

Sure Coat[®] Manual Powder Spray Gun

Customer Product Manual
Part 237421G06
Issued 3/09

**For parts and technical support, call the Industrial Coating
Systems Customer Support Center at (800) 433-9319 or
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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 all persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

All phases of equipment installation must comply with all federal, state, and local codes.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing any moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Provide adequate ventilation to prevent dangerous concentrations of volatile materials or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits while working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Grounding



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

All work conducted inside the spray booth or within 1 m (3 ft) of booth openings is considered within a Class 2, Division 1 or 2 Hazardous location and must comply with NFPA 33, NFPA 70 (NEC articles 500, 502, and 516), and NFPA 77, latest conditions.

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

Action in the Event of a Malfunction

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

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

Disposal

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

Section 2

Description

Introduction

The Sure Coat manual powder spray gun electrostatically charges and sprays organic powder coatings. The integral powder supply (IPS) voltage multiplier is user-replaceable. The spray gun is used with a Sure Coat manual control unit and a corona modular powder pump.

Versions

Four versions of the spray gun are available. The versions vary by voltage multiplier polarity and gun inlet adapter length.

Table 2-1 Spray Gun Versions

Variable	Description
Cable Length	6 meter (optional 6 meter extension available)
Multiplier Polarity	Negative or Positive
Inlet Adapter Length	Short or Long

Standard Nozzles

Spray guns are shipped with a Tivar flat-spray nozzle with 4-mm slot installed. A 26-mm conical nozzle with a 26-mm deflector and pattern adjuster is included.

Spray Gun Description

See Figure 2-1. The Sure Coat manual powder spray gun has a voltage multiplier housed in the gun body (8). The multiplier converts low-voltage dc power to the high electrostatic voltage needed for powder coating. The voltage generates a high-strength electrostatic field between an electrode inside the nozzle (6) and the grounded workpiece in front of the spray gun. The electrostatic field produces a corona discharge around the electrode.

Compressed air pumps the powder from the feed hopper, conveys it through the powder feed hose (3) to the spray gun, and propels it toward the workpieces. As the powder particles are sprayed through the corona, they pick up an electrostatic charge and are attracted to the workpieces.

The spray pattern is controlled by the shape of the nozzle, the speed of the powder-conveying air exiting the nozzle, and the electrostatic field generated between the electrode and the grounded workpiece. The spray gun has a trigger (4) and a purge button (5) on the handle.

The voltage controls, dc power supply, and the powder pump flow-rate and atomizing air pressure regulators and gauges are housed in a separate control unit. A non-adjustable restrictor on the rear panel of the control unit controls gun air pressure. Gun air flows out around the electrode, keeping it free of powder. The pump and gun air start flowing when the trigger is pulled.

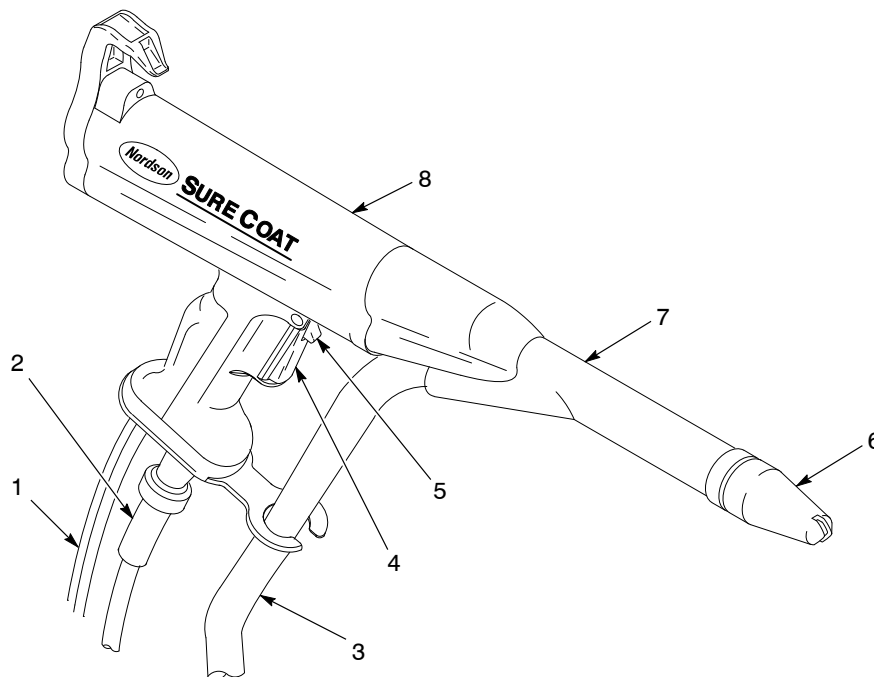


Figure 2-1 Sure Coat Manual Powder Spray Gun

- | | | |
|-----------------------------|-----------------|------------------|
| 1. Purge and gun air tubing | 4. Trigger | 7. Inlet adapter |
| 2. Cable | 5. Purge button | 8. Body |
| 3. Powder feed hose | 6. Nozzle | |

Purge Feature

See Figure 2-1. When the operator presses the purge button (5), purge air at system pressure flows through the powder path to blow out any powder buildup. Purge air flows as long as the operator presses the purge button. Purging does not override the trigger function and stop powder flow.

Options

Refer to the *Parts* section on page 8-1 for the following option part numbers and illustrations. Contact your Nordson representative for additional information.

- 32-mm conical nozzles
- 14-, 16-, 19-, and 26-mm deflectors for conical nozzles
- small and large pattern adjusters
- 2.5-, 3-, 4-, and 6-mm Tivar and glass-filled PTFE flat spray nozzles
- 60° and 90° Cross-Cut nozzles
- castle nozzle (six radial slots)

Specifications

For more information, contact your Nordson representative.

Output Voltage and Current

Maximum rated output voltage at the electrode	95 kV \pm 10%
Maximum rated output current at the electrode	100 μ A \pm 10%

Air Pressure

Purge air	5.5–6.5 bar (80–95 psi) at 227–255 l/min (8–9 scfm)
Gun air	0.34 bar (5 psi) 6 l/min (0.2 scfm)
Minimum input pressure	4.13 bar (60 psi)
Maximum input pressure	6.89 bar (100 psi)

Air Quality

Powder spray systems require clean, dry, oil-free operating air. Moist or oil-contaminated air can cause the powder to clog in the pump venturi throat, feed hose, or spray gun passages. Use 3-micron filter/separators with automatic drains and a refrigerated or regenerative desiccant-type air dryer that can produce a 3.2 °C (38 °F) or lower dewpoint at 6.89 bar (100 psi).

Rating

This equipment is rated for use in an explosive environment (Class II, Division I).

Section 3

Installation



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

Spray Gun Connections



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.

See Figure 3-1.

NOTE: Keep the powder feed hose as short as possible, no more than 12-m (39-ft) long if using 1/2-in. ID hose, or 4-m (13-ft) long if using 3/8-in. ID hose. Longer lengths may cause uneven powder flow.

1. Install the powder feed hose (4).
 - Connect one end to the pump outlet.
 - Connect the other end to the hose adapter on the underside of the inlet adapter (5).
2. Pinch the feed hose and snap it into the hose bracket (3).
3. Wrap spiral-cut tubing around the feed hose at the pump outlet and any other place necessary to prevent the feed hose from kinking and cutting off the flow of powder.
4. Install the clear gun air (4 mm) and black purge air (6 mm) tubing (1).
 - Connect one end to the quick-disconnect fittings in the base of the spray gun handle.
 - Connect the other end to the gun and purge air quick-disconnect fittings in the rear panel of the control unit.

Spray Gun Connections *(contd)*

5. Connect the spray gun cable (2) to the GUN OUTPUT receptacle on the rear panel of the control unit. Secure the cable to the receptacle with the retaining nut on the cable end.

NOTE: An optional 6 meter cable extension is available, if needed. Refer to *Options* in the *Parts* section for the extension part number.

6. Wrap pieces of small diameter 9.5-mm ($3/8$ -in.) ID spiral-cut tubing, included with the spray gun, around the air tubing and cable at intervals from the spray gun to the control unit. Wrap the first piece 25.4–30.5 cm (10–12 in.) from the spray gun handle.
7. Use spiral-cut tubing to bundle together the feed hose to the cable and air tubing bundle about 0.6 m (2 ft) below the spray gun handle.
8. Establish a path for the feed hose, gun and purge air tubing, and spray gun cable. Make sure the tubing, hose, and cable cannot be abraded, cut, or run over by heavy equipment.

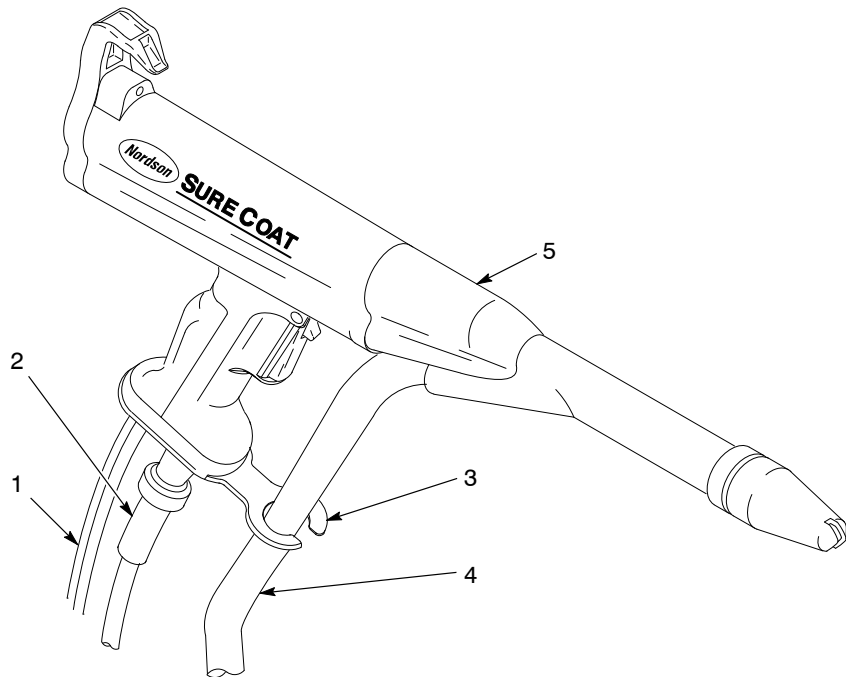


Figure 3-1 Spray Gun Connections

- | | |
|---------------------------------|------------------|
| 1. Gun air and purge air tubing | 4. Feed hose |
| 2. Spray gun cable | 5. Inlet adapter |
| 3. Hose bracket | |

Optional Nozzle Installation



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

See Figure 3-2. The spray gun is shipped with a flat spray nozzle installed. Follow these instructions to install a conical nozzle in place of the flat spray nozzle:

1. Disconnect the feed hose (1) from the pump.
2. Blow out the feed hose and spray gun with low-pressure compressed air.
3. Wipe the powder off the exterior of the spray gun with a clean, dry cloth.
4. Remove the flat spray nozzle (6) from the inlet adapter (2).
5. Clean the inlet adapter with a clean, dry cloth.
6. Install the conical nozzle and pattern adjuster sleeve (4) assembly on the inlet adapter. The conical nozzle fits onto the inlet adapter; the pattern adjuster slides over the nozzle.
7. Install the deflector (5) on the electrode holder (3), making sure you do not bend the electrode.

