Encore® LT Automatic Powder Spray Controllers

Customer Product Manual
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– English –
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Change Record

Revision	Date	Change
01	10/13	Replaces 1107712
02	03/20	Approval changes.
03	08/21	Changed factory default settings.
04	12/21	Corrected conveyor interlock schematic.
05	05/22	Added UKCA Compliance.
06	10/24	Updated manufacturer’s address.

Section 1
Safety

Introduction

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

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

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when 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.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

Grounding inside and around the booth openings must comply with NFPA requirements for Class II, Division 1 or 2 Hazardous Locations. Refer to NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

Disposal

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

Section 2
Description

Introduction

See Figure 2-1. This manual covers all versions of the Encore LT Automatic Powder Spray Controllers:

- Single Gun Controller
- Dual Gun Controller
- Multi-Gun Controller
- Multi-Gun Controller with Axis Controller

The Dual Gun Controller controls two Encore Automatic Powder Spray Guns. An optional wall mounting kit that accommodates one or two gun controllers is available for the Dual Gun Controller.

The Multi-Gun Controller can control from 4 to 8 automatic guns. Optional Encore Axis Controllers can be installed in a multi-gun controller enclosure, or as a standalone unit. The Axis controllers control the operation of in/out positioners and reciprocators. Axis controllers are covered in manual 1600005.

NOTE: Multi-Gun Controllers with Axis Controllers and standalone Axis Controllers must be installed in a non-hazardous area.

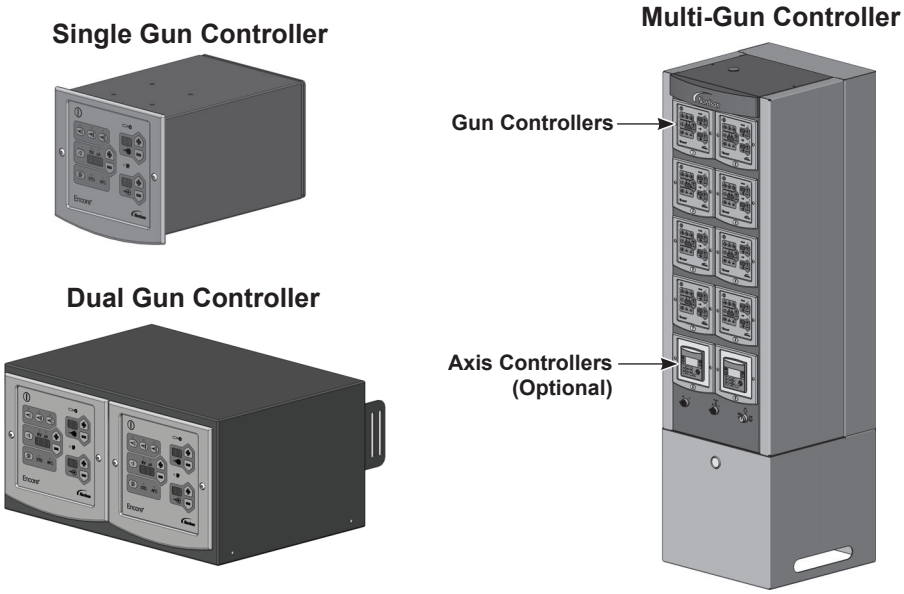


Figure 2-1 Encore LT Automatic Controllers

Controller Components

All automatic controllers have the following components:

- Gun controllers
- Rear panels with power supply and manifold(s)

Multi-gun controllers also include a I/O board, power distribution terminal blocks, air distribution manifold and pressure gauge, interlock keyswitch, trigger all switch, and power switch.

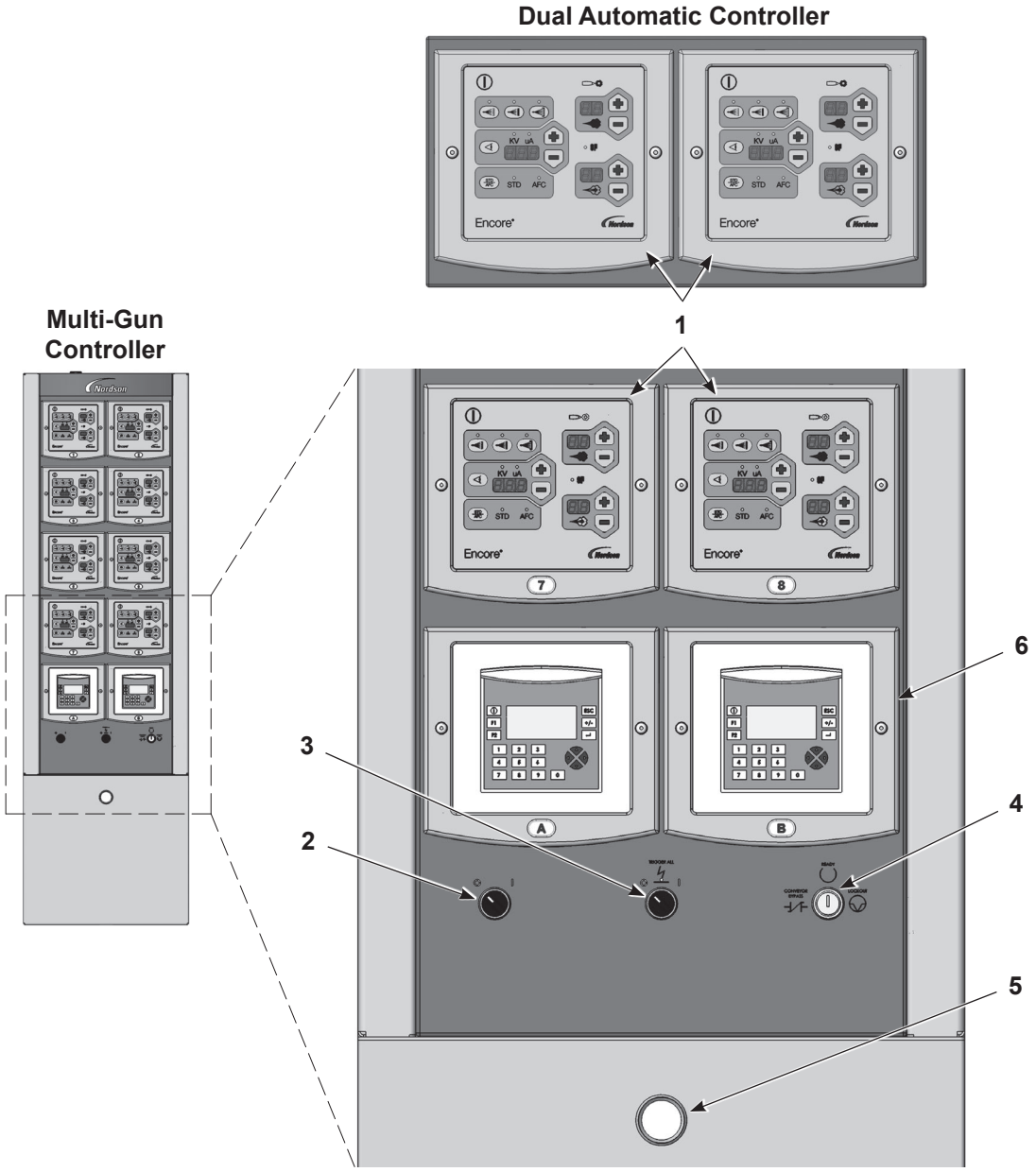


Figure 2-2 Encore LT Automatic Controllers

1. Gun controllers
2. Power switch (multi-gun only)
3. Trigger All switch (multi-gun only)
4. Keyswitch (multi-gun only)
5. Air supply pressure gauge (multi-gun only)
6. Axis controllers (optional)

Triggering

Single/Dual Gun Controller

Each gun controlled by a single or dual gun controller can be locally triggered with the Enable/Disable buttons on the gun controller keypads, or remotely triggered by a PLC or other switching device.

Multi-Gun Controller

Multi-gun controllers are normally triggered remotely by a PLC or other switching device. The Trigger All switch on the front panel triggers all guns manually.

Interlock Keyswitch

The Interlock keyswitch (multi-gun controller only) has three positions:

Ready: Normal operation. Guns can be triggered, as long as the conveyor is running. This prevents powder waste and hazardous operating situations.

Bypass: Allows you to trigger the guns on and off without running the conveyor. Use the Bypass position to set up and test spray gun settings.

Lockout: Guns cannot be triggered. If Axis Controllers are installed in the multi-gun controller, the in/out positioners and oscillators or reciprocators cannot be moved. Use this position when working inside the booth.

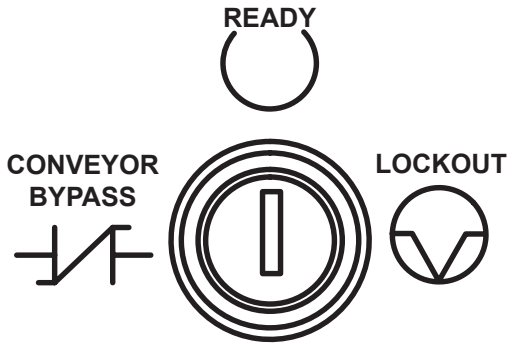


Figure 2-3 Interlock Keyswitch

Specifications

Model	Input Rating	Output Rating
ENCORE Applicator	+/− 19 Vac, 1 A	100 kV, 100 µA
Single Gun Controller	100−250 Vac, 50/60 Hz,1 phase 2.5 A, 100 VA max	N/A
Dual Gun Controller	100−250 Vac, 50/60 Hz,1 phase 2.5 A, 125 VA max	N/A
Multi-Gun Controller	100−250 Vac, 50/60 Hz,1 phase 6.3 A, 275 VA max	N/A

- Input Air: 4.0−7.6 bar (58−110 psi), <5 µ particulates, dew point <10 °C (50 °F)
- Max Relative Humidity: 95% non-Condensing
- Ambient Temperature Rating (Encore System): +15 to +40 °C (59−104 °F)
- Hazardous Location Rating for Applicator: Zone 21 or Class II, Division 1
- Hazardous Location Rating for Controllers (without Axis Controllers): Zone 22 or Class II, Division 2
- Dust Ingress Protection: IP6X

Special Conditions for Safe Use

To meet requirements for the European Union and the United Kingdom:

- The Encore LT Controllers shall be used over the ambient temperature range of +15 °C to +40 °C (59−104 °F) with the Encore Powder Electrostatic Automatic Applicators.
- The equipment must be installed and used in accordance with Standard EN50177.
- The Encore LT Automatic Controller can be installed in a non-hazardous area or in a hazardous area defined as a Zone 22.
- Caution should be taken when cleaning plastic surfaces of the Encore LT Controller. There is a potential for static electricity build up on these components.

Controller Dimensions and Weights

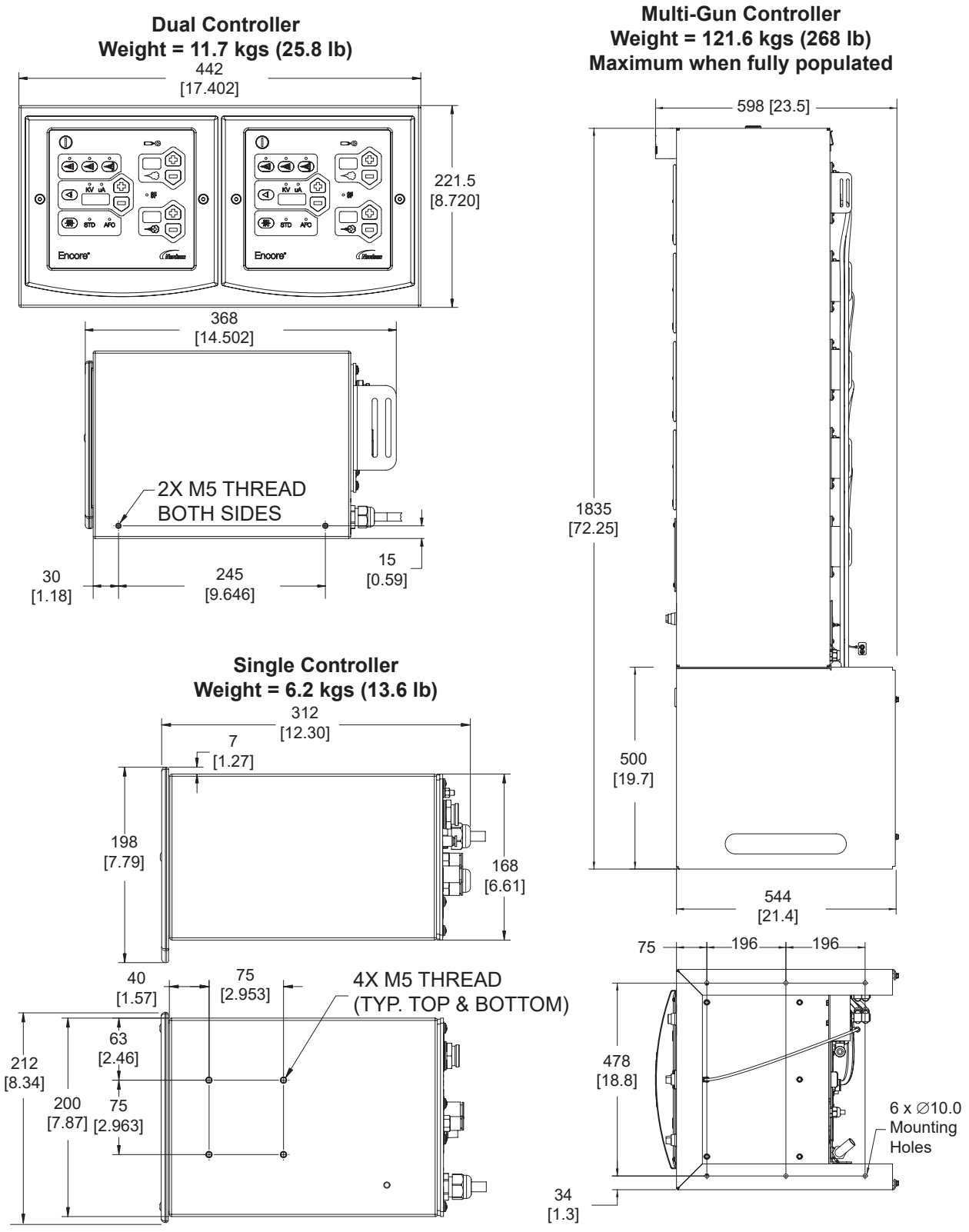
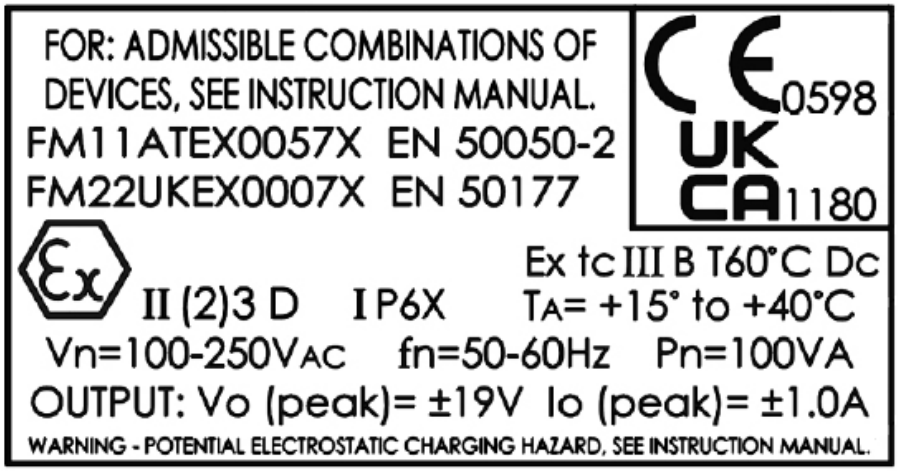


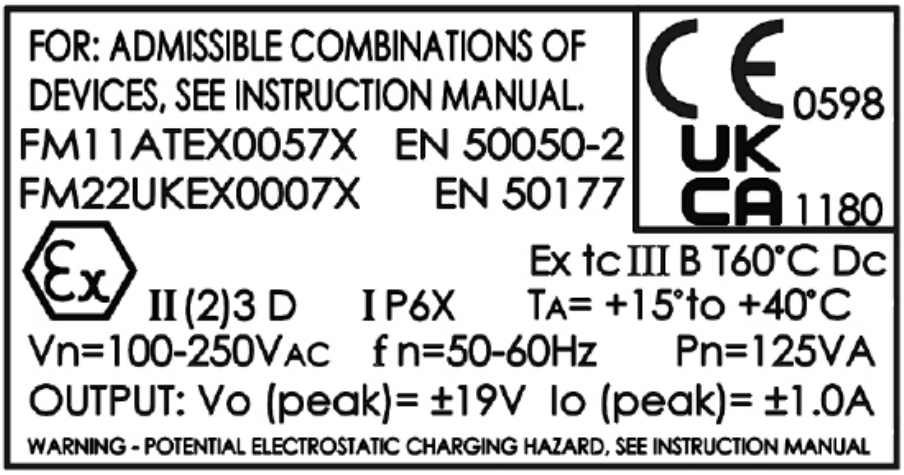
Figure 2-4 Controller Dimensions (mm, [in.])

