

# **Kinetix<sup>®</sup> Electrostatic Spray Gun Automatic Airless**

Customer Product Manual

Part 334592F03

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**For parts and technical support, call the Industrial Coating  
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# Table of Contents

<b>Safety</b> .....	<b>1-1</b>
Introduction .....	1-1
Qualified Personnel .....	1-1
Intended Use .....	1-1
Regulations and Approvals .....	1-2
Personal Safety .....	1-2
High-Pressure Fluids .....	1-3
Fire Safety .....	1-4
Halogenated Hydrocarbon Solvent Hazards .....	1-4
Action in the Event of a Malfunction .....	1-5
Disposal .....	1-5
Safety Labels .....	1-5
 <b>Description</b> .....	 <b>2-1</b>
Introduction .....	2-1
Airless Description .....	2-2
Features .....	2-2
Options .....	2-2
Coating Materials .....	2-2
Theory of Operation .....	2-2
Electrostatic Charge .....	2-2
Fluid Flow .....	2-3
Air Flow .....	2-3
 <b>Installation</b> .....	 <b>3-1</b>
Preparation .....	3-1
Typical Airless System .....	3-2
Air and Fluid Hose Connections .....	3-3
Air Hose .....	3-3
Fluid Hose .....	3-3
Fluid Hose Connection .....	3-4
Gun Cable Connection .....	3-6
Securing the Hoses and Cables .....	3-7
Gun Cable .....	3-7
Air and Fluid Hoses .....	3-7
Installing the Nozzle and Gasket with Restrictor .....	3-7
Optional Quick-Exhaust Valve .....	3-9
 <b>Operation</b> .....	 <b>4-1</b>
Introduction .....	4-1
Daily Startup .....	4-2
Atomization Adjustments .....	4-2
Shutdown .....	4-3
Short-Term .....	4-3
Long-Term .....	4-3
Multi-Component Coatings .....	4-3

<b>Maintenance</b> .....	<b>5-1</b>
Introduction .....	5-1
Daily .....	5-1
Periodically .....	5-3
System Flushing .....	5-3
Spray Gun Cleaning .....	5-4
Routine Cleaning .....	5-4
Extensive Cleaning .....	5-5
Electrostatic System Checks .....	5-5
 <b>Troubleshooting</b> .....	 <b>6-1</b>
Introduction .....	6-1
Common Problems .....	6-2
Spray Pattern/Film Build Troubleshooting .....	6-3
Electrostatic Troubleshooting .....	6-4
Multiplier Continuity and Resistance Check .....	6-5
Gun Cable Continuity Checks .....	6-5
 <b>Repair</b> .....	 <b>7-1</b>
Tools/Supplies Required .....	7-2
Nozzle, Restrictor, and Fluid Tip Replacement .....	7-2
Return Springs Replacement .....	7-4
Air Piston and Connecting Rod Replacement .....	7-5
Preparation .....	7-5
Spray Gun Disassembly .....	7-5
Air Piston and Connection Rod Replacement .....	7-5
Spray Gun Assembly .....	7-7
Ball Tip and Packing Cartridge Replacement .....	7-8
Preparation .....	7-8
Spray Gun Disassembly .....	7-9
Ball Tip and Packing Cartridge Removal .....	7-9
Ball Tip and Packing Cartridge Installation .....	7-11
Spray Gun Assembly .....	7-11
Multiplier Replacement .....	7-12
Multiplier Removal .....	7-12
Multiplier Installation .....	7-13
Gun Cable Replacement .....	7-14
Fluid Supply Hose Replacement .....	7-15
Service Illustration and Notes .....	7-16

<b>Parts</b> .....	<b>8-1</b>
Introduction .....	8-1
Using the Illustrated Parts List .....	8-1
Kinetix Airless Automatic Electrostatic Spray Gun .....	8-2
Adhesives, Sealants, and Lubricants .....	8-6
Recommended Kits .....	8-6
Perlast Fluid Seal .....	8-6
Fluid Tip .....	8-6
Air Seal .....	8-7
Standard Gold Packing Cartridge .....	8-7
Puller Link Upgrade Kits .....	8-7
Puller Link Upgrade with Spacer Block .....	8-7
Puller Link Upgrade .....	8-7
Cordset Assemblies .....	8-8
Automatic Cordset with 50-ft Extension .....	8-8
Automatic Cordset .....	8-8
Optional Quick-Exhaust Valve .....	8-8
Optional Hot Paint Fluid Seal Kit .....	8-9
Optional PTFE Packing Cartridge .....	8-9
Hoses and Tubing .....	8-9
Recommended Spare Parts .....	8-10
 <b>Specifications</b> .....	 <b>9-1</b>
Dimensions .....	9-1
Weight .....	9-1
Operating Pressures .....	9-1
Standard Fitting Sizes .....	9-1
Gun Electrostatics .....	9-2
Conductivity Range .....	9-2
Approvals .....	9-2
Special Conditions for Safe Use in the European Union .....	9-2



# *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.

## 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. 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 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.

## 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:

<u>Element</u>	<u>Symbol</u>	<u>Prefix</u>
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.

## Safety Labels

Table 1-1 contains the text of the safety label on this equipment. The safety label is provided to help you operate and maintain your equipment safely. See Figure 2-1 for the location of the safety label.

Table 1-1 Safety Label

Heading	
	<b>WARNING:</b> Allow only qualified personnel to use this equipment. Observe and follow all safety instructions for this equipment.
	<b>WARNING:</b> Risk of explosion or fire. Fire, open flames, and smoking prohibited.
	<b>WARNING:</b> Do not point the spray gun at any part of your body or at anyone else. Do not operate the fluid delivery system if any component is leaking. Failure to observe this warning could result in an injection injury.
	<b>WARNING:</b> Risk of electrical shock. Disconnect and lockout input power to equipment before servicing. Failure to observe this warning may result in personal injury or death.



## Section 2

# Description

## Introduction

See Figure 2-1.

The Kinetix airless automatic electrostatic high-pressure spray gun electrostatically charges and sprays liquid coatings. The spray gun is powered by the Kinetix automatic gun power supply and has an internal multiplier which is user-replaceable.

The spray gun is non-circulating and can be used with heated and unheated non-circulating spray systems.

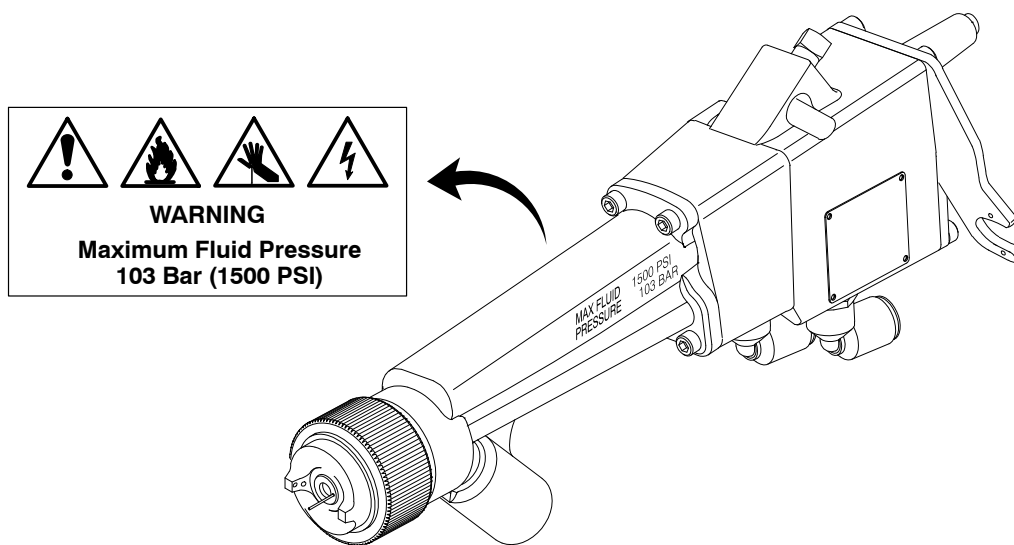


Figure 2-1 Kinetix Airless Automatic Electrostatic Spray Gun

*Note:* Refer to *Safety Label* on page 1-5 for a description of the warning symbols.

## Airless Description

This gun sprays coating materials at high pressures of up to 103 bar (1500 psi). Atomization is achieved by forcing the coating materials through a very small nozzle orifice. This spray gun can yield considerably better transfer efficiencies than conventional air spray guns and can apply large quantities of coating material very quickly.

## Features

Features of the airless spray gun are

- easy disassembly for cleaning and repair
- light weight, compact
- self-adjusting packing cartridge

## Options

Options include a variety of Nordson Cross-Cut<sup>®</sup> and dome nozzles; restrictors; fluid hoses; quick-exhaust valve; and fittings.

## Coating Materials

The spray guns are compatible with a wide variety of coating materials including

- general solvent-based
- metallics
- high-solids
- multi-component

**NOTE:** The seals in the spray gun are compatible with most coatings. If the coating material you use damages the seals, contact your Nordson Corporation representative for compatible replacements.

## Theory of Operation

See Figure 2-2.

### *Electrostatic Charge*

The gun control unit delivers low-voltage dc power through an electrostatic cable (1) to the multiplier (3), which is housed in the extension (4) of the spray gun. The multiplier then generates high-voltage for an electrostatic field. This electrostatic field produces a corona discharge around the gun's electrode (6).

Resistors within the multiplier limit the output current at safe levels. High voltage (93 kV) passes through the gun's electrode to electrostatically charge the coating material. As the charged coating material is sprayed it is attracted to the grounded object to be coated.

## Fluid Flow

Fluid enters the spray gun through a fluid hose (9) attached to the extension and flows to the fluid tip (7). The ball tip (5) controls fluid flow through the fluid tip. The packing cartridge (8) prevents fluid from flowing out of the back of the extension.