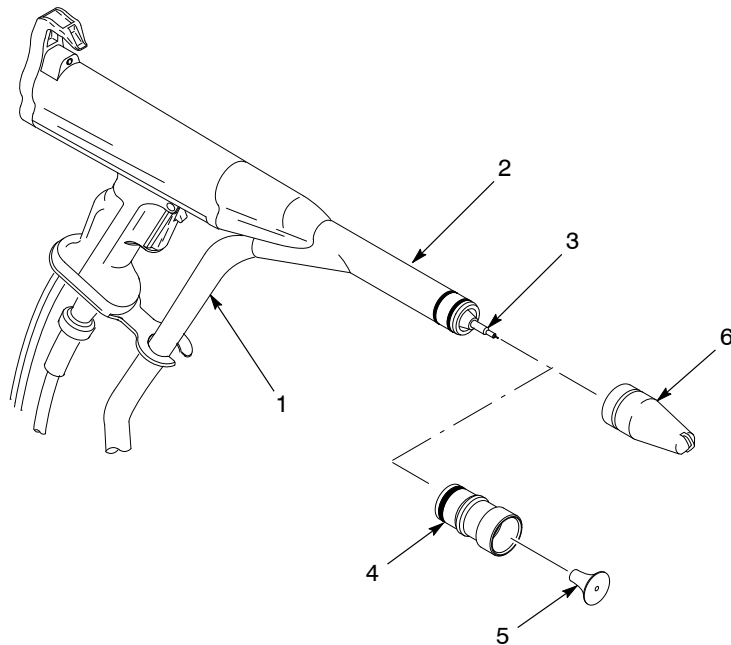


Figure 3-2 Optional Nozzle Installation

- | | |
|---------------------|--|
| 1. Feed hose | 4. Pattern adjuster sleeve and nozzle assembly |
| 2. Inlet adapter | 5. Deflector |
| 3. Electrode holder | 6. Flat spray nozzle |

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.

Spraying Powder



WARNING: Do not operate the spray gun if the resistance of the multiplier or the electrode assembly are not within the ranges specified in this manual. Failure to observe this warning may result in personal injury, fire, and property damage.

See Figure 4-1.

1. Set kV and pump air pressures as described in the *Operation* section of the control unit manual.
2. Point the spray gun into the booth and pull the trigger (4).



WARNING: Turn off the electrostatic voltage and ground the spray gun electrode before making any adjustments to the spray gun or nozzle.

If using a conical nozzle, use the pattern adjust sleeve to modify the spray pattern as desired. Refer to the *Operation* section of the control unit manual for additional spray pattern adjustments.

- For a wider pattern: Slide the pattern adjust sleeve toward the back of the gun.
- For a narrower pattern: Slide the pattern adjust sleeve towards the front of the gun.

Refer to *Optional Nozzle Installation* on page 3-3 in the *Installation* section before removing the standard flat spray nozzle shipped with the spray gun. Refer to page 8-11 of the *Parts* section for information on other optional nozzles.

Purging

NOTE: Purging does not override the trigger function.

1. See Figure 4-1. Release the trigger (4).
2. Point the spray gun into the booth, away from any parts to be coated.
3. Press and hold the purge button (3).

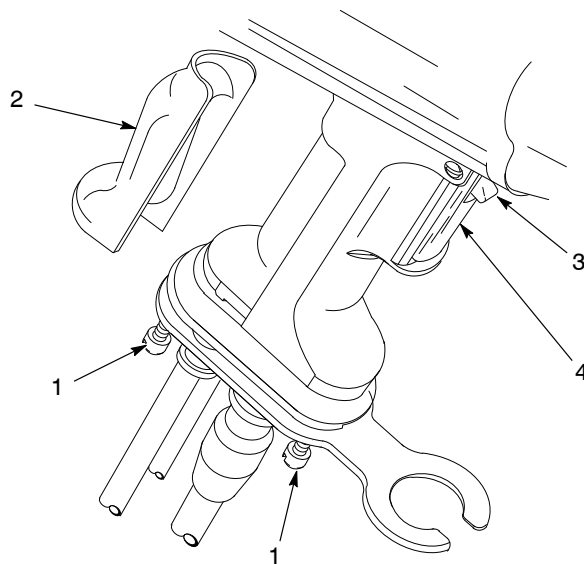
Shutdown

1. Turn off the main power at the control unit.
2. If using unswitched auxiliary air (AUX 1), turn the regulator counterclockwise until the gauge reads zero.
3. Ground the spray gun electrode to discharge any residual voltage.
4. Perform the *Daily Maintenance* procedure on page 5-1 in the *Maintenance* section.

Optional Handle Pad Installation

An optional handle pad for operators with large hands is available. Follow these instructions to remove the standard handle pad and install the large pad.

1. See Figure 4-1. Turn off power at the control unit.
2. Loosen (do not remove) the two screws (1) in the base of the handle.
3. Slide the handle pad (2) off the handle.
4. Install the new handle pad onto the handle.
5. Tighten the two screws in the base of the handle.



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Figure 4-1 Spraying Powder, Purging, and Changing the Handle Pad

- | | |
|---------------|-----------------|
| 1. Screws | 3. Purge button |
| 2. Handle pad | 4. Trigger |

Section 5

Maintenance



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

Daily Maintenance

1. Purge the spray gun by pointing it into the booth and pressing the purge button.
2. Disconnect the powder feed hose from the pump.



CAUTION: Never blow air through the feed hose from the spray gun to the pump. Doing so could force powder through the pump air tubing into the valves, regulators, and gauges in the control unit, causing them to fail.

3. Point the spray gun into the booth and blow the powder out of the hose and gun with low-pressure compressed air.
4. See Figure 5-2. Disassemble the powder path using the following steps.
 - a. Remove the flat spray nozzle (6), or any installed optional nozzle.



CAUTION: The electrode assembly (2) projects several inches past the end of the body (1). To avoid damaging the electrode assembly when removing the inlet adapter (3) from the body, pull the inlet adapter straight off the body, parallel with the body centerline.

- b. Remove the hose adapter (7) from the inlet adapter.
 - c. Loosen the set screw (4) in the body. Pull the inlet adapter straight off the gun body.
5. Clean the body, electrode assembly, and all removed parts with a low-pressure air gun. Wipe the parts with a clean, dry cloth.

6. Carefully remove fused powder from the parts with a wooden or plastic dowel or similar tool. Do not use tools that will scratch the plastic. Powder will build up and impact fuse on any scratches.
7. If necessary, remove any O-rings and clean the parts with a cloth dampened with isopropyl or ethyl alcohol. Do not immerse the spray gun in alcohol. Do not use any other solvents.
8. Replace any worn parts and assemble the spray gun.

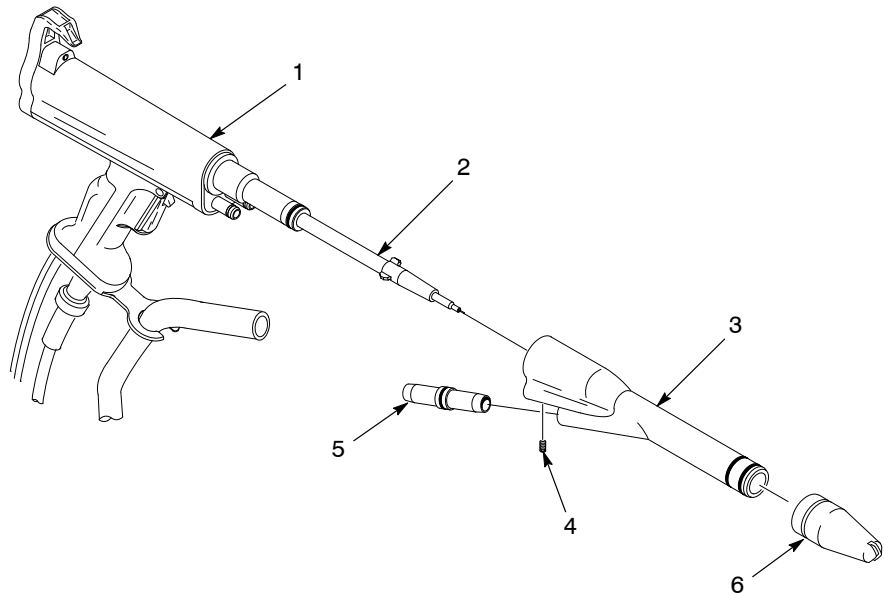


Figure 5-2 Daily Maintenance

- | | |
|-----------------------|----------------------|
| 1. Body | 4. Set screw |
| 2. Electrode assembly | 5. Hose adapter |
| 3. Inlet adapter | 6. Flat spray nozzle |

Weekly Maintenance

Check the resistance of the voltage multiplier and electrode assembly with a megohmmeter as described in *Continuity and Resistance Checks* on page 6-4 of the *Troubleshooting* section.

If the resistance readings do not fall within the specified ranges, replace the multiplier, electrode assembly, or both.

Section 6

Troubleshooting



WARNING: Allow only qualified personnel to perform the following tasks. 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.