Controller Certification Labels

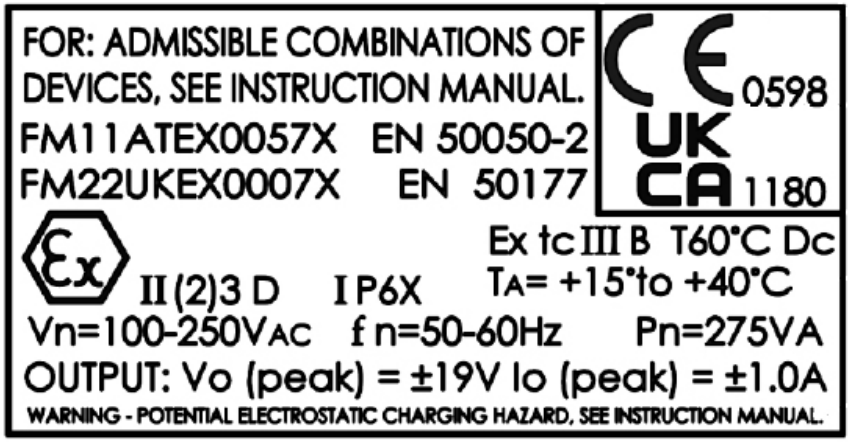
Single Gun Controller Label



Dual Gun Controller Label



Multi-Gun (4−8 Guns) Controller Label



Section 3

System Setup

System Diagrams

Single/Dual Gun System Diagram

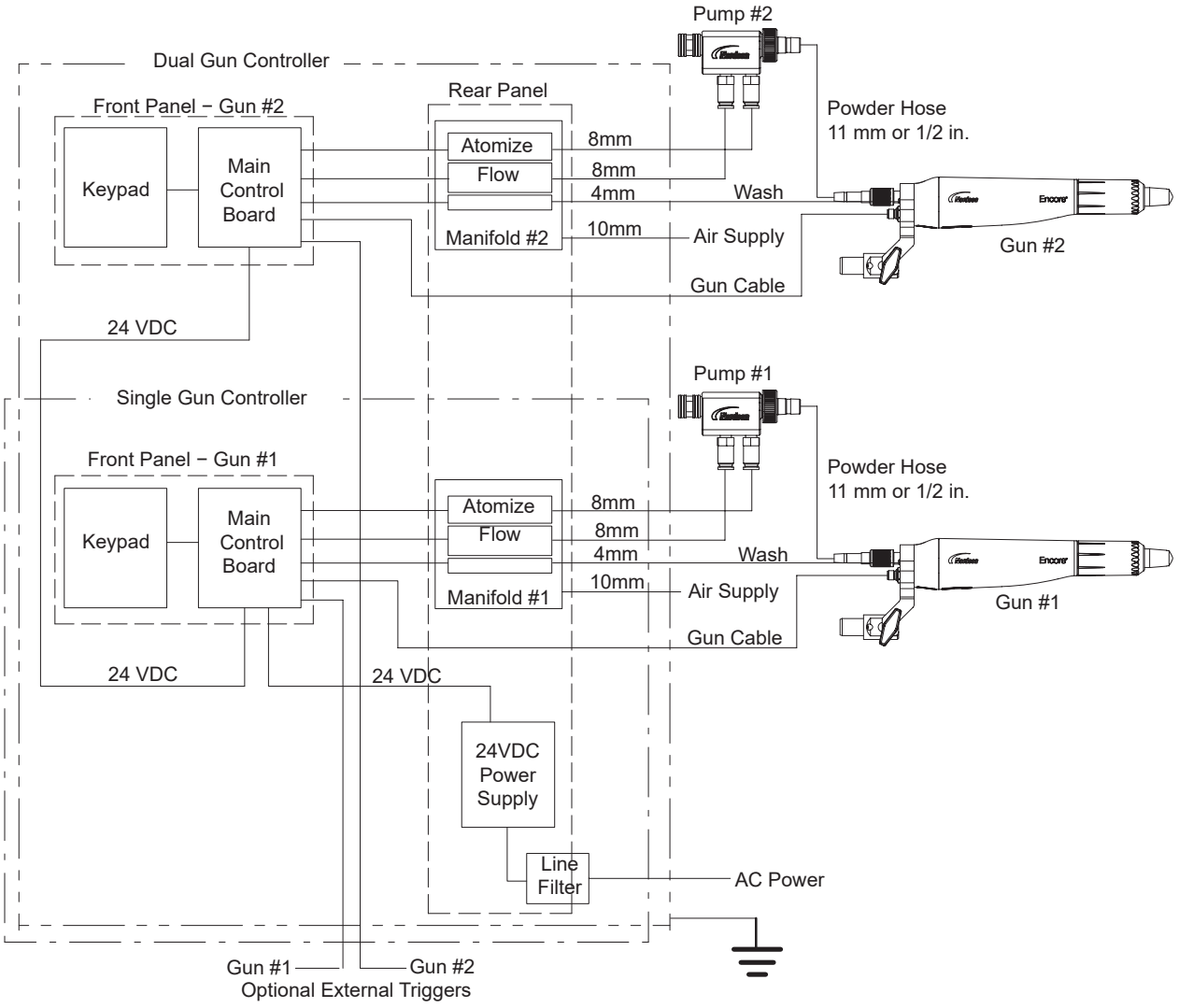


Figure 3-1 Single/Dual Gun System Diagram

Multi-Gun System Diagram

NOTE: System grounds are not shown. Refer to the system wiring diagrams for internal grounds.

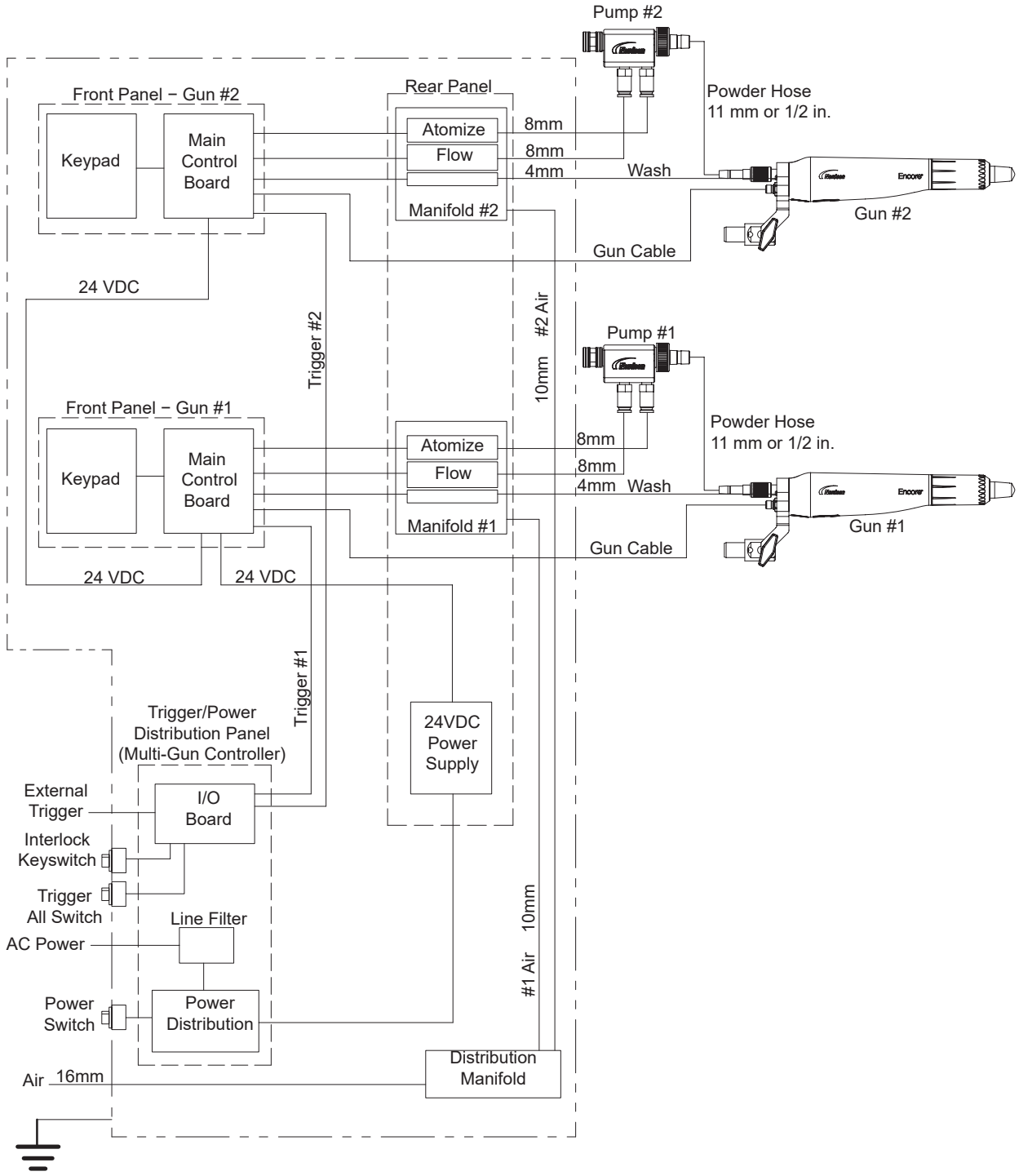


Figure 3-2 Encore LT Multi-Gun Automatic Controller Block Diagram

Single/Dual Controller Mounting

Mount the controller on a flat surface with enough clearance around it to connect the power, air, and gun cable to the rear panel. Refer to Figure 3-4 for dimensions.

WARNING: Connect the ground wire shipped with the controller to the ground stud on the rear panel. Clamp the ground wire to a true earth ground.

Dual Controller Optional Wall Mounting Kit

The optional wall mounting kit consists of a swiveling wall mounting bracket, stacking brackets if installing two controllers, fasteners, and ground wires.

1. See Figure 3-3. Install the wall mounting bracket (5) on a vertical surface strong enough to bear the weight of the controller(s) and mounting bracket. Use appropriate fasteners.
2. Install a controller on the bracket tray and line up the holes in the enclosure with the holes in the tray flanges.
3. If installing only one controller, secure it to the bracket flanges with four M5 x 12 pan head screws (2).
4. If installing two controllers, use four M5 x 12 pan head screws (2) to install the slotted ends of the stacking brackets (1) and controller to the tray. Do not tighten the screws.
5. Place the second controller on top of the first controller, adjust the stacking brackets to line up the screw holes, then secure the stacking brackets to the top controller with four M5 x 12 pan head screws. Tighten the bottom screws.
6. Use one 12-in. ground wire (3) to ground the top controller to the bottom controller. Use the 4-in. ground wire (4) to ground the bottom controller to the wall mount tray. Use the other 12-in. ground wire to connect the tray to the mounting plate.
7. Loosen the tray swivel bolt (6) to rotate the tray to the desired position, then tighten the bolt.

Dual Controller Optional Wall Mounting Kit (contd)

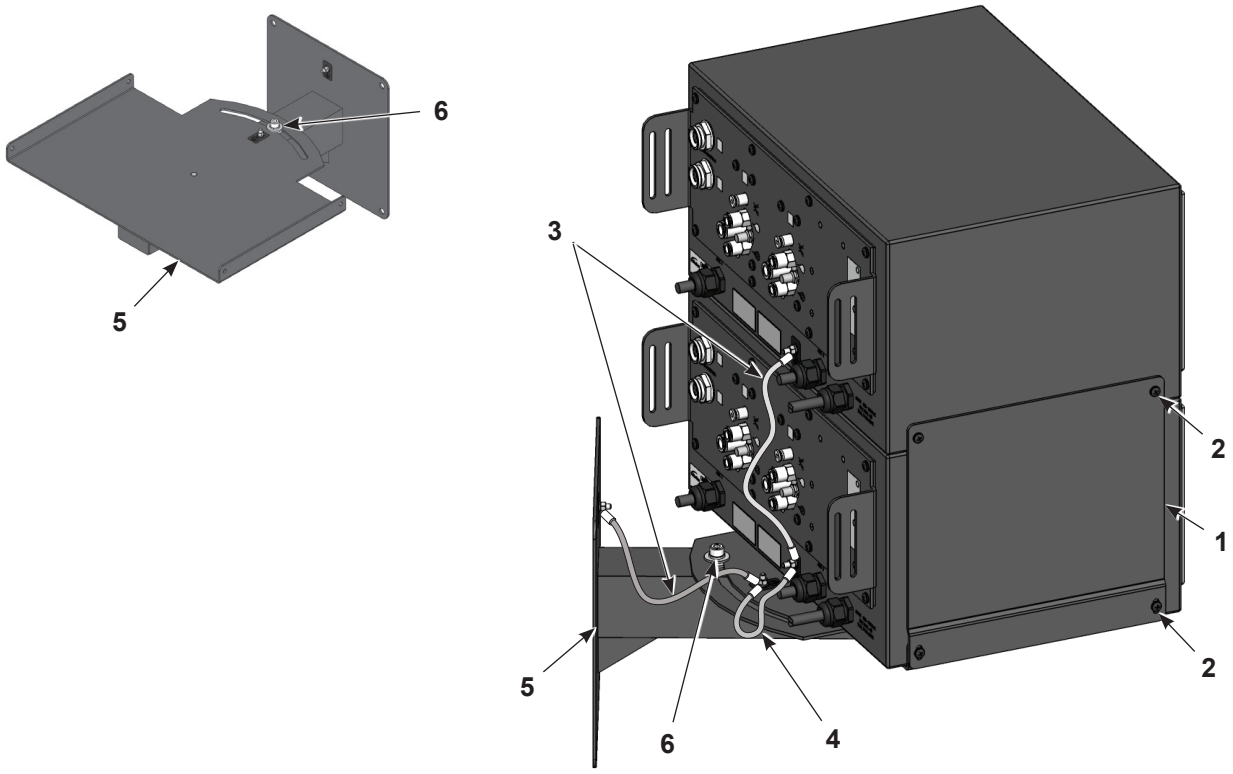


Figure 3-3 Dual Controller Mounting with Optional Wall-Mount Bracket

1. Stacking brackets
2. M5 x 12 screws
3. 12-in. Ground wire
4. 4-in Ground wire
5. Wall-mount bracket
6. Swivel bolt

Multi-Gun Controller Mounting

NOTE: If the multi-gun controller is equipped with Axis Controllers, it must be located outside the spray zone. Locating it inside the spray zone (3 feet or 1 meter on all sides of the booth) will void all agency approvals.

Position the multi-gun controller at the entrance or exit end of the booth, with access to both power and compressed air. Anchor the enclosure to the floor. Provide trays or covers to prevent damage to the gun and pump air tubing and gun cables. Refer to Figure 2-4 for dimensions.

System Connections

Single/Dual Controller Connections

Make connections as shown in Figure 3-4. See Figure 3-5 for remote trigger, conveyor interlock, and remote lockout connections.

Connect the ground cable with clamp to the ground stud (1) and clamp to a true earth ground or a grounded booth base.

Use spiral-cut tube wrap to bundle the flow and atomizing air tubing to the pumps, and the gun cable and electrode air wash tubing to the guns. Route the tubing and cables to prevent damage and kinking.

NOTE: An optional 0.3 micron air filter is available for use with single and dual controllers. Refer to *Parts* for ordering information.

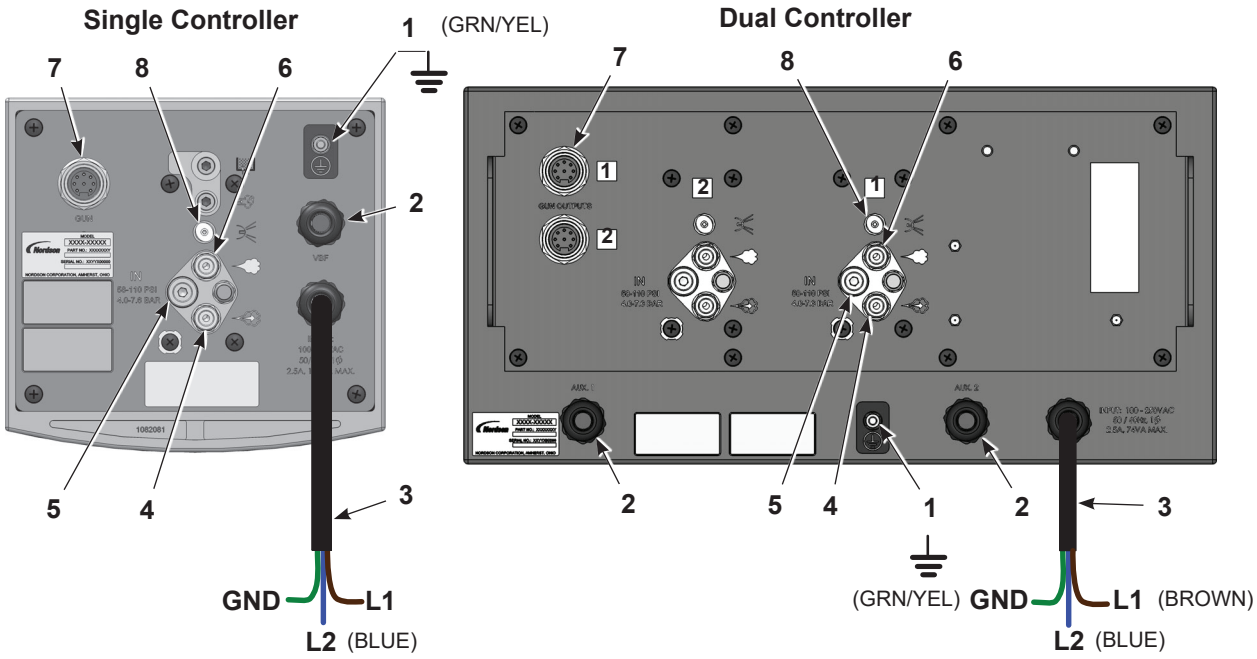


Figure 3-4 Single/Dual Automatic Gun Controller Connections

1. Ground stud
2. Auxiliary power or external trigger
3. Controller power cord (15ft)
4. Atomizing air (blue, 8mm, to pump)
5. Air supply (blue, 10mm)
6. Flow air (black, 8mm, to pump)
7. Gun cable
8. Electrode air wash (clear, 4mm, to gun)

Remote Connections for Single/Dual Controllers

See Figure 3-5. Bring the trigger and interlock cables into the enclosure through the AUX or VBF strain reliefs and connect them to the J3 terminals on the main control board(s). The Trigger A, Conveyor Interlock, and Lockout circuits are all sinking circuits. These circuits operate on 10 mA ± 1.

