Sure Coat®
Modular Gun Control System

Issued 4/03

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

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Contact Us

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

Address all correspondence to:

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

System Configuration

The Sure Coat modular gun control system is custom configured to fit your application requirements. Only the options that you requested were installed when the system was manufactured.

Use the following chart to record the components contained in your system. If you upgrade your system at a later date, be sure to update the information listed in the chart.

Component	Your System	Date Installed
Number of guns in system		
Type of pneumatic modules		
Interface card		
Gun purge module		
Application/triggering controller		
Photo eye junction box (number of inputs)		
Photo eyes (quantity)		
PLC		

List of Related Documentation

This manual is divided into alphabetical parts. Parts A and B cover equipment that is included in all systems. Parts C–G cover optional equipment that may be added on to a base system.

Your manual contains only the parts that are relevant to your system. If you decide to add on to your system at a later date, you will receive additional parts that explain the installation and operation of the options that you receive.

Refer to the following chart for a list of documentation that is available for the Sure Coat modular gun control system. Use this list to order documentation if you misplace any parts of your manual.

NOTE: Parts A and B apply to all configurations of the system. If you order part A, you will automatically receive parts A and B, a three-ring binder, and tabs A–G. If you order part B, you will only receive part B.

Document Part Number	Title
331235	Part A: *System Overview*
1007365	*Upgrading the Sure Coat Modular Gun Control System*
334658	Part B: *Pneumatic Modules*
334659	Part C: *Purge Timer Interface Card*
334660	Part C: *Discrete I/O Interface Card*
334661	Part C: *UCS DeviceNet Interface Card*
334662	Part C: *UCS ProfiBus Interface Card*
334663	Part D: *Gun Purge Module*
334666	Part G: *Application Controller*
334685	*Sure Coat Application Controller Operator's Card*
334667	*Sure Coat Application Controller Installation*
1010255	*Sure Coat Triggering Controller (for Sure Coat Modular Gun Control Systems)*
1017461	*Sure Coat Triggering Controller Operator's Card*

Table of Contents

Sure Coat® Modular Gun Control System

Part A: System Overview

Customer Product Manual
Part 331235C
Issued 4/03

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Notice

Trademarks

Table of Contents

Section A 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.

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.

Section A 2
Description

Introduction

The Sure Coat modular gun control system provides pneumatic and electrostatic controls for up to 16 Sure Coat, Versa-Spray, or Tribomatic automatic powder spray guns. The electrostatic functions of the guns can be controlled simultaneously by the central control unit. Each gun has an individual pneumatic controller.

System Components

Refer to Table A 2-1 and see Figure A 2-1 for an overview of the modular gun control system's major components.

NOTE: Your system may not have all of the equipment listed. Refer to the *Parts* section in this part of the manual for ordering information.

Table A 2-1 System Components

Item	Component	Description
1	Application/Triggering Controller (Optional)	Automates triggering for all guns in the system. Refer to *Optional Equipment* in this section for more information.
2	Central Control Unit	Provides electrostatic controls, dc power, grouping, triggering, and monitoring functions for all guns in the system.
3	Pneumatic Modules	Control the flow rate and atomizing air to the guns. Each gun is controlled by an individual pneumatic module.
4	Main Control Cabinet	Provides electrical connections for all guns and solenoids in the system. Houses the system power supply and driver cards for all guns and optional equipment.
5	Main Pneumatic Section	Distributes air pressure to pneumatic modules and purge modules.
NS	Gun Purge Module (Optional)	Purges the guns' powder paths. The gun purge module is located in the main pneumatic section (5).

System Components *(contd)*

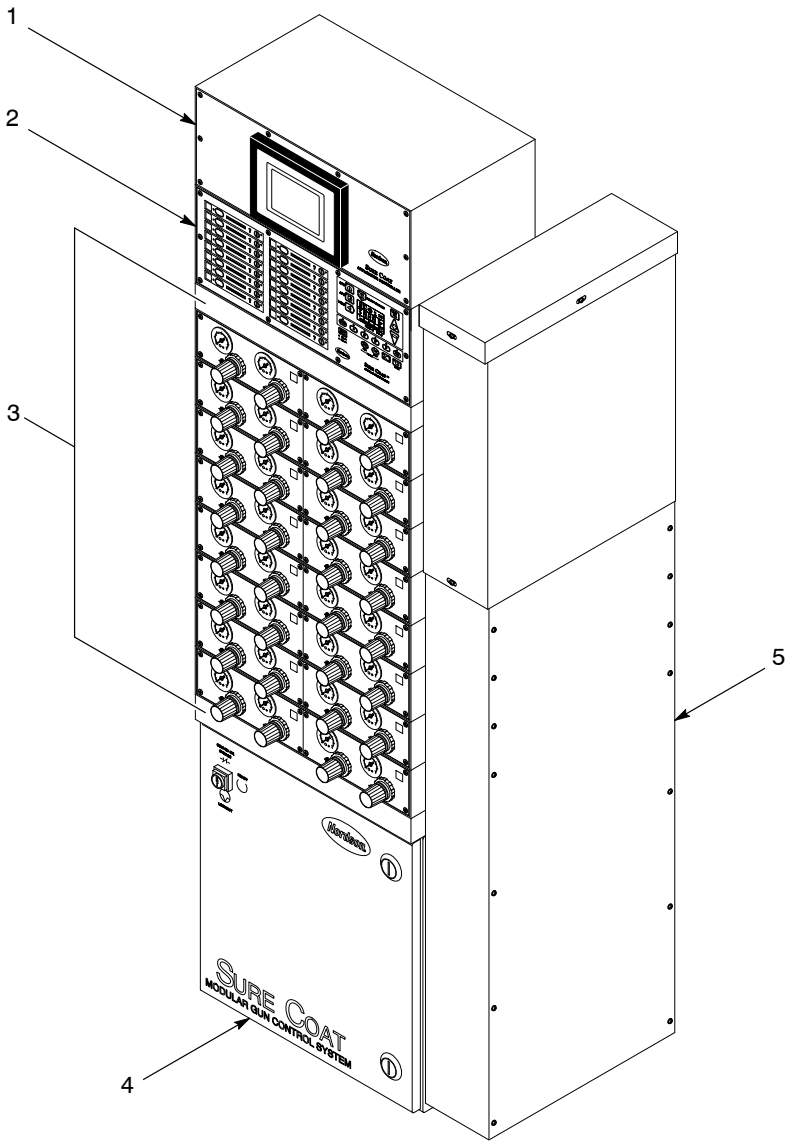


Figure A 2-1 System Components

Central Control Unit

The Sure Coat central control unit provides electrostatic control and monitoring functions for all automatic powder spray guns connected to the Sure Coat modular gun control system.

The control status information and parameters are adjusted and viewed from the front panel controls and indicators. A liquid crystal display provides status information to the operator to identify the mode of operation, control parameter set point values, and the status of the controller's output for each gun connected to the system.

Front Panel

Controls and Indicators

See Figure A 2-2 and refer to Table A 2-2.

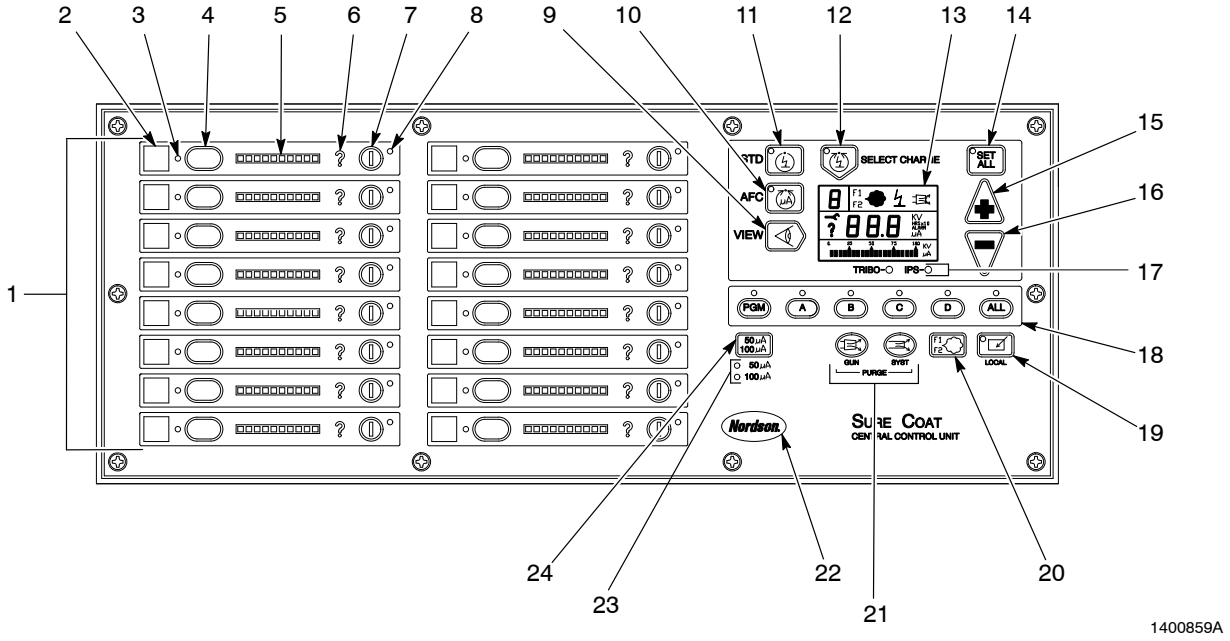


Figure A 2-2 Front Panel Controls and Indicators

Table A 2-2 Front Panel Controls and Indicators

Item	Component	Description
1	Gun Panels	Display the status and errors for each individual gun.
2	Gun Location Label	Indicates which gun is controlled by each individual gun panel.
3	Gun Display LED	Indicates which gun is currently being viewed on the display. Indicates which gun's set points may be adjusted.
4	Gun Select Key	Selects an individual gun to be viewed on the display. The selected gun's set points may be adjusted after the gun has been selected.
5	Bar Graph	Shows a bar graph of the set point indicated on the digital display for each individual gun. The bar graph lights when the gun is triggered.
6	Error Indicator	Indicates an individual gun error.
7	Gun Trigger Key	Triggers or shuts off the corresponding gun.
8	Gun Trigger LED	Indicates that the corresponding gun is triggered.
		Continued...

Controls and Indicators *(contd)*

Table A 2-2 Front Panel Controls and Indicators *(contd)*

Item	Component	Description
9	VIEW Key	Selects the display of gun current or gun voltage when the corresponding gun is triggered. Selects the display of gun current, voltage, or trigger hours while the corresponding gun is not triggered. Values appear on the gun's bar graph and the digital display. The maintenance timer cannot be viewed while the gun is triggered.
10	AFC Key	Turns on and off the AFC function.
11	STD Key	Turns on and off the standard mode.
12	SELECT CHARGE Key	Turns on and off the various Select Charge modes.
13	Display	Refer to *Display* in this section.
14	SET ALL Key	Allows the operator to adjust set points of all like guns in the system at the same time.
15	+ Key	Increases the set point value. Pressing the button continuously causes the value to increase until the maximum value is reached.
16	– Key	Decreases the set point value of the selected gun. Pressing the button continuously causes the set point value to decrease until the minimum value is reached.
17	Gun Type LEDs	Indicates the type of gun (IPS or Tribomatic) connected to the system.
18	Group Triggering Keys	Allows the operator to set up and trigger gun groups. PGM: Activates the program mode so that guns may be put in groups. A, B, C, D: Triggers an individual group of guns. ALL: Simultaneously triggers all guns in the system.
19	LOCAL Key	If applicable, switches system control from the central control unit to the application/triggering controller or remote PLC. The central control unit has control of system when the LOCAL LED is lit.
20	F1/F2 Key	**Flow 1/Flow 2 Systems Only:** Switches from flow rate 1 to flow rate 2 air pressure setting.
21	PURGE Keys	GUN: Purges the powder paths of all of the guns in the system SYST: Not used **NOTE:** The GUN key is only functional in systems with the gun purge module.
22	Nordson Key	Puts the system into the diagnostics mode to view error codes.
23	μA Display LEDs	Indicates which bar graph scaling option is currently active.
24	μA Key	Switches the scaling of the gun bar graphs. The total bar graph range can be either 50 or 100 μA for IPS; or 5 or 10 μA for Tribomatic guns.

Display

See Figure A 2-3 and refer to Table A 2-3. The display contains the status of the powder spray, electrostatics, and the set points.

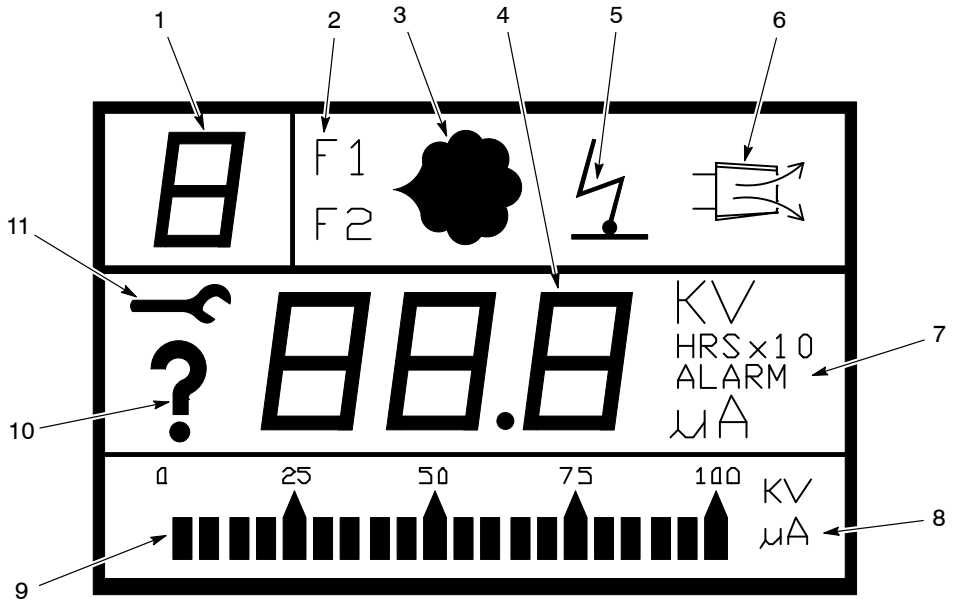


Figure A 2-3 Front Panel Display

Table A 2-3 Front Panel Display

Item	Component	Description
1	Select Charge Value	Indicates which Select Charge value is currently active. Number range is from 1 to 3.
2	F1/F2	**Flow 1/Flow 2 Systems Only:** Indicates which flow rate setting is active.
3	Powder Icon	Indicates that guns are triggered and powder flow is on. This icon will flash if an error in the solenoid circuit is detected.
4	Digital Display	Shows the digital number of the set point and actual parameter information. Additional information that may be shown is gun on hours, total hours, error codes, kV set point, μA set point, and actual μA value. The display is blank when no appropriate value can be displayed.
5	Gun kV or Electrostatics Icon	Lights to indicate that the selected gun is triggered. The icon will flash if an error in a gun drive circuit is detected.
6	Purge Icon	Lights to indicate that the gun purge function is active.
7	Unit Indicators	Lights to indicate the selection of KV, μA, HRS, x10, or ALARM.
8	Bar Graph Units	Shows the unit of measure displayed on the bar graph.
9	Bar Graph	Shows the parameter displayed on the digital display as a bar graph. The bar graph is only active while a gun is triggered.
10	Fault Icon	Lights when there is an alarm or error condition. This icon will not turn off until the unit is reset or all errors are cleared.
11	Diagnostics Icon	Lights when the system is in the diagnostics mode.

Back Panel

See Figure A 2-4 and refer to Table A 2-4.

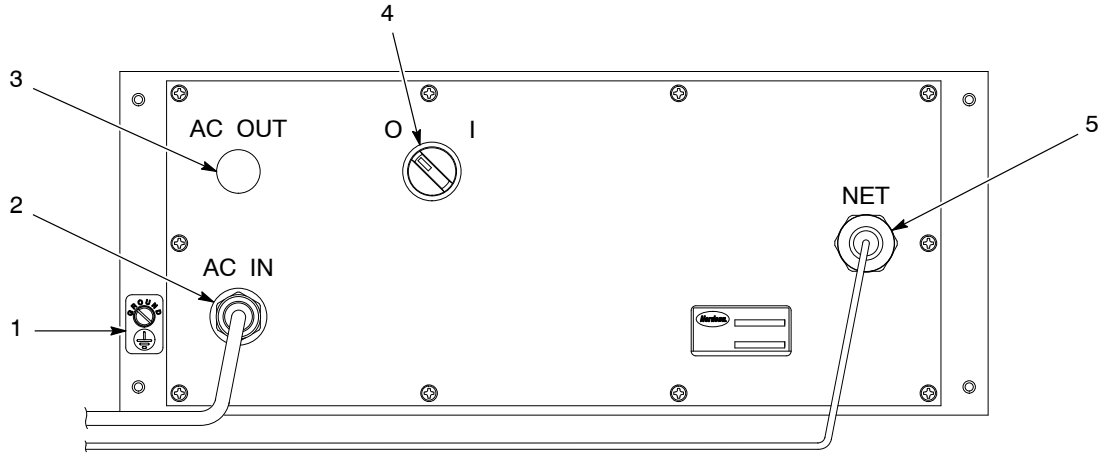


Figure A 2-4 Central Control Unit Back Panel Components

Table A 2-4 Back Panel Components

Item	Component	Description
1	Ground Stud	Grounds the central control unit enclosure.
2	AC IN Cable/Feed-Through	Connects main ac power to the central control unit.
3	AC OUT Knockout	Supplies power to the (optional) application or triggering controller.
4	Power Switch	Turns on or off the central control unit's power.
5	NET Cable/Feed-Through	Connects the communication cable from the central control unit to the main control cabinet.

IPS Gun Operating Modes

Mode	Description
Standard	The Standard mode 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 adjusted in the Standard mode.
Select Charge	The Select Charge modes allow the operator to select different electrostatic charging characteristics to get an optimum coating on differently shaped parts.
Mode 1 (Recoat)	This mode is used when recoating parts that have already been cured, but require additional coating and curing. This mode aggressively reduces gun current to eliminate back ionization.
Mode 2 (Special)	This mode is for coating with special powders (dry blend metallics or micas). This mode allows adjustment of voltage and current to coat parts effectively.
Mode 3 (Deep Cavity)	This mode is for coating inside boxes or other deep cavities. This mode uses fixed, low voltage and current to coat front edges and high voltage and current to coat inside of the deep cavity.
AFC (Automatic Feedback Current)	Automatic Feedback Current (AFC) is a function that is available in Standard and Select Charge modes. The maximum current output from the spray gun is controlled by the operator-adjusted set point (μA output). This allows the operator to limit the maximum output current of the gun to prevent excess charging of the powder. AFC provides an optimum combination of kV and electrostatic field strength for coating parts with interior corners and deep recesses at close range. **NOTE:** AFC set points may be either locked at factory- programmed default settings or enabled for operator adjustment. Refer to the *Configuration* section in this part of the manual for instructions for locking out set point adjustment or enabling set point adjustment.

Timers

The three system timers are the maintenance timer, the total spray timer, and the service timer.

Timer	Description
Maintenance	The maintenance timer (gun on hours) keeps track of how long each gun has been triggered. This is a cumulative total that can be reset. The maintenance timer for a gun can be viewed by pressing the gun's select key then pressing the VIEW key while the gun is not triggered. The timer can be reset by pressing the down arrow key while viewing the maintenance hours. Time is shown as hours (HRS). This timer can be used in tracking preventive maintenance procedures.
Total Spray	The total spray timer (gun on total hours) keeps track of the total time each gun has been triggered. This timer cannot be reset. The total spray timer can be viewed by pressing the Nordson key and going into the diagnostics mode. Time is shown as HRS x 10. The numeral 1 appears in the upper left corner of the display when the total spray timer is visible. This timer is used for diagnostic purposes.
Service	The service timer (total hours) keeps track of how long the control system has been in service. This timer cannot be reset. The service timer can be viewed by pressing the Nordson key and going into the diagnostics mode. Time is shown as HRS x 10. The numeral 2 appears in the upper left corner of the display when the service timer is visible. This timer is used for diagnostic purposes.

Pneumatic Modules

The pneumatic modules control the flow rate and atomizing air pressures to the guns. Refer to Part B, *Pneumatic Modules*, for more information.

Main Control Cabinet

Front View

See Figure A 2-5 and refer to Table A 2-5.