No.	Problem	Page
1.	Uneven pattern, unsteady or inadequate powder flow	6-1
2.	Voids in powder pattern	6-2
3.	Loss of wrap, poor transfer efficiency	6-2
4.	No kV output from the spray gun (LED on the spray gun does not light)	6-2
5.	No kV output from the spray gun (LED on the spray gun lights)	6-3
6.	No kV output and no powder output	6-3
7.	No purge output	6-3

Problem	Possible Cause	Corrective Action
1. Uneven pattern, unsteady or inadequate powder flow	Blockage in spray gun, powder feed hose, or pump	<ol style="list-style-type: none"> 1. Disconnect the feed hose from the pump. 2. Blow out the hose with compressed air. 3. Disassemble and clean the spray gun and pump. 4. Replace the feed hose if it is clogged with fused powder.
	Nozzle or deflector worn, affecting pattern	<p>Remove, clean, and inspect the nozzle or deflector. Replace worn parts as necessary.</p> <p>If excessive wear or impact fusion is a problem, reduce the flow rate and atomizing air pressures.</p>

Continued...

Problem	Possible Cause	Corrective Action
1. Uneven pattern, unsteady or inadequate powder flow (<i>contd</i>)	Damp powder	Check the powder supply, air filters, and dryer. Replace the powder supply if contaminated.
	Low atomizing or flow rate air pressure	Increase the atomizing and/or flow rate air pressures.
	Improper fluidization of powder in hopper	Increase the fluidizing air pressure. If the problem persists, remove the powder from the hopper. Clean or replace the fluidizing plate if contaminated.
2. Voids in powder pattern	Worn nozzle or deflector	Remove and inspect the nozzle or deflector. Replace worn parts.
	Plugged powder path	Remove the nozzle parts and inlet adapter from the spray gun and clean them.
3. Loss of wrap, poor transfer efficiency	NOTE: Before checking possible causes, check the error code on the control unit and perform the error codes corrective action in the control unit manual.	
	Low electrostatic voltage	Increase the electrostatic voltage.
	Poor electrode connection (Error code 9)	Perform the <i>Multiplier and Electrode Assembly Resistance Check</i> on page 6-4.
	Poorly grounded parts	Check the conveyor chain, rollers, and part hangers for powder buildup. The resistance between the parts and ground must be 1 megohm or less. For best results, 500 ohms or less is recommended.
4. No kV output from the spray gun (LED on the spray gun does not light)	NOTE: Before checking possible causes, check the error code on the control unit and perform the error codes corrective action in the control unit manual.	
	Damaged gun cable (Error codes 7 or 8)	Perform the <i>Gun Cable Continuity Checks</i> on page 6-6. If an open or short is found, replace the cable.
	Malfunctioning control unit (Error code 3)	If you found no problem with the cable, refer to the <i>Troubleshooting</i> section of the control unit manual.

Continued...

Problem	Possible Cause	Corrective Action
5. No kV output from the spray gun (LED on the spray gun lights)	NOTE: Before checking possible causes, check the error code on the control unit and perform the error codes corrective action in the control unit manual.	
	Malfunctioning voltage multiplier (Error codes 7, 8, or 9)	Perform the <i>Multiplier and Electrode Assembly Resistance Check</i> on page 6-4. Perform the <i>Electrode Assembly Resistance Check</i> on page 6-5.
	Poor electrode connection (Error code 9)	
6. No kV output and no powder output	Malfunctioning trigger switch or cable	Check for continuity between pins 1 and 2 (controller end of cable) with the switch actuated. If no continuity is found, unplug the cable from the trigger switch and check the continuity across the cable. If no short or open circuit is found, check the trigger switch. Refer to <i>Trigger and Purge Switch Continuity Check</i> on page 6-7. If no short or open circuit is found, replace the cable.
7. No purge output	Malfunctioning switch or damaged cable (no error codes)	Check the continuity between pins 2 and 5 (controller end of cable) with the switch actuated. If no continuity is found, unplug the cable from the trigger switch and check the continuity across the cable. If no open circuit is found, check the trigger/purge switch. If no open circuit is found, replace the cable.

Continuity and Resistance Checks



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

Multiplier and Electrode Assembly Resistance Check



CAUTION: Short all three pins in the multiplier connector before checking the continuity and resistance of the multiplier and electrode assembly. If not shorted, the multiplier could be damaged. Use the optional shorting plug shown in Figure 6-1.

1. Remove the end cap from the spray gun body. Refer to the *Repair* section on page 7-1.
2. Disconnect the J2 connector from the multiplier.
3. See Figure 6-1. Connect the shorting plug (1) to the multiplier connector (2).
4. Connect the megohmmeter (6) probes to the shorting plug ring-tong terminal and electrode (5). If the reading is infinite, switch the probes.
5. The megohmmeter should read between 140 to 210 megohms at 500 volts. If the reading is not in this range, perform the *Electrode Assembly Resistance Check* on page 6-5. If the electrode assembly reading is within the range specified, replace the multiplier.
6. Check for burn-through holes or arc tracks. Replace parts if necessary.

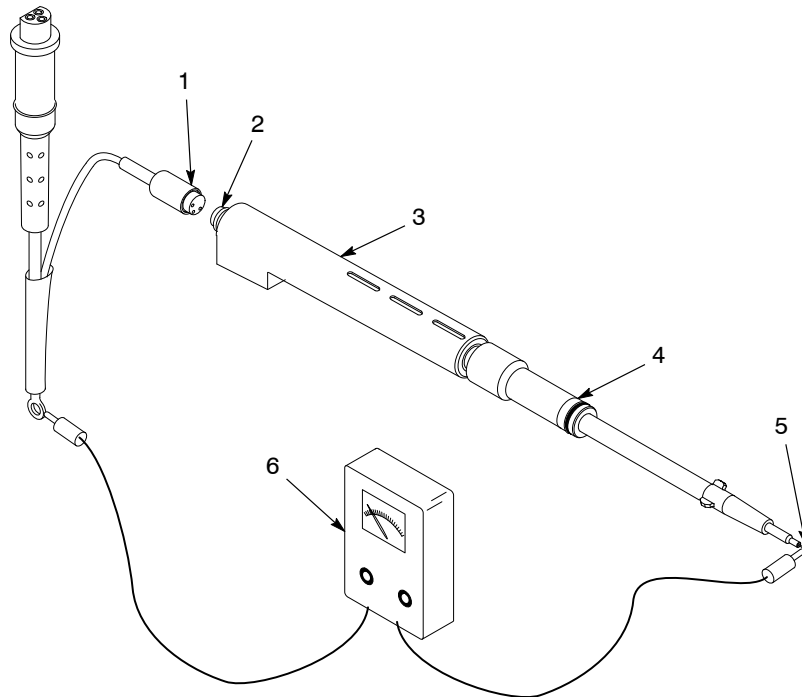


Figure 6-1 Multiplier and Electrode Assembly Resistance Check

- | | |
|-------------------------|-----------------------|
| 1. Shorting plug | 4. Electrode assembly |
| 2. Multiplier connector | 5. Electrode |
| 3. Multiplier | 6. Megohmmeter |

Note: Spray gun body and inlet adapter not shown for clarity.

Electrode Assembly Resistance Check

See Figure 6-1.

1. Unscrew the electrode assembly (4) from the multiplier (3).
2. See Figure 6-2. Connect the megohmmeter probes to the electrode (1) and the contact pin (3).
3. The megohmmeter should read between 2 to 10 megohms at 500 volts. If the reading is not in this range, replace the electrode assembly.
4. Check for the electrode assembly for burn-through holes or arc tracks. If found on any parts, replace them.

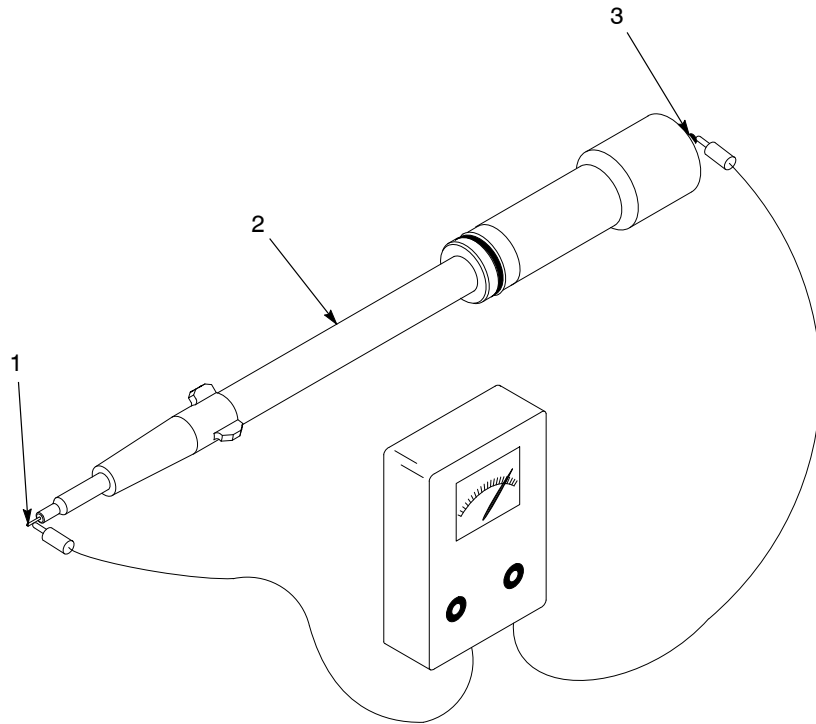


Figure 6-2 Electrode Assembly Resistance Check

- | | |
|-----------------------|----------------|
| 1. Electrode | 3. Contact pin |
| 2. Electrode assembly | |

Gun Cable Continuity Checks

See Figure 6-3. Pin functions are given in Tables 6-1, 6-2, and 6-3. Make the following continuity checks with a standard ohmmeter.

