 10.

This timer cannot be reset and is used for diagnostic purposes.

Total Spray Timer

NOTE: The total spray timer is not available in software version 1.0.

The total spray timer keeps track of the total time the spray gun has been triggered. This timer can be viewed by pressing the Nordson key to go into the diagnostics mode. Time is shown in HRS x 10.

This timer can not be reset and is used for diagnostic purposes.

Specifications

The control unit enclosure meets IP54 and Class II, Division II requirements.

Electrical

Input	85–250 Vac, 1 phase, 50–60 Hz
Output	6–21 Vdc to spray gun
Short circuit output current	300 mA
Maximum output current	600 mA

Operating Pressure

Minimum input pressure	4 bar (60 psi)
Maximum input pressure	7 bar (100 psi)
Flow rate air	1 bar (15 psi)
Atomizing air	0.3 bar (5 psi)
Auxiliary air (fluidizing)	1.0–2.8 bar (15–40 psi)
Gun air	0.3 bar (5 psi) fixed
Purge air	Full input air pressure

Air Supply Quality

The 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 dew point at 7 bar (100 psi) and a filter system with prefilters and coalescent-type filters capable of removing oil, water and dirt in the submicron range.

Symbols

Figure 2-7 identifies the symbols used on the control unit.

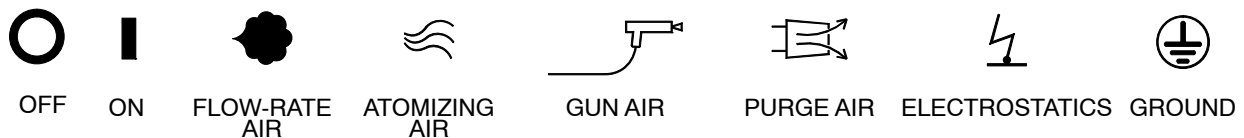


Figure 2-7 Symbol Legend

Section 3

Installation



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

Mounting

Three mounting options are available for the manual gun control unit. The mounting kits must be specified and ordered separately. Refer to *Mounting Bracket Kits* on page 7-10.

Operator Platform Rail Mounting Kit

1. Attach the rail bracket to the front of the control unit with the four screws.
2. Start threading the locking bolts with nuts into the front of the rail bracket, but do not tighten them.
3. Install the controller onto the rail.
4. Tighten the locking bolts and nuts.

Wall Mounting Kit

1. Attach the wall bracket to the front of the control unit with the four screws.
2. Using the bracket as a template, drill holes in the mounting surface.
3. Secure the wall bracket to the mounting surface.

Bench Top Mounting Kit

1. Attach the bench top mounting bracket to the unit with the four screws.
2. Using the bracket as a template, drill holes in the bench top.
3. Secure the bench top mounting bracket to the mounting surface.

Electrical Connections



WARNING: Do not skip step 1. Failure to install the locking disconnect switch or breaker may result in a severe shock during installation or repair.



CAUTION: Equipment damage may occur if the control unit is connected to any line voltage other than that stated on the ID plate.

1. Install a locking disconnect switch or breaker in the service line ahead of the equipment so power can be shut off during installation or repair.
2. Make sure that the input voltage is 85–240 Vac nominal, 1 phase, 50/60 Hz.

NOTE: If you are using the vibratory motor control option, the input power must match the rating of the motor.

3. Wire the unterminated end of the power cord using these guidelines:

Wire	Type
Brown	L1 (hot)
Blue	L2 (neutral)
Green/yellow	Ground



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.

4. Connect the ground strap furnished with the control unit to the ground stud.
5. Secure the ground strap's clamp to an earth ground.
6. Connect the power cord's plug to the POWER INPUT receptacle.
7. Connect the gun cable to the GUN OUTPUT receptacle.

Pneumatic Connections

Maximum input air pressure is 7 bar (100 psi). The supply air must be clean and dry. Moist or contaminated air can cause powder to cake in the feed hopper; stick to the feed hose walls; clog the pump venturi throats and gun passages; and cause grounding or arcing inside the spray gun.

Use prefilters and coalescent filters with automatic drains and a refrigerated or regenerative desiccant air dryer capable of producing a 3.4 °C (38 °F) or lower dewpoint at 7 bar (100 psi).

NOTE: The unit is shipped with 10-, 8-, and 6-mm tubing connectors installed in the input and output ports. Refer to your spray gun, pump, and hopper manuals for locations of connections listed in the Other Connection column.

See Figure 2-6.

Air Tubing Size	Air Tubing Color	Controller Connection (Bottom Panel)	Other Connection
10 mm	Blue	IN air connector (1)	Main air supply NOTE: Install a manually operated, self-relieving shutoff valve in the supply line to the control unit.
6 mm	Black	Purge air connector (2)	Spray gun
4 mm	Clear	Gun air connector (3)	Spray gun
8 mm	Blue	Atomizing air connector (4)	Powder pump fitting A
8 mm	Black	Flow rate air connector (5)	Powder pump fitting F
10 mm	Black	AUX 1 air connector (6)	Fluidizing air fitting (on feed hopper or fluidizing pickup tube)

Section 4

Operation



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



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



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

Startup

Before operating a Nordson powder spray system, read all the system component manuals.

NOTE: For information on the operation of components of the powder spray system, refer to the appropriate manuals.

Before powering on the manual gun control unit, make sure that the following conditions are met.

- The booth exhaust fans must be turned on.
- The powder recovery system must be operating.
- The powder in the feed hopper must be thoroughly fluidized.
- The cable, feed hose, and air tubing must be correctly connected to the spray gun, powder pump, and control unit.

Startup *(contd)*

See Figure 4-1.

1. Turn the control unit main power switch to the on position. All the icons on the LCD panel light. The controller switches to the factory default mode or to the last selected mode. The LCD displays the kV or μ A setting.

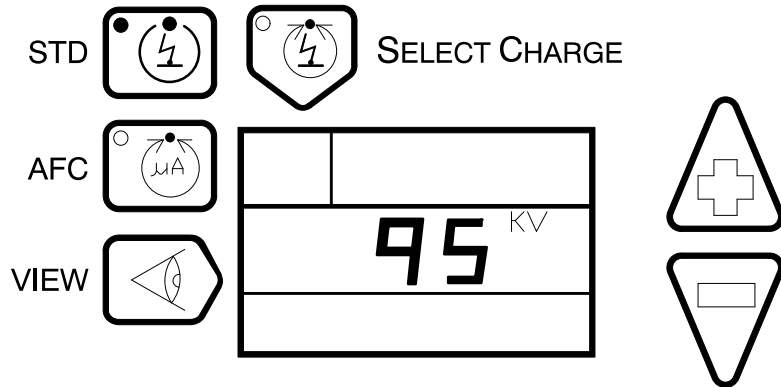


Figure 4-1 STD Mode Display, Spray Gun Not Triggered

2. Set the air pressures using the guidelines listed in the following chart.

NOTE: The pressures given are average starting points. Pressures vary according to required film build, line speed, and part configuration. Adjust the pressures to obtain the desired results.

Flow Rate	1 bar (15 psi)
Atomizing	0.3 bar (5 psi)
AUX (Fluidizing)	0–2 bar (0–30 psi)

NOTE: Before spraying, allow 5–10 minutes for the powder in the feed hopper to adequately fluidize.



WARNING: The operator must maintain skin contact with the gun handle. If wearing gloves, cut away the palm. Failure to observe this warning could result in a shock.

3. Point the spray gun into the booth, pull the trigger, and test the spray pattern.

NOTE: The typical display is shown in Figure 4-2 when the spray gun is triggered. Refer to the *Description* section for additional information on this display.

NOTE: If you are using the vibratory motor control option, the vibrating motor will turn on as the spray gun is triggered and will remain on until approximately 30 seconds after the trigger is released.

4. Adjust the flow rate, and atomizing air pressures and the pattern adjust sleeve (if used) to obtain the desired spray pattern.
5. Select an operating mode using Tables 4-1, 4-2, 4-3, or 4-4.

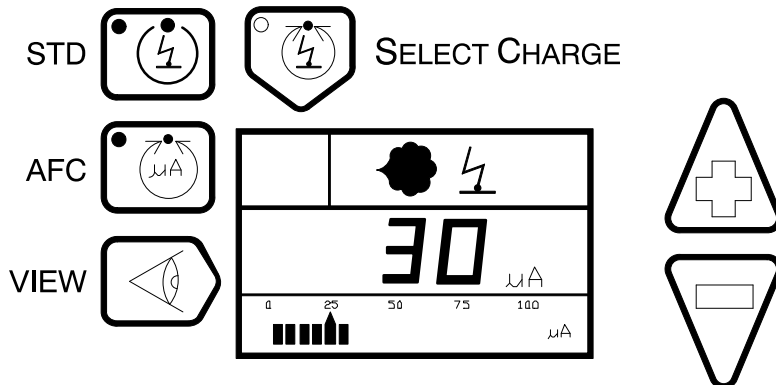


Figure 4-2 STD Mode Display, AFC On, Spray Gun Triggered

Initial Gun Usage

When a spray gun is first put into service, verify that the control unit is in the STD mode with AFC turned on, at a set point of 30 μA (software versions 2.0, 3.0, 4.0, 5.0 only).

1. Record the μA output with no parts in front of the spray gun.
2. Monitor the μA output daily under the same conditions.

NOTE: A significant increase in μA output indicates a probable short in the gun resistor. A significant decrease indicates a failing resistor or voltage multiplier.

3. Select an operating mode using Tables 4-1, 4-2, 4-3, or 4-4.

NOTE: Refer to the *Description* section for additional information on Select Charge and Standard modes.

Configuring Gun Type—Only for Software Versions 3.0, 4.0, and 5.0

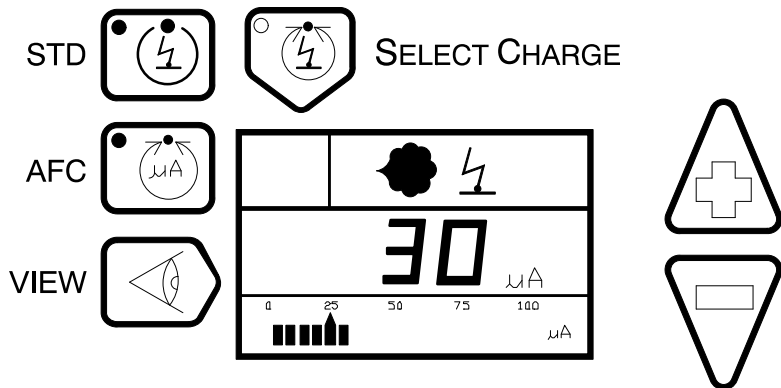
The default spray gun type is the Sure Coat manual powder spray gun. Perform the following procedure to switch between Sure Coat and Versa-Spray powder spray guns.

1. Depress and hold the Nordson logo key and turn on the control unit.
2. Hold the Nordson logo key until CFG appears on the display. CHOOSE GUN scrolls across the display.
3. Either press the VIEW key or wait until SC appears on the display.
4. Use the arrow keys to select either Sure Coat (SC) or Versa-Spray (VS).
5. Press the Nordson logo key to exit the CONFIG mode.