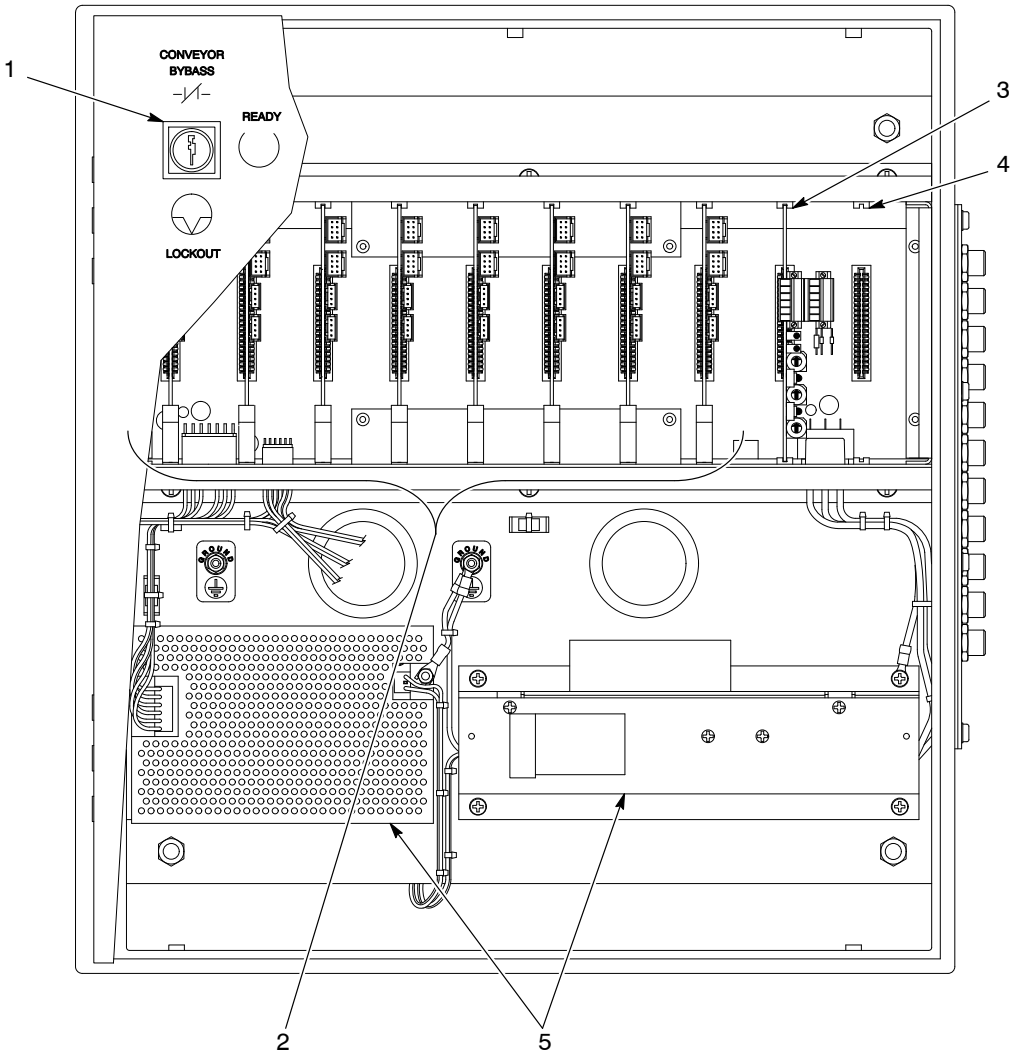


Figure A 2-5 Main Control Cabinet Components—Front View

Table A 2-5 Main Control Cabinet Components—Front View

Item	Component	Description
1	System Keyswitch	Sets the system to one of three modes for maintenance or normal operation. Refer to the *Operation* section in this part of the manual for a description of the three modes of operation.
2	Gun Driver Cards (Slots 1–8)	Allow the modular gun control system to interface with the individual guns and pneumatic modules. Each gun control card can control up to two guns.
3	Interface Card (Slot 9)	Allows the modular gun control system to interface with optional equipment, such as the purge modules; application or triggering controller; or remote PLC.
4	Blank Card Slot (Slot 10)	Allows the modular gun control system to be upgraded in the future.
5	Power Supplies	Distribute power to system components.

Back View

See Figure A 2-6 and refer to Table A 2-6.

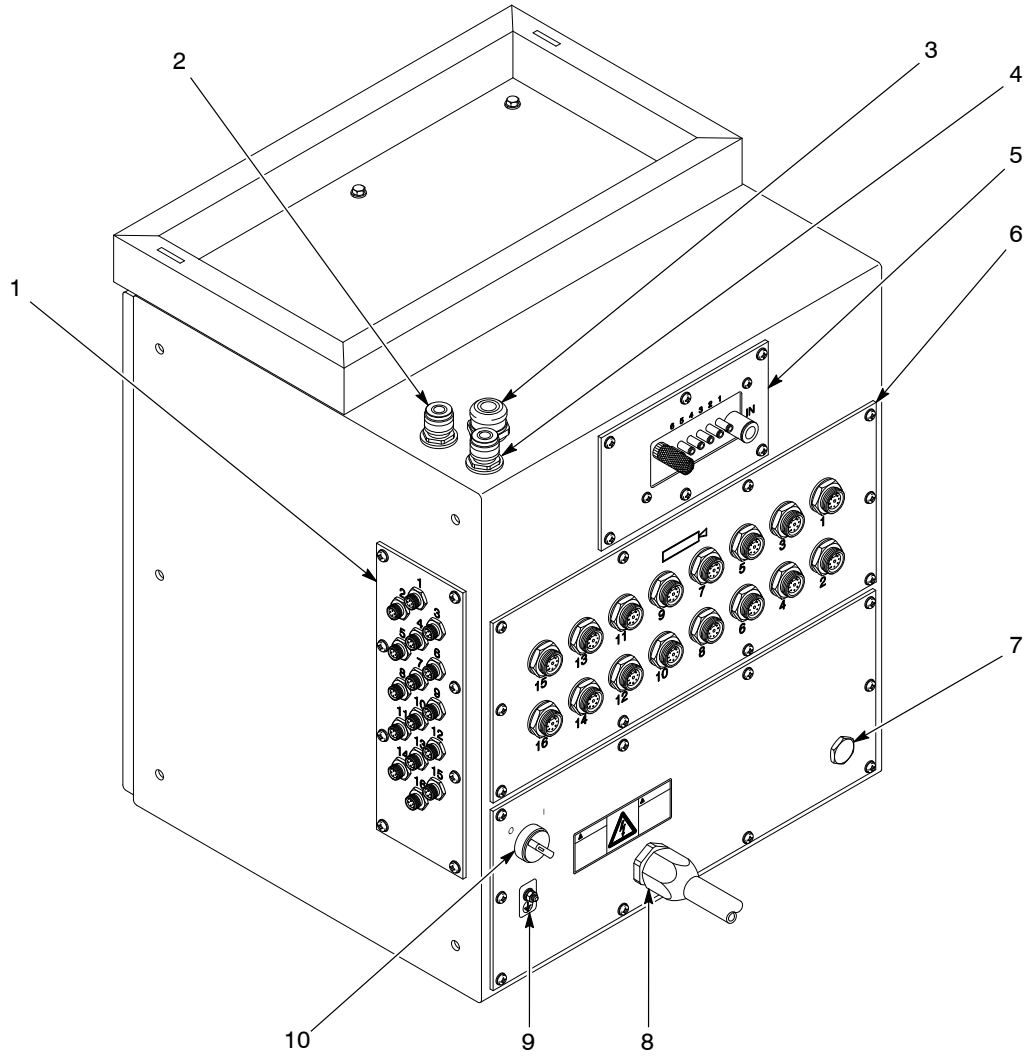


Figure A 2-6 Main Control Cabinet Components—Back View

Table A 2-6 Main Control Cabinet Components—Back View

Item	Component	Description
1	Solenoid Panel	Connects the gun driver cards to the pneumatic module solenoids.
2	AC Power Out Cable/Feed-Through	Supplies power to the central control unit and optional application/triggering controller.
3	Application/Triggering Controller Cable/Feed-Through (Optional)	Connects the interface card in the main control cabinet to the application/triggering controller.
4	Network Cable/Feed-Through	Connects the network interface cable to the main control cabinet from the central control unit.
5	Purge Manifold (Optional)	Sends pilot air signal to activate the optional gun purge module.
6	Gun Receptacle Panel	Connects individual gun cables to the modular gun control system.
7	External Equipment Knockout	Connects optional, external equipment (such as a customer-supplied PLC or photo eye junction box) to the modular gun control system.
8	System Power Cord/Feed-Through	Supplies main ac power for the modular gun control system.
9	Ground Stud	Grounds the modular gun control system enclosure and all components.
10	System Power Switch	Turns on and off all connected components.

Optional Equipment

NOTE: The Sure Coat modular gun control system is custom-configured per customer specifications. This manual contains information about the specific components of your configuration. Contact your Nordson representative for additional information.

Gun Purge Module

The gun purge module purges the powder paths of all guns in the system and prevents powder buildup within the guns.

Automated Triggering Controls

Controller	Description
Sure Coat Application Controller	The application controller fully automates the modular gun control system. It provides automatic triggering and control information for all guns in the system. The application controller identifies part styles on the conveyor and automatically selects the appropriate electrostatic characteristics based on user-programmed set points. **NOTE:** The application controller must be used with the UCS DeviceNet interface card.
Sure Coat Triggering Controller	The triggering controller allows automatic gun triggering but does not identify part styles. The triggering controller may be used with either a purge timer interface card (for triggering guns in groups) or discrete I/O interface card (for triggering guns individually).

Interface Cards

Interface Card	Description
Purge Timer	The purge timer interface card allows the modular gun control system to interface with the optional gun purge module. The purge timer interface card also allows gun triggering in groups using either sinking current or relay switches. Triggering must be done using an optional triggering controller. When used with the triggering controller, the purge timer interface card allows gun triggering in groups.
Discrete I/O	The discrete I/O interface card allows the modular gun control system to interface with a high-end, optional PLC and the gun module. The discrete I/O interface card allows individual gun triggering, purge, and set point adjustment through a PLC. When used with the triggering controller, the discrete I/O interface card allows individual gun triggering.
DeviceNet	The UCS DeviceNet interface card is used with either the Sure Coat application controller or an optional PLC with a DeviceNet interface. It allows the modular gun control system to interface with the gun purge module.
ProfiBus	The UCS ProfiBus interface card is used with a high-end, optional PLC with a ProfiBus interface. It allows the modular gun control system to interface with the gun purge module.

Specifications

Specifications are subject to change without notice.

Electrical

Main input voltage	85–240 Vac, 50/60 Hz 1 ∅, 10 amp (300 VA)
Gun output	6–21 Vdc
Maximum current	600 mA
Maximum short circuit current	50 mA
ANSI/ISA-S82.01	Pollution Degree 1 Overvoltage Category III

Pneumatic

Operating Air Pressures

Minimum input air pressure	5.6 bar (80 psi)
Maximum input air pressure	7 bar (100 psi)

Typical Air Pressures

Flow rate air	2 bar (30 psi)
Atomizing air	1 bar (15 psi)
Gun air	0.6 bar (10 psi) fixed

Air Supply Quality

Main input 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 7 bar (100 psi). Install a filter system with prefilters and coalescent type filters capable of removing oil, water, and dirt in the submicron range.

Symbols

See Figure A 2-7.

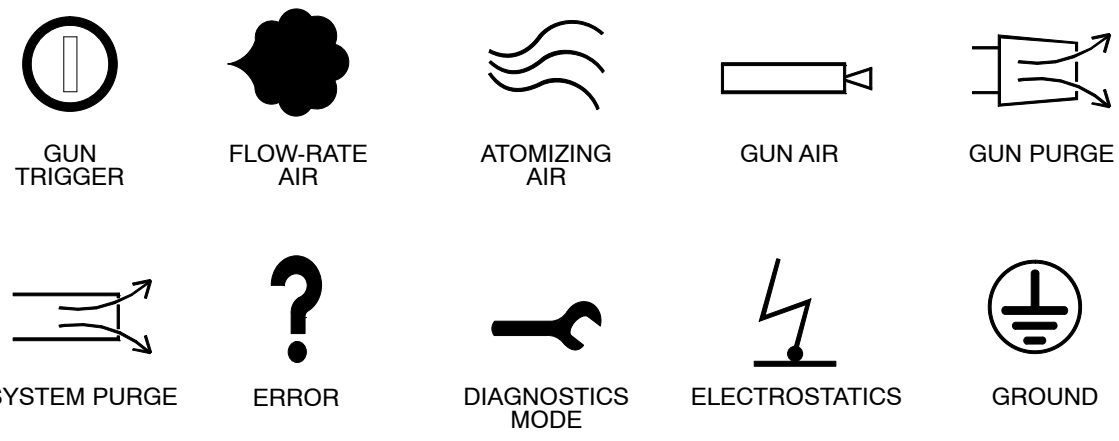


Figure A 2-7 Symbols

Section A 3
Installation

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

Introduction

This section explains general installation procedures for the Sure Coat modular gun control system. Installation procedures for optional components are explained in their individual parts of this manual.

NOTE: If you order any of the optional upgrade kits for the modular gun control system, installation and operation instructions will be shipped with the kit.

NOTE: Refer to the powder application equipment manuals for additional installation instructions.

Mounting

NOTE: The modular gun control system is mounted on top of a varying number of metal bases. The number of the bases is dependant upon the number of pneumatic modules used in the system. The bases raise the modular gun control system so that the central control unit will be at eye level.

1. The modular gun control system is shipped bolted upright to a wooden pallet. Unbolt the modular gun control system from the pallet.
2. Find a clean, flat floor surface to install the modular gun control system. The area should be near the powder spray booth main electrical panel and air supply.
3. Bolt the modular gun control system to the floor or booth operator platform using suitable, customer-supplied hardware.

Electrical Connections

NOTE: Input power to the modular gun control system must be 85–240 Vac, 1 phase, 50/60 Hz.

1. Install a fused, locking disconnect switch in the service line ahead of the modular gun control system so that power can be shut off during installation or repair.

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

2. See Figure A 3-2. Use the provided ground strap to connect the main control cabinet ground stud (7) to a true earth ground.
3. The main electrical line (6) shipped with the modular gun control system is 6 m (20 ft) long. Cut the outer conduit to the desired length. Leave the wire leads 0.3 m (1 ft) longer than the outer conduit.
4. Install a water-tight strain relief in a knockout in the booth's main electrical panel. Route the modular gun control system main electrical wiring through the strain relief.
5. Refer to Table A 3-1. Connect the leads to the booth's main electrical panel using the information listed in Table A 3-1.
6. Connect the the gun cables to the cable receptacles on the gun receptacle panel (4).

   NOTE: Sure Coat automatic gun cables connect directly to the modular gun control system. Versa-Spray and Tribomatic gun cables require an adapter between the cable and the modular gun control system. If you did not receive the necessary adapters, contact your Nordson representative.

Table A 3-1 Power Supply Wiring

Wire Color	Function
Yellow	Alarm (normally-open relay contact)
Yellow	Alarm (normally-open relay contact)
Brown	L1 (hot) interlocked to spray booth fan
Black[1]	AUX L1 (hot) not interlocked
Blue	L2 (neutral)
Green/Yellow	Chassis ground
Red[2]	120 V Conveyor interlock
Orange[2, 3]	120 V Conveyor interlock

NOTES:

1. The black wire was added to recent revisions and is not present on all systems.
2. The conveyor interlock voltage can be switched from 120 V to 240 V. Refer to *Changing Interlock Voltage from 120V to 240V* in this section.
3. The orange wire provided hot, not interlocked power to the application/triggering controller in some versions of the system. To check which wire is AUX L1, remove the main I/O panel. If the orange wire is connected to the I/O panel's power switch, then the orange wire is AUX L1.

Changing Interlock Voltage from 120V to 240V

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

Use the following procedure to change the conveyor interlock wiring from 120 V to 240 V.

1. See Figure A 3-2. Remove screws securing the main I/O panel (5) to the rear of the main control cabinet.
2. Carefully remove the main I/O panel from the main control cabinet.
3. See Figure A 3-1. Locate the main terminal block on the main I/O panel and disconnect the red wire from terminal E.
4. Secure the red wire to the terminal labeled 240V.
5. Secure the main I/O panel to the rear of the main control cabinet using the screws.

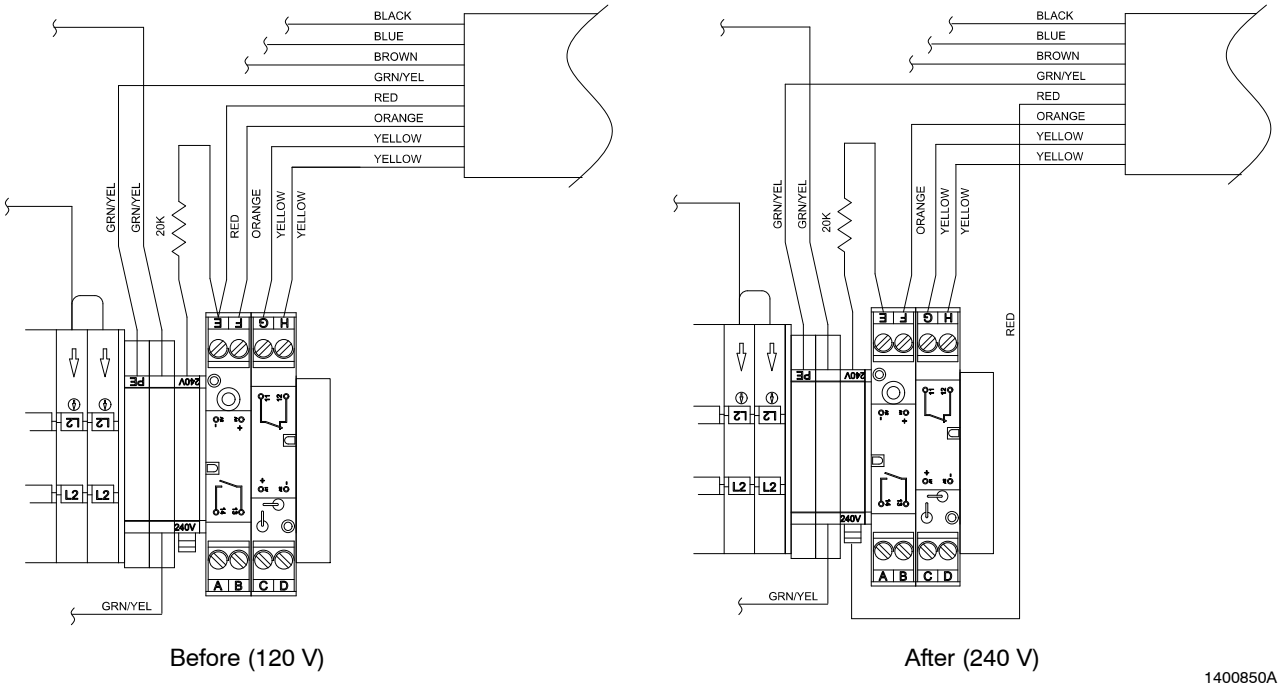


Figure A 3-1 Changing Conveyor Interlock Voltage from 120V to 240V

Note: Refer to the *Troubleshooting* section for a full schematic of the main I/O panel.

Pneumatic Connections

The system's maximum input air pressure is 7 bar (100 psi). The supply air must be clean and dry. 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) dewpoint at 7 bar (100 psi).

NOTE: The gun air outlets on the control system are plugged at the factory. Some guns do not need to be connected to the gun air connector. Refer to Table A 3-2 for an outline of gun air requirements by gun type.

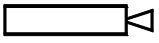
Table A 3-2 Gun Air Requirements

Gun Type	Gun Air
Sure Coat	Required
Versa-Spray	Optional(1)
Tribomatic	Not Required
(1)Versa-Spray guns can only use the gun air connection if the gun is equipped with a diffuser. Refer to your Versa-Spray gun manual for more information about the gun diffuser.	

1. See Figure A 3-2. Connect air tubing between each gun and pump as described in Table A 3-3.

   NOTE: If your system is equipped with the gun purge module, refer to the *Gun Purge Module* part of this manual for guidelines for installing purge air tubing.

Table A 3-3 Control System Air Tubing Connections

Item	Control System Connection	Tubing Size and Color	Other Connection
1	 GUN AIR	4-mm clear	4-mm air fitting on gun
2	 ATOMIZING AIR	8-mm blue	Powder pump fitting A
3	 FLOW-RATE AIR	8-mm black	Powder pump fitting F

2. Install the ball valve (9) on the main air connection (10).
3. Connect the included red, flexible air hose (8) to the ball valve. Connect the other end to the main air supply line.