- J1 pins 1 and 2 with the trigger switch closed
- J1 pins 2 and 5 with the purge switch closed
- J1 pin 1 and J3 pin 1
- J1 pin 2 and J2 pin 3
- J1 pin 3 and J2 pin 1
- J1 pin 4 and J2 pin 2
- J1 pin 5 and J3 pin 3
- J1 pin 6 and ring-tong terminal

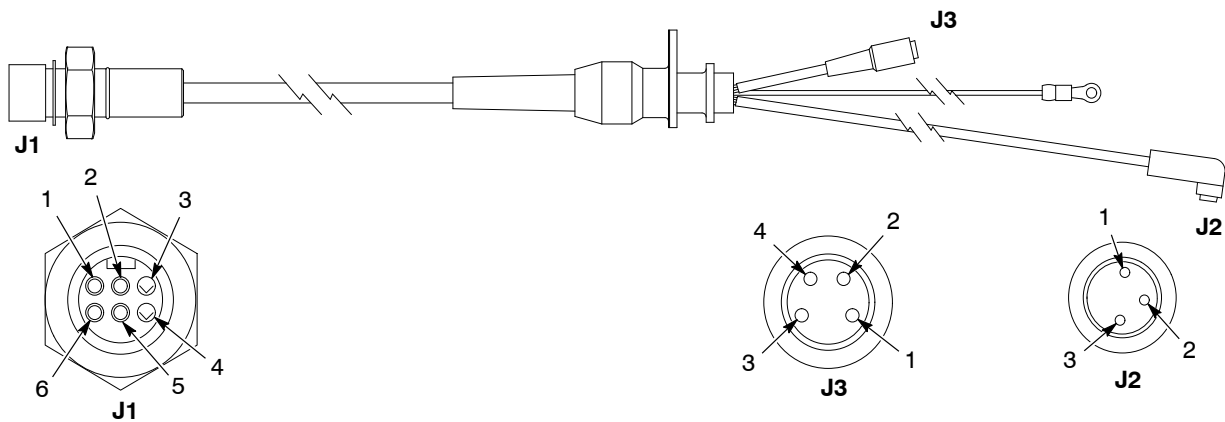


Figure 6-3 Gun Cable with Connectors

Table 6-1 J1 Connector Pin Functions

Pin	Function
1	Trigger
2	Negative (common)
3	Positive (+21 Vdc)
4	μ A feedback
5	Purge
6	Ground

Table 6-2 J2 Multiplier Connector Pin Functions

Pin	Function
1	Positive (+21Vdc)
2	μ A feedback
3	Negative (common)

Table 6-3 J3 Trigger/Purge Switch Connector Pin Functions

Pin	Function
1	Trigger
2	Common
3	Purge
4	No connection

Trigger and Purge Switch Continuity Check

See Figure 6-4. Check the trigger (2) and purge (1) switch continuity by performing the following procedure:

1. Remove the cable strain relief (4) from the gun base (5).
2. Pull the cable out far enough so the P3 connector (3) is accessible.
3. Unplug the two mating connectors.
4. Use an ohmmeter to check the trigger and purge switch continuity at the switch P3 connector. Refer to Table 6-4 for normal results.

Table 6-4 Trigger and Purge Switch Continuity Check

Pins	Switch Position	Results
1 and 2	Off (Open)	No continuity
1 and 2	On (Closed)	Continuity
2 and 3	Off (Open)	No continuity
	On (Closed)	Continuity

If the switch does not function as described, replace the switch. Refer to *Trigger and Purge Switch Replacement* on page 7-3 in the *Repair* section.

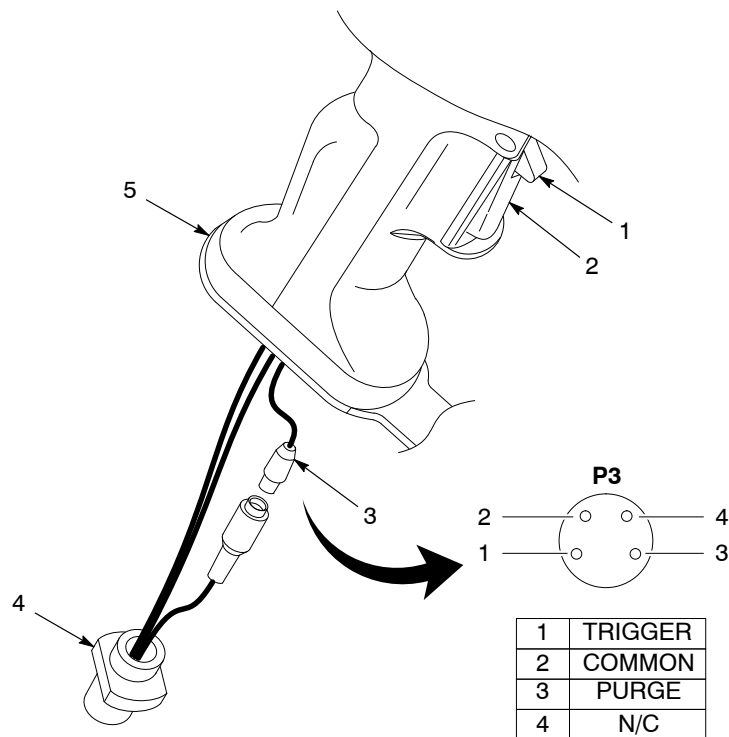


Figure 6-4 Trigger and Purge Switch Continuity Check

- | | |
|-------------------|------------------------|
| 1. Purge switch | 4. Cable strain relief |
| 2. Trigger switch | 5. Gun base |
| 3. P3 connector | |

Wiring Diagram

See Figure 6-5. This wiring diagram illustrates the cable connections and functions.

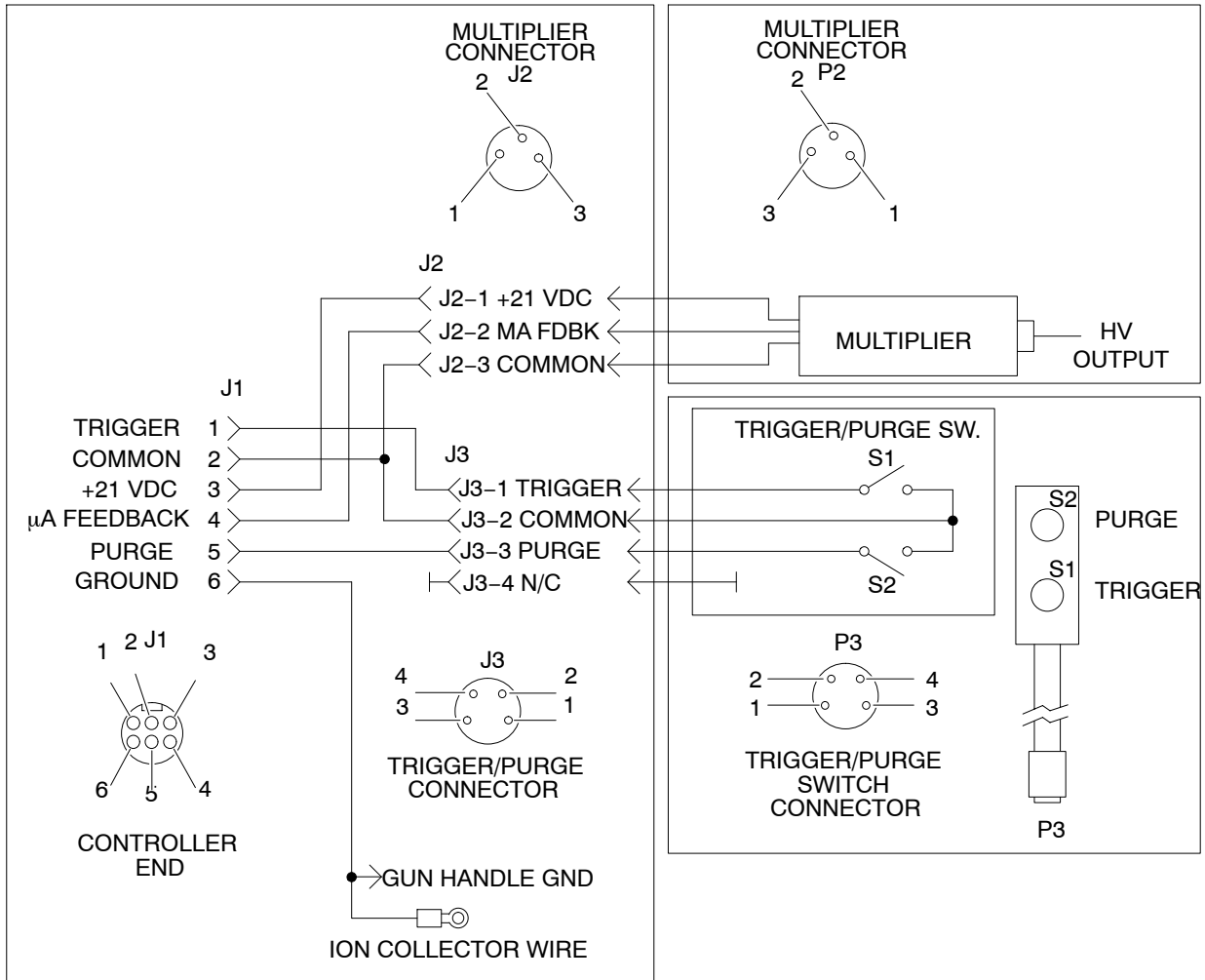


Figure 6-5 Wiring Diagram

Section 7

Repair



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



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

Powder Path Repair

To disassemble the powder path and replace any parts, perform the *Daily Maintenance* procedure on page 5-1 in the *Maintenance* section.

Cable Replacement

See Figure 7-1.

1. Remove the screw (16) and lock washer (17).
2. Turn the gun cable (18) to remove it from the handle base (21).
3. Disconnect the trigger J3 connector (19) from the trigger and purge switch (9).
4. Remove the screw (1) that secures the end cap (2). Set the screw and end cap aside.
5. Disconnect the multiplier J2 connector (3) from the back of the multiplier (4).
6. Remove the post (5) and lock washer (6) securing the ground wire (7). Set the post and lockwasher aside.
7. Separate the body (8) from the handle (22). Feed the ground wire and multiplier J2 connector through the handle.
8. Perform the previous steps in reverse to install a new cable.

