Upgrading the
Sure Coat® Modular Gun Control System

⚠️ **WARNING:** Read the *Safety* section in the *Sure Coat Modular Gun Control System* manual before performing any of the following tasks.

Introduction

When your system was manufactured, the only parts built into it were those which support the options that you originally ordered. In order to add on to your existing system, you must make sure that you have all of the necessary components to support the new equipment.

• Refer to *Planning an Upgrade* for a description of the components that you need to order for your system.

• Refer to *Parts* for the part numbers for the components that you need to order for your system.

Planning an Upgrade

Adding Guns

NOTE: Sixteen is the maximum number of guns that can be controlled by the modular gun control system.

Table 1 Adding Guns to an Existing System

Number of Guns in Existing System	What You Have to Order
6	• Gun upgrade kit • Sliding side panel for the main pneumatic module • Air tubing (As Required)
8	• Gun upgrade kit • 9-12 gun rear cover • Air tubing (As Required)
10	• Gun upgrade kit • Air tubing (As Required)
12	• Gun upgrade kit • 13-16 gun rear cover • Air tubing (As Required)
14	• Gun upgrade kit • Air tubing (As Required)

Adding Options

NOTE: Depending on the options you already have, you may not have to order the items listed in the Other Necessary Components column. Refer to *System Configuration* at the beginning of the *Sure Coat Modular Gun Control System* manual to determine whether or not your system already has the necessary components before ordering additional options.

Table 2 Adding Optional Components to an Existing System

Component You are Adding	Other Necessary Components
Application controller	• Photo eye junction box • Photo eyes (appropriate quantity) • Encoder
Triggering controller	• Interface card (purge timer or discrete I/O) • Photo eye junction box • Photo eyes (appropriate quantity) • Encoder
Customer-supplied PLC	• Interface card • Photo eye junction box • Photo eyes (appropriate quantity) • Encoder

Adding Guns

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

Perform these procedures to add guns onto your system:

• *Pneumatic Module Enclosure Installation*

• *Rerouting the Air Tubing and Solenoid Cables*

• *Gun and Solenoid Receptacle Installation*

• *Gun Driver Card Installation and Connections*

• *New Solenoid Cable and Air Tubing Installation*

• *Central Controller Mapping*

Pneumatic Module Enclosure Installation

WARNING: Shut off and lock out electrical power before servicing. Failure to observe this warning could result in equipment damage, personal injury, or death.

WARNING: System or material pressurized. Relieve system pressure before servicing. Failure to observe this warning could result in equipment damage, personal injury, or death.
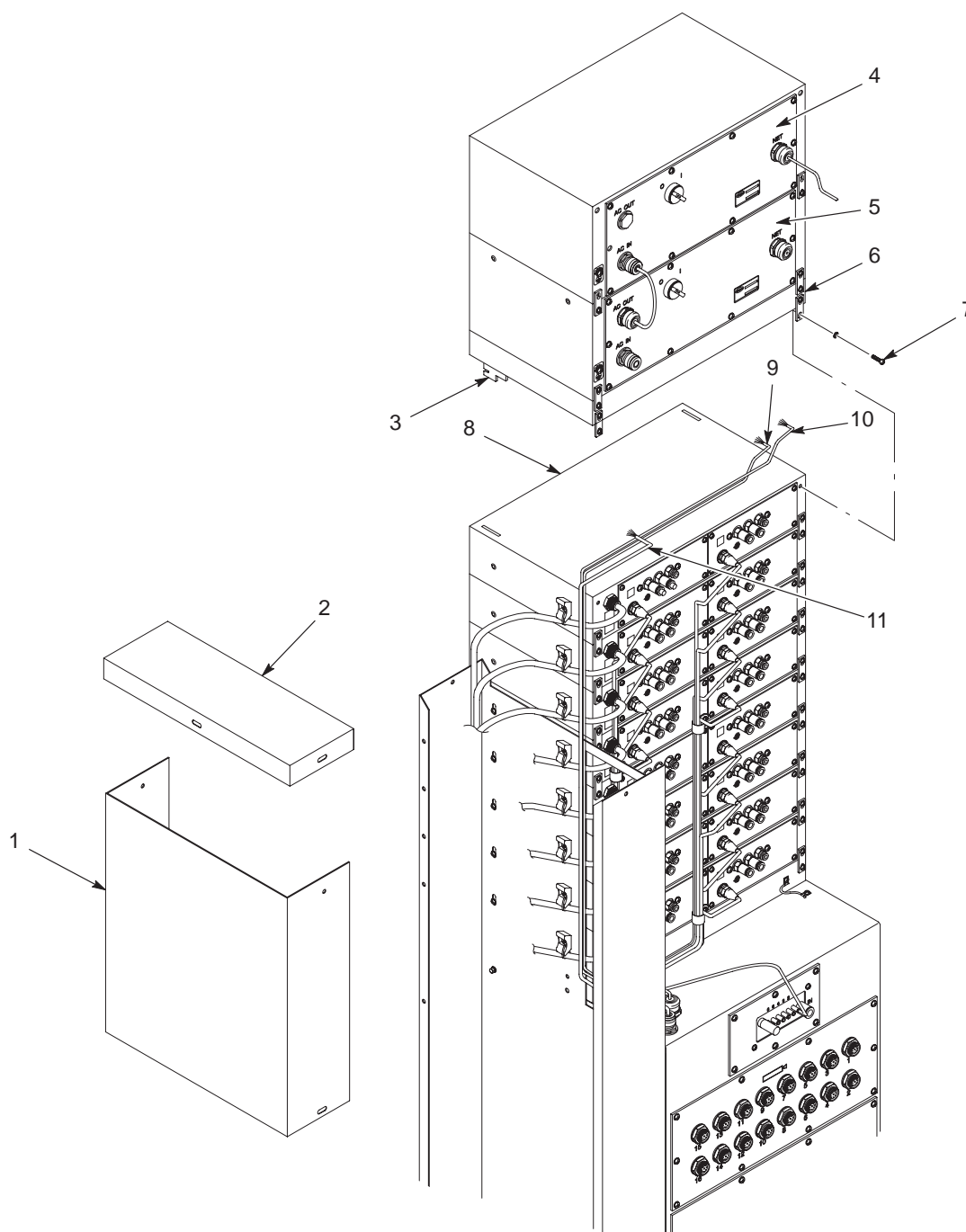
See Figure 1.