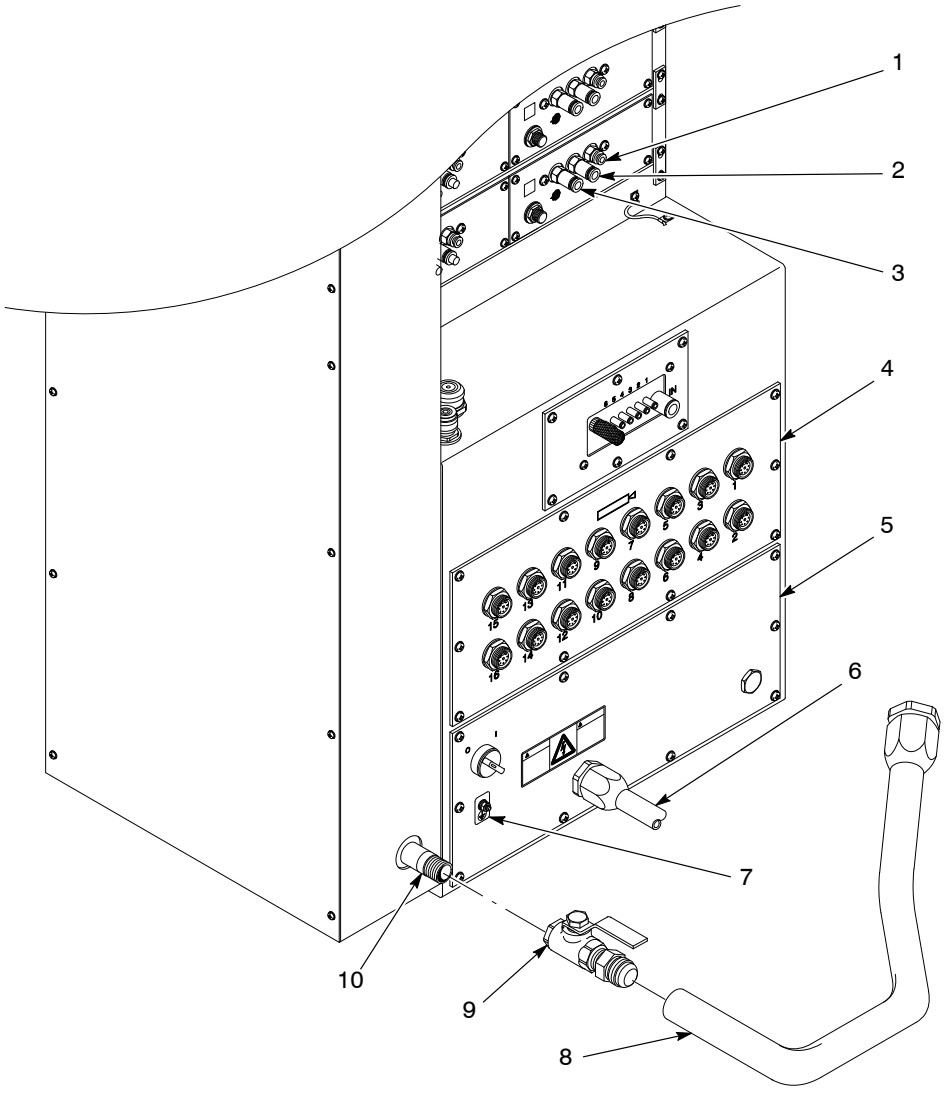


Figure A 3-2 Electrical and Pneumatic Connections

1. Gun air connector
2. Atomizing air connector
3. Flow rate air connector
4. Gun receptacle panel
5. Main I/O panel
6. Main electrical line
7. Ground stud
8. Flexible air hose
9. Ball valve
10. Main air connection

Note: The gun purge option is not shown in this illustration. Refer to the *Gun Purge Module* of this manual for purge air tubing connections.

Section A 4
Configuration

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

Introduction

You can customize the central control unit to fit the needs of your specific application. These procedures should only be necessary when the system is first installed. However, you may also perform these procedures to change your system to fit changing application requirements.

Restoring Factory Default Settings

If you are not satisfied with the settings that you have set up for your system, you may restore the modular gun control system to its factory default settings.

Table A 4-1 Restoring Factory Default Settings

To Restore	Press These Keys
Default set points to the gun that you are viewing on the display	STD and Nordson
Default set points to all guns in the system	SET ALL, STD, and Nordson
All defaults set at the factory, including all set points, gun mapping sequence, pneumatic type, etc.	STD and Nordson while the system is powering up

Entering Configuration Mode

NOTE: System power must be on in order to enter the configuration mode. Refer to the *Operation* section in this part of the manual.

NOTE: Make sure that the central control unit is in Local mode before performing any configuration procedures. See Figure A 4-1. If the LED on the LOCAL key (11) is lit, the central control unit is in Local mode. If the LED is not lit, press the LOCAL key.

1. See Figure A 4-1. Press the Nordson key (15).
2. When three dashes appear in the display (8), press the PGM key (16). CHOOSE CONFIG scrolls across the display and LEDs blink on the keys that correspond to the configurable options.
3. Refer to Table A 4-2 for a list of the system's configurable options. Press the key listed in the Key column to configure its corresponding option. Instructions for configuring each option are explained in the procedures listed in the Refer to column.

Table A 4-2 Configurable Options

Key	Option	Refer to
A	Program gun location on the central control unit	*Gun Mapping*
B	Program system pneumatic module type	*Pneumatic Type*
AFC	Enable/disable set point adjustments in Select Charge AFC	*Select Charge AFC Enable/Disable*
ALL	Lock out all set point adjustments	*Set Point Lockout*

4. To exit the configuration mode, press the Nordson key.

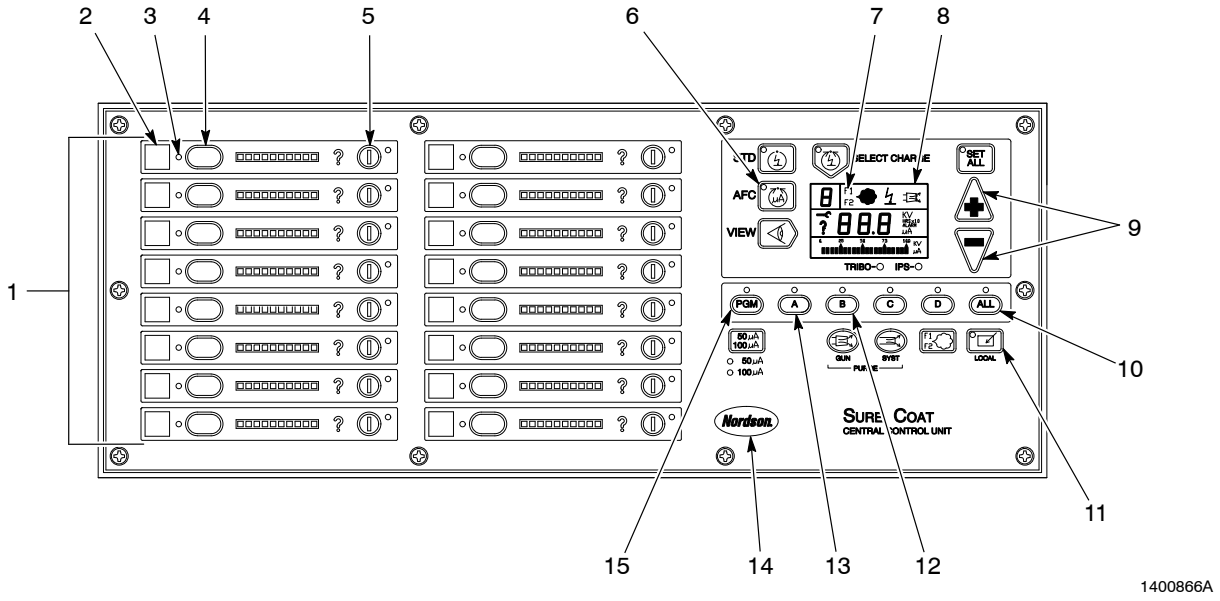


Figure A 4-1 Central Control Unit Configuration

1. Gun panels
2. Gun location label
3. Gun select LED
4. Gun select key
5. Gun trigger key
6. AFC key
7. F1/F2 icon
8. Display
9. +/− keys
10. ALL key
11. LOCAL key
12. B key
13. A key
14. Nordson key
15. PGM key

Gun Mapping

See Figure A 4-1. The central control unit gun panels (1) are factory configured in one of the following ways:

- **Horizontal numbering:** Left column controls odd-numbered guns; right column controls even-numbered guns.
- **Vertical numbering:** Left column controls the first half of the guns; right column controls second half of guns. For example, in a 16-gun system, the left column controls guns 1–8 and the right column controls guns 9–16.

The operator can reassign the location of the guns on the central control unit to meet changing application requirements.

Gun Mapping *(contd)*

1. Enter the configuration mode. Refer to *Entering Configuration Mode* for instructions.
2. Press the A key (14). ASSIGN GUN scrolls across the display (8), then the numeral 1 appears. The gun select LED (3) on the gun keypad currently programmed to control gun number 1 lights.
3. If you want to change the physical location of gun 1, press the desired new physical location's gun select key (4). The gun select LED lights to indicate the gun's new location.
4. Press the + key (9) until the next gun number that you want to assign appears in the display. The gun select LED lights to indicate the gun's current location.
5. Press the desired new physical location's gun select key. The gun select LED lights to indicate the gun's new location.
6. Repeat steps 4 and 5 to assign as many guns as necessary.

   NOTE: If you have an odd number of guns in your system, one location must be empty. For example, if your system has eight gun driver cards and only 15 guns, you must make sure that gun 16 is not assigned to any physical location. When 16 appears on the display, press the corresponding gun select key to remove gun 16 from the central control unit.

7. Record the location of the guns using the gun location labels (2).
8. Use the +/– keys to check the numbering sequence of the gun keypads. As each sequential number appears on the display, the corresponding gun select LED will light to indicate the physical location of each gun.

   NOTE: To continue on to another configuration mode, press the corresponding configurable option key. Configurable option keys are indicated by blinking LEDs.

9. To exit the configuration mode, press the Nordson key (15).

Pneumatic Type

There are two available pneumatic types for the modular gun control system. Use the following procedure to configure the modular gun control system to recognize your system's pneumatic modules.

1. Enter the configuration mode. Refer to *Entering Configuration Mode* for instructions.
2. See Figure A 4-1. Press the B key (13). CHOOSE FLO scrolls across the display (8), then either 0 or 1 appears.
3. Refer to Table A 4-3. Use the +/– keys (9) to select the appropriate setting. The numeral on the display and the appearance of the F1/F2 icon (7) will indicate the current pneumatic type.

Table A 4-3 Pneumatic Type Settings

Numeral	F1/F2 Icon Appearance	Pneumatic Type
0	F1 illuminated	Standard 2 gauge
1	F1 and F2 illuminated	F1/F2 3 gauge

NOTE: To continue on to another configuration mode, press the corresponding configurable option key. Configurable option keys are indicated by blinking LEDs.

4. To exit the configuration mode, press the Nordson key (15).

Select Charge AFC Enable/Disable

The ability to adjust AFC set points in Select Charge mode 2 may be either enabled or disabled.

NOTE: Performing this procedure will not affect the operation of AFC in the Standard mode.

1. Enter the configuration mode. Refer to *Entering Configuration Mode* for instructions.
2. See Figure A 4-1. Press the AFC key (6). SELEC CHARGE AFC scrolls across, then either 0 or 1 appears on the display (8).
3. Use the +/– keys (9) to select one of the following settings as desired.
   - **0:** Enabled. Operator may adjust Select Charge mode 2 AFC set points to fit application.
   - **1:** Disabled. Factory-set Select Charge mode 2 AFC set points are active and cannot be changed.

NOTE: To continue on to another configuration mode, press the corresponding configurable option key. Configurable option keys are indicated by blinking LEDs.

4. To exit the configuration mode, press the Nordson key (15).

Set Point Lockout

The ability for the operator to adjust electrostatic set points and operating mode changes may be enabled or disabled using the following procedure.

NOTE: When the set point adjustment is locked out, the operator can only use the central control unit to trigger the guns, enter the diagnostics mode, purge, and switch between F1 and F2 air pressure settings.

1. Enter the configuration mode. Refer to *Entering Configuration Mode* for instructions.
2. See Figure A 4-1. Press the ALL key (10). DENY CHANGE scrolls across, then either 0 or 1 appears the display (8).
3. Use the +/– keys (9) to select one of the following settings as desired.
   - **0:** Enabled. Operator may adjust set points to fit application.
   - **1:** Disabled. Operator-specified set points are active and cannot be changed.

NOTE: To continue on to another configuration mode, press the corresponding configurable option key. Configurable option keys are indicated by blinking LEDs.

4. To exit the set point lockout mode, press the Nordson key (15).

Section A 5
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.

This section explains basic operating procedures for the Sure Coat modular gun control system. Refer to your other powder application equipment manuals for additional operation instructions before operating the modular gun control system.

Interface and Conveyor Interlock Signals

The following paragraphs explain how the system operates, depending on what external equipment it has and the position of the keyswitch on the main control cabinet.

Interface Modes

See Figure A 5-2. There are two system interface modes that can be selected using the LOCAL key (10) on the central control unit. The LED on the LOCAL key indicates which mode is active.

NOTE: The LOCAL key will not affect operation unless the system is connected to an application/triggering controller or remote PLC.

Table A 5-1 Interface Modes

Mode	LED	Operation
Local	On	Allows the operator to control the system using the central control unit.
Remote	Off	Allows the operator to trigger or purge the guns using the application/triggering controller or a remote PLC. Most keys on the central control unit are disabled when in remote mode.

System Keyswitch

Refer to Table A 5-2. The keyswitch on the main control cabinet door allows the operator to quickly set the system to one of three operation modes.

NOTE: When the keyswitch is in the LOCKOUT or BYPASS positions, the key can be removed so that the selected mode cannot be accidentally changed.

Table A 5-2 Keyswitch Positions

Position	What it Does	When to Use
READY	Allows the system to work during normal operation Shuts system down if conveyor stops (if system is wired to conveyor interlock)	Normal operation
LOCKOUT	Disables all guns in system	Maintenance or repair in the booth
BYPASS	Allows guns in the system to operate while the conveyor is not running	Adjustments while there is a pause in production or the booth is off line

Conveyor Interlock for Automatic Triggering

When the system is connected to an application/triggering controller or remote PLC, the guns turn on or off at different times depending on the status of the conveyor and trigger signals. Refer to Table A 5-3.

Table A 5-3 Conveyor Interlock for Automatic Triggering

Interface Mode	Keyswitch Position	Conveyor Status	Trigger Signal Status	Gun Spray Status
REMOTE	READY or BYPASS	On	On	Spray normally
		On	Off	Stop spraying until a new trigger signal is received
		Off	On	If spraying, will continue spraying until trigger signal stops; after signal stops, cannot spray again until conveyor starts
		Off	Off	Stop spraying; cannot spray again until conveyor starts and trigger signal is received
	LOCKOUT	On/Off	On/Off	Stop spraying; cannot spray again until keyswitch is in READY or BYPASS position
LOCAL	READY or BYPASS	On	N/A	Triggering is controlled through central control unit
		Off	N/A	Stop spraying
	LOCKOUT	On/Off	N/A	Stop spraying; cannot spray again until keyswitch is in READY or BYPASS position
NOTE: If the conveyor stops and the keyswitch is in the READY position, CON appears on the central control unit display.				

Startup

1. Make sure that the following conditions are met before starting up the modular gun control system:
   - The booth exhaust fans are on.
   - The powder recovery system is operating.
   - The powder in the feed hopper is thoroughly fluidized.
   - The gun cable, feed hose, and air tubing are correctly connected to the gun, pump, and modular gun control system.

NOTE: If the control system is wired to the booth electrical panel, you may leave the control system power switches in the on position. The control system will automatically turn on and off when the booth power is turned on and off.

2. Turn on the modular gun control system by turning its two power switches to the on position. There is one switch on the back of the main control cabinet and one on the back of the central control unit. Make sure that all the icons on the display light.

NOTE: The system performs an internal check for 5 seconds. The controller switches to either the factory default mode or to the last selected mode.

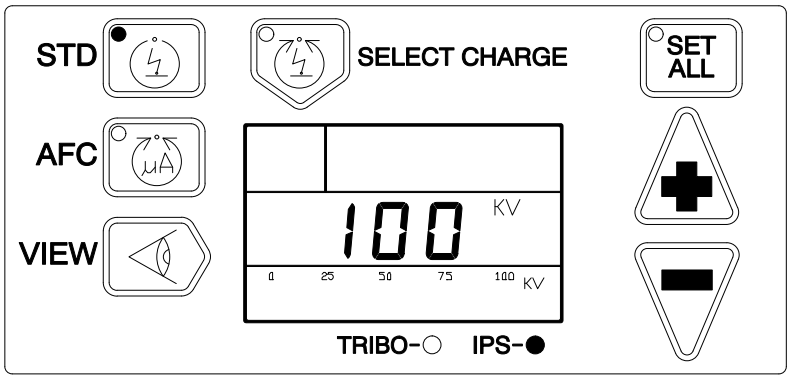


Figure A 5-1 Typical Display in STD Mode with Gun Not Triggered

3. Turn on the main air supply and set the operating air pressures to the appropriate settings.

   NOTE: The pressures given are average starting points. Pressures vary according to required film build, line speed, and part configuration. Refer to the *Operation* section in Part B, *Pneumatic Modules*, for air pressure adjustment guidelines.

   - **Atomizing Air:** 1 bar (15 psi)
   - **Flow Rate Air:** 2 bar (30 psi)

4. If you have added or replaced a gun since the last time you operated the system, perform the *Initial Gun Use* procedure.
5. Perform the *Daily Operation* procedure.

Initial Gun Use

Perform this procedure when a gun is first put into service.

1. Make sure that the maximum kV setting (95 kV Sure Coat guns; 100 kV Versa-Spray guns) appears on the digital display in the STD mode with the AFC function on.
2. See Figure A 5-2. Press the VIEW key (4) to display μA.
3. Trigger the gun and obtain the desired spray pattern by adjusting the flow rate and atomizing air pressures.
4. Record the μA output with no parts in front of the gun.
5. Monitor the μA output daily, under the same conditions. A significant increase in μA output indicates a probable short in the gun resistor. A significant decrease indicates a failing resistor or voltage multiplier.

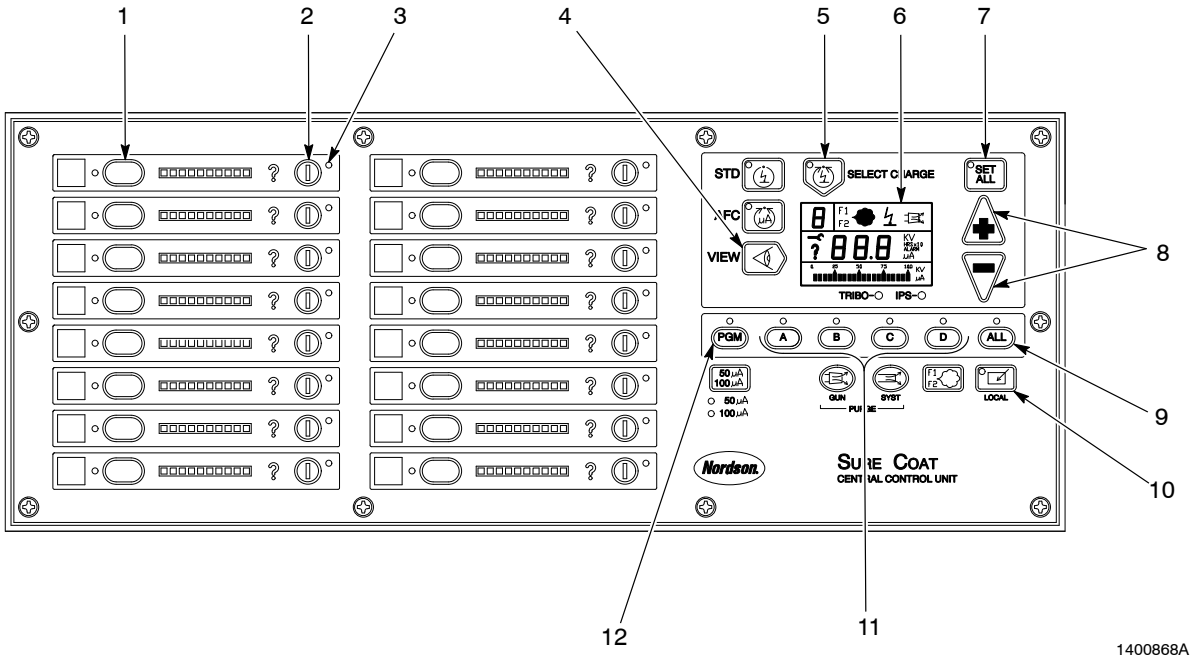


Figure A 5-2 Modular Gun Control System Operation

1. Gun select key
2. Gun trigger key
3. Trigger LED
4. VIEW key
5. Select Charge key
6. Display
7. SET ALL key
8. +/– keys
9. ALL key
10. Local
11. Gun group trigger keys
12. PGM key

Daily Operation

NOTE: If the system has an application controller, all set points are adjusted through the application controller. Refer to Part G: *Application Controller* in this manual for more information.

1. Complete the *Startup* procedure.
2. Put the system keyswitch in the BYPASS position while you are making initial adjustments to the guns.

NOTE: Figure A 5-3 shows the typical display when the gun is triggered. Refer to the *Description* section in this part of the manual for more information about the display.