Cable Replacement *(contd)*

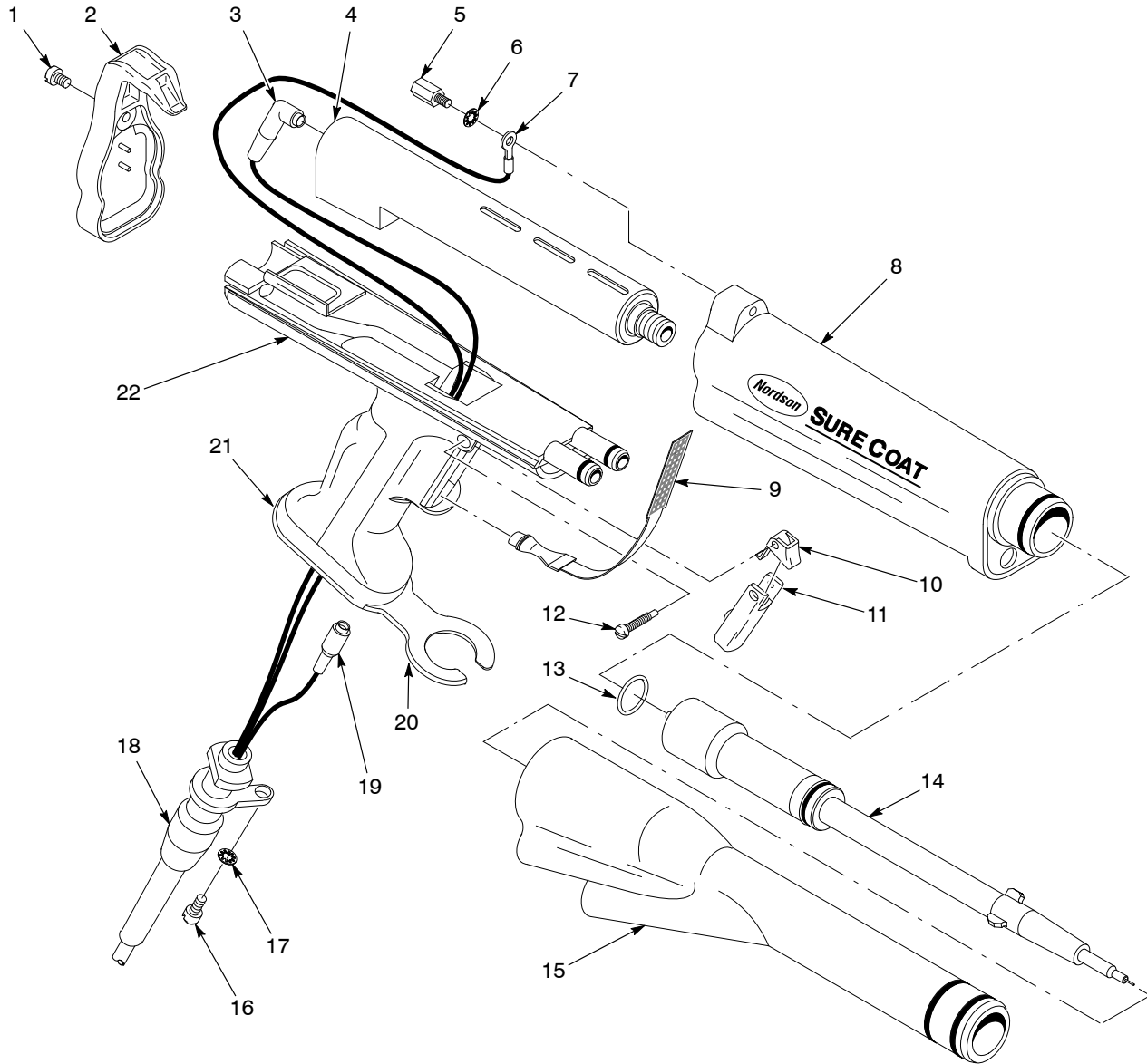


Figure 7-1 Cable; Multiplier; and Trigger and Purge Switch Replacement

- | | | |
|----------------------------|-----------------------------|--------------------------|
| 1. Screw | 9. Trigger and purge switch | 16. Screw |
| 2. End cap | 10. Purge button | 17. Lock washer |
| 3. Multiplier J2 connector | 11. Trigger | 18. Gun cable |
| 4. Multiplier | 12. Pivot screw | 19. Trigger J3 connector |
| 5. Post | 13. O-ring | 20. Hose bracket |
| 6. Lock washer | 14. Electrode assembly | 21. Handle base |
| 7. Ground wire | 15. Inlet adapter | 22. Handle |
| 8. Body | | |

Multiplier Replacement

See Figure 7-1.

1. Purge the spray gun and disassemble the powder path components as described in the first five steps of the *Daily Maintenance* procedure on page 5-1 in the *Maintenance* section.
2. Unscrew the electrode assembly (14) from the multiplier (4). Inspect the O-ring (13) and replace it if it is damaged.
3. Remove the screw (1) securing the end cap (2).
4. Unplug the multiplier J2 connector (3) from the multiplier.
5. Remove the post (5) and lockwasher (6) securing the ground wire (7).
6. Slide the multiplier out of the gun body (8) from the rear.
7. Replace the old multiplier with a new multiplier.
8. Perform the previous steps in reverse to assemble the spray gun.

Trigger and Purge Switch Replacement

See Figure 7-1.

1. Perform steps 1–3 of the *Cable Replacement* procedure on page 7-1.
2. Remove the pivot screw (12) from the handle (22).
3. Remove the trigger (11) and purge button (10).
4. See Figure 7-2. Peel the trigger and purge switch (2) off of the handle (the switch is secured with adhesive).
5. Pull the switch out of the handle.
6. Install the new switch using the following steps:
 - a. Slide the new switch connector (3) into the handle cut-out (4).
 - b. Connect the J3 connector to the switch connector.
 - c. Install the cable in the handle and secure it with the screw and lock washer.
 - d. Peel the adhesive backing (1) off the back of the new switch.
 - e. Line up the top of the switch with the top of the switch cavity (5). Press the switch onto the handle. Make sure the switch is correctly aligned and securely attached to the handle.
7. Install the trigger and purge button and the pivot screw.

Trigger and Purge Switch Replacement *(contd)*

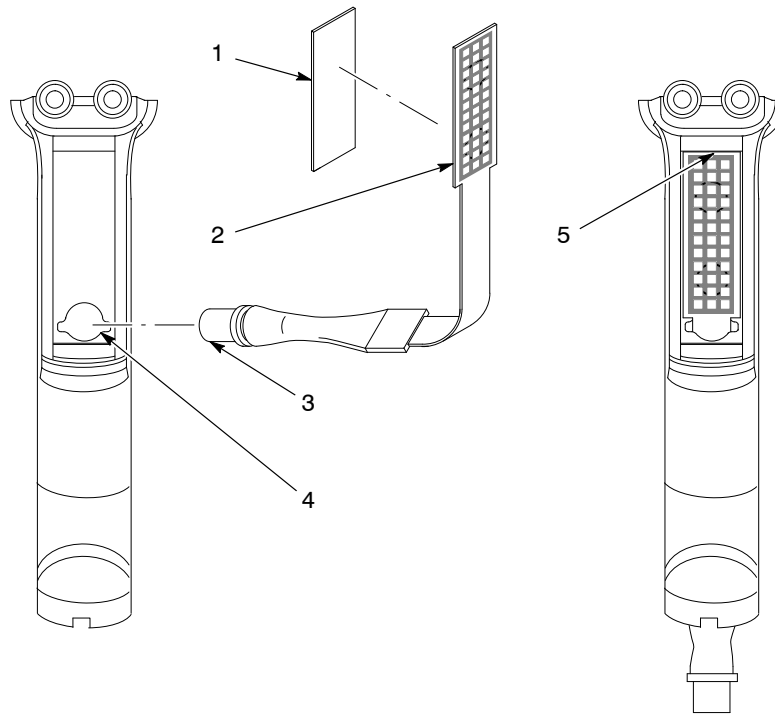


Figure 7-2 Trigger and Purge Switch Replacement

- | | |
|-----------------------------|----------------------|
| 1. Adhesive backing | 4. Handle cut-out |
| 2. Trigger and purge switch | 5. Switch cavity top |
| 3. Switch connector | |

Section 8

Parts

Introduction

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

Using the Illustrated Parts List

Numbers in the Item column correspond to numbers that identify parts in illustrations following each parts list. The code NS (not shown) indicates that a listed part is not illustrated. A dash (—) is used when the part number applies to all parts in the illustration.

The number in the Part column is the Nordson Corporation part number. A series of dashes in this column (- - - - -) means the part cannot be ordered separately.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

- If you order the assembly, items 1 and 2 will be included.
- If you order item 1, item 2 will be included.
- If you order item 2, you will receive item 2 only.

The number in the Quantity column is the quantity required per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

Letters in the Note column refer to notes at the end of each parts list. Notes contain important information about usage and ordering. Special attention should be given to notes.

Item	Part	Description	Quantity	Note
—	0000000	Assembly	1	
1	000000	• Subassembly	2	A
2	000000	• • Part	1	

Spray Gun Part Numbers

The following spray gun part numbers are listed by multiplier polarity. The spray gun part number and serial number are stamped into the label on the end cap. To order the correct parts for your spray gun, match the spray gun part number on the end cap label with the spray gun description.

Negative Polarity Spray Guns		Positive Polarity Spray Guns	
Part	Adapter Length	Part	Adapter Length
1072137	Long	1072530	Long
1072531	Short	1072532	Short

Spray Gun Parts

This parts list is split into two tables and two illustrations. See Figure 8-1 for the parts listed on this page.

Item	Part	Description	Quantity	Note
1	982800	SCREW, pan, rec, M4 x 6, black, zinc	1	
2	-----	CAP, end, manual gun	1	A
3	288535	GASKET, cover, manual gun	1	B
4	288552	POWER SUPPLY, 95 kV, negative	1	
4	302112	POWER SUPPLY, 95 kV, positive	1	
5	288553	POST, spacer, hex	1	
6	983416	WASHER, lock, internal, 4 mm, steel, zinc	1	
7	288543	BODY, manual gun	1	
8	940212	O-RING, silicone, 0.938 x 1.063 x 0.063 in.	1	
9	940117	O-RING, silicone, 0.312 x 0.438 x 0.063 in.	2	
10	982455	SCREW, set, M6 x 1.0 x 8, nylon, black	1	
11	288541	TRIGGER, purge, manual gun	1	
12	1093489	TRIGGER, actuator, manual gun	1	
13	288549	SWITCH, keypad, trigger/purge	1	B
14	288537	PIVOT, threaded, gun, M5	1	
15	288567	ELECTRODE, manual gun, long	1	C
15	288573	ELECTRODE, manual gun, short	1	C
16	1002739	ADAPTER, inlet, manual gun, long, nylon	1	
16	1003067	ADAPTER, inlet, manual gun, short, nylon	1	
17	940182	O-RING, silicone, 0.750 x 0.875 x 0.063 in.	2	

NOTE A: Included in *End Cap Service Kit* on page 8-6.

