Two-Component Controller

Customer Product Manual
Part 331 163A

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Notice

Trademarks

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Two-Component Controller

1. Safety

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.

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 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.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated.
- 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.

High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the MSDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:

WARNING: Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show him this card.
- Tell him what kind of material you were spraying.

MEDICAL ALERT—AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment in the spray area. 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 MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- 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.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

Element	Symbol	Prefix
Fluorine	F	“Fluoro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

Check your material MSDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

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.

2. Description

See Figure 1. This figure shows a typical two-component controller.

The two-component controller operates and monitors the two-component meter. The keypad on the front of the two-component controller is used to set the operating parameters.

The two-component controller reads the encoder and proximity switches on the two-component meter to detect faults and to measure dispensed volume.

Any faults detected are displayed on the keypad LCD panel. The LCD panel has two lines, with 16 characters per line.

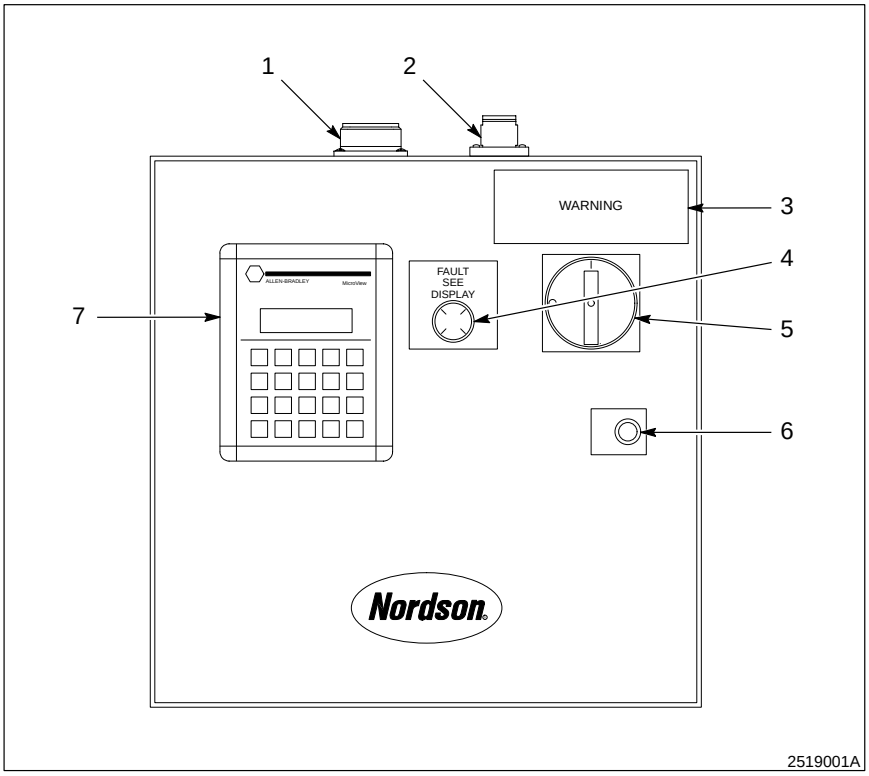

Fig. 1 Typical Two-Component Controller

1. Metering unit interface connection
2. Robot interface cable connection
3. Warning label
4. Fault light
5. Power switch
6. Door latch
7. Keypad display

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.

WARNING: All wiring must be connected according to local, state, and national codes.

The following provides instructions on how to connect the power to the two-component controller, and how to connect the metering unit cable and robot interface cable.

Connecting Power

See Figure 2 and the system controller prints located in the system manual for the wiring information needed to connect the AC power.

1. Open the controller box.
2. Route power wires through a conduit.
3. Connect the AC power.
4. Close the controller box.