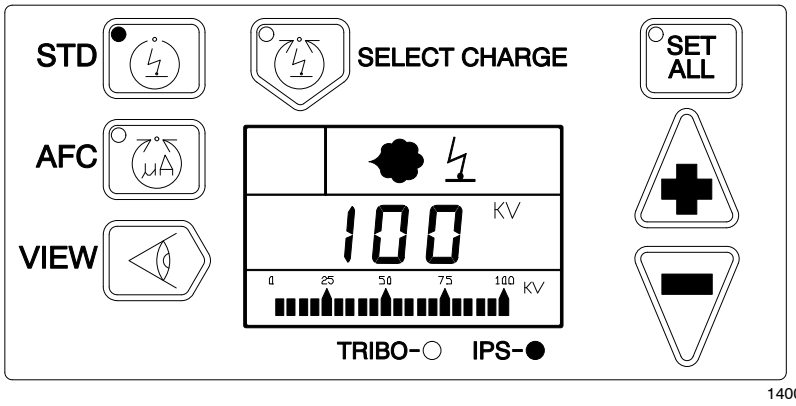


Figure A 5-3 Typical Display in STD Mode with Gun Triggered

3. If your system is connected to either Versa-Spray or Sure Coat automatic guns, select the appropriate operating mode for your application. Refer to *IPS Gun Operating Modes* in this section to select the appropriate operating mode for your application.
4. Use Table A 5-4 to verify the correct data on the display.

Daily Operation *(contd)*

Table A 5-4 Display Screens

AFC	Display Units	Display with Gun Triggered[1]	Display with Gun Not Triggered
On	kV	Gun output (controller modifies kV to match μA)	Initial kV setting (factory kV)
On	μA	Actual μA[2, 3]	AFC set point[2, 3]
Off	kV	Actual kV	kV set point
Off	μA	Actual μA	Blank

NOTES:

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.
2. Pressing the AFC key shows the AFC set point then the actual μA current feedback from the gun on the display and the bar graph.
3. Pressing the +/– keys switches the display to AFC set point. Each time you press the keys changes the AFC set point.

4. See Figure A 5-2. Trigger the gun to test the spray pattern. Trigger the guns using one of the following methods:
   - Gun Trigger Key (2): Triggers individual gun.
   - Gun Group Key (11): Triggers a pre-programmed group of guns.
   - ALL Key (9): Triggers all guns in the system.
5. Adjust the set points as necessary. Refer to *Set Point Adjustments* in this section for more information.

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.

6. Put the system keyswitch in the READY position. The system is now ready for normal operation when the conveyor starts.

IPS Gun Operating Modes

Standard

See Figure A 5-4 and refer to Table A 5-5. Press the STD key to select the Standard operating mode. Press the AFC key to turn AFC on or off.

Table A 5-5 Standard Operating Mode

AFC	Description		
Off	Use the +/– keys to turn on/off the kV or adjust the set point. The controller stores the kV setting when powered off or the mode is changed.		
	Setting	**Sure Coat Guns**	**Versa-Spray Guns**
	kV Set Point	adjustable	adjustable
	kV Range	0 then 25–95 kV	0 then 33–100 kV
On	Adjust the desired AFC set point by using the +/– keys. The factory-set starting point is 30 μA. If the set point is changed, the controller remembers the new set point value. Voltage is automatically set to the maximum, and the AFC function 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 Guns**	**Versa-Spray Guns**
	Initial kV	95 kV	100 kV
	Set Point Increments	5 μA	5 μA
	Range	10–100 μA	10–100 μA
	Default Set Point	30 μA	30 μA

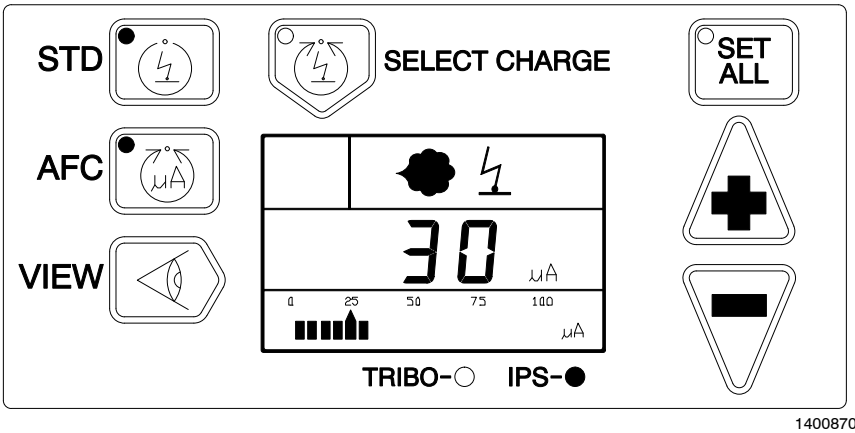


Figure A 5-4 Gun Triggered in STD Mode with AFC On

Select Charge

Refer to Table A 5-6 and see Figure A 5-5. Press the SELECT CHARGE key repeatedly to select the desired Select Charge mode.

Table A 5-6 Select Charge Operating Modes

Select Charge Mode	Application	kV			AFC	
		Initial/Default kV Value		kV Set Point		
		Sure Coat	Versa-Spray		Default μA Value	μA Set Point
1	Recoat	95	100	Fixed	15	Fixed
2	Special	60	60	Adjustable(1)	30	Adjustable(2)
3	Deep cavity	95	100	Fixed	70	Fixed

NOTES:

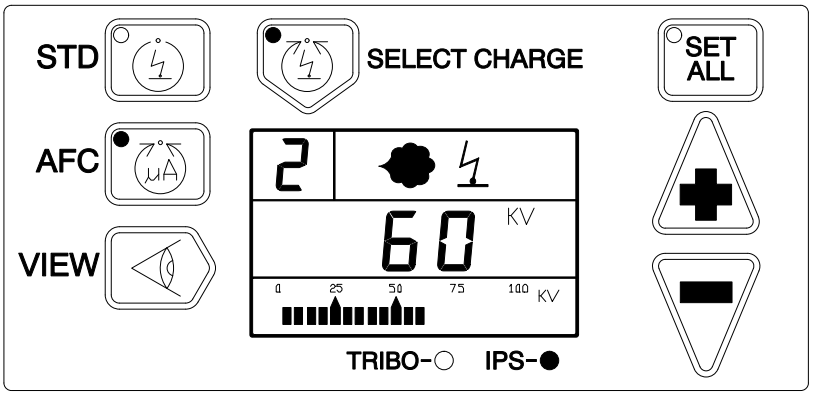
1. kV set points are adjustable if the system is configured to allow adjustment. Refer to *Set Point Lockout* in the *Configuration* section for more information.
2. AFC set point adjustment can be enabled or disabled by reconfiguring the system. Refer to *Select Charge Enable/Disable* in the *Configuration* section for more information.

Mode/Application Descriptions:

Mode 1 (Recoat): This mode is for recoating. It is used when recoating parts that have already been cured, but require additional coating and curing. This mode aggressively reduces gun voltage to eliminate back ionization.

Mode 2 (Special): This mode is for coating with special powders (dry blend metallics or micas). This mode allows adjustment of voltage and current to coat parts effectively.

Mode 3 (Deep Cavity): This mode is for coating inside boxes or other deep cavities. This mode uses fixed, low kV and current to coat front edges and high kV and current to coat inside of the deep cavity.



1400871A

Figure A 5-5 Gun Triggered in Select Charge Mode 2

Set Point Adjustments

See Figure A 5-2. You can adjust the operating modes and set points of either a single gun or all guns in the system at the same time.

Adjustment	Procedure
Single Gun	1. Press the gun select key (1) of the gun you want to adjust. The LED to the left of the gun select key will illuminate. 2. Adjust the operating modes and set points as desired. 3. Press the gun's trigger key (2) to test the spray pattern.
All Guns in System (SET ALL)	**NOTE:** Different types of guns (Tribomatic, Versa-Spray, and Sure Coat) cannot be simultaneously adjusted using SET ALL. 1. Press the gun select key (1) of the gun that you want to all other guns to match. 2. Press the SET ALL key (7). The SET ALL LED lights. 3. Adjust the control mode and AFC set points to the desired settings. All like guns in the system will be adjusted to the same control mode and AFC set points in real time. 4. Press the SET ALL key to exit the SET ALL mode. 5. Press the ALL key (9) to test the spray patterns.

Setting Up Groups of Guns

The central control unit can be programmed to trigger an operator-specified group of guns at the same time. The central control unit can store up to four groups of guns.

The guns in each of these groups can be triggered simultaneously by pressing the corresponding A, B, C, or D key. For example, guns in the first slot may be located in group A; guns in the second slot may be located in group B; etc.

1. See Figure A 5-2. Press the PGM key (12). The PGM LED lights.
2. Press the group trigger key (11) to which you want to assign guns. The corresponding LED lights and the letter appears on the display (6).
3. Press the gun trigger keys (2) for the guns that you want to assign to the group. The corresponding trigger LEDs (3) will light. If you want to remove a gun from the group, press the corresponding gun trigger key.

   NOTE: A single gun may be assigned to up to four groups.

4. Repeat steps 2 and 3 to program additional groups of guns.
5. Press the PGM key when you have finished programming the desired groups of guns.
6. Press the gun group trigger key to make sure that the guns that you have just programmed trigger.

Restoring Factory Default Settings

If you are not satisfied with the settings that you have set up for your system, you may restore the modular gun control system to its factory default settings.

Table A 5-7 Restoring Factory Default Settings

To Restore	Press These Keys
Default set points to the gun that you are viewing on the display	STD and Nordson
Default set points to all guns in the system	SET ALL, STD, and Nordson
All defaults set at the factory, including all set points, gun mapping sequence, pneumatic type, etc.	STD and Nordson while the system is powering up

Shutdown

1. Stop triggering all guns in the system.

NOTE: If the control system is wired to the booth electrical panel, you may leave the control system power switches in the on position. The control system will automatically turn on and off when the booth power is turned on and off.

2. Turn the main power switch on the rear of the main control cabinet.

   NOTE: Turning the power switch on the main control cabinet to the off position shuts down the main control cabinet and central control unit. It is not necessary to turn the central control unit power switch to the off position.

3. Ground the gun electrodes to discharge any residual voltage.
4. Perform the *Daily Maintenance* procedure in this manual and all other system component manuals.

Daily Maintenance

WARNING: Turn off the electrostatic voltage and ground the gun electrode before performing the following tasks. Failure to observe this warning could result in a severe shock.

1. Compare the gun's μA output in kV mode with no parts in front of the 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. Refer to the *Troubleshooting* section for more information.

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. 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 system cabinet with a clean, dry cloth.

Section A 6
Troubleshooting

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

Identifying Errors

This section explains procedures for using the central control unit and gun driver cards to identify errors in the modular gun control system. Refer to the manuals included with your other powder application equipment to troubleshoot the other components of your powder coating system.

WARNING: Do not touch the gun if the kV icon is flashing. A flashing kV icon while the gun is not triggered is a warning to the operator that voltage may be present at the gun because of faulty hardware. Failure to observe this warning may result in an electrical shock.

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

The modular gun control system indicates faults using error codes and LEDs. Faults with an individual gun are identified by error codes displayed on the central control unit digital display. Faults are also identified by LED illumination on the gun driver cards in the main control cabinet. Refer to *Error Codes* and *Gun Driver Cards* in this section for explanations of the system fault indications.

NOTE: Error codes can only be viewed in the diagnostic mode.

Diagnostics Mode

See Figure A 6-1. If the system is triggered while an error condition is present, the question mark on the corresponding gun panel illuminates and a question mark is displayed on the digital display. The diagnostics mode must be entered to view the error codes.

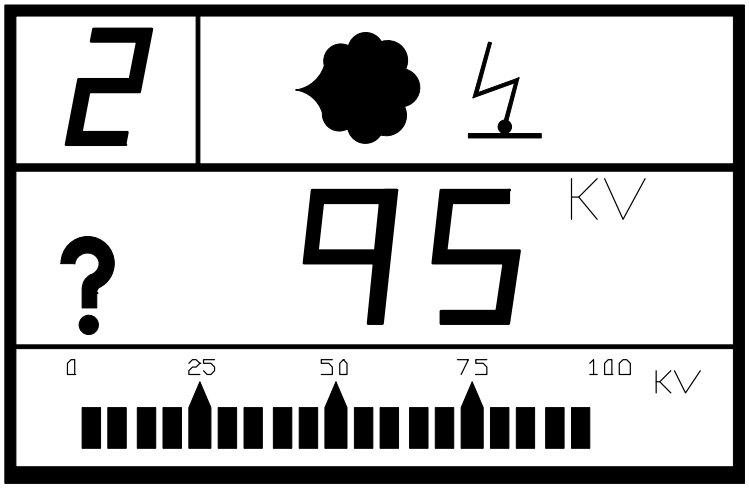


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Figure A 6-1 Display of an Error Condition

Operation

The diagnostics mode is available at all times. The gun can still be triggered while the display shows the diagnostics information.

Pressing the Nordson key at any time while in the diagnostics mode results in an automatic exit from this mode and a return to the previous operating mode.

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

WARNING: Do not touch the gun if the kV icon is flashing. A flashing kV icon while the gun is not triggered indicates an electrostatics problem. Failure to comply with this warning may result in an electrical shock.

Use the following procedure to enter the diagnostics mode.

1. Press the Nordson key.
2. See Figure A 6-2. Verify that the wrench symbol is shown on the digital display to signify that the diagnostics mode has been entered.

   The system performs internal checks and automatically runs through the following diagnostics sequence. Each set of information is displayed for several seconds before automatically proceeding to the next step.

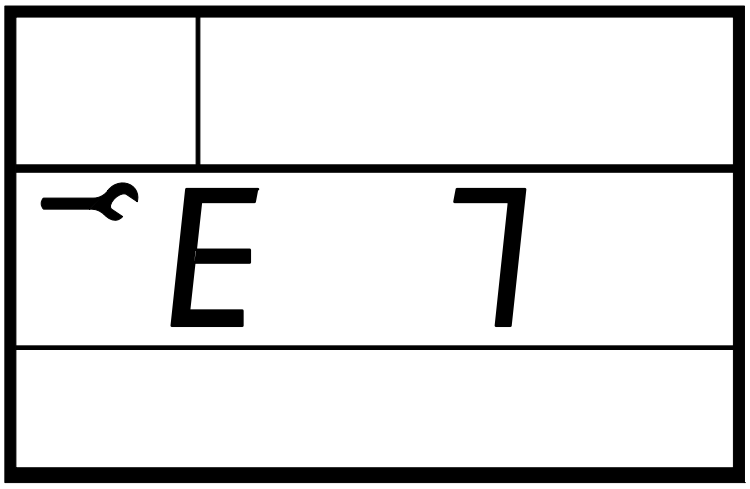

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Figure A 6-2 Diagnostic Mode Display

NOTE: Pressing the Nordson key during the diagnostics sequence aborts the sequence.

a. An error code or dashes are shown on the digital display. Dashes indicate that no error or alarm condition is present.

b. If error codes are displayed, dashes are shown when there are no more error codes.

c. The total spray timer value is displayed as HRSx10, and the number 1 is displayed in the upper left corner.

d. The service timer value is displayed as HRSx10, and the number 2 is displayed in the upper left corner.

e. All segments and icons light on the LCD display.

f. The controller type is displayed (for example, SC3).

g. The software version is displayed (for example, 3.0).

h. Dashes are displayed to signify that the internal checks are completed.

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

3. Record all error codes.

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

4. If an error code is available, refer to *Error Codes* to locate the error and perform the corrective action.

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

Error Codes

Table A 6-8 Error Codes

Error Code	Fault	Corrective Action
1	Problem writing to Neuron EEPROM	Turn off the power to the system to reset the microprocessor. If the problem persists, replace the gun driver card.
2	RAM test failure	Turn off the power to the system to reset the microprocessor. If the problem persists, replace the gun driver card.
3	kV not within commanded gun drive voltage	Check the gun current with no parts in front of the gun. If the current is 105 μA, check for a short circuit of the current feedback wires in the gun cable: Unplug the cable from the gun and trigger the gun. • If the error stays E3, replace the cable. • If the error changes to E7, check the resistance of the multiplier as described in the gun manual.
4	Not used in this system	Contact your Nordson representative for assistance.
5		
6		
7	Gun cable or multiplier open circuit	If the current display is 1 μA or less, check the multiplier cable and electrode assembly for loose connections. If the connections are secure, check the multiplier with a ohmmeter as described in the gun manual. If the multiplier reading is acceptable, check for a defective cable as described in the gun manual.
8	Gun cable or multiplier short circuit	Unplug the cable from the gun and trigger the gun. • If the error changes to E7, check the resistance of the multiplier as described in the gun manual. • If the error code stays E8, check the continuity of the cable as described in the gun manual.
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	Gun driver card hardware	a. Turn off the power to the system. b. Unplug the cable from the back of the gun. c. Turn on the power to the system. • If the error code changes to 7 (open circuit), the board is working correctly. Check the gun multiplier. • If the error code remains at 11, replace the gun driver card.
12	System not communicating with host interface	Check the network interface cable. Make sure that both ends are securely connected and there is no damage to the cable.

Continued...

Error Code	Fault	Corrective Action
13	PLC communication failure	Check the PLC cable connections and the terminating resistor.
14	Interface card not communicating with remote host	a. Press the Reset button on the interface card (slot 9). b. Check the wiring connections on the interface card. c. If the problem persists, replace the interface card.
15	Foldback fault	Unplug the cable from the gun and trigger the gun. • If the error changes to E7, check the resistance of the multiplier as described in the gun manual. • If the error code stays E15, check the continuity of the cable as described in the gun manual.
16	Gun identification fault	Make sure that the gun is a Versa-Spray II, Tribomatic, or Sure Coat automatic powder spray gun. Check the gun cable connection.
17	Tribomatic μA below set point	Check the powder flow for poor charging. Check for humidity in the compressed air supply.
18	No 24 V supply	Turn off the system power and check for shorts or open wiring. If no shorts or open wiring can be found, replace the power supply.
29	Gun mapping error	Reconfigure gun numbering on the central control unit.
30	Incompatible module	Incorrect software version. Install new gun driver software.
31	Missing node	Make sure the gun driver card is securely inserted in the card cage. If the card is securely inserted in the card cage, replace the gun driver card.

Clearing Error Codes

Error codes are not automatically cleared when they are viewed. Clear error codes by either turning off system power or entering diagnostics mode and pressing one of the following keys:

- **– (down arrow) key:** clears the error code for only the gun that is presently displayed
- **+ (up arrow) key:** clears all error codes in the system

Alarm Override

If your system is connected to an external alarm, the alarm will turn on when an error is detected. An uncleared error code will cause the alarm to be on until the problem is solved.

Press the Nordson key to override the alarm for 10 minutes. The alarm will turn on again in 10 minutes if the problem is not solved. If a new alarm condition occurs within the original 10-minute period, the alarm will turn on again. You may continue to press the Nordson key to override the alarm and allow the system to operate until the problem is solved.

Gun Driver Cards

Switches

Refer to Table A 6-9 and see Figure A 6-3.

Table A 6-9 Gun Driver Card Reset Switches

Item	Switch	Function
1	Reset	Restarts the microprocessor if gun operation becomes erratic
2	Service	Prepares the card for software installation

LEDs

Refer to Table A 6-10 and see Figure A 6-3.

Table A 6-10 Gun Driver Card LEDs

Item	Color	Function	Meaning	Corrective Action
3	Red	Alarm	Lights when an error is detected (communication, neuron, RAM, or hardware fault)	Enter diagnostic mode and clear the error code.
4	Yellow	Service	Short on pulse, then off continuous: Normal at startup.	No action necessary.
			Lit continuously: Bad node hardware.	Replace the gun driver card.
			Flashing once for approximately two seconds: Power up/reset when no node applications.	Wait for the gun driver card to initialize. If it does not initialize, replace the card.
			Repeated short on pulses: Watchdog timer resets occurring.	Replace the gun driver card.
			Pulsing on/off at 1 second intervals: Node is not configured.	Replace the gun driver card.
5	Green	Status	Flashing (heartbeat) when communicating properly with the master or option card.	No action necessary.
6	Green	Power	Lights when power (5 Volts) is applied to the board.	No action necessary.
7	Yellow	Foldback A	Lights when the over-current protection circuit has been triggered because of high current draw from the gun drive circuitry on odd-numbered gun.	Check the gun and cable for shorts.
8	Yellow	Foldback B	Lights when the over-current protection circuit has been triggered because of high current draw from the gun drive circuitry on even-numbered gun.	Check the gun and cable for shorts.