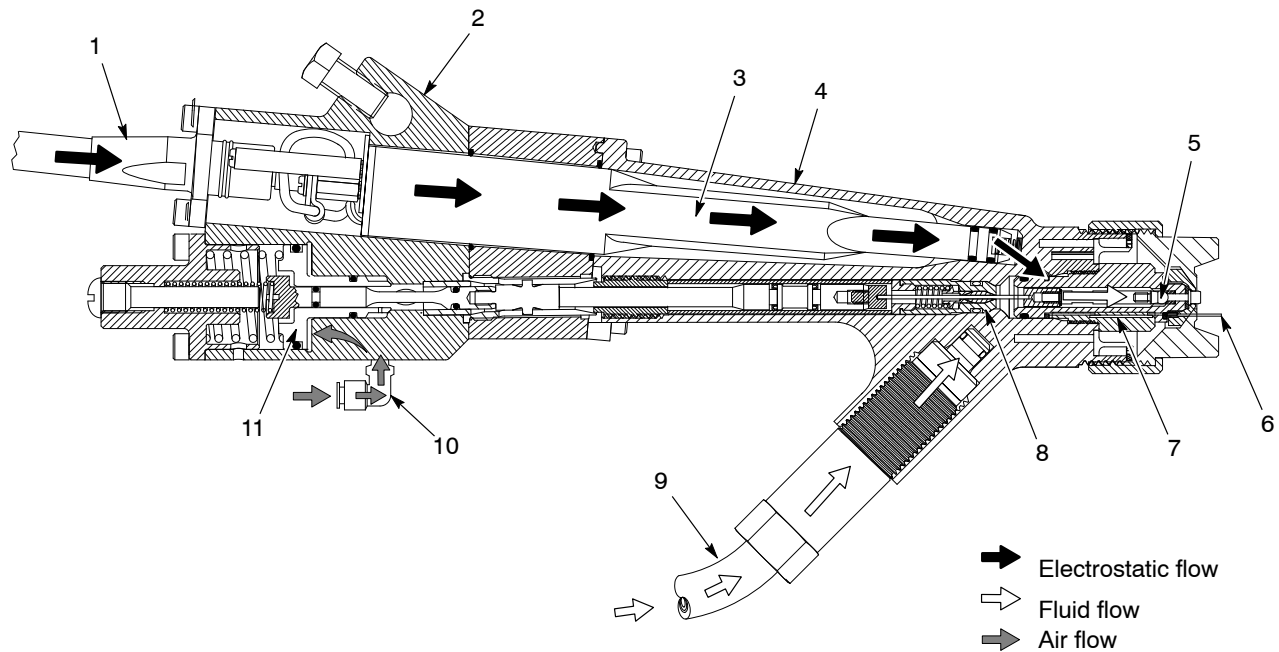


Figure 2-2 Spray Gun Components and Operation

- |                        |                      |  |
|------------------------|----------------------|--|
| 1. Electrostatic cable | 5. Ball tip          | 9. Fluid hose                          |
| 2. Gun body            | 6. Electrode         | 10. Activation (trigger) inlet fitting |
| 3. Multiplier          | 7. Fluid tip         | 11. Air piston                         |
| 4. Extension           | 8. Packing cartridge |  |

## Air Flow

See Figure 2-2.

Activation or trigger air (10) moves the air piston (11), which then pulls on the connecting rod, opening the ball tip (5) generating fluid flow.

Airless spray guns can be fitted with a variety of restrictors and nozzles. Restrictors are pre-atomization devices that do not normally reduce flow, but aid in atomization and tend to reduce the pattern width. If a restrictor is used, the nozzle gasket is removed and replaced with a restrictor.





## 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.

## Preparation



**CAUTION:** Do not overtighten parts. Failure to observe this caution will result in equipment damage.

**NOTE:** Nozzles; gaskets or gasket with restrictors; the electrode; and the PTFE retaining washer are not shipped with the spray gun and must be ordered separately based on your application.

**NOTE:** A gasket or gasket with restrictor and the PTFE retaining washer are required. For assistance in selecting the appropriate nozzle and restrictor for your application, contact your Nordson Corporation representative.

Before installation,

- make sure you have the appropriate nozzle; gasket or gasket with restrictor; electrode; and PTFE retaining washer for your application.
- make sure you have high-pressure fluid hoses of the correct length, ID, and materials.



**WARNING:** Risk of fire and/or electrical shock if the spray gun and system components are not properly grounded.

- make sure the system is properly grounded.

**NOTE:** Inadequately grounded parts will lose electrostatic attraction efficiency when sprayed.

- remove the spray gun, brushes, and combination tool from the box.

# Typical Airless System



**WARNING:** Install an approved pressure-relief device set at 103 bar (1500 psi) in the fluid line to the spray gun. The fluid supply hose must have a minimum pressure rating of 103 bar (1500 psi). Failure to observe this warning could result in equipment damage or personal injury.

Figure 3-1 shows the components of a typical system.

**NOTE:** Some components shown are optional. Make sure your system contains self-relieving shutoff valves for the fluid supply.

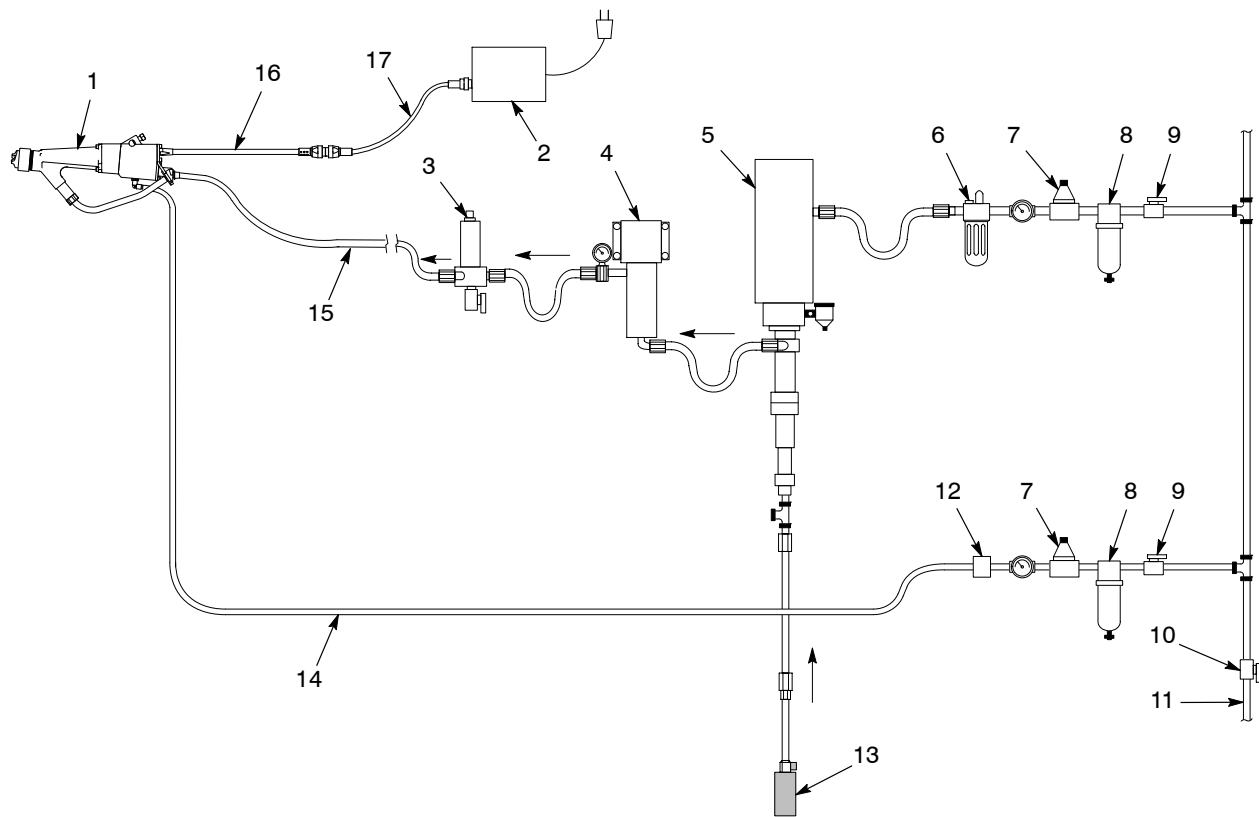


Figure 3-1 Typical Airless System

- |                         |                                 |                              |
|-------------------------|---------------------------------|------------------------------|
| 1. Spray gun            | 7. Air regulator                | 13. Siphon screen            |
| 2. Control unit         | 8. Air filter                   | 14. Activation (trigger) air |
| 3. Fluid filter         | 9. Self-relieving shutoff valve | 15. Fluid supply             |
| 4. Heater (as required) | 10. Drain valve                 | 16. Gun cable                |
| 5. Pump                 | 11. Drain rod                   | 17. Extension cable          |
| 6. Air lubricator       | 12. Solenoid                    |                              |

## Air and Fluid Hose Connections

Spray gun fittings accept standard Nordson hoses.

### Air Hose

The air hoses supplying air to the spray gun should be no longer than 7.62 m (25 ft).

Limit the number of restrictions in the air supply lines and hose to provide maximum air flow.

1. Clean the air hose fitting with a clean, dry cloth.
2. Connect the trigger air hose between the  $\frac{1}{4}$ -in. tube fitting in the spray gun body and the air supply outlet.

### Fluid Hose



**WARNING:** The fluid hose must be a grounding-type hose, with continuity between fittings. Without a ground, a static charge could build up in the spray gun, resulting in shocks to the operator or sparking that could cause a fire. Resistance checks, from hose fitting to hose fitting, should be a part of your regular maintenance procedures.