1. Remove the application controller (if applicable), central control unit, and spacer from the modular gun control system using the following steps:

    a. Remove the top (2) and sliding side covers (1), if applicable, from the main pneumatic section.

    b. Loosen the clips securing the AC IN cable (11) and NET interface cables (9, 10). Tag the cables to ease installation. Remove the cable straps that bundle the cables to allow more slack.

    c. Remove the application controller back panel (4) and disconnect the NET interface cable (10) from the application controller. Temporarily secure the back panel to the application controller using 2-4 screws.

    d. Remove the central control unit back panel (5) and disconnect the NET interface cable (9) and AC IN cable (11) from the central control unit. Temporarily secure the back panel to the central control unit using 2-4 screws.

    e. Remove the two lower screws (7) from the support brackets on the spacer (6).

WARNING: Heavy equipment. Get assistance before attempting to lift the spacer, central control unit, and application controller assembly.

    f. Slide the application controller (if applicable), central control unit, and spacer assembly back and lift it away from the top pneumatic module enclosure (8).

2. See Figure 2. Insert the support brackets (1) into the slots in the top of the existing pneumatic module (5). Push the new pneumatic module forward until the fronts of the modules are even with each other. Tightening the screws will help slide the new enclosure into place.

3. Secure the new pneumatic module using the supplied screws (4) and brackets (3).
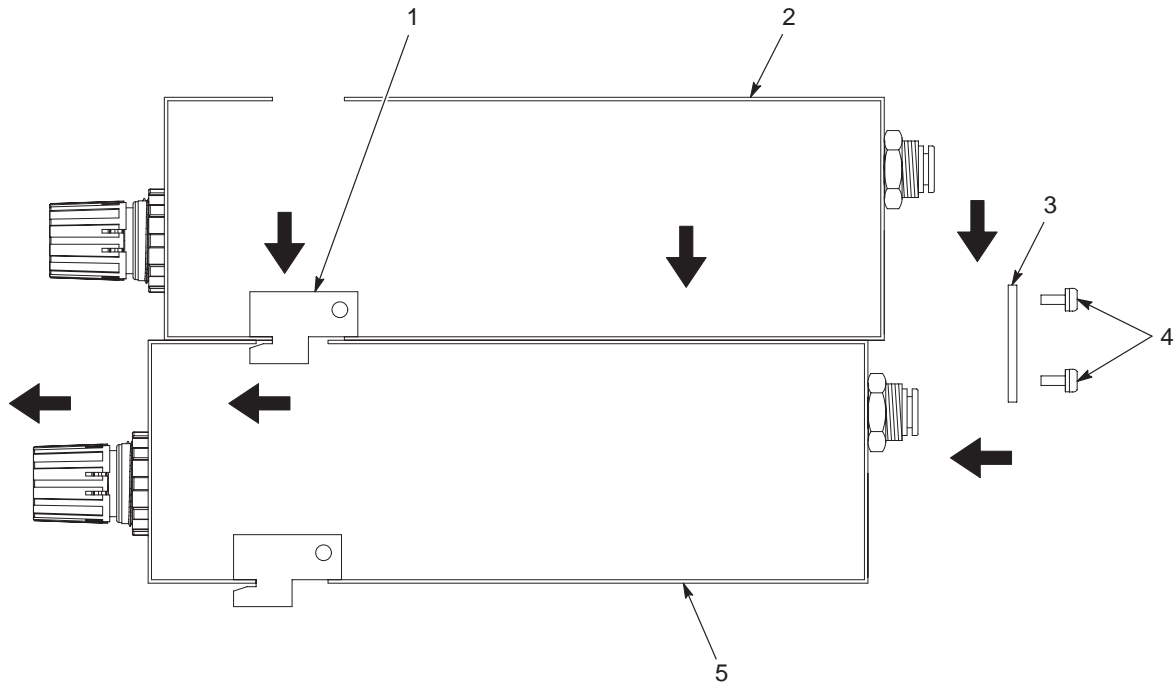
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Figure 1   Pneumatic Module Enclosure Installation