B: Included in *Handle Repair Kit* on page 8-6.

C: Refer to *Electrode Kits* on page 8-8.

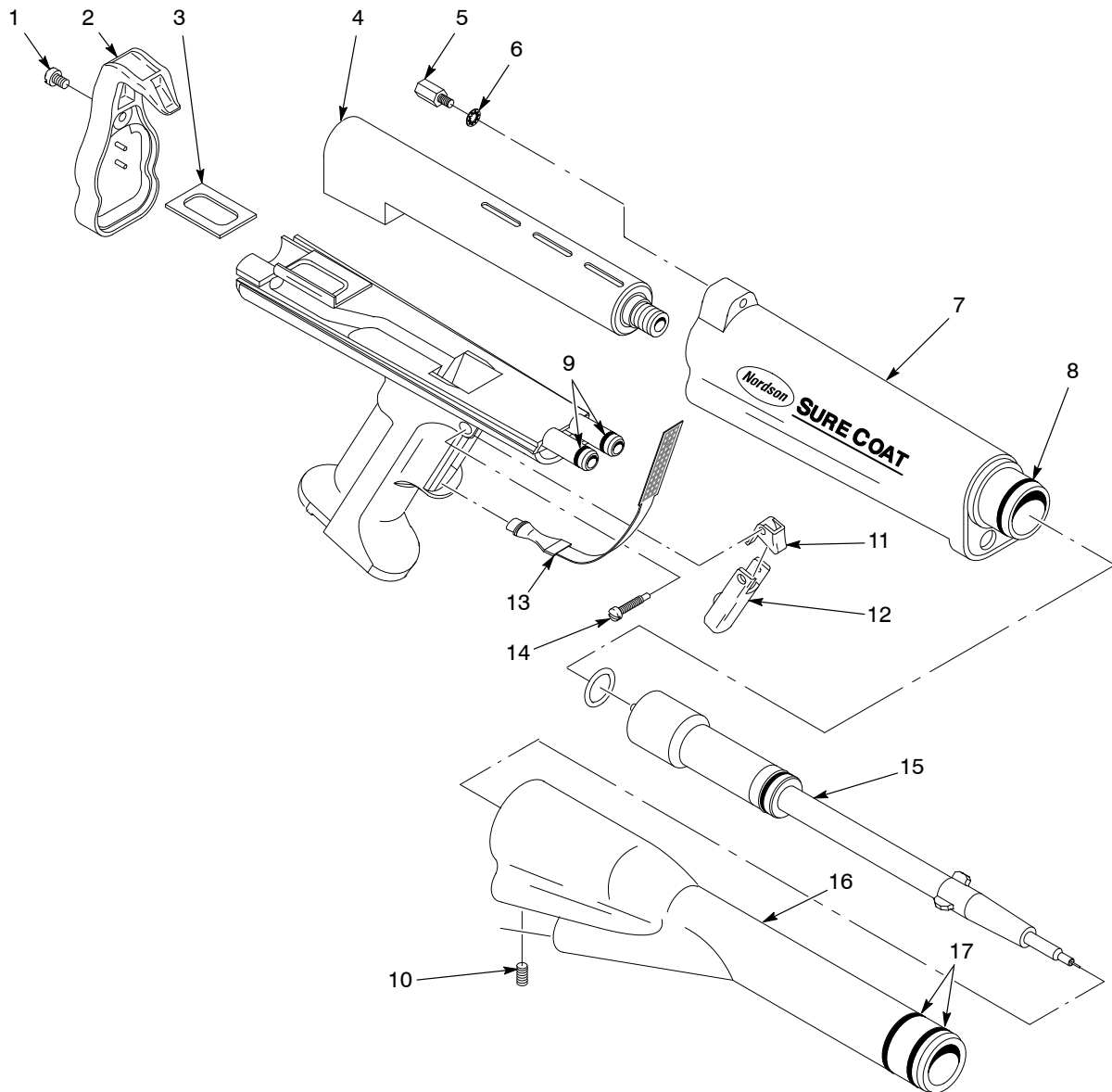


Figure 8-1 Spray Gun Parts (1 of 2)

Spray Gun Parts *(contd)*

See Figure 8-2 for the parts listed on this page.

Item	Part	Description	Quantity	Note
18	173141	DEFLECTOR, 26 mm, flat, Tivar, with O-ring	1	
19	940084	• O-RING, silicone, 0.188 x 0.312 x 0.063 in.	1	
20	309445	NOZZLE WITH ADJUSTER KIT, 26-mm deflector	1	
21	309450	• ADJUSTER, 26-mm deflector, with O-ring	1	D
22	941224	• • O-RING, silicone, 1.125 x 1.312 x 0.094 in.	1	
23	309448	• NOZZLE, conical, 26 mm, with O-ring	1	E
24	940212	• • O-RING, silicone, 0.938 x 1.063 x 0.063 in.	1	
25	302103	NOZZLE, flat spray, 4 mm	1	
26	288568	ADAPTER, hose, with O-ring	1	
27	1020466	• O-RING, polyurethane, 0.625 x 0.750 x 0.063 in., 70 Duro	1	
28	288561	HANDLE, with cover, manual gun	1	B
29	288538	BASE, handle, manual gun	1	
30	288545	BRACKET, hose, manual gun	1	
31	982801	SCREW, oval, rec, M4 x 20, black, zinc	2	
32	982825	SCREW, pan head, rec, M4 x 12, with integral lock washer bezel, black, zinc	1	
33	900617	TUBING, polyurethane, 4-mm OD, clear	AR	
34	900741	TUBING, polyurethane, 6/4 mm, black	AR	
35	972399	CONNECTOR, round, male, M6 tubing x 1/8-in. universal	1	
36	972398	CONNECTOR, round, male, M4 tubing x M5 thread	1	
37	288534	GASKET, base, manual gun	1	B
38	288550	PAD, ground, small, manual gun	1	
39	1072112	CABLE SERVICE KIT, Sure Coat, manual gun, 6 meter	1	
NS	900620	TUBING, polyurethane, spiral cut, 3/8-in. ID	AR	

NOTE B: Included in *Handle Repair Kit* on page 8-6.
D: Replaces old-style adjuster, part 288569.
E: Replaces old-style nozzle, part 288558.
AR: As Required
NS: Not Shown

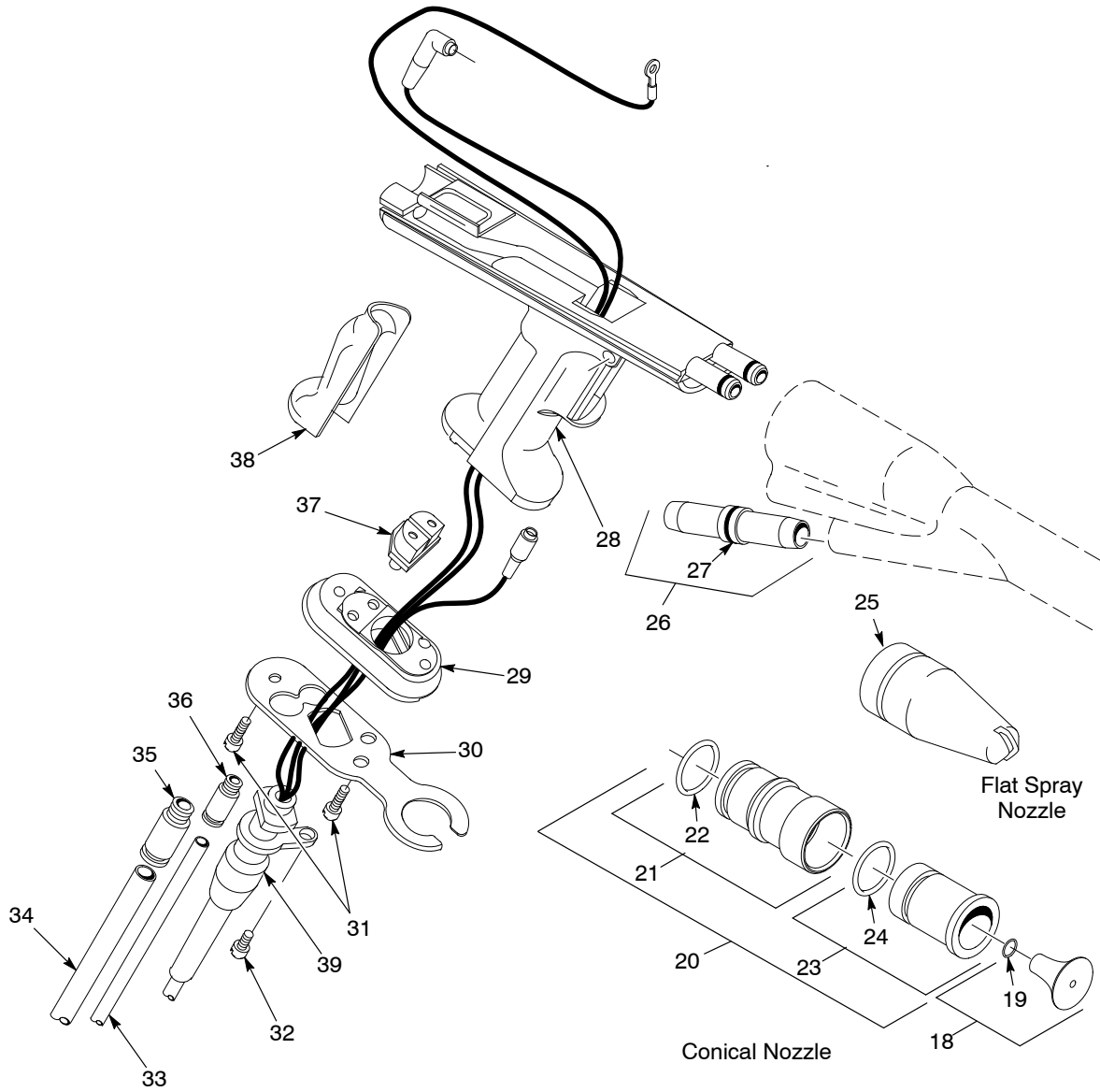


Figure 8-2 Spray Gun Parts (2 of 2)

Repair Kits

End Cap Service Kit

See Figure 8-1. To order this kit, you must call Nordson Customer Service and give the representative your gun serial number and part number.