Table 3-1 Example of a 20  $\mu$ A Current Draw

Resistivity of Coating	Isocore Hose ( $\frac{1}{4}$ -in. ID)
0.05 M $\Omega$	16.5 ft
0.10 M $\Omega$	3.5 ft

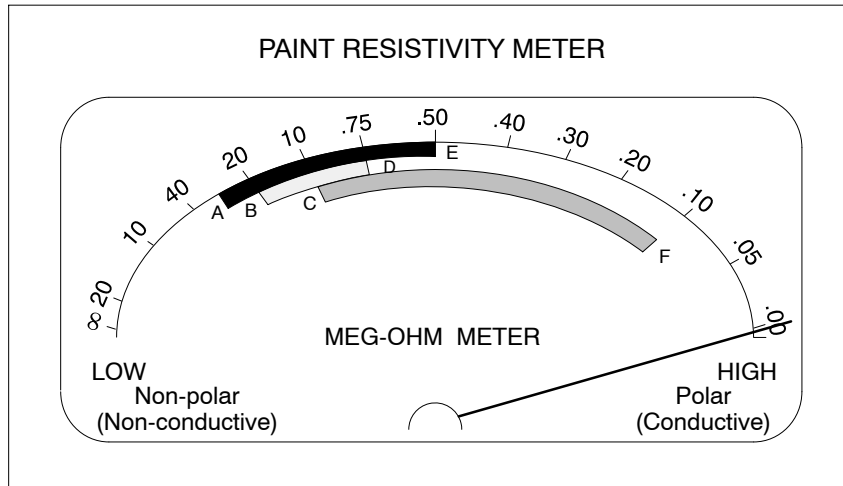
As coating materials become more conductive (lower resistivity), more current will bleed back through the fluid column in the fluid hose to the grounded fitting. With a very conductive material like water, all of the current will bleed to the ground and the spray gun would essentially be shorted.

A certain level of conductivity is required for electrostatics to be practical. Coating materials with resistivities of 0.75–2.0 M $\Omega$  usually work well. The transfer efficiency and wrap could be reduced as coating resistivities fall below 0.10 M $\Omega$ .

Figure 3-2 identifies the optimum coating resistivities for electrostatics of 0.75–2.0 M $\Omega$ .

Figure 3-3 plots the tubing length required to keep current draw at 20  $\mu$ A. To maintain current draw at 20  $\mu$ A, the hose length must increase.

## Fluid Hose (contd)



Legend:

- Best range for airspray electrostatic 0.5–3.0 range — A to E scale.
- Best range for airless and air-assisted airless electrostatic 0.75–2.0 range — B to D scale.
- Best range for rotary 0.10–1.0 range — C to F scale.

**NOTE:** Readings outside these ranges are often acceptable.

Figure 3-2 Resistivity Range for Coatings

### Fluid Hose Connection

1. Clean the fluid hose fittings with a clean, dry cloth.
2. Connect the fluid hose(s) between the fluid-delivery system outlet and the fluid hose on the spray gun extension.

**NOTE:** The standard fluid hose will work well for most coating materials. The effectiveness of the electrostatics may diminish when coating resistivities fall below 25 megohms/cm. The optional 25 ft long fluid hose will improve the electrostatic charge by isolating the fluid column.

See Figure 3-3 for the plot of a 20  $\mu$ A current draw.

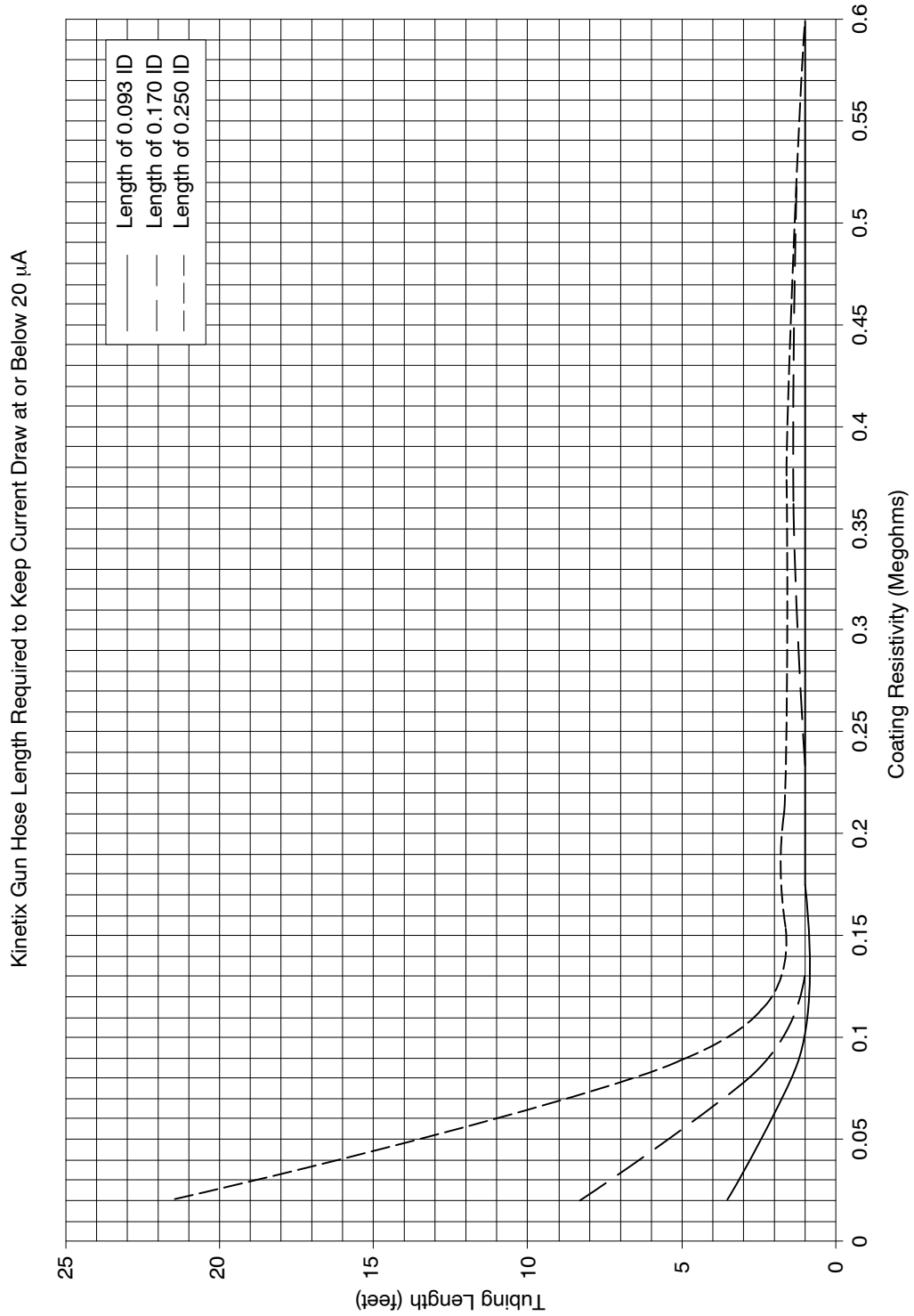


Figure 3-3 Hose Length Required to Keep Current Draw at or Below 20  $\mu$ A

## Gun Cable Connection



**WARNING:** Ground all electrically conductive equipment. Ungrounded conductive equipment can store a static charge, which could ignite a fire or cause an explosion if a hot spark is discharged. Wear shoes with conductive soles such as leather, or use grounding straps to maintain a connection to ground when working with or around electrostatic equipment.

**NOTE:** Refer to the gun control unit manual for more information.

1. Insert the small threaded connector (8) of the gun cable through the ground bracket (7).
2. Install the lock washer (9) on the threaded connector and secure with the nut (10).
3. Connect the three-pin connector on the pigtail (11) from the multiplier to the small connector of the gun cable.
4. Carefully push the pigtail back into the the gun body and attach the ground bracket to the spray gun with the four screws (6).
5. Connect the large male connector (5) on the gun cable to the female connector of the extension cable (4).
6. Connect the male connector of the extension cable (3) to the POWER OUTPUT receptacle (2) on the back of the control unit.

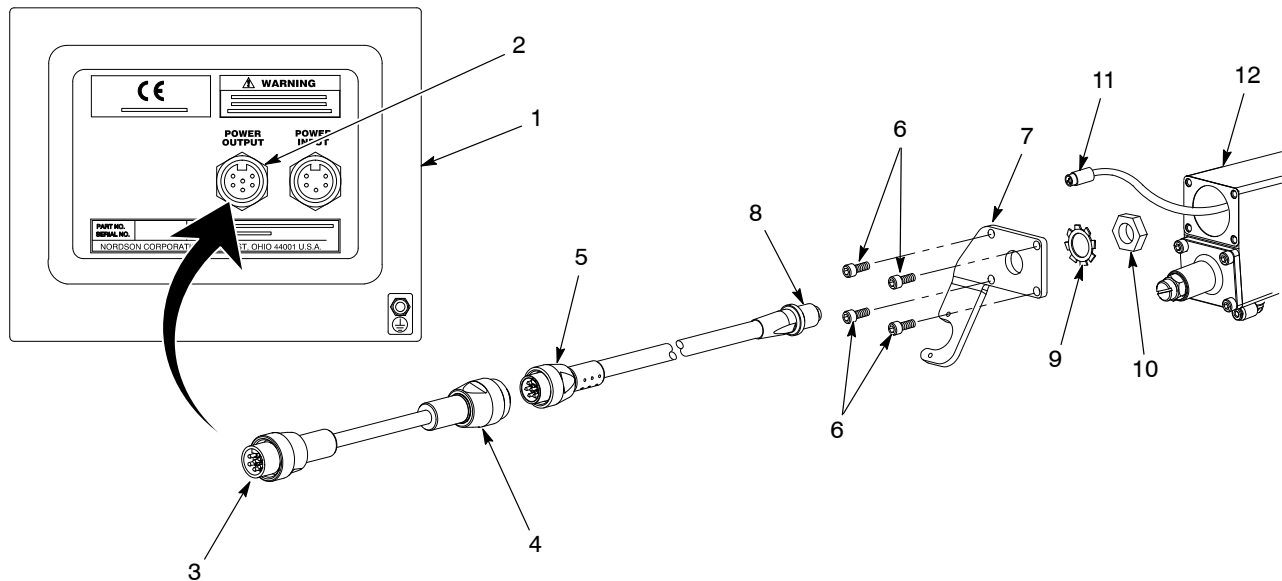


Figure 3-4 Gun Cable Installation

- |                               |                          |                |
|-------------------------------|--------------------------|----------------|
| 1. Gun control unit           | 5. Cable large connector | 9. Lock washer |
| 2. POWER OUTPUT receptacle    | 6. Screws                | 10. Nut        |
| 3. Extension cable male end   | 7. Bracket               | 11. Pigtail    |
| 4. Extension cable female end | 8. Cable small connector | 12. Spray gun  |

## Securing the Hoses and Cables

### *Gun Cable*

- Protect the ends of the gun cable so that no contaminants, oils, particles, or solvents are carried by it into the control unit receptacle or multiplier connector.
- Do not tie the cable to the machine members in areas where the cable must move or stretch.
- Do not bend the cable around a radius of less than 15.24 cm (6 in.) at stationary points and 20.3 cm (8 in.) at flexing points.
- Do not allow the cable to become abraded around sharp corners such as booth edges.
- Do not walk on the cable or run over it with heavy objects.
- Do not use cable ties. Use hook and loop tape to secure the cable.
- Bundle the cable with the air and fluid hoses.