1. Sliding side cover
2. Top cover
3. Support bracket
4. Application controller back panel

5. Central controller back panel
6. Spacer
7. Screws
8. Top pneumatic module enclosure

9. Central controller NET interface cable
10. Application controller NET interface cable
11. AC IN cable

Note: Typical modular gun control system shown. Your system may appear slightly different.

Pneumatic Module Enclosure Installation *(contd)*

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Figure 2   Securing the New Pneumatic Module Enclosure

1. Support bracket
2. New pneumatic module enclosure
3. Bracket
4. Screws
5. Existing pneumatic module enclosure

4. Install the application controller (if applicable), central control unit, and spacer onto the modular gun control system using the following steps:

   a. See Figure 1. Align the spacer's slotted support brackets (3) with the slots in the top of the top pneumatic module enclosure (8). Set the application controller, central control unit, and spacer assembly onto the top pneumatic module. Slide the assembly forward to lock the slotted support brackets in place. Secure the assembly to the pneumatic module using the two screws (7).

   b. Remove the central control unit rear panel (5) and connect the AC IN (11) and NET interface (9) cables to the central control unit. Refer to the *Troubleshooting* section in Part A of the *Sure Coat Modular Gun Control System* manual for a wiring diagram of the central control unit. Install the central control unit rear panel and cable clips.

   c. Remove the application controller rear panel (4) and connect the NET interface cable (10) to the application controller. Refer to the *Troubleshooting* section in Part G: *Application Controller* of the *Sure Coat Modular Gun Control System* manual for a wiring diagram of the application controller. Install the application controller rear panel and cable clips.

5. Install the top (2) and sliding covers (1), if applicable, onto the main pneumatic section.

Rerouting the Air Tubing and Solenoid Cables

Use the following procedure to reroute the air tubing and solenoid cables after you have added new pneumatic modules to your system.

1. If the solenoid cables and the supply, flow rate, atomizing, and gun air tubing on the back of the pneumatic modules are not already numbered, tag them all now. Label the cables and tubing with the number that corresponds to their current module.

2. Starting with the backs of the pneumatic modules, use the supplied number labels to renumber the pneumatic modules. Label the top right module number 1, then place the numbered labels over the existing labels on the system to recreate your system's original numbering pattern.

NOTE: The default numbering pattern is shown in Tables 3 and 4. If you numbered your system differently, record the pattern and duplicate it.

Table 3 Back Panel Numbering Pattern

9	1
10	2
11	3
12	4
13	5
14	6
15	7
16	8

3. Refer to Table 4. Renumber the fronts of the pneumatic modules. Label the top left module number 1, then place the numbered labels over the existing labels on the system to recreate your system's original numbering pattern.