Remote Connections for Single/Dual Controllers (contd)

Remote Trigger: To remotely trigger the gun(s) pull the Trigger A circuit low. If the Conveyor Interlock and Lockout are used they must be pulled low to circuit common J3−4 in order to trigger the guns.

Conveyor Interlock: Use the Conveyor Interlock circuit to prevent gun triggering while the conveyor is off. If not used, jumper to Common.

Lockout: Use the Lockout circuit to prevent gun triggering while working in the booth. If not used, jumper to Common.

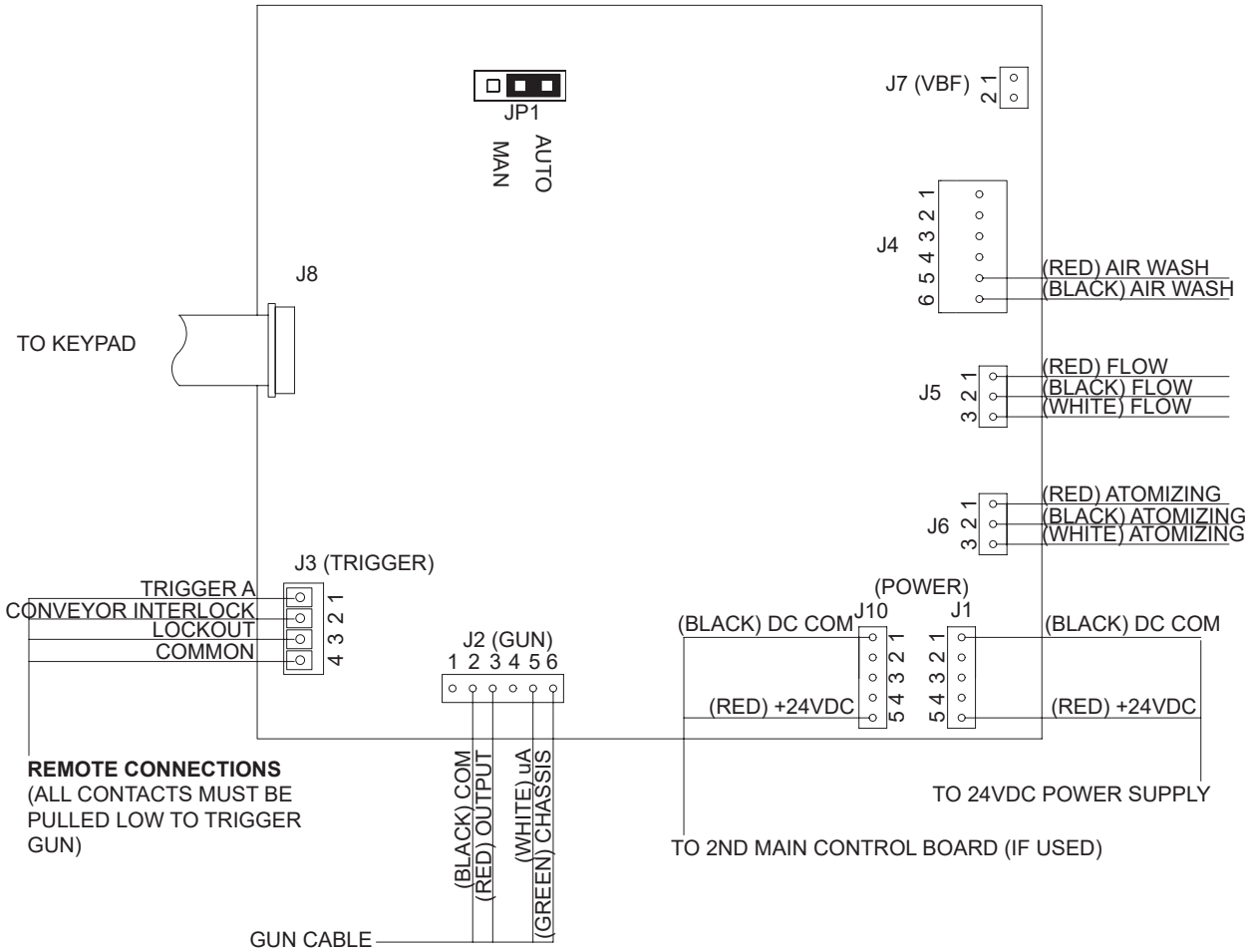


Figure 3-5 Single/Dual Automatic Gun Controller − Main Control Board Trigger/Interlock/Lockout Connections

Multi-Gun Controller Connections

Lift up on the bottom of the rear cover and disconnect the ground cable, then lift the cover up and off the controller enclosure. The rear panels of the gun controllers provide connections for power, ground, gun cable and electrode air wash air, and pump air.

Make connections as shown in Figure 3-6. See Figure 3-5 for external trigger and conveyor interlock connections.

Use spiral-cut tube wrap to bundle the flow and atomizing air tubing to the pumps, and the gun cable and electrode air wash tubing to the guns. Route the tubing and cables to prevent damage and kinking.

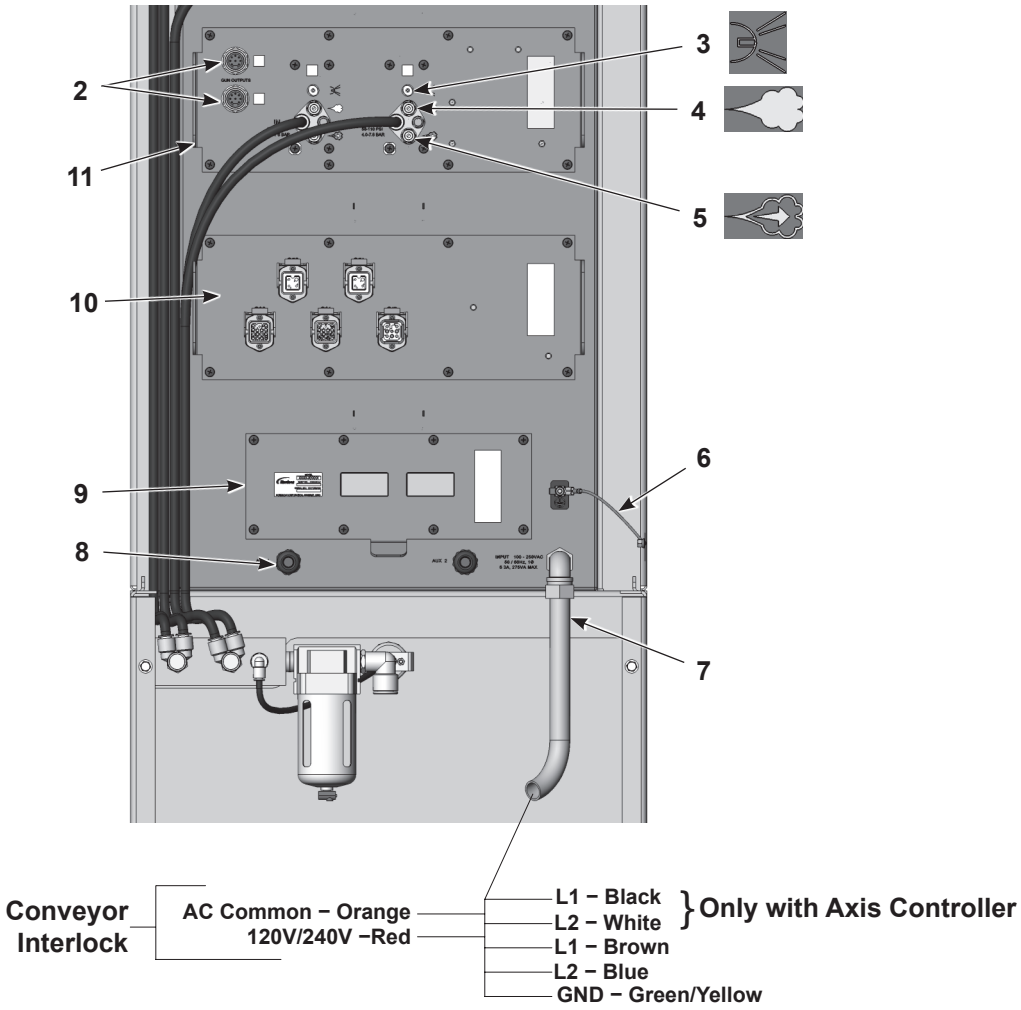


Figure 3-6 Multi-Gun Controller − Power, Air, and Gun Connections (rear cover and rear kick panel removed)

1. Air supply tubing − 16mm blue
2. Gun cables
3. Gun air wash tubing − 4mm clear
4. Pump flow tubing − 8mm black
5. Pump atomizing tubing − 8mm blue
6. Rear cover ground wire
7. Power
8. Auxiliary strain reliefs
9. Trigger/power distribution panel
10. Axis Controller panel (optional)
11. Gun controller panels

NOTE: Each gun controller panel provides outputs for two Encore automatic spray guns. The Axis Controller is optional. Refer to the Axis Controller manual for connections.

Remote Connections for Multi-Gun Controllers

Remote Trigger

Bring the trigger cable into the enclosure through one of the AUX strain reliefs and connect it to the J4 terminals on the main control board(s). To trigger the gun(s) the T1−T8 trigger circuits must be pulled low (sinking). These circuits operate on 10 mA ±1.

Conveyor Interlock

The conveyor interlock uses the red and orange leads in the power cable. The interlock is factory wired for 240V, but can be changed to 120V at the J3 terminal block on the trigger distribution board.

NOTE: If the conveyor interlock is not used, the keyswitch must be set to Bypass in order to operate the guns.

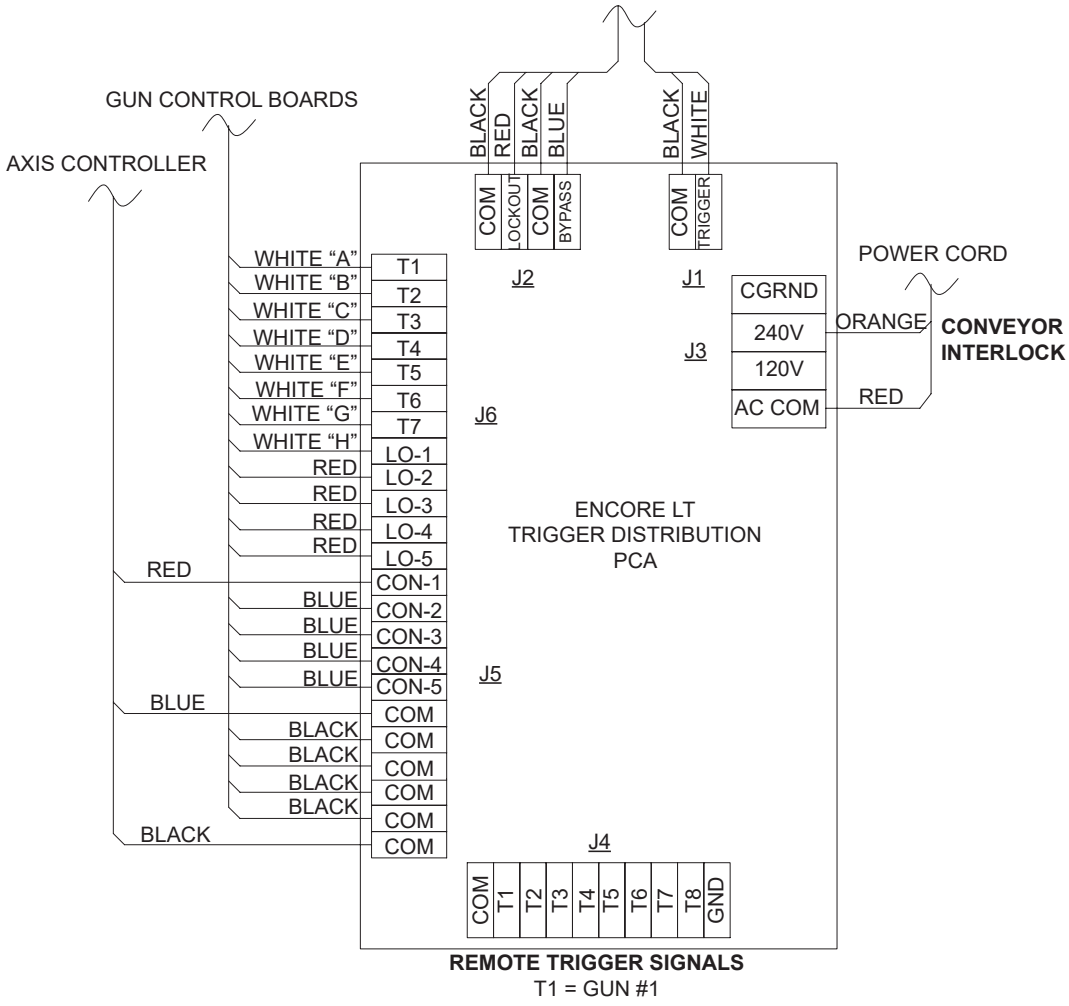


Figure 3-7 Multi-Gun Controller − Remote Trigger/Conveyor Interlock Connections

System Air Supply

See Figure 3-4. Supply compressed air to the controller at 4.0−7.6 bar (58−110 psi).

NOTE: Compressed air should be supplied from an air drop equipped with a self-relieving shutoff valve. The air must be clean and dry. A refrigerant or desiccant-type air drier and air filters are recommended.

System Ground

Locate the ground wire with clamp shipped with the controller. Attach the ground wire terminal to the ground stud at the rear of the controller, then attach the clamp to a true earth ground or grounded booth base.

Gun Connections

1. See Figure 3-4 or Figure 3-6. Connect 4-mm clear electrode air wash tubing to the air wash connectors on the gun controller panels.
2. Connect the gun cables to the receptacles on the gun controller panels. Tighten the cable nuts securely.
3. Route the air wash tubing and gun cables to the spray guns, bundling them together with spiral-cut tubing. Protect the bundles from damage and kinking.
4. See Figure 3-8. Connect the wash tubing to the barbed fitting (3) (bar-mount gun) or tubing union (4) (tube-mount gun).
5. Connect the gun cable to the gun receptacle (5) and tighten the cable nut securely.
6. Connect the powder hose to the hose connector (2). The connector can be disconnected from the gun by unscrewing the retainer nut (1) and pulling back on the hose connector.

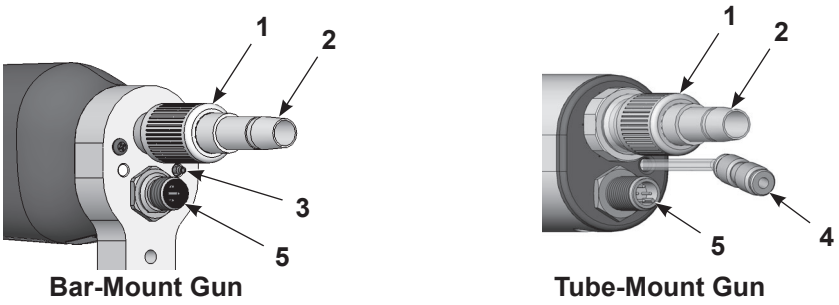


Figure 3-8 Gun Connections − Bar Mount and Tube-Mount Guns

1. Retainer nut
2. Hose connector
3. Barbed fitting
4. Tubing union (4-mm)
5. Gun cable receptacle

Pump Connections

1. See Figure 3-4 or Figure 3-6. Connect 8-mm black flow and blue atomizing air tubing to the gun controller connectors.
2. Route the tubing to the powder pumps. Bundle the tubing with spiral-cut tubing and protect it from damage and kinking.
3. See Figure 3-9. Connect the air tubing to the pump fittings.
4. Connect the powder hose to the pump throat holders.

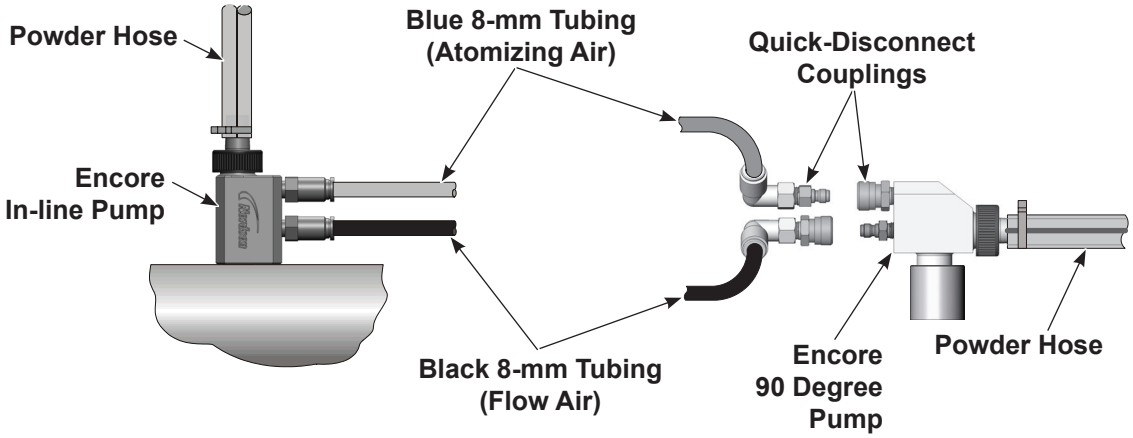


Figure 3-9 Pump Connections

Controller Configuration

Power Up Sequence

When power is applied to the system, the controller goes through the following sequence:

1. All displays and LEDs light for 3 seconds.
2. The main control board configuration is displayed on the KV/µA panel:
   A: Auto
   H: Manual
3. The controller software version, then the hardware version, are displayed on the KV/µA panel in the form N.NN for 1 second each.