Item	Part	Description	Quantity	Note
—	333988	END CAP SERVICE KIT, manual gun	1	
2	-----	• END CAP, manual gun	1	
NS	-----	• LABEL, with part and serial numbers, end cap	1	
NS: Not Shown				

Handle Repair Kit

See Figures 8-1 and 8-2.

Item	Part	Description	Quantity	Note
—	309454	HANDLE REPAIR KIT	1	
3	288535	• GASKET, cover, manual gun	1	
10	940117	• O-RING, silicone, 0.312 x 0.438 x 0.063 in.	2	
14	288549	• SWITCH, keypad, trigger/purge	1	
29	288561	• HANDLE, with cover, manual gun	1	
38	288534	• GASKET, base, manual gun	1	

Seals Kit

See Figure 8-3. This kit is used for all versions of the Sure Coat manual spray gun. It does not include the O-rings used on the conical nozzle.

Item	Part	Description	Quantity	Note
—	321152	SEAL KIT, Sure Coat manual gun	1	
1	940212	• O-RING, silicone, 0.938 x 1.063 x 0.063 in.	1	
2	940163	• O-RING, silicone, 0.625 x 0.750 x 0.063 in.	1	
3	940182	• O-RING, silicone, 0.750 x 0.875 x 0.063 in.	2	
4	940117	• O-RING, silicone, 0.312 x 0.438 x 0.063 in.	2	
5	1020466	• O-RING, polyurethane, 0.625 x 0.750 x 0.063 in., 70 Duro	1	

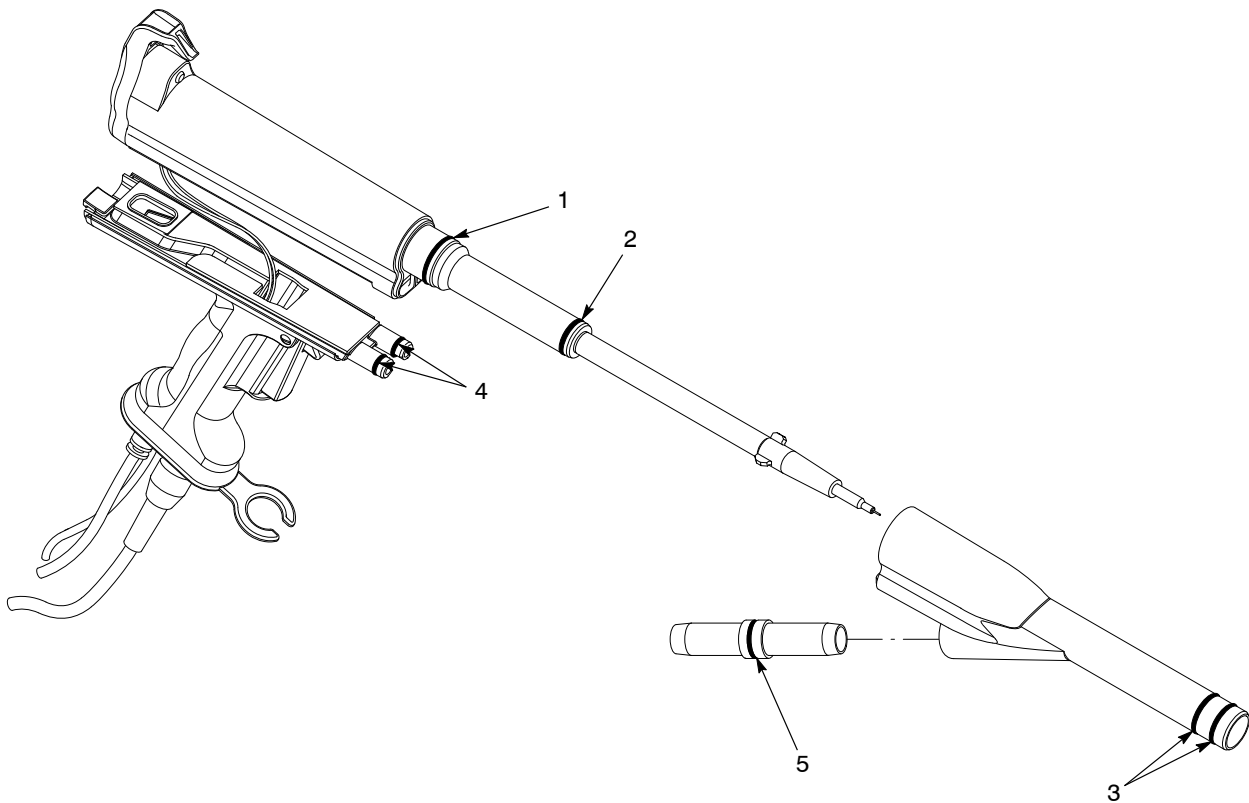


Figure 8-3 Seals Kit

Electrode Kits

See Figure 8-4. Make sure you order the correct electrode kit for your spray gun by matching the spray gun part number on the end cap label with the spray gun description.

Item	Part	Part	Description	Quantity	Note
—	288567		ELECTRODE, manual gun, long	1	
—		288573	ELECTRODE, manual gun, short	1	
1	941081	941081	• O-RING, silicone, 0.250 x 0.438 x 0.094 in.	1	
2	288557	288557	• SUPPORT, electrode, manual gun	1	
3	940163	940163	• O-RING, silicone, 0.625 x 0.750 x 0.063 in.	1	
4	288555		• SLEEVE, wear, manual gun, long	1	
4		288572	• SLEEVE, wear, manual gun, short	1	
5	-----	-----	• CABLE, core, bulk, unjacketed	1	
6	288560	288560	• ELECTRODE, spring, contact, Sure Coat	1	
7	288554	288554	• HOLDER, cable, electrode	1	
NS: Not Shown					

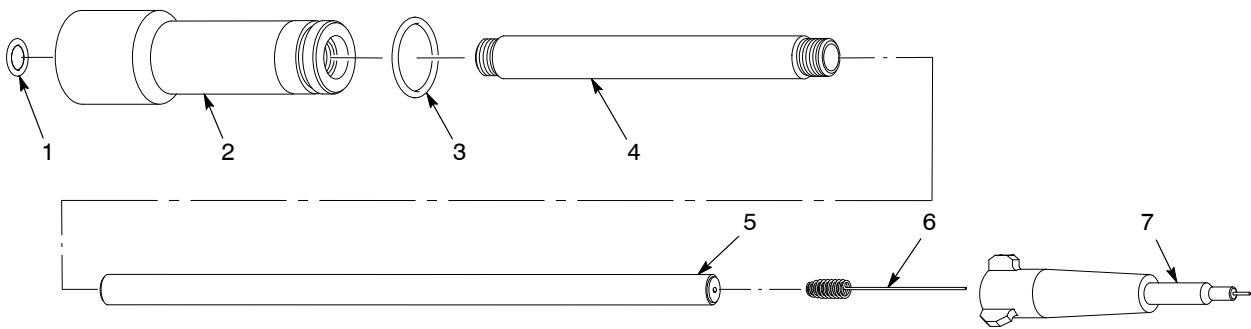


Figure 8-4 Electrode Kits

Options

Deflectors

See Figure 8-5.

Item	Part	Description	Quantity	Note
1	135865	DEFLECTOR, 14-mm, Tivar, with O-ring	1	
1	147880	DEFLECTOR, 16-mm, Tivar, with O-ring	1	
1	173138	DEFLECTOR, 19-mm, Tivar, with O-ring	1	
2	249233	DEFLECTOR, 38-mm, Tivar, with O-ring	1	
3	940084	• O-RING, silicone, 0.188 x 0.312 x 0.063 in.	1	A

NOTE A: This O-ring is included with all deflectors.

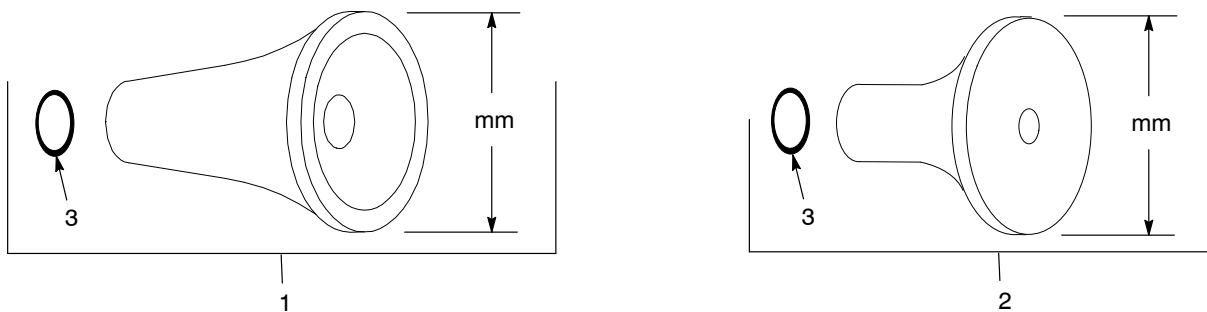


Figure 8-5 Deflectors

Pattern Adjusters

See Figure 8-6.

NOTE: Remove the standard nozzle before installing these pattern adjusters.

Item	Part	Description	Quantity	Note
1	309444	ADJUSTER, 19-mm, pattern	1	A
2	309446	ADJUSTER, 38-mm, pattern,	1	B

NOTE A: This pattern adjuster can be used with 14-, 16-, and 19-mm deflectors.
 NOTE B: This pattern adjuster can only be used with a 38-mm deflector.