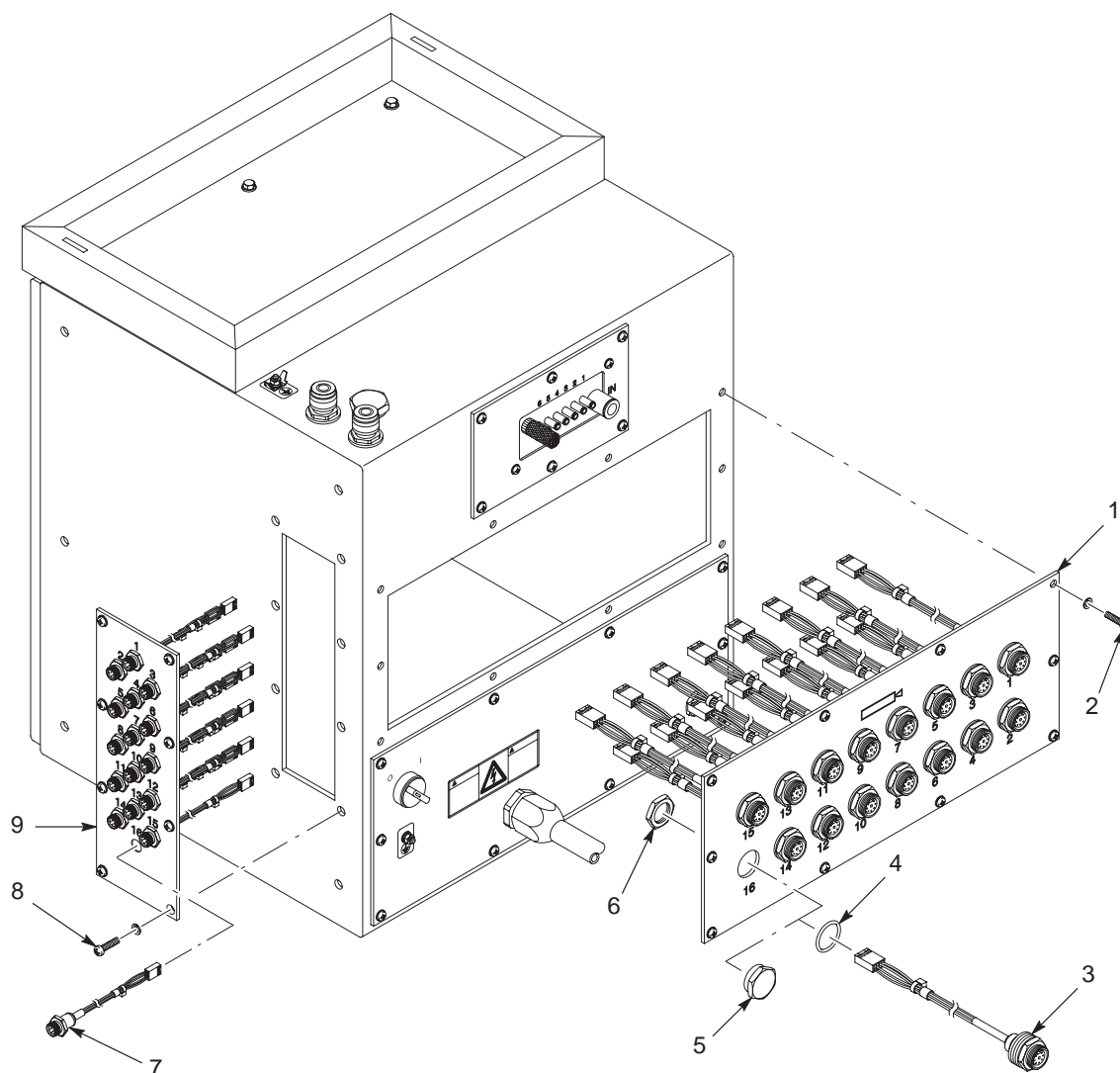Table 4 Front Panel Numbering Pattern

1	9
2	10
3	11
4	12
5	13
6	14
7	15
8	16

4. On the back of the system, remove the solenoid cable and air tubing that are tagged 1 and move them to their corresponding connections on the pneumatic module labeled 1.

5. Repeat step 4 for each set of air tubing and cables.

Gun and Solenoid Receptacle Installation

See Figure 3.

Step	Task	Procedure
1	Preparation	a. Remove the side cover from the main pneumatic section. b. If the cables on the gun receptacle panel (1) are not already numbered, tag them now. c. Disconnect the gun and solenoid cables from their receptacles.
2	Solenoid Receptacle	a. Remove the eight screws (8) securing the solenoid receptacle panel (9) to the main control cabinet. Carefully remove the solenoid receptacle panel. b. Remove the plugs from the next two available spaces in the solenoid receptacle panel. c. Install the new solenoid receptacles (7) into the solenoid receptacle panel. d. Secure the solenoid receptacle panel to the main control cabinet using the eight screws.
3	Gun Receptacle	a. Remove the ten screws (2) securing the gun receptacle panel (1) to the main control cabinet. Carefully remove the gun receptacle panel. b. Remove the plugs (5) and lock nuts (6) for the next two available spaces in the gun receptacle panel. c. Install the new gun receptacles (3) and conduit seals (4) into the gun receptacle panel. Secure the receptacles using the lock nuts you removed in step 3b.

4	Final Steps	a. Tag the new gun and solenoid receptacle wires and route them through one of the rubber grommets in the main control cabinet subpanel.
		
		   • Guns 1-8: Route the wires through the right grommet
		   • Guns 9-16: Route the wires through the left grommet
		
		NOTE: Make sure that the ground wire is securely attached to the gun receptacle panel before installing the panel into the main control cabinet.
		
		b. Secure the gun receptacle panel (1) to the main control cabinet using the ten screws (2).
		
		c. Connect the gun cables to the appropriate gun receptacles.
		
		d. Connect the solenoid cables to the appropriate solenoid receptacles.
		
		e. Connect the solenoid and gun receptacle wires to the appropriate gun driver card. Refer to *Gun Driver Card Installation and Connections.*

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Figure 3   Gun and Solenoid Receptacle Installation