Controller Automatic/Manual Configuration

See Figure 3-5. Jumper JP1 on the Gun Main Control board must be placed in the AUTO position in order for it to function properly with automatic spray guns. If it is in the MAN position the guns cannot be triggered remotely. Refer to *Troubleshooting* to change the jumper position.

Entering Configuration Mode

To enter configuration mode, press and hold the Plus and Minus buttons simultaneously on the kV/uA panel, then either turn on power, or if the controller is disabled press the Enable/Disable button. After 1 second all panels will flash **CF** for 3 seconds. After 3 seconds the kV/µA panel displays **F − 1** for function 1. The controller is now in configuration mode.

To save your settings and exit configuration Mode, press the **Enable/Disable** button.

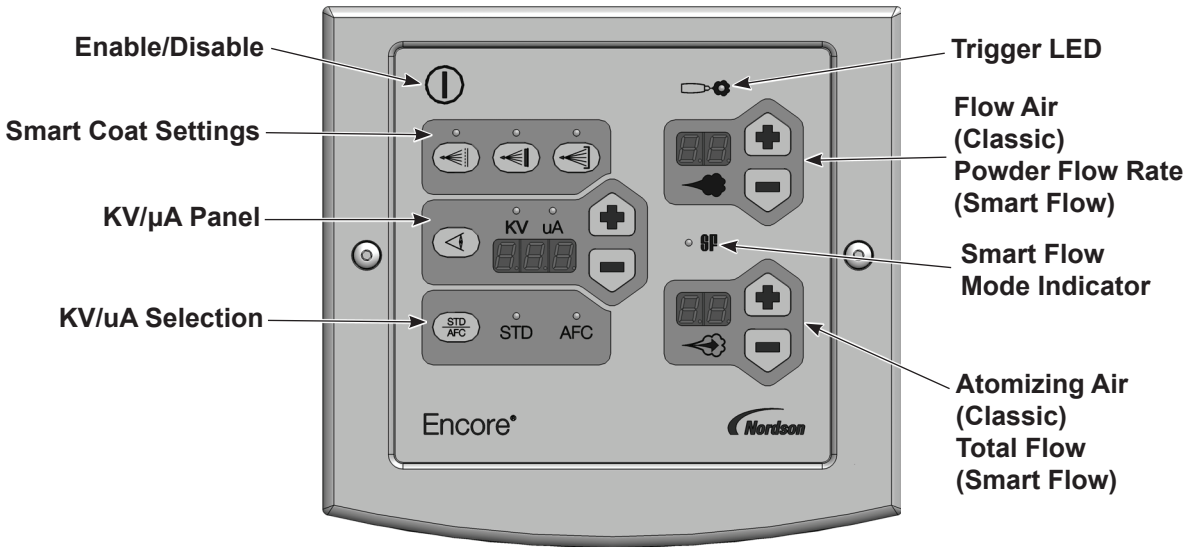


Figure 3-10 Controller Interface

Function Settings

To change functions press the + or − buttons on the kV/µA panel. To change function settings press the + or − buttons on the Flow Air panel.

Function No.	Name	Settings	Default
1	Gun Type	0 = Encore	0
2	Trigger Type	0 = External, 1 = Continuous	0
3	Electrostatic Control	0 = Custom, 1 = Classic, 2 = PE	1
4	Powder Flow Control	0 = Smart, 1 = Classic	1
5	Cable Length	0 = 8 meters, 1 = 12 meters, 2 = 16 meters	0

NOTE: Refer to the *Operation* section for explanations of the Electrostatic Control and Powder Flow Control modes.

Controller Triggering

Continuous

Continuous is used for Dual or Single Automatic Controllers when there are no external signals for Trigger, Conveyor Interlock, or Lockout. The guns are turned on and off by pressing the Enable/Disable button.

External

Use External if the trigger signal will come from an external source, such as a PLC, or from the Trigger All switch on the front of the controller cabinet.

External Signals

Trigger: 10 mA typical, +24V ±5% maximum

Conveyor (50/60 Hz): 120V ±10% at 10 mA RMS maximum
240V ±10% at 10 mA RMS maximum

The controller monitors the Conveyor Interlock and Lockout signals. The controller will trigger on when all 3 inputs (Trigger, Conveyor Interlock, and Lockout) are pulled low (sinking). The guns can be turned off by momentarily pressing the Enable/Disable button.

Refer to the *External Triggering Examples* on the the following page.

External Triggering Examples

a. Operator turns off one or more guns with the Enable/Disable buttons. An external trigger signal is received. The guns turned off will not turn on until the trigger signal turns off then on. This allows the operator to shut off guns not needed for a particular part.

b. Gun is on. Operator turns off the gun with the Enable/Disable button. The gun turns off and will not turn on again until the external trigger signal is turned off then on.

c. Trigger signal is on, conveyor is off so gun is off. The operator turns off the gun with the Enable/Disable button. Gun will not turn on when the conveyor turns on until the trigger signal is turned off then on.

Input State Table								
State	**Trigger**	**Conv.**	**Lockout**	**KV Display**	**Flow Display**	**Atomizing Display**	**Trigger LED**	**System Status**
No Trigger, Conveyor Off,Locked Out	Off	Off	Off	Set Pt	CO/Set Pt	LO/Set Pt	OFF	OFF
No Trigger, Conveyor Off,No Lock Out	Off	Off	On	Set Pt	CO/Set Pt	Set Pt	OFF	OFF
No Trigger, Conveyor On,Locked Out	Off	On	Off	Set Pt	Set Pt	LO/Set Pt	OFF	OFF
No Trigger, Conveyor On,No Lock Out	Off	On	On	Set Pt	Set Pt	Set Pt	OFF	OFF
Trigger On, Conveyor Off,Locked Out	On	Off	Off	Set Pt	CO/Set Pt	LO/Set Pt	Flashing	OFF
Trigger On, Conveyor Off,No Lock Out	On	Off	On	Set Pt	CO/Set Pt	Set Pt	Flashing	OFF
Trigger On, Conveyor On,Locked Out	On	On	Off	Set Pt	Set Pt	LO/Set Pt	Flashing	OFF
Trigger On, Conveyor On,No Lock Out	**On**	**On**	**On**	**Actual**	**Set Pt**	**Set Pt**	**ON**	**Spraying**
Manual Disable	On	On	On	OFF	Set Pt	Set Pt	Flashing	OFF
Manual Disable	On	Off	On	OFF	Set Pt	Set Pt	Flashing	OFF
Manual Disable	Off	On	On	OFF	Set Pt	Set Pt	OFF	OFF

Section 4

Operation

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

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

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

Controller Interface

See Figure 4-1. Use the controller interface to make spray settings and monitor system operation. Refer to Setup for configuration settings.

Low Power Mode

Pressing and holding the **Enable/Disable** button for three seconds puts the gun controller to sleep (low power mode). The displays and LEDs dim completely.

A momentary press of the Enable/Disable button wakes up the gun controller.

Gun Triggering

External Trigger Mode: If the gun controllers are configured for external triggering, the guns are turned on and off by a signal from a PLC or other device. An individual gun can be disabled for one trigger cycle by pressing its controller's Enable/Disable button. This allows the operator to turn off unneeded guns for a particular part.

Continuous Trigger Mode: If the gun controllers are configured for continuous triggering, use the Enable/Disable buttons to turn the guns on and off.

Trigger All: For a multi-gun controller, the Trigger All switch can be used to turn all guns on or off.

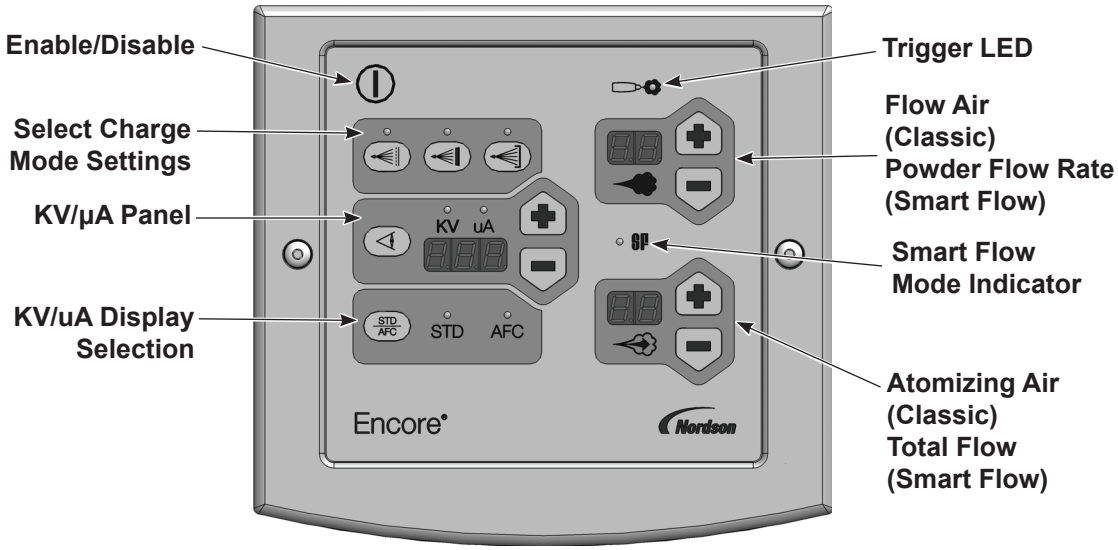


Figure 4-1 Gun Controller Interface

Displays and LEDs


When the gun is triggered the Trigger LED lights.


When the controller is configured for Smart Flow mode, the Smart Flow LED lights.

When the gun is triggered the actual kV or µA output is displayed. When the gun is not triggered the kV or µA setpoint is displayed. The flow and atomizing or total flow setpoints are always displayed.

Electrostatic Settings

Electrostatic output can be set in Select Charge mode, or in Custom or Classic mode. Custom or Classic mode is chosen when the controller is configured. Set the electrostatic output depending on the shape and type of product being coated and the powder used.

Select Charge® Mode

The Select Charge modes are non-adjustable electrostatic settings. The LEDs above the Select Charge mode buttons indicate the selected mode.

The Select Charge Modes and electrostatic setpoints are:

Recoat	100 kV, 15 µA
Metallics	50 kV, 50 µA
Deep Recesses	100 kV, 60 µA

NOTE: Pressing the + or − keys have no effect when a Select Charge mode is selected.

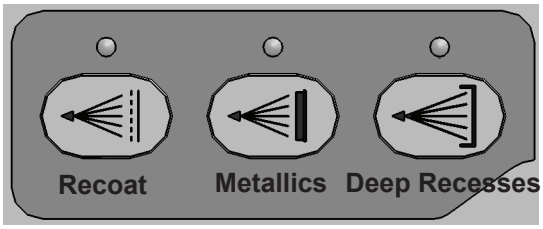


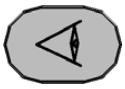
Figure 4-2 Select Charge Mode

NOTE: If you press the STD/AFC selection button while using a Select Charge mode, the controller switches to Classic or Custom mode.

Custom Electrostatic Mode

Custom Mode is the factory default electrostatic mode.

In Custom mode, both kV output and microampere (µA) output limits can be adjusted independently. Both the kV and AFC LEDs light to indicate that the controller is in this mode.

Use the View button  to toggle the display between kV and µA. Press the + or − buttons to enter the desired setpoints. The longer the button is pressed the faster the units change.

- The valid AFC range is 5−100 µA.
- The valid STD range is 0 or 25−100 kV.

Classic Electrostatic Mode

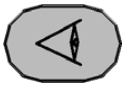
Classic Mode is the optional electrostatic mode. The controller must be configured to use this mode. Refer to *Function Settings* in the *System Setup* section for instructions on changing the electrostatic mode.

In Classic mode you can choose to control kV output (STD) or µA output (AFC), but not both at the same time.

Classic Standard (STD) Mode

See Figure 4-3. Use the STD mode to set the no-load output voltage (kV).

1. Press the STD/AFC button 

to toggle between STD and AFC. The LEDs light to show which is selected. Select STD. The STD LED lights.
2. Press the View button  to toggle the display between kV and µA. Press the + or − buttons to enter the desired kV setpoint. The longer a button is pressed the faster the units change.

The valid STD range is 0 or 25−100 kV.

Classic Electrostatic Mode (contd)

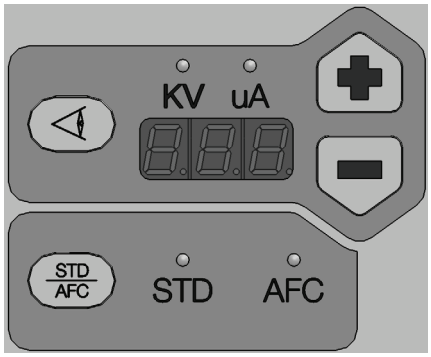
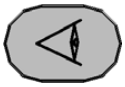


Figure 4-3 kV/ µA Display and STD/AFC Selection for Classic Mode

Classic AFC Mode

See Figure 4-3. Use the **AFC** mode to set µA output limits. In AFC mode kV automatically defaults to 100 kV. When current output increases, kV output and electrostatic charging decreases. The closer the gun comes to the part, the greater the current draw.

1. Press the STD/AFC button to toggle between STD and AFC. The AFC LED lights when AFC is selected.
2. Press the View button  to toggle the display between kV and µA. Select µA, then press the + or − buttons to enter the desired µA setpoint. The longer a button is pressed the faster the units change.

The valid AFC range is 5−100 µA.

Encore LT PE Mode

To configure the controller for the Encore PE system, set function number 3 (Electrostatic Control) to setting 2 (Encore PE).

When the controller function number 3 is set to PE, the electrostatic settings will allow the user to control both kV and µA (custom mode) and they will be able to control the µA setting to values less than 3.0µA in 0.1µA increments.

For example, the user can set the µA settings from 5, 4, 3.0, 2.9, 2.8, ... through 0.1.

Powder Flow Settings

The controller varies the flow and atomizing air to a venturi-type powder pump depending on the settings. Flow air controls the amount and velocity of the powder; atomizing air dilutes the powder flow and increases the velocity.

Two modes of pump air control are available:

Smart Flow: In this mode, you set the Total Flow and Flow Air %. If you decrease the flow air %, the flow air pressure decreases, but the atomizing air pressure increases, so that the result is that the powder velocity remains the same. The Smart Flow LED lights when the controller is configured for Smart Flow mode.

Classic Flow: This is the factory default mode. This mode is the traditional method of controlling powder flow and velocity. In this mode you set flow and atomizing air separately and balance them manually for optimum results. When the controller is configured for Classic Flow mode, the Smart Flow LED is off.

NOTE: Refer to *Function Settings* in the *System Setup* section for a list of the mode defaults and configuration instructions.

Flow Air % or Flow Air

Total Flow or Atomizing Air

Figure 4-4 Flow Setting Panels

To use Smart Flow mode, the controller must be configured for it. Refer to *Function Settings* in the *System Setup* section for a list of the mode defaults and configuration instructions.

 sets the powder flow rate (Flow Air %).

 sets the powder velocity (Total Flow).

Setting values for both are 0−99% of maximum output. Press the + and − buttons to enter the desired setpoint. The longer a button is pressed the faster the units change.

When making Smart Flow settings, set the Total Flow setpoint first to obtain the desired pattern size and velocity, then set the Flow Air % setpoint for the desired powder flow.

At 7 bar (100 psi) supply pressure:

Total Flow Setting %	Flow Air Setting %	Flow Air Pressure bar (psi)	Atomizing Air Pressure bar (psi)
50	50	1.7 (25)	1.7 (25)
50	25	0.86 (12.5)	2.6 (37.5)

Smart Flow Mode Settings (contd)

In other words,

If Total Flow = 50%, Flow Air = 50%, then
Flow air = 1.7 bar (25 psi) or 1/2 of 3.4 bar (50 psi), and
Atomizing air = 1.7 bar (25 psi) or 1/2 of 3.4 bar (50 psi).

If Total Flow = 50%, Flow Air = 25%, then
Flow air = 0.86 bar (12.5) psi or 1/4 of 3.4 bar (50 psi), and
Atomizing air = 2.6 bar (37.5 psi) or 3/4 of 3.4 bar (50 psi).

NOTE: If either Total Flow or Flow Air % are set to 0% then the controller does not output any air when triggered and no powder is pumped.

Powder velocity is inversely related to transfer efficiency; the higher the velocity the lower the transfer efficiency. High powder flow rates can result in faster wear of powder contact parts.

Use this chart as a starting point making changes for powder volume or delivery velocity as required. The data in this table was collected using 20 feet of 11mm ID powder tubing and a typical white epoxy powder. For higher output use 12.7mm ID powder tubing. Powder output values in g/min are typical, your results may vary.