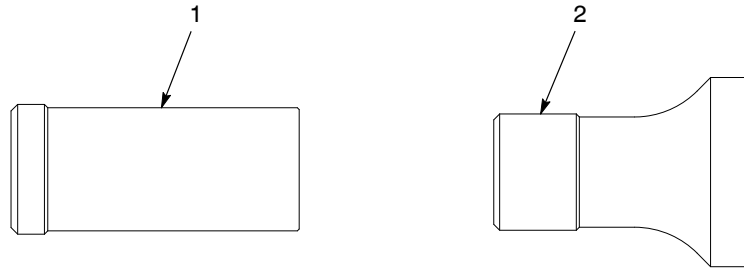


Figure 8-6 Pattern Adjusters

Glass-Filled PTFE Flat Spray Nozzles

See Figure 8-7.

Item	Part	Description	Quantity	Note
1	302108	NOZZLE, flat spray, 2.5-mm, glass-filled PTFE	1	
1	302109	NOZZLE, flat spray, 3-mm, glass-filled PTFE	1	
1	302110	NOZZLE, flat spray, 4-mm, glass-filled PTFE	1	
1	302111	NOZZLE, flat spray, 6-mm, glass-filled PTFE	1	

Tivar Flat Spray Nozzles

See Figure 8-7.

Item	Part	Description	Quantity	Note
1	302101	NOZZLE, flat spray, 2.5-mm	1	
1	302102	NOZZLE, flat spray, 3-mm	1	
1	302104	NOZZLE, flat spray, 6-mm	1	
2	302105	NOZZLE, flat spray, 2.5-mm 60° cross	1	
3	302106	NOZZLE, flat spray, 2.5-mm 90° cross	1	
4	302107	NOZZLE, 2.5-mm castle	1	

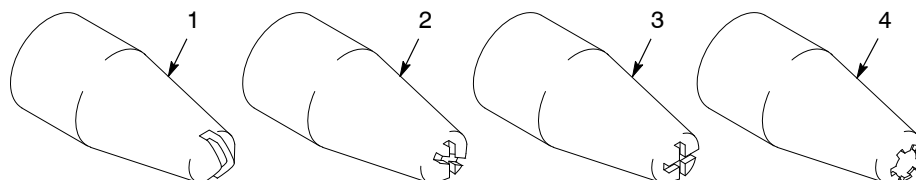


Figure 8-7 Tivar and Glass-Filled PTFE Flat Spray Nozzles

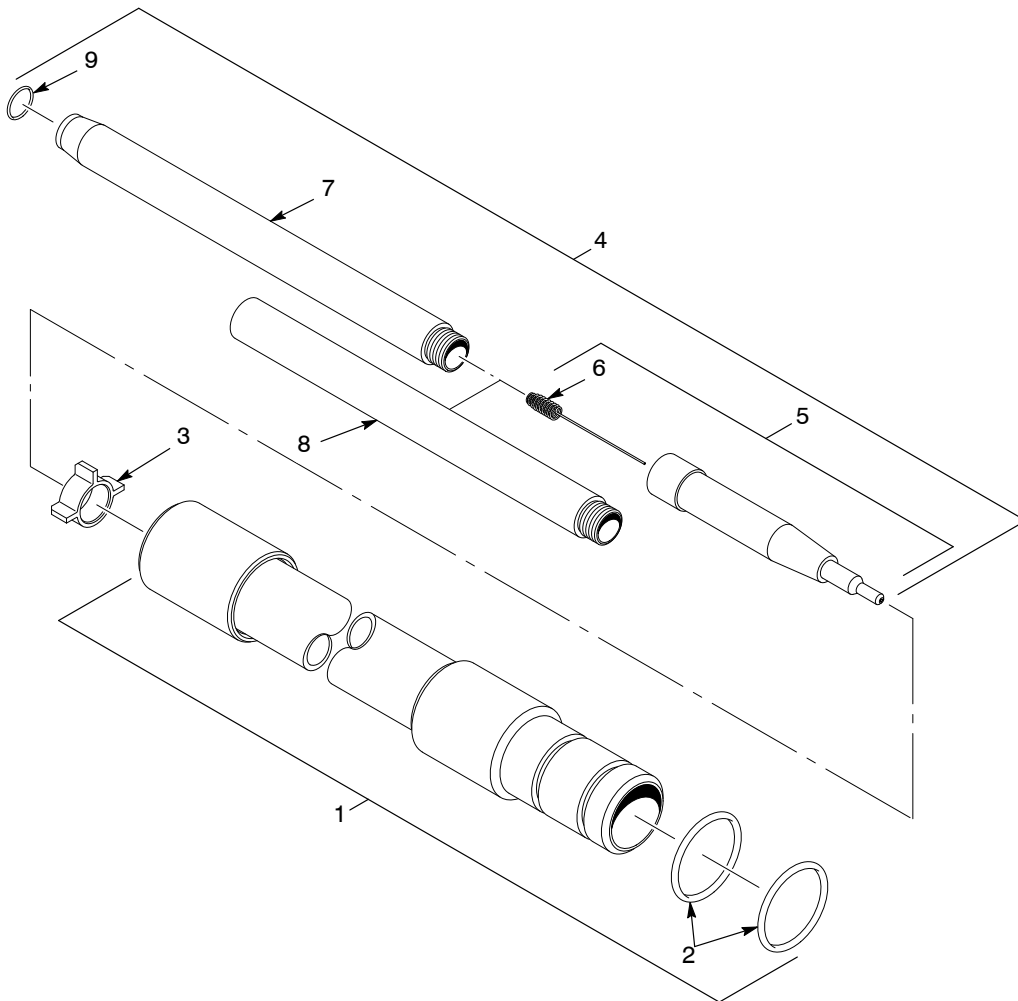
Tivar Nozzle Kit

Part	Description	Quantity	Note
1077172	KIT, nozzle, manual, Sure Coat	1	
302101	• NOZZLE, flat spray, 2.5-mm	1	
302104	• NOZZLE, flat spray, 6-mm	1	
302105	• NOZZLE, flat spray, 2.5-mm, 60°, cross	1	
302106	• NOZZLE, flat spray, 2.5-mm 90°, cross	1	
302107	• NOZZLE, flat spray, 2.5-mm castle	1	
173138	• DEFLECTOR, 19 mm, Versa-Spray II, w/O-ring	1	
135865	• DEFLECTOR, barrel, w/O-ring	1	
147880	• DEFLECTOR, Tivar, 16 mm, w/O-ring	1	

Lance Extension Kits

See Figure 8-8.

Item	Part	Part	Description	Quantity
—	305799		150-mm LANCE EXTENSION, Sure Coat	1
—		305800	300-mm LANCE EXTENSION, Sure Coat	1
1	305792		• KIT, tube, extension, 150 mm	1
1		305793	• KIT, tube, extension, 300 mm	1
2	940182	940182	• • O-RING, silicone, 0.750 x 0.875 x 0.063 in.	2
3	275148	275148	• SUPPORT, cable, Sure Coat	1
4	305790		• 150-mm EXTENSION ELECTRODE KIT, Sure Coat	1
4		305791	• 300-mm EXTENSION ELECTRODE KIT, Sure Coat	1
5	305798	305798	• • ELECTRODE AND SUPPORT KIT, Sure Coat	1
6	288560	288560	• • • ELECTRODE, spring, contact, Sure Coat	1
7	275120	275120	• • SLEEVE, contact, lance extension	1
8		160021	• • LINK, adapter, 300 mm	1
9	940084	940084	• • O-RING, silicone, 0.188 x 0.312 x 0.063 in.	1



1401181A

Figure 8-8 Lance Extension Kits

Short to Long Gun Adapter Kit

Part	Description	Quantity
275262	SHORT TO LONG GUN ADAPTER KIT	1
1002739	• ADAPTER, inlet, long, manual gun, nylon	1
288567	• ELECTRODE, manual gun, standard	1
940182	• O-RING, silicone, 0.750 x 0.875 x 0.063 in.	2
982455	• SCREW, set, M6 x 1.0 x 8, nylon, black	1

Long to Short Gun Adapter Kit

Part	Description	Quantity
275200	LONG TO SHORT GUN ADAPTER KIT	1
1003067	• ADAPTER, short, inlet, manual gun, nylon	1
288573	• ELECTRODE, manual gun, short, packaged	1
940182	• O-RING, silicone, 0.750 x 0.875 x 0.063 in.	2
982455	• SCREW, set, M6 x 1.0 x 8, nylon, black	1

Handle Pad for Large Hands

Part	Description	Quantity
288544	PAD, ground, medium, manual gun	1

Powder and Air Tubing

These are bulk part numbers. Order each part in one-foot increments.

Part	Description	Note
900649	³ / ₈ -in. ID TUBING, powder, blue	AR
900648	11-mm ID TUBING, powder, blue	AR
900650	¹ / ₂ -in. ID TUBING, powder, blue	AR
900741	6/4-mm TUBING, polyurethane, black, air	AR
900617	4-mm OD TUBING, polyurethane, clear, air	AR
AR: As Required		

Cable Extension – 6 Meters

Part	Description	Quantity
1083221	CABLE, manual gun, 6 meter extension	1

Shorting Plug

See Figure 8-9. Use this plug to test the voltage multiplier.

Item	Part	Description	Quantity	Note
1	161411	PLUG, shorting, IPS	1	

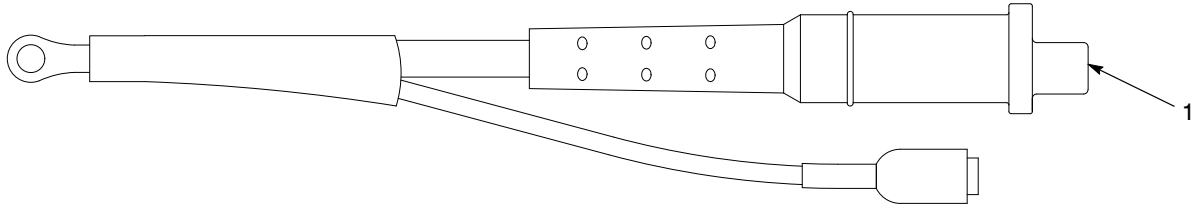


Figure 8-9 Shorting Plug

Control Units

Part	Description	Quantity
1018181	CONTROL UNIT, manual, 3 gauge, Sure Coat	1