1. Gun receptacle panel
2. Screws
3. Gun receptacle

4. Conduit seal
5. Plug
6. Lock nut

7. Solenoid receptacle
8. Screws
9. Solenoid receptacle panel

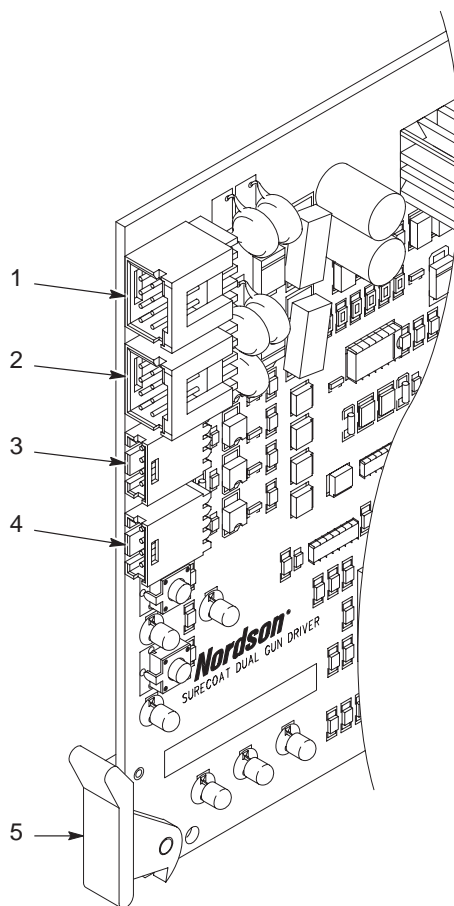## Gun Driver Card Installation and Connections

⚠ **WARNING:** This unit contains electrostatic sensitive devices (ESD). To prevent damage to ESD parts, wear a grounding wrist strap.

1. Carefully remove the gun driver card from its packaging, handling the gun driver card by its edges.

2. See Figure 4. Pull down the locking tab (5) on the gun driver card.

3. Orient the gun driver card as shown in Figure 4, and slide it into the next available card slot from the left of the rack. Push the card in until the front edge is even with the front edges of the rest of the cards in the rack.

4. Push up the locking tab to lock the card into place.

5. Refer to Table 5. Install the solenoid and gun receptacle wire connectors into the appropriate connections on the gun driver card.

Table 5 Gun Driver Card Connections

Item	Connection
1	Gun cables 2, 4, 6, 8, 10, 12, 14, 16
2	Gun cables 1, 3, 5, 7, 9, 11, 13, 15
3	Solenoid cables 2, 4, 6, 8, 10, 12, 14, 16
4	Solenoid cables 1, 3, 5, 7, 9, 11, 13, 15

6. Restore power to the modular gun control system.

7. Refer to *Central Controller Mapping* for information about how to program the new central control unit to recognize the new gun driver card.

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Figure 4   Gun Driver Card Installation and Connections

1. Even gun cable connector
2. Odd gun cable connector
3. Even solenoid cable connector

4. Odd solenoid cable connector
5. Locking tab

New Solenoid Cable and Air Tubing Installation

Solenoid Cable Installation

See Figure 5.

1. Label the new solenoid cables (7) with the two new highest numbers.

2. Plug the solenoid cable into the pneumatic module (6).

3. Route the solenoid cable along the existing solenoid cables, down into the main pneumatic section (3).

4. Loosen the screws securing the cable clamps (8) to the pneumatic modules. Place the new solenoid cable into the cable clamps and tighten the clamps.

   NOTE: Extra cable clamps are included in the gun upgrade kits. Install these cable clamps to the pneumatic modules as desired to keep the solenoid cables in order.