Connecting Power *(contd.)*

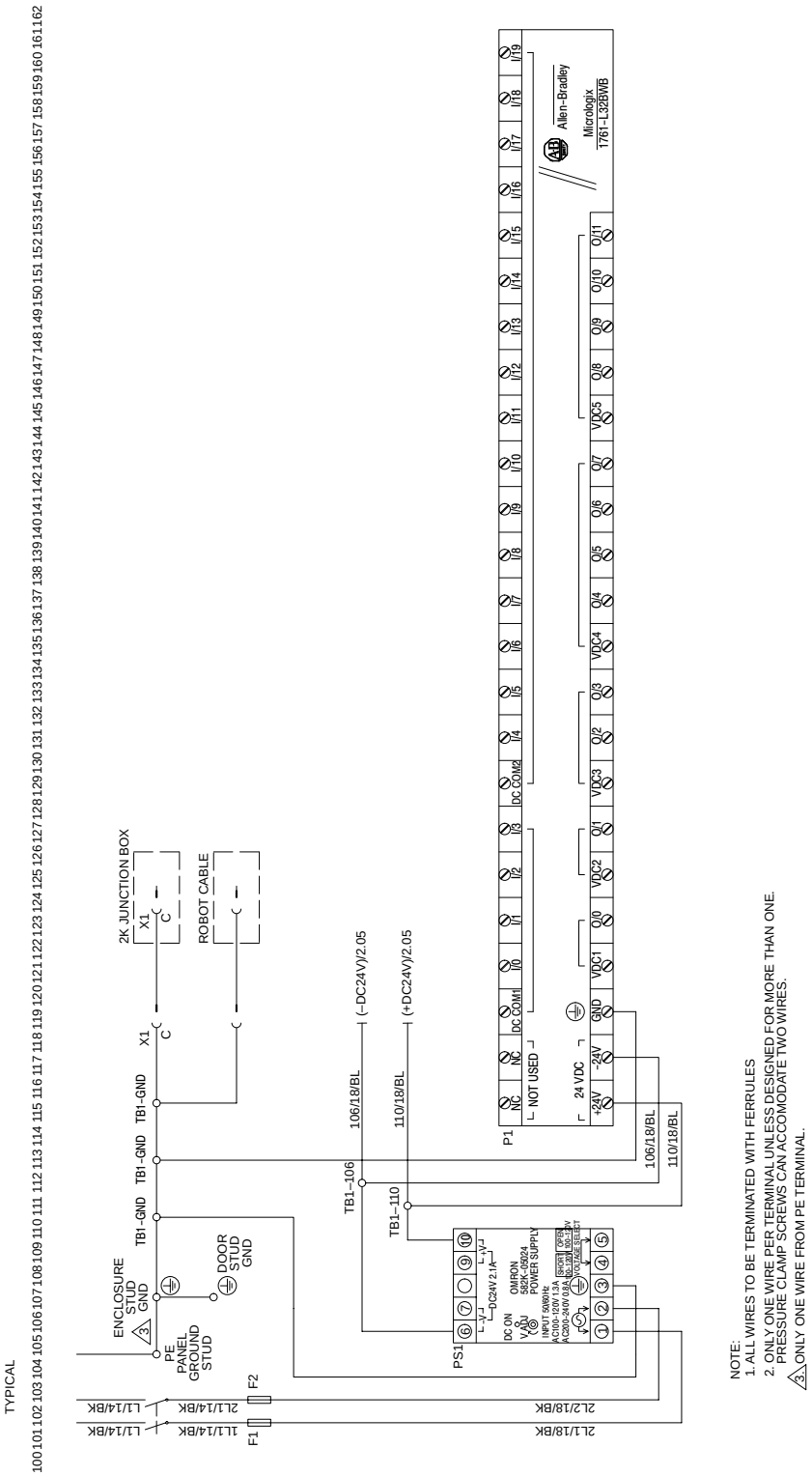

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Fig. 2 Power Hookup Electrical Schematic

Connecting Robot Interface and Metering Unit Cables

See Figure 3 and the system controller prints located in the system manual. Figure 3 shows the two-component controller with the robot interface cable and metering unit cable connected.

See Figures 4 and 5, and the system controller prints located in the system manual for the wiring information needed to connect the robot interface and metering unit cables.