### *Air and Fluid Hoses*

- Bundle the air and fluid hose(s) together with hook and loop tape, spiral-cut tubing, or similar devices. If you secure the hoses to a stationary object at any point between the fluid-delivery system, make sure the hoses can flex without strain.
- If desired, cover the spray gun body, hoses, and other equipment in the spray area with a grounded conductive wrapping to keep them clean.

**NOTE:** Putting strain on the hoses instead of the cable ensures that the cable is not damaged by striking other objects or severe flexing.

## Installing the Nozzle and Gasket with Restrictor

See Figure 3-5.



**WARNING:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Shut off the fluid delivery system and relieve the fluid pressure in the system. Failure to observe this warning could result in an injection injury.

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Point the spray gun into the booth or waste container and activate the spray gun to relieve residual pressure. Deactivate the trigger air to prevent inadvertent activation of the spray gun.
3. Unscrew the retaining ring (6). Remove the retaining ring and cap (5) assembly.

4. Make sure the gasket (3) is installed in the nozzle (4).

**NOTE:** If you are using a gasket with restrictor (3), the restrictor will already be installed in the gasket. Make sure the gasket with restrictor is installed in the nozzle with the flush surface toward the nozzle.

5. Install the PTFE retaining washer (2) behind the gasket to hold it in place. The end of the fluid tip (1) can be used to seat the gasket and washer.

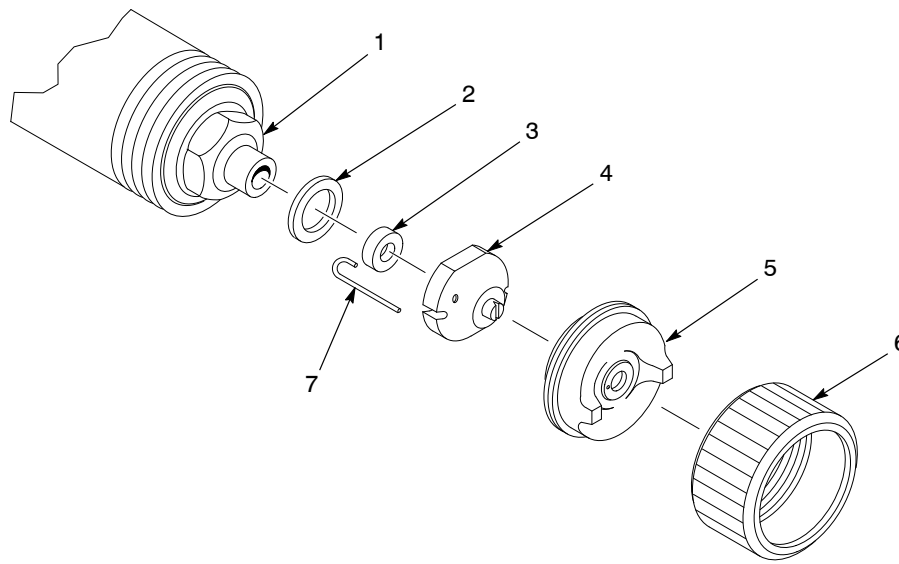


Figure 3-5 Nozzle and Gasket with Restrictor Installation

- |                                     |           |                   |
|-------------------------------------|-----------|-------------------|
| 1. Fluid tip                        | 4. Nozzle | 6. Retaining ring |
| 2. PTFE retaining washer            | 5. Cap    | 7. Electrode      |
| 3. Gasket or gasket with restrictor |           |                   |

6. Align the slot in the nozzle with the tab in the air cap. Make sure to line up the holes for the electrode.
7. Insert the electrode through the nozzle and air cap making sure the short leg of the electrode is inserted into the second hole in the back of the nozzle.
8. Screw the cap into the retaining ring until it rests in the groove in the bottom of the ring. Make sure the cap rotates freely in the retaining ring.
9. Screw the retaining ring and cap assembly onto the extension. Hold the cap in the desired position and tighten the retaining ring until it is snug.

**NOTE:** The cap screws into the retaining ring and rests in a groove in the ring that lets it rotate freely. Do not overtighten the cap.



## Optional Quick-Exhaust Valve

See Figure 3-6.

A quick-exhaust valve is available for applications requiring a faster air piston response. Follow this procedure to install the quick-exhaust valve.

1. Remove and save the elbow (2) supplied with the spray gun.
2. Apply PTFE tape to both ends of the nipple (1).
3. Install the nipple into the quick-exhaust valve (3).
4. Apply PTFE tape to the muffler (4) and install it into the quick-exhaust valve.
5. Apply pipe sealant adhesive to the threads of the elbow if not already applied. Install the elbow into the quick-exhaust valve.
6. Install the quick-exhaust nipple into the spray gun body trigger port (5).

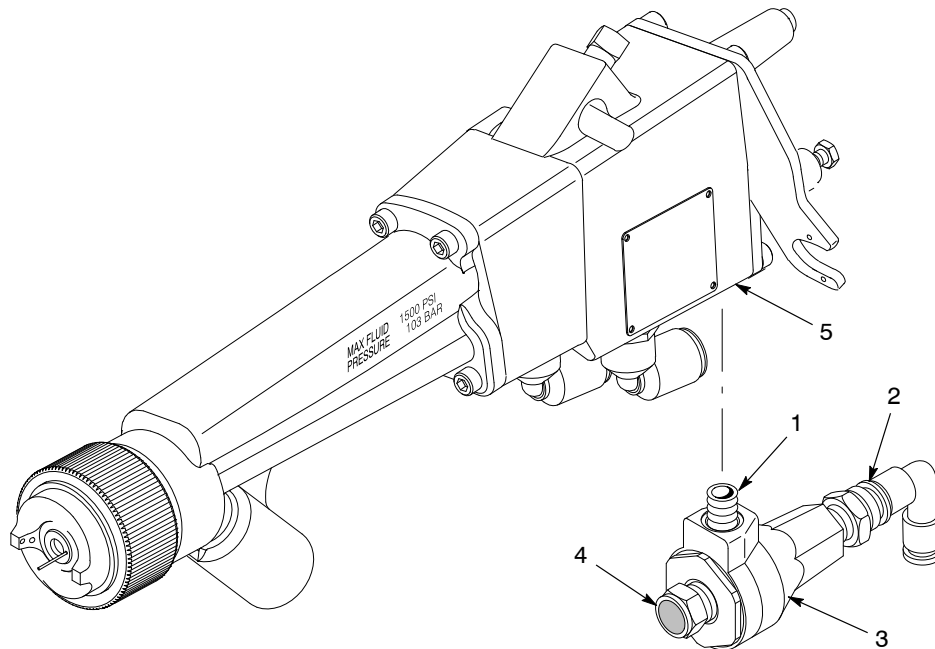


Figure 3-6 Optional Quick-Exhaust Valve Installation

- |   |                        |                          |
|---|------------------------|--------------------------|
| 1. $\frac{1}{8}$ in. NPT x $\frac{1}{8}$ in. NPT nipple | 3. Quick-exhaust valve | 5. Gun body trigger port |
| 2. $\frac{1}{8}$ in. NPT x $\frac{1}{4}$ in. OD elbow   | 4. Muffler             |                          |



## 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.

## Introduction



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



**WARNING:** High-pressure fluids are extremely hazardous. Do not point the spray gun at any part of your body or at anyone else. Do not operate the fluid-delivery system if any component is leaking. Failure to observe this warning could result in an injection injury. Refer to *High-Pressure Fluids* in the *Safety* section for more information.



**WARNING:** Do not exceed the maximum fluid pressure rating of 103 bar (1500 psi). Failure to follow this warning may result in death or personal injury.

Before operating the spray gun, make sure that

- the fluid tip; nozzle; gasket or gasket with restrictor; electrode; and PTFE retaining washer are correctly installed and the cap is installed and securely held with the retaining ring.
- all fluid connections are secure and leak-free. The fluid hose(s) are grounded.
- fluid delivery components are correctly installed. All conductive system components and flammable material containers are securely connected to a true earth ground.
- the operator station and spray area are clean and free of debris.

## Daily Startup

**NOTE:** When starting a new spray system for the first time, flush the fluid-delivery system, hose(s), and spray gun with a solvent compatible with the coating material to be used. Remove the cap from the spray gun before flushing solvent through the spray gun. Flushing will remove contaminants from the system.

1. Turn on the spray booth exhaust fans.
2. Turn on the air supply shutoff valve. Adjust the air pressure as required for your application. Do not exceed 6.9 bar (100 psi).
3. Turn on the gun control unit.
4. Pressurize the system with fluid. Refer to your pump manual for startup and operating instructions. Do not exceed 103 bar (1500 psi).
5. Turn on the fluid heater(s), if used. Refer to your heater manual for operating instructions. Do not exceed 82 °C (180 °F).
6. Check the fluid-delivery system for leaks.
7. Point the spray gun into the booth and activate the spray gun. Adjust the fluid pressure to obtain the desired atomization and spray pattern. Refer to *Atomization Adjustments* in this section.
8. Use a Nordson kV meter to read the kV output of the power supply. Use this information and the values from *Electrostatic Troubleshooting* on page 6-4 as a baseline when troubleshooting the electrostatic system.