Operating Modes

Table 4-1 Operating Modes—Software Versions 2.0, 3.0, and 4.0

Mode	AFC	Description		
Standard	Off	See Figure 4-3. Use the up/down arrow keys to turn the kV on/off or adjust the set point. The control unit stores the kV setting when the mode is changed or when the control unit is powered off.		
		Setting	Sure Coat Configurations	Versa-Spray Configurations
		kV Set Point	adjustable	adjustable
		kV Range	0 then 25 to 95 kV	0 then 25 to 80 kV
		Maximum kV Output/Default Setting	95 kV	80 kV
	On	See Figure 4-3. Adjust the desired AFC set point by using the up/down keys. The factory-preset starting point is 30 μ A. If the set point is changed, the controller remembers the new set point value.		
		Voltage is automatically set to the maximum, and AFC allows the setting of a feedback current threshold. If the current threshold is reached, the voltage is automatically adjusted to maintain the required coverage.		
		If the AFC set point is changed, the controller remembers the new set point value.		
		Setting	Sure Coat Configurations	Versa-Spray Configurations
		Initial kV Value	95 kV (not adjustable)	80 kV (not adjustable)
Set Point Increments		5 μ A	5 μ A	
kV Range	10 to 100 μ A	10 to 120 μ A		
Default Set Point	30 μ A (Default set point for software version 1.0: 20 μ A)			
Maximum Current	100 μ A	120 μ A		



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Figure 4-3 STD Mode with AFC On

Table 4-2 Select Charge Modes—Software Version 4.0

Mode	Description				
Select Charge	Application		Select Charge Mode		
	Re-coat		1		
	Touch-up		2		
	Deep cavity with spray gun inside		3		
	Custom (user programmable)		4		
	See Figure 4-4. Select the desired Select Charge value (based on the application and coating requirements) by depressing the Select Charge key.				
		Mode #1	Mode #2	Mode #3	Mode #4
	Sure Coat Initial kV Value:	95 kV	95 kV	95 kV	60 kV
	Versa-Spray Initial kV Value:	80 kV	80 kV	80 kV	60 kV
	Set Point:	not adjustable	not adjustable	not adjustable	adjustable
Maximum Current	15 μ A	50 μ A	70 μ A	30 μ A	

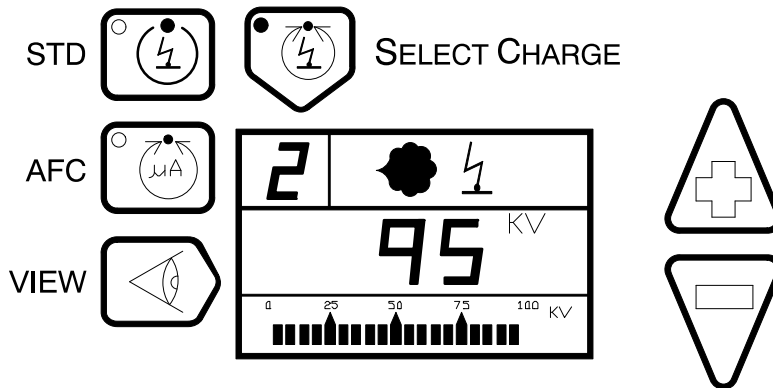


Figure 4-4 Select Charge Mode

Operating Modes *(contd)*

Table 4-3 Select Charge Modes—Software Versions 3.0 and 2.0

Mode	Description			
Select Charge	Application	Select Charge Mode		
	Re-coat	1		
	Touch-up	2		
	Deep cavity with spray gun inside	3		
	See Figure 4-5. Select the desired Select Charge value (based on the application and coating requirements) by depressing the Select Charge key.			
		Mode #1	Mode #2	Mode #3
	Sure Coat Initial kV Value:	95 kV	95 kV	95 kV
	Versa-Spray Initial kV Value:	80 kV	80 kV	80 kV
	Set Point:	not adjustable	not adjustable	not adjustable
	Maximum Current	15 μ A	50 μ A	70 μ A
NOTE: The kV and AFC set points are not user adjustable and are set for optimum output for the mode.				

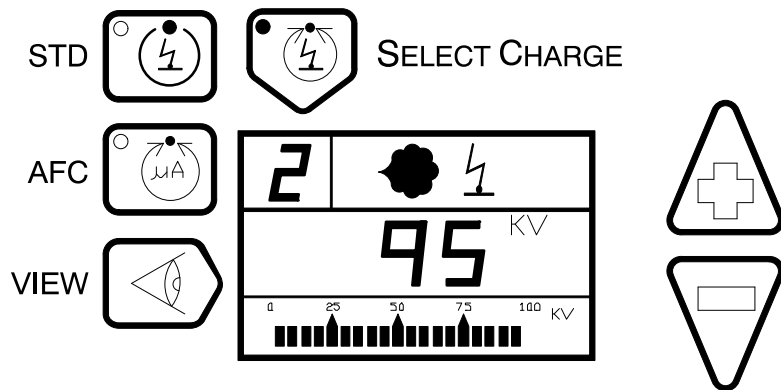


Figure 4-5 Select Charge Mode

Table 4-4 Select Charge Modes—Software Version 1.0

Mode	AFC	Description			
Select Charge	On	See Figure 4-6. Adjust the desired AFC set point by using the up/down keys. A suggested starting point is 20 μ A. If the set point is changed, the control unit remembers the new set point value. The default AFC set point can be different for Select Charge modes 2 or 3. AFC cannot be set in value 1.			
		Voltage is automatically set to the maximum, and AFC allows the setting of a feedback current threshold. If the current threshold is reached, the voltage is automatically adjusted to maintain the required coverage. The kV is set to that particular mode's initial kV value.			
		Mode #1	Mode #2	Mode #3	
		Initial kV value	95	95	95
		kV set point	not adjustable	not adjustable	not adjustable
		AFC set point	not adjustable	10 – 50	10 – 100
Maximum current	15 μ A	50 μ A	100 μ A		

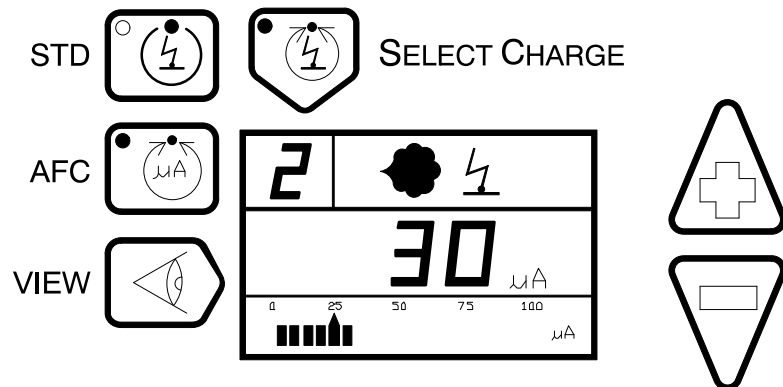


Figure 4-6 Select Charge Mode with AFC On

Select Charge Mode Examples

Mode	Application
1	When recoating parts that have already been cured but require additional coating and curing, the gun current should be limited and maintained.
2	When coating large parts with a mix of large flat sections and recessed or angled sections, high kV is required for painting the flat sections at a far gun to part distance, but low voltage from the gun is required for painting the recessed sections at a close gun to part distance.
3	When coating parts with deep cavities, low kV and low current are required to coat the corners, but high kV and high current are required to coat the flat sections inside.
4	Version 4.0 Only When spraying special powders (metallics, micas, etc.) where application-specific low initial kV and AFC allow for more uniform charging of powder particles.

Operating Modes *(contd)*

Verify the correct data on the display in Table 4-5.

Coat a part and adjust the voltage settings (kV or AFC) and air pressures to achieve the desired results.

NOTE: Obtaining a high quality finish and maximum transfer efficiency (percentage of powder sprayed that adheres to the part) requires experimentation and experience. Settings for electrostatic voltage and air pressure affect overall coating performance. In most applications, the settings should produce a soft spray pattern that directs as much of the powder as possible onto the part with a minimum of overspray. These settings allow the maximum amount of charged powder to be attracted to the grounded part.

NOTE: Lowering the voltage is a common method for trying to improve coverage of deep recesses and interior corners of parts. However, lowering the voltage may also reduce the overall transfer efficiency. Powder velocity, direction, and pattern shape can be just as important as electrostatic voltage in coating these areas.

Table 4-5 Displays





Function	Display when gun triggered ⁽¹⁾	Display when gun not triggered
STD Mode & Viewing kV	Version 1.0, 2.0, 4.0, and 5.0: kV set point Version 3.0: Actual kV	kV setting
AFC On & Viewing kV	Actual kV	Initial kV setting (factory kV)
AFC On & Viewing μ A	Actual μ A ⁽²⁾	AFC set point ⁽³⁾
AFC Off & Viewing kV	kV set point	kV set point
AFC Off & Viewing μ A	Actual μ A	Blank
<p>⁽¹⁾ Use the VIEW key to toggle the display between kV and μA values. The units are shown on the display and the bar graph.</p> <p>⁽²⁾ Pressing the AFC key shows the AFC set point then the actual μA current feedback from the spray gun on the display and the bar graph.</p> <p>⁽³⁾ Pressing the up or down key switches the display to AFC set point. All subsequent key presses change the AFC set point.</p>		

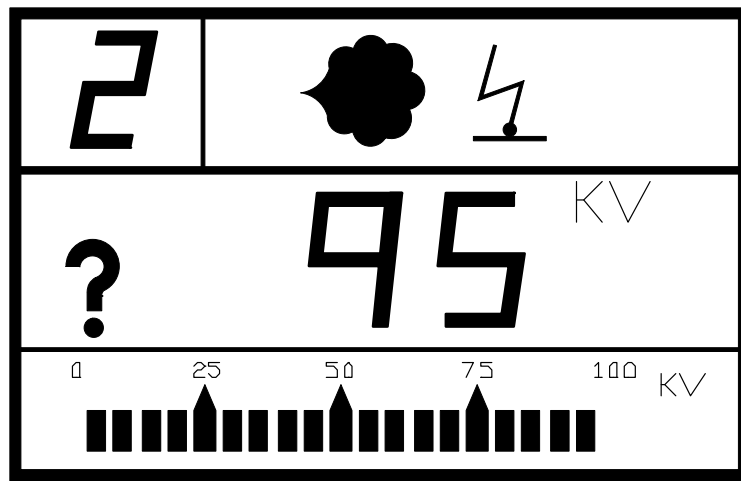
Error Conditions

The Sure Coat control unit continuously monitors the operation of vital system components. The question mark (?) error icon alerts the operator about potential faults to prevent rejects and to reduce downtime. The automatic self diagnostics pinpoint a faulty component to facilitate troubleshooting and also reduces downtime.

See Figure 4-7.

If the question mark (?) error icon appears on the display, refer to the *Troubleshooting* section.

Icon	Icon Status	Gun Status	Problem
	Flashing	Triggered	Electrostatics
	Flashing	Not triggered	kV is on when it should be off
	Flashing	Triggered	Solenoid
	On continuously	Triggered	Press the Nordson key to view error code



1400473A

Figure 4-7 Display of an Error Condition

Air Pressure Adjustments

Refer to the feed hopper manual for the recommended fluidizing air pressure and to *Specifications* on page 2-8 for recommended flow rate and atomizing air pressures.

Fluidizing Air Pressure

When properly fluidized, small air bubbles should rise gently and uniformly to the surface of the powder, making it look like it is boiling. In this state, the powder feels and acts similar to a liquid, enabling it to be easily transported by the powder pump from the hopper to the spray gun.

If the fluidizing pressure is set too low, a heavy inconsistent powder may flow. If the fluidizing pressure is too high, the powder boils violently and the flow is uneven with possible air pockets in the powder stream.

Flow Rate Air Pressure

Flow rate air transports a powder and air mixture from the feed hopper to the spray gun. Increasing the flow rate air pressure increases the amount of powder sprayed from the spray gun and may increase the thickness of the powder deposited on the part.

If the flow rate air pressure is set too low, an inadequate film build or uneven powder output may result. If the flow rate air pressure is too high, too much powder could be output at too high a velocity. This could cause excessive film build or overspray, which reduces transfer efficiency and wastes powder. Excessive flow rate air pressure may also accelerate the build-up of impact fused powder (impact fusion) in the spray gun or pump or cause premature wear of the spray gun and pump parts in contact with the powder.

Keeping the amount of overspray to a minimum reduces the amount of powder to be recovered and recycled. This minimizes wear and tear on the system components such as pumps, spray guns, and filters. Maintenance costs are also kept down.

Atomizing Air Pressure

Atomizing air is added to the powder and air stream to increase the powder velocity in the feed hose and break up clumps of powder. Higher atomizing air pressures are needed at lower powder flow rates to keep the powder particles suspended in the air stream. Higher powder velocities may cause the spray pattern to change.

If the atomizing air pressure is set too low, the result may be uneven powder output from the spray gun along with puffing and surging. If set too high, atomizing air pressure can increase the powder velocity and cause excessive overspray, impact fusion, and premature wear of the pump and spray gun parts.

NOTE: Set the atomizing air at least to 0.3 bar (5 psi). If the air pressure is too low, powder may flow back from the powder pump and get inside the control unit, damaging the air valves and regulators.

Shutdown

1. Turn the control unit's main power switch to the off position.
2. If using auxiliary air, turn the AUX regulator counterclockwise until the gauge reads zero.
3. Ground the gun electrode to discharge any residual voltage.
4. Perform the *Daily Maintenance* procedure.

Daily Maintenance

1. Compare the spray gun's μA output in kV mode with no parts in front of the spray gun, with the output and kV setting recorded at initial startup. Significant differences may mean that the gun electrode assembly or multiplier is shorted or failed.



