Smart-Coat® Controller

Part 107 000A

NORDSON CORPORATION ● AMHERST, OHIO ● USA

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Notice

Trademarks

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Section 1
Safety

1. Introduction

This section contains general safety instructions for using your Nordson equipment. Task- and equipment-specific warnings are included in other sections of this manual where appropriate. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- store this manual within easy reach of personnel installing, operating, maintaining, or repairing this equipment.
- follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies. Refer to the National Fire Protection Association (NFPA) standard 33 and to federal, state, regulatory agency, and local codes for rules and regulations covering installation and operation of powder spray systems.
- obtain and read Material Safety Data Sheets (MSDS) for all materials used.

2. Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.

WARNING: Failure to observe this warning may result in personal injury, death, or equipment damage.

2. Safety Symbols (contd.)

WARNING: Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: Risk of explosion or fire. Fire, open flames, and smoking prohibited.

WARNING: Wear protective clothing, safety goggles, and approved respiratory protection. Failure to observe may result in serious injury.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

CAUTION: Failure to observe may result in equipment damage.

3. Qualified Personnel

"Qualified personnel" is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance, and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations, and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating the equipment to see that its personnel meet these requirements.

4. Intended Use

WARNING: Use of this equipment in ways other than described in this manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in this manual.

Nordson Corporation cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or property damage. Unintended uses may result from taking the following actions:

- making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Nordson replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your Nordson equipment
- allowing unqualified personnel to perform any task

5. Installation

Read the installation section of all system component manuals before installing your equipment. A thorough understanding of system components and their requirements will help you install the system safely and efficiently.

- Allow only qualified personnel to install Nordson and auxiliary equipment.
- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.
- Install all electrical, pneumatic, gas, and hydraulic connections to local code.

5. Installation (contd.)

- Install locking, manual, shutoff valves in the air supply lines to the system. This allows you to relieve air pressure and lock out the pneumatic system before undertaking maintenance and repairs.
- Install a locking disconnect switch or breaker in the service line ahead of any electrical equipment.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Ground all electrically conductive equipment within 10 feet (3 meters) of the spray area. Ungrounded conductive equipment can store a static charge which could ignite a fire or cause an explosion if a hot spark is discharged.
- Route electrical wiring, electrostatic cables, and air hoses and tubing along a protected path. Make sure they will not be damaged by moving equipment. Do not bend electrostatic cables around a radius of less than 6 in. (152 mm).
- Install safety interlocks and approved, fast-acting fire detection systems. These shut down the spray system if the booth exhaust fan fails, a fire is detected, or other emergency situation develops.
- Make sure the spray area floor is conductive to ground and that the operator's platform is grounded.
- Use only designated lifting points or lugs to lift and move heavy equipment. Always balance and block loads when lifting to prevent shifting. Lifting devices must be inspected, certified, and rated for a greater weight than the equipment being lifted.
- Protect components from damage, wear, and harsh environmental conditions.
- Allow ample room for maintenance, material supply container drop-off and loading, panel accessibility, and cover removal.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.

6. Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments to their judgement or reaction times, should operate this equipment.

Read all component manuals before operating a powder spray system. A thorough understanding of all components and their operation will help you operate the system safely and efficiently.

- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.

- Know where EMERGENCY STOP buttons, shutoff valves, and fire extinguishers are located. Make sure they work. If a component malfunctions, shut down and lock out the equipment immediately.

- Before operating, make sure all conductive equipment in the spray area is connected to a true earth ground.

- Never operate equipment with a known malfunction or leak.

- Do not attempt to operate electrical equipment if standing water is present.

- Never touch exposed electrical connections on equipment while the power is ON.

- Do not operate the equipment at pressures higher than the rated maximum working pressure of any component in the system.

- Know the pinch points, temperatures, and pressures for all equipment that you are working with. Recognize potential hazards associated with these and exercise appropriate caution.

- Wear shoes with conductive soles, such as leather, or use grounding straps to maintain a connection to ground when working with or around electrostatic equipment.

6. Operation (contd.)

- Do not wear or carry metallic objects (jewelry or tools) while working with or around electrostatic equipment. Ungrounded metal can store a static charge and cause harmful shocks.
- Maintain skin-to-metal contact between your hand and the gun handle to prevent shocks while operating manual electrostatic spray guns. If wearing gloves, cut away the palm or fingers.
- Keep parts of the body or loose clothing away from moving equipment or parts. Remove personal jewelry and cover or tie back long hair.
- Wear National Institute of Occupational Safety and Health (NIOSH) approved respirators, safety glasses or goggles, and gloves, and while handling powder containers, filling hoppers, operating spray equipment, and performing maintenance or cleaning tasks. Avoid getting powder coatings on your skin.
- Never point manual guns at yourself or other persons.
- Do not smoke in the spray area. A lit cigarette could ignite a fire or cause an explosion.
- If you notice electrical arcing in a spray area, shut down the system immediately. An arc can cause a fire or explosion.
- Shut off electrostatic power supplies and ground gun electrodes before making adjustments to powder spray guns.
- Shut off moving equipment before taking measurements or inspecting workpieces.
- Wash exposed skin frequently with soap and water, especially before eating or drinking. Do not use solvents to remove coating materials from your skin.
- Do not use high-pressure compressed air to blow powder off your skin or clothes. High-pressure compressed air can be injected under the skin and cause serious injury or death. Treat all high-pressure fittings and hoses as if they could leak and cause injury.

7. Less-Obvious Dangers

Operators should also be aware of less-obvious dangers in the workplace that often cannot be completely eliminated:

- exposed surfaces on the equipment which may be hot or have sharp edges and cannot be practically safeguarded
- electrical equipment which may remain energized for a period of time after the equipment has been shut off
- vapors and materials which may cause allergic reactions or other health problems
- automatic hydraulic, pneumatic, or mechanical equipment or parts that may move without warning
- unguarded, moving mechanical assemblies

8. Action in the Event of a System or Component Malfunction

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

- Disconnect and lock out electrical power. Close and lock out hydraulic and pneumatic shutoff valves and relieve pressures.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component.

9. Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks.

- Always wear appropriate protective devices and use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Use only genuine Nordson replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.

9. Maintenance and Repair *(contd.)*

- Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.
- Do not attempt to service electrical equipment if there is standing water present. Do not service electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.
- Do not attempt to service a moving piece of equipment. Shut off the equipment and lock out power. Secure equipment to prevent uncontrolled movement.
- Relieve air pressures before servicing equipment. Follow the specific instructions in this manual.
- Make sure that the room where you are working is sufficiently ventilated.
- If a “power on” test is required, perform the test carefully and then shut off and lock out power as soon as the test is over.
- Connect all disconnected equipment ground cables and wires after servicing the equipment. Ground all conductive equipment.
- Service lines connected to panel disconnect switches may still be energized unless they are disconnected. Make sure the power is off before servicing. Wait 5 minutes for capacitors to discharge after shutting off the electrical power.
- Turn off the electrostatic power supply and ground the gun electrode before adjusting or cleaning.
- Keep high-voltage connection points clean and insulated with dielectric grease or oil.
- Check all ground connections periodically with a standard ohm meter. Resistance to ground must not exceed one megohm. If arcing occurs, shut down the system immediately.

9. Maintenance and Repair (contd.)

- Check interlock systems periodically to ensure their effectiveness.

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program.

- Do not store flammable materials in the spray area or room. Keep containers of flammable materials far enough away from spray booths to prevent their inclusion in a booth fire. If a fire or explosion occurs, flammable materials in the area will increase the chances and the extent of personal injuries and property damage.

- Practice good housekeeping procedures. Do not allow dust or powder coatings to accumulate in the spray area or booth or on electrical equipment. Read this information carefully and follow instructions.

10. Disposal

Dispose of equipment and materials used in operation and cleaning according to your local regulations.

11. Safety Labels

The Safety Label table lists labels that are found on your Nordson equipment. These labels provide instructions to avoid safety hazards and conditions that may result in personal injury, death, or property and equipment damage.

Table 1-1 Safety Labels

Item	Part	Description
1.	173 797	 **WARNING:** Disconnect main power before servicing. Do not operate or service without following all safety instructions.
2.	248 316	 **WARNING:** Disconnect main power before servicing.
3.	127 597	 **WARNING:** Disconnect main power before servicing. Safety Instructions 1. To be installed in accordance with all local codes and ordinances, all pertinent statutes and regulations, and the safety provisions of the Nordson manual. 2. Ground all equipment and other metal objects within 10 ft (3 m) of spray area. Keep spray area clean. 3. Work pieces must be grounded. Keep conveyor and hangers clean. 4. Hold gun in bare hand. Avoid wearing shoes with non-conductive soles, such as rubber (leather soles are conductive). 5. Turn off power and ground nozzle before doing any cleaning or other work on gun. 6. Do not store flammable materials in spraying area. **CAUTION:** Shut off electrical power before breaking connections or opening enclosure.

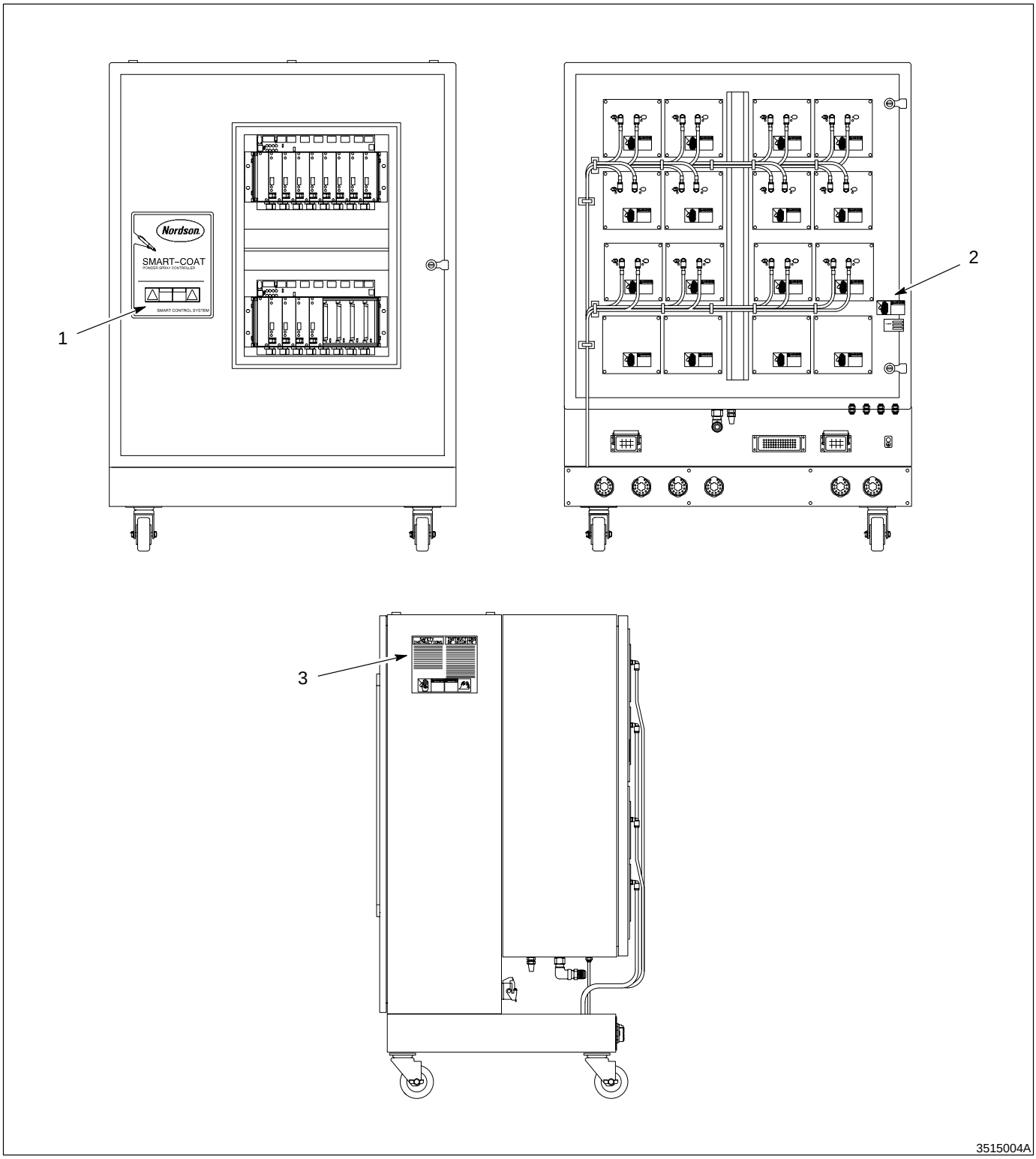


Fig. 1-1 Safety labels on the Smart-Coat controller

Section 2

Description

Section 2
Description

1. Introduction

The Smart-Coat system automatically adjusts the major parameters used for powder spraying: powder and air flow, charging voltage, gun-to-part distance, and booth air flow. The operator enters part recipes into the Versa Screen operator interface. Photosensors identify the part size and shape as it enters the spray booth. The system automatically adjusts the flow of air and powder and triggers the spray guns on and off to coat the part. As different parts enter the booth, the spray parameters change automatically, including when individual guns turn on and off.