## Atomization Adjustments

Obtaining the correct coating material atomization and transfer efficiency for your application requires a combination of operator experience and experimentation. To obtain the best results, perform the following tasks.



**WARNING:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Shut off the fluid-delivery system and relieve system fluid pressure before removing nozzles or restrictors. Failure to observe the warning could result in an injection injury.

Adjust the coating material atomization by increasing or decreasing the fluid pressure. If these adjustments do not improve the atomization, install a gasket with restrictor. If the gasket with restrictor does not improve atomization, change the nozzle, restrictor, or coating material viscosity.

## Shutdown



**WARNING:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Before installing or changing nozzles or restrictors, shut off the fluid delivery system and relieve the fluid pressure in the system. Failure to observe this warning could result in an injection injury.

### Short-Term

For short-term breaks in production, no shutdown procedures are necessary. Deactivate the trigger air and wipe the cap and fluid tip with a clean cloth dampened with a compatible solvent.

### Long-Term



**WARNING:** Before installing or changing nozzles or restrictors, shut off the fluid delivery system and relieve the fluid pressure in the system. Failure to observe this warning could result in an injection injury.

For long-term shutdowns, follow this procedure

1. Shut off the power supply.
2. Shut off the fluid-delivery system.
3. Relieve system fluid and air pressures.
4. Activate the spray gun into a waste container.
5. Remove the nozzle, gasket, or gasket with restrictor.
6. Flush the fluid-delivery system, fluid hose, and spray gun with a compatible solvent.

Refer to the *Flush the System* on page 5-3 for recommended flushing and cleaning procedures.

## Multi-Component Coatings



**CAUTION:** Leaving the coating material in the spray gun longer than the indicated pot-life may clog the spray gun and require disassembly and replacement of major spray gun components.

Refer to the coating material pot-life information to determine the proper shutdown procedures.



## 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.

## Introduction

The spray gun requires very little routine maintenance beyond cleaning. For best results, keep the spray gun as clean as practical.

## Daily



**WARNING:** Shut off the gun control unit and ground the spray gun electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Shut off the fluid-delivery system and relieve the fluid pressure in the system. Failure to observe this warning could result in an injection injury.

Perform the following procedure at the end of each work shift.

1. Shut down the fluid-delivery system.
2. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
3. Point the spray gun into the booth or grounded waste container and activate to relieve any residual pressure.
4. Deactivate the trigger air to prevent inadvertent activation of the spray equipment.

## Daily *(contd)*



**WARNING:** Before changing the nozzle or restrictor, shut down the system and relieve all fluid and air pressures. Failure to observe this warning could result in an injection injury.



**CAUTION:** Use a non-conductive solvent compatible with your coating material. Cleaning with conductive solvents can result in carbon tracking and loss of kV.



**CAUTION:** Use only a Nordson cleaning brush to clean the fluid tip and cap. Using metal tools will damage the fluid tip and cap, causing faulty spray patterns.

5. Clean the nozzle and restrictor, if used.
  - a. Remove the retaining ring and cap.
  - b. Remove the nozzle; PTFE retaining washer; electrode; and gasket or gasket with restrictor, if used. Soak the nozzle and restrictor in a compatible solvent to loosen any cured coating material. Use an ultrasonic cleaner if necessary.
  - c. Clean the nozzle and restrictor with a nozzle cleaning brush.
  - d. Examine the nozzle and restrictor orifices with a magnifying lens. If the orifices are clogged, use a probe to clean them. Insert the probe against the direction of flow. Do not use a twisting or sawing motion to clean the orifices.
  - e. Blow out the orifices with an OSHA-approved blowgun, against the direction of fluid flow.
6. Clean the fluid tip and extension with a soft-bristled brush and a compatible solvent.
7. Clean the spray gun extension frequently with a clean cloth dampened with non-conductive solvent. Do not soak the spray gun in solvent.
8. Dry the fluid tip, cap, and spray gun with low-pressure air from an OSHA-approved blowgun.



## Periodically

Periodically perform the following maintenance procedures on the spray gun. The frequency of these procedures will vary depending on the application and coating material being used.



**WARNING:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Shut off the fluid-delivery system and relieve the fluid pressure in the system. Failure to observe this warning could result in an injection injury.



**CAUTION:** Use a non-conductive solvent compatible with your coating material. Cleaning with conductive solvents can result in carbon tracking and loss of kV.

## System Flushing

1. Relieve system fluid pressure and make sure the spray gun cannot be activated.
2. Turn off the power supply and ground the spray gun's electrode to remove any residual charge.
3. Point the spray gun down into a grounded waste container. Activate the spray gun to drain the spray gun and hose(s).
4. Remove the retaining ring; cap; nozzle; PTFE retaining washer, electrode; and gasket or gasket with restrictor, if used.
5. Turn on the solvent supply and adjust it to the lowest possible pressure.
6. Activate the spray gun into a suitably grounded container. Allow solvent to flow until it runs clear.
7. Turn off the solvent supply and relieve the pressure. Disconnect the fluid hose.

## Spray Gun Cleaning

**NOTE:** Activate the spray gun to pull the ball tip off of the seat before removing the fluid tip. This will prevent damage to the ball tip and/or the seat.



**CAUTION:** Do not clean the multiplier or the electrical cables with solvent. Failure to observe this caution could result in equipment damage.

### Routine Cleaning

1. Remove the fluid tip.
2. Disconnect the trigger air hose and fluid hose(s).



**CAUTION:** Use a non-conductive solvent compatible with your coating material. Cleaning with conductive solvents can result in carbon tracking and loss of kV.



**CAUTION:** Use only a Nordson cleaning brush to clean the fluid tip and cap. Using metal tools will damage the fluid tip and cap, causing faulty spray patterns.

3. Point the spray gun down and clean the front of the spray gun with a soft-bristled brush dampened with a compatible cleaning solvent.

**NOTE:** Pointing the spray gun down at a slight angle will prevent solvents from entering the air passages and possibly damaging the air seals. Most air seals are not universally compatible with all solvents and can be damaged.

4. Dampen a soft cloth with a compatible cleaning solvent. Point the spray gun downward and clean the exterior.

**NOTE:** Take special care when cleaning the spray gun body with solvents. Excessive amounts of solvent can leak into the spray gun and damage the multiplier. If the handle requires extensive cleaning, remove the multiplier. Refer to the *Multiplier Replacement* on page 7-12.

5. Clean the fluid tip, cap, and retaining ring with a soft-bristled brush and a compatible solvent. Remove the O-ring and contact ring and soak the fluid tip in solvent if necessary.
6. Install the retaining ring, cap, nozzle, restrictor, PTFE retaining washer, electrode, and fluid tip. Make sure the ball tip is retracted before installing the fluid tip.
7. Install the trigger air hose and fluid hose(s).

## Extensive Cleaning



**CAUTION:** Never soak or vigorously clean the spray gun with the multiplier installed.

For more extensive cleaning, disassemble the spray gun and clean each part. Once disassembled, the extension and body can be soaked in solvent and scrubbed. Remove all the seals before soaking any parts in solvent.

## Electrostatic System Checks

Use a Nordson non-loading kV meter to perform checks on the electrostatic system, and a megohmmeter to check the resistance values on the spray gun. These checks ensure that the operator, electrostatic spray gun, electrostatic power supply, and all conductive material within the spray area are connected to a true earth ground. Proper grounding is essential for efficient operation and prevention of a buildup and subsequent discharge of an electrostatic charge that could ignite combustible material within the spray area.

Make sure the electrostatic equipment has and maintains the proper resistance values. Proper resistance values are important to maintain the equipment within designed current outputs. The resistance values may vary over a period of time due to several conditions; for example, a buildup of residue in the spray area and degradation of electrical components that have been exposed to high voltages may occur.



## 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.

## Introduction



**WARNING:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.

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.

This section contains troubleshooting tables for

- common spray gun problems;
- spray pattern and film-build faults; and
- electrostatics.

When multiple causes exist for a problem, they are listed in order of importance.

## Common Problems

Problem	Possible Cause	Corrective Action
<b>1. Spray gun spitting</b>	Dirty or worn ball tip or fluid tip	Clean or replace the ball tip and fluid tip.
	Air bubbles in fluid stream	Bleed air from the fluid-delivery system. Check for leaks in the fluid-delivery system or excessive agitation in the fluid reservoir.
	Fluid pressure too low	Increase the fluid pressure.
<b>2. Fluid leaking around the nozzle or retaining ring</b>	Worn or damaged nozzle gasket or gasket with restrictor	Replace the nozzle gasket or gasket with restrictor.
<b>3. Air leaking from the front of the spray gun</b>  <b>NOTE:</b> A small amount of air will continually flow from the front of the spray gun to keep the nozzle clean. If the leaking is excessive, follow these troubleshooting procedures.	Foreign matter on air piston's seal or seat	Remove and clean the air piston and seat.
	Worn or damaged air piston or other air seals	Replace the piston O-rings or other seals.
<b>4. Fluid leaking from rear of extension</b>	Worn or damaged packing cartridge O-ring	Replace the O-ring and back-up ring.
	Worn or damaged packing cartridge	Replace the packing cartridge (the packing cartridge cannot be repaired).
<b>5. Low or erratic fluid flow</b>	Fluid-delivery system malfunction	Check the fluid-delivery system (air and fluid).
	Blockage within spray gun, fluid hose, or fluid system	Flush the system. If necessary, repair or replace clogged or damaged components.
	Low fluid pressure	<b>WARNING:</b> Do not exceed the maximum fluid pressure rating of 103 bar (1500 psi). Failure to observe this warning may result in death or personal injury.  Slowly raise the fluid pressure until the desired fluid flow is obtained. Do not exceed the maximum pressure rating.
	Fluid too viscous	Lower the viscosity by adding solvent or increasing the fluid temperature.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
<b>6. Coarse spray</b>	Fluid too viscous	Lower the viscosity by adding solvent or increasing the fluid temperature.
	Solvent evaporates too quickly	Use slower-evaporating solvent. Contact your material supplier.
	Clogged or damaged nozzle, restrictor, or fluid tip	Clean and inspect the nozzle, restrictor, and fluid tip. Replace them if they are damaged.
	Power supply is off	Turn on the power supply. Refer to the <i>Kinetix Automatic Gun Power Supply</i> manual.
<b>7. Excessive bounce back</b>	Fluid pressures too high	Reduce the fluid pressures.
<b>8. Dry spray</b>	Spray gun held too far away from substrate	Move the spray gun closer to the substrate.