WARNING: Check all ground connections thoroughly. Ungrounded equipment and parts may accumulate a charge that could arc and cause a fire or explosion. Failure to observe this warning could cause serious injury.

2. Check all ground connections, including part grounds.

NOTE: Ungrounded or poorly grounded parts affect transfer efficiency, electrostatic wrap, and the quality of the finish.

3. Check power and gun cable connections.
4. Make sure that the air being supplied is clean and dry.
5. Wipe powder and dust off the control unit's cabinet with a clean, dry cloth.
6. Carefully remove fused powder from the parts with a wooden or plastic dowel or similar tool.

NOTE: Do not use tools that will scratch the plastic. Powder will build up and impact fuse on any scratches.

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.

Introduction

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.

Icon	Icon Status	Gun Status	Problem
	Flashing	Triggered	Electrostatics
	Flashing	Not triggered	kV is on when it should be off
	Flashing	Triggered	Solenoid
	On continuously	Triggered	Press the Nordson key to view error code

Enter the diagnostics mode to find the specific problem.

Diagnostics Mode

See Figure 5-1.

If the spray gun is triggered while an error condition is present, a question mark is displayed on the digital display and the powder and kV symbols flash on and off. The diagnostics mode must be entered to correct the errors.

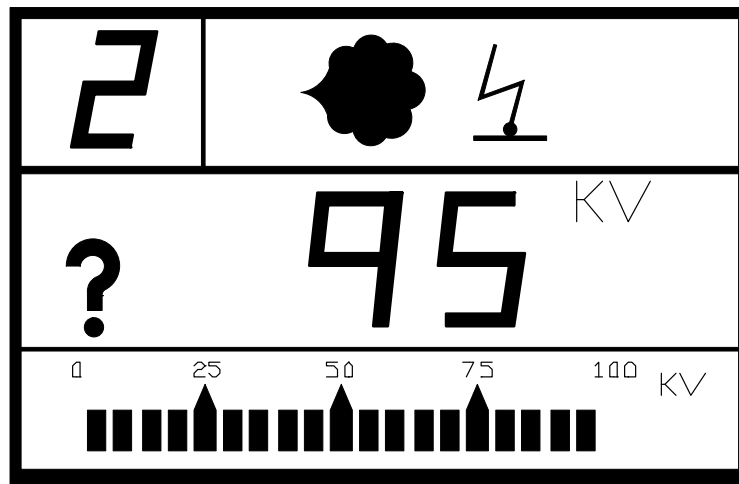


Figure 5-1 Error Condition Display

Operation

The diagnostics function is available at all times. Trigger and purge are still operational while the display shows the diagnostics information.

NOTE: In software version 1.0, the diagnostics function is only available when the system is not triggered. Triggering the spray gun or pressing the Nordson key at any time while in diagnostics results in an automatic exit from the diagnostics mode and a return to the previous operating mode.

NOTE: Do not power off the system unless instructed to do so. Error codes are erased when the system is powered off.

To enter diagnostics mode:

1. Press the Nordson key.
2. See Figure 5-2. A wrench symbol on the digital display indicates that diagnostics mode is active.

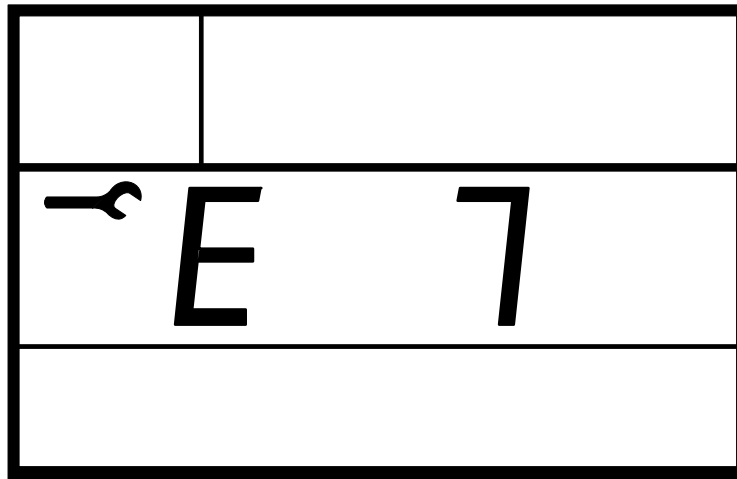


Figure 5-2 Diagnostics Mode Display

The system performs internal checks and automatically cycles through the following diagnostics sequence:

- a. Error codes are shown on the digital display if any error occurs.
- b. Dashes are displayed to indicate the end of the error code.
- c. The total spray timer value is displayed, and the number 1 is displayed in the Select Change digit along with the HRS x10.
- d. The service timer value is displayed and the number 2 is displayed in the upper left corner along with the HRS x10.
- e. All segments and icons light up on the LCD display.
- f. The controller type SC1 (manual controller) is displayed.
- g. The software version is displayed. The letter S is displayed in the upper left hand corner, along with the version number.

NOTE: After the entire diagnostics procedure is completed, the controller automatically exits diagnostics and reverts to the previous operating mode.

3. Record all error codes.

NOTE: Make sure to record error codes prior to turning power off. Error codes are erased when power is turned off.

4. If an error code is available, refer to Table 5-1 to locate the error and perform the corrective action.

NOTE: After the entire diagnostics procedure is completed, the controller automatically exits the diagnostics mode and reverts to the mode that was previously set.

5. If an error code was not recorded, re-enter the diagnostics mode to view and record the error code.

NOTE: For any manual powder spray gun problem, refer to the spray gun's manual for additional information.

6. To clear a fault while in the diagnostics mode, press the down arrow key.

Error Codes

Table 5-1 Error Codes

Error Code	Problem	Corrective Action
1	Problem writing to Neuron EPROM	Turn off control unit power to reset the microprocessor. If the problem persists, replace the control board.
2	RAM test failed	Turn off control unit power to reset the microprocessor. If the problem persists, replace the control board.
3	μ A Feedback fault	Trigger the gun with no parts in front of the spray gun. If the gun current is greater than 105 μ A, check for a short circuit of the current feedback wire in the gun cable: Unplug the connector to the multiplier at the back of the spray gun. Trigger the gun and check the display. <ul style="list-style-type: none"> • If the error stays E3, replace the cable. • If the error changes to E7, replace the multiplier.
4	Trigger valve solenoid #1 has a short or open	Check the solenoid valve coil. If the problem persists, replace the solenoid.
5	Purge valve solenoid #2 has a short or open	Turn off control unit power and check the solenoid valve coil. If the problem persists, replace the solenoid.
6	Not used in this system	Contact your Nordson representative for assistance.
7	Gun cable or multiplier open circuit	Check if the LED on the back of the spray gun illuminates when the trigger is depressed. <ul style="list-style-type: none"> • If the LED is not on, check for a faulty gun cable. • If the LED is on, trigger the spray gun close to a grounded part. If the current display is 1 μ A or less, check the multiplier cable and electrode assembly for loose connections. If the connections are secure, check the multiplier with a kV meter. If the kV meter shows output voltage, check for a defective feedback wire in the cable. If the feedback wire is good, check for a defective multiplier.
8	Gun cable or multiplier short circuit	Check if the LED on the back of the spray gun illuminates when the trigger is depressed. If the LED is not on, turn off the control unit. Unplug the connector to the multiplier at the back of the spray gun. Trigger the spray gun and check the LED. If the LED stays off and the error code stays E8, the cable is shorted and must be replaced. If the LED is on and the error code changes to E7, the gun cable is good. Check for a defective multiplier.

Continued...

Error Code	Problem	Corrective Action
9	Not used in this system	Contact your Nordson representative for assistance.
10	Not used in this system	Contact your Nordson representative for assistance.
11	Controller board hardware	Turn off control unit power. Unplug the multiplier connection at the back of the spray gun. Power up the controller and then trigger the spray gun. If the problem changes to an open circuit, then the board is working correctly. Check the multiplier. If the problem persists, replace the controller board.
12	Not used in this system	Contact your Nordson representative for assistance.
13	Not used in this system	Contact your Nordson representative for assistance.
14	Motor relay open circuit	Check the wiring leading from the circuit board to the motor relay and coil for an open circuit. If the motor relay is not present, check for a motor load simulator resistor at J4 pins 5 and 6 on the main circuit board.
15	Foldback fault	Check if the LED on the back of the spray gun illuminates when the trigger is depressed. If the LED is not on, turn off the control unit. Unplug the connector to the multiplier at the back of the spray gun. Trigger the spray gun and check the LED. If the LED stays off and the error code stays E8, the cable is shorted and must be replaced. If the LED is on and the error code changes to E7, the gun cable is good. Check for a defective multiplier.

Determining Software Version

See Figure 5-3.

The software version of your system is displayed during the diagnostics mode. The letter S (software) appears in the upper left corner, the software version is displayed next to the wrench symbol.

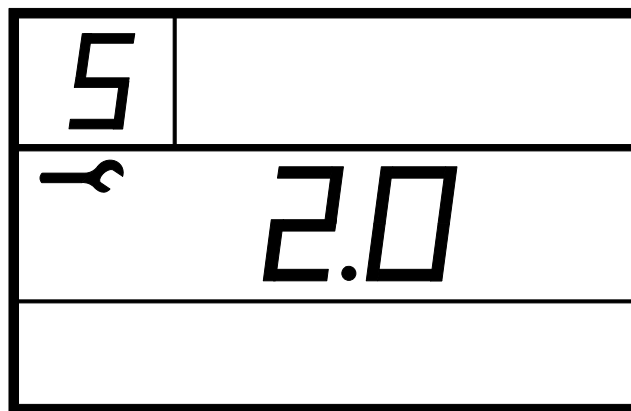


Figure 5-3 Software Version Display

Other Problems



WARNING: Electrical power must be on to check voltages. Touching energized electrical components could be fatal. Turn off power before making adjustments or repairs.

No Display at Startup

See Figure 5-4.

Check the fuses on the bottom panel. Remove the keypad module and check if the dc power LED is lit on the controller board.

- If the LED is on, replace the keypad module.
- If the LED is off, check the ac and the dc electrical circuits.

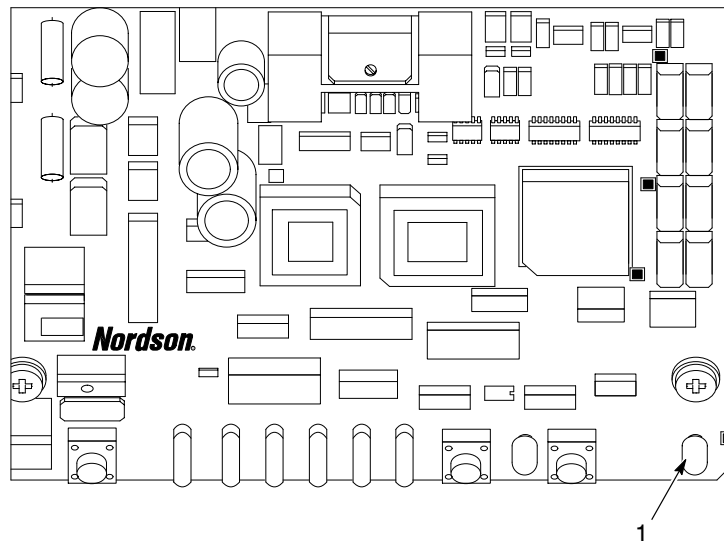


Figure 5-4 Controller Board Power LED Location

1. dc Power LED

Electrical Circuits

See Figure 5-5.

1. Check the fuses (1 and 2) on the power supply module panel (3). Replace any blown fuses.
2. Check the connections of the POWER INPUT (7) and GUN OUTPUT (6) cables. Tighten any loose cable connections.
3. Remove the power supply module from the control unit. Check the dc output (5) connections. Tighten any loose wires.
4. Check the wiring connections to the GUN OUTPUT and POWER INPUT receptacles. Tighten any loose wires.
5. Carefully install the power supply module into the control unit.