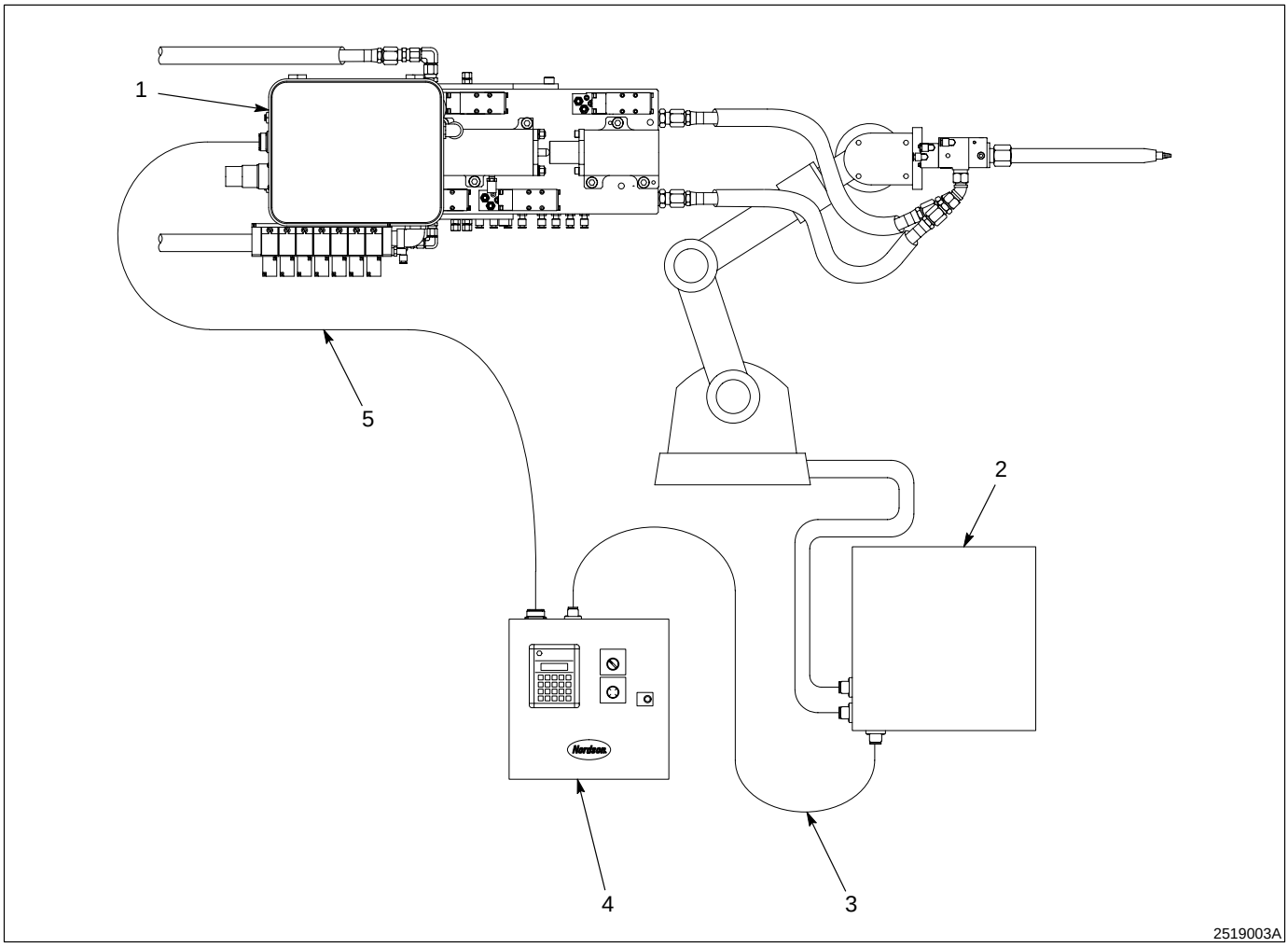

Fig. 3 Connected Robot Interface Cable and Metering Unit Cable

1. Metering unit junction box
2. Robot controller
3. Robot interface cable
4. Two-component controller
5. Metering unit cable

1. Connect the robot interface cable from the two-component controller to the robot.
2. Connect the metering unit cable from the two-component controller to the metering unit junction box.
3. The two-component controller is now ready for setup.

Connecting Robot Interface and Metering Unit Cables

(contd.)

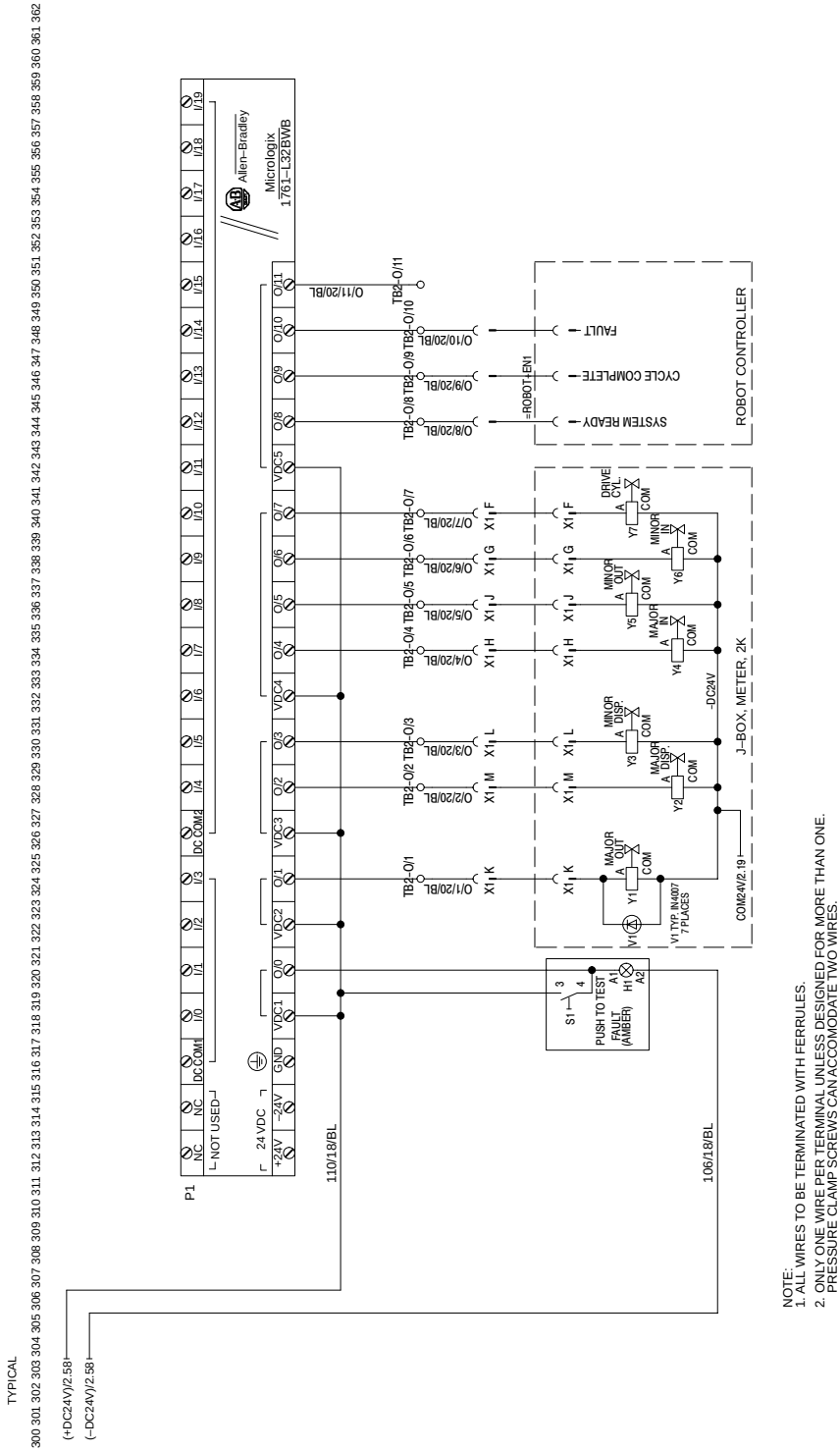

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Fig. 4 Robot Interface Cable Connection Electrical Schematic