Total Air Setting % ►	20	40	60	80	100
Flow Output Setting % T	**Powder Output in g/min.**				
20	45	26	20	27	45
40	79	128	105	138	100
60	118	176	215	220	235
80	168	240	288	300	318
100	168	284	375	408	430

Classic Flow Mode Settings

 sets the flow air pressure.

 sets the atomizing air pressure.

Setting values for both are 0−99% of maximum air pressure. Press the + and − buttons to enter the desired setpoint. The longer a button is pressed the faster the units change.

At 7 bar (100 psi) supply pressure:

Flow Setting %	Atomizing Setting %	Flow Air Pressure bar (psi)	Atomizing Air Pressure bar (psi)
25	25	1.7 (25)	1.7 (25)
40	10	2.7 (40)	0.689 (10)

In other words,

If Flow air = 25%, Atomizing air = 25%, then
Flow air = 1.7 bar (25 psi), Atomizing air = 1.7 bar (25 psi).

If Flow air = 40%, Atomizing air = 10%, then
Flow air = 2.7 bar (40 psi), Atomizing air = 0.689 bar (10 psi).

Refer to your pump manual for typical operating values for Flow and Atomizing air.

Daily Operation

Startup

1. Turn on the spray booth exhaust fan.
2. Turn on the system air supply and power.
3. Fluidize the powder supply.
4. Turn on controller power. Make sure all gun controllers are enabled. The displays on the gun controller interfaces should light.
5. Multi-Gun Controller: Turn the interlock keyswitch to READY.
6. External Trigger Mode: Start the conveyor and run parts through the booth. The guns should be triggered automatically by your triggering device. Alternately, you can use the Trigger All switch if you have a multi-gun controller.

   Continuous Trigger Mode: Start the conveyor, then press the Enable/Disable buttons to start spraying powder.
7. Adjust each controller to achieve the desired spray pattern, powder flow rate, and transfer efficiency.

The controller interface displays actual kV or µA output when the gun is spraying and setpoints when the gun is off. The air flow displays always show the setpoints.

On Initial Startup: With the gun triggered, air set to zero, and no parts in front of the gun, record the µA output for each gun in the system.

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 that a resistor or electrostatic power supply requires service.

Interface Messages

Trigger LED flashing:

- A trigger signal is received but the gun controller is disabled. Press the Enable/Disable button to enable the controller.
- A trigger signal is received but the conveyor is off or the controller is locked out, or both. Start the conveyor and turn the keyswitch to READY.

Flow Rate display toggles between the setpoint and CO: Conveyor is off.

Total Air/Atomizing display toggles between the setpoint and LO: Controller is locked out.

kV/µA display flashes: Spray gun is shorted. Refer to *Troubleshooting* for more information.

Shutdown

1. Purge the spray guns by performing a color change procedure as described in your system manual.
2. Press the Enable/Disable buttons for more than one second to put the controllers to sleep.
3. Turn off the system air supply and relieve the system air pressure.
4. If shutting for a long period of time, turn off the controller power.
5. Perform maintenance on the powder pumps and guns as described in their manuals.

Maintenance

- Perform the recommended maintenance procedures for the automatic guns and pumps, as described in their manuals.
- Periodically check the air filter in the base of the multi-gun controller. Drain the filter bowl and change the element as needed. Refer to Parts for the replacement filter element part number. Do the same for filters used with single and dual gun controllers.
- Periodically check all system connections. Make sure all equipment in the spray area is securely connected to a true earth ground. Vacuum dust and powder from equipment.

Recommended Cleaning Procedure for Powder Contact Parts

Nordson Corporation recommends using an ultrasonic cleaning machine and Oakite® BetaSolv emulsion cleaner to clean gun and pump powder contact parts.

NOTE: Do not immerse electrode assemblies in solvent. They cannot be disassembled; cleaning solution and rinse water will remain inside the assembly.

1. Fill an ultrasonic cleaner with BetaSolv or an equivalent emulsion cleaning solution at room temperature. Do not heat the cleaning solution.
2. Remove the parts to be cleaned. Remove the O-rings. Blow off the parts with low-pressure compressed air.

NOTE: Do not allow O-rings to come in contact with the cleaning solution.

3. Place the parts in the ultrasonic cleaner and run the cleaner until all parts are clean and free of impact fusion.
4. Rinse all parts in clean water and dry before re-assembly. Inspect the O-rings and replace any that are damaged.

NOTE: Do not use sharp or hard tools that will scratch or gouge the smooth surfaces of powder contact parts. Scratches will cause impact fusion.

Section 5
Troubleshooting

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

WARNING: Before making repairs to the controller or spray gun, shut off system power and disconnect the power cord. Shut off the compressed air supply to the system and relieve the system pressure. Failure to observe this warning could result in personal injury.

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact your local Nordson representative for help.

Controller Faults

Problem	Possible Cause	Corrective Action
1. Trigger LED blinks, gun does not spray	Trigger signal received, conveyor off or system locked out	Start the conveyor. Turn the keyswitch to Ready.
	Trigger signal received, gun controller disabled	Press the Enable/Disable button.
	Trigger signal received, gun controller disabled, conveyor off	Press the Enable/Disable button, turn on the conveyor, or turn the keyswitch to Bypass to trigger the guns with the conveyor off or with no conveyor signal. Check the Trigger Type configuration. Refer to System Setup for configuration instructions.
2. kV/µA display blinks, no kV	Gun cable is shorted	Check the gun cable or extension. Make sure the gun electrode is not touching the parts.

General Troubleshooting Chart

Problem	Possible Cause	Corrective Action
1. Uneven pattern, unsteady or inadequate powder flow	Blockage in spray gun, powder hose, or pump	1. Purge the spray gun. Remove the nozzle and electrode assembly and clean them. 2. Disconnect the powder hose from the spray gun and blow out the gun with an air gun. 3. Disconnect the powder hose from the pump and gun and blow out the hose. Replace the hose if it is clogged with powder. 4. Disassemble and clean the pump. 5. Disassemble the spray gun. Remove and clean the powder tube. Replace components as necessary.
	Nozzle, deflector, or electrode assembly worn, affecting pattern	Remove, clean, and inspect the nozzle, deflector, and electrode assembly. Replace worn parts as necessary. If excessive wear or impact fusion is a problem, reduce the flow and atomizing air.
	Damp powder	Check the powder supply, air filters, and dryer. Replace the powder supply if contaminated.
	Low atomizing or flow air pressure	Increase the atomizing and/or flow air flow.
	Improper fluidization of powder	Increase the fluidizing air pressure. **Hopper**: If the problem persists, remove the powder from the hopper. Clean or replace the fluidizing plate if contaminated. **VBF**: Check the pickup tube. If the diffuser in the base of the tube is clogged and cannot be cleaned, replace the pickup tube.
2. Voids in powder pattern	Worn nozzle or deflector	Remove and inspect the nozzle or deflector. Replace worn parts.
	Plugged electrode assembly or powder path	Remove and clean the electrode assembly. If necessary, remove the and clean the powder path.

Continued...

Problem	Possible Cause	Corrective Action
3. Low powder flow or powder flow surging	Low supply air pressure	Input air must be greater than 4.0 bar (58 psi).
	Flow air valve plugged	Remove valve and check manifold passages. If manifold is clean, replace valve.
	Air tubing kinked or plugged	Check flow and atomizing air tubing for kinks.
	Pump throat worn	Replace pump throat.
	Pump not assembled correctly	Check and re-assemble pump.
	Pick-up tube blocked	Check for debris or bag (VBF units) blocking pick-up tube.
	Fluidizing air too high	If fluidizing air is set too high the ratio of powder to air will be too low.
	Fluidizing air too low	If fluidizing air is set too low the pump will not operate at peak efficiency.
	Powder hose plugged or kinked	Check for kinks in hose; blow out with compressed air.
	Powder hose too long or diameter too small	11mm ID hose length should be no longer than 7.62 m (25 ft). Shorten hose if necessary. If hose must be longer, switch to 1/2 in. ID hose.
	Gun powder path plugged	Check powder tube, and electrode assembly for impact fusion or debris. Clean as necessary with compressed air.
	Flow and atomizing air tubing connections reversed	Check flow and atomizing air tubing routing and correct if incorrect.
4. No kV when gun is triggered On, powder flow OK	kV set to zero	Set kV to a non-zero value.
5. No powder flow when gun is triggered On, kV OK	Flow Air or Total Flow set to zero	Change settings to a non-zero number.
	Input air turned OFF	Make sure air is being supplied to controller.
6. Powder is spraying, but no kV output from the spray gun, display flashing, shows 0 kV, 0 µA	Damaged gun cable	Perform the *Gun Cable Continuity Checks* as described in the gun manual. If an open or short is found, replace the cable.
	Spray gun power supply shorted	Perform the *Power Supply Resistance Test* as described in the gun manual.

Continued...

Problem	Possible Cause	Corrective Action
7. Powder is spraying, but no kV output from the spray gun, display shows voltage or µA output	Spray gun power supply open	Perform the *Power Supply Resistance Test* as described in the gun manual.
	Damaged gun cable	Perform the Gun Cable Continuity Checks as described in the gun manual. If an open or short is found, replace the cable.
8. No kV output and no powder output	Controller configured for manual operation	Cycle controller power. If H appears on the kV/uA display, remove the main control board and move the JP1 jumper to the Man position.
	No trigger signal to controller	Check wiring and triggering device.
9. Loss of wrap, poor transfer efficiency	Low electrostatic voltage	Increase the electrostatic voltage.
	Poor electrode connection	Remove the nozzle and electrode assembly. Clean the electrode and check for carbon tracking or damage. Check the electrode resistance as described in the gun manual. If the electrode assembly is good, remove the gun power supply and check its resistance as described in the gun manual.
	Poorly grounded parts	Check the conveyor chain, rollers, and part hangers for powder buildup. The resistance between the parts and ground must be 1 MΩ or less. For best results, 500 kΩ or less is recommended.
10. Powder build up on the electrode tip	Insufficient electrode air wash flow	Remove electrode air wash connector and check manifold orifice for blockage. Orifice size is 0.25−0.3 mm. Clean with an appropriate tool.
11. More than one key on the keypad quits working when pressed	Flex connection from the keypad to the main board is not seated properly	Loosen and re-seat the flex circuit on the main board, making sure the flex cable is fully inserted into the connector. To loosen the flex circuit, gently pull the black bar on the cable connector away from the white connector. This will allow you to adjust the flex cable to ensure proper seating. The cable should be inserted past the white line marked towards the end of the cable. Push the black bar back into the white connector to secure.

Section 6

Parts

Introduction

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

This section covers parts for the dual and multi-gun controllers, powder and air tubing, and options. Refer to the following manuals for additional information and optional equipment.

Encore LT Automatic System Operator Card: 1108326
Encore Automatic Powder Spray Guns: 1098185
Encore Ion Collector Kits: 1098186

These manuals can be downloaded from:
http://emanuals.nordson.com/finishing/

WARNING: Shut off the controller and disconnect the power cord or disconnect and lock out power at a breaker or disconnect ahead of the controller before opening the controller enclosures. Failure to observe this warning could result in a severe electrical shock and personal injury.

CAUTION: Electrostatic sensitive device. When handling electronic devices, wear a grounding wrist strap and use proper grounding techniques to avoid damage.

Controller Part Numbers

Use these part numbers to order controllers. For Axis controller parts, refer to the Axis controller manual.

Part	Description	Note
1107870	CONTROLLER ASSEMBLY, 1 gun, Encore automatic, packaged	
1107702	CONTROLLER ASSEMBLY, 2 gun, Encore automatic, packaged	
1107792	CONTROLLER, 4 gun, Encore automatic	
1107794	CONTROLLER, 6 gun, Encore automatic	
1107795	CONTROLLER, 8 gun, Encore automatic	
1108542	CONTROLLER, 4 gun with Axis controller, Encore automatic	
1108543	CONTROLLER, 6 gun with Axis controller, Encore automatic	
1108544	CONTROLLER, 8 gun with Axis controller, Encore automatic	

Single Controller Parts

See Figure 6-1 and Figure 6-2 and the parts list on the following page.

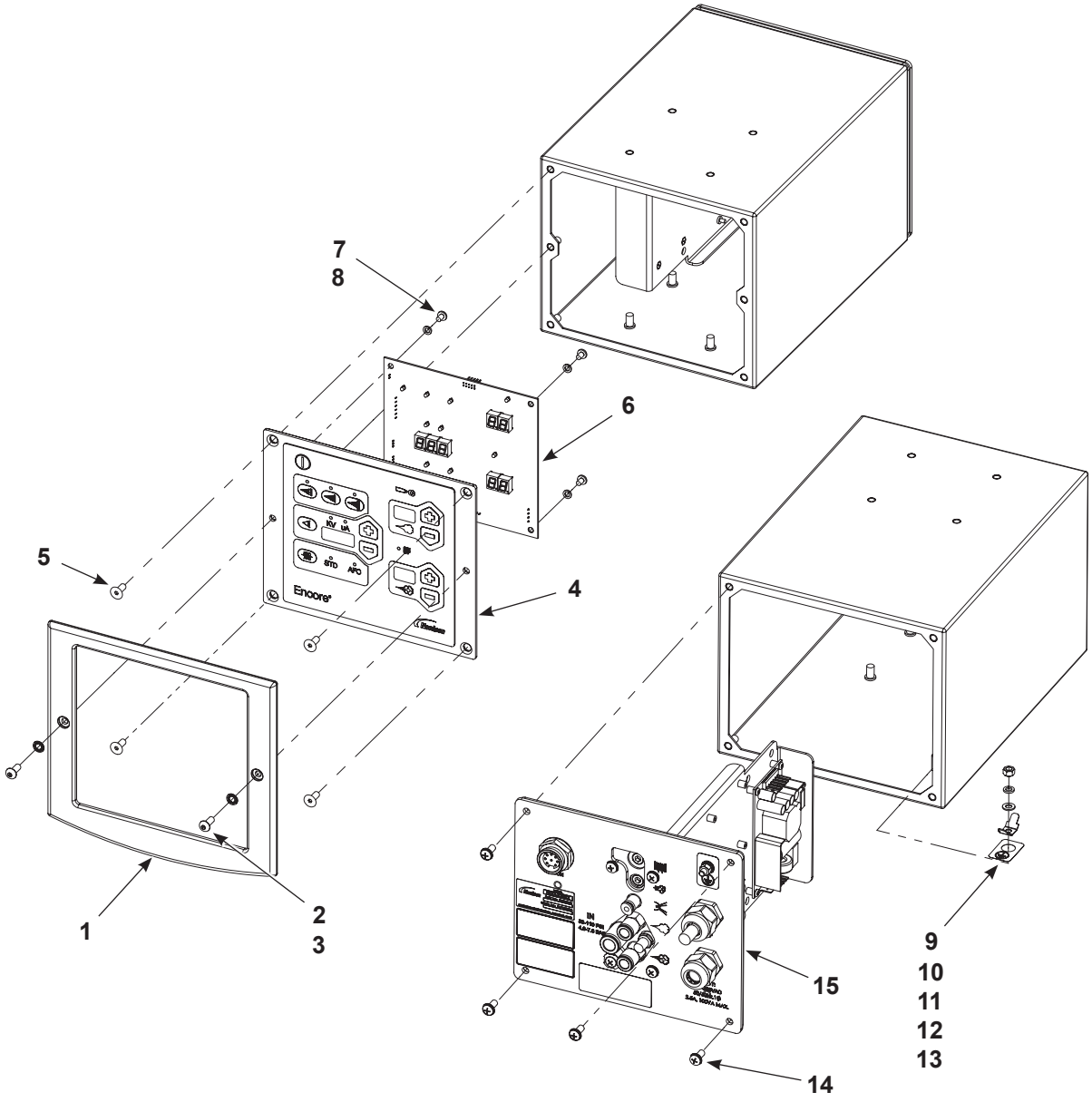


Figure 6-1 Single Controller Parts (1 of 2)

Single Controller Parts List

See Figure 6-1.

Item	Part	Description	Quantity	Note
1	1082081	BEZEL, interface, controller	1	
2	982636	SCREW, button head, socket, M5 x 12, zinc	2	
3	983127	WASHER, lock, internal, M5, zinc	2	
4	1108312	PANEL, keypad, Encore LT/auto controller, packaged	1	
5	982916	SCREW, flat head, socket, M5 x 10, black	4	
6	1108279	KIT, PCA, control, Encore LT	1	
7	982881	SCREW, pan head, recessed, M4 x 6, zinc	4	
8	983403	WASHER, lock, split, M4, steel, zinc	4	
9	984702	NUT, hex, M5, brass	2	
10	983401	WASHER, lock, split, M5, steel, zinc	2	
11	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
12	983469	LUG, 90, double, 0.250, 0.438	1	
13	240674	TAG, ground	2	
14	1045837	SCREW, pan head, recessed, M5 x 12, with lockwasher	4	
15	------	PANEL, sub-assembly, 1 gun, Encore automatic	1	A
NOTE: A. See Figure 6-2 for service parts.				

Single Controller Rear Panel Parts

This panel is used only on the single gun controller.