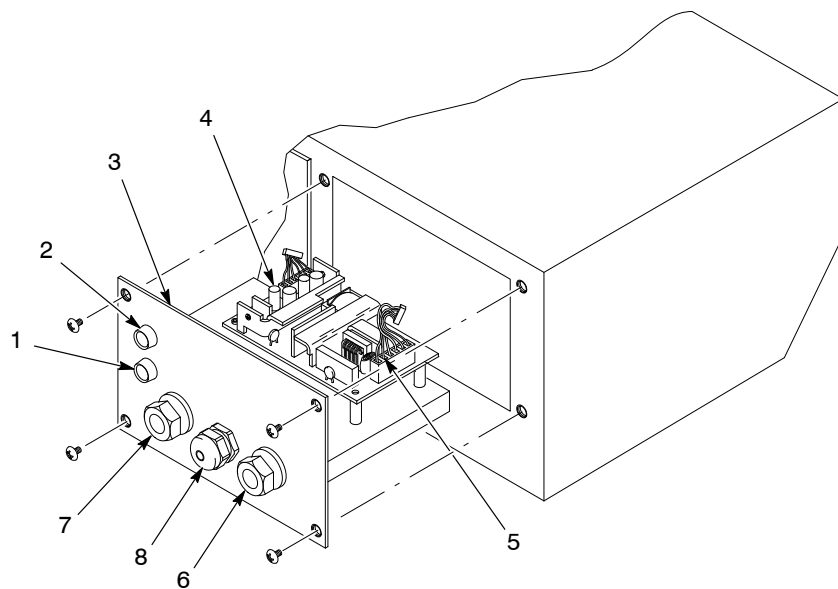


Figure 5-5 dc Output Location

- | | |
|------------------------------|-------------------------------|
| 1. Fuse 1 | 5. dc Output |
| 2. Fuse 2 | 6. GUN OUTPUT receptacle |
| 3. Power supply module panel | 7. POWER INPUT receptacle |
| 4. Power supply panel | 8. Vibratory motor connection |

Wiring Diagrams

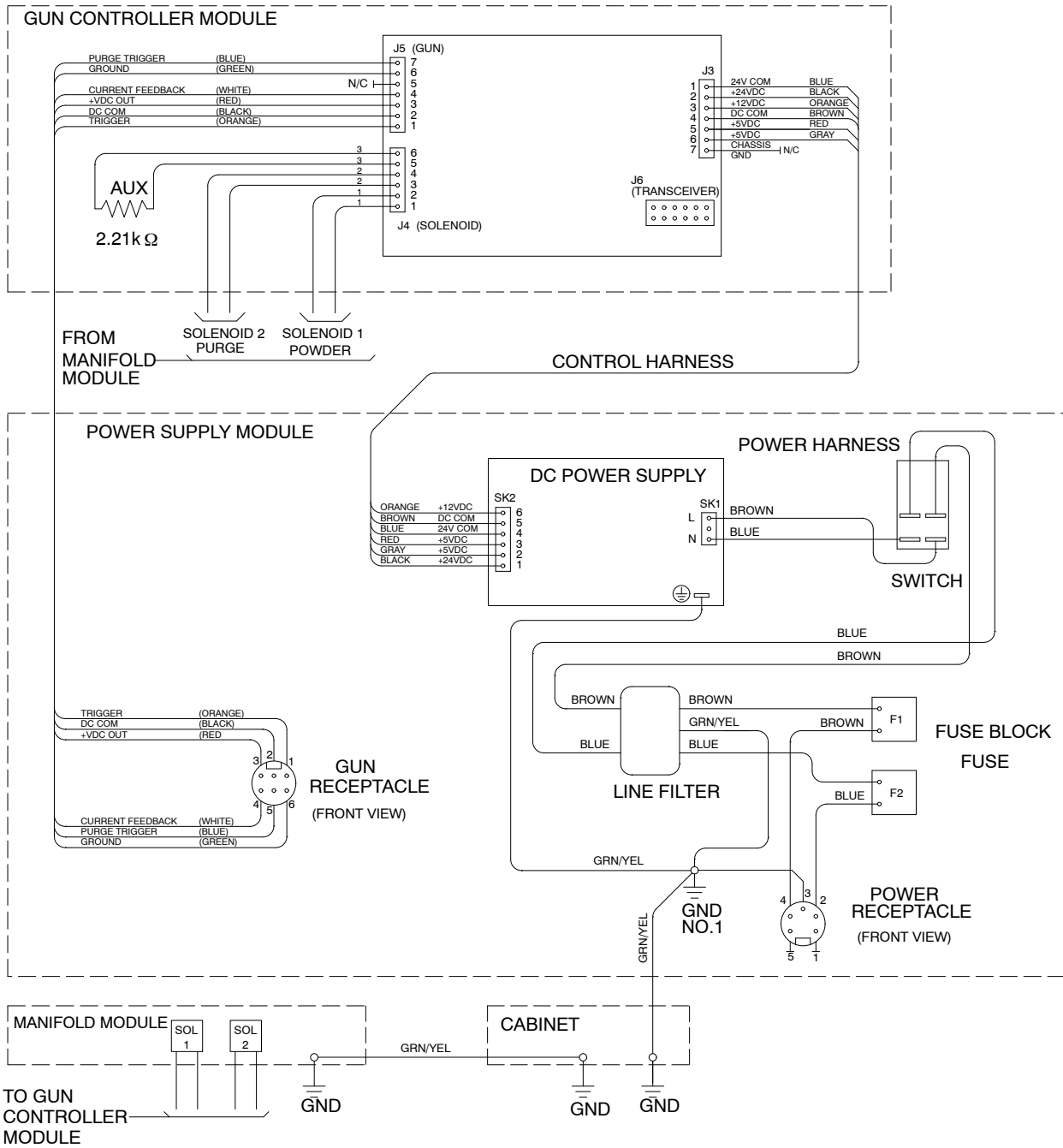


Figure 5-6 Wiring Diagram for Control Unit without Vibratory Motor Control

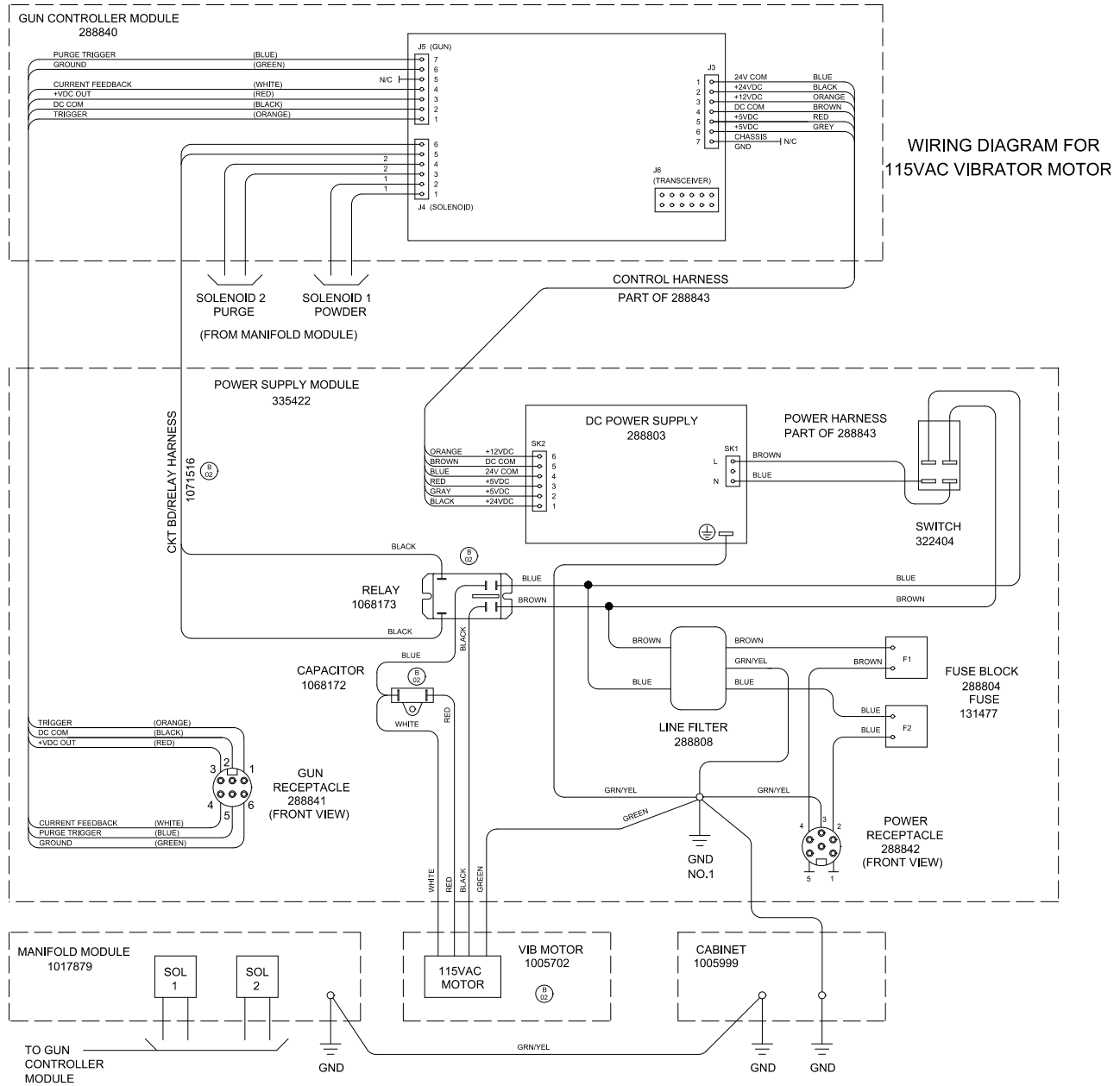


Figure 5-7 Wiring Diagram for 115 Vac Control Unit with Vibratory Motor Control

Wiring Diagrams (contd)

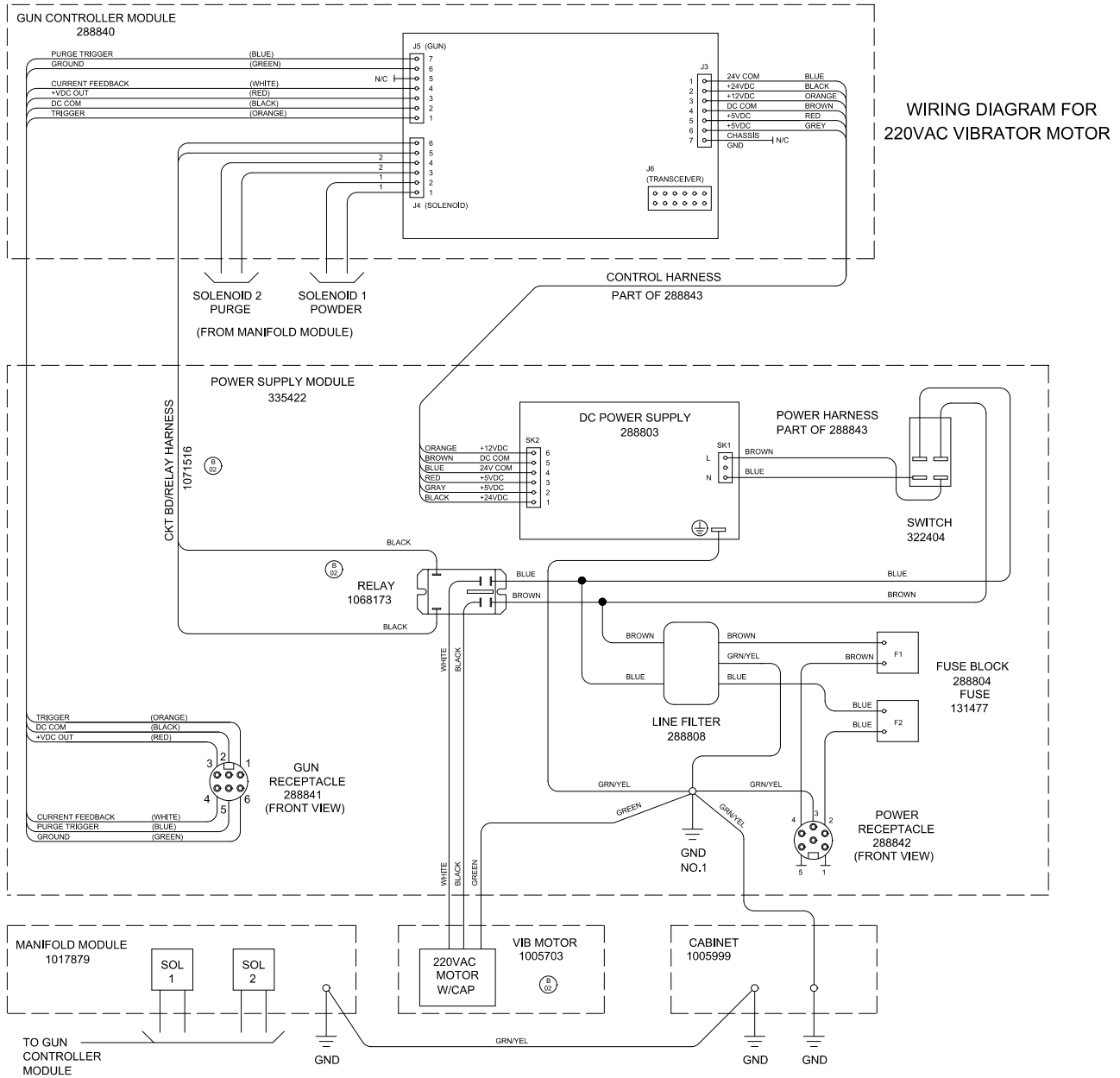


Figure 5-8 Wiring Diagram for 220 Vac Control Unit with Vibratory Motor Control

Section 6

Repair



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



WARNING: Disconnect and lock out electrical power before performing the following tasks. Failure to observe this warning could result in personal injury or death.

