

# Electrostatic Cable Care and Installation

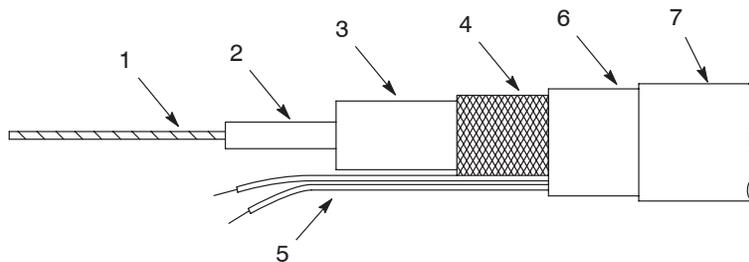
## Introduction

**NOTE:** This manual provides general guidelines for electrostatic cable care and installation. For more specific instructions, refer to the appropriate spray gun and power unit manuals.

The electrostatic cable conducts high voltage between the electrostatic power unit and the electrostatic spray gun.

### Cable Construction

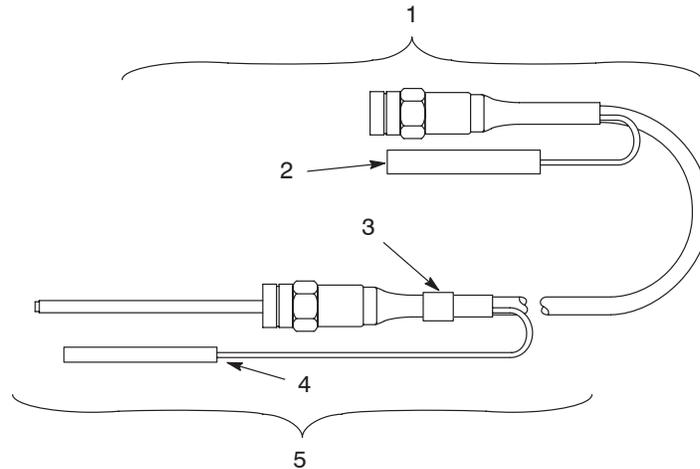
Item	Description	Note
1	Conductive fiber core	
2	Corona guard	
3	High dielectric sheath	
4	Braided conductor	Grounds the spray gun through the power unit.
5	Control wires	Runs on the outside on the braided conductor in manual spray gun cables. The control wires trigger the electrostatic output of the power unit when the operator triggers the spray gun to dispense coating material.
6	Insulating sheath	
7	Durable outer covering	Serves as an insulator and to protect the cable from wear and contaminants.



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## Cable Connections

See Figure 1. A connecting nut is located at the power supply end (5) and the spray gun end (1) of all electrostatic cables. These connecting nuts are internally connected to the conductive braid within the cable to provide the grounding necessary for safe operation. A brass tag (3) is installed on the power supply end of the cable to help identify the cable connections.



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Figure 1 Typical Electrostatic Cable

- |                           |                           |
|---------------------------|---------------------------|
| 1. Spray gun end          | 4. Control wire connector |
| 2. Control wire connector | 5. Power supply end       |
| 3. Brass tag              |                           |

## Dos and Don'ts of Cable and Power Supply Care

Electrostatic cable conducts a high-voltage potential and is subject to electrical breakdowns, burn through, or carbon tracking if it is not properly cared for. A major cause of early cable failure is air trapped within the gun cable bore or insulating tube. An air pocket, even a small bubble, can allow a corona to form. This can damage the cable, spray gun, and current-limiting resistor within the spray gun.

Another major cause of failure is rough usage of the cable.

Refer to [Table 1](#) for guidelines to gaining maximum life from all components of an electrostatic system.