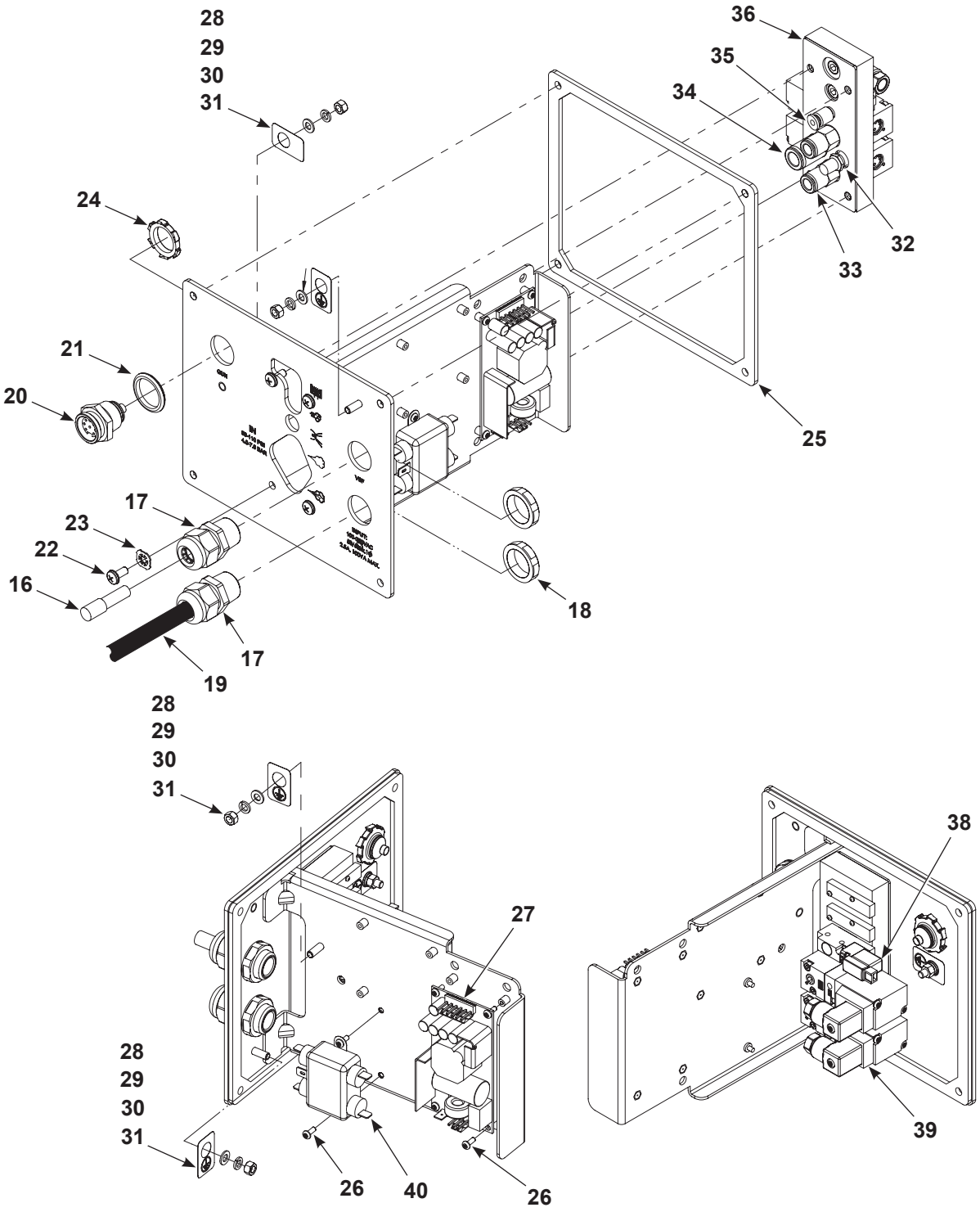


Figure 6-2 Single Controller Rear Panel Parts (2 of 2)

Single Controller Rear Panel Sub-Assembly Parts List

See Figure 6-2. This panel is used only on the single gun controller.

Item	Part	Description	Quantity	Note
—	------	PANEL, sub-assembly, 1 gun, Encore automatic	1	A
16	972930	• PLUG, push-in, 8 mm tube, plastic	AR	
17	972808	• CONNECTOR, strain relief, 1/2 in. NPT	2	
18	984192	• NUT, lock, 1/2 in. NPT, nylon	2	
19	1107537	• CORD, power, 15 ft (4.6 m), w/0.250 terminals	1	
20	1107566	• RECEPTACLE, gun, Encore, auto	1	
21	939122	• SEAL, conduit fitting, 1/2 in. blue	1	
22	1045837	• SCREW, pan head, recessed, M5 x 12, with lockwasher	4	
23	1068715	• WASHER, lock, dished, #10	1	
24	984526	• NUT, lock, 1/2 in. conduit	1	
25	1107693	• GASKET, rear panel, Encore auto	1	
26	982824	• SCREW, pan head, recessed, M3 x 8, with lockwasher	4	
27	1107695	• POWER SUPPLY, 24 Vdc, 60 W	1	
28	984702	• NUT, hex, M5, brass	3	
29	983401	• WASHER, lock, split, M5, steel, zinc	3	
30	983021	• WASHER, flat, 0.203 x 0.406 x 0.040, brass	3	
31	240674	• TAG, ground	3	
32	1108313	• MUFFLER, exhaust, R1/8	1	
33	1030873	• VALVE, check, M8 tube x R1/8, M input	2	
34	1107596	• CONNECTOR, male, with internal hex, 10 mm tube x 1/8 in. unithread	1	
35	1062009	• CONNECTOR, male, with internal hex, oval collar, 4 mm tube x M5	1	
36	1082120	• PLUG, pipe, socket, flush, R1/8, zinc	2	
37	1107593	• GASKET, manifold, controller, Encore LT	1	
38	1099281	• VALVE, solenoid, 3 port, 24 V, 0.35 W	1	
39	1107582	• REGULATOR, electro-pneumatic, with harness, Encore automatic	2	
40	1107696	• FILTER, line, RFI power, 3A, with 0.250 terminals	1	

NOTE: A. See Figure 6-4 for service parts.

AR: As Required

Dual Controller Parts

See Figure 6-3 and the parts list on the following page.

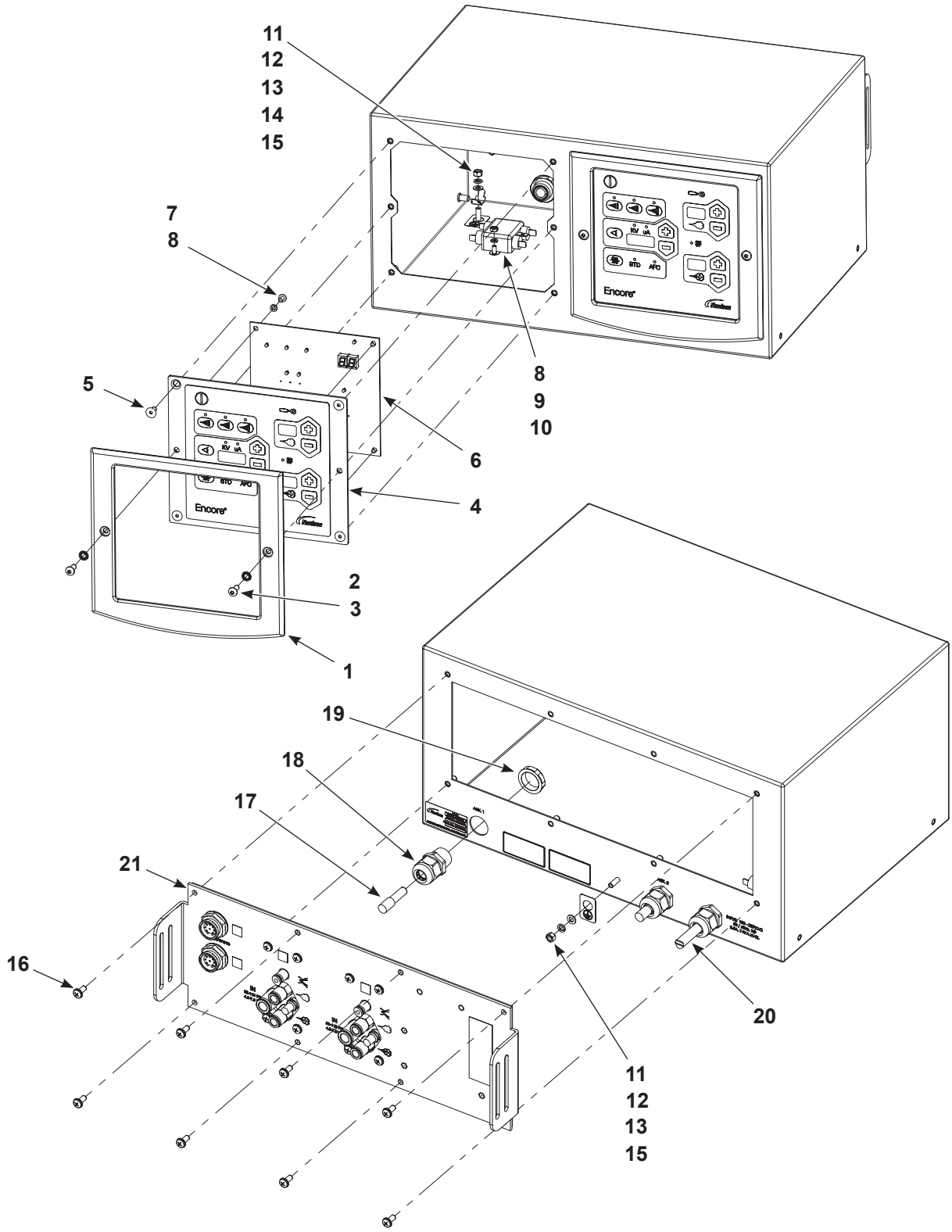


Figure 6-3 Dual Controller Parts

Dual Controller Parts

See Figure 6-3.

Item	Part	Description	Quantity	Note
1	1082081	BEZEL, interface, controller	AR	
2	982636	SCREW, button head, socket, M5 x 12, zinc	AR	
3	983127	WASHER, lock, internal, M5, zinc	AR	
4	1108312	PANEL, keypad, Encore LT/auto controller, packaged	AR	
5	982916	SCREW, flat head, socket, M5 x 10, black	AR	
6	1108279	KIT, PCA, control, Encore LT	AR	
7	982881	SCREW, pan head, recessed, M4 x 6, zinc	AR	
8	983403	WASHER, lock, split, M4, steel, zinc	AR	
9	984715	NUT, hex, M4, steel, zinc	2	
10	1107696	FILTER, line, RFI power, 3A, with 0.25 Q.D.	1	
11	984702	NUT, hex, M5, brass	2	
12	983401	WASHER, lock, split, M5, steel, zinc	2	
13	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
14	983469	LUG, 90, double, 0.250, 0.438	1	
15	240674	TAG, ground	2	
16	1045837	SCREW, pan head, recessed, M5 x 12, with lockwasher	8	
17	972930	PLUG, push-in, 8 mm tube, plastic	AR	
18	972808	CONNECTOR, strain relief, 1/2 in. NPT	3	
19	984192	NUT, lock, 1/2 in. NPT, nylon	3	
20	1107537	CORD, power, 15 ft (4.6 m), with 0.250 terminals	1	
21	−−−−−−	PANEL, sub-assembly, 2 gun, controller, Encore automatic	1	A

NOTE: A. See Figure 6-4 for service parts.

AR: As Required

Dual and Multi-Gun Rear Panel Sub-Assembly

This panel is used on both the dual controller and the multi-gun controller.

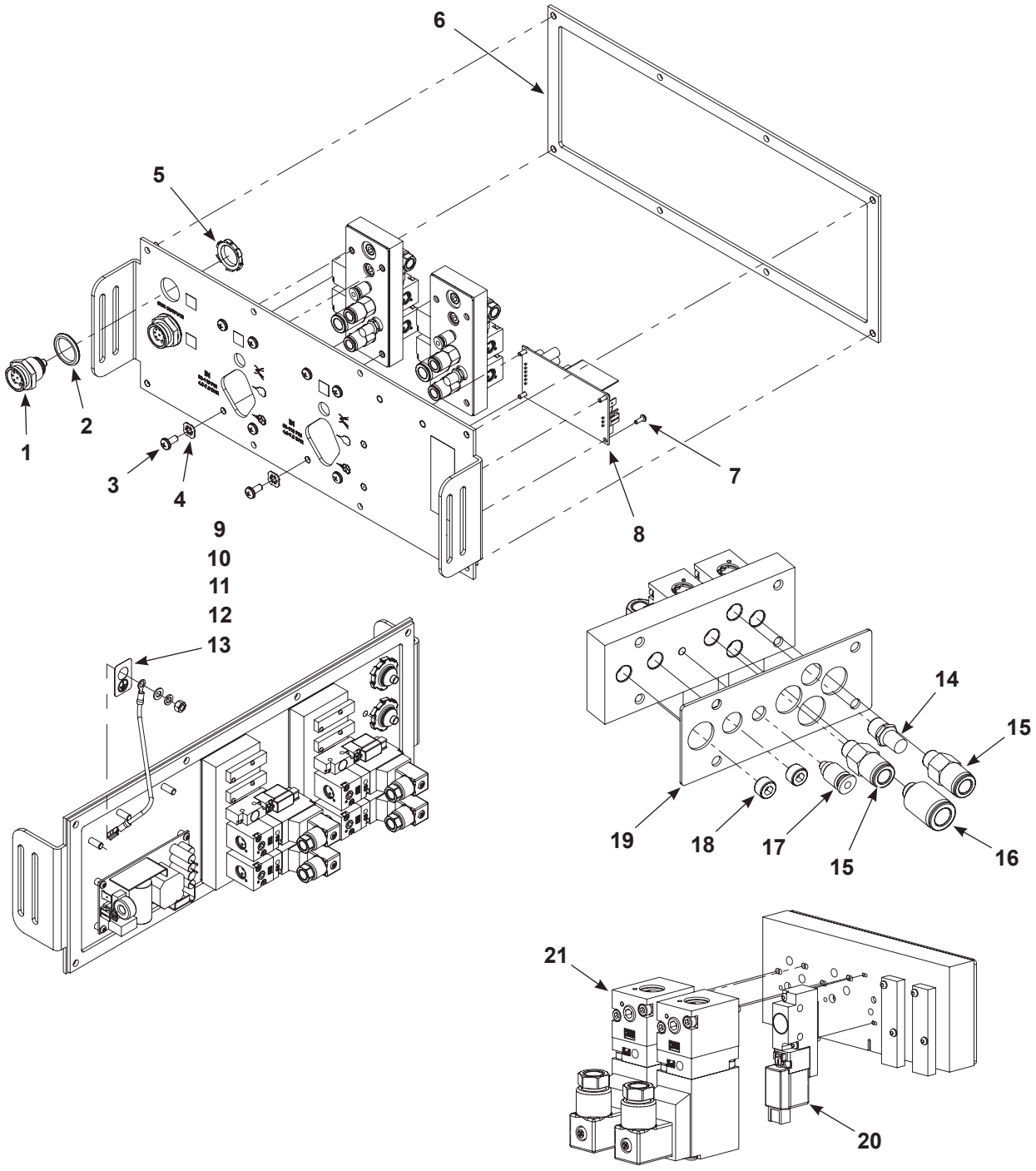


Figure 6-4 Rear Panel Sub-Assembly Parts − Dual and Multi-Gun Controllers

Dual and Multi-Gun Rear Panel Sub-Assembly Parts List

See Figure 6-4.

Item	Part	Description	Quantity	Note
1	1107566	RECEPTACLE, gun, Encore, auto	2	
2	939122	SEAL, conduit fitting, 1/2 in. blue	2	
3	1045837	SCREW, pan head, recessed, M5 x 12, with lockwasher	8	
4	1068715	WASHER, lock, dished, #10	2	
5	984526	NUT, lock, 1/2 in. conduit	2	
6	1107693	GASKET, rear panel, Encore auto	1	
7	982824	SCREW, pan head, recessed, M3 x 8, with lockwasher	4	
8	1107695	POWER SUPPLY, 24VDC, 60W	1	
9	984702	NUT, hex, M5, brass	2	
10	983401	WASHER, lock, split, M5, steel, zinc	2	
11	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
12	302189	WIRE, ground assembly, 10.5 in.	1	
13	240674	TAG, ground	2	
14	1108313	MUFFLER, exhaust, R1/8	1	
15	1030873	VALVE, check, M8 tube x R1/8, M input	2	
16	1107596	CONNECTOR, male, with internal hex, 10 mm tube x 1/8 in. unithread	1	
17	1062009	CONNECTOR, male, with internal hex, oval collar, 4 mm tube x M5	1	A
17	1604492	CONNECTOR, 4 mm tube x M5, 0.4 mm orifice	1	A
18	1082120	PLUG, pipe, socket, flush, R1/8, zinc	2	
19	1107593	GASKET, manifold, controller, Encore LT	1	
20	1099281	VALVE, solenoid, 3 port, 24 V, 0.35 W	1	
21	1107598	REGULATOR, electro-pneumatic, HY., with harn	2	

NOTE: A. If replacing this connector, check the original connector ID. The 1604492 connector has a 0.4 mm orifice. The 1062009 connector does not. Order the correct connector for your version of controller.