Keypad Module Replacement

See Figure 6-1.

The keypad module (3) can be replaced from the front of the control unit. The keypad module consists of the LCD module, keypad, and three circuit boards that are plugged into each other and secured by standoffs.



CAUTION: The circuitry is sensitive to electrostatic discharge. Wear a grounding wrist strap when working on the control module. Failure to observe this caution may result in damage to the keypad module.

1. Remove the four screws (1) and washers (2).
2. Tilt the top of the keypad module (3) forward and disconnect all three connectors (4).
3. Lift the keypad module out of the control unit.
4. Install the new bezel gasket on the new keypad module.
5. Place the new keypad module on the bottom edge of the opening and connect all three connectors (4).



CAUTION: Special care must be taken when installing the keypad so to not damage the gasket and cause it to bulge/deform and loose its seal.

6. Tilt the keypad module in and inspect the bezel gasket to make sure it is seated properly.
7. Carefully tighten the four screws in a criss-cross pattern to secure it to the control unit. As you are tightening the screws, make sure the bezel gasket does not bulge or deform in any way.
8. Retighten screws as needed to close any air gaps that exist between the gasket and the cabinet.

Keypad Module Replacement *(contd)*

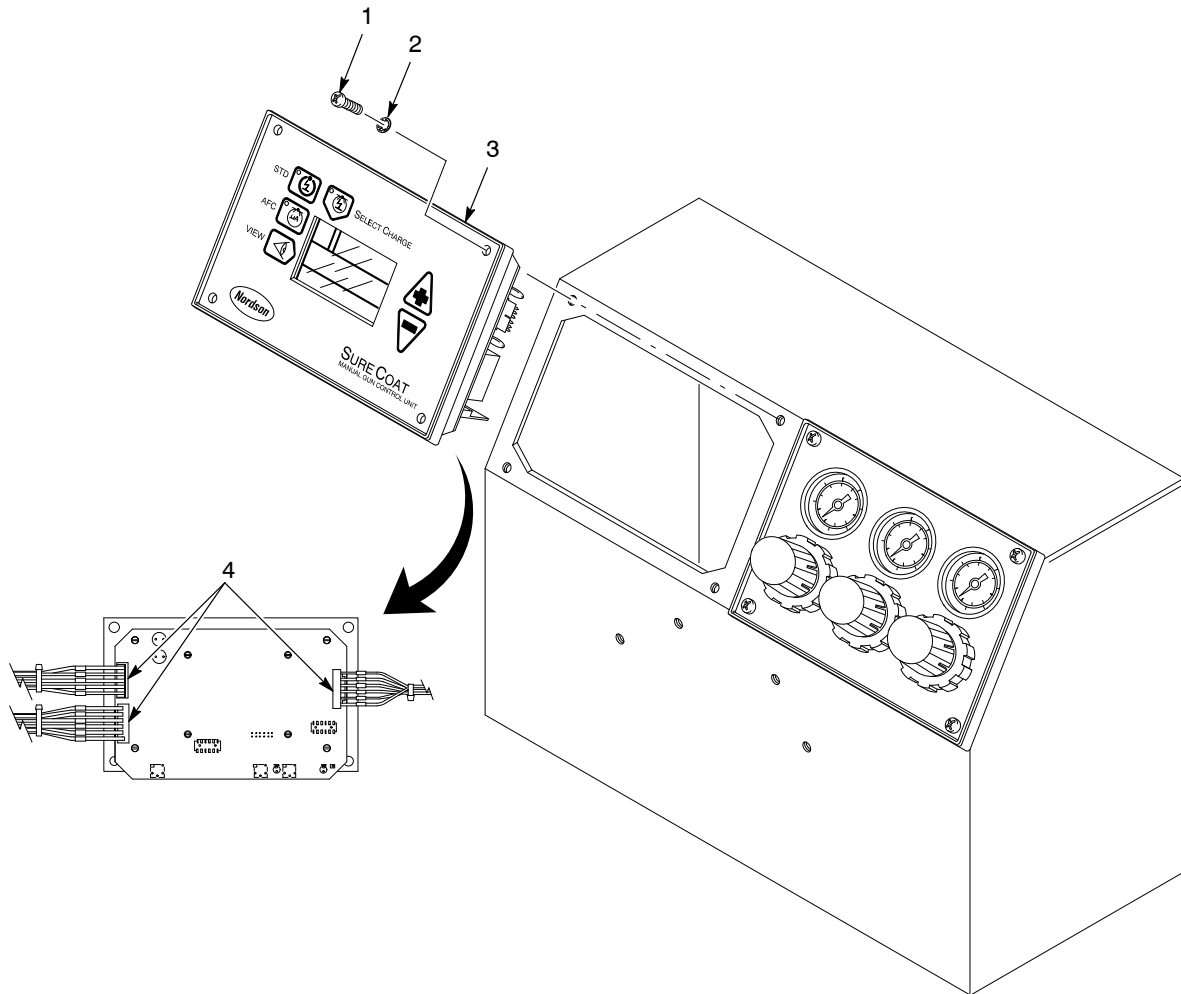


Figure 6-1 Keypad Module Replacement

- 1. Screw
- 2. Washer

3. Keypad module

4. Connectors

DC Power Supply Replacement

See Figure 6-2.

The dc power supply is mounted on the power supply module, which is the bottom left panel of the control unit.

1. Remove the four screws (2) securing the power supply module (1) to the control unit (5).
2. Unplug the ac input (4) and dc output (6) connectors from the dc power supply board (3).
3. Remove the four screws that secure the dc power supply board to the power supply module. Remove the dc power supply board.

NOTE: If necessary, carefully use a screwdriver to unsnap the dc power supply board from the standoffs.

4. Snap the new dc power supply board onto the four standoffs on the power supply module.
5. Secure the new dc power supply board to the power supply module using the four screws.
6. Attach the ac input and dc output connectors to the new dc power supply board.
7. Secure the power supply module to the control unit using the four screws.

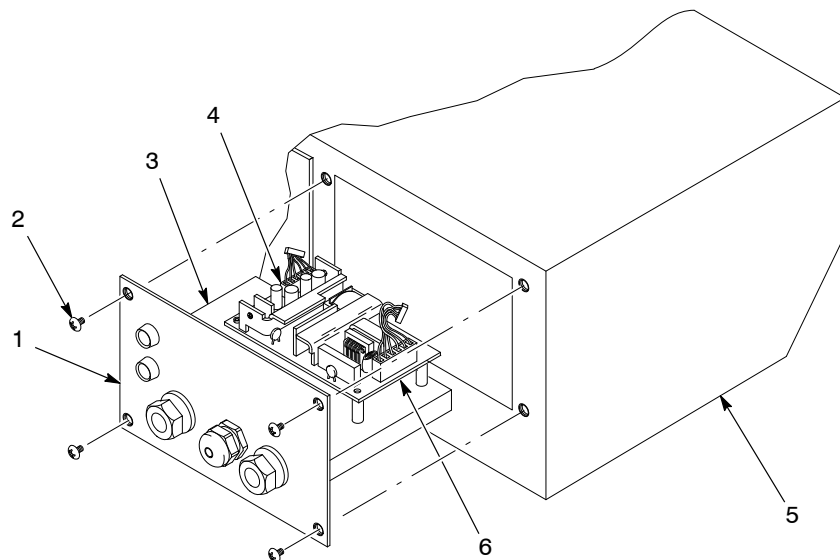


Figure 6-2 dc Power Supply Replacement

- | | |
|--------------------------|------------------------|
| 1. Power supply module | 4. ac Input connector |
| 2. Screws | 5. Control unit |
| 3. dc Power supply board | 6. dc Output connector |

Manifold Replacement

See Figure 6-3.

The manifold assembly is mounted on the pneumatic module, which is accessible through the bottom right panel of the control unit.

NOTE: The pneumatic module components (such as the manifold) can be replaced separately, and the solenoid valves can be rebuilt. Refer to *Solenoid Valve Rebuild* on page 6-6 and *Service Kits* on page 7-11.

1. Disconnect all air tubing from the control unit.
2. Remove the four screws (2) securing the manifold panel (6) to the bottom of the control unit (1).
3. Disconnect the air tubing from the manifold assembly (5).
4. Disconnect the ground wire from the manifold panel ground stud (3).
5. Separate the solenoid coils (7) from the manifold by removing the knurled nuts (9) and washers (8) and pulling off the coils.
6. Remove the two screws (4) securing the manifold assembly to the manifold panel.
7. Rebuild the solenoid valve, if necessary. Refer to *Solenoid Valve Rebuild* on page 6-6 for instructions.
8. Secure the new manifold assembly to the manifold panel using the two screws.
9. Secure the solenoid coil to the solenoid valve using the washer and knurled nut.
10. Connect the ground wire to the ground stud on the manifold panel.
11. Connect the air tubing to the manifold assembly. See Figure 6-5 for a pneumatic diagram.
12. Secure the pneumatic module to the control unit using the four screws.

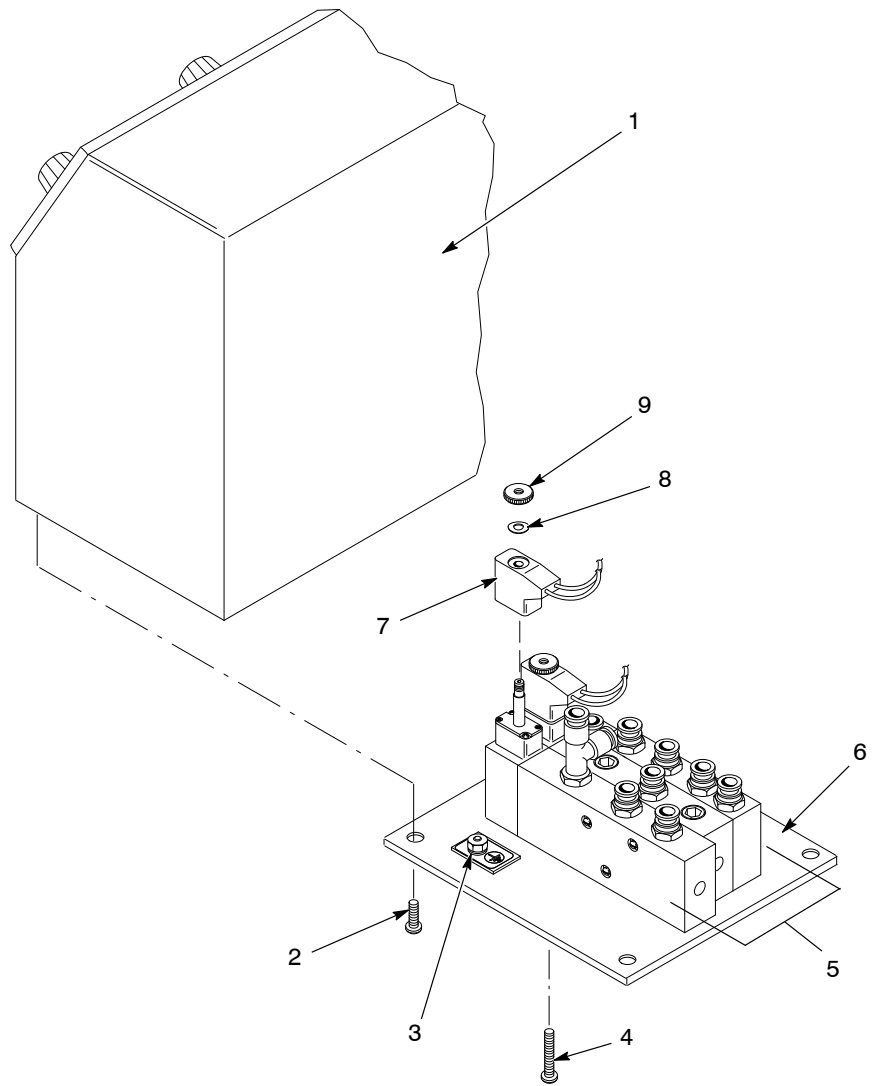


Figure 6-3 Manifold Replacement

- | | |
|----------------------|-------------------|
| 1. Control unit | 6. Manifold panel |
| 2. Screws | 7. Solenoid coil |
| 3. Ground stud | 8. Washer |
| 4. Screws | 9. Knurled nut |
| 5. Manifold assembly | |

Solenoid Valve Rebuild

See Figure 6-4.