See Figure 2-1. The Smart-Coat controller (SCC) is an integral part of the Smart-Coat system. The SCC controls the spray guns, and can accommodate Versa-Spray and Tribomatic guns.

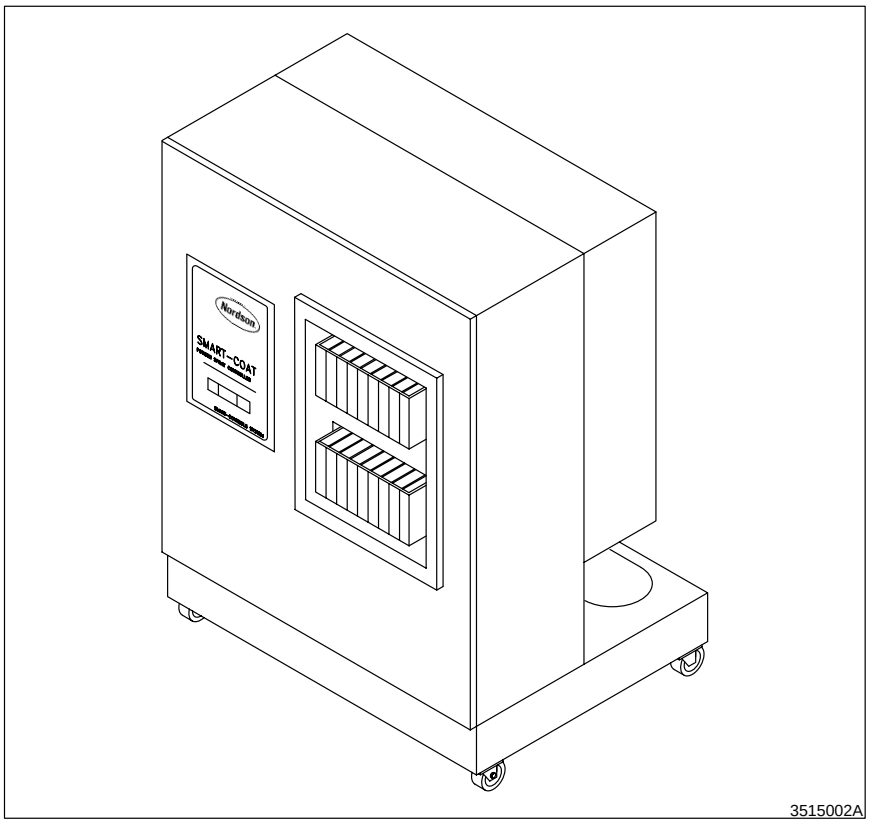


Fig. 2-1 Smart-Coat controller

For Tribomatic guns, the controller sets the following gun parameters:

- on and off times
- flow-rate air pressure (ejector air)
- diffuser air pressure

In addition, the controller monitors the electrostatic charge on the powder.

For Versa-Spray guns, the controller sets:

- on and off times
- flow-rate air pressure
- atomizing air pressure
- electrostatic charge on the powder

1. Introduction *(contd.)*

See Figure 2-2.

One Smart-Coat controller card (1) and one voltage-to-pressure regulator (2) are needed to control each gun. One controller enclosure holds cards and regulators for up to 16 guns. More guns may be accommodated with additional enclosures, which are integrated with a single software control program.

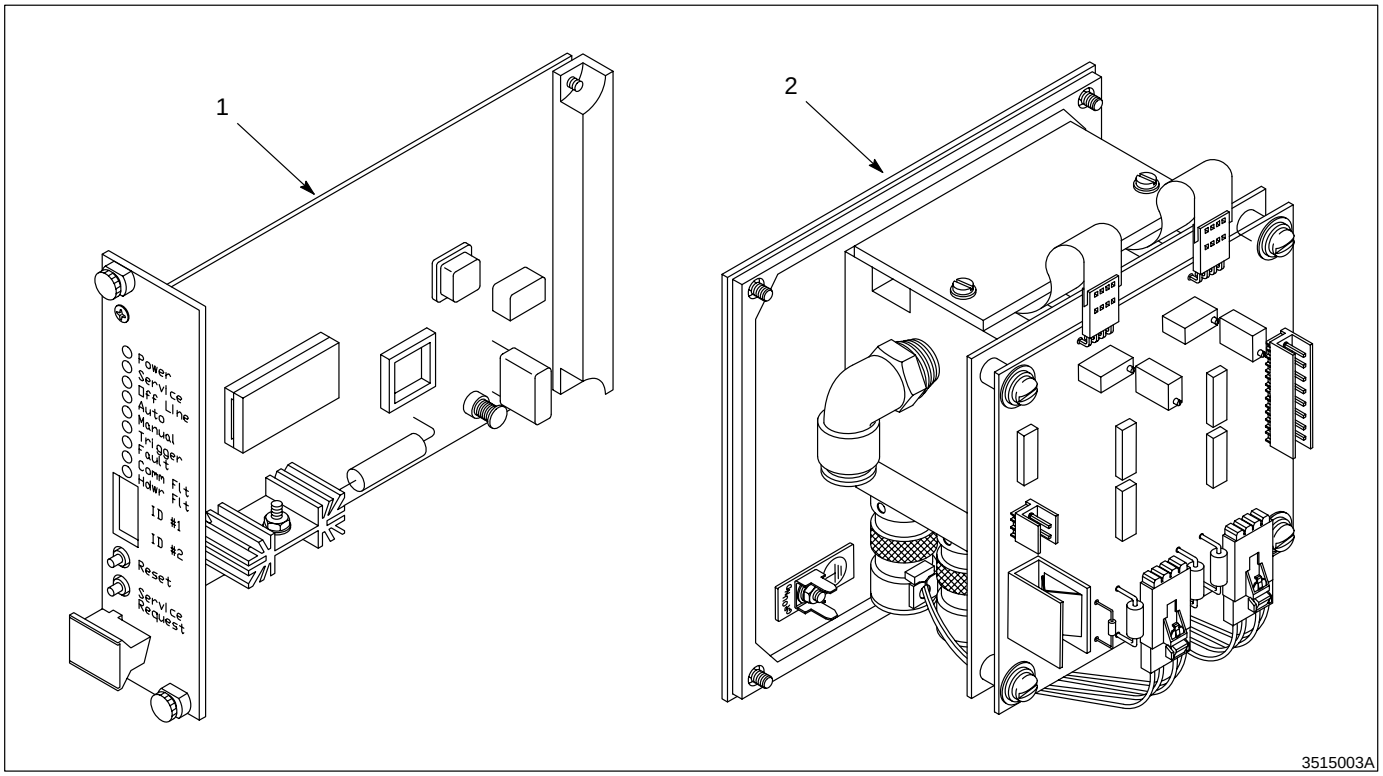


Fig. 2-2 Gun-control electronics

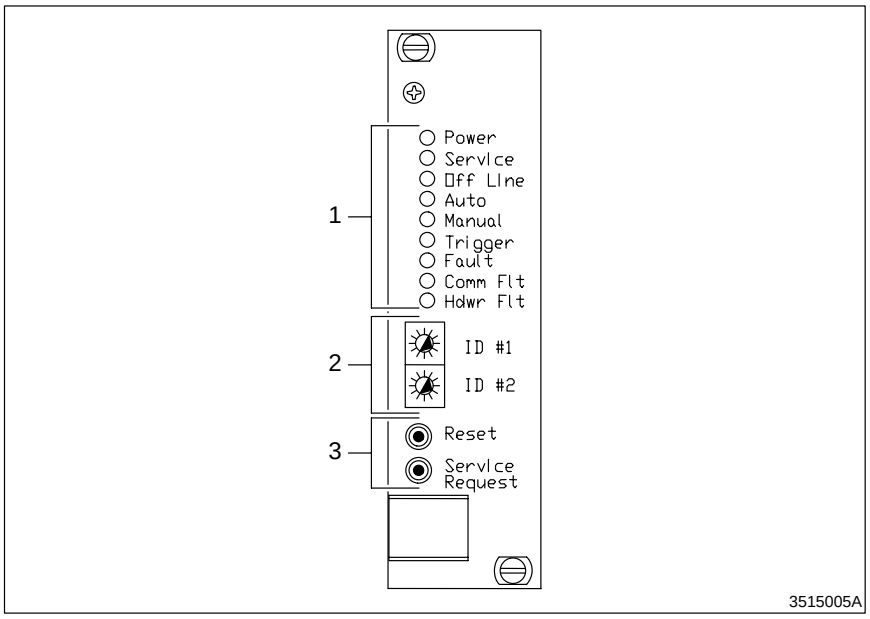
1. *Smart-Coat controller card*
2. *Voltage-to-pressure regulator*

2. Indicators and Controls

Guns are not configured or operated directly with the Smart-Coat controller, but through the operator interface (OI). Refer to the *Versa Screen Operator Interface* manual for configuration and operating instructions.

See Figure 2-3. The indicators and controls located on the front panel of each Smart-Coat controller card are described in Table 2-1. LED indicators check the operating mode and troubleshoot problems. In many cases, detailed error messages are displayed on the OI screen when the controller detects a problem. Error messages and their remedies are described in the *Versa Screen Operator Interface* manual.

2. Indicators and Controls
(contd.)



1. Indicators
2. Address switches
3. Push buttons

Fig. 2-3 Front panel of Smart-Coat controller card

Table 2-1 Controls and Indicators on the Smart-Coat Controller Card

Item	Normal Condition/Function
Indicators (1)	
Power	on when system is powered
Service	on or pulsing when system error is detected
Off Line	on when operating in off-line mode and pulsing when recipes are downloaded from OI
Auto	on when operating in auto mode and pulsing when conveyor is stopped
Manual	on when operating in manual mode
Trigger	on when gun and air outputs are triggered on
Fault	on when gun setting is not at recipe set point
Comm Flt	pulses when controller signs on to network, on when communication fault occurs
Hdwr Flt	on when hardware fault is detected

2. Indicators and Controls
(contd.)

Address Switches (2)	
ID #1	identifies enclosure card installed in; switch ranges from 1 to 15 and is usually set to 1 on all cards in first enclosure, 2 on all cards in second enclosure, and so on
ID #2	identifies gun card controls; switch ranges from 0 to 15 and is usually set to 0 on first card in enclosure, 1 on second card, and so on
Push Buttons (3)	
Reset	resets controller card; all information currently in memory is erased; communication reestablished with network and recipes are downloaded from OI.
Service Request	reserved for future use, has no effect

3. Modes of Operation

Each Smart-Coat controller card operates in one of three modes: off line, manual, or automatic. Change the operating mode through the operator interface.

Off-Line

In off-line mode, the gun is cut out of the system and cannot be turned on. The Off-line indicator is lit.

Manual

In manual mode, the operator interface can be used to change the gun settings, or trigger, test, and purge the gun. The Manual indicator is lit.

Automatic

In automatic mode, the card controls the guns according to the currently selected part recipe. The Auto indicator is lit.

4. Power-On Sequence

1. Turn on power to the controller.

2. Check the LED indicators on the controller cards to make sure they reach the proper operating state.

   NOTE: Check LED indicators on the Smart-Coat controller cards after power is turned on or when they are automatically or manually reset.

3. Each card performs a self-test. During the self-test, all indicator LEDs (except Power) turn off. After the cards successfully complete the test, the Comm Flt LED pulses once.

4. Each controller card establishes communication with the network in sequence. When the card successfully establishes communication, the Comm Flt LED pulses once and then turns off.

5. Part recipes are transferred from the OI and stored in each controller card memory.

6. Check the Off-line LEDs on each card to make sure it is pulsing as the data transfer occurs. After the recipes transfer, the Off-line LED stays on.

7. Now, the Smart-Coat controller is operational. Select an operating mode at the operator interface to begin production.

NOTE: If the Smart-Coat controller does not function properly when turned on or reset, follow the corrective actions recommended in the *Problems Indicated by SCC LEDs* troubleshooting chart.

Section 3

Installation

Section 3
Installation

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

1. Location

Locate the Smart-Coat controller near the powder spray booth. Leave enough room to open the front and back panels for maintenance. See Figure 3-1 for clearance dimensions.

Once the controller is properly positioned, lock the leg casters to keep the unit stationary.