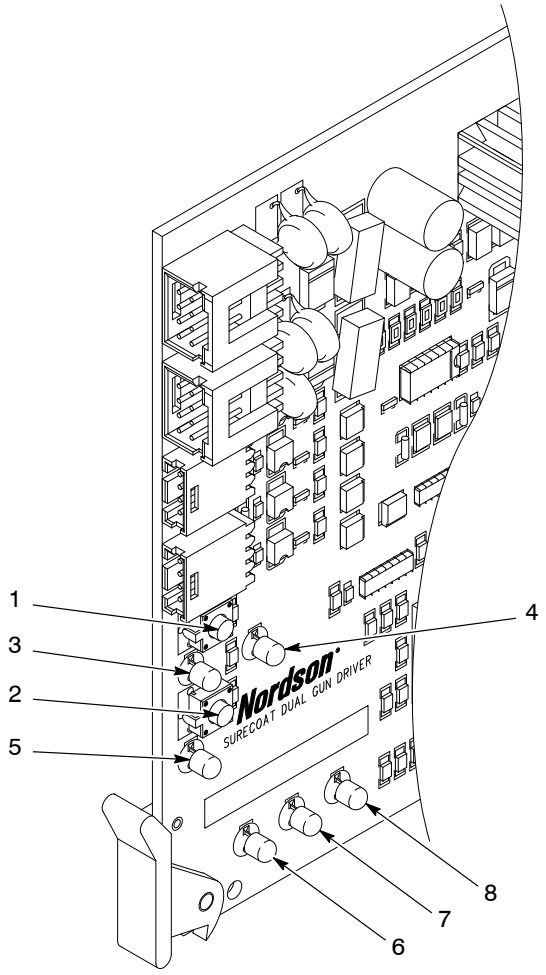

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Figure A 6-3 Gun Driver Card Switches and LEDs

1. SW1
2. SW2
3. Red alarm LED
4. Yellow service LED
5. Green status LED
6. Green power LED
7. Yellow foldback A LED
8. Yellow foldback B LED

Electrical Schematics

Central Control Unit

See Figure A 6-4.

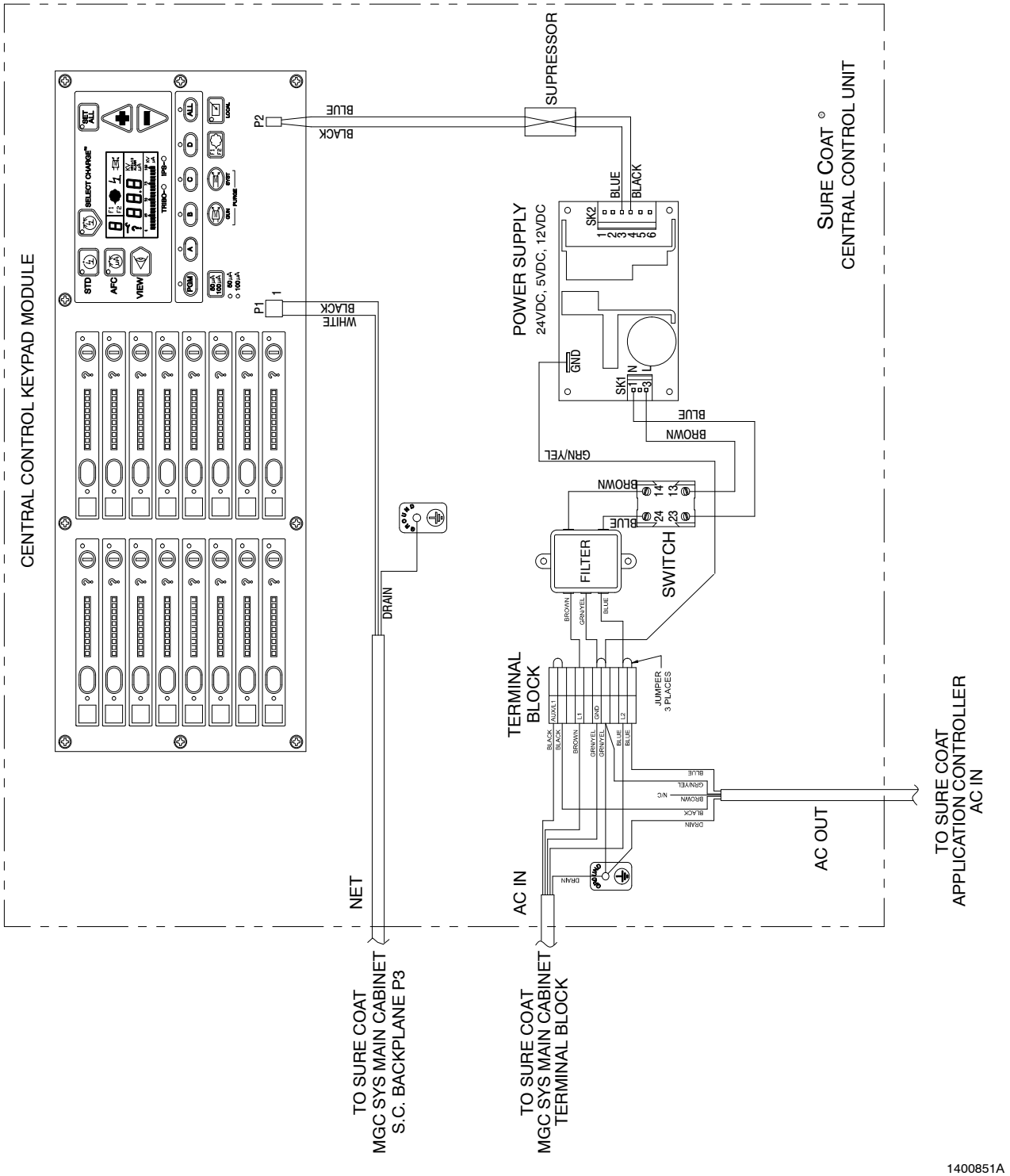

Figure A 6-4 Central Control Unit Electrical Schematic

Solenoid and Gun Control Panels

See Figure A 6-5.

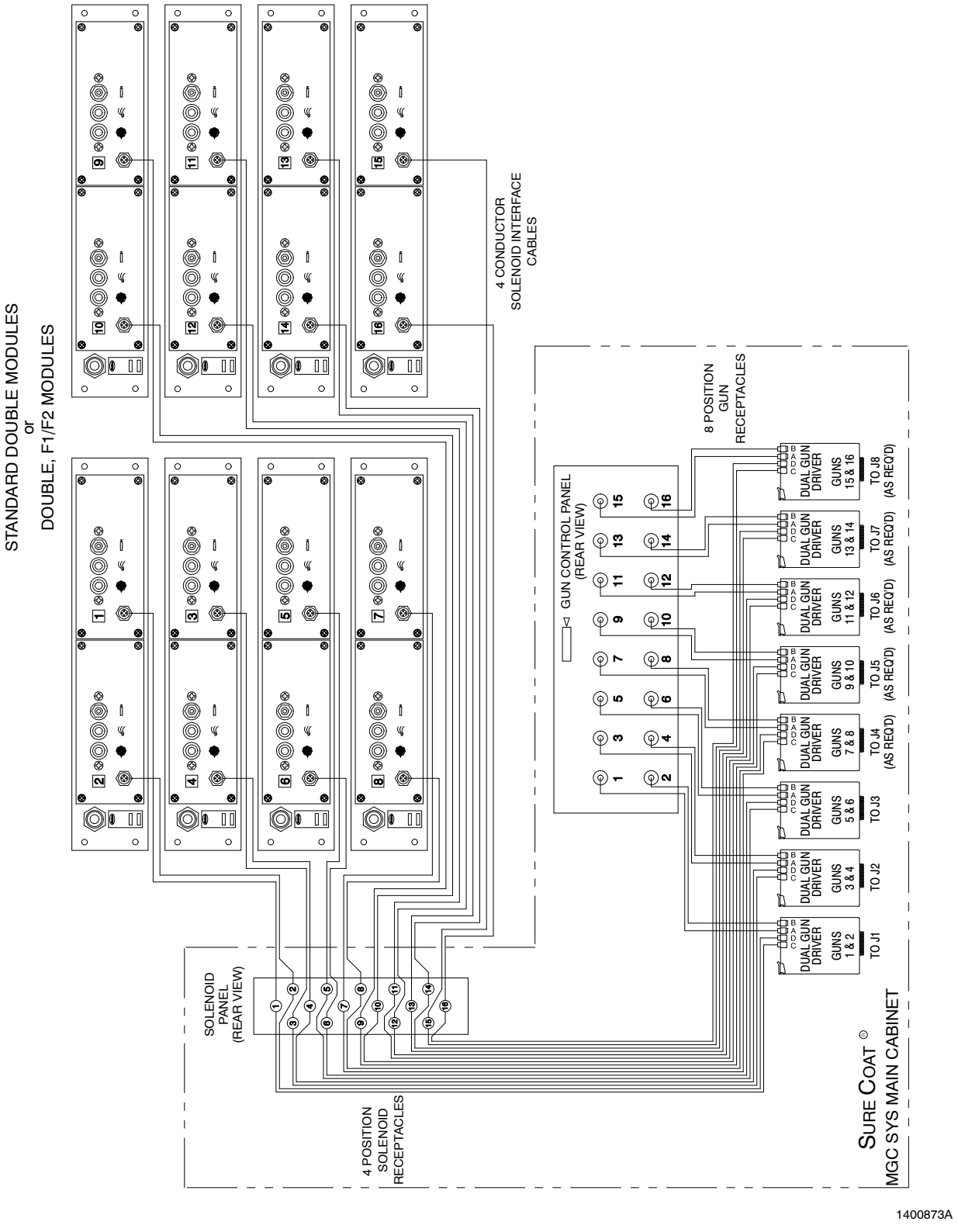

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Figure A 6-5 Solenoid and Gun Control Panels Electrical Schematic

Main Control Cabinet

See Figure A 6-6.

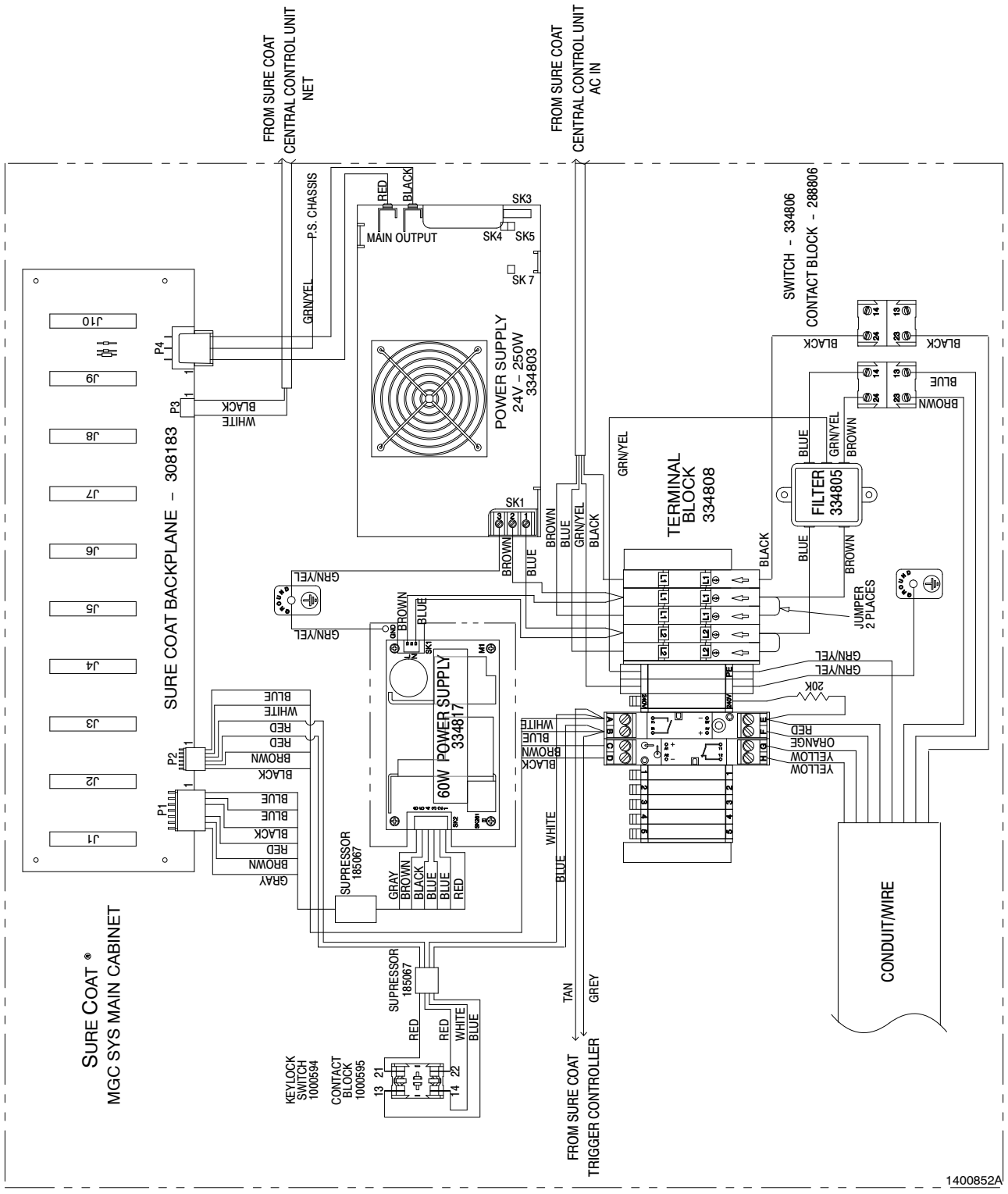


Figure A 6-6 Main Control Cabinet Electrical Schematic

Main I/O Panel

See Figure A 6-7.

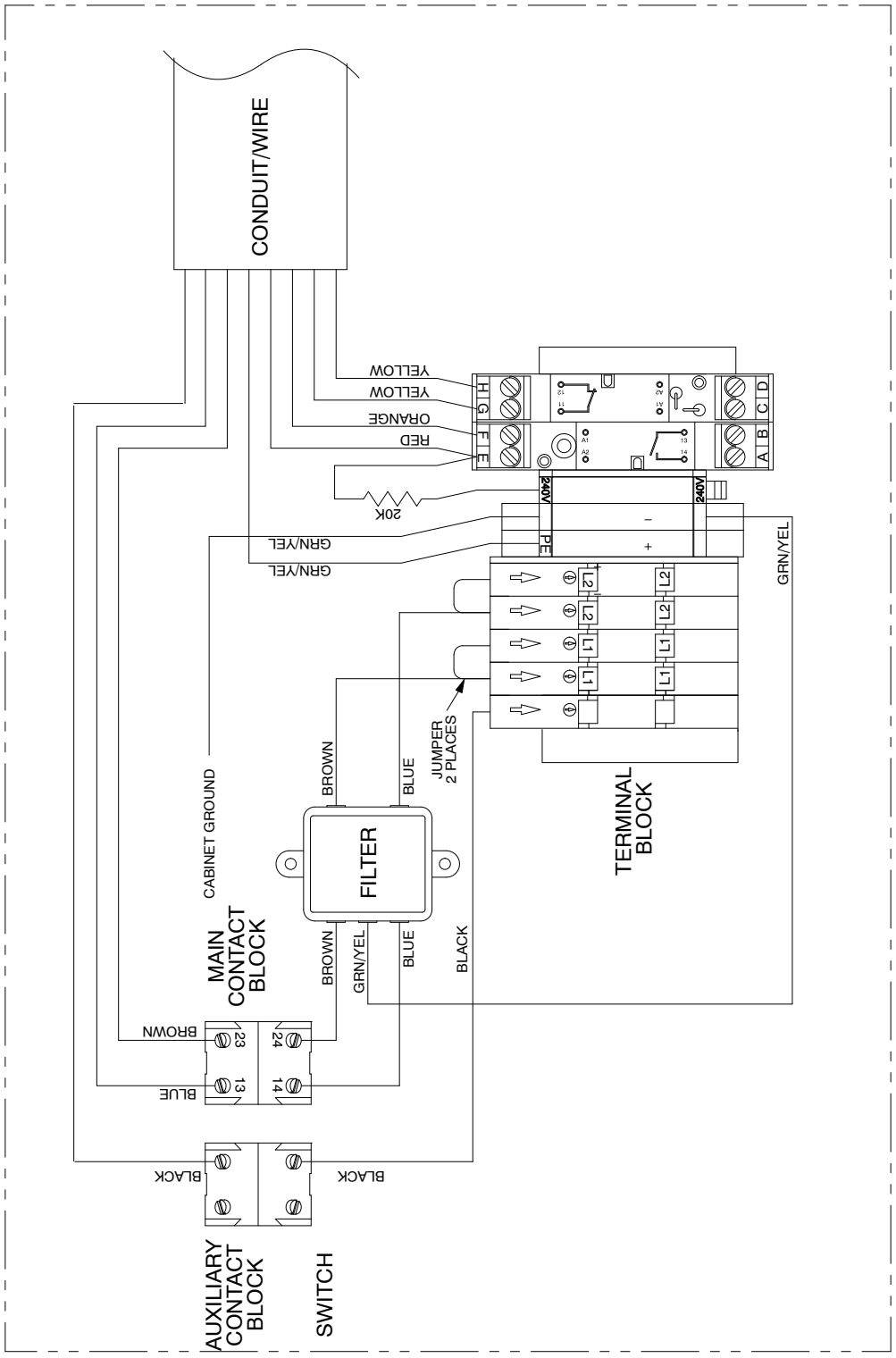


Figure A 6-7 Main I/O Panel Electrical Schematic

Section A 7
Parts

Introduction

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. 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	

System Components and Hardware

The following lists detail the major system components and hardware. Refer to the lists later in this section for a breakdown of each subassembly.

NOTE: Your system may not require all of the parts shown.

Front

See Figure A 7-1.

Item	Part	Description	Quantity	Note
1	334813	CAP, tapped hole, 6 mm, nylon	AR	
2	- - - - - -	CONTROL UNIT, central	1	A
3	- - - - - -	BRACKET, mounting, spacer	2	
4	303099	BRACKET, support, no. 2	2	
5	982768	SCREW, machine, M, pan, recessed, M4 x 8	2	
6	- - - - - -	BASE, 8 in.	AR	
7	- - - - - -	BASE, 5 in.	AR	
8	982470	SCREW, hex, cap, M6 x 45 mm, black	AR	
9	983409	WASHER, lock, M, split, M6	AR	
10	303147	PANEL, front, base, 4.5 in.	AR	
11	303148	PANEL, front, base, 7.5 in.	AR	
12	- - - - - -	CABINET, main control	1	B
13	- - - - - -	MODULE, pneumatic section, main	1	C
14	- - - - - -	MODULE, pneumatic	AR	D

NOTE A: Refer to *Central Control Unit Assembly* in this section for a breakdown of parts in this assembly.

B: Refer to *Main Control Cabinet* in this section for a breakdown of parts in this assembly.

C: Refer to *Pneumatic Section* in this section for a breakdown of parts in this assembly.

D: Refer to the *Parts* section of Part B, *Pneumatic Modules*, for a breakdown of parts in this assembly.

AR: As Required

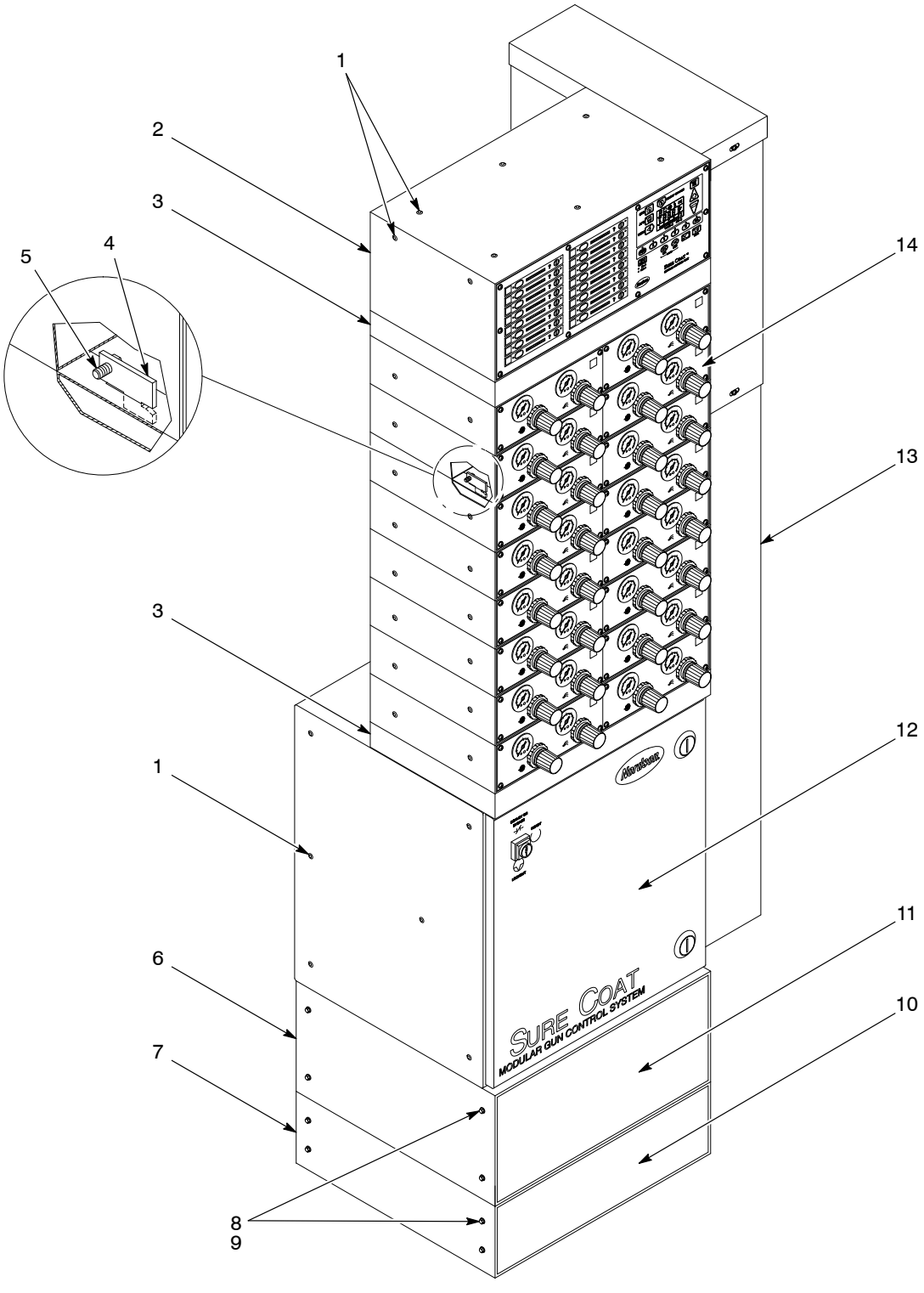


Figure A 7-1 System Components and Hardware—Front View

Back

See Figure A 7-2.