This procedure uses the valve seal, trigger, or purge valve service kits to rebuild the solenoid valves. Refer to *Service Kits* on page 7-11 for more information.

NOTE: Seven tee seals are included in the seal kit. If you rebuild the trigger valve, use all seven tee seals. If you rebuild the auxiliary valve, you will only use six tee seals.

1. Remove the manifold. Refer to *Manifold Replacement* on page 6-4 for instructions.
 2. Remove the screws (7) and pull the end cap (6) off the solenoid valve body (1). Make sure the three small O-rings (8) and flat round gasket (9) remain in the end cap.
 3. Remove the piston and bushing (5) from the valve body.
 4. Push on the spring pad (2) to force the spool assembly (4) out of the valve body.
 5. Disassemble the spool assembly and clean and replace parts as necessary.
 6. Assemble the solenoid valve. Lightly lubricate the following items with the lubricant included in the service kit before installing it them:
 - spool (11)
 - tee seals (10)
 - piston (5) O-ring
 - O-rings (8)
 - gasket (9)
- NOTE:** The spacers (12) and tee seals (10) are identical and may be installed in any location along the spool (11). Use only six of the seven tee seals provided in the seal kit when rebuilding the purge valve.
7. Install the spool assembly into the valve body.
 8. Install the piston and bushing into the valve body.
 9. Make sure that the small O-rings are aligned with the holes in the valve body, and install the endcap using the four screws. Torque the screws to 1 N•m (9 in.-lb).

Once the manifold is removed from the control unit, either of the spools can be rebuilt. See Figure 6-5 to determine which valve to repair.

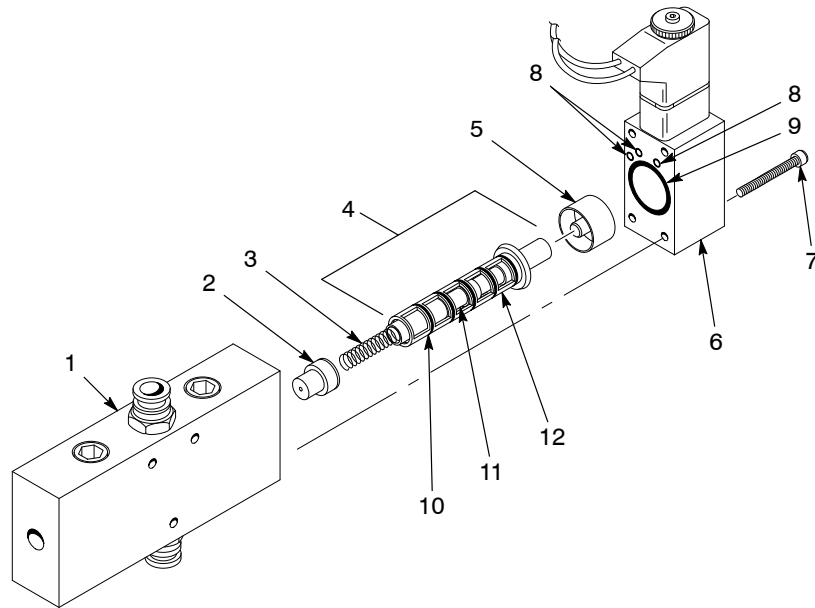


Figure 6-4 Solenoid Valve Rebuild

- | | | |
|-------------------|-----------------------|-----------------|
| 1. Valve body | 5. Piston and bushing | 9. Round gasket |
| 2. Spring pad | 6. End cap | 10. Tee seal |
| 3. Spring | 7. Screw | 11. Spool |
| 4. Spool assembly | 8. O-rings | 12. Spacer |

Regulator/Gauge Replacement

Remove the right front panel to access the regulator/gauges.

1. Remove the four screws securing the regulator/gauge module to the control unit.
2. Lift the regulator/gauge module out of the control unit and disconnect the air tubing from the regulator/gauge.
3. Pull the regulator cap off the regulator/gauge and unscrew the panel mounting ring. Remove the regulator/gauge from the panel.
4. Secure the new regulator/gauge to the panel using the mounting ring. Install the new regulator cap.
5. Connect the air tubing to the new regulator/gauge. See Figure 6-5 for a pneumatic diagram.



CAUTION: A bezel gasket is included on the regulator assembly. Special care must be taken when installing the regulator so to not damage the gasket and cause it to bulge/deform and loose its seal.

6. Set the regulator/gauge module into the control unit and inspect the bezel gasket to make sure it is seated properly.
7. Carefully tighten the four screws in a criss-cross pattern to secure it to the control unit. As you are tightening the screws, make sure the bezel gasket does not bulge or deform in any way.
8. Retighten screws as needed to close any air gaps that exist between the gasket and the cabinet.

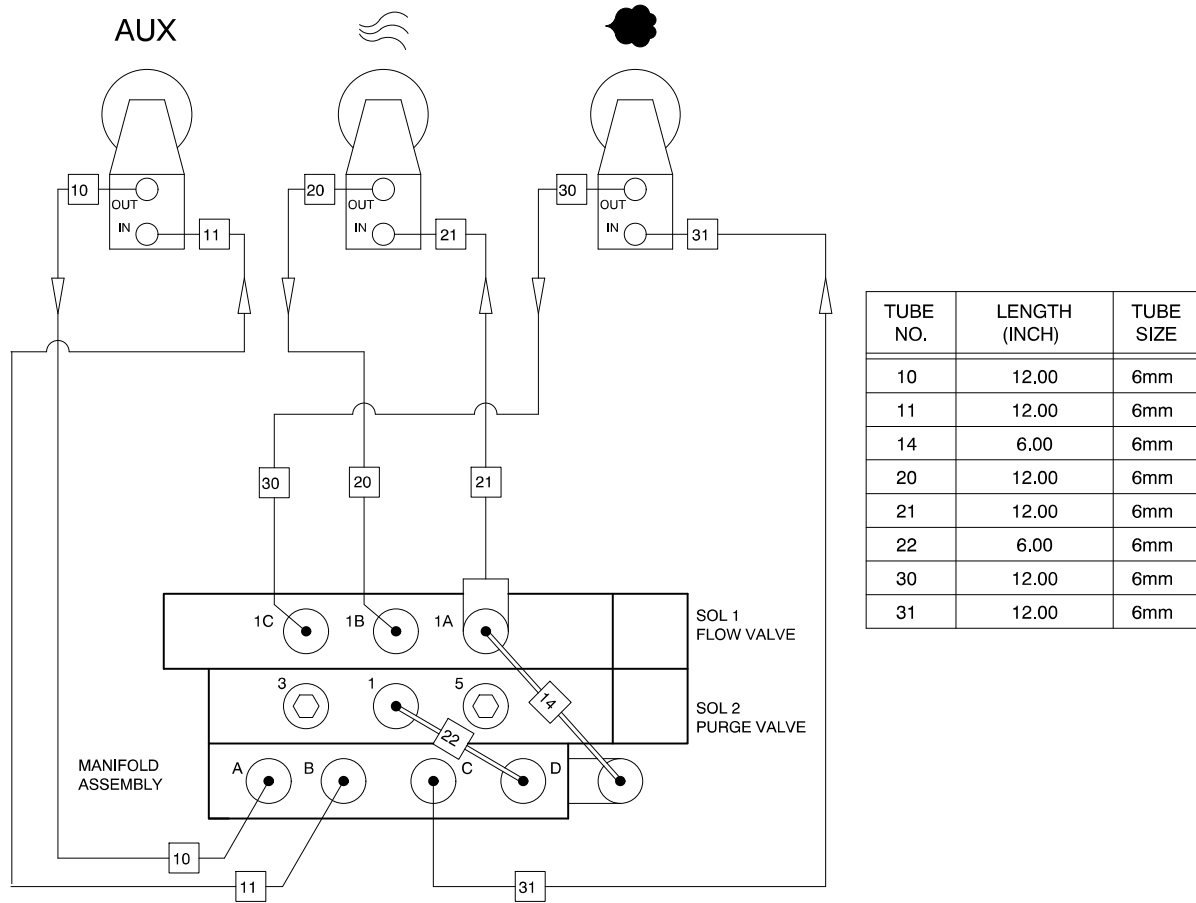


Figure 6-5 Pneumatic Diagram

Section 7

Parts

Introduction

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

Using the Illustrated Parts List

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

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

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

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

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

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

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

Control Unit

See Figure 7-1.

Item	Part	Description	Quantity	Note
—	1018181	CONTROL UNIT, manual, 3 gauge, Sure Coat, packaged	1	
1	322404	• SWITCH, rocker, DPST, dust tight	1	
2	307372	• GASKET, front panel	2	
3	982825	• SCREW, pan, recessed, M4 x 12, with integral lock washer bezel	16	
4	327744	• KIT, keypad assembly, Sure Coat, manual	1	A
5	1018246	• MODULE, gauge/regulator, Sure Coat, manual controller	1	A
6	1063284	• KIT, module, manifold, 3 gauge, manual, Sure Coat	1	A
7	335449	• POWER SUPPLY MODULE KIT, manual individual controller	1	A
8	240674	• TAG, ground	3	
9	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	3	
10	983401	• LOCK WASHER, m, split, M5, steel, zinc	3	
11	984702	• NUT, hex, M5, brass	3	
12	302189	• WIRE, ground, assembly, 10.50 in.	2	
NS	972286	• REDUCER, 8-mm stem x 6-mm tube	2	
NS	900742	• TUBING, polyurethane, 6 mm, blue	AR	
NS	240976	• CLAMP, ground, with wire	1	B
NS	-----	• RESISTOR, 2.2k, 0.25 W, 1% axl	1	C
NS	982499	• SCREW, pan, slotted, M6 x 12, zinc	4	
NS	983128	• LOCK WASHER, m, internal, M6, steel, zinc	4	
NS	173086	• CABLE, power, 3 wire, 18 ft	1	
<p>NOTE A: The parts included in these assemblies are identified later in this section. B: This is the external ground assembly that connects the control unit to a true earth ground. C: This resistor is located on the keypad module plug in connector J4.</p> <p>AR: As Required NS: Not Shown</p>				