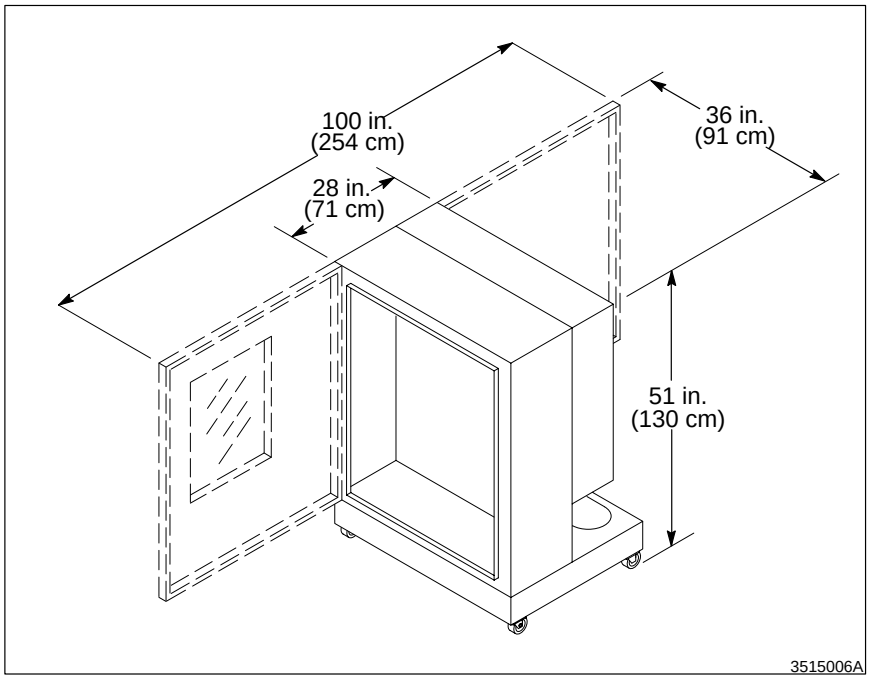


Fig. 3-1 Clearance dimensions

2. Connections

See Figure 3-2. Make the following electrical connections to the back of the Smart-Coat controller:

1. Connect the ground terminal (5) of the Smart-Coat controller to a true earth ground with the grounding strap provided.

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

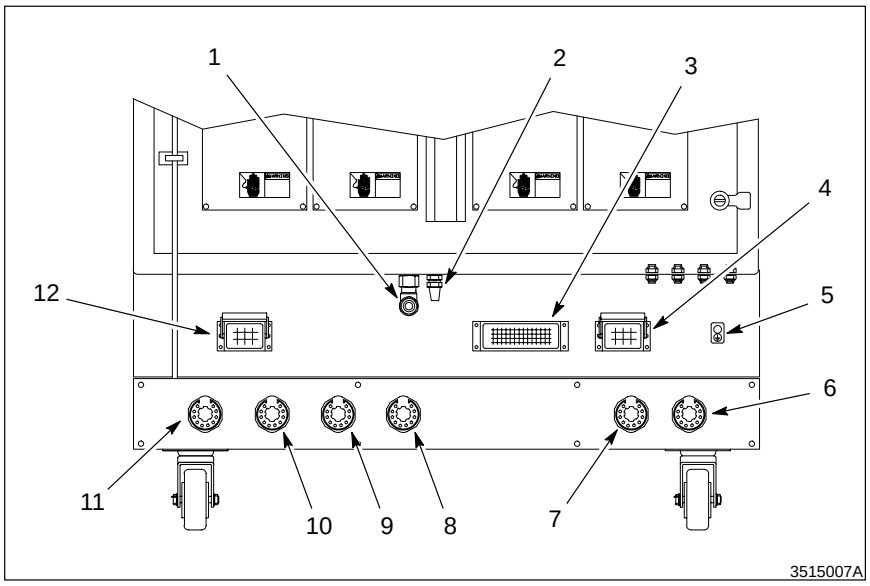


Fig. 3-2 Electrical and air connections

1. Main air inlet
2. Exhaust air muffler
3. Gun cable receptacle
4. Power cable receptacle
5. Ground terminal
6. Purge air outlet, guns 11-16
7. Purge air outlet, guns 1-10
8. Diffusing/atomizing air outlet, guns 11-16
9. Flow-rate air outlet, guns 11-16
10. Diffusing/atomizing air outlet, guns 1-10
11. Flow-rate air outlet, guns 1-10
12. Network cable receptacle

2. Disconnect the powder spray booth from line voltage and lock out electrical power.

3. Plug the power cord from the powder booth into the power cable receptacle (4) marked “AC”.

4. Plug the gun control cable into the gun cable receptacle (3) marked “GUNS”.

5. Plug the network cable into the network cable receptacle (12) marked “NET”.

   NOTE: Use only Nordson cables to connect Smart-Coat controllers.

Make the following air line connections:

1. Connect the air supplied from the powder booth to the main air inlet (1).

2. Connect the air line bundle from the pumps for guns 1-10 to the flow-rate air outlet (11) for guns 1-10, labeled “1”.

2. Connections (contd.)

3. Connect the air line bundle from the diffusing/atomizer air ports of the pumps for guns 1-10 to the diffusing/atomizer air outlet (10) for guns 1-10, labeled “2”.

4. Connect the air line bundle from the flow air ports of the pumps for guns 11-16 to the flow air outlet (9) for guns 11-16, labeled “3”.

5. Connect the air line bundle from the diffusing/atomizer air ports of the pumps for guns 11-16 to the diffusing/atomizer air outlet (8) for guns 11-16, labeled “4”.

6. Connect the air line bundle from the purge air ports of the pumps for guns 1-10 to the purge air outlet (7) for guns 1-10, labeled “5”.

7. Connect the air line bundle from the purge air ports of the pumps for guns 11-16 to the purge air outlet (6) for guns 11-16, labeled “6”.

NOTE: If you are installing more than one Smart-Coat controller (to control more than 16 guns), contact a Nordson representative for proper installation and configuration procedures.

Section 4

Troubleshooting

Section 4
Troubleshooting

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

1. Introduction

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

Table 4-1 Operational Problems

Table 4-2 Problems Indicated by SCC LEDs

2. Operational Problems

Problem	Other Symptoms	Possible Cause	Corrective Action
1. All controllers go off-line automatically, Off-line LEDs ON	Hdwr Flt LEDs ON	Booth turned off	Turn on the booth. Refer to the booth manual.
		Booth shut down automatically	Fix the condition and restart the booth. Refer to the booth manual.
		Interlock input to SCC defective	Check the interlock signal. Refer to the *Repair* section.
	Fault LEDs ON, fault message at OI: Encoders missing	Part position module defective	Repair or replace the part position module (PPM). Refer to the PPM manual.
		Signal from encoder defective	Repair or replace the encoder.
	Comm Flt LEDs pulsing, no mode LEDs on	Communication problem	Repair the network wiring leading to, or inside the SCC enclosure. Refer to the *Repair* section.
2. No guns spray when part is in position		No part detected (Part ID=0)	Check Part ID on Powder Gun Status screen of OI. If it is zero, check the signal from the programmable logic controller (PLC) and PPM. Refer to the PLC and PPM manuals.
		Operator cleared SCC memory by issuing Shift Register Reset command from OI	None. The guns will restart when new parts pass in front of them.
		Powder depleted or not delivered properly	Check the powder hopper and pumps.
	Auto LEDs pulsing	Conveyor stopped	If the conveyor is stopped, restart it. If the conveyor is moving, check the Conveyor Run/Stop output from the PLC. The output should be on when the conveyor is moving. See Figures 7-3 and 7-4 in the *Specifications* section.

2. Operational Problems
(contd.)

Problem	Other Symptoms	Possible Cause	Corrective Action
2. No guns spray when part is in position *(contd.)*	Power LEDs on, Comm Flt LEDs pulsing	Communications problem	Repair the network wiring leading to, or inside of the SCC enclosure. Refer to the *Repair* section.
	No LEDs on	AC or 5-VDC power failure	Check the AC or 5-VDC power. Refer to the *Repair* section.
	Off-line LEDs on	All controllers went off-line automatically	Refer to problem 1 in the *Troubleshooting* section.
	Trigger, Fault LEDs on	Air supply problem	Check the air supply. Refer to the *Repair* section.
	Trigger, Hdwr Flt LEDs on	30-VDC power failure	Repair or replace the 30-VDC power supply. Refer to the *Repair* section.
3. One gun stopped spraying		Operator changed operating mode of gun	Change the mode back to automatic or manual. Refer to the *Versa Screen Operator's Interface* manual.
		Pump is clogged or otherwise damaged	Clean or repair the pump. Refer to the pump manual.
	Off-line LED on, Comm Flt LED pulses continuously	Communication problem	Repair the network wiring leading to, or inside of the SCC enclosure. Refer to the *Repair* section.
	Fault LED on	Voltage-to-pressure regulator problem	Repair or replace the voltage-to-pressure regulator. Refer to the *Repair* section.
	Off-line LED on, Comm Flt LED not pulsing	Booth turned off	Turn on the booth. Refer to the booth manual.
		Encoder pulses not being detected	Reset the SCC. Press the Reset button. Refer to the *Description* section.

3. Problems Indicated by SCC LEDs

Problem	Other Symptoms	Possible Cause	Corrective Action
1. Power LED on all SCC cards off		AC or 5 VDC power failure	Check the AC or 5-VDC power. Refer to the *Repair* section.
2. Power LED on one SCC card off	No other LEDs on	SCC card failure	Replace the SCC card. Refer to the *Repair* section.
	Other LEDs working properly	LED failure: SCC card working	Controller will function properly. Replace SCC card only if failed LED causes operator confusion.
3. Service LED on one SCC card on		SCC card failure	Replace the the SCC card. Refer to the *Repair* section.
4. Service LED on one SCC card pulsing			Press the reset button to rest the SCC. Refer to the *Description* section.
5. Fault LED on all SCC cards on	Fault messages at OI indicate low pressure conditions	Air supply off or not regulated to the proper pressure	Check the air supply. Refer to the *Repair* section.
	Fault messages at OI indicate low current conditions	Guns not connected	Plug the gun cable connector securely into the back of SCC enclosure.
6. Fault LED on one SCC card on	Fault message at OI indicates a pressure problem	Voltage-to-pressure regulator problem	Repair or replace the voltage-to-pressure regulator. Refer to the *Repair* section.
	Fault message at OI indicates a gun current problem	Gun problem	Refer to the gun manual.
	Fault message at OI indicates a “Photocell Gap” problem	SCC lost track of part position	Perform a Shift Register Reset operation from the OI. Refer to the *Versa Screen Operator Interface* manual.

3. Problems Indicated by SCC LEDs (contd.)

Problem	Other Symptoms	Possible Cause	Corrective Action
6. Fault LED on one SCC card on *(contd.)*	Fault message at OI indicates an "Unprogrammed Preset" problem	A Part ID assigned a recipe with no parameters programmed	Program the recipe or assign another recipe to the Part ID. Refer to the *Versa Screen Operator Interface* manual.
	Fault message at OI indicates an "Invalid Mode" problem	The command issued to SCC is invalid in current mode of operation	Change the operating mode and repeat function.
7. Comm Flt LEDs pulsing on all SCC cards	SCC just powered up or reset	Normal event. LEDs will turn off after network communications is established	—
		Network communication can not be established	Make sure the computer inside the PLC enclosure is turned on. Repair the network wiring leading to, or inside of the SCC enclosure. Refer to the *Repair* section.
8. Hdwr Flt LEDs on all SCC cards on		Booth turned off	Turn on the booth. Refer to the booth manual.
		Booth shut down automatically	Fix the condition and restart booth. Refer to the booth manual.
		Interlock input to SCC defective	Check the interlock signal. Refer to the *Repair* section.
		30-VDC power failure	Check the 30-VDC power. Refer to the *Repair* section.
9. Hdwr Flt LED on one SCC card on		Voltage-to-pressure regulator defective	Repair or replace the voltage-to-pressure regulator. Refer to the *Repair* section.
		SCC card defective	Repair or replace the SCC card. Refer to the *Repair* section.

Section 5

Repair

Section 5
Repair

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

1. Checking the Interlock Signal

WARNING: Only qualified, certified electricians should perform the repair procedures in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

The Smart-Coat controller receives an interlock signal directly from the powder spray booth. The SCC cannot turn on the guns and spray powder when the booth is off. When the booth is off or any of its safety interlocks activated, both the booth and SCC are shut down automatically. All SCC cards go off-line, as indicated by the Off-line LEDs turning on.

If all SCC cards go off-line at the same time, make sure the booth was not intentionally turned off. If it was not, make sure a safety interlock did not shut down the booth. Correct the situation and restart the booth.

If neither of the above situations occurred, check the interlock signal arriving at the SCC.

NOTE: The interlock signal is a 120-VAC input from the standard booth interlock circuit.