## Spray Pattern/Film Build Troubleshooting

Figure 6-1 illustrates common spray pattern and film build faults.

Problem	Possible Cause	Corrective Action
<b>1. Fluttering or spitting (1)</b>	Air in fluid line	Check for air leaks in the system.
	Fluid pressure too low	Increase the fluid pressure.
<b>2. Irregular pattern (2)</b>	Partially clogged nozzle orifice	Remove the nozzle and clean it.
	Worn or damaged nozzle	Replace the nozzle.
<b>3. Tails in pattern (3)</b>	Fluid pressure too low	Increase the fluid pressure.



Figure 6-1 Common Spray Pattern Faults

1. Fluttering or spitting

2. Irregular pattern

3. Tails in pattern

## Electrostatic Troubleshooting

Problem	Possible Cause	Corrective Action
<b>1. Loss of wrap, poor transfer efficiency</b>	Low electrostatic voltage	Increase the voltage.
	Resistor or power supply failure	Check the multiplier/tip resistor assembly with a megohmmeter for 270–340 megohms at 500 volts. If the reading is out of range, check the resistor tip separately. Tip resistor should measure 33.25–36.75 megohms. Refer to <i>Multiplier Continuity and Resistance Check</i> on page 6-5.
	Poorly grounded parts	Check conveyor chain, rollers, and part hangers for paint buildup. The resistance between the parts and the ground must be 1 megohm or less. 500 ohms or less is recommended for best results.
<b>2. No kV output from spray gun</b>	Damaged gun cable	Check the continuity of the cable wires, from pin to pin. Replace the cable if any opens or shorts are found. Refer to <i>Gun Cable Continuity Checks</i> on page 6-5.
	Malfunctioning voltage multiplier	Check the continuity and resistance of the multiplier/resistor assembly with a megohmmeter for 270–340 megohms at 500 volts. No burn throughs or arc tracks should be visible on any gun parts. Refer to <i>Multiplier Continuity and Resistance Check</i> on page 6-5.
	Failed tip resistor	Check the resistor with a megohmmeter for 33.25–36.75 megohms at 500 volts.
	Malfunctioning gun control unit	Check for 21 Vdc between cable end connectors. Refer to <i>Gun Cable Continuity Check</i> on page 6-5.
<b>3. %kV reading on controller incorrect</b>	Input voltage switch is not in correct position	If the input voltage is 120 V, the switch in the controller must be set to the 120 V position. Refer to the gun control unit manual for more information.



# Multiplier Continuity and Resistance Check

See Figure 6-2.

The multiplier should measure 277–340 megohms at 500 volts.

1. Connect a probe on the megohmmeter to one of the three pins (1) on the end of the multiplier
2. Connect the earth ground probe (common end) of the megohmmeter to the contact spring (2).

**NOTE:** Diodes require proper polarity for reading.

If the multiplier does not measure correctly, replace the multiplier. Refer to *Multiplier Replacement* on page 7-12.

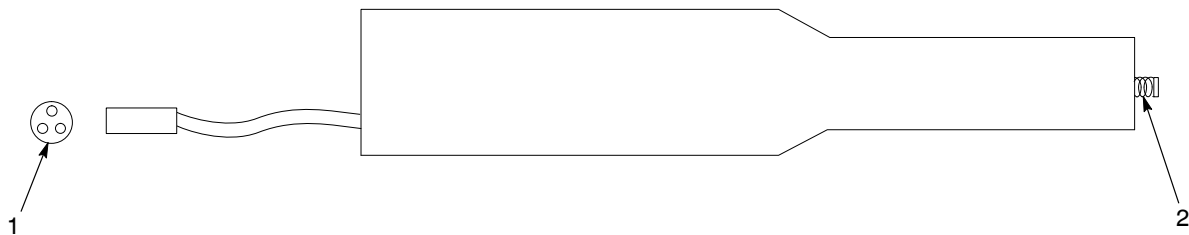


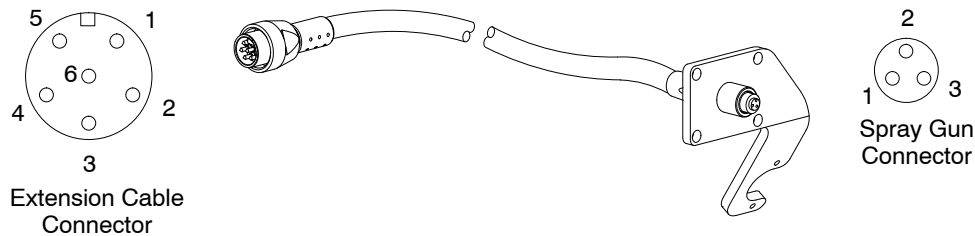
Figure 6-2 Multiplier Continuity and Resistance Check

1. Pins

2. Contact spring

# Gun Cable Continuity Checks

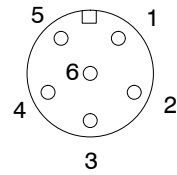
1. Use an ohmmeter to check the continuity of the armored gun cable. Place the probes of the ohmmeter on the pins as listed.



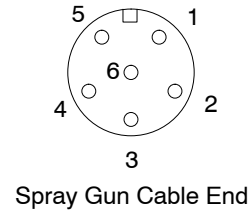
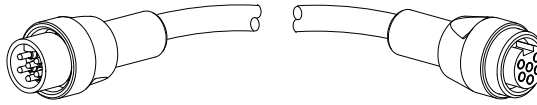
Extension Cable Connector	Spray Gun Connector	Position
1	—	Open
2	3	Closed
3	1	Closed
4	2	Closed
5	Bracket	Closed
6	Bracket	Closed

## Gun Cable Continuity Checks *(contd)*

2. Use an ohmmeter to check the continuity of the extension cable. Place the probes of the ohmmeter on the pins as listed.



Power Supply End



Spray Gun Cable End

Power Supply End	Spray Gun Cable End	Position
1	1	Closed
2	2	Closed
3	3	Closed
4	4	Closed
5	5	Closed
6	6	Closed

## 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:** Shut off the power supply. Ground the spray gun's electrode to remove any residual charge. Failure to observe this warning could result in personal injury.



**WARNING:** Shut off the fluid-delivery system and relieve system fluid pressure before removing nozzles or restrictors. Failure to observe the warning could result in an injection injury.



**WARNING:** Use only Nordson replacement parts to repair the spray gun. Deviating from the repair instructions, using unauthorized parts, or making unauthorized modifications can result in personal injury or death and/or the loss of approvals by agencies such as Factory Mutual Research Corporation (FM) or the Canadian Standards Association (CSA).



**CAUTION:** Do not overtighten threaded parts. Failure to observe this caution will result in equipment damage.

**NOTE:** Tighten all fittings until snug or to the specified torques. Because the spray gun uses O-ring seals, further tightening provides no benefit and could damage plastic threads.

**NOTE:** The numeric callouts in this section match the item numbers in the spray gun parts list. Refer to the *Parts* section for complete part descriptions and ordering information. Items in the repair section that are not called out in the spray gun parts list are identified with alphabetic callouts.

## Tools/Supplies Required

Before beginning any of the repair tasks described in this section, make sure you have the following tools and supplies:

- See Figure 7-1: Combination tool provided with your spray gun
- $\frac{5}{32}$ -in. hex wrench
- Flat-blade screwdriver
- Service kits and replacement parts
- Removeable threadlocking adhesive
- Dielectric grease
- PTFE grease lubricant (MagnaLube G) or equivalent PTFE-based lubricant
- Pipe/thread/hydraulic sealant adhesive

**NOTE:** Refer to the *Parts* section for service kits and individual part numbers.

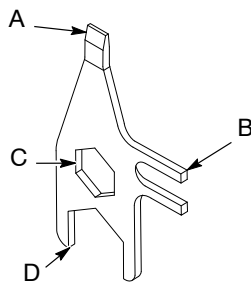


Figure 7-1 Combination Tool

- |                           |                   |
|---------------------------|-------------------|
| A. Screwdriver            | C. Fluid tip tool |
| B. Packing cartridge tool | D. Hose tool      |

## Nozzle, Restrictor, and Fluid Tip Replacement

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Flush the fluid-delivery system, hoses, and spray gun.
3. Turn off the fluid-delivery system. Relieve system fluid pressures. Point the spray gun into the booth or grounded container and activate it to relieve any residual pressure.
4. Disconnect the fluid hose from the spray gun and move the spray gun to a clean, dry, flat surface.
5. See Figure 7-2. Unscrew the retaining ring (47) and airless cap (46) assembly from the extension.

6. Remove the nozzle (A); PTFE retaining washer (D); electrode (C); and gasket (B) or gasket with restrictor, if used. Do not lose the gasket. Clean the nozzle and restrictor as described on page 5-2.
7. Activate the spray gun to retract the ball tip (39). Place the hex on the combination tool over the hex on the fluid tip (43) and unscrew it from the extension.
8. Make sure the O-ring (42) and conductive back-up ring (44) are installed on the new fluid tip, with the O-ring toward the rear of the fluid tip. Lubricate the O-ring with dielectric grease.



**CAUTION:** Do not overtighten threaded parts. Failure to observe this caution will result in equipment damage.

9. Activate the spray gun to retract the ball tip. Screw the new fluid tip in the extension. Tighten the fluid tip snugly.
10. Install the nozzle; electrode; gasket or gasket with restrictor; and PTFE retaining washer and securely hand-tighten the retaining ring and cap assembly onto the extension.