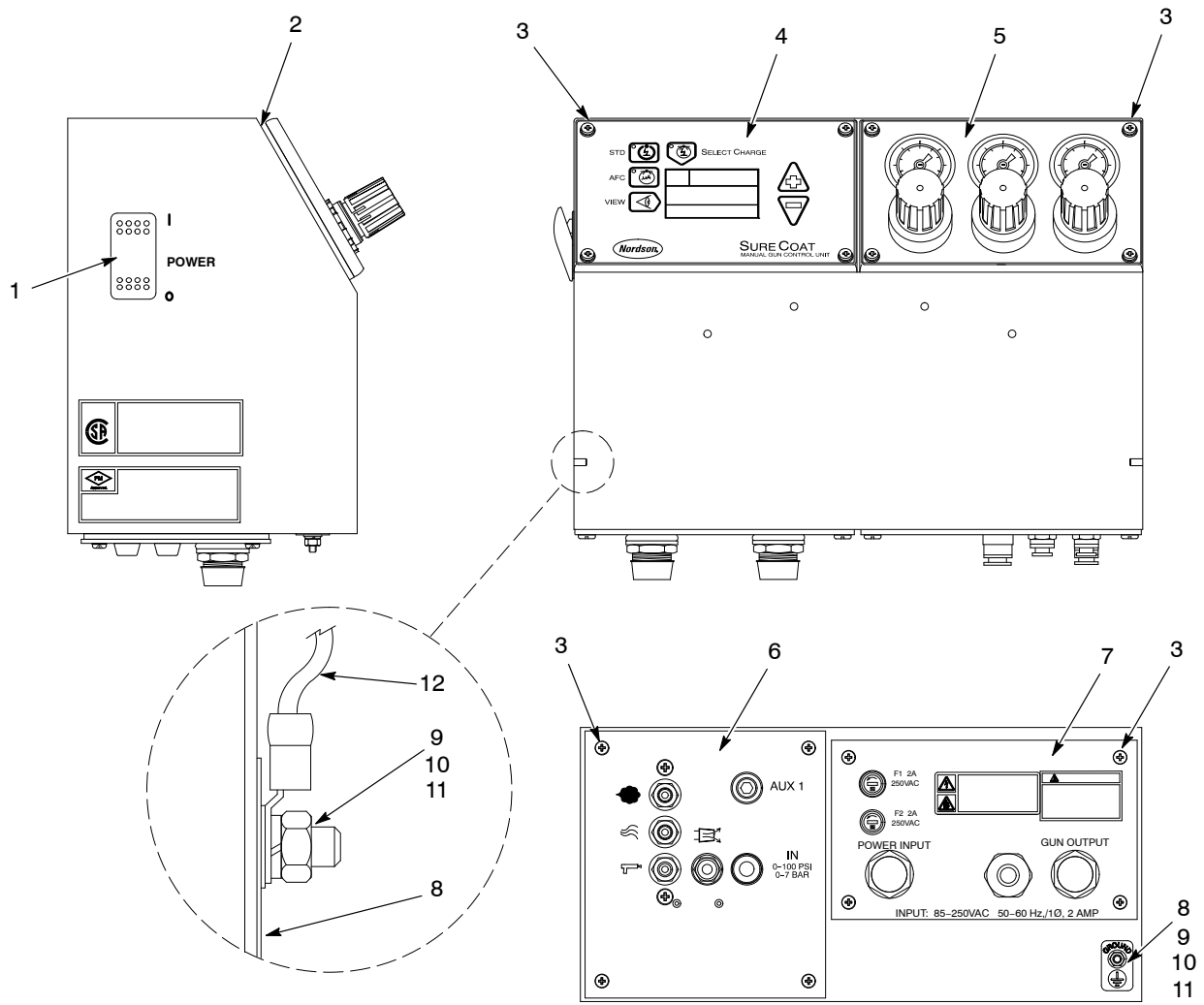


Figure 7-1 Control Unit

Keypad Module

See Figure 7-2.

Item	Part	Description	Quantity	Note
—	327744	KIT, keypad assembly, Sure Coat, manual	1	
—	-----	• MODULE, keypad, Sure Coat	1	
1	288836	• • MODULE, LCD, Sure Coat	1	
2	288839	• • PANEL, keypad, manual control, Sure Coat	1	
3	227186	• • PCA, manual gun controller	1	
4	227210	• • • FUSE, submini, 40 mA, 250 V, trigger	1	
5	227210	• • • FUSE, submini, 40 mA, 250 V, purge	1	
NS	288814	• BEZEL, manual control, Sure Coat	1	
NS	982825	• SCREW, panel, recessed, M4 x 12, with integral lock washer bezel	4	
NS	307916	UPGRADE KIT, software, manual gun control unit	1	A
NOTE A: Order this kit to upgrade your control unit to the most current software version.				
NS: Not Shown				

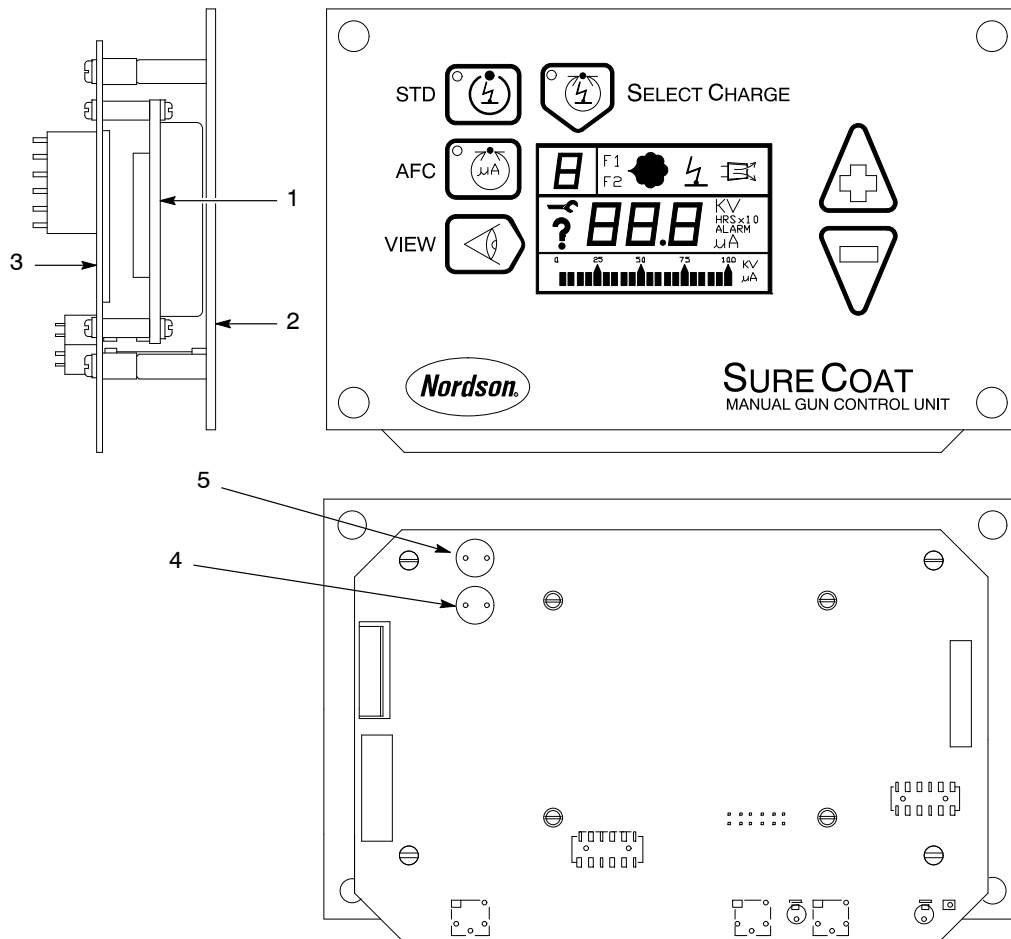


Figure 7-2 Keypad Module

Manifold Module

See Figure 7-3.

Item	Part	Description	Quantity	Note
—	1063284	KIT, module, manifold, 3 gauge, manual, Sure Coat	1	
1	-----	• PANEL, pneumatic, manual individual controller	1	
2	334799	• SCREW, pan, recessed, M5 x 10, with integral lock washer bezel	2	
3	1005527	• GASKET, pneumatic panel, manual, Sure Coat	1	
4	1017878	• MANIFOLD, assembly, 3 gauge, manual, Sure Coat	1	
5	327748	• • VALVE, check, M8 T x R 1/4 in., male input	2	
6	288822	• • CONNECTOR, orifice, 4-mm tube x 1/4-in. universal	1	A
6	1071556	• • CONNECTOR, orifice, 4-mm tube x 1/8-in. RPT	1	A
7	971100	• • CONNECTOR, male, 6-mm tube x 1/4-in. universal	8	
8	972283	• • CONNECTOR, round, male, 10-mm tube x 1/4-in. universal	2	
9	972142	• • ELBOW, male, 6-mm tube x 1/4-in. universal	1	
10	972142	• • TEE, male run, 6-mm tube x 1/4-in. universal	1	
11	240674	• TAG, ground	1	
12	933469	• LUG, 90 degree, double, 0.250 x 0.438 in.	1	
13	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	1	
14	983401	• LOCK WASHER, m, split, M5, steel, zinc	1	
15	984702	• NUT, hex, M5, brass	1	

NOTE A: Manifold port size changed in 2006 to 1/8 in. threads. If replacing connector order appropriate size.

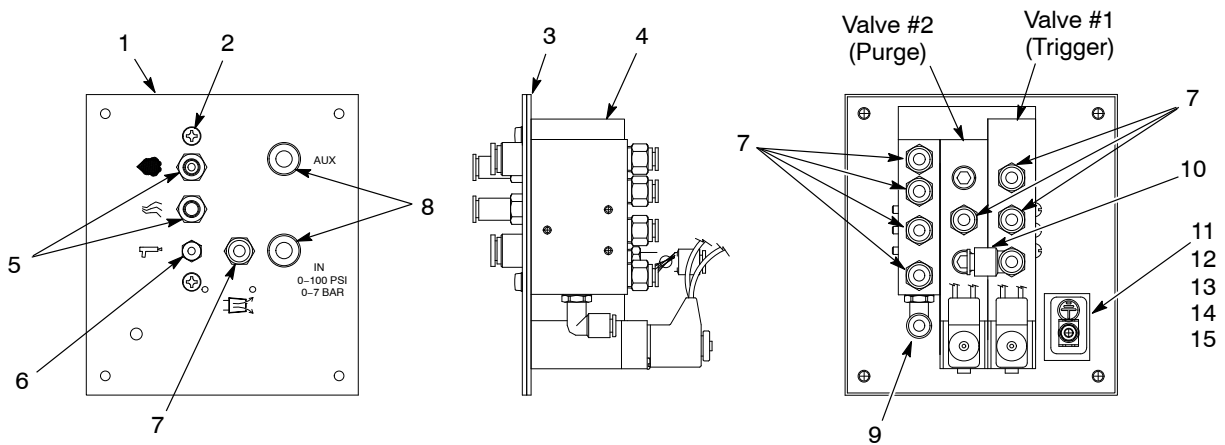


Figure 7-3 Manifold Module

Power Supply Module

See Figure 7-4.

Item	Part	Description	Quantity	Note
	335449	POWER SUPPLY MODULE KIT, manual individual controller (standard version)		
	-----	POWER SUPPLY MODULE, manual individual controller, 115V, with vibratory motor control		
	-----	POWER SUPPLY MODULE, manual individual controller, 220V, with vibratory motor control		
1	982824	<ul style="list-style-type: none"> • SCREW, pan, recessed, M3 x 8, with integral lock washer bezel 	4	
2	1067030	<ul style="list-style-type: none"> • FILTER, line, with butt splice 	1	
3	982825	<ul style="list-style-type: none"> • SCREW, pan head, recessed, M4 x 12, with integral lock washer bezel 	2	
4	288803	<ul style="list-style-type: none"> • POWER SUPPLY, 24, 5, 12 Vdc, 40 W 	1	
5	335442	<ul style="list-style-type: none"> • HARNESS, control, manual individual controller 	1	
6	939122	<ul style="list-style-type: none"> • SEAL, conduit fitting, 1/2 in. 	2	
7	984526	<ul style="list-style-type: none"> • NUT, lock, 1/2-in. conduit 	2	
8	288841	<ul style="list-style-type: none"> • RECEPTACLE, input, T wire, female 	1	
9	-----	<ul style="list-style-type: none"> • PANEL, power supply tray 	1	
10	302195	<ul style="list-style-type: none"> • GASKET, back panel, electrostatic, Sure Coat 	1	
11	131477	<ul style="list-style-type: none"> • FUSE, 2.00, fast acting, 250 V, 5 x 20 	2	
12	288804	<ul style="list-style-type: none"> • FUSE HOLDER, panel mount, 5 x 20 	2	
13	288842	<ul style="list-style-type: none"> • RECEPTACLE, power, Sure Coat 	1	
14	271221	<ul style="list-style-type: none"> • LUG, 45, double, 0.250 in. x 0.438 in. 	1	
15	983401	<ul style="list-style-type: none"> • LOCK WASHER, m, split, M5, stainless steel, zinc 	1	
16	983021	<ul style="list-style-type: none"> • WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass 	1	
17	984702	<ul style="list-style-type: none"> • NUT, hex, M5, brass 	1	
18	1068173	<ul style="list-style-type: none"> • RELAY, two-pole, 30 amp 	1	A
19	1068172	<ul style="list-style-type: none"> • CAPACITOR, film, type 7124, 2.5 μf 	1	B
NOTE A: Use only with control units with vibratory motor control.				
NOTE B: Use only with 110 Vac Sure Coat control units with vibratory motor control.				