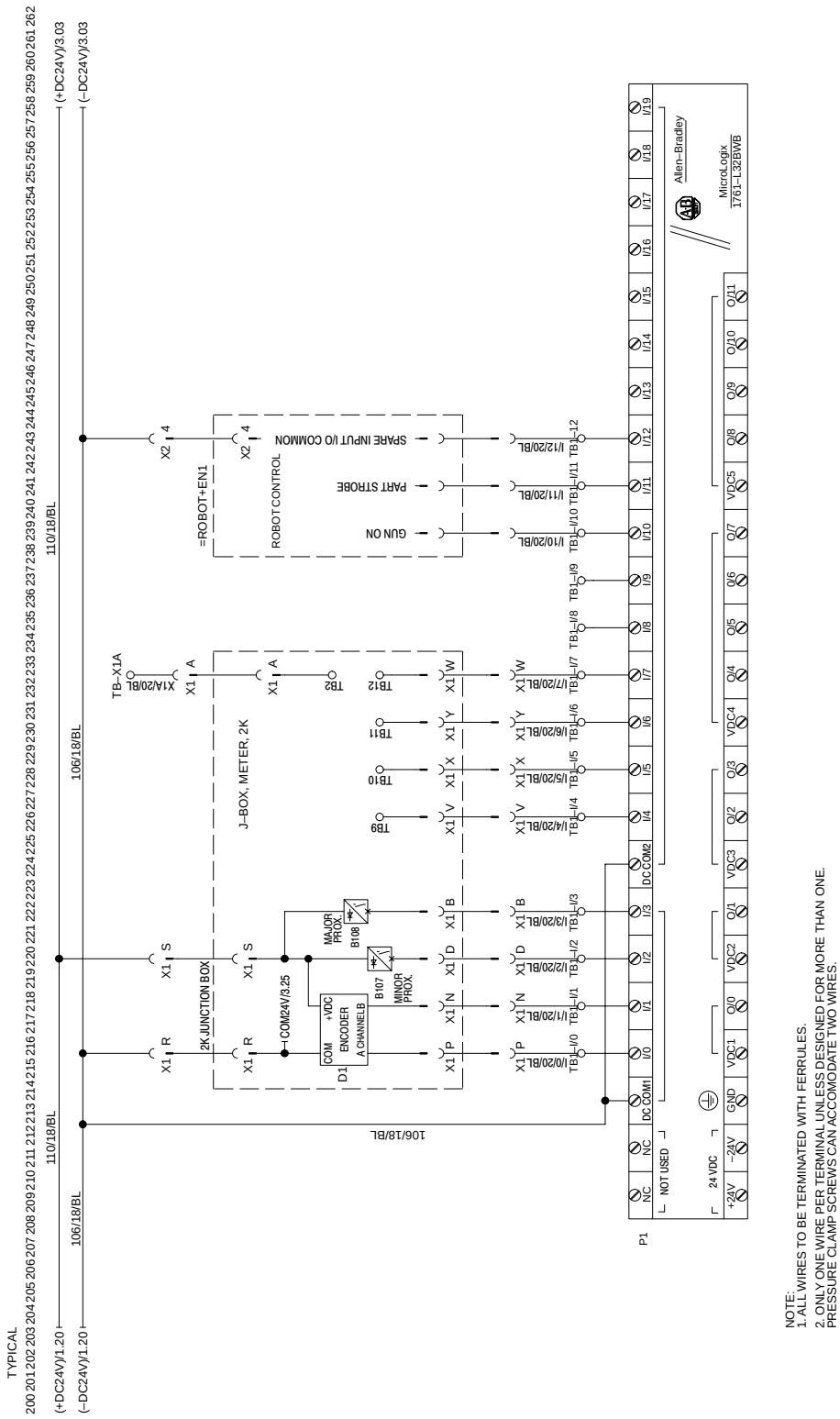

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Fig. 5 Metering Unit Cable Connection Electrical Schematic

4. Operation

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

NOTE: Read this entire section before performing any procedures.

The following provides information on how to use the two-component controller keypad.

Using the Keypad

See Figure 6. This figure shows what each button on the keypad represents.