1. Checking the Interlock Signal (contd.)

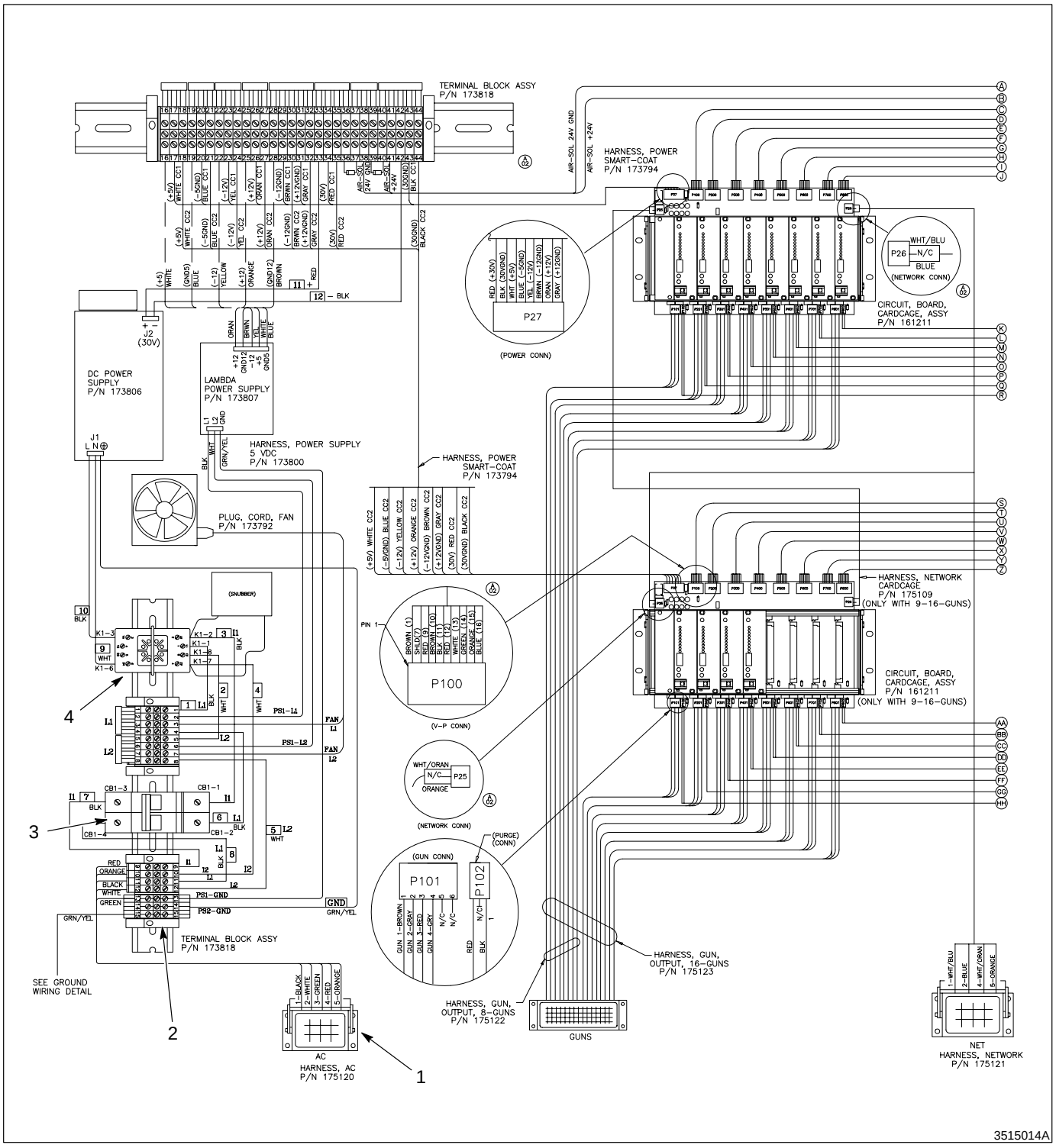


Fig. 5-1 SCC electrical schematic, part A, illustrating interlock signals

1. *AC harness*
2. *Small terminal block*
3. *Circuit breaker*
4. *Interlock relay*

1. Checking the Interlock Signal *(contd.)*

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

1. Open the front door of the Smart-Coat controller.

2. See Figure 5-1. Measure the voltage between terminals 9 and 10 of the small terminal block (2). The voltage should be greater than 100 V. If the voltage is too low, follow the procedure *AC Power Input* in this section.

3. If the voltage is acceptable, measure the voltage between terminals K1-2 and K1-7 of the interlock relay (4). The voltage should be greater than 100 V.

If the voltage is too low, disconnect and lock out power. Tighten the following connections and wiring:

- small terminal block (2), terminals 9 and 10
- circuit breaker (3), terminals CB1-2 and CB1-4
- wires 8, 6, and 4

4. If the voltage between K1-2 and K1-7 is acceptable, check the voltage between terminals K1-1 and K1-8 of the interlock relay (4). The voltage should be greater than 100 V.

If the voltage is too low, disconnect and lock out power. Tighten the following connections and wiring:

- interlock relay coil (4), terminals K1-1 and K1-8
- small terminal block (2), terminals 1 and 5
- wires 1 and 2

5. If the voltage between K1-1 and K1-8 is acceptable, check the voltage between terminals K1-3 and K1-6 of the interlock relay (4). The voltage should be greater than 100 V.

If the voltage is too low, disconnect and lock out power. Replace the interlock relay (4).

If the voltage measured in steps 2 through 5 is acceptable, the interlock signal is reaching the Smart-Coat controller properly. If all SCC cards remain off-line, contact your Nordson service representative.

AC Power Input

1. See Figure 5-1. Measure the voltage between pins 4 and 5 of the AC harness (1). The voltage should be greater than 100 VAC.

   NOTE: If the voltage is acceptable, the interlock signal is reaching the Smart-Coat Controller properly.

2. If the voltage is too low, the interlock signal is not reaching the SCC enclosure. Check and correct the wiring from the programmable logic controller (PLC) enclosure to the booth junction box and from the booth junction box to the SCC enclosure. Refer to the electrical schematics and procedures provided by Nordson.

2. Network Communications

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

When the Smart-Coat controller is powered up or reset, it establishes communication with the network. The Comm Flt LEDs pulse for several minutes while each SCC card signs on to the network. After communication is established, the Comm Flt LEDs turn off and the Off-line LEDs begin to pulse. If the Comm Flt LEDs do not stop pulsing after several minutes, there is a communications problem.

Make sure the rest of the system is on and operational. Reset the SCC and make sure communication can be established.

If the rest of the system is operational and the SCC can not establish communications, check the network wiring supplying each SCC enclosure:

- from each SCC enclosure to the booth junction box
- from the booth junction box to the PLC
- from the PLC to the gateway

Refer to the system electrical schematics provided by Nordson.

If the communication problem persists, check the network wiring inside each SCC enclosure.

2. Network Communications (contd.)

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

1. See Figure 5-2. Disconnect and lock out power to the SCC.
2. Check and repair the following:
   - connections at the network harness connector (3)
   - connections at the network card cage harness (2)
   - connections at the P25 (4) and P26 (1) connectors

After tightening loose connections, turn on the Smart-Coat controller. If communication is still not established, call your Nordson service representative.

2. Network Communications (contd.)

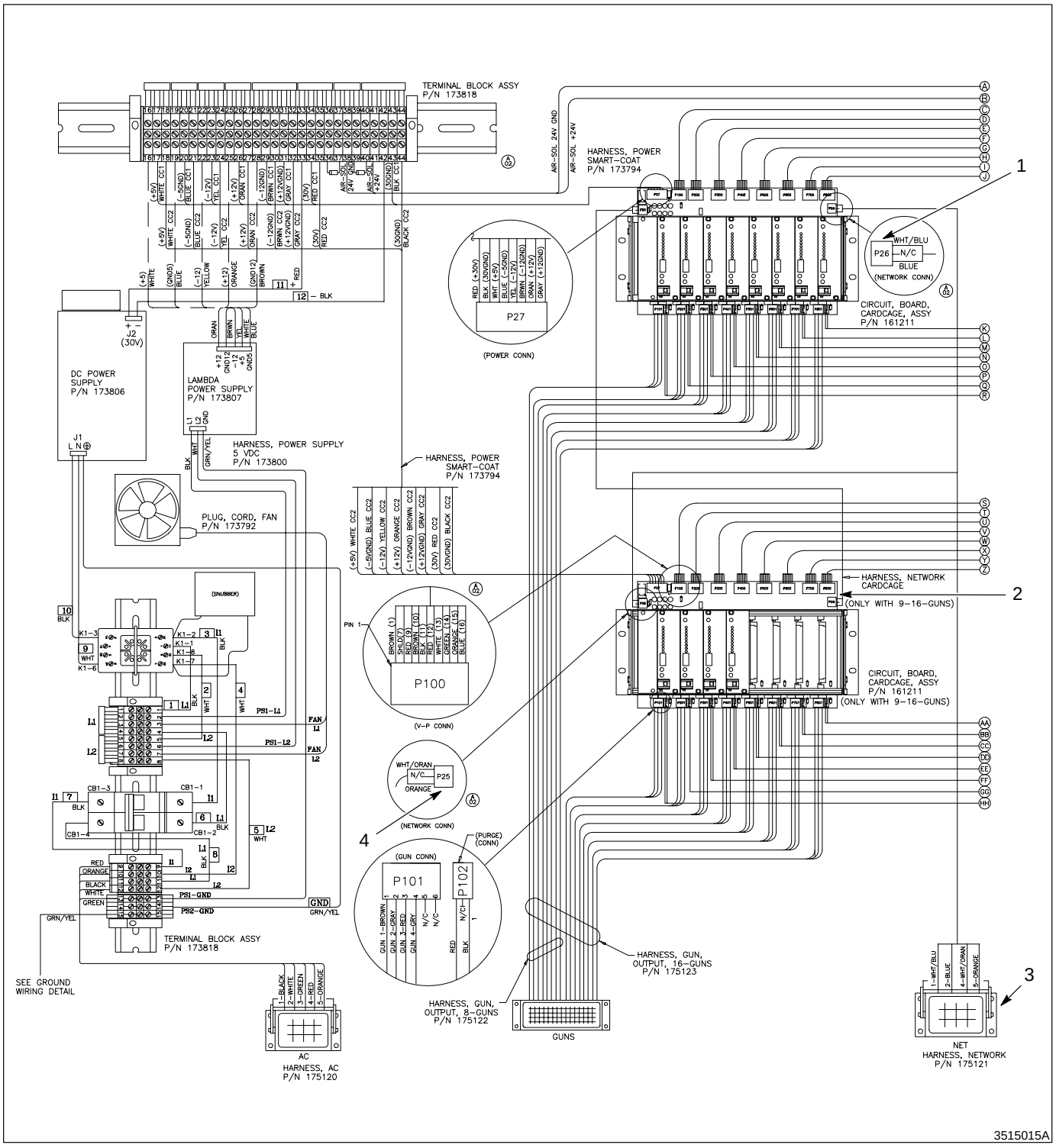


Fig. 5-2 SCC electrical schematic, part A, illustrating network communication signals

1. *P26 connector*
2. *Network card cage harness*
3. *Network harness connector*
4. *P25 connector*

3. Power-AC

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems.

Follow the procedure in this section to restore AC power to the SCC.

1. Make sure the input AC power from the booth is on and operational.

2. See Figure 5-3. Open the front panel of the SCC. Make sure the circuit breaker (6) is on.

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

3. If the circuit breaker is on, go to step 4. If the circuit breaker is off, disconnect and lock out power. Check for a shorted connection in the AC wiring or an overloaded condition at the 30- and 5-VDC power supplies as follows:

   a. Check the continuity of the AC wiring with an ohm meter. Fix any shorted wires.

   b. Unplug the interlock relay (5) from the 30-VDC power supply (3). Reset the circuit breaker (6) and turn on the system power. If the breaker does not trip, replace the 30-VDC power supply. Follow the procedure, *Replacing the Power Supplies*, in this section.

   c. Disconnect and lock out power. Unplug the AC power input connector (bottom connector) from the 5-VDC power supply (4). Reset the circuit breaker (6) and turn on the system power. If the breaker does not trip, replace the 5-VDC power supply. Follow the procedure, *Replacing the Power Supplies*, in this section.

      NOTE: If the circuit breaker still trips off when power is supplied to the SCC, contact your Nordson service representative.