Power Supply Module *(contd)*

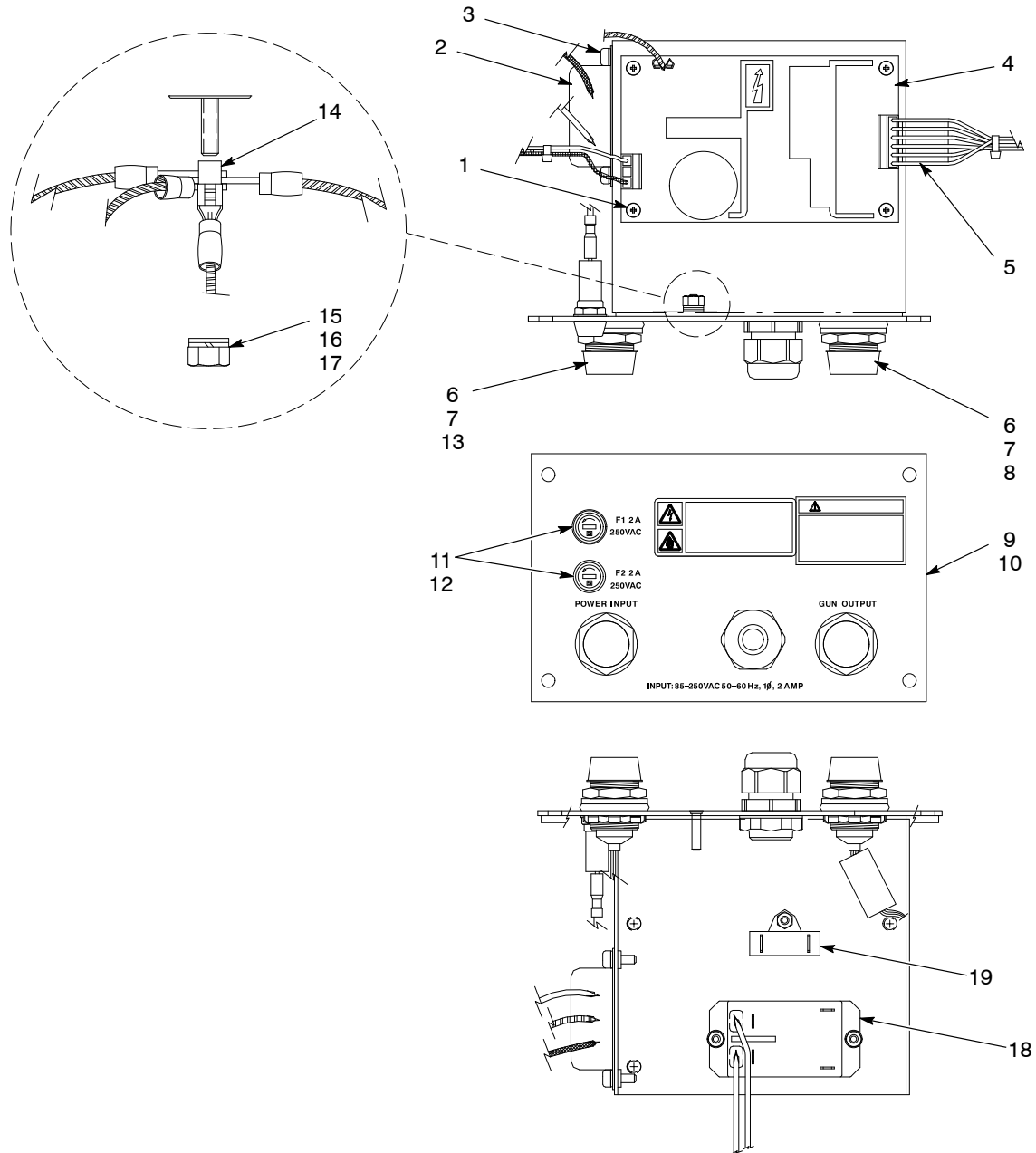


Figure 7-4 Power Supply Module

Gauge/Regulator Module

See Figure 7-5.

Item	Part	Description	Quantity	Note
—	1018246	GAUGE/REGULATOR MODULE, Sure Coat, manual controller	1	
1	288817	• PANEL, manual controller, 3 gauge, Sure Coat	1	
2	288814	• BEZEL, manual controller, Sure Coat	1	
3	141603	• SEAL, panel, regulator	3	
4	1004625	• REGULATOR ASSEMBLY, 0-100 psi, 0-7 bar, vertical	2	
5	1018157	• REGULATOR ASSEMBLY, 0-25 psi, 0-1.7 bar, vertical	1	

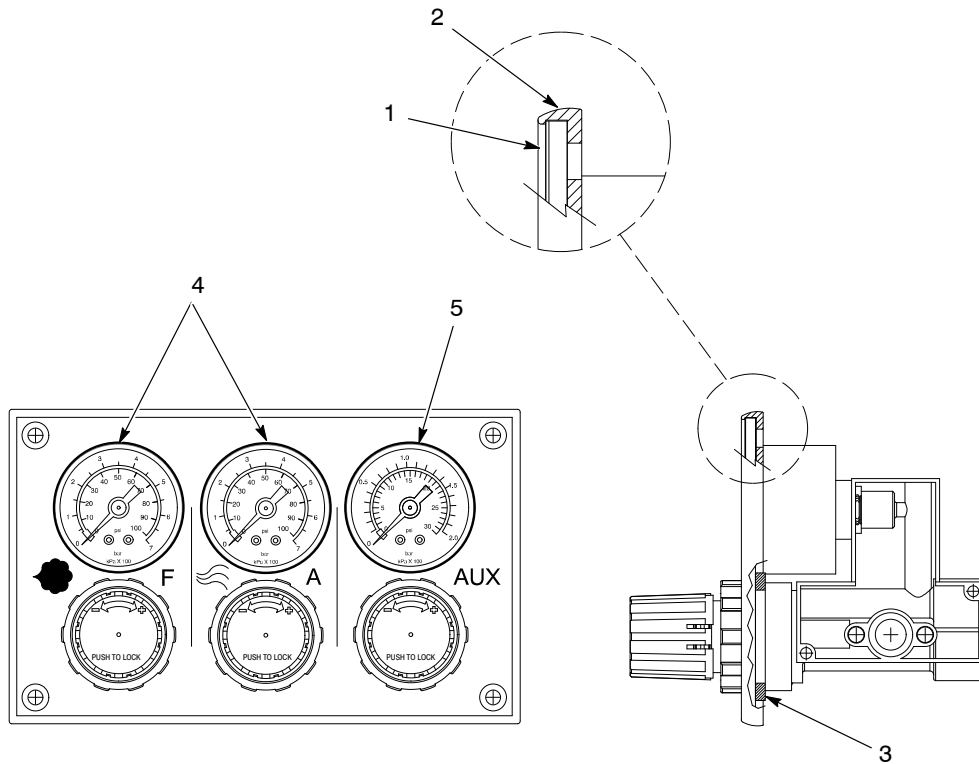


Figure 7-5 Gauge/Regulator Module

Mounting Bracket Kits

See Figure 7-6.

Item	Part	Description	Quantity	Note
1	288828	BRACKET KIT, mounting, rail	1	
2	1023868	WALL MOUNT KIT, manual, Sure Coat	1	
3	288844	TABLE TOP BRACKET KIT, Sure Coat	1	

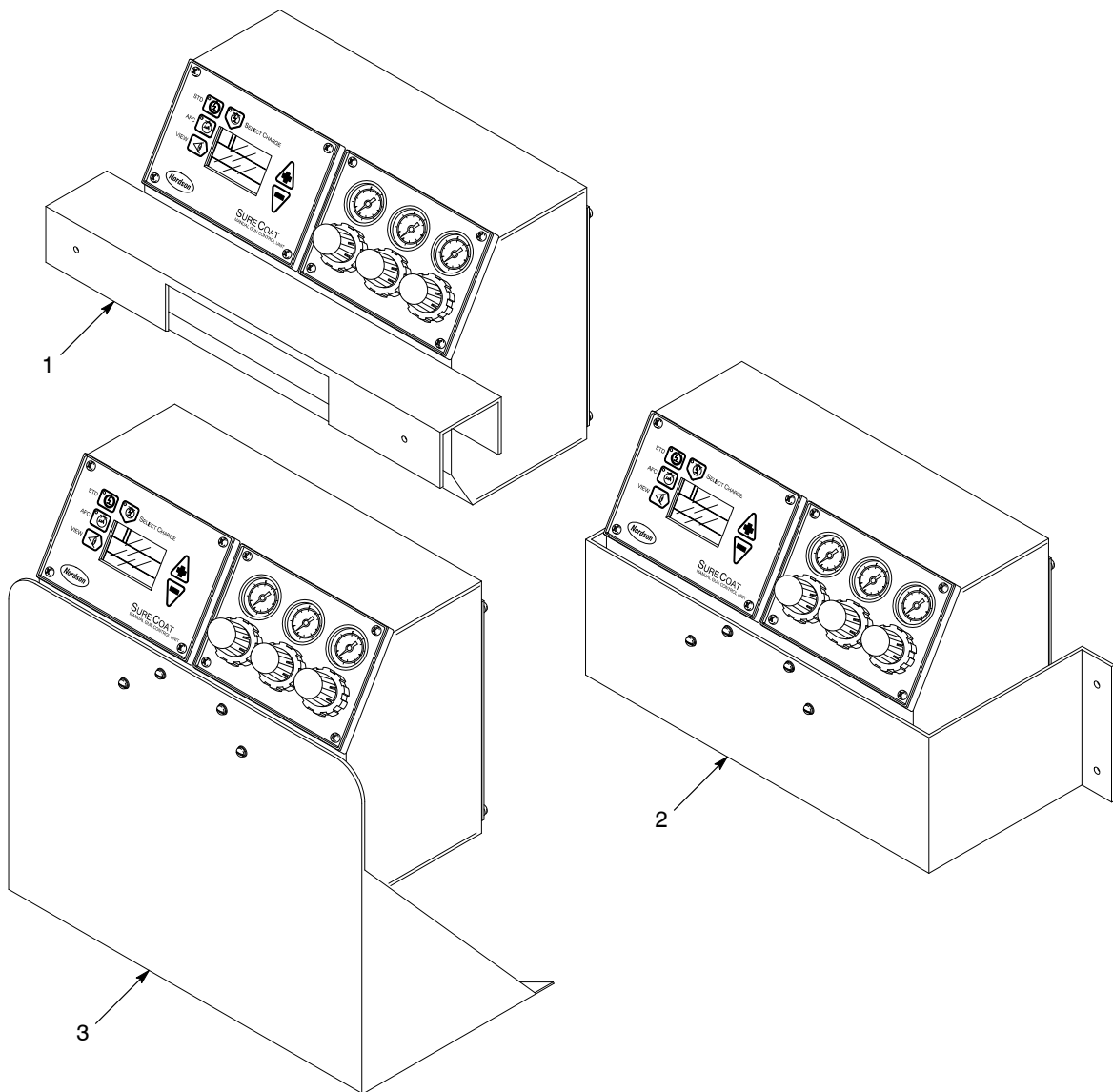


Figure 7-6 Mounting Bracket Kits

Air Tubing

Order all air tubing in increments of one foot.

Part	Description	Note
900618	TUBING, polyurethane, 8 mm, blue	
900619	TUBING, polyurethane, 8 mm, black	
900742	TUBING, polyurethane, 6 mm, blue	
900741	TUBING, polyurethane, 6 mm, black	

Service Kits

See Figure 7-3 to determine which valve to order.

Item	Part	Description	Quantity	Note
NS	333677	TRIGGER VALVE SERVICE KIT	1	A
NS	333678	PURGE (auxiliary) VALVE SERVICE KIT	1	B
NS	900349	LUBRICANT, PTFE grease, 0.750-oz tube	1	C
NS	1027108	SEAL SERVICE KIT, spool, valve	1	D
<p>NOTE A: The trigger valve is the longer of the two valves.</p> <p>B: The purge valve is the shorter of the two valves.</p> <p>C: Lubricate the spool with this grease when you rebuild either of the valves.</p> <p>D: The valve spool seal service kit, part 1027108, contains seven tee seals. This kit may be used to rebuild either the trigger or purge valve. If you use the seal kit to rebuild the purge valve, only six tee seals will be used. Discard the extra tee seal.</p> <p>NS: Not Shown</p>				

Cable Adapter

Use this cable adapter to connect a Versa-Spray or Tribomatic 500 spray gun to the Sure Coat manual gun control unit.

Part	Description	Note
339783	CABLE ADAPTER, Versa-Spray to Sure Coat, manual	
305776	CABLE ADAPTER, Tribomatic to Sure Coat, manual	