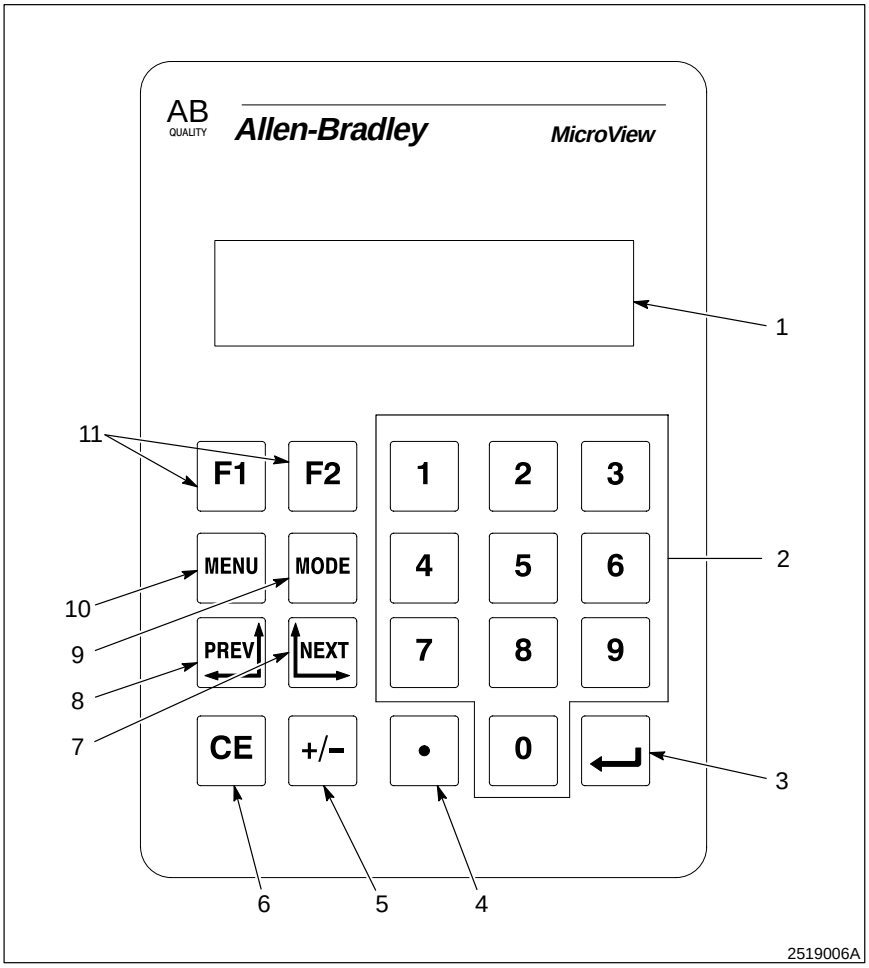

Fig. 6 Keypad

1. Display panel
2. Number keys
3. ENTER key
4. Decimal key
5. Positive\negative toggle key
6. Clear entry key
7. NEXT screen key
8. PREVIOUS screen key
9. MODE key
10. MENU key
11. Function keys

Refer to Table 1 for an explanation of the keypad functions.

Table 1 Keypad Functions

Key	Function
MENU	Returns to the main menu of an application
MODE	Accesses special features and configuration of operating parameters
PREV	Steps back through a sequence of linked screens
NEXT	Steps forward through a series of linked screens
CE	Clears an entire value during data entry
+/–	Toggles a data entry value between positive or negative
•	Enters a decimal point
↵	The ENTER key. Sends data to the controller. Data can be either default values or data entered at the keypad
0 → 9	Enters numbers 0–9 during data entry or selects a numbered item shown on the display
F1 → F2	Displays any application screen assigned to the key

Using the Keypad *(contd.)*

See Figure 7 for the menu tree.