4. If the circuit breaker is on, check the supply voltage and the continuity of AC wiring inside the SCC enclosure.

*3. **Power-AC** (contd.)*

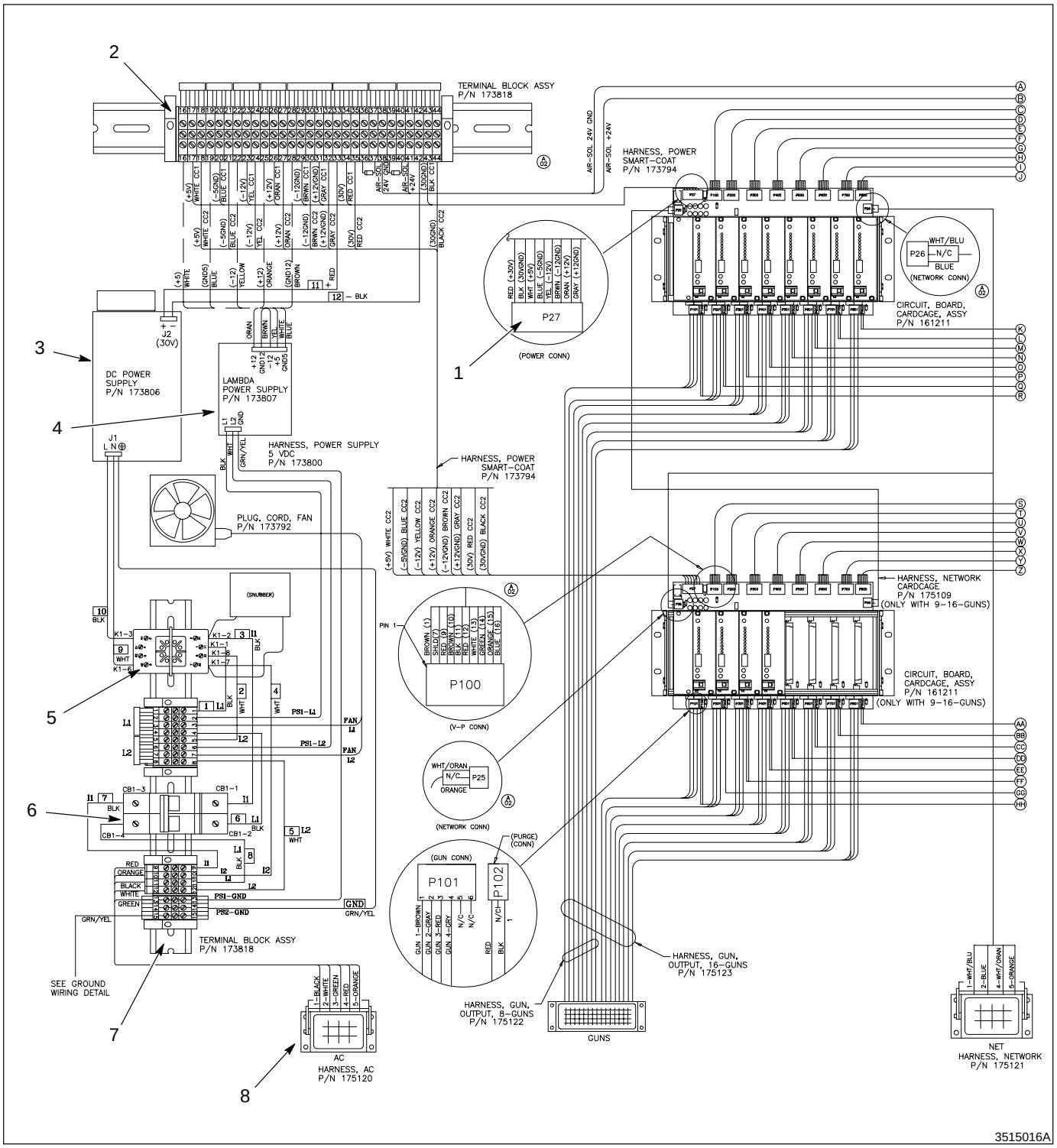


Fig. 5-3 SCC electrical schematic, part A, illustrating power supply signals

1. *P27 connector*
2. *Large terminal block*
3. *30 VDC power supply*
4. *5 VDC power supply*
5. *Interlock relay*
6. *Circuit breaker*
7. *Small terminal block*
8. *AC harness connector*

3. Power-AC *(contd.)*

See Figure 5-3. Measure the voltage between terminals 11 and 12 of the small terminal block (7). The voltage should be greater than 100 VAC. If the voltage is too low:

1. Check the power level coming into the SCC enclosure. Check and correct the wiring from the PLC enclosure to the booth junction box and from the booth junction box to the SCC enclosure. Refer to the electrical schematics and procedures provided by Nordson.

2. If the supply voltage is adequate, disconnect and lock out power. Check and correct the following connections and wiring inside the SCC:

   - connections at the small terminal block (7), terminals 11 and 12
   - connections at the AC harness connector (8), pins 1 and 2

If the voltage between terminals 11 and 12 is acceptable, measure the voltage between terminals 4 and 8. The voltage should be greater than 100 VAC. If the voltage is too low disconnect and lock out power. Check and correct the following wires and connections:

- wires 5, 6, and 8
- connections at the circuit breaker (6), terminals CB1-4 and CB1-2

If AC power is still not restored, call your Nordson service representative.

4. Power-5 VDC

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

Follow this procedure to restore 5 VDC power to the SCC.

See Figure 5-3.

1. Check the voltage level of all three DC outputs from the 5-V power supply (4). Each output should be near its nominal voltage (either 5, 12, or –12 VDC). Check the voltage between the pins at the large terminal block (2):

   - +5 and Gnd5, terminals 16 and 19
   - +12 and Gnd12, terminals 25 and 28
   - –12 and Gnd12, terminals 22 and 28

4. Power-5 VDC (contd.)

2. If each output is near zero, check the AC power connection. Follow the procedure, *Checking the AC Power Connection*, in this section.

3. If any of the outputs are below their nominal value, check for a short circuit or overloaded condition in the 5-V wiring. Follow the procedure, *Checking for Short Circuits*, in this section.

4. If any output is greater than its nominal voltage, check for loose connections in the 5-V wiring. Follow the procedure, *Checking for Loose Connections*, in this section.

Checking the AC Power Connection

See Figure 5-3.

1. Measure the AC input voltage between pins L1 and L2 of the 5-VDC power supply (4). The voltage should be greater than 100 VAC.

2. If the AC input voltage is acceptable, the 5-VDC power supply (4) failed. Replace it by following the procedure, *Replacing the Power Supplies*, in this section.

3. If the AC input voltage is too low, measure the voltage between terminals 2 and 6 of the small terminal block (7). The voltage should be greater than 100 VAC.

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

4. If the voltage is acceptable, disconnect and lock out power. Check and correct the wiring between the small terminal block (7) and the 5-VDC power supply (4).

5. If the voltage is too low, check the AC power. Follow the procedure, *Power-AC*, in this section.

Checking for Short Circuits

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

See Figure 5-3.

1. Disconnect and lock out power.
2. Unplug the power harness from the P27 connector (1).
3. Turn the power on.
4. Check the voltage level of all three DC outputs from the 5-V power supply (4). Each output should be near its nominal voltage (either 5, 12, or –12 VDC). Check the voltage between pins at the large terminal block (2):
   - +5 and Gnd5, terminals 16 and 19
   - +12 and Gnd12, terminals 25 and 28
   - –12 and Gnd12, terminals 22 and 28
5. If each output voltage is near its nominal value, the 5-VDC power supply is operational, but one or more SCC cards is defective, contact your Nordson service representative to find and replace the defective card.

Checking for Loose Connections

See Figure 5-3.

1. Check the voltages at the P27 connectors (1) on both card cages. Each pin should have the nominal voltage marked on the schematic.

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

2. If all voltages are not near their nominal value, disconnect and lock out power. Correct any loose connections found at the P27 connector (1) and large terminal block (2).
3. If no loose connections are found, replace the 5-V power supply. Follow the procedure, *Replacing the Power Supplies*, in this section.

5. Power-30 VDC

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

Follow the procedure in this section to restore 30 VDC power to the SCC.

See Figure 5-3.

1. Measure the voltage between the J2 connector pins on the 30-VDC power supply (3) output.
2. If the output is near zero, check the AC power connection. Follow the procedure, *Checking the AC Power Connection*, in this section.
3. If the output is below its nominal value (30 V), but not zero, check for short-circuit or overloaded conditions in the 30-V wiring. Follow the procedure, *Checking for Short Circuits*, in this section.
4. If the 30-VDC output is above its nominal voltage, check for loose connections in the 30-V wiring. Follow the procedure, *Checking for Loose Connections*, in this section.

Checking the AC Power Connection

1. See Figure 5-3. Measure the AC input voltage between the J1 connector pins on the 30-VDC power supply (3). The voltage should be greater than 100 VAC.
2. If the AC input voltage is acceptable, the 30-VDC power supply failed. Replace it by following the procedure, *Replacing the Power Supplies*, in this section.
3. If the AC input voltage is too low, measure the voltage between terminals K1-3 and K1-6 of the interlock relay (5). The voltage should be greater than 100 VAC.

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

Checking the AC Power Connection *(contd.)*

4. If the voltage is acceptable, disconnect and lock out power. Check and correct the wiring between the interlock relay (5) and the 30-VDC power supply (3).

5. If the voltage is too low, repair the AC power. Follow the procedure, *Power-AC*, in this section.

Checking for Short Circuits

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

1. Disconnect and lock out power.

2. See Figure 5-3. Unplug the power harness from the P27 connector (1).

3. Check the resistance across the red and black wires in the power harness.

4. If the resistance is greater than 5 Ω, there is a problem in the power harness. Call your Nordson service representative.

5. If the resistance is less than 5 Ω, replace the 30-VDC power supply. Follow the procedure, *Replacing the Power Supplies*, in this section.

Checking for Loose Connections

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

1. See Figure 5-3. Check for loose wires or connections from the 30-VDC power supply (3) to the large terminal block (2), terminals 33 through 42. Tighten any loose connections.

2. Check for loose wires and connections from the large terminal block (2) to the P27 connector (1). Tighten any loose connections.

3. If no loose connections are found, replace the 30-V power supply. Follow the procedure, *Replacing the Power Supplies*, in this section.

6. Replacing the Power Supplies

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

1. Disconnect and lock out power.
2. See Figure 5-3. Unplug the top and bottom connectors from the 5-VDC power supply (4).
3. Disconnect the wires from the J1 and J2 connectors of the 30-VDC power supply (3).
4. Unbolt the bracket that holds both power supplies onto the SCC front panel.
5. To replace the 5-VDC power supply, unbolt it from the bracket. Bolt on the new one.
6. To replace the 30-VDC power supply, unbolt it from the bracket. Bolt on the new one.
7. Bolt the power supply bracket to the front panel of the SCC.
8. Plug in the top and bottom connectors on the 5-VDC power supply.
9. Reconnect the wires to the J1 and J2 connectors of the 30-VDC power supply (3).

7. Voltage-To-Pressure Regulators

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

Voltage-to-pressure regulators convert voltages supplied by the OI to pressures for gun operation. The actual pressures supplied to the guns are measured and displayed on the Gun Status screen of the OI.

NOTE: The actual measured pressures may differ by ± 2 psi (±138 mbar) from their set points. This is the normal operating range of the regulator. If the pressures differ by ± 5 psi (± 345 mbar), an alarm is activated.

7. Voltage-To-Pressure Regulators (contd.)

Follow the repair procedures in this section to correct an alarm condition, or to prevent an alarm condition from occurring as the voltage-to-pressure regulators drift more than ± 2 psi (± 138 mbar) from their set points. Use the Gun Status screen of the OI to compare the actual measured pressures with the set points.

Pressure Present When Gun Is OFF

When a gun is off, the flow and atomizing/diffuser air pressures should be zero. If the actual pressure is greater than 2 psi (138 mbar), follow the procedure below.

NOTE: All voltages in this procedure are measured using pin 1 of connector P2 (3) as the DC signal common, unless noted otherwise.

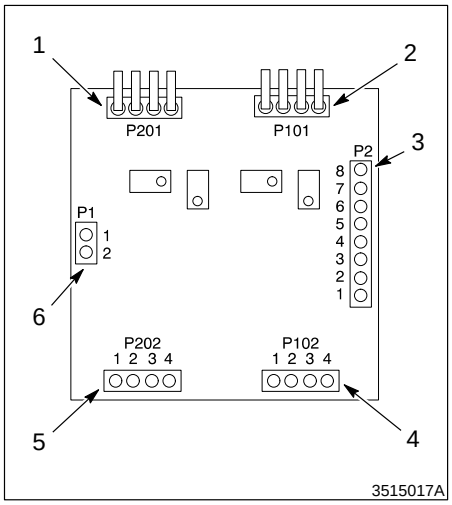


Fig. 5-4 Voltage-to-pressure regulator electrical connectors

1. *P201 connector*
2. *P101 connector*
3. *P2 connector*
4. *P102 connector*
5. *P202 connector*
6. *P1 connector*

1. See Figure 5-4. Measure the DC power input voltage at the P1 connector (6) of the faulty regulator. Measure the voltage between pins 1 and 2 to make sure it is between 28 and 33 VDC.

2. If the voltage is outside the acceptable range, check the 30-VDC power supply. Follow the procedure, *Power-30 VDC*, in this section.

3. If the voltage is acceptable, measure the control signal input voltages for the flow air and atomizing/diffuser air. Measure the following voltages at the P2 connector (3) while the voltage-to-pressure regulator is triggered off:

   - flow-rate air-pin 1 and pin 3
   - atomizing/diffuser air-pin 1 and pin 6

Pressure Present When Gun Is OFF *(contd.)*

4. If either control input signal is greater than 0.90 VDC, replace the SCC card. Follow the procedure, *Replacing the SCC Card*, in this section.

5. If the control input signals are acceptable, measure the actual pressure output voltages. Measure the following voltages at the P2 connector (3) while the voltage-to-pressure regulator is triggered off:

   - flow-rate air-pin 1 and pin 2
   - atomizing/diffuser air-pin 1 and pin 5

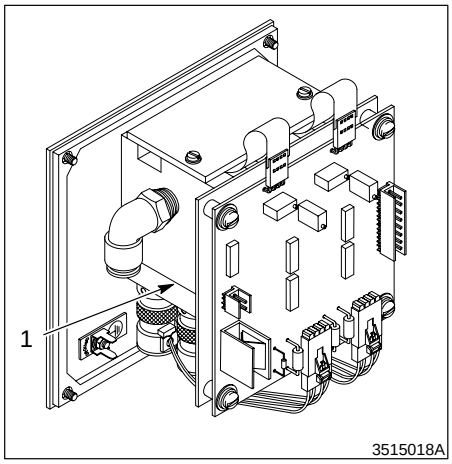


Fig. 5-5 Voltage-to-pressure regulator

1. Manifold plate

6. If either voltage is greater than 1.08 VDC, air may be leaking past an internal valve on the regulator. See Figure 5-5. Tighten the four screws on the solenoid manifold plate (1). Then, check for a high back pressure in the air line. Unplug the air quick-disconnect harness on the back of the SCC enclosure and repeat step 5.