Item	Part	Description	Quantity	Note
1	983409	WASHER, lock, M, split, M6	AR	
2	982128	SCREW, hex, machine, M6 x 10	AR	
3	900740	TUBING, polyurethane, 10/6.5–7 mm, 60 ft	AR	
4	982320	SCREW, pan, recessed, M5 x 16	AR	
5	983401	WASHER, lock, M, split, M5	AR	
6	983408	WASHER, flat, M, narrow, M5	AR	
7	129538	MOUNT, cable strap	AR	
8	983410	WASHER, flat, M, narrow, M6	AR	
9	983080	WASHER, flat, e, 0.500 x 1.125 x 0.083 in.	AR	
10	983180	WASHER, lock, e, split, $^1/_2$-in.	AR	
11	984170	NUT, hex, regular, $^1/_2$-13	AR	
12	981602	SCREW, hex, $^1/_2$-13 x 2.5 in., cap	4	
13	981604	SCREW, hex, $^1/_2$-13 x 1.250 in., cap	AR	
14	982134	SCREW, hex, cap, M6 x 14	6	
15	341630	CABLE, shielded, 3 wire, 18 AWG, 6 ft	1	
16	900617	TUBING, polyurethane, 4 mm OD, clear, 6 ft	AR	
17	246258	JUMPER, ground, 4 in.	6	
18	334799	SCREW, pan, recessed, M5 x 10, with integral lock washer, bezel	AR	
19	970980	CLAMP, cable, 0.5 in.	AR	
20	334774	CABLE, 4 connector, solenoid interface, 5 ft	AR	
21	334818	LABEL, numbers, repeat, 1–16	3	
22	303098	BRACKET, support, no. 1	AR	
AR: As Required				

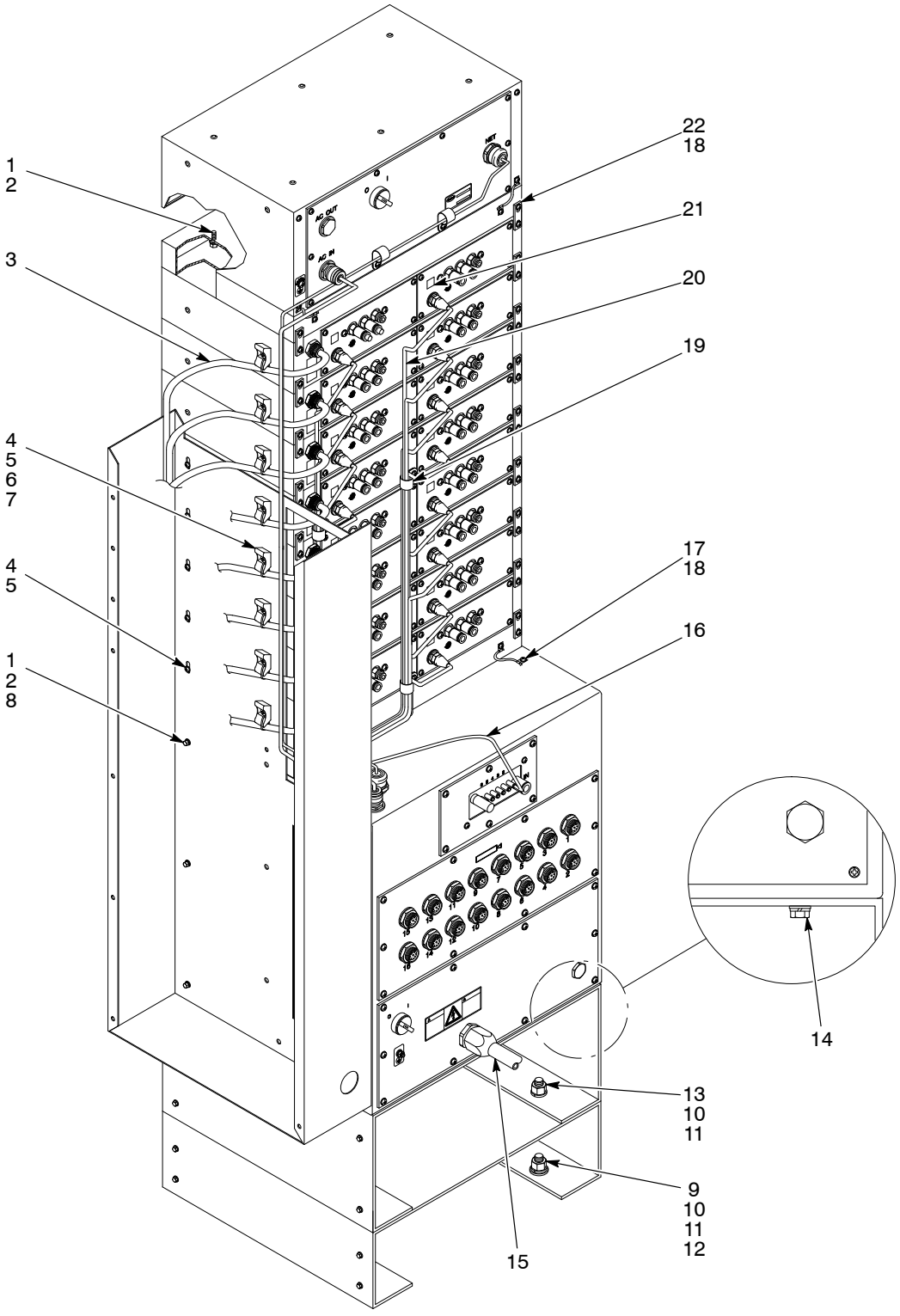


Figure A 7-2 System Components and Hardware—Back View

Sheet Metal Covers

See Figure A 7-3.

Item	Part	Description	Quantity	Note
1	1007108	COVER, rear, 3 sided, 6–8 gun	1	
1	1007112	COVER, rear, 3 sided, 9–12 gun	1	
1	1007116	COVER, rear, 3 sided, 13–16 gun	1	
2	- - - - - -	• COVER, MGCSYS, rear, 3 sided	1	
3	983029	• WASHER, flat, m, regular, M6, steel, zinc	1	
4	1007124	• SCREW, thumb, round head, metric, M6	1	
5	1007120	• HANDLE, flush mount, pull, snap-in	1	
6	1007123	• WIRE, ground assembly, 18.0 in.	1	
7	984702	• NUT, hex, M5, brass	1	
8	983401	• WASHER, lock, m, split, M5, steel, zinc	1	
9	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in. brass	1	
10	933469	• LUG, 90, double, 0.250 x 0.438 in.	1	
11	240674	• TAG, ground	1	
12	- - - - - -	COVER, dress out, top	1	
13	983409	WASHER, lock, m, split	AR	
14	982128	SCREW, hex, machine, M6 x 10	AR	
15	341643	COVER KIT, upgrade, 6–7 gun, dress out, sliding	1	
16	- - - - - -	COVER, dress out, side	1	
AR: As Required				

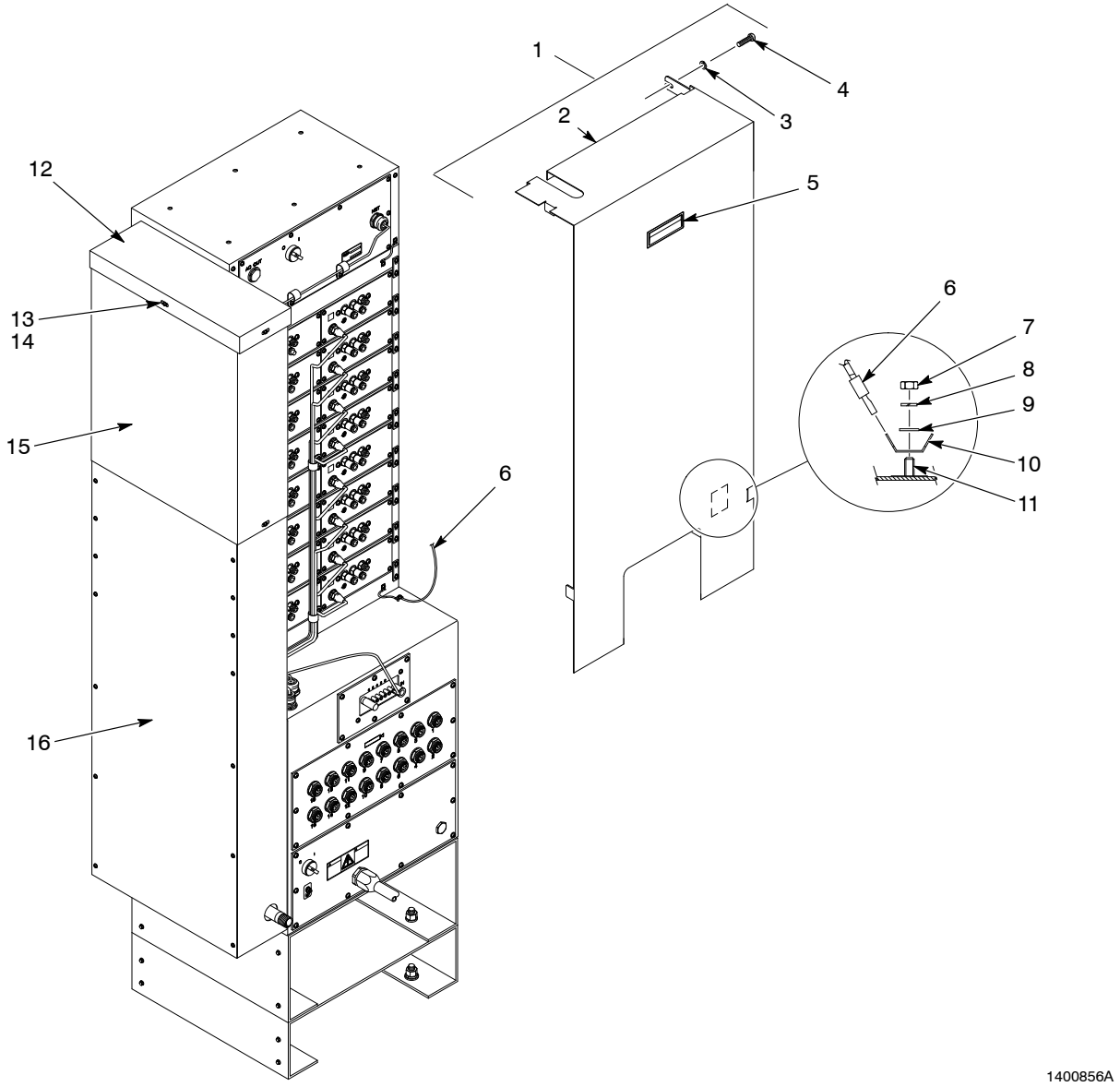


Figure A 7-3 Sheet Metal Covers

Main Control Cabinet

Front

See Figure A 7-4.

Item	Part	Description	Quantity	Note
1	- - - - - -	CABINET, control, main	1	
2	983409	WASHER, lock, M, split, M6	AR	
3	982128	SCREW, hex, machine, M6 x 10	19	
4	- - - - - -	BRACKET, mounting, spacer	1	
5	983436	WASHER, lock, M, ext, 8	4	
6	984707	NUT, hex, M8	4	
7	- - - - - -	PANEL, sub, main control	1	A
8	- - - - - -	PIN, hinge	2	
9	334758	LATCH, door, tool operated	2	
10	334772	GASKET, bulk, 0.25 x 0.50 in., with PSA	8 ft	
11	- - - - - -	DOOR, cabinet, control, main	1	
12	185067	SUPPRESSOR, ferrite, 7-mm dia	1	
13	305938	SWITCH, keylock, 3 position, rotary	1	B
13	1000594	SWITCH, keylock, 3 position	1	C
NS	1000595	CONTACT BLOCK, 1 NO and 1 NC contact	1	C
14	240674	TAG, ground	5	
15	933469	LUG, 90, double, 0.250, 0.438 in.	5	
16	983021	WASHER, flat, e, 0.203 x 0.406 x 0.040 in.	5	
17	983401	WASHER, lock, M, split, M5	AR	
18	984702	NUT, hex, M5, brass	5	
NS	341621	WIRE group, ground	1	

NOTE A: Refer to *Sub Panel Assembly* in this section for a breakdown of the parts in this assembly.
B: Order this switch if your system does not have an FM-approval label on the main I/O panel.
C: Order this switch and contact block if your system has an FM-approval label on the main I/O panel.
AR: As Required
NS: Not Shown

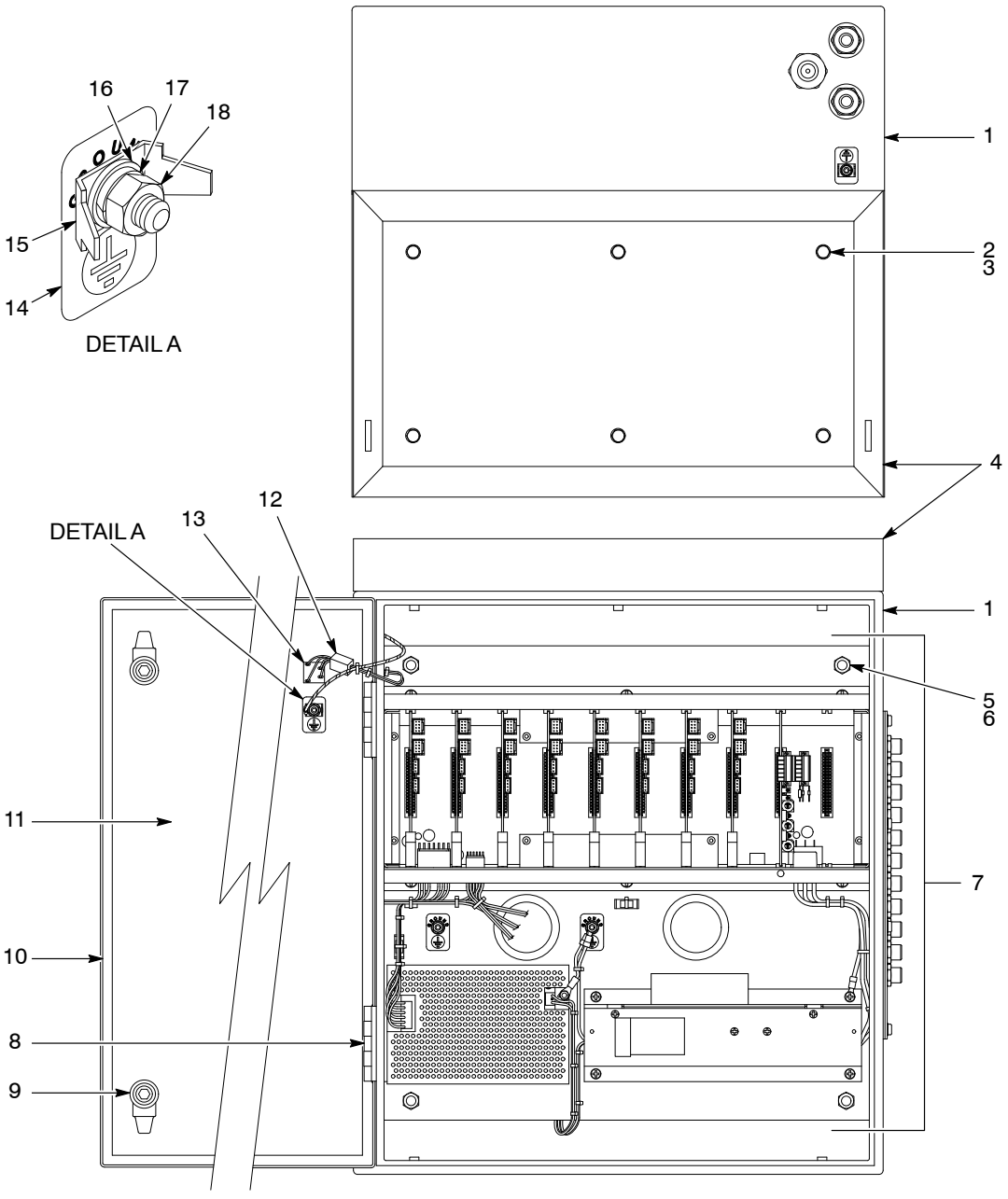


Figure A 7-4 Main Control Cabinet—Front View

Back

See Figure A 7-5.

Item	Part	Description	Quantity	Note
1	240674	TAG, ground	6	
2	933469	LUG, 90, double, 0.250, 0.438 in.	6	
3	984702	NUT, hex, M5, brass	6	
4	983401	WASHER, lock, M, split, M5	AR	
5	983021	WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	6	
6	334800	PLUG, $^1/_2$-in. pipe, 1-in. hex	2	
7	939122	SEAL, conduit fitting, $^1/_2$ in.	2	
8	984426	NUT, lock, $^1/_2$-in. conduit	2	
9	334700	MANIFOLD, purge, gun	1	
10	334799	SCREW, pan, recessed, M5 x 10, with integral lock washer, bezel	34	
11	- - - - - -	PANEL, gun control	1	A
12	- - - - - -	PANEL, I/O, main controller	1	B
13	- - - - - -	PANEL, solenoid	1	C
14	933005	CONNECTOR, cord, 12 mm	1	
15	933073	CONNECTOR, cable, 0.125–0.250 in.	1	
NS	- - - - - -	PANEL, blank, purge	1	

NOTE A: Refer to *Gun Control Panel* in this section for a breakdown of the parts included in this assembly.

B: Refer to *Main Input/Output Panel* in this section for a breakdown of the parts included in this assembly.

C: Refer to *Solenoid Panel* in this section for a breakdown of the parts included in this assembly.