Multi-Gun Controller Parts

Front Panel Parts

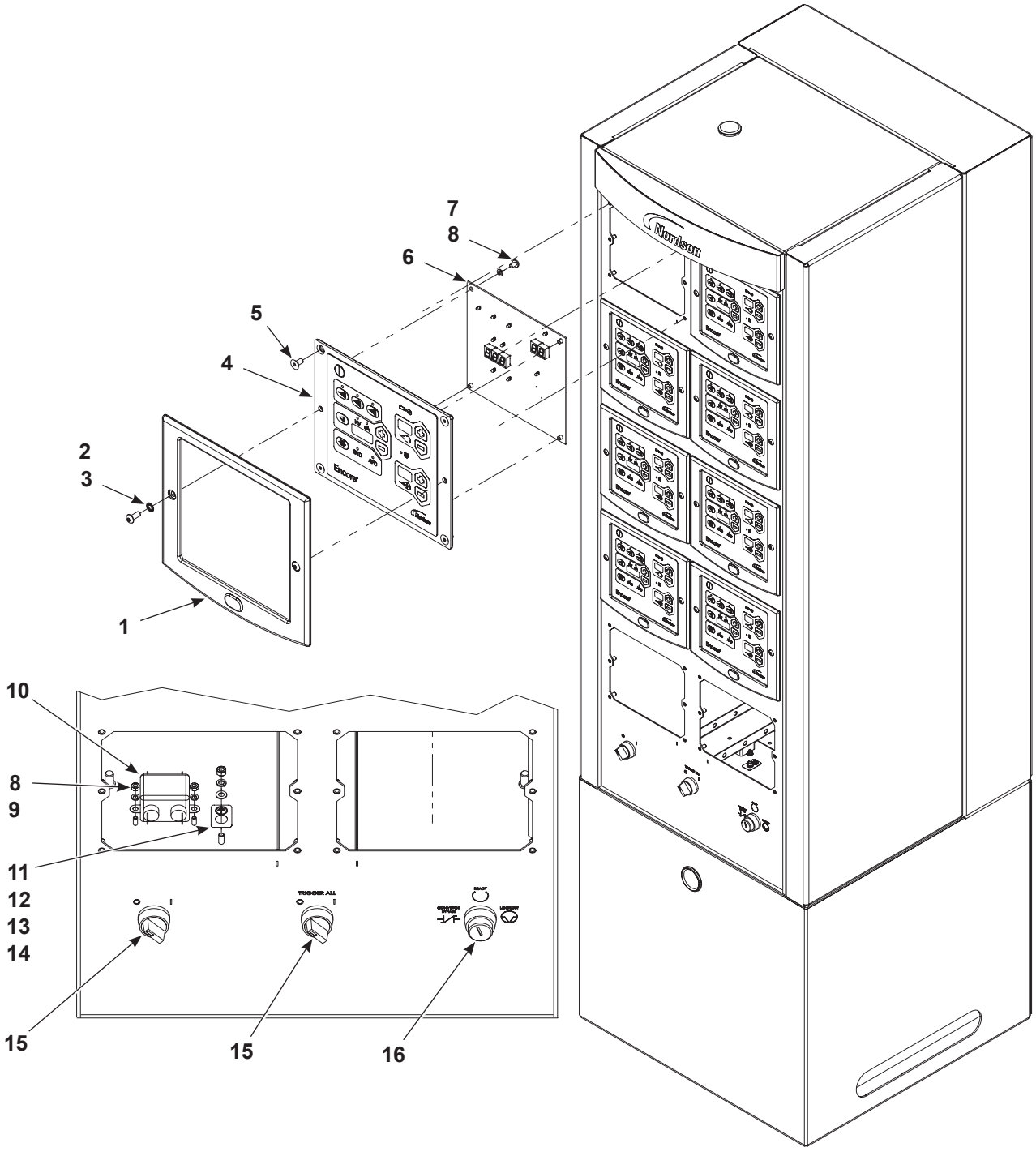


Figure 6-5 Multi-Gun Controller Front Panel Parts

Multi-Gun Controller Front Panel Parts List

See Figure 6-5.

Item	Part	Description	Quantity	Note
1	1082081	BEZEL, interface, controller	AR	
2	982636	SCREW, button head, socket, M5 x 12, zinc	AR	
3	983127	WASHER, lock, internal, M5, zinc	AR	
4	1108312	PANEL, keypad, Encore LT/auto controller, packaged	AR	
5	982916	SCREW, flat head, socket, M5 x 10, black	AR	
6	1108279	KIT, PCA, control, Encore LT	AR	
7	982881	SCREW, pan head, recessed, M4 x 6, zinc	AR	
8	983403	WASHER, lock, split, M4, steel, zinc	AR	
9	984715	NUT, hex, M4, steel, zinc	2	
10	1107696	FILTER, line, RFI power, 3 A, with 0.25 Q.D.	1	
11	984702	NUT, hex, M5, brass	AR	
12	983401	WASHER, lock, split, M5, steel, zinc	AR	
13	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	AR	
14	240674	TAG, ground	AR	
15	334806	SWITCH, round, 2 position, 90 degree	2	
16	1000594	SWITCH, keylock, 3 position	1	
AR: As Required				

Multi-Gun Controller Rear Panel Parts

See Figure 6-4 for the dual and multi-gun rear panel sub-assembly and parts list. Each panel provides the outputs for 2 automatic spray guns.

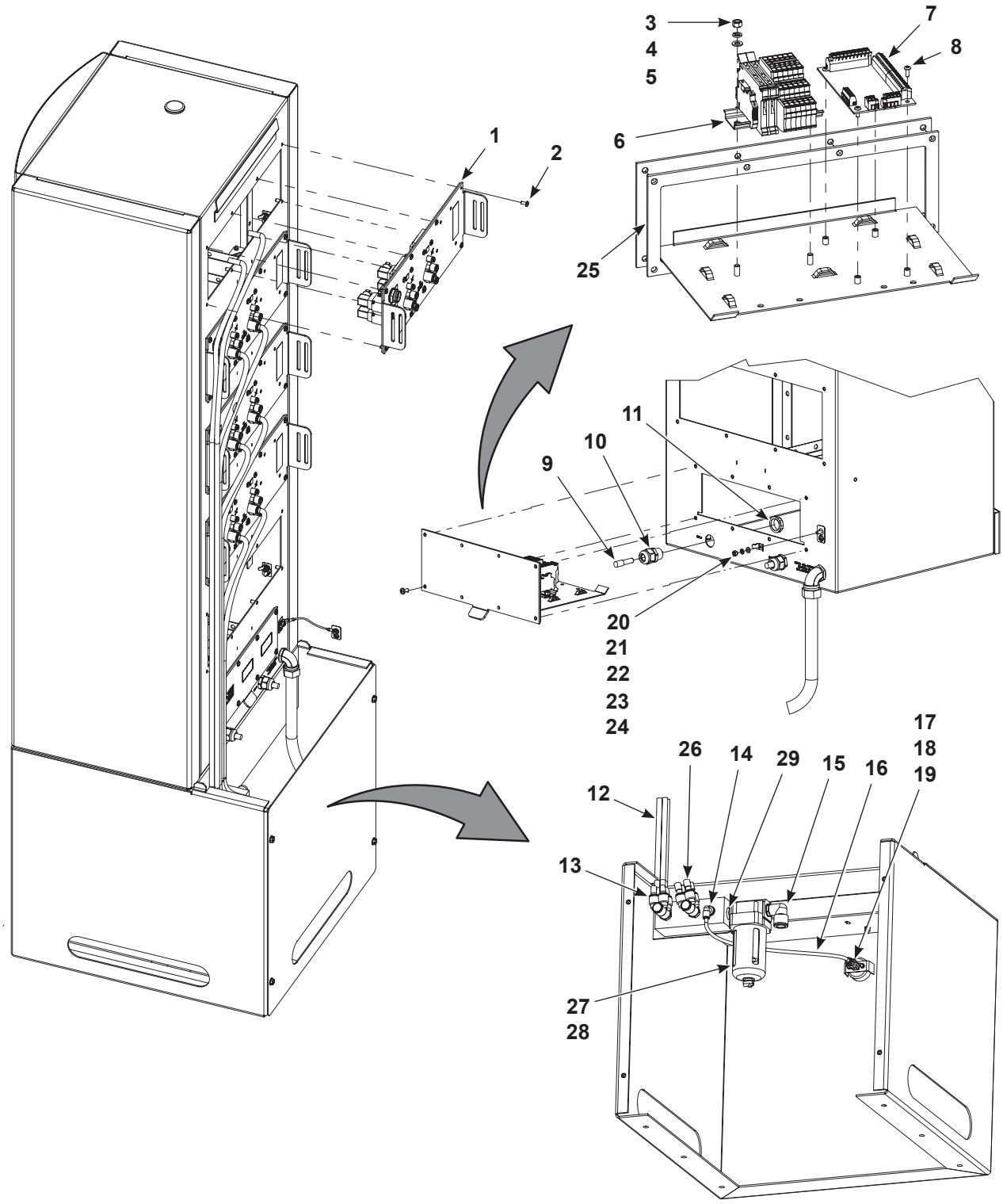


Figure 6-6 Multi-Gun Controller Rear Panel Parts

Multi-Gun Controller Rear Panel Parts List

See Figure 6-6.

Item	Part	Description	Quantity	Note
1	–––––––	PANEL, sub-assembly, 2 gun, controller, Encore automatic	AR	A
2	1045837	SCREW, pan head, recessed, M5 x 12, with lockwasher,	AR	
3	984702	NUT, hex, M5, brass	2	
4	983401	WASHER, lock, split, M5, steel, zinc	2	
5	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
6	–––––––	TERMINAL BLOCK ASSEMBLY, Encore LT automatic	1	
7	1108311	KIT, PCA, trigger distribution, Encore LT	1	
8	982824	SCREW, pan head, recessed, M3 x 8, with lockwasher	4	
9	972930	PLUG, push-in, 8 mm, tube, plastic	AR	
10	972808	CONNECTOR, strain relief, 1/2 in. NPT	AR	
11	984192	NUT, lock, 1/2 in. NPT, nylon	AR	
12	900740	TUBING, polyurethane, 10/6.5−7 mm, blue	AR	
13	1107759	FITTING, 3/8 RPT, 4, 10 mm tube	2	
14	972091	CONNECTOR, male, elbow, 6 mm tube x 3/8 in. unithread	1	
15	972143	CONNECTOR, male, elbow, 16 mm tube x 1/2 in. unithread	1	
16	900742	TUBING, polyurethane, 6/4 mm, blue	AR	
17	972399	CONNECTOR, male, w/internal hex, 6 mm tube x 1/8 in. unithread	1	
18	973572	COUPLING, pipe, hydraulic, 1/8 in., steel, zinc	1	
19	1043857	GAUGE, air, 0−100 psi, 0−7 bar, 1-1/2 in.	1	
20	984702	NUT, hex, M5, brass	2	
21	983401	WASHER, lock, split, M5, steel, zinc	2	
22	983021	WASHER, flat, 0.203 x 0.406 x 0.040, brass	2	
23	983469	LUG, 90, double, 0.250, 0.438	1	
24	240674	TAG, ground	2	
25	1107717	GASKET, distribution tray, Encore automatic	1	
26	148256	PLUG, 10 mm, tubing	AR	
27	1600608	FILTER, mist separator, 0.3 micron, 1/2 NPT	1	
28	1600609	• FILTER ELEMENT, mist separator, 0.3 micron	1	
29	973076	NIPPLE, steel, schedule 40, 1/2 in. NPT, 1.12 in.	1	
NS	240976	CLAMP, ground, with wire	1	

NOTE: A. Refer to Rear Panel Sub-Assembly a parts breakdown.

AR: As Required

NS: Not Shown

System Parts and Options

Powder Hose and Air Tubing

Powder hose and air tubing must be ordered in increments of one foot.

Part	Description	Note
768176	Powder hose, 11 mm antistatic	
768178	Powder hose, 12.7 mm (1/2 in.) antistatic	
900648	Powder hose, 11 mm blue	
900650	Powder hose, 12.7 mm (1/2 in.) blue	
900617	Air tubing, 4 mm, clear	
900742	Air tubing, 6 mm, blue	
1096789	Air tubing, antistatic, 6/4 mm, black (conductive air tubing)	
900741	Air tubing, 6 mm, black	
900618	Air tubing, 8 mm, blue	
900619	Air tubing, 8 mm, black	
900740	Air tubing, 10 mm, blue	
900517	Tubing, poly, spiral cut, 0.62 in. ID	
301841	Strap, Velcro, with buckle, 25 x 3 cm	

System Options

Part	Description	Quantity	Note
1107918	KIT, wall mount, Encore auto	1	A
1600566	KIT, filter, Encore LT	1	B
1601153	KIT, 2-gun upgrade, Encore auto controller	1	C
1601154	KIT, cabinet cooler, 1700 BTU/HR	1	D

NOTE: A. Use for mounting a one or two dual controllers on a wall.

B. Optional filter kit for use with single and dual gun controllers. Kit includes fittings and mounting bracket.

C. 4 and 6 gun controllers only.

D. Multi-gun controller only.

Section 7
Drawings

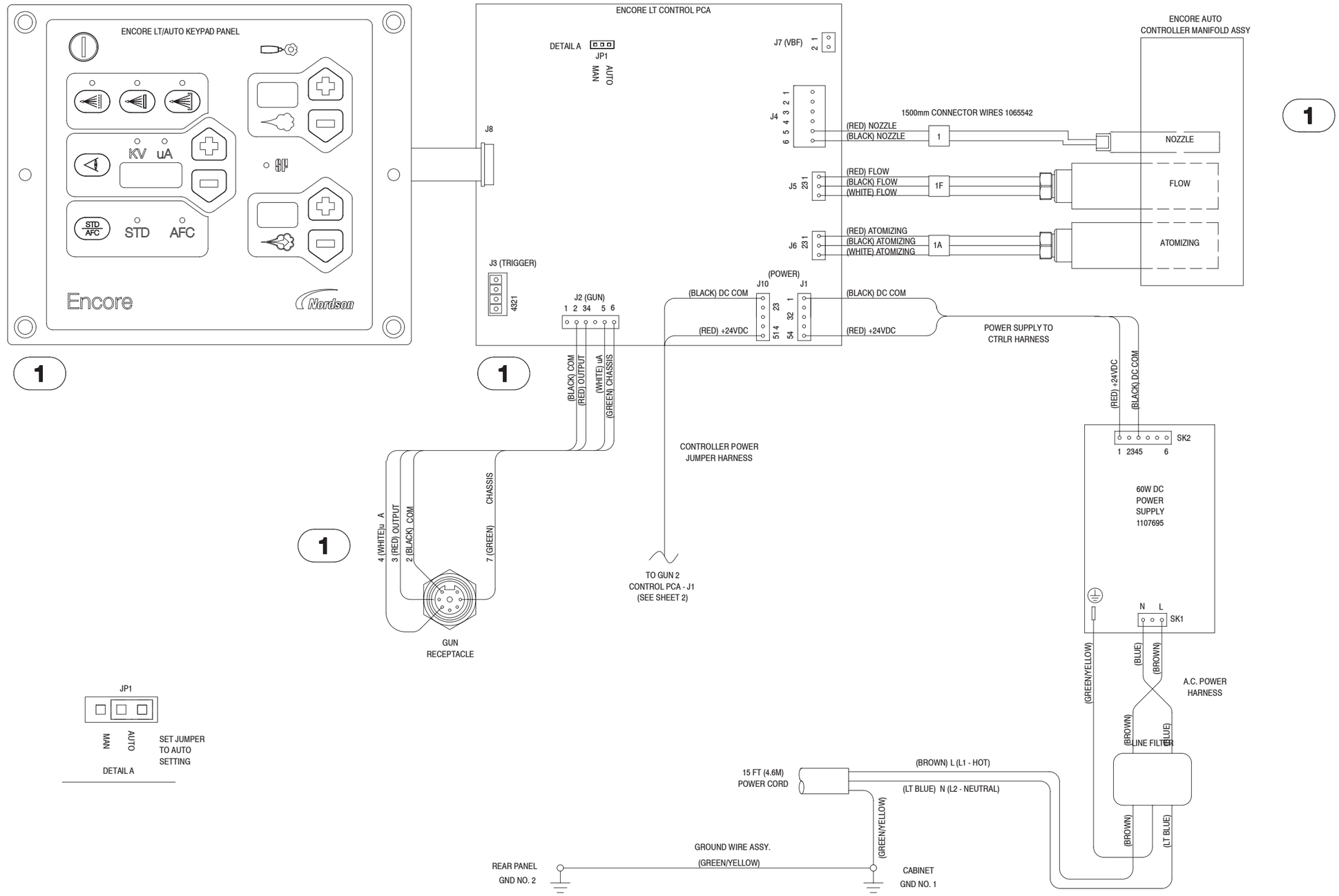


Figure 7-1 Single/Dual-Gun Controller Wiring Diagram (1 of 2)