7. If the actual pressure output voltages are acceptable after disconnecting the air line, unblock the air line and reconnect it.

8. If either voltage remains greater than 1.08 VDC, replace the voltage-to-pressure regulator. Follow the procedure, *Replacing the Voltage-To-Pressure Regulator*, in this section.

No Pressure When Gun ON

When a gun is on, the flow and atomizing/diffuser air pressure should rise to the user-defined set point.

If the flow or atomizing/diffuser air is zero (± 2 psi (± 138 mbar)) when the gun is on, the Fault LED will light on the SCC card and a low-pressure fault message will be displayed at the OI. If the flow and atomizing/diffuser air are zero, follow the procedure, *No Pressure, Both Outputs*, in this section. If pressure is zero for only one channel, follow the procedure, *No Pressure, One Output*, in this section.

No Pressure, Both Outputs

1. Make sure the spray booth is on and no interlocks were activated.

2. Make sure the air supplying the booth is on and regulated to the proper pressure. Refer to the booth manual.

3. Check the 30-VDC power. Follow the procedure, *Power-30 VDC*, in this section.

If you still have no air pressure for either output, follow the procedure, *No Pressure, One Output*, in this section, for both voltage-to-pressure regulator outputs.

No Pressure, One Output

1. See Figure 5-4. Measure the control signal input voltages for the output with no pressure: either the flow or atomizing/diffuser air. Measure one of the following voltages at the P2 connector (3) while the voltage-to-pressure regulator is triggered on:

   - flow-rate air-pin 1 and pin 3
   - atomizing/diffuser air-pin 1 and pin 6

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

2. If the voltage is less than 1.0 VDC, disconnect and lock out power. Check the wires and connections between the voltage-to-pressure regulator and the SCC card. Fix any loose connections or shorted wires.

3. Turn on the power and repeat step 1. If the control signal input voltage is still low, replace the SCC card. Follow the procedure, *Replacing the SCC Card*, in this section.

4. If the control signal input voltage is greater than 1.0 VDC, disconnect and lock out power. Check for loose wires and connections at the solenoid valve connectors on the voltage-to-pressure circuit board: P102 (4) and P202 (5). Fix any loose connections or shorted wires.

5. Turn on the power and repeat step 1. If the control signal input voltage is still high, replace the voltage-to pressure regulator. Follow the procedure, *Replacing the Voltage-To-Pressure Regulator*, in this section.

Pressure Too Far From Set Point

If the actual flow or atomizing/diffuser air pressure is more than ±2 psi (±138 mbar) from its set point, follow the procedure below.

1. Make sure the air supplying the booth is on and regulated to the proper pressure. Refer to the booth manual.

2. See Figure 5-4. Measure the difference between the control signal input voltage and the pressure output voltage. Measure the voltage between the appropriate pins on the P2 connector (3):

   - for low or high flow-rate air, pins 2(+) and 3(–)
   - for low or high atomizing/diffuser air, pins 5(+) and 6(–)

3. If the voltage difference is less than –0.08 VDC, replace the voltage-to-pressure regulator. Follow the procedure, *Replacing the Voltage-To-Pressure Regulator*, in this section.

4. If the voltage is greater than –0.08 VDC, the SCC card is possibly sending false pressure alarms. If the problem persists, replace the SCC card. Follow the procedure, *Replacing the SCC Card,* in this section.

Replacing the Voltage-To-Pressure Regulator

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

Removing the Old Regulator

See Figure 5-6.

1. Disconnect the powder spray booth from line voltage and lock out electrical power.

2. Relieve the air pressure between the pumps and the Smart-Coat controller.

Removing the Old Regulator *(contd.)*

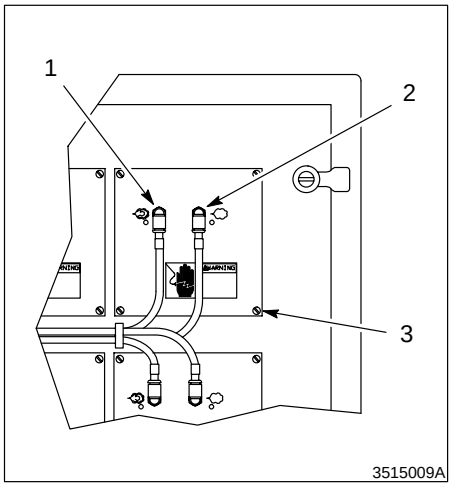


Fig. 5-6 Front panel of voltage-to-pressure regulator

1. Air line connector
2. Air line connector
3. Screws

3. Disconnect the air line connections (1, 2) on the face of the regulator.

4. While holding onto the regulator panel, remove the four screws (3) holding the regulator to the Smart-Coat enclosure.

5. Gently pull the regulator out about 6 inches (15.2 centimeters) to expose the connectors on the unit.

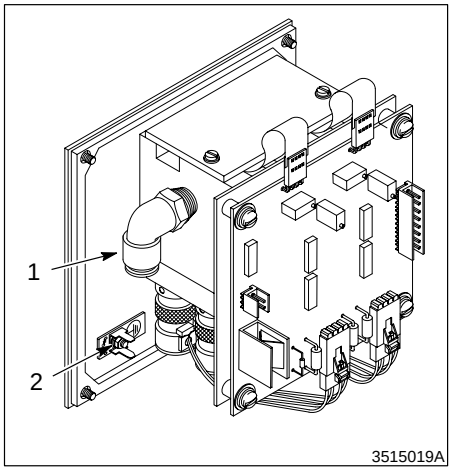


Fig. 5-7 Voltage-to-pressure regulator

1. Air inlet connector
2. Ground terminal

See Figure 5-7.

6. Disconnect the tubing from the air inlet connector (1).

7. Disconnect the ground wire from the ground terminal (2).

Installing a New Regulator

See Figure 5-7.

1. Reconnect the tubing to the air inlet connector (1).
2. Reconnect the ground wire to the ground terminal (2).

See Figure 5-6.

3. Push the regulator into the enclosure so the front plate is flush.
4. Tighten the four screws (3).
5. Reconnect the air inlet connectors (1, 2).

Replacing the SCC Card

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

Removing the Old Card

See Figure 5-8.

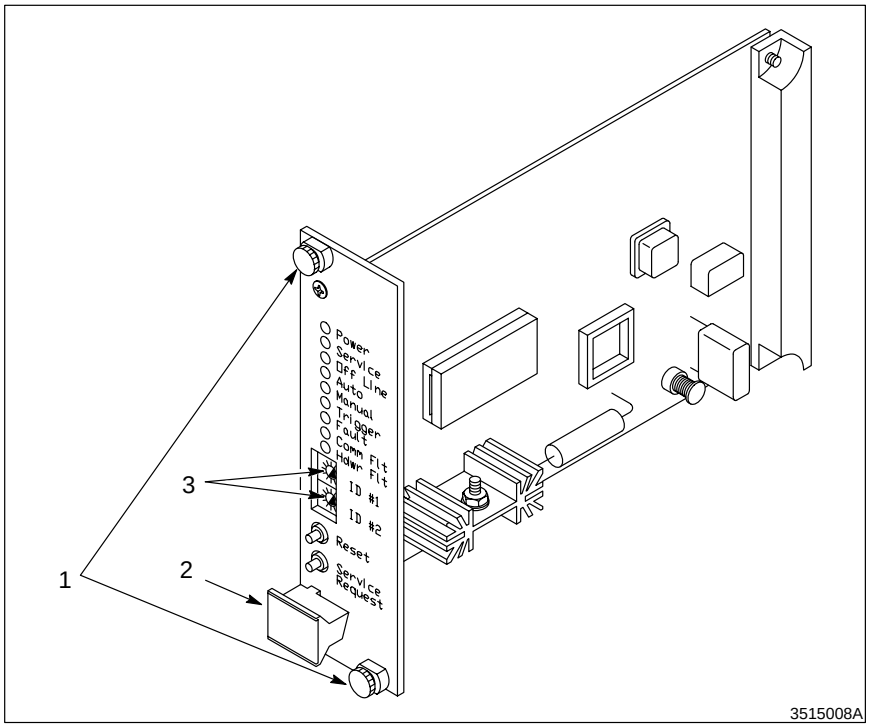


Fig. 5-8 Smart-Coat controller card

1. Screws
2. Ejector knob
3. Address switches

1. Disconnect the powder spray booth from line voltage and lock out electrical power.
2. Unscrew the two screws (1) holding the card to the enclosure.
3. Press the ejector knob (2) down to eject the card from the backplane connector. Slide out the card.

Installing a New Card

See Figure 5-8.

1. Set the address switches (3) on the new card to the same settings used on the old card.
2. Slide the card into the enclosure and press firmly to seat it in the backplane connector.
3. Tighten the screws (1).

8. Air Supply

WARNING: Only qualified, certified electricians should perform the repair procedures given in this section.

WARNING: The following measurements must be performed with the power on. Be sure to disconnect and lock out all power before correcting any electrical problems found.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

Follow the procedure in this section to restore air to the SCC.

1. Relieve the air pressure between the booth air supply and the main air inlet (Figure 3-2, (1)) on the SCC.
2. See Figure 5-9. Open the back panel of the SCC. Check the air filter (1). If it is dirty or blocked, replace it.
3. Turn on the main air supply and regulate it to a pressure greater than 90 psi (6.2 bar).

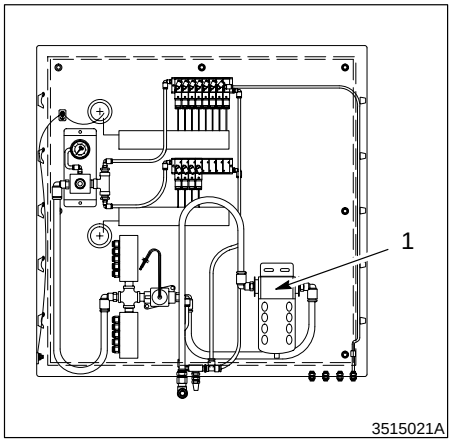


Fig. 5-9 Inside back panel of the SCC

1. Air filter

8. Air Supply (contd.)

See Figure 5-10.

4. If the air supply is still low or absent, check the wiring between the 30-VDC power supply and the main air solenoid valve (1).

   a. Open the front panel of the SCC.

   b. Measure the voltage between terminals 38 and 41 of the large terminal block (Figure 5-3, (2)).

5. If the voltage is less than 22 VDC, check the 30-VDC power. Follow the procedure, *Power-30 VDC*, in this section.

WARNING: Disconnect, lock out, and tag electrical power at a disconnect or breaker in the service line ahead of electrical equipment before servicing.

6. If the voltage is at least 22 VDC, disconnect and lock out power to the SCC. Check the wiring between the large terminal block and the main air solenoid valve (1). Tighten any loose connections.