Table 1 Dos and Don'ts of Cable and Power Supply Care

<b>Do</b>	<b>Don't</b>
Establish a protected path for the cable between the spray gun and the power supply.	Don't allow the cable to become cut or abraded around sharp corners such as booth edges.
	Don't walk on the cable or run over it with heavy objects.
	Don't bend the cable around a radius of less than six inches at stationary points and eight inches at flexing points.
	Don't stretch the cable or allow the reciprocator, product, or conveyor to pull on it.
	Don't allow loops or loose segments of the cable between anchor points to flex severely or strike against other objects.
Cover the cable and spray gun with non-conductive plastic wherever possible to protect them from contact with solvent and/or coating material. Change the plastic regularly.	
Anchor the electrostatic cable so that no strain will be placed on the cable. The cable can be anchored to the fluid hose or powder feed tubing leading to the spray gun so that any strain put on the two will be borne by the hose or tubing.	Don't anchor the cable to moving machinery unless allowances have been made for cable movement.
	Don't bundle cables together in such a way that they can strain or abrade each other.
Tie the cable to the spray gun mounting bar (automatic guns) so that it is not damaged by abrading or striking other objects.	
Use elastic straps or springs to anchor the cable if the electrostatic gun is mounted to a reciprocator or a similar movable machine. Make sure any cable loops required to accommodate machine movement are prevented from flexing severely or striking hard surfaces.	
Clean and protect the ends of the cable so that no contaminants, oils, particles, solvents, etc. are carried into the spray gun or power supply where arcing, carbon tracking, or burn through will occur.	Don't put dirty (even slightly dirty) cable ends into the well of the power unit or electrostatic gun.
	Don't use ketones, lacquer thinner, or other active solvents to clean the outside of the cable as this will damage the outer cover and cause electrical breakdown.
Make sure sufficient dielectric grease is present in the gun cable bore or insulating tube to displace all air when the cable is inserted. Also, assure all air is displaced from the power unit well by the proper application of dielectric grease or oil as directed by the power unit manual.	Don't install the cable without regreasing (where appropriate) after maintenance.
	Don't use sharp instruments that may cut or dent the cable when you are installing it.

## Electrostatic Cable Installation

**NOTE:** Refer to the spray gun and power supply manuals for detailed cable installation instructions.

### *Cleaning the Cable Well and High-Voltage Bore*

Follow these steps to clean the spray gun's high-voltage bore, the well of the power unit, and the cable ends before installing the cable in a spray gun or power supply.

1. Spray the inside of the gun high-voltage bore and the power unit cable well with isopropyl alcohol.
2. Brush out the cable well and the high-voltage bore in the spray gun with a round brush; then spray the bore and well a second time to flush out the loosened material.
3. Use a cloth dampened with isopropyl alcohol to wipe off the ends of the cable.
4. When the cable end, gun high-voltage bore, and power unit well are dry, locate the small plastic containers of insulating oil or grease supplied with the power supply. Fill the power supply high-voltage well with oil or grease as directed in the power supply manual. Make certain that no foreign matter is dragged into the well by the cable.

### *Installing the Electrostatic Cable*

1. Use a clean, dry, lint-free cloth to wipe the power supply cable end (end with brass tag) clean of any contamination.  
**NOTE:** If contamination cannot be easily wiped off, use a cloth dampened with isopropyl alcohol. Allow the cable end to dry thoroughly before installing it. Do not install the cable until it is thoroughly clean and dry.
2. Make sure the power supply's high-voltage well is filled with oil or grease as directed in the power supply's manual.
3. Slowly insert the cable end into the power unit well. Wipe up any oil or grease as it overflows.
4. Secure the cable connecting nut to the power unit well fitting.
5. Attach the cable to the strain relief on the side of the cabinet (if used).
6. Use a clean, dry, lint-free cloth, to wipe the gun end of the cable. Refer to the spray gun manual for detailed cable installation instructions.

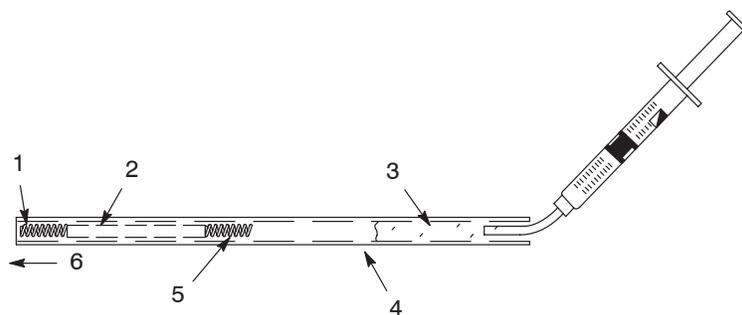
## Resistor Care and Replacement



**CAUTION:** If the greasing procedure is not followed, premature failure of the resistor, cable, or gun components will occur because of the high-voltage corona or arcing.