5. Plug the loose end of the solenoid cable into the empty connector on the solenoid receptacle panel (1). Bundle the remaining cable in with the existing solenoid cables.
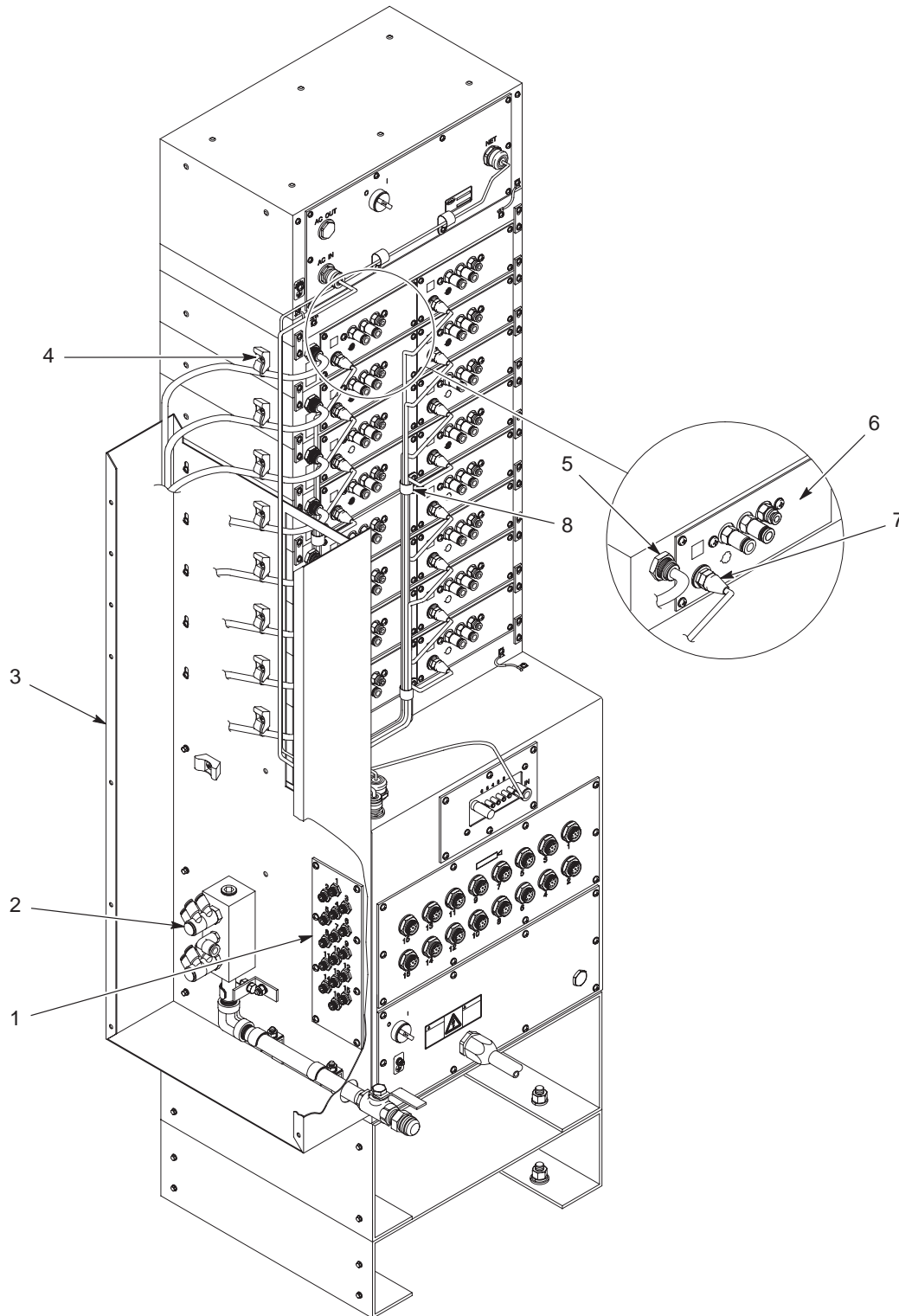
Supply Air Tubing Installation

See Figure 5.

1. Install the cable strap mount (4) to the new pneumatic module using the supplied screw and washers.

2. Connect one end of the 10-mm supply air tubing to the bulkhead fitting (5).

3. Route the 10-mm air tubing into the main pneumatic section (3). Use a cable strap to secure the 10-mm air tubing to the cable strap mount.

4. Remove a plug from the four-way supply air fitting (2).

5. Cut the 10-mm air tubing to the appropriate length and connect the loose end to the four-way supply air fitting.

6. Bundle the remaining supply air tubing in with the other 10-mm supply air tubing.

Flow Rate, Atomizing, and Gun Air Tubing Installation

Refer to *Pneumatic Connections* in the *Installation* section in Part A of the *Sure Coat Modular Gun Control System* manual for guidelines for connecting the flow rate, atomizing, and gun air tubing.

Purge Air Tubing Installation

To connect purge air tubing between the new guns and the gun purge module, refer to the *Installation* section in Part D: *Gun Purge Module* of the *Sure Coat Modular Gun Control System* manual.

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Figure 5   New Solenoid Cable and Air Tubing Installation

1. Solenoid receptacle panel
2. Four-way supply air fitting
3. Main pneumatic section
4. Cable strap mount
5. Bulkhead fitting
6. Pneumatic module
7. Solenoid cable
8. Cable clamps