7. Turn on the SCC. If the air supply is still low or absent, replace the main air solenoid valve.

8. Air Supply *(contd.)*

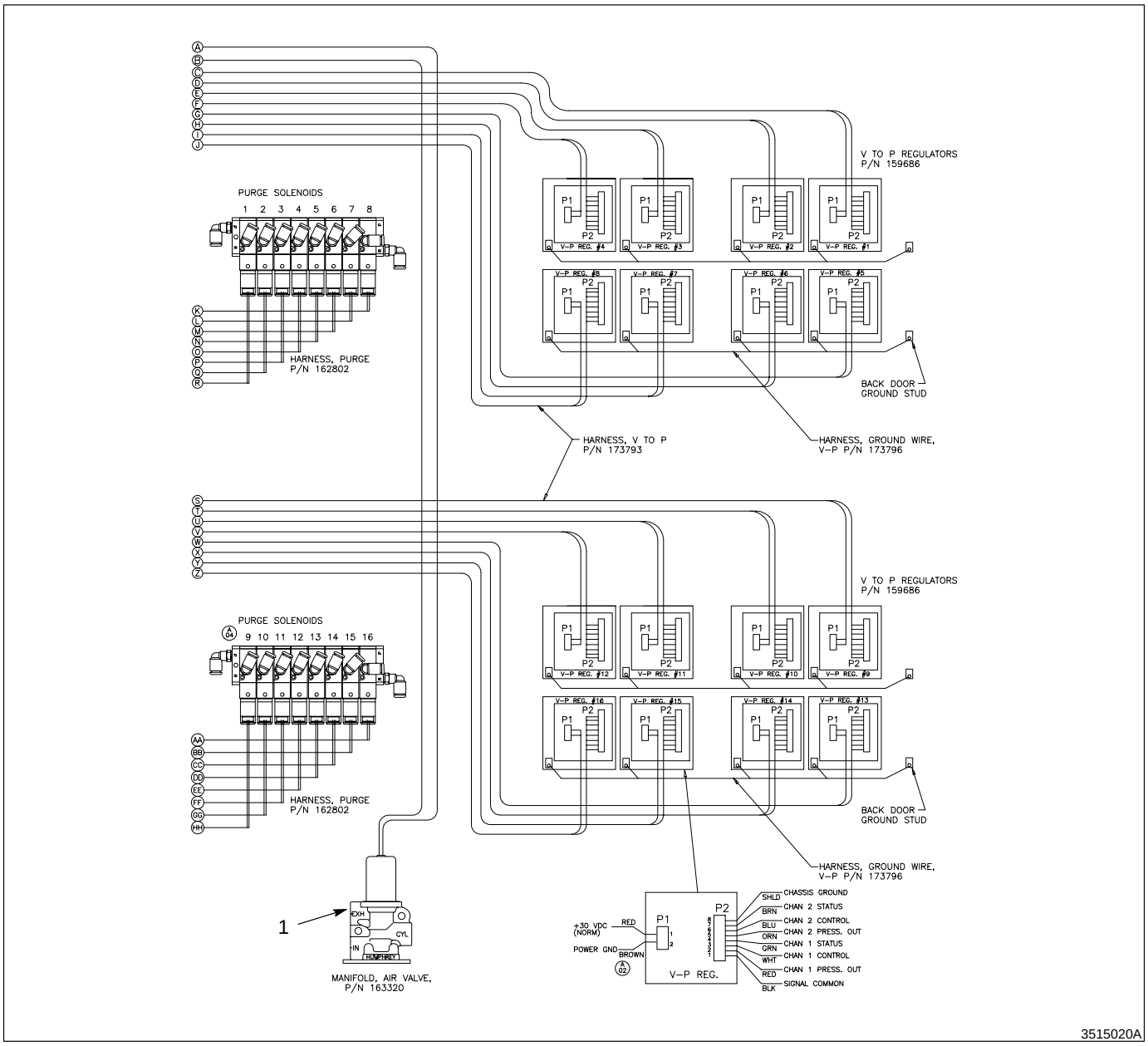


Fig. 5-10 SCC electrical schematic, part B

1. Main air solenoid valve

Section 6

Parts

Section 6
Parts

1. Introduction

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

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 six-digit 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.

Item	Part	Description	Quantity	Note
—	000 000	Assembly	1	
1	000 000	• Subassembly	2	A
2	000 000	• • Part	1	

- 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.

2. Smart-Coat Controller Parts List

See Figure 6-1.

Item	Part	Description	Quantity	Note
—	173 818	Smart-Coat controller, 8 gun	1	A
—	173 827	Smart-Coat controller, 16 gun	1	A
1	- - - - - -	• Enclosure	1	
—	187 044	• Kit, one-gun, add-on		B
2	113 626	• • Regulator, voltage-to-pressure	1	C
3	900 741	• • Tubing, polyurethane, 6-mm O.D. x 4-mm I.D., black	AR	
4	900 742	• • Tubing, polyurethane, 6-mm O.D. x 4-mm I.D., blue	AR	
5	163 321	• • Valve, solenoid, 24 VDC	1	
6	971 778	• • Union, bulkhead, 6-mm tubing	1	
7	972 126	• • Elbow, male, 6-mm x $^1/_8$-in. NPT	1	
8	983 450	• • Washer, 0.562 x 0.718 x 0.03 in.	1	
9	162 786	• • Controller card	1	C
10	139 041	• Socket, quick disconnect, $^1/_4$-in. tube	6	
11	900 600	• Tubing, nylon, 16-mm, black	3	
12	173 804	• Filter, air, $^1/_2$-in. port	1	
13	983 449	• Washer, flat, 0.784 x 0.935-in., nylon	1	
14	973 968	• Adapter, bulkhead, $^1/_4$-in. NPT	1	
15	972 615	• Muffler, filter, $^1/_4$-in. NPT	1	
16	900 740	• Tubing, polyurethane, 10-mm O.D. x 7-mm I.D.	AR	
17	972 620	• Connector, male	1	
18	973 128	• Elbow, pipe	1	
19	972 145	• Union, bulkhead, 16-mm tee x $^1/_2$-in. RPT	1	
20	983 448	• Washer, 1.031 x 1.218 in., nylon	1	
21	163 318	• Valve, air, 24-VDC	1	
22	173 803	• Regulator, air, 1-125 psi	1	
23	901 260	• Gage, air, 0-100 psi	1	
24	162 803	• Circuit breaker	1	
25	937 230	• Relay, DPDT, 10-A	1	
26	852 019	• Fan, muffin, 120-VAC	1	
27	173 807	• Power supply, 5, +12, –12 VDC	1	
28	173 806	• Power supply, 30-VDC	1	
NS	900 481	Adhesive, pipe thread	1	

NOTE A: Increment the part number by one for each gun between 8 and 16
B: One kit required per gun
C: Rebuilt exchange (RBX) parts available
AR: As Required
NS: Not Shown

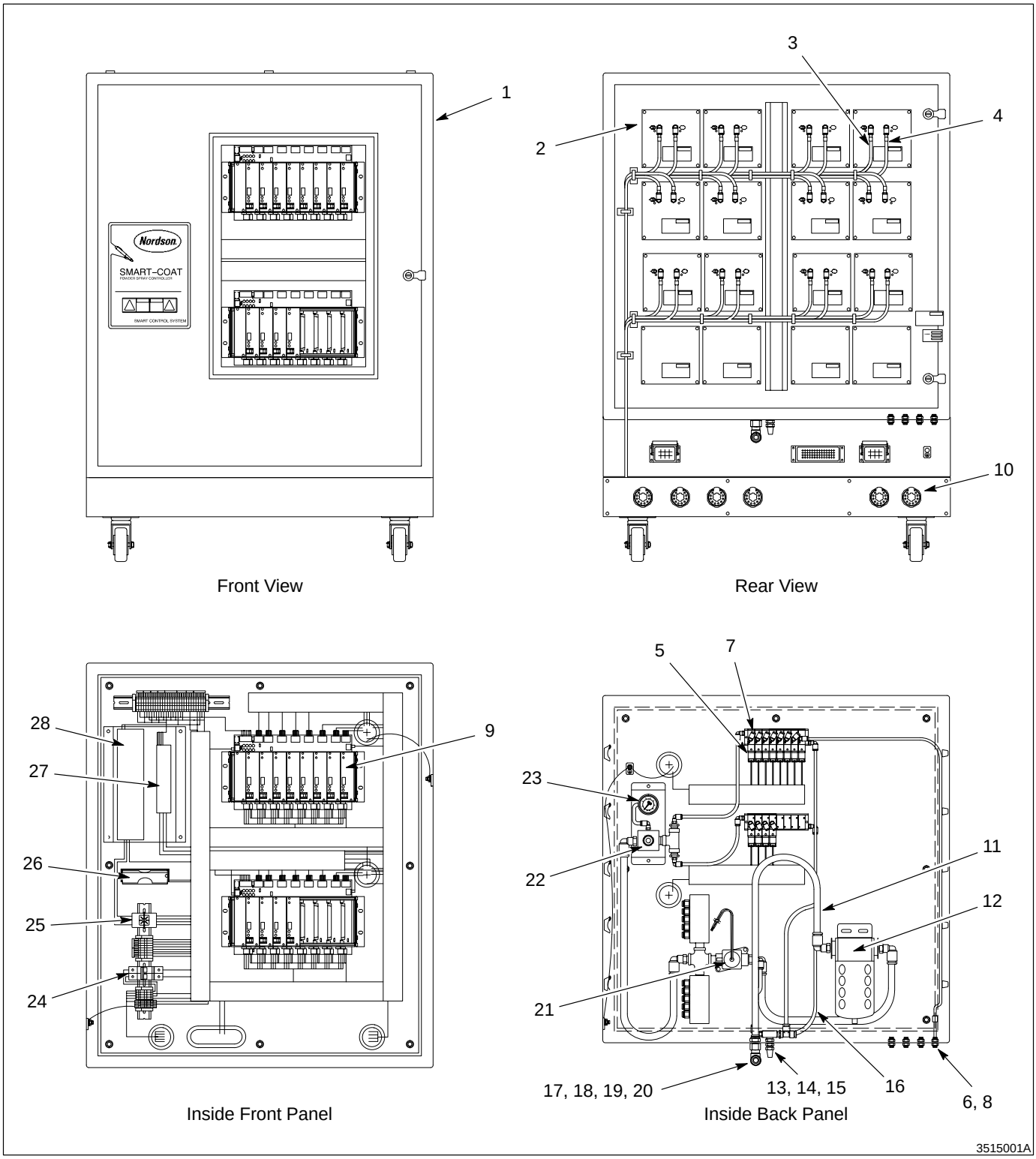


Fig. 6-1 Smart-Coat controller parts

Section 7

Specifications

Section 7
Specifications

1. Technical Data

Dimensions	See Figure 3-1.
Weight	Approximately 300 lb (136 kg)
Electrical Input	120 VAC, 50/60 Hz, single phase
Power Consumption	700 W
Air Pressure Input	Minimum: 90 psi (6.2 bar) Maximum: 105 psi (7.2 bar)
Air Quality	Air must be clean and dry. Use a regenerative desiccant or refrigerated air dryer to produce a 38 °F (3.4 °C) or lower dew point at 100 psi (6.9 bar), and a filter system with prefilters and coalescent type filters capable of removing oil, water, and submicron dirt.

2. Electrical Schematics

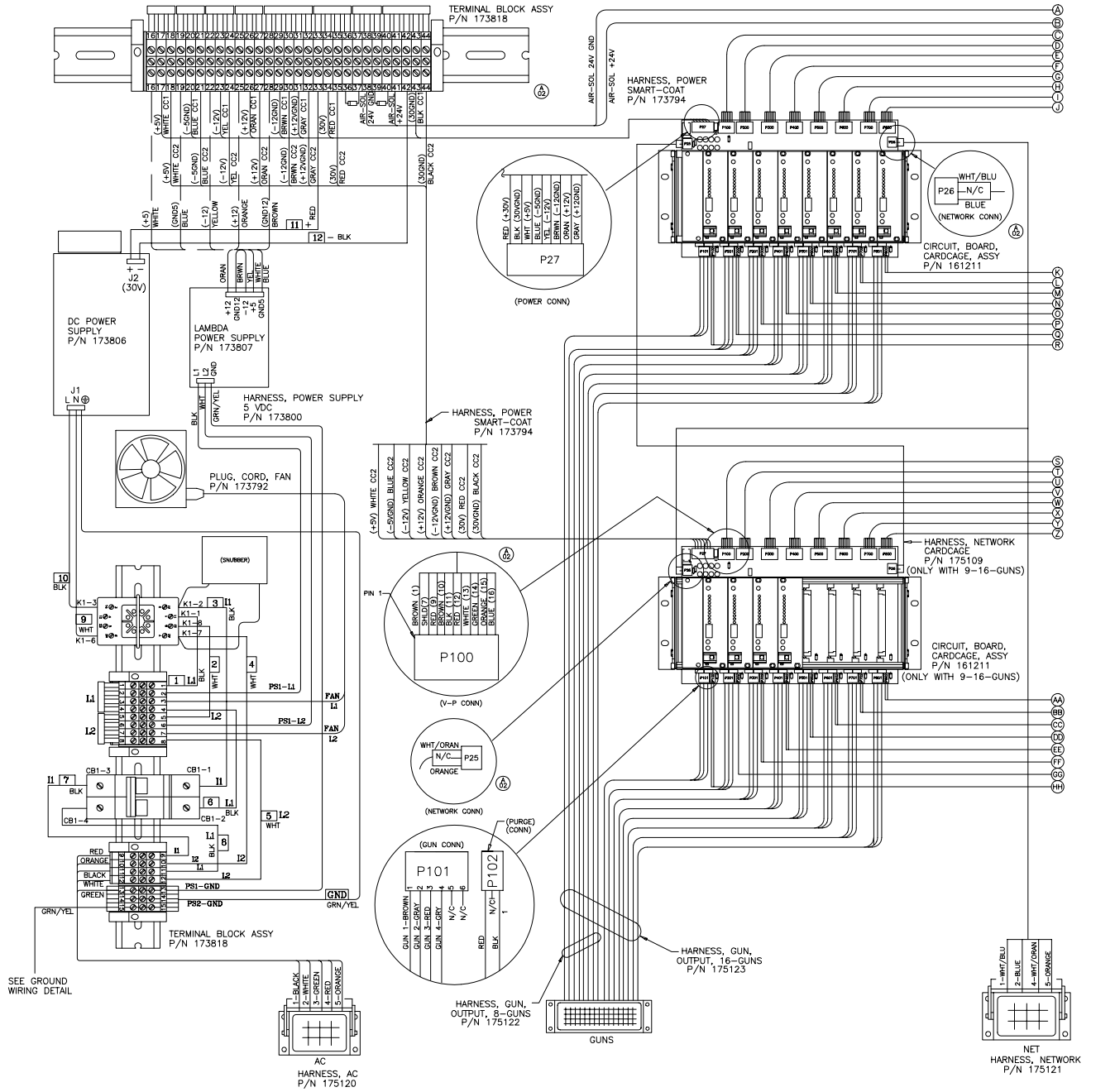
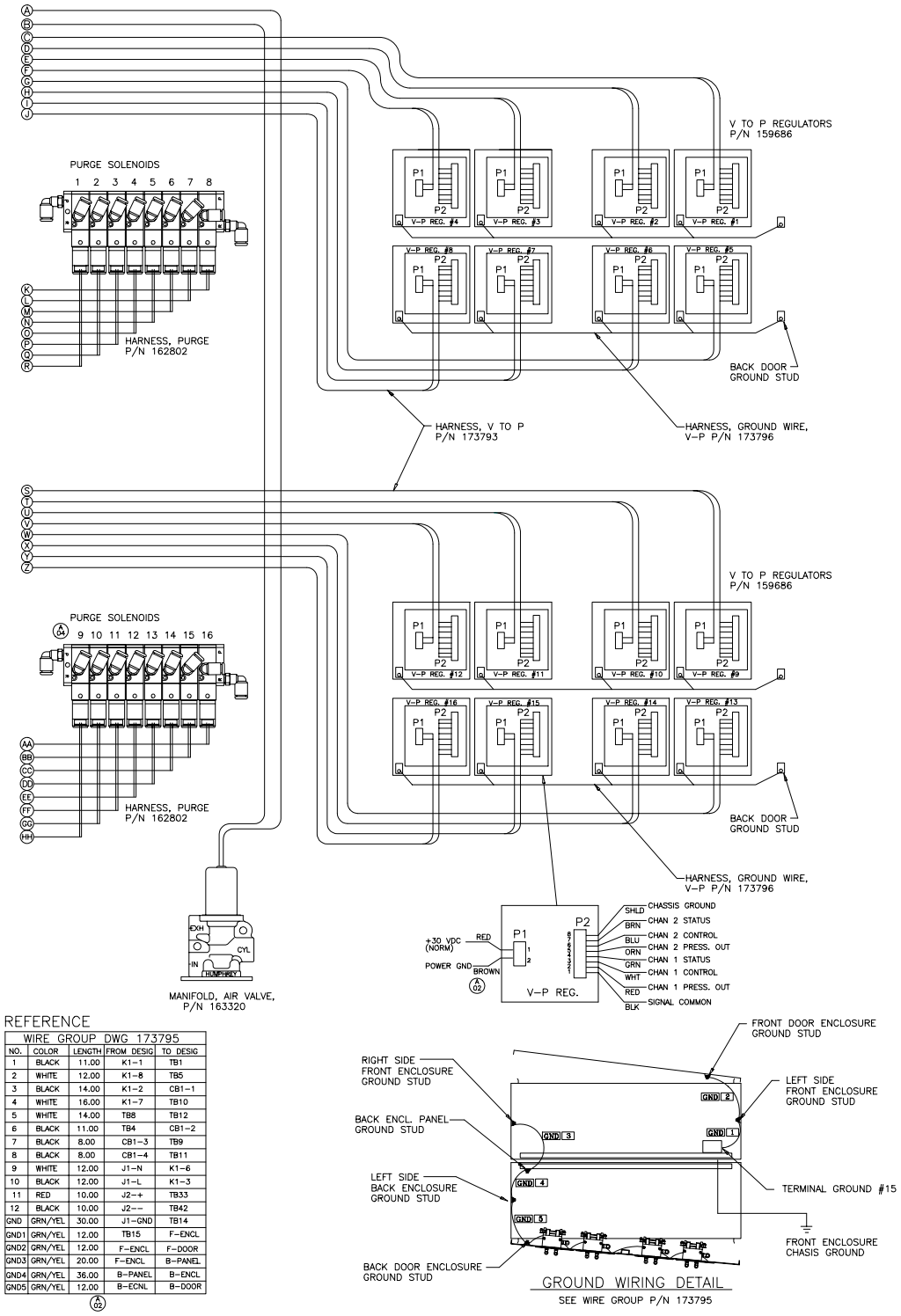