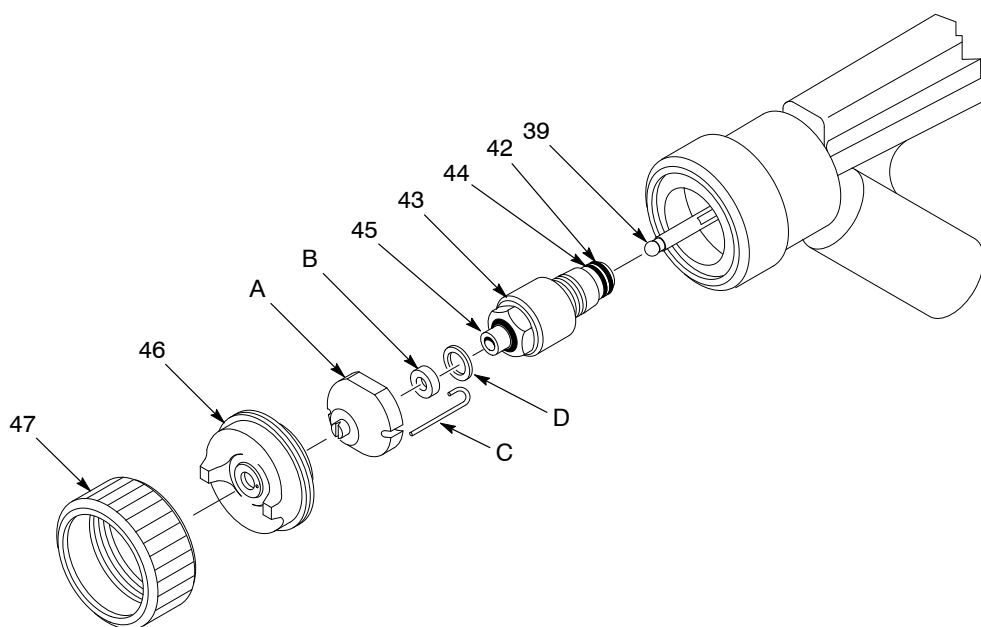


Figure 7-2 Replacing the Nozzle, Restrictor, and Fluid Tip

- |                             |                     |                                     |
|-----------------------------|---------------------|-------------------------------------|
| 39. Ball tip                | 45. Conductive ring | B. Gasket or gasket with restrictor |
| 42. O-ring                  | 46. Airless cap     | C. Electrode                        |
| 43. Fluid tip               | 47. Retaining ring  | D. PTFE retaining washer            |
| 44. Conductive back-up ring | A. Nozzle           |                                     |

## Return Springs Replacement

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Flush the fluid-delivery system, hoses, and spray gun.
3. Turn off the fluid-delivery system. Relieve system fluid pressures. Point the spray gun into the booth or grounded container and activate it to relieve any residual pressure.
4. Disconnect the fluid hose from the spray gun and move the spray gun to a clean, dry, flat surface.

**NOTE:** Keep a firm grip on the fluid adjuster housing because the fluid return spring and piston return compression spring will begin to push out the fluid adjuster housing as you loosen the socket screws.

5. See Figure 7-3. Remove the four socket screws (12) with a  $\frac{5}{32}$ -in. hex wrench to remove the fluid adjuster housing (14).
6. Remove and inspect the springs. Replace if worn or damaged.
7. Generously lubricate the piston return compression spring (16), the fluid return spring (15), and the fluid adapter housing bores where the springs will rest inside the fluid adjuster with MagnaLube G or an equivalent PTFE-based lubricant.
8. Place the piston return compression spring on the air piston.
9. Insert the fluid return spring inside the fluid adjuster housing and into the recess at the back of the connecting rod.
10. Secure the fluid adjuster housing onto the piston block body (25) by holding it firmly and securing with the four socket screws. Tighten the socket screws to 2.27–2.83 N•m (20–25 in.-lb).

**NOTE:** The springs will provide some resistance as you tighten the socket screws.

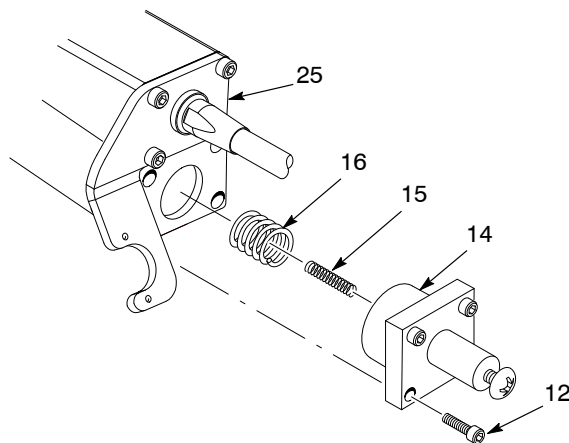


Figure 7-3 Fluid and Piston Return Springs Replacement

- |                            |                                      |
|----------------------------|--------------------------------------|
| 12. #10-24 socket screws   | 16. Piston return compression spring |
| 14. Fluid adjuster housing | 25. Piston block body                |
| 15. Fluid return spring    |                                      |

# Air Piston and Connecting Rod Replacement

## Preparation

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Flush the fluid-delivery system, hoses, and spray gun.
3. Turn off the fluid-delivery system. Relieve system fluid pressures. Point the spray gun into the booth or grounded container and activate it to relieve any residual pressure.
4. Disconnect the fluid hose from the spray gun and move the spray gun to a clean, dry, flat surface.
5. Remove the nozzle, restrictor, and fluid tip as described in *Nozzle, Restrictor, and Fluid Tip Replacement* on page 7-2.
6. Remove the fluid adjuster housing as described in *Return Springs Replacement* on page 7-4.

## Spray Gun Disassembly

1. See Figure 7-4. Insert a flat-blade screwdriver into the end of the piston block body (25) to loosen the connecting rod (17) from the packing cartridge. The connecting rod will remain in the piston block body.
2. Remove the four socket-head screws (40 and 48) with a  $\frac{5}{32}$ -in. hex wrench to remove the extension (41) and spacer block (28).

**NOTE:** A set of small face-seal O-rings is located on each side of the spacer block for the air cores. One large face-seal O-ring is located on each side of the spacer block to seal the multiplier.

3. Remove the extension and spacer block from the piston block body. Do not lose the four face-seal O-rings (29) or the two large face-seal O-rings (27).

**NOTE:** If the extension remains on the piston block body, loosen the connecting rod from the packing cartridge again.

## Air Piston and Connection Rod Replacement

1. See Figure 7-4. Using the  $\frac{5}{32}$ -in. hex wrench, push the connecting rod (17) out of the piston block body. Inspect and replace worn or damaged connecting rod O-rings (18).
2. Push the air piston (19) out of the piston block body. Inspect the air piston and replace if necessary. Generously lubricate the inside bore of the piston body with MagnaLube G or an equivalent PTFE-based lubricant.

## Air Piston and Connection Rod Replacement *(contd)*

3. Inspect the O-rings (20 and 21) on the air piston and replace them if necessary. Generously lubricate the O-rings with MagnaLube G or an equivalent PTFE-based lubricant and install them in the piston block body (25).
4. Lubricate the O-rings (18) on the connecting rod (17) and push it through the air piston.
5. Assemble the spray gun. Refer to *Spray Gun Assembly* on page 7-7.

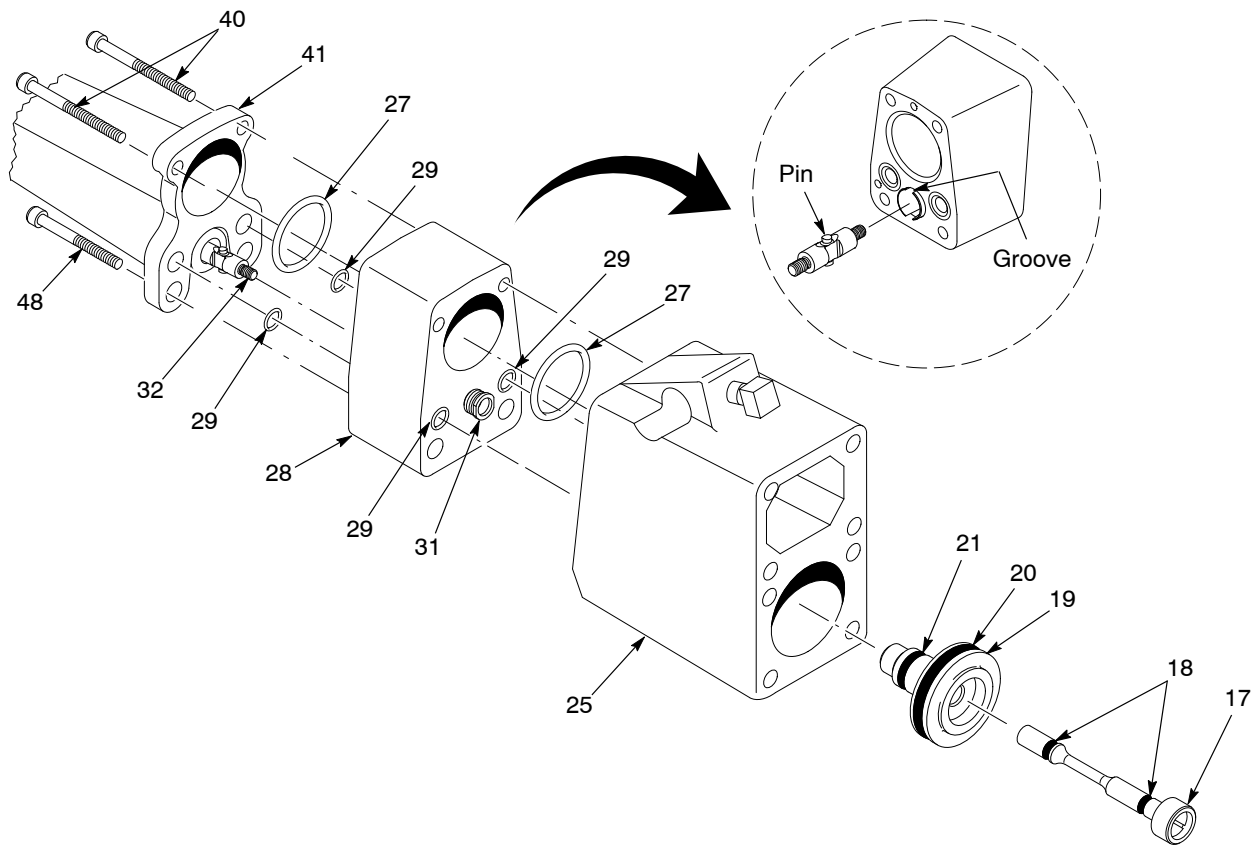


Figure 7-4 Air Piston and Connecting Rod Replacement

- |                    |                             |                        |
|--------------------|-----------------------------|------------------------|
| 17. Connecting rod | 25. Piston block body       | 32. Puller link        |
| 18. O-rings        | 27. Large face-seal O-rings | 40. Socket-head screws |
| 19. Air piston     | 28. Spacer block            | 41. Extension          |
| 20. O-ring         | 29. Face-seal O-rings       | 48. Socket-head screws |
| 21. O-ring         | 31. Retainer bushing        |                        |



## Spray Gun Assembly

**NOTE:** A set of small face-seal O-rings is located on each side of the spacer block for the air cores. One large face-seal O-ring is located on each side of the spacer block for the multiplier.