Apply dielectric grease each time the electrostatic cable is removed from the high-voltage bore of the spray gun or the spray gun is disassembled.

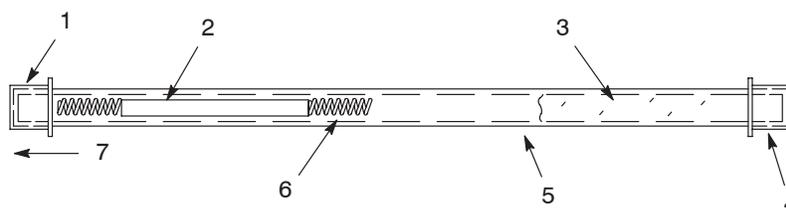
See Figures 2 and 3. The dielectric grease will prevent a corona discharge and arcing from occurring in the cable bore of the spray gun around the contact points of the resistor, spring and cable end. When installing, testing, or reassembling the spray gun, use the following procedures.



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Figure 2 Typical Greasing Procedure

- |             |                      |                        |
|-------------|----------------------|------------------------|
| 1. Spring   | 3. Dielectric grease | 5. Spring              |
| 2. Resistor | 4. Insulating tube   | 6. Toward spray nozzle |



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Figure 3 Typical Resistor Replacement Kit

- |                      |                    |                        |
|----------------------|--------------------|------------------------|
| 1. Cap               | 4. Cap             | 6. Spring              |
| 2. Resistor          | 5. Insulating tube | 7. Toward spray nozzle |
| 3. Dielectric grease |                    |                        |

## Resistor Care and Replacement *(contd)*

Replacement Scenario	Procedure
New Spray Gun and a New Electrostatic Cable	<p>New spray guns are factory assembled with the insulating tube, resistor, and grease already in place in the spray gun or installed on the cable. Most new cables are shipped with a resistor replacement kit packaged with the cable.</p> <p>Do not disassemble the spray gun unless necessary.</p> <ol style="list-style-type: none"> <li>1. Wipe the new cable end (opposite from the end with the brass serial number tag) and insert the cable into the high-voltage bore of the spray gun. The cable end will act as a piston in the insulating tube and force the dielectric grease around the resistor and spring.</li> <li>2. Once the cable is in place, tighten the retaining nut.</li> <li>3. Place the unused resistor service kit in stock for future use.</li> </ol> <p><b>NOTE:</b> Resistor replacement kits for AN-8 PLUS guns include a new insulating tube packed with dielectric grease, a resistor, and a spring. Remove the old insulating tube, resistor, and spring. Replace these with the new ones in the kit after the cable bore is clean.</p>
Old Spray Gun with a New Electrostatic Cable	<p>Replace the resistor within the spray gun when installing a new cable. Frequently a bad resistor is the cause of cable failure.</p> <ol style="list-style-type: none"> <li>1. Refer to the appropriate spray gun manual to disassemble the spray gun and remove the insulating tube and resistor.</li> <li>2. Clean as much of the old grease as possible from the high-voltage bore of the spray gun with a clean cloth and a round brush.</li> <li>3. Remove the plastic shipping caps from the replacement kit's insulating tube. Insert the new resistor replacement kit into the high-voltage bore of the spray gun, resistor end first.</li> <li>4. Assemble the spray gun.</li> <li>5. Insert the cable into the high-voltage bore of the spray gun.</li> <li>6. Once the cable is in place, tighten the retaining nut.</li> </ol>