Central Controller Mapping

Each gun driver card is factory configured to control two guns. In systems that have an odd number of guns, the last gun driver card in the rack must be programmed to ignore its second channel.
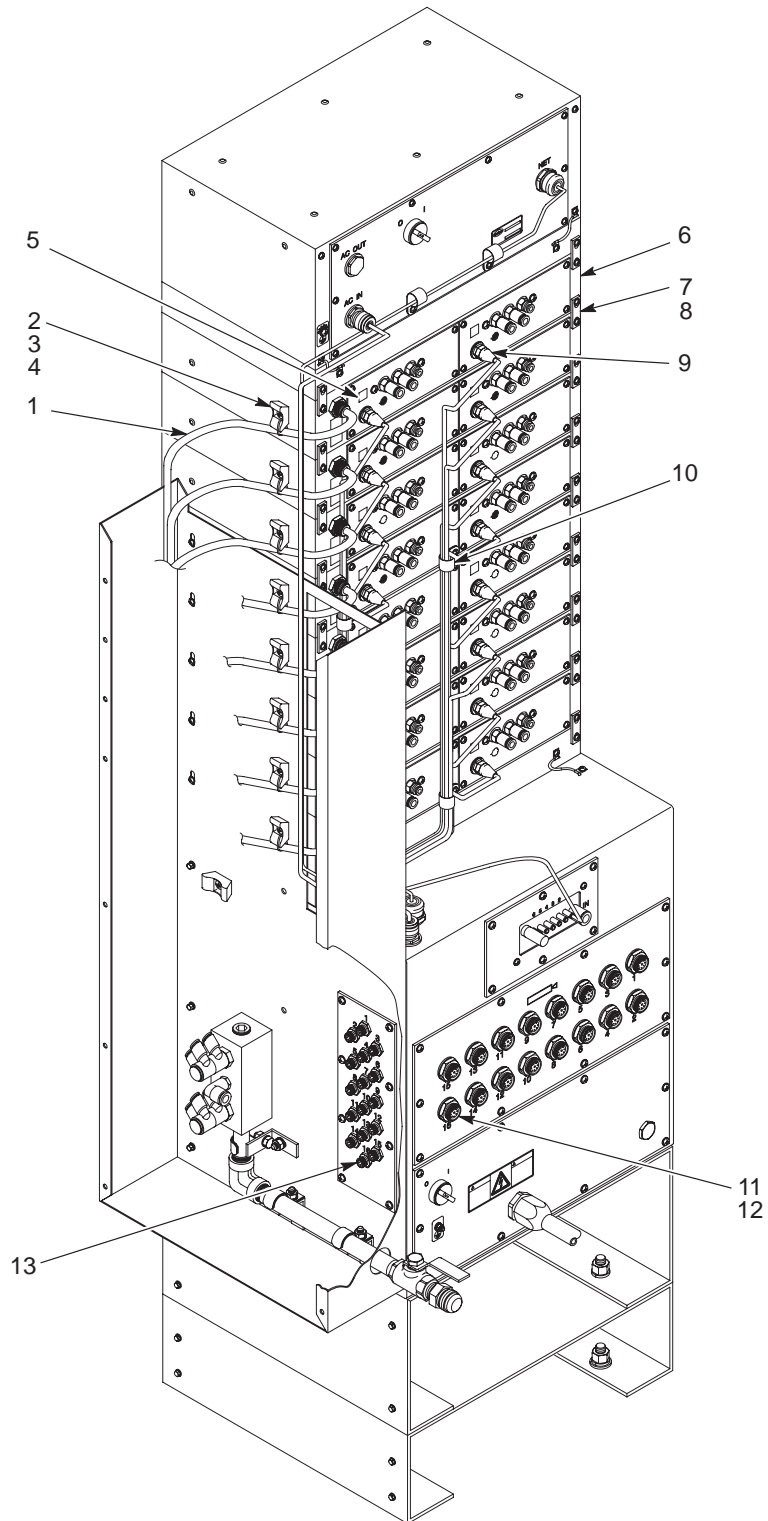
Refer to G*un Mapping* in the *Configuration* section in Part A of the *Sure Coat Modular Gun Control System* manual for instructions for setting the central control unit to recognize and ignore channels on the gun driver cards.

Parts

Gun Upgrade Kits

See Figure 6.

Item	Part	Description	Quantity	Note
—	303142	STANDARD UPGRADE KIT, double	1	
—	303144	F1/F2 UPGRADE KIT, double	1	
1	900740	• TUBING, polyurethane, 10/6.5-7 mm	6 ft	
2	129538	• MOUNT, cable strap	1	
3	983408	• WASHER, flat, M, narrow, M5, steel, zinc	1	
4	982320	• SCREW, pan head, recessed, M5 x 16, black	1	
5	334818	• LABELS, numbers, repeat, 1-16	2	
6	303136	• STANDARD MODULE, pneumatic, double	1	A
6	303138	• F1/F2 MODULE, pneumatic, double		A
7	303098	• BRACKET, support, number 1	2	
8	334799	• SCREW, pan, recessed, M5 x 10, with integral lock washer	4	
9	334774	• CABLE, 4 connector, solenoid interface, 5 ft	2	
10	- - - - - -	• CLAMP, cable, 0.500-in. dia	2	
11	334782	• RECEPTACLE, 8 position, gun	2	
12	939122	• SEAL, conduit fitting, $^1/_2$ in.	2	
13	334773	• RECEPTACLE, 4 position, solenoid	2	
NS	939004	• STRAP, cable, 0.06-1.75 in., natural	12	
NS	939171	• STRAP, cable, 18-4.00 in., natural	4	
NS	341632	• PCA, Sure Coat dual gun driver, packaged	1	
NS	326139	• PLUG, 4-mm tubing	2	

NOTE A: Refer to the *Parts* section of *Part B: Pneumatic Modules* in the *Sure Coat Modular Gun Control System* manual for the parts contained in this assembly.