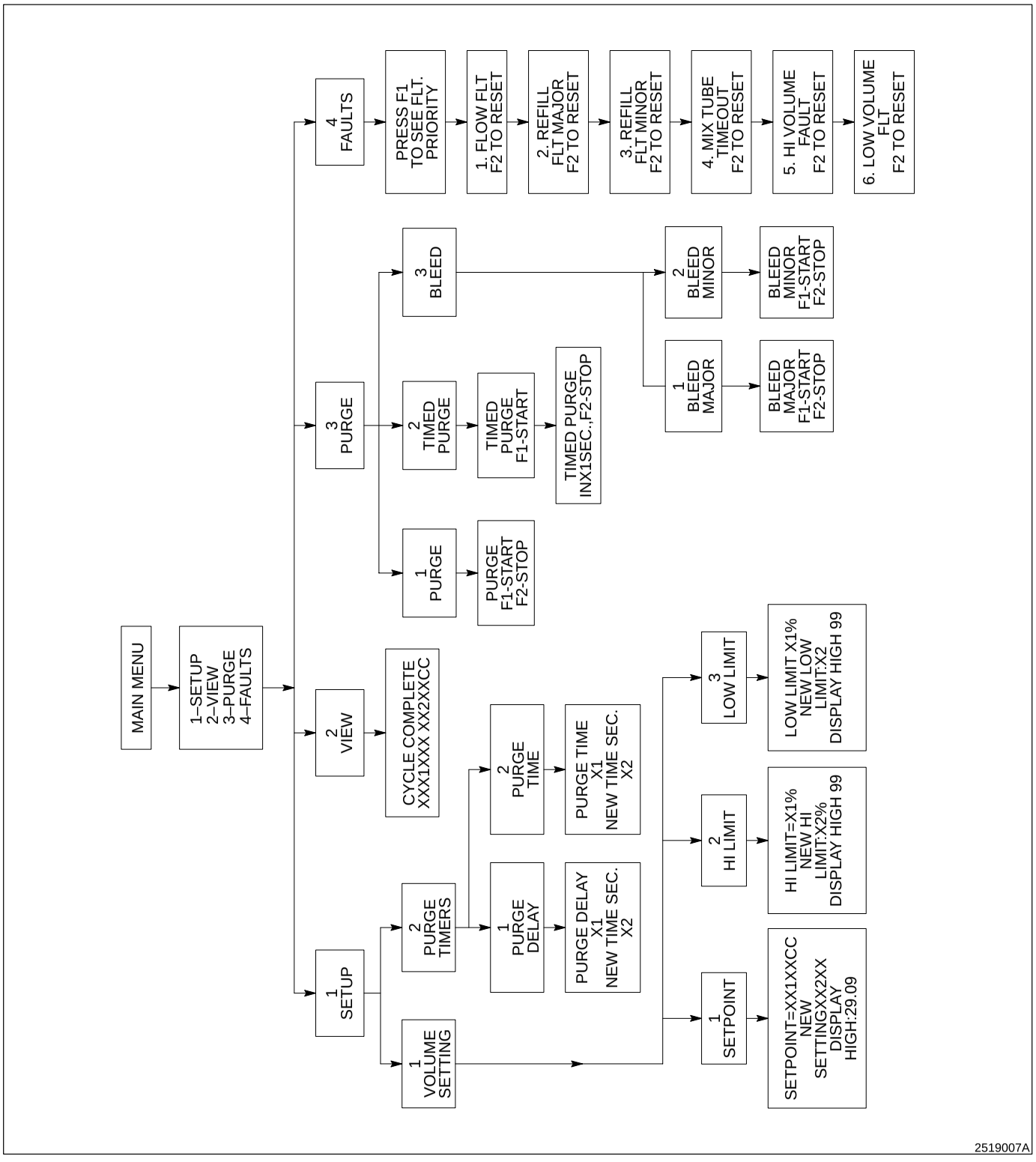

Fig. 7 Menu Tree

Setup

The View screen displays the status of the operation. Unless other functions are being performed with the two-component controller, the View screen always appears.

NOTE: The two-component controller displays the View screen after a 30-second timeout.

1. Turn the power switch on.
2. The View screen appears on the screen.
3. Press **[MENU]**. The Main Menu appears.

Volume

1. From the Main Menu, press **[1]** for SETUP. The Setup screen appears.

2. From the Setup screen, press **[1]** for VOLUME SETTING. The Volume Setting screen appears.

3. Press **[1]** for SETPOINT. The Setpoint screen appears.

4. Enter the NEW SETPOINT and press **[Enter]**. The Volume Setting screen appears.

5. Press **[2]** for HI LIMIT. The Hi Limit screen appears. Enter the HI LIMIT and press **[Enter]**. The Volume Setting screen appears.

6. Press **[3]** for LOW LIMIT. The Low Limit screen appears. Enter the LOW LIMIT and press **[Enter]**. The Volume Setting screen appears.

7. The volume is now set. Press **[MENU]** to return to the Main Menu.

Purge

1. From the Main Menu, press **[1]** for SETUP. The Setup screen appears.

2. Press **[2]** for PURGE TIMERS. The Purge Timers screen appears.

NOTE: Purge Delay is the number of seconds the controller counts down before starting a timed purge. This is used for a Timed Purge, as explained in the *Purge* section.

3. Press **[1]** for PURGE DELAY. The purge delay screen appears. Enter the new Purge Delay (NEW TIME SEC.) and press **[Enter]**. After 30 seconds, the View Screen appears to show the status of the operation. Or, press **[MENU]** to return to the Main Menu.

Purge *(contd.)*

4. From the View screen, press **[MENU]** to return to the Main Menu.

5. Press **[1]** for SETUP. The Setup screen appears.

6. Press **[2]** for PURGE TIMERS. The Purge Timers screen appears.

NOTE: Purge Time is the length of time a purge lasts. This is used for a Timed Purge, as explained in the *Purge* section.

7. Press **[2]** for PURGE TIMER. The Purge Timer screen appears. Enter the new Purge Time and press **[Enter]**. After 30 seconds, the View screen appears to show the status of the operation. Or, press **[MENU]** to return to the Main Menu.

View Screen

1. From the Main Menu, press **[2]** for VIEW. The View screen appears.

2. If the controller and meter are in operation, the View screen will display the current status—either Dispensing or Refilling.

NOTE: When the screen displays Dispensing, it upcounts the CCs as the meter dispenses.

3. If the controller and meter have just finished a cycle, the View screen will display CYCLE COMPLETE OK XX CC

4. If the dispensing cycle and refill cycle are complete, and there is a fault, the fault light will begin blinking. The View screen will display the active fault.

NOTE: CYCLE COMPLETE & FAULTED XX CC indicates the last part dispensed was bad. Use this as a troubleshooting tool to determine how many CCs were dispensed when a fault occurred.

Purge

The following procedures explain how to perform purges.

Manual Purge

1. Press **[MENU]**. The Main Menu appears.
2. Press **[3]** for PURGE. The Purge screen appears.
3. Press **[1]** for Purge. The Manual Purge screen appears.
4. Press **[F1]** to start the purge.
5. Press **[F2]** to stop the purge.
6. Press **MENU** to return to the Main Menu.

Timed Purge

1. From the Main Menu, press **[3]** for PURGE. The Purge screen appears.
2. Press **[2]** for TIMED PURGE. The Timed Purge screen appears.
3. Press **[F1]** to start the timed purge.
4. Press **[MENU]** to return to the Main Menu.