AR: As Required

NS: Not Shown

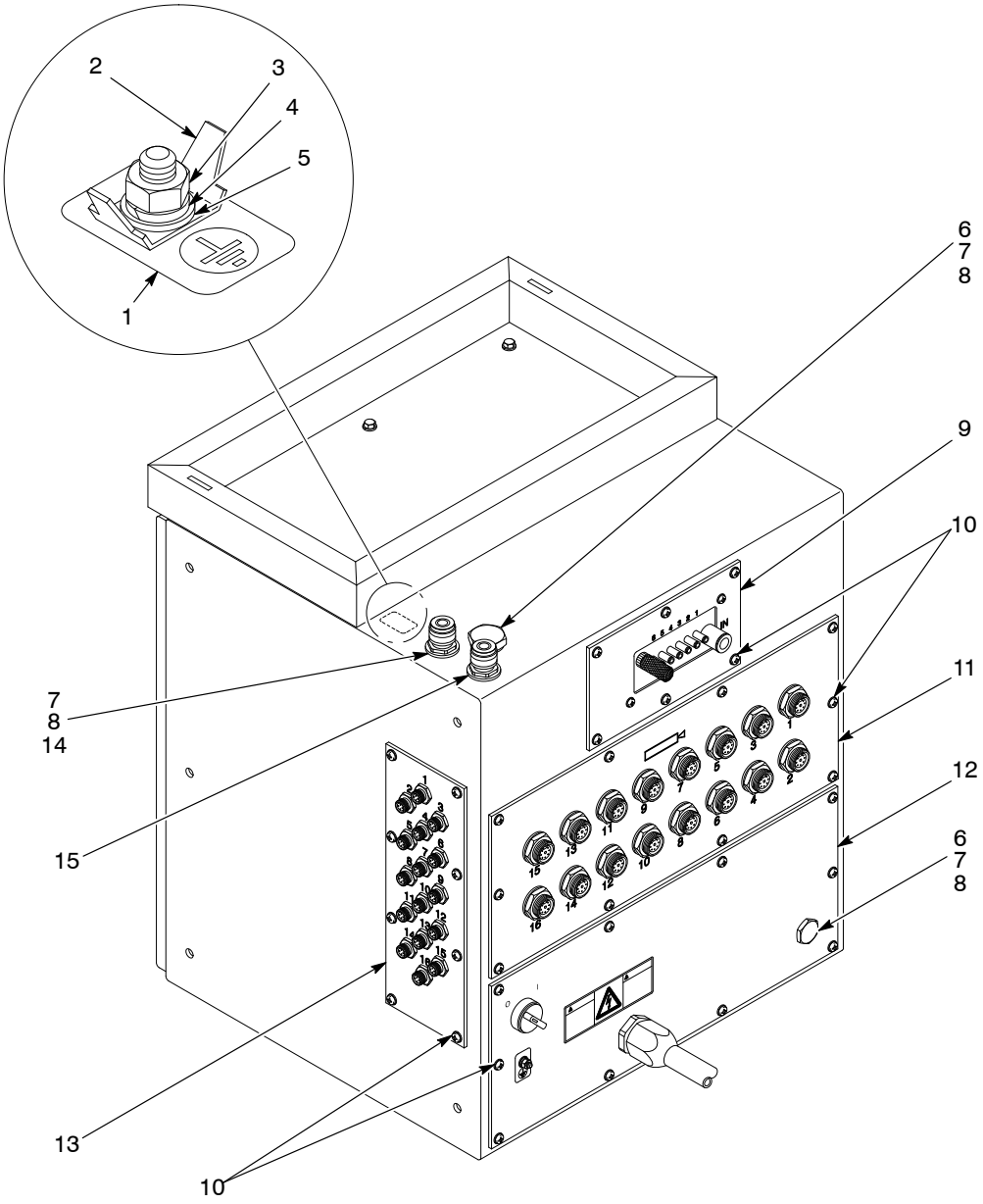


Figure A 7-5 Main Control Cabinet—Back View

Gun Control Panel

See Figure A 7-6.

Item	Part	Description	Quantity	Note
1	- - - - - -	PANEL, gun control	1	
2	334782	• RECEPTACLE, 8 position, gun	AR	
3	939122	• SEAL, conduit fitting, $^1/_2$ in.	16	
4	334761	• GASKET, panel, I/O, main	1	
5	984526	• NUT, lock, $^1/_2$-in. conduit	16	
6	240674	• TAG, ground	1	
7	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	1	
8	983401	• WASHER, lock, M, split, M5	1	
9	984702	• NUT, hex, M5, brass	1	
10	334800	• PLUG, $^1/_2$-in. pipe, 1-in. hex	AR	
NS	334783	ADAPTER, gun cable, Versa-Spray (black)	AR	A
NS	341622	ADAPTER, gun cable, Versa-Spray, PE (gray)	AR	A
NS	334784	ADAPTER, gun cable, Tribomatic	AR	A

NOTE A: Use these adapters to connect Versa-Spray or Tribomatic guns to the Sure Coat modular gun control system. Sure Coat guns do not require an adapter.

AR: As Required

NS: Not Shown

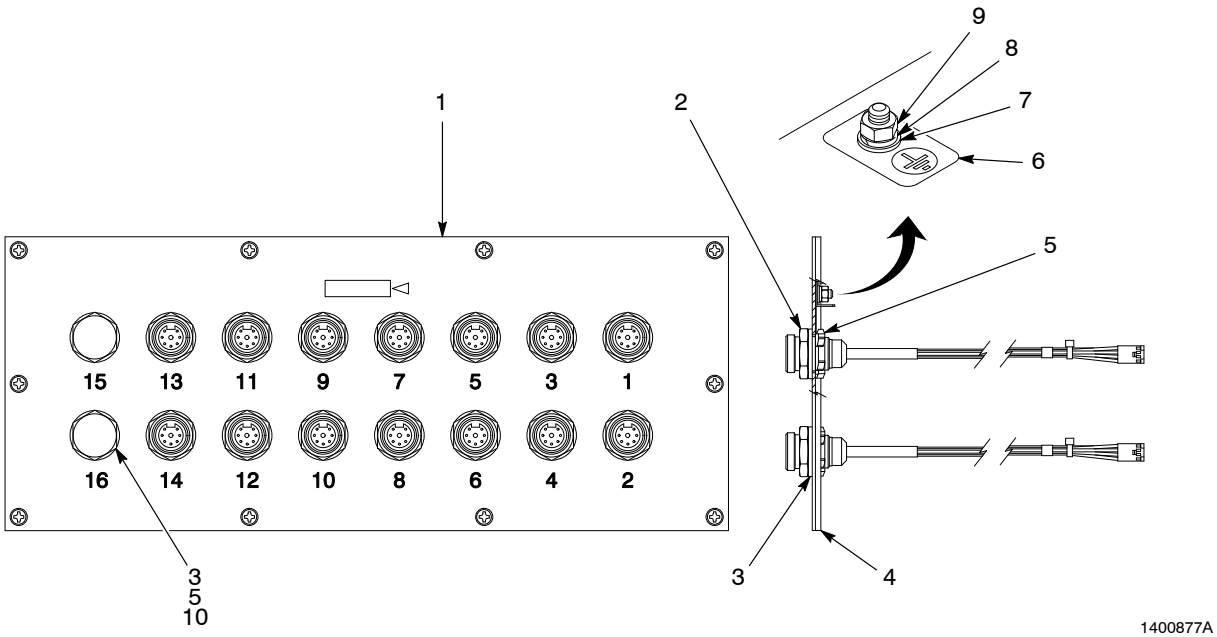


Figure A 7-6 Gun Control Panel

Solenoid Panel

See Figure A 7-7.

Item	Part	Description	Quantity	Note
1	- - - - - -	PANEL, solenoid connector	1	
2	334773	• RECEPTACLE, 4 position, solenoid	AR	
3	334753	• GASKET, panel, solenoid	1	
4	240674	• TAG, ground	1	
5	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	1	
6	983401	• WASHER, lock, M, split, M5	1	
7	984702	• NUT, hex, M5, brass	1	
8	900338	• CAP, flush, $^{9}/_{16}$-in. dia	AR	
AR: As Required				

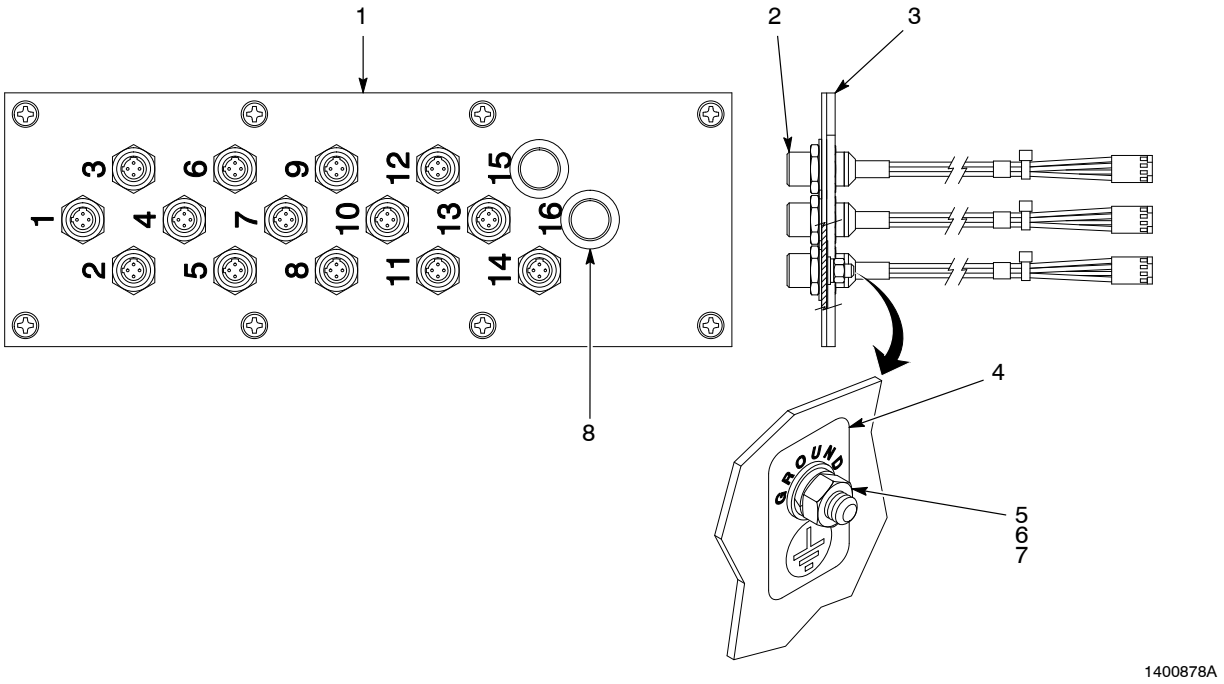


Figure A 7-7 Solenoid Panel

Sub Panel Assembly

See Figure A 7-8.

Item	Part	Description	Quantity	Note
1	- - - - - -	PANEL, sub, main controller, Sure Coat	1	
2	334799	• SCREW, pan, recessed, M5 x 10, with integral lock washer bezel	6	
3	- - - - - -	• FRAME, card, Sure Coat	1	A
4	334775	• HARNESS GROUP, power, 24 V	1	
NS	982086	• SCREW, pan, slotted, M3 x 8, zinc	2	
NS	983400	• WASHER, lock, M, split, M3, zinc	2	
5	982825	• SCREW, pan, recessed, M4 x 12, with integral lock washer bezel	2	
6	334803	• POWER SUPPLY, 24 V, 250 W, with fan	1	
7	- - - - - -	• BRACKET, power supply, 24 V	1	
8	981039	• SCREW, pan, 6-32 x 0.312 in., slotted	2	
9	983102	• WASHER, lock, split, 6, zinc	2	
10	334780	• HARNESS, power, ac	1	
11	334817	• POWER SUPPLY, 60 W, with cover	1	
12	982091	• SCREW, pan, slotted, M3 x 6, zinc	4	
13	983520	• WASHER, lock, M, integral, M3, zinc	4	
14	334776	• HARNESS, power, +5, +12, -12 V	1	
15	185067	• SUPPRESSOR, ferrite, 7-mm dia	1	
16	221674	• BUSHING, snap, 1.97 in.	2	
17	240674	• TAG, ground	2	
18	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040, brass	2	
19	983401	• WASHER, lock, M, split, M5, steel, zinc	2	
20	984702	• NUT, hex, M5, brass	2	
21	334778	• HARNESS, signal, interface	1	

NOTE A: Refer to *Card Frame* in this section for a breakdown of the parts included in this assembly.

NS: Not Shown

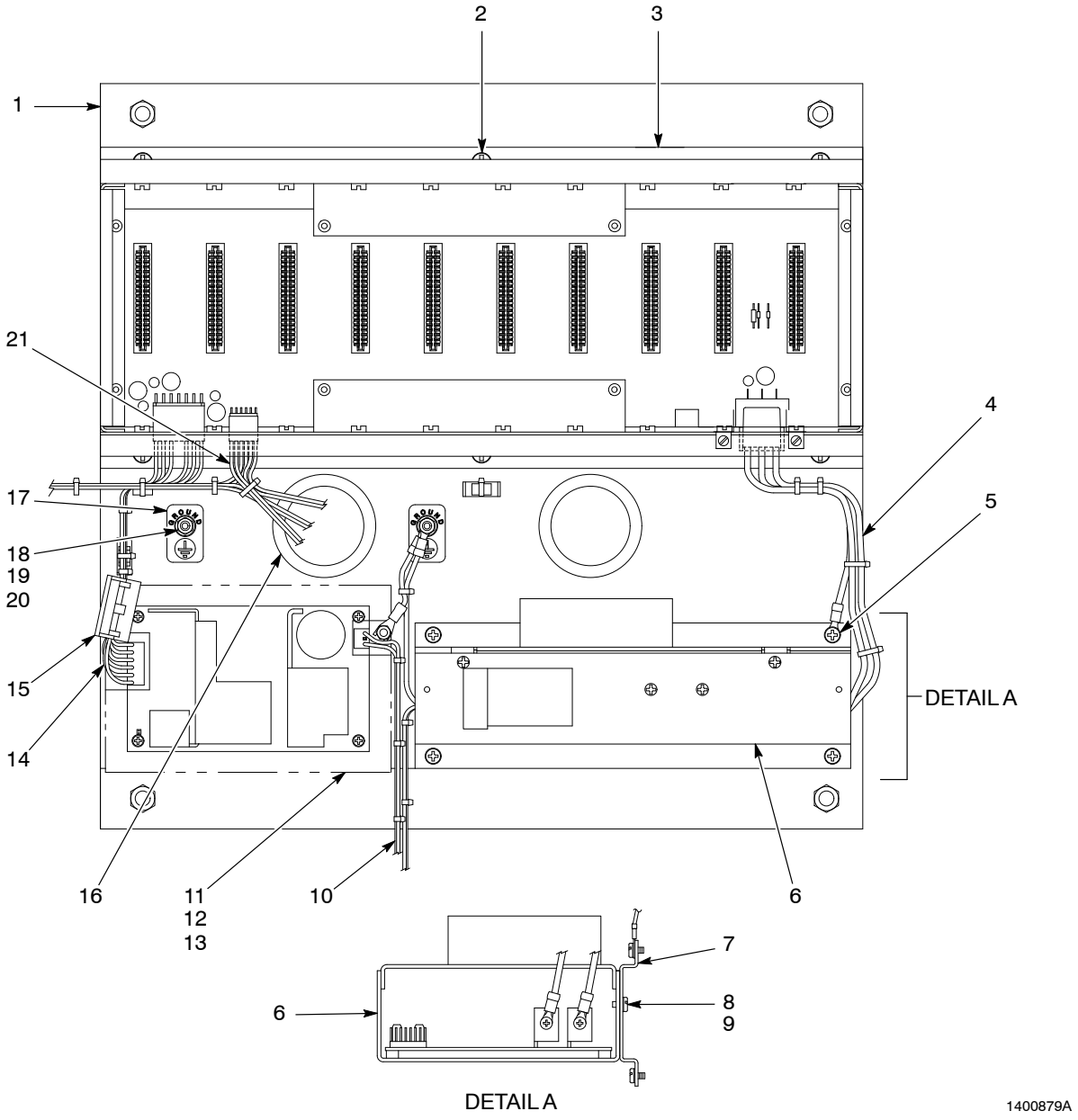


Figure A 7-8 Sub Panel Assembly

Card Frame

See Figure A 7-9.

Item	Part	Description	Quantity	Note
1	- - - - - -	BRACKET, card frame, controller cabinet	1	
2	308183	PCA, Sure Coat backplane	1	
3	982824	SCREW, pan, recessed, M3 x 8, with integral lock washer bezel, zinc	8	
4	334801	GUIDE, printed circuit board, 7 in.	20	
NS	308178	PCA, Sure Coat dual gun driver	AR	A
NS	- - - - - -	PCA, interface	1	B

NOTE A: Each gun driver card controls up to two guns.

B: Refer to *Optional Equipment—Interface Cards* in this section for ordering information for the correct interface card for your application.

AR: As Required

NS: Not Shown

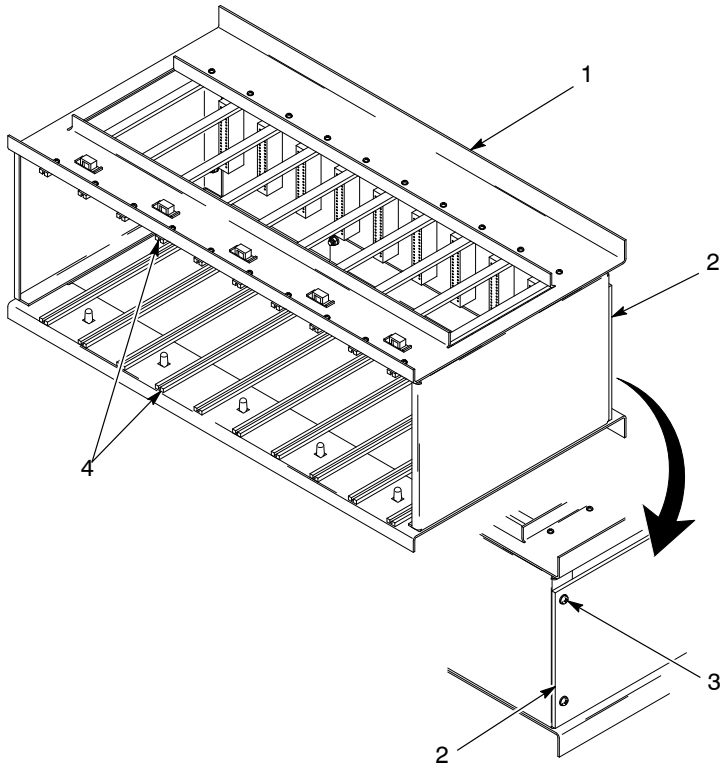


Figure A 7-9 Card Frame

Pneumatic Section

See Figure A 7-10.

Item	Part	Description	Quantity	Note
—	- - - - - -	MODULE, pneumatic, no purge	1	
1	- - - - - -	• PANEL, pneumatic, dress-out	1	
2	973431	• PLUG, pipe, socket, standard, $^1/_2$ in.	1	
3	303091	• FITTING, $^3/_8$-in. NPTM, (4) 10-mm tube	2	
4	972124	• ELBOW, male, 10-mm tube x $^3/_8$-in. universal	1	
5	- - - - - -	• MANIFOLD, pneumatic	1	
6	973077	• NIPPLE, steel, schedule 40, $^1/_2$, 3.0-in. long	1	
7	973127	• ELBOW, pipe, hydraulic, 90, $^1/_2$ in.	1	
8	973326	• NIPPLE, steel, schedule 40, $^1/_2$, 10-in. long	1	
9	901151	• VALVE, ball, $^1/_2$ NPT	1	
10	972620	• CONNECTOR, male, 37, 1 $^1/_{16}$-12 x $^1/_2$ in., brass	1	
11	- - - - - -	• GASKET, bulk, 0.25 x 0.50 in., with PSA	AR	
12	163435	• CLAMP, 0.75-in. conduit, one hole	3	
13	183467	• BRACKET, L-shaped	3	
14	982129	• SCREW, hex, machine, M6 x 16	3	
15	983410	• WASHER, flat, M, narrow, M6	9	
16	983409	• WASHER, lock, M, split, M6	6	
17	984703	• NUT, hex, M6	6	
18	982320	• SCREW, pan, recessed, M5 x 16	3	
19	983401	• WASHER, lock, M, split, M5	3	
20	983408	• WASHER, flat, M, narrow, M5	6	
21	129538	• MOUNT, cable strap	3	
NS	900481	• ADHESIVE, pipe/thread/hydraulic sealant	AR	
NS	982825	SCREW, pan, recessed, M4 x 12, with integral lock washer, bezel	AR	
NS	148256	PLUG, 10 mm, tubing	AR	

AR: As Required

NS: Not Shown

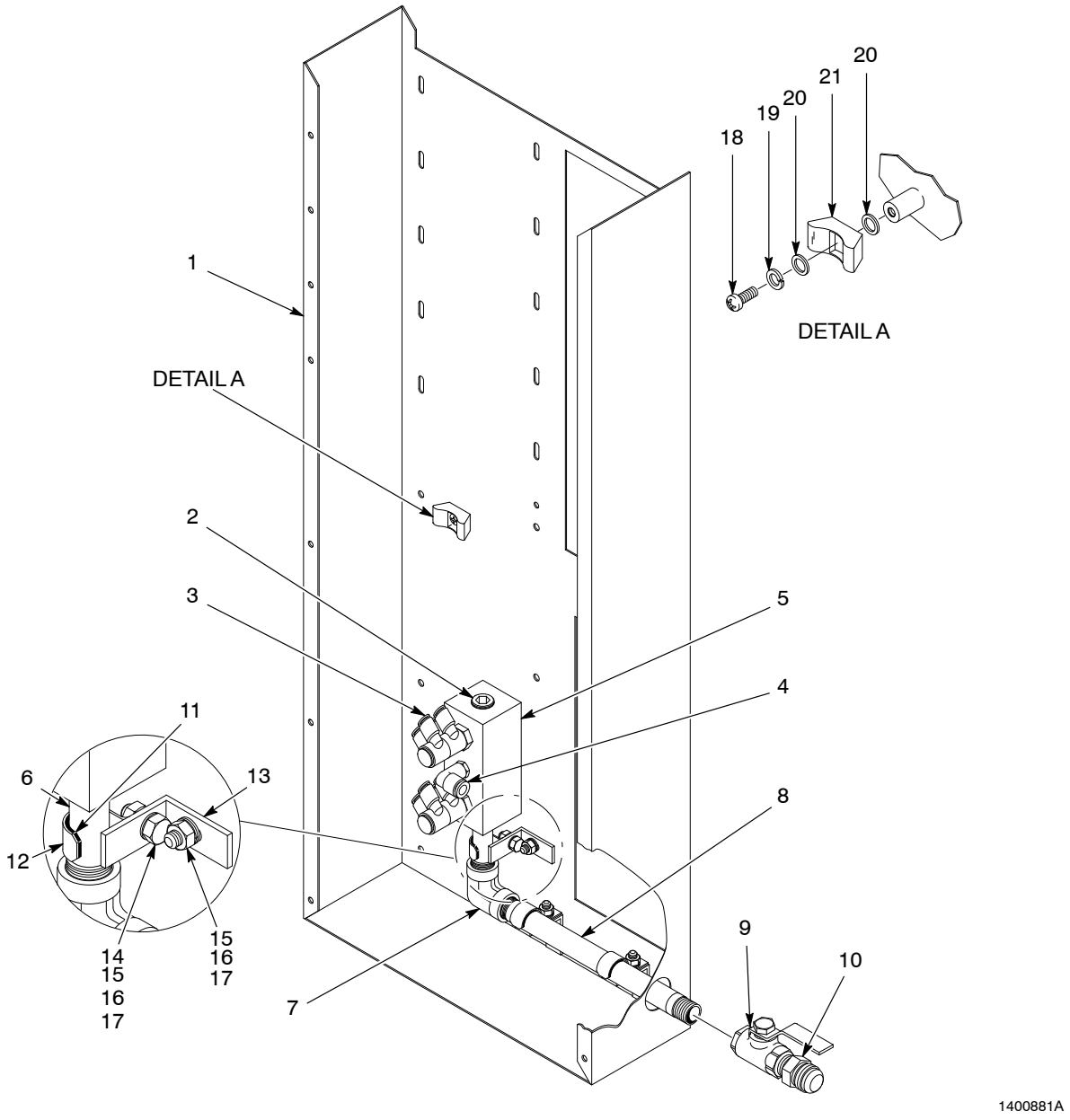


Figure A 7-10 Pneumatic Section

Main Input/Output Panel

See Figure A 7-11.