Fig. 7-1 SCC electrical schematic (1 of 2)



REFERENCE

WIRE GROUP DWG 173795

NO.	COLOR	LENGTH	FROM DESIG	TO DESIG
1	BLACK	11.00	K1-1	TB1
2	WHITE	12.00	K1-8	TB5
3	BLACK	14.00	K1-2	CB1-1
4	WHITE	16.00	K1-7	TB10
5	WHITE	14.00	TB8	TB12
6	BLACK	11.00	TB4	CB1-2
7	BLACK	8.00	CB1-3	TB9
8	BLACK	8.00	CB1-4	TB11
9	WHITE	12.00	J1-N	K1-6
10	BLACK	12.00	J1-L	K1-3
11	RED	10.00	J2-+	TB33
12	BLACK	10.00	J2--	TB42
GND	GRN/YEL	30.00	J1-GND	TB14
GND1	GRN/YEL	12.00	TB15	F-ENCL
GND2	GRN/YEL	12.00	F-ENCL	F-DOOR
GND3	GRN/YEL	20.00	F-ENCL	B-PANEL
GND4	GRN/YEL	36.00	B-PANEL	B-ENCL
GND5	GRN/YEL	12.00	B-ECNL	B-DOOR

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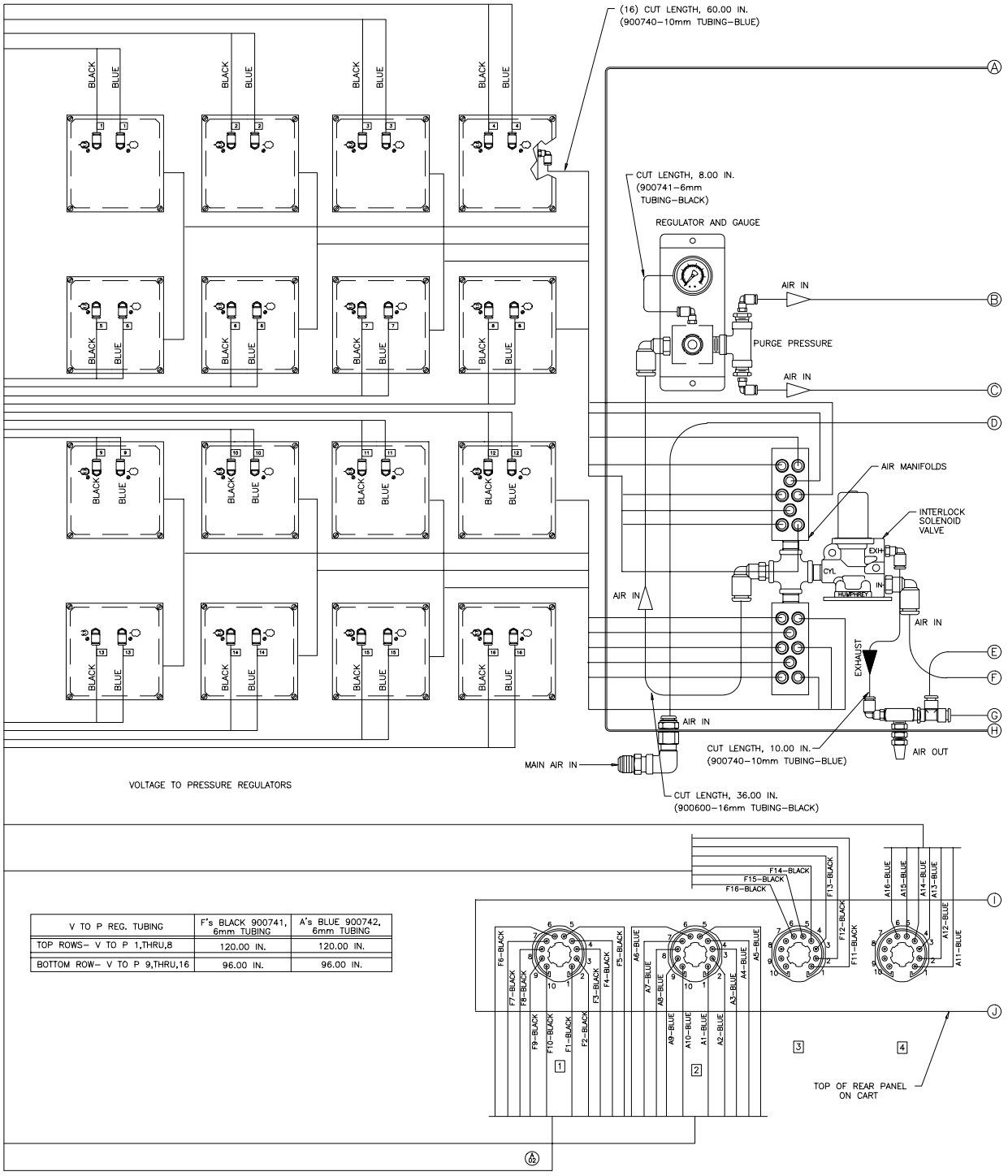
Fig. 7-2 SCC electrical schematic (2 of 2)

3. Pneumatic Schematics



V TO P REG. TUBING	F's BLACK 900741, 6mm TUBING	A's BLUE 900742, 6mm TUBING
TOP ROWS– V TO P 1,THRU,8	120.00 IN.	120.00 IN.
BOTTOM ROW– V TO P 9,THRU,16	96.00 IN.	96.00 IN.

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Fig. 7-3 SCC pneumatic schematic (1 of 2)

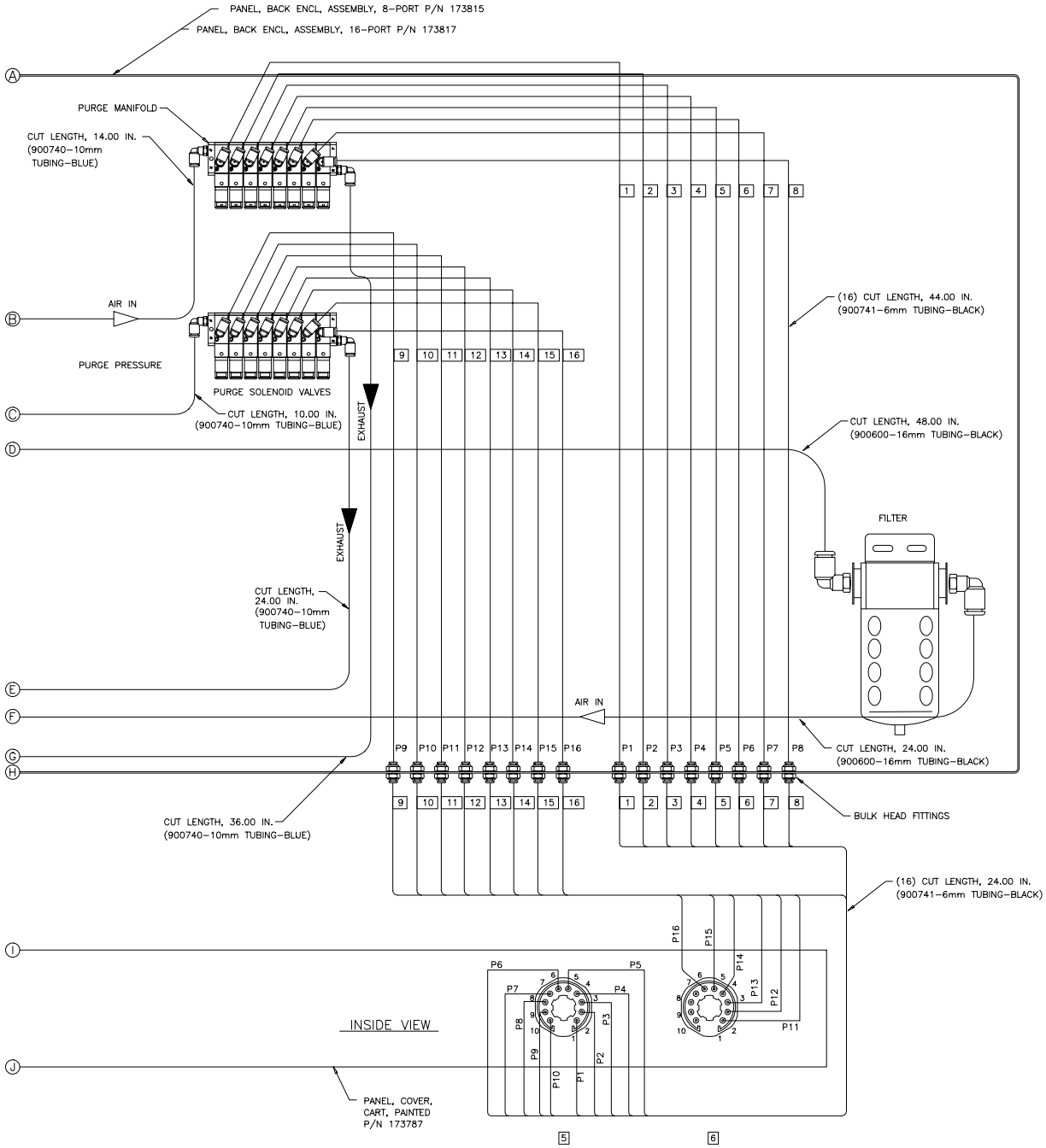

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Fig. 7-4 SCC pneumatic schematic (2 of 2)