Bleed

The following procedures explain how to perform bleeds.

Bleed Major

NOTE: The bleed function will bleed for only 60 seconds before automatically shutting off.

1. From the Main Menu, press **[3]** for PURGE. The Purge screen appears.
2. From the Purge screen, press **[3]** for BLEED. The Bleed screen appears.
3. From the Bleed screen, press **[1]** for BLEED MAJOR. The Bleed Major screen appears.
4. Press **[F1]** to start the bleed major.
5. Press **[F2]** to stop the bleed major.
6. Press **[MENU]** to return to the Main Menu.

Bleed Minor

NOTE: The bleed function will bleed for only 60 seconds before automatically shutting off.

1. From the Main Menu, press **[3]** for PURGE. The Purge screen appears.
2. From the Purge screen, press **[3]** for BLEED. The Bleed screen appears.
3. From the Bleed screen, press **[2]** for BLEED MINOR. The Bleed Minor screen appears.

Bleed Minor *(contd.)*

4. Press **[F1]** to start the bleed minor.
5. Press **[F2]** to stop the bleed minor.
6. Press **MENU** to return to the Main Menu.

Shutdown

To shutdown the two-component controller, turn the power switch to the OFF position.

5. Troubleshooting Faults

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

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.

NOTE: When the light on the two-component controller starts blinking during operation, the actual fault appears on the LCD panel. The following table will assist you in correcting any problems the fault message indicates.

Problem	Possible Cause	Corrective Action
1. FLOW FAULT	No material flow due to cured material blocking mixer tube and/or nozzle	Replace mixer tube or nozzle.
	No material flow due to insufficient air pressure on drive cylinder	Verify drive cylinder pressure, and increase if needed.
	No material flow due to inoperable dispense gun cartridge on either major or minor side	Isolate faulty cartridge by performing bleed operation on major and minor hydraulic circuits. Replace as needed.
	No material flow due to inoperable discharge valve(s) on metering unit	Isolate faulty valve by performing bleed operation on major and minor hydraulic circuits. Replace valve as needed.
2. REFILL FAULT MAJOR	Major metering cylinder not refilling in required time due to insufficient material unloader pressure	Verify that all necessary ball valves are open and increase unloader drive pressure if needed.
	Major metering cylinder not refilling in required time due to inoperable refill valve on metering unit	Verify by performing bleed operation on major circuit. Replace valve as needed.

Problem	Possible Cause	Corrective Action
(contd.)	Faulty proximity switch	Verify operation of proximity switch.
3. REFILL FAULT MINOR	Minor metering cylinder not refilling in required time due to insufficient material unloader pressure	Verify that all necessary ball valves are open and increase unloader drive pressure if needed.
	Minor metering cylinder not refilling in required time due to inoperable refill valve on metering unit	Verify by performing bleed operation on major circuit. Replace valve as needed.
	Faulty proximity switch	Verify operation of proximity switch.
4. MIX TUBE TIMEOUT	Meter did not dispense or purge in the preset time allocated	Replace mixer tube with a new mixer and reset fault by pressing **[F2].**
5. HI VOLUME FAULT	Meter dispensed more material than high volume setpoint due to the setpoint being improperly set	Correct the setpoint to the desired amount.
	Meter dispensed more material than high volume setpoint due to the gun being open for more time	Review the automation settings and correct if necessary.
	Meter dispensed more material than high volume setpoint due to high air regulator setting on drive cylinder	Reduce the air regulator setting for the drive cylinder.
6. LOW VOLUME FAULT	Meter dispensed less material than low volume setpoint due to the setpoint being improperly set	Correct the setpoint to the desired amount.
	Meter dispensed less material than low volume setpoint due to the gun being open for less time.	Review the automation settings and correct if necessary.
	Meter dispensed less material than low volume setpoint due to insufficient air regulator setting on drive cylinder	Increase the air regulator setting on the drive cylinder.

After you have corrected the problem causing the fault message, perform the following steps to clear the fault message.

1. Press **[MENU]** to return to the Main Menu.
2. From the Main Menu, Press **[4]** for FAULTS. The Fault screen appears.
3. Press **[F1]** to view the fault. If the fault has been corrected, press **[F2]** to re-set.

6. Maintenance

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

To ensure smooth operation of the two-component controller, perform the following routine maintenance.

NOTE: Do not use solvents to clean any part of the controller.

- Keep the door to the controller closed except when performing maintenance or repairs inside the controller.
- Clean the keypad periodically with a soft, damp cloth.
- Periodically check the tightness of all wire termination screws.

7. Repairs

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

WARNING: Risk of electrical shock. Disconnect and lockout input power to equipment before servicing. Failure to observe may result in personal injury or death.

The following paragraphs provide instructions on how to replace fuses, the keypad, the power supply, and the Programmable Logic Controller (PLC). See Figure 8 for the location of these replaceable parts.

Fuses

1. Open the controller box.
2. Open the fuse holder (2).
3. Remove the old fuse.
4. Insert a new fuse.
5. Close the fuse holder.
6. Close the controller box.