*Continued...*

Replacement Scenario	Procedure
Old Spray Gun with an Old Electrostatic Cable with a New Resistor	<p data-bbox="667 224 1382 281"><b>Using a Resistor Replacement Kit:</b> Refer to and follow the steps in <i>Old Spray Gun with a New Electrostatic Cable</i>.</p> <p data-bbox="667 294 1029 321"><b>Replacing the Resistor Only:</b></p> <ol data-bbox="667 338 1430 953" style="list-style-type: none"> <li data-bbox="667 338 1393 394">1. Refer to the appropriate spray gun manual to disassemble the spray gun and remove the insulating tube and resistor.</li> <li data-bbox="667 415 1398 499">2. Clean as much of the old grease as possible from the high-voltage bore of the spray gun with a clean cloth and a round brush.</li> <li data-bbox="667 520 1430 611">3. Warm a syringe filled with dielectric grease to about 98 to 110 °F. This can be done by keeping the syringe in a pocket for a short period of time or by running hot water on it.</li> <li data-bbox="667 632 1409 716">4. Once the grease is warm, place the flexible tube on the end of the syringe all the way into the insulating tube. Extrude about 5-cc grease into it as shown in Figure 2.</li> <li data-bbox="667 737 1192 764">5. Insert the resistor into the insulating tube.</li> <li data-bbox="667 785 1406 842">6. Insert the insulating tube containing the resistor and grease into the high-voltage bore of the spray gun.</li> <li data-bbox="667 863 997 890">7. Assemble the spray gun.</li> <li data-bbox="667 911 1292 953">8. Insert the electrostatic cable and tighten the cable retaining nut.</li> </ol>

## Voltage and Resistance Testing



**WARNING:** Failure to make sure that the high-voltage contact points and resistor are embedded in dielectric grease, with all air pockets removed, can lead to cable or resistor failure, arcing, burn-through, property damage, and personal injury.

Any time an electrostatic cable is removed from a spray gun, the high-voltage bore, or insulating tube, should be repacked with dielectric grease. This will make sure that sufficient grease is available to displace all air from the bore or insulating tube when the cable is reinstalled.

Once the cable has been installed, use a megohmmeter to check proper circuit resistance between the gun electrode and power unit end of the cable. Refer to the *Electrostatic System Checks* instruction sheet for test procedures and data.

## Service Kit

Part	Description	Quantity
106338	SERVICE KIT, cable cleaning	1

## Nordson Electrostatic Cables

Part	Length, m	Cable Description	Diameter, In.	Used on
245302	8	Multi out pack	$\frac{5}{16}$	CA,CA-1,NAE-4,7A
245303	12	Multi out pack	$\frac{5}{16}$	CA,CA-1,NAE-4,7A
245305	8	Single out pack	$\frac{5}{16}$	NAE-1A,-4,7A
245306	12	Single out pack	$\frac{5}{16}$	NAE-1A,-4,7A
245307	16	Single out pack	$\frac{5}{16}$	NAE-1A,-4,7A
245387	8	Single out C-1	$\frac{5}{16}$	C,C-1
245388	12	Single out C-1	$\frac{5}{16}$	C,C-1
245389	16	Single out C-1	$\frac{5}{16}$	C,C-1
245403	8	Single out pack	$\frac{5}{16}$	NAE-1M
245404	12	Single out pack	$\frac{5}{16}$	NAE-1M
245767	8	Air manual	$\frac{5}{16}$	NAE-4M,7M
246361	16	HV auto	$\frac{3}{8}$	AN-9
246362	12	HV auto	$\frac{3}{8}$	AN-9
246363	8	HV auto	$\frac{3}{8}$	AN-9
246563	8	Single out pack	$\frac{5}{16}$	AN-8
246564	12	Single out pack	$\frac{5}{16}$	AN-8
246565	16	Single out pack	$\frac{5}{16}$	AN-8
247290	8	Manual		AN-8W
247985	12	ANR-1	$\frac{5}{16}$	ANR-1
247986	16	ANR-1	$\frac{5}{16}$	ANR-1
248663	8	HV CA-10	$\frac{5}{16}$	CA-10
248664	12	HV CA-10	$\frac{5}{16}$	CA-10
248665	16	HV CA-10	$\frac{5}{16}$	CA-10
249045	8	HV AN-10	$\frac{5}{16}$	AN-10
249046	12	HV AN-10	$\frac{5}{16}$	AN-10
249047	16	HV AN-10	$\frac{5}{16}$	AN-10
118937	8	H.V. manual	$\frac{5}{16}$	AN-8 PLUS
118938	12	H.V. manual	$\frac{5}{16}$	AN-8 PLUS
118940	16	H.V. manual	$\frac{5}{16}$	AN-8 PLUS
138340	8	H.V. SCF-EA1	$\frac{5}{16}$	SCF-EA1
138341	12	H.V. SCF-EA1	$\frac{5}{16}$	SCF-EA1
138342	16	H.V. SCF-EA1	$\frac{5}{16}$	SCF-EA1

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