AR: As Required

NS: Not Shown

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Figure 6   Gun Upgrade Kits

Sheet Metal Cover Kits
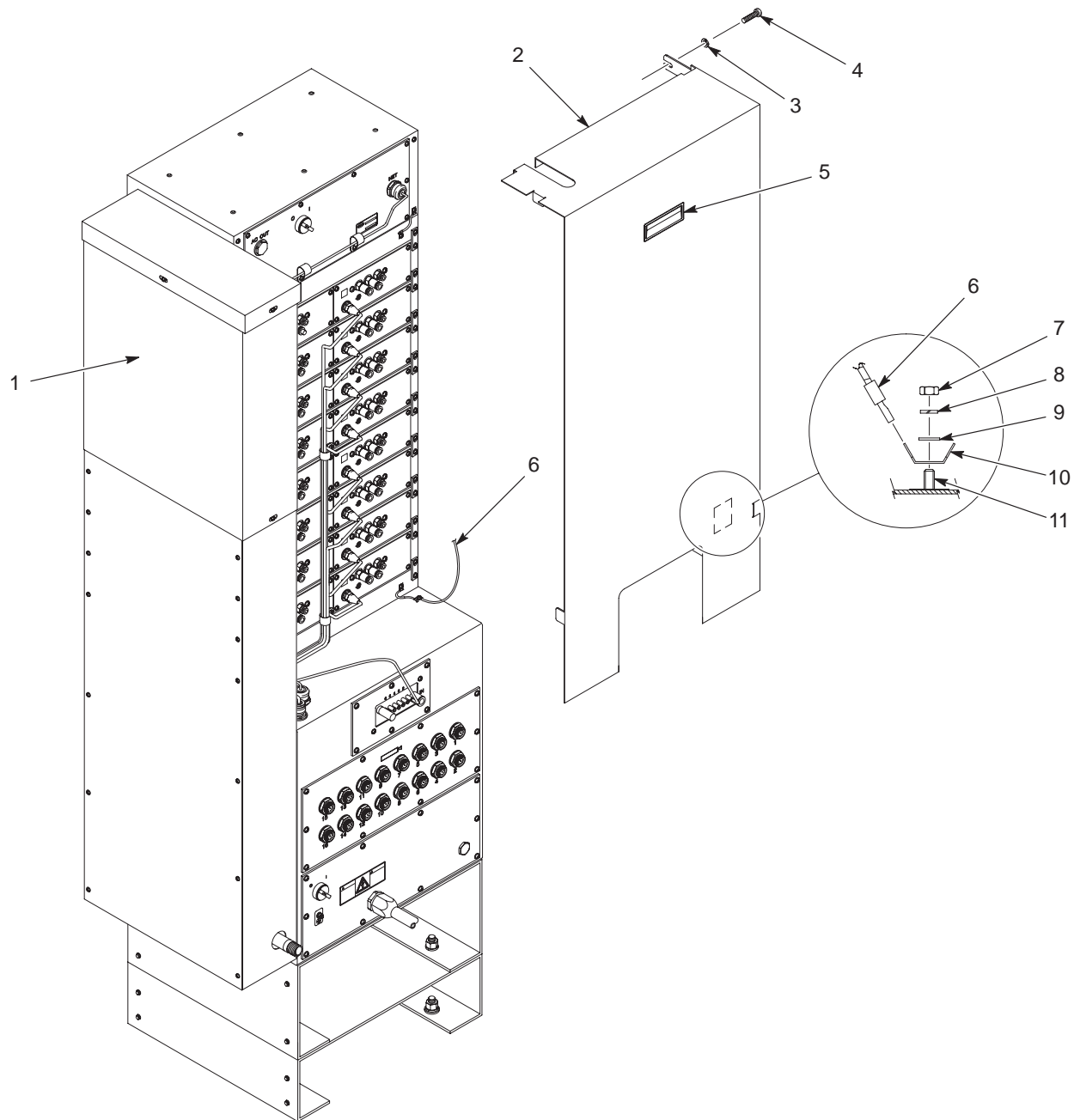
Main Pneumatic Section Sliding Cover

See Figure 7.

NOTE: Order this kit when you upgrade your system from 6 guns or less to 8 guns or more.

Item	Part	Description	Quantity	Note
1	341643	KIT, upgrade, 6-7 gun, cover, dress-out, sliding	1	

Rear Covers

See Figure 7.

Item	Part	Description	Quantity	Note
—	1007108	6-8 GUN REAR COVER, 3 sided, packaged	1	
—	1007112	9-12 GUN REAR COVER, 3 sided, packaged	1	
—	1007116	13-16 GUN REAR COVER, 3 sided, packaged	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	

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Figure 7   Sheet Metal Cover Kits

Note: The rear cover ground wire must be attached controller cabinet and rear cover ground lug.

Interface Cards

Part	Description	Note
341629	PURGE TIMER interface card	
341627	DISCRETE I/O interface card	
341626	UCS DEVICENET interface card	
341628	UCS PROFIBUS interface card	

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	APPLICATION CONTROLLER, module, UCS DeviceNet	A
1014977	TRIGGERING CONTROLLER, module	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.		

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