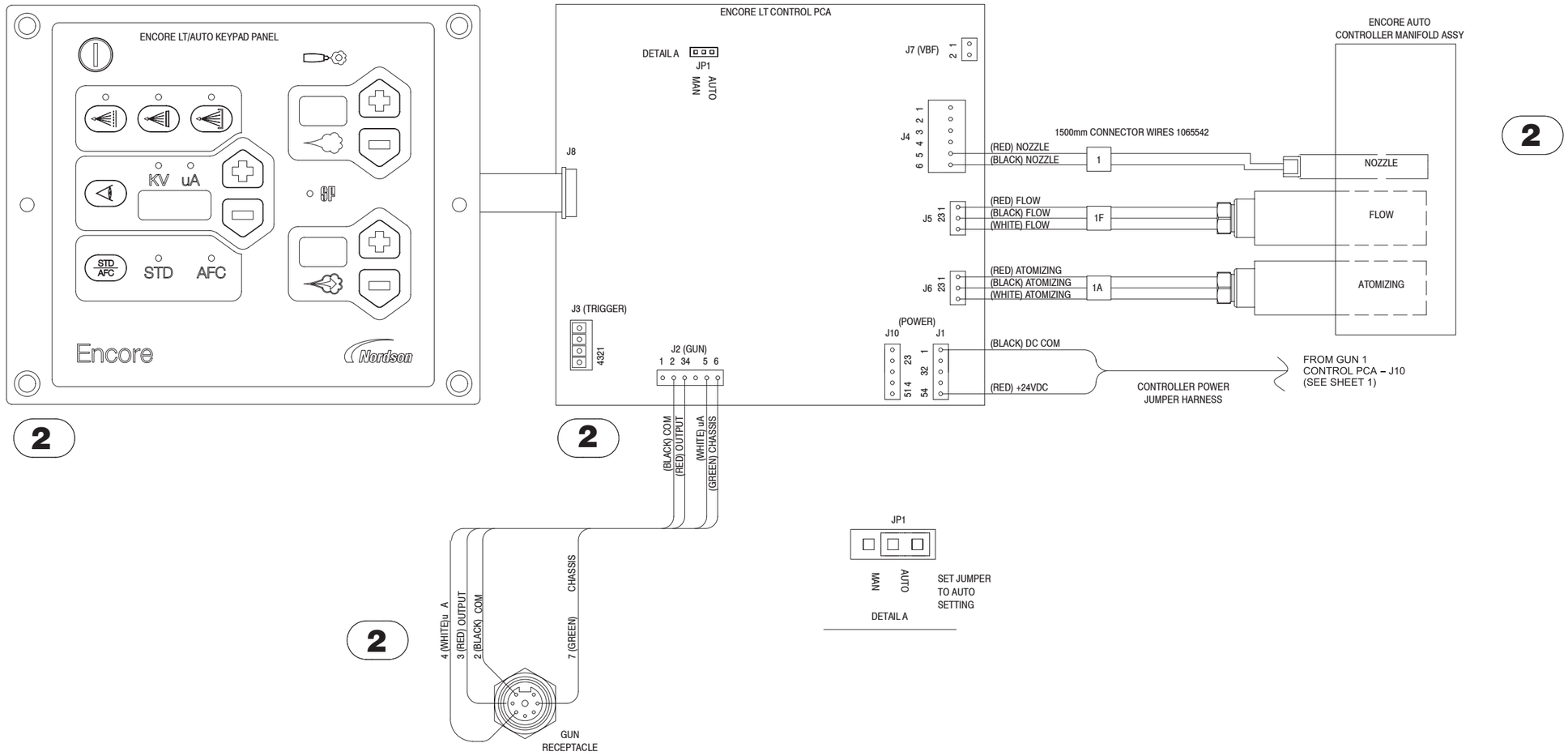
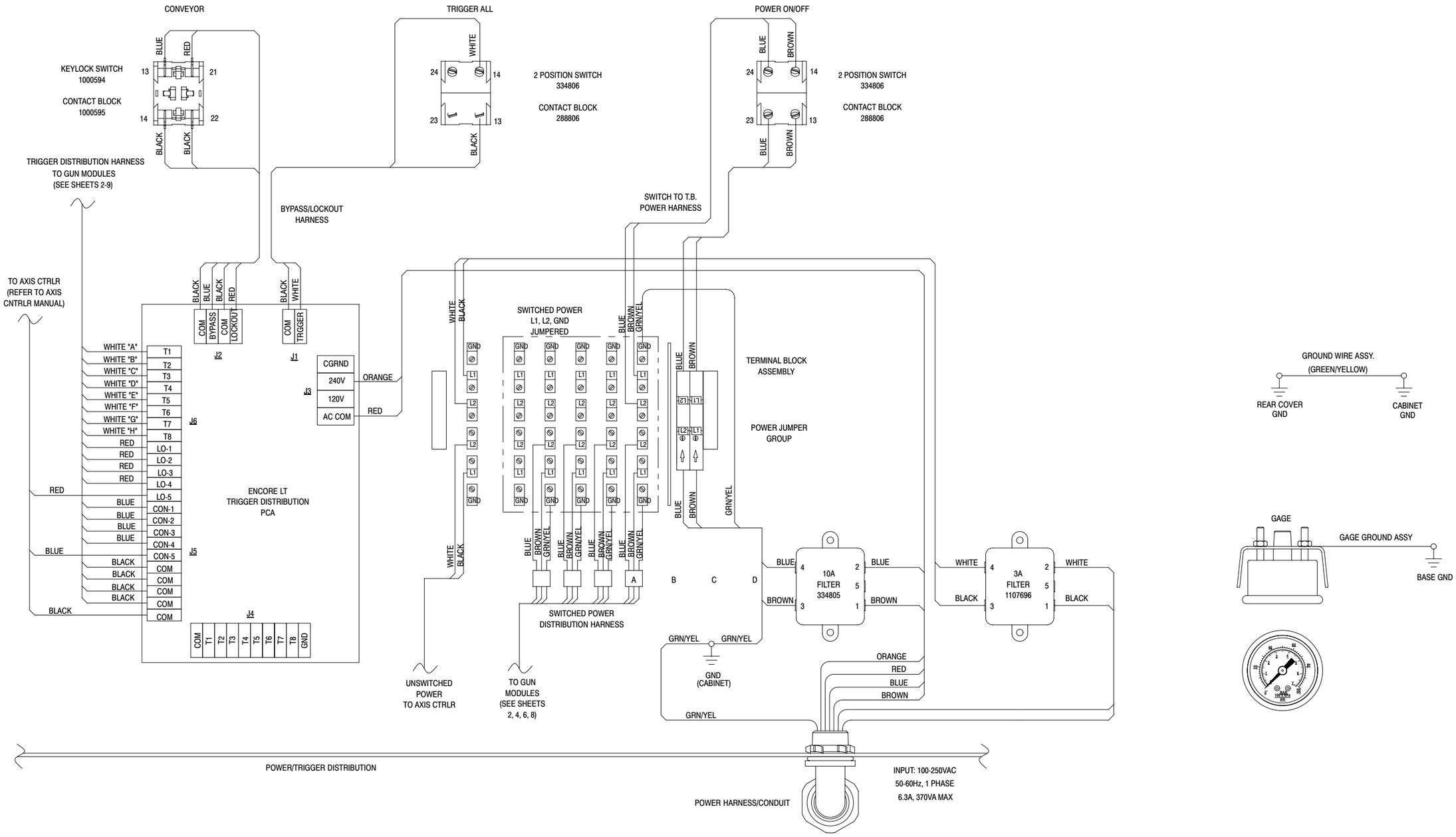


Figure 7-2 Dual-Gun Controller Wiring Diagram (2 of 2)



Multi-Gun Controller Wiring Diagram (1 of 3)

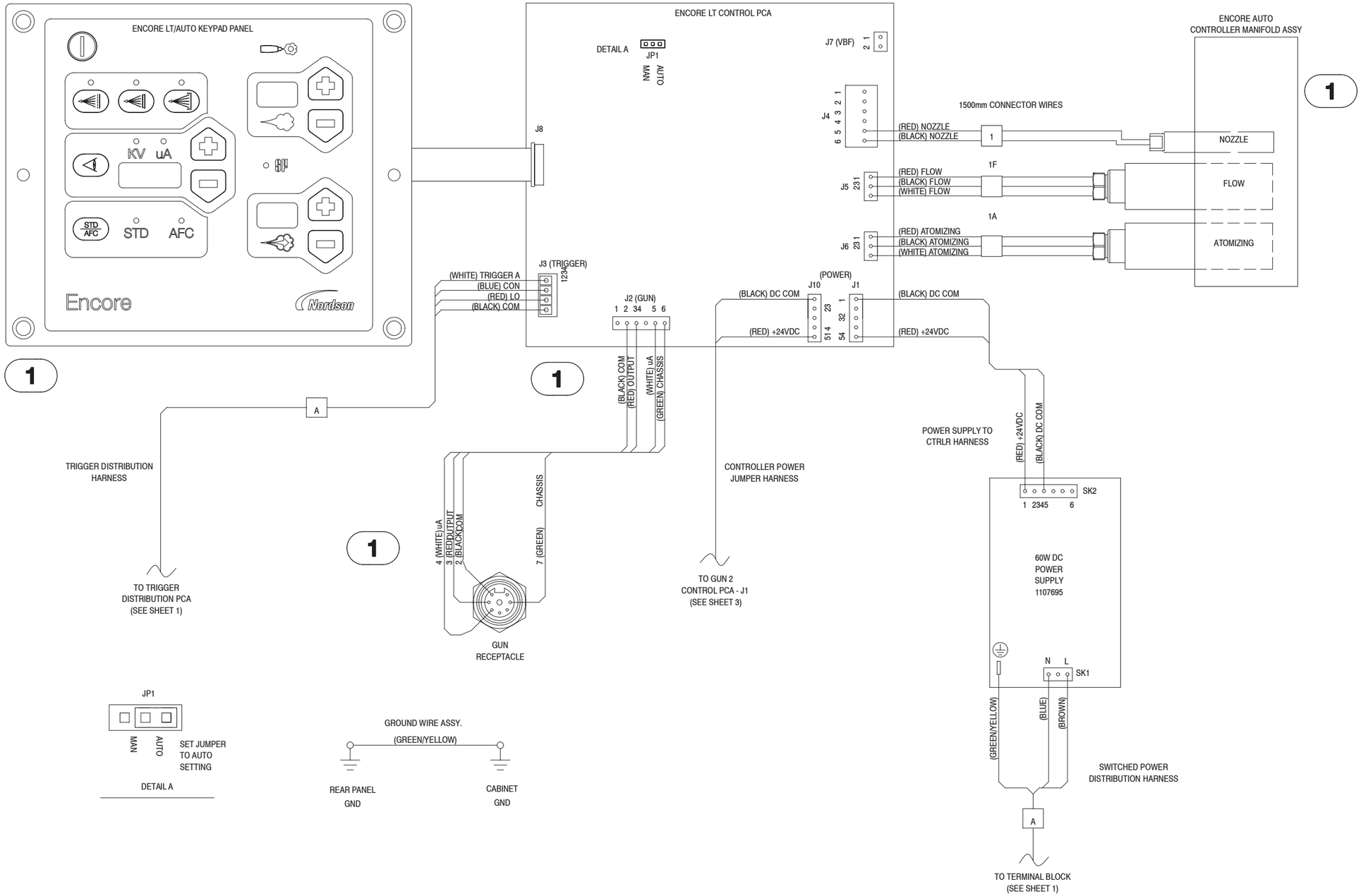
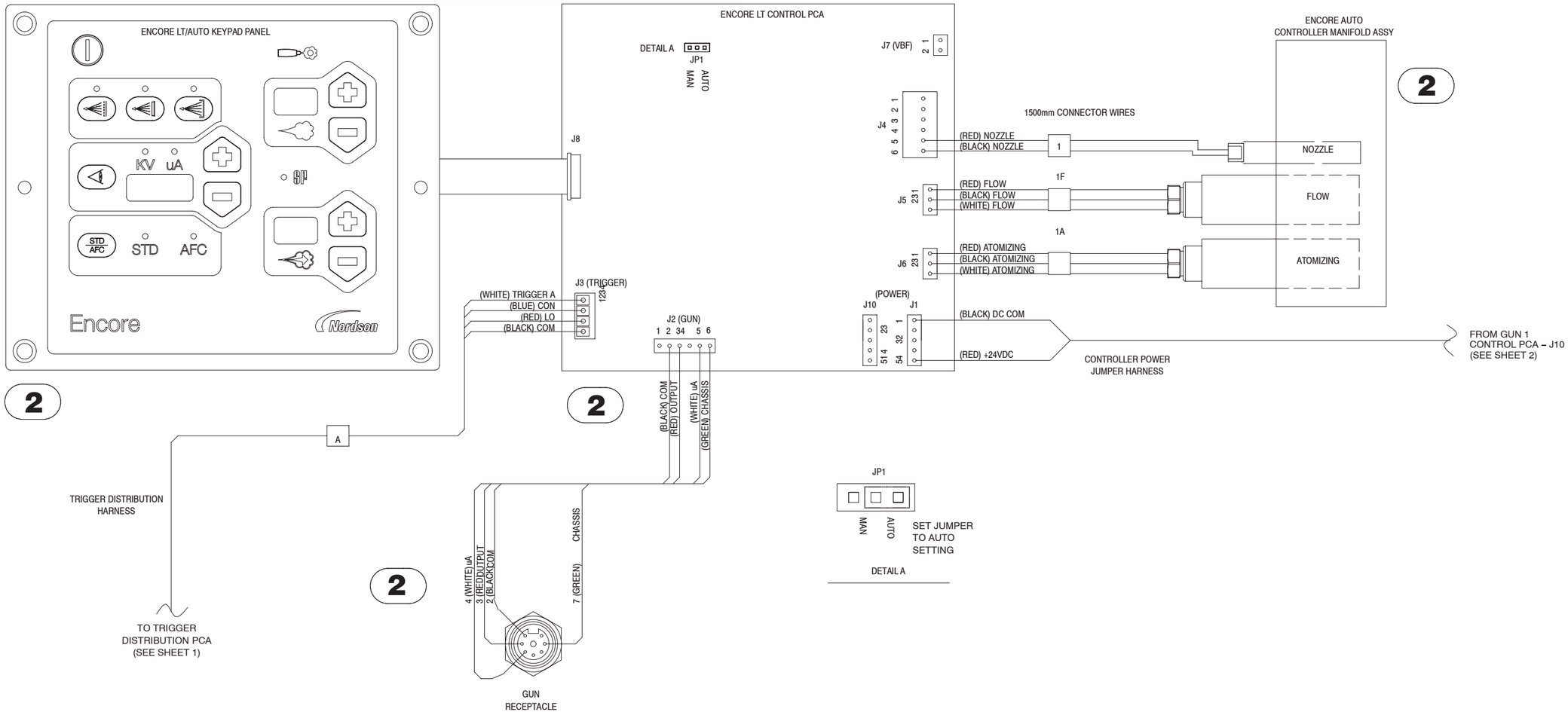


Figure 7-3 Multi-Gun Controller Wiring Diagram (2 of 3)



REPEAT SHEETS 2 AND 3 FOR MORE CONTROLLERS

Figure 7-4 Multi-Gun Controller Wiring Diagram (3 of 3)

EU DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: Encore LT Automatic and Manual Powder Spray Systems

Models: Encore Automatic Applicator and Encore LT Automatic Controllers.
Encore LT Manual Applicator with Encore LT Manual Controller.

Description: The automatic electrostatic powder spray system includes applicator, Control cable and associated controllers. These Controls are available in a one applicator, dual applicator or a 4-8 applicator system. The manual powder electrostatic powder spray system includes applicator, control cable and associate controls. This is available in a stationery system, or in a mobile system.

Applicable Directives:
2006/42/EC – Machinery Directive
2014/30/EU – EMC Directive
2014/34/EU – ATEX Directive

Standards Used for Compliance:

EN/ISO12100 (2010)	EN60204-1 (2018)	EN61000-6-3 (2007)
EN IEC 60079-0 (2018)	EN50050-2 (2013)	EN61000-6-2 (2005)
EN60079-31 (2014)	EN50177 (2009 +A1:2012)	EN55011 (2009)

Principles:
This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:
- Ambient Temperature: +15ºC to +40ºC
- Ex II 2 D / 2mJ = (Manual and Auto Applicators)/ Automatic Applicators are Type: A-P per EN50177
- EX II (2) 3 D = (Manual & Automatic Controllers)

Certificates:
- FM11ATEX0056X = (Applicators) (Dublin, Ireland)
- FM11ATEX0057X = (Controller) (Dublin, Ireland)

ATEX Surveillance
- 0598 SGS Fimko Oy (Helsinki, Finland)

Date: 10Oct2024

_____
Jeremy Krone
Supervisor Product Development Engineering
Industrial Coating Systems
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Nordson Authorized Representative in the EU
Contact: Operations Manager
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Nordson Deutschland GmbH
Heinrich-Hertz-Straße 42-44
D-40699 Erkrath

UK DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacture.

Product: Encore LT Automatic and Manual Powder Spray Systems

Models: Encore Automatic Applicator and Encore LT Automatic Controllers.
Encore LT Manual Applicator with Encore LT Manual Controller.

Description: The automatic electrostatic powder spray system includes applicator, Control cable and associated controllers. These Controls are available in a one applicator, dual applicator or a 4-8 applicator system. The manual powder electrostatic powder spray system includes applicator, control cable and associate controls. This is available in a stationery system, or in a mobile system.

Applicable UK Regulations:
Supply Machinery Safety 2008
Electromagnetic Compatibility Regulation 2016
Equipment & Protective Systems Intended for use in Potentially Explosive Atmosphere Reg 2016

Standards Used for Compliance:

EN/ISO12100 (2010)	EN IEC 60079-0 (2018)	EN61000-6-3 (2007)	EN55011 (2009)	EN60204-1 (2018)
EN50177 (2009)	EN60079-31 (2014)	EN61000-6-2 (2005)	EN50050-2 (2013)	

Principles:
This product has been designed & manuf. according to the Directives & standards / norms described above.

Type of Protection:
- Ambient Temperature: +15ºC to +40ºC
- Ex II 2 D / 2mJ = (Manual and Auto Applicators)/ Automatic Applicators are Type: A-P per EN50177
- EX II (2) 3 D = (Manual & Automatic Controllers)

Certificates:
- FM22UKEX0006X = (Applicators) (Maidenhead, Berkshire, UK)
- FM22UKEX0007X = (Controllers) (Maidenhead, Berkshire, UK)

EX Quality System Certificate
- SGS Baseefa NB 1180 (Buxton, Derbyshire, UK)

Date: 10Oct2024

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