Item	Part	Description	Quantity	Note
—	- - - - - -	PANEL, input/output, main, Sure Coat	1	
1	334806	• SWITCH, round, 2 position, 90 degree	1	
2	288806	• CONTACT BLOCK, 2 normally open contacts	1	
3	- - - - - -	• PANEL, input/output	1	
4	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	1	
5	983401	• WASHER, lock, split, M5, steel, zinc	3	
6	984702	• NUT, hex, M5, brass	1	
7	240674	• TAG, ground	1	
8	143010	• FITTING, carflex liqtite, $^1/_2$ in.	1	
9	143009	• CONDUIT, carflex, liqtite, $^1/_2$ in., 20 ft	1	
10	931221	• TUBING, heat shrink, 0.046-in. ID, 0.187-ft long	1	
11	320586	• RESISTOR, 20 kiloohms, 1 W	1	
12	334808	• TERMINAL BLOCK assembly	1	
13	320589	• CONTROL RELAY, 24 Vdc, open, fixed	1	
14	320588	• CONTROL RELAY, 120 Vac, open, fixed	1	
15	983403	• WASHER, lock, M, split, M4, zinc	2	
16	984715	• NUT, hex, M4, steel, zinc	2	
17	334805	• FILTER, line, RFI, power, 10 A	1	
18	334779	• JUMPER GROUP, I/O	1	
19	334761	• GASKET, panel, main	1	
20	187040	• MOUNT, cable tie, 4 way, adhesive	2	
21	939110	• STRAP, cable, 0.875-in. dia	2	
NS: Not Shown				

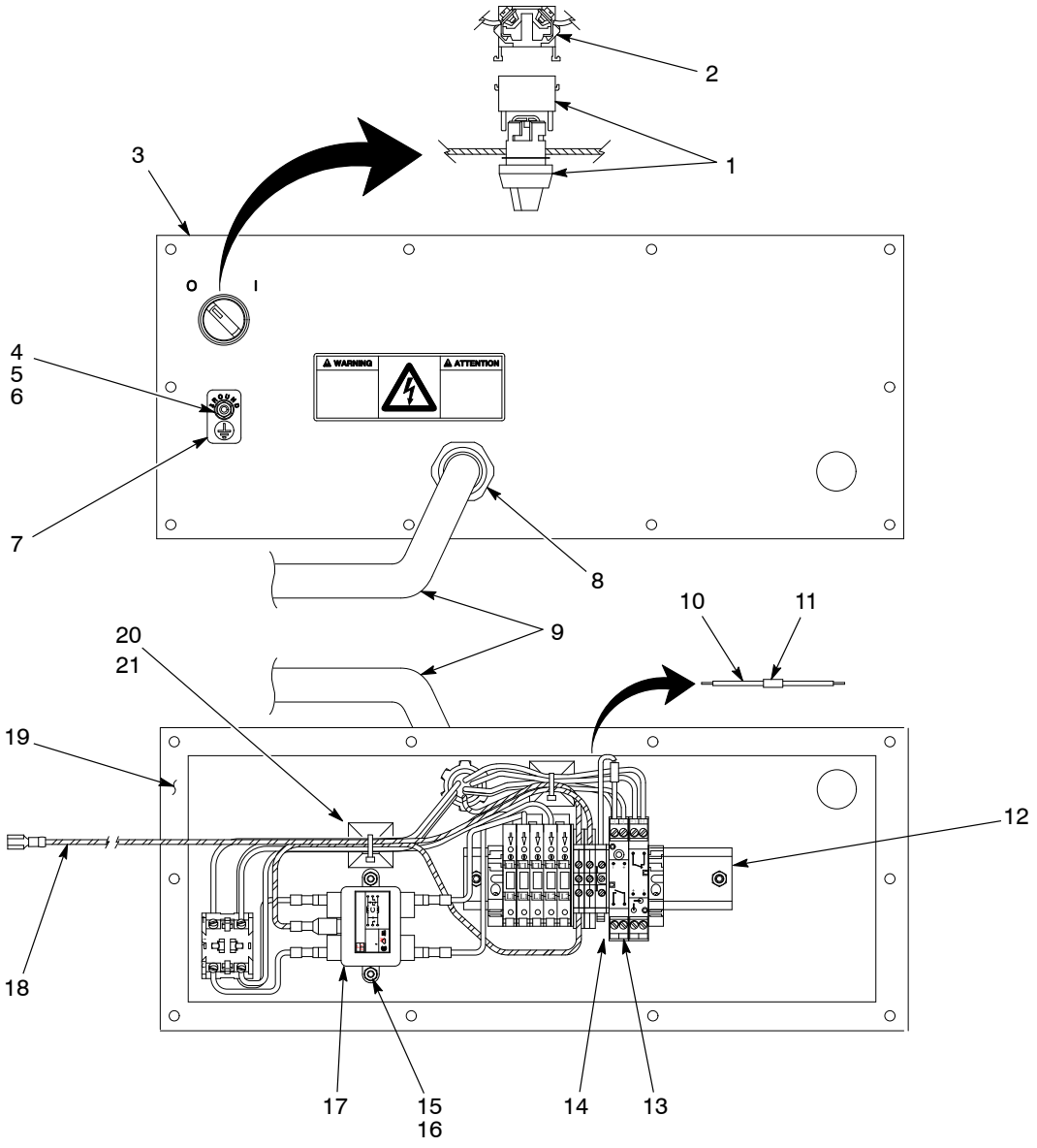


Figure A 7-11 Main Input/Output Panel

Central Control Unit Assembly

Front Panel

See Figure A 7-12.

Item	Part	Description	Quantity	Note
—	- - - - - -	CONTROL UNIT, central, 16 gun	1	
1	- - - - - -	• CABINET, central control unit, Sure Coat	1	
2	- - - - - -	• PANEL, rear, central control unit, Sure Coat	1	
3	982825	• SCREW, pan, recessed, M4 x 12, with integral lock washer, bezel	20	
4	240674	• TAG, ground	2	
5	982437	• SCREW, pan, M5 x 10, brass	1	
6	983401	• WASHER, lock, M, split, M5, steel, zinc	2	
7	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	2	
8	984702	• NUT, hex, M5, brass	1	
9	933469	• LUG, 90, double, 0.250, 0.438 in.	1	
10	334769	• GASKET, central controller, front	1	
11	334716	• KEYPAD MODULE, central control unit, 16 gun	1	

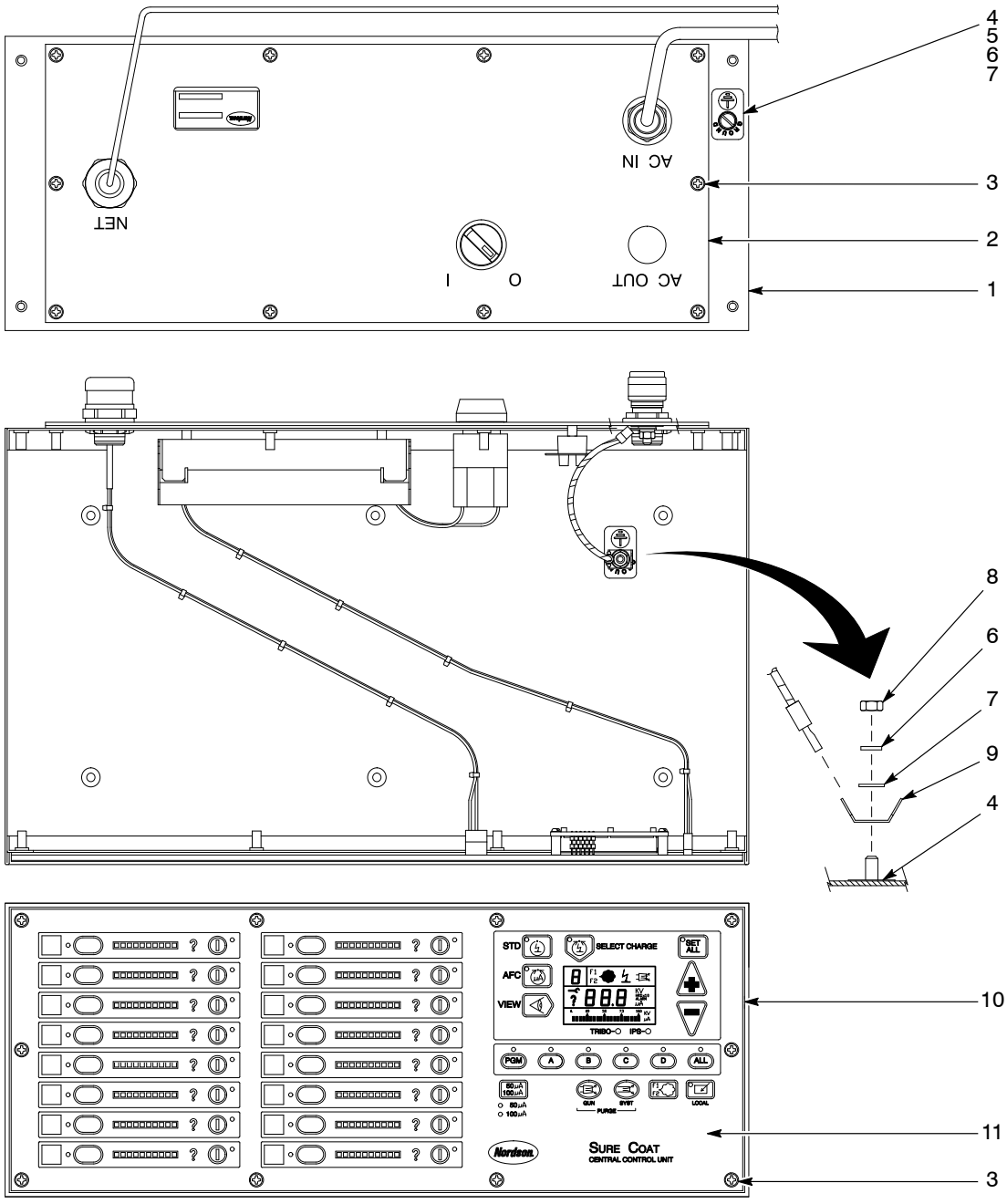


Figure A 7-12 Central Control Unit Assembly

Rear Panel

See Figure A 7-13.

Item	Part	Description	Quantity	Note
—	- - - - - -	PANEL, rear, central control unit, Sure Coat	1	
1	984702	• NUT, hex, M5, brass	1	
2	983401	• WASHER, lock, M, split, M5, steel, zinc	1	
3	983021	• WASHER, flat, e, 0.203 x 0.406 x 0.040 in., brass	1	
4	933469	• LUG, 90, double, 0.250, 0.438 in.	1	
5	240674	• TAG, ground	1	
6	- - - - - -	• PANEL, central controller, I/O, rear	1	
7	334770	• GASKET, central controller, rear	1	
8	982169	• SCREW, pan, M3 x 16, zinc	3	
9	1005622	• BLOCK, terminal, 10 station	1	
10	- - - - - -	• MARKER, terminal block, 10 station	1	
11	933630	• JUMPER, comb type, 2 pole, 10 mm	3	
12	983403	• WASHER, lock, M, split, M4, steel, zinc	2	
13	984715	• NUT, hex, M4, steel, zinc	2	
14	- - - - - -	• FILTER, line, RFI power	1	
15	982824	• SCREW, pan, recessed, M3 x 8, with integral lock washer, bezel	4	
16	288803	• POWER SUPPLY, 24, 5, 12 Vdc, 40 W	1	
NS	- - - - - -	• KIT, cover enclosure, power supply	1	
17	933071	• TERMINAL, ring tong, INS, 22–18	1	
18	185034	• CONNECTOR, plug, 3 position, MC1, 5, 3.81 mm	1	
19	185067	• SUPPRESSOR, ferrite, 7-mm dia	1	
20	334781	• HARNESS, power, central controller	1	
21	183474	• CABLE, 2 cond, shielded, 20 gauge, PVC, 8.25 ft	1	
22	933073	• CONNECTOR, cable, 0.125 to 0.250 in.	1	
23	341636	• CABLE, shielded, 4 wire, 18 AWG, 6 ft	1	
24	933005	• CONNECTOR, cord	1	
25	939122	• SEAL, conduit fitting, $^1/_2$ in.	1	
26	984526	• NUT, lock, $^1/_2$-in. conduit	1	
27	334806	• SWITCH, round, 2 position, 90 degree	1	
28	288806	• CONTACT BLOCK, 2 normally open contacts	1	
NS: Not Shown				

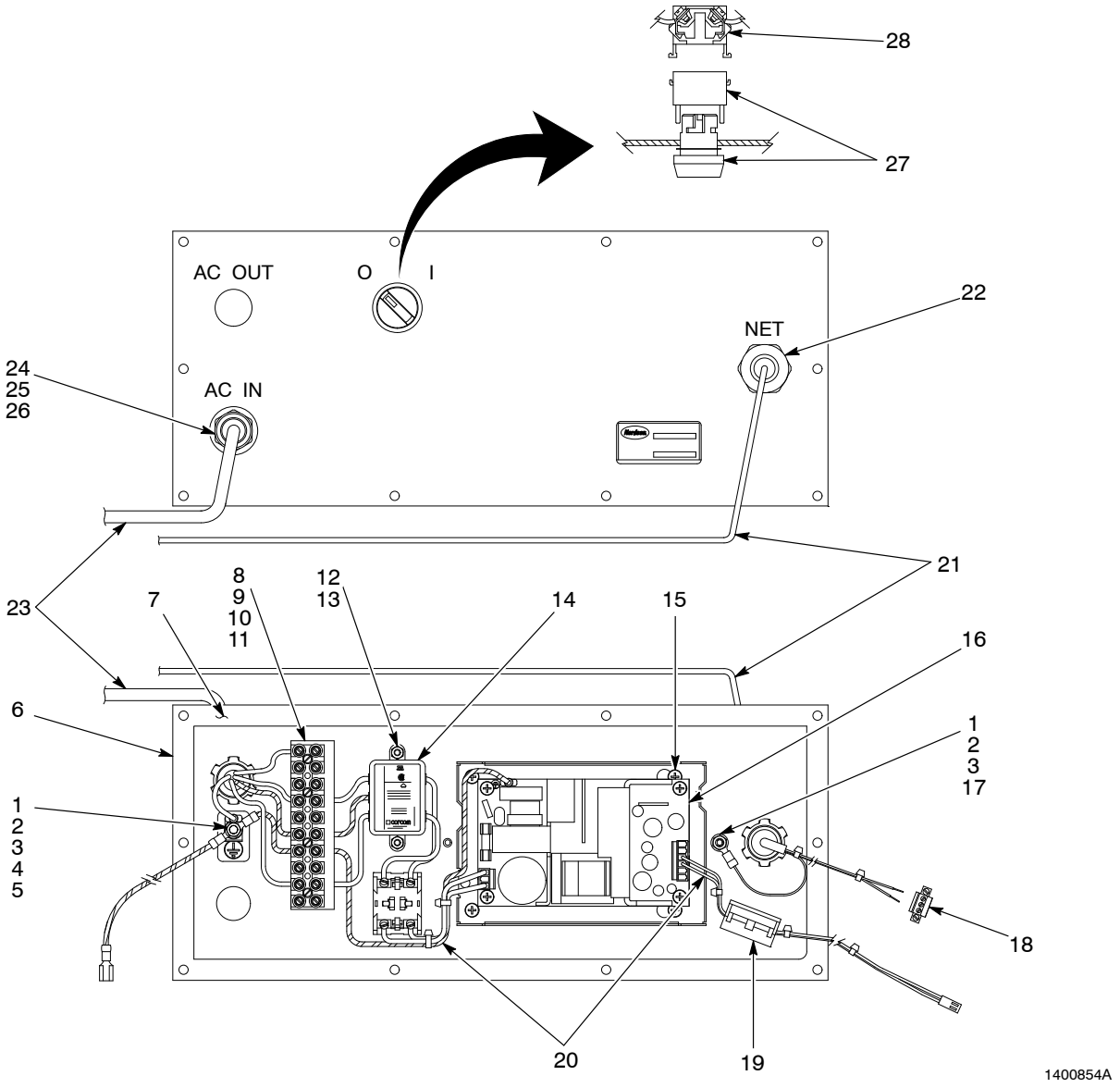


Figure A 7-13 Central Control Unit Rear Panel

Optional Equipment

Refer to the *Description* section in this part of the manual for a more detailed description of the optional equipment.

Interface Cards

Part	Description	Note
341629	PCA, interface, purge timer	
341627	PCA, discrete I/O	
341626	PCA, UCS DeviceNet	
341628	PCA, UCS ProfiBus	

Gun Purge Module

Order the following kit to add a gun purge module to an existing system. The kit includes the gun purge module, purge manifold, purge timer interface card, and instructions.

Part	Description	Note
1040836	KIT, Sure Coat, gun purge, upgrade	

Application/Triggering Controllers

NOTE: To integrate these controllers into your system, you also must order other equipment (such as photoeyes, junction boxes, and an encoder). Contact your Nordson representative for more information.

Part	Description	Note
341620	MODULE, controller, application, UCS DeviceNet	A
1014977	MODULE, controller, triggering	B

NOTE A: This kit includes the application controller and UCS DeviceNet interface card.

B: This kit includes only the triggering controller. You must also order either a purge timer or discrete I/O interface card.

DECLARATION of CONFORMITY

PRODUCT:

Versa-Spray II or Sure Coat (bar or tube mount) IPS Automatic Powder Spray Applicators;
Tribomatic or Tribomatic II, Automatic Tribo charging applicators.
Used with Sure Coat Automatic Stackable Control System.

APPLICABLE DIRECTIVES:

89/37/EEC	(Machinery)
73/23/EEC	(Low Voltage Directive)
89/336/EEC	(Electromagnetic Compatibility Directive)
94/9/EC	(Equipment for use in potentially Explosive Atmospheres Directive)

STANDARDS USED FOR COMPLIANCE:

EN292	EN50081	EN50177
EN50014	EN50082	IEC417L
EN50020	EN55011	FM7260
EN50050	EN60204	

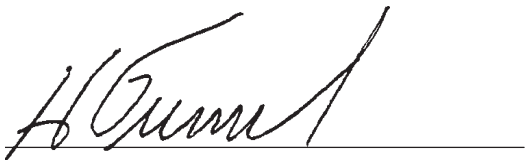
PRINCIPLES:

This product has been manufactured according to good engineering practice.

The product specified conforms to the directive and standards described above.

CERTIFICATIONS:

ISO 9001—DNV No. QSC3277
EMC—TUV Rheinland V9971887
EECS (Notified Body No. 600)—EECS ATEX 0771
Factory Mutual—3006518
Canadian Standards Association—2500004817



Date: 17 July 00

Herb Turner
Vice President, Powder Systems Group

Nordson

Nordson Corporation • Westlake, Ohio

DoC 30-0G