Keypad

1. Open the controller box.
2. Unplug the cable connector to the keypad (4).
3. Remove the nuts (5).
4. Slide the keypad out of the controller door.
5. Install the new keypad.
6. Install the nuts.
7. Download the program. Refer to your programming software literature for instructions on how to download the program.
8. Plug in the cable connector.
9. Close the controller box.

Power Supply

1. Open the controller box.
2. Disconnect the wires from the power supply (1).
3. Disconnect the power supply from the din rail and remove the power supply from the controller box.
4. Snap the new power supply onto the din rail.
5. Connect the wires.
6. Close the controller box.

PLC

1. Open the controller box.
2. Disconnect the wires and keypad cable connector from the PLC (3).
3. Disconnect the PLC from the din rail and remove the PLC from the controller box.
4. Snap the new PLC onto the din rail.
5. Connect the wires.
6. Download the program. Refer to your programming software literature for instructions on how to download the program.
7. Put the PLC in run mode from the software.
8. Plug in the keypad cable connector.
9. Close the controller box.

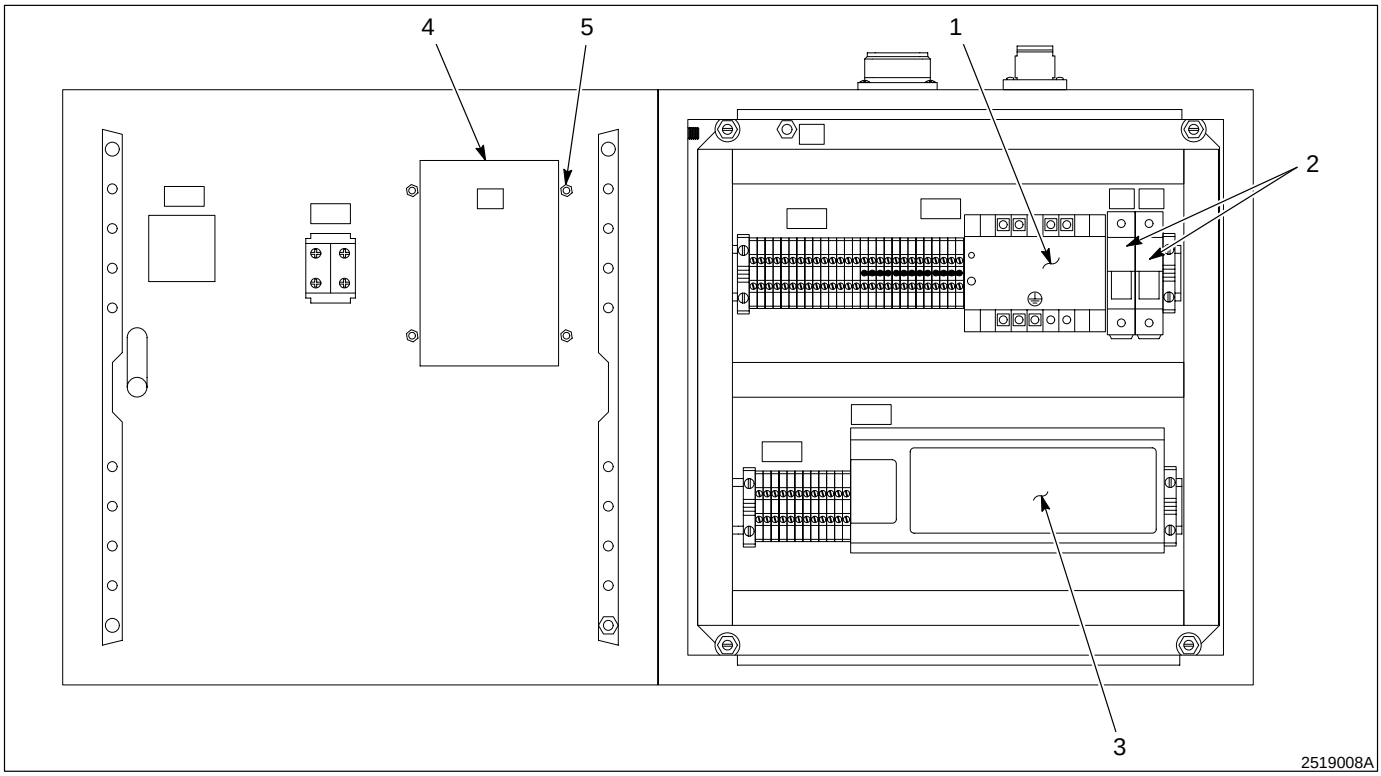

Fig. 8 Replaceable Parts

1. Power supply
2. Fuse holders
3. PLC
4. Keypad
5. Keypad nuts

8. Recommended Spare Parts

Keep these spare parts on hand to reduce downtime.

120 V Two-Component Controller

Part	Description	Quantity
332 225	Fuse, 2A, 600 V, time-delay, 0.406 X 1.5	2
235 933	Controller, programmable 32 I/O	1
235 942	Power Supply, 24 Vdc, 2.1A, CE	1
235 936	Display, operator interface	1

240 V Two-Component Controller

Part	Description	Quantity
320 871	Fuse, gl-Gg, 10 X 38mm, 500 V, 1A	2
320 870	Controller, PLC 24 Vdc, 32 I/O	1
235 942	Power Supply, 24 Vdc, 2.1A, CE	1
235 936	Display, operator interface	1