1. See Figure 7-4. Make sure the four face-seal O-rings (29) are correctly installed. Lubricate the O-rings with O-ring grease.
2. Make sure the two large face-seal O-rings (27) are correctly installed. Apply dielectric grease to these O-rings.
3. Grasp the puller link (32) and pull it until the ball tip is fully retracted.

**NOTE:** It is critical that the pins on the puller link engage the grooves in the retainer bushing for the remainder of the assembly procedure. If not, the packing cartridge wire will bend and the spray gun will not trigger properly.

4. Generously lubricate the pins on the top and bottom of the puller link and the grooves on the end of the retainer bushing (31) with MagnaLube G or an equivalent PTFE-based lubricant.
5. Apply threadlocking adhesive to the threads of the puller link, then align the pins in the link with the grooves on the retainer bushing. Push the extension against the spacer block.
6. Grasp the entire spray gun making sure to hold onto the piston block body, extension, and spacer block. Turn the spray gun so it is on its side. Attach the connecting rod by tightening it with the flat-blade screwdriver on the combination tool.

**NOTE:** The ball tip should not rotate during this procedure. If it does then the pins are not engaged in the retainer bushing grooves and step 3 should be repeated.

7. Secure the extension to the piston block body with the four socket-head screws (40 and 48). Tighten the screws to 2.27–2.83 N•m (20–25 in.-lb).
8. Install the retaining ring; airless cap; nozzle; gasket or gasket with restrictor; PTFE retaining washer; electrode; and fluid tip as described in *Nozzle, Restrictor, and Fluid Tip Replacement* on page 7-2.
9. Install the piston return spring, ball tip return spring, and fluid adjuster housing as described in *Return Springs Replacement* on page 7-4.
10. Attach the fluid hose to the bracket.

## Ball Tip and Packing Cartridge Replacement



**CAUTION:** If the packing cartridge leaks, clean the packing cartridge bore in the extension with a compatible non-conductive solvent to remove any residual coating material. Failure to do so may result in loss of kV.



**CAUTION:** Do not overtighten threaded parts. Failure to observe this caution will result in equipment damage.

The Kinetix spray gun is shipped with the standard gold packing cartridge. This durable packing cartridge is appropriate for most coating materials. Use the optional PTFE packing cartridge with harsh chemical solvents such as MEK.

The only serviceable parts of the packing cartridge are the external O-ring and back-up ring. If replacing the O-ring and back-up ring does not stop the packing cartridge from leaking, you must replace the packing cartridge.

The ball tip is not a component of the packing cartridge. You must order the ball tip separately.

### ***Preparation***

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Flush the fluid-delivery system, hoses, and spray gun.
3. Turn off the fluid-delivery system. Relieve system fluid pressures. Point the spray gun into the booth or grounded container and activate it to relieve any residual pressure.
4. Disconnect the fluid hose from the spray gun and move the spray gun to a clean, dry, flat surface.
5. Remove the nozzle, restrictor, and fluid tip as described in *Nozzle, Restrictor, and Fluid Tip Replacement* on page 7-2.
6. Remove the fluid adjuster housing as described in *Return Springs Replacement* on page 7-4.

## ***Spray Gun Disassembly***

See Figure 7-4.

1. Insert the flat-blade screwdriver of the combination tool into the end of the piston block body (25) to loosen the connecting rod (17) from the packing cartridge. The connecting rod will remain in the piston block body.
2. Remove the four socket-head screws (40 and 48) with a  $\frac{5}{32}$ -in. hex wrench to remove the extension (41) and spacer block (28).

**NOTE:** A set of small face-seal O-rings is located on each side of the spacer block for the air cores. One large face-seal O-ring is located on each side of the spacer block to seal the multiplier.

3. Remove the extension and spacer block from the piston block body. Do not lose the four face-seal O-rings (29) or the two large face-seal O-rings (27).

**NOTE:** If the extension remains on piston block body, loosen the connecting rod from the packing cartridge again.

## ***Ball Tip and Packing Cartridge Removal***

See Figure 7-5.

1. Holding the flats on the pull shaft (35), unscrew the adapter link (32).
2. Push the pull shaft forward and unscrew the packing cartridge retainer (33) with the combination tool.
3. Pull the pull shaft out of the back of the extension to remove the pull shaft, packing cartridge (36), and sleeve retainer (34). Do not bend the packing cartridge wire (A).
4. Remove the sleeve retainer from the pull shaft and unscrew the pull shaft from the packing cartridge assembly.
5. Clean the extension fluid bores with a round, soft-bristled brush and a compatible non-conductive solvent. For thorough cleaning, remove the fluid fittings from the extension.
6. Inspect the packing cartridge. Replace the O-ring (38) and back-up ring (37) if they are damaged. If the packing cartridge is damaged, replace it with a new one.
7. Lubricate the packing cartridge O-ring with with MagnaLube G or an equivalent PTFE-based lubricant.
8. Generously lubricate both ends of the packing cartridge wire with MagnaLube G or an equivalent PTFE-based lubricant. Push and pull the wire 40–50 times to work the lubricant into the packing cartridge.

## Ball Tip and Packing Cartridge Removal (contd)

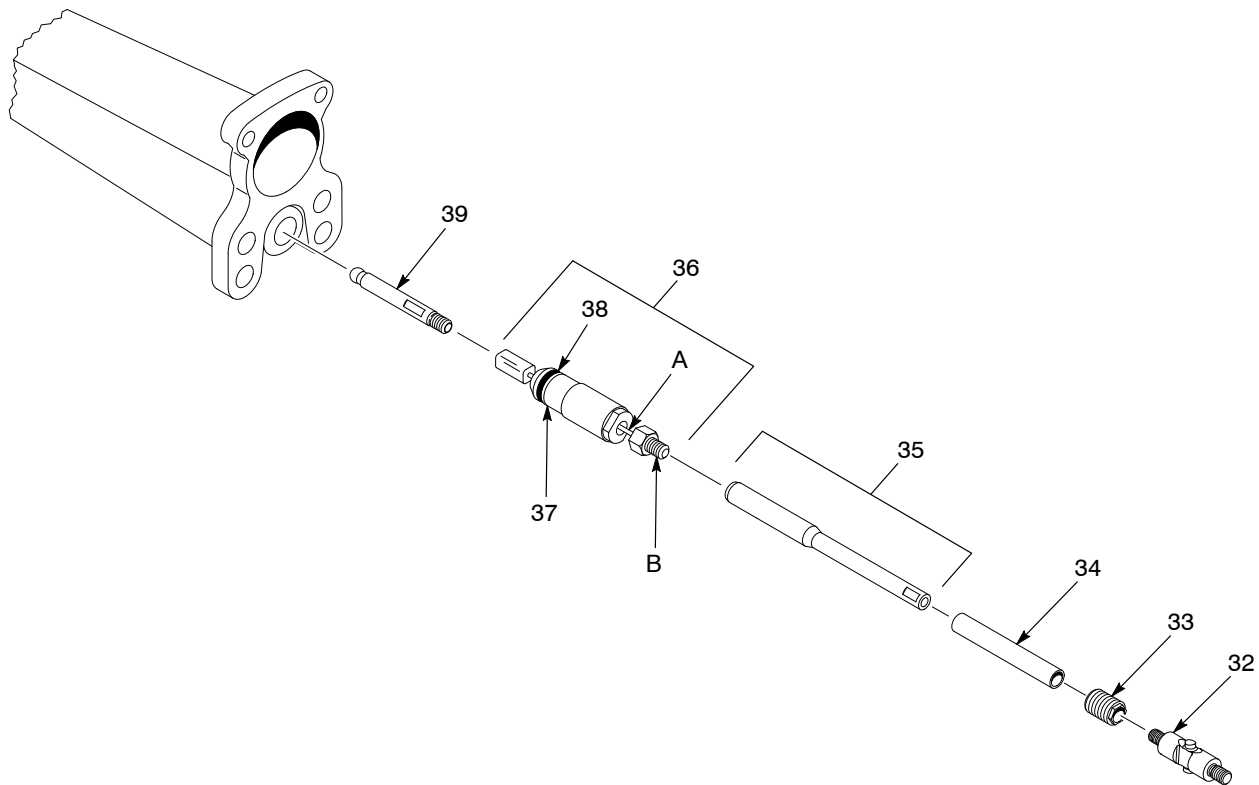


Figure 7-5 Ball Tip and Packing Cartridge Replacement

- |                                |                       |                           |
|--------------------------------|-----------------------|---------------------------|
| 32. Puller link                | 36. Packing cartridge | 39. Ball tip              |
| 33. Packing cartridge retainer | 37. Back-up ring      | A. Packing cartridge wire |
| 34. Sleeve retainer            | 38. O-ring            | B. Puller fitting         |
| 35. Pull shaft                 |                       |                           |
9. If the ball tip (39) is damaged, replace it as follows:
    - a. Hold the ball tip fitting on the end of the packing cartridge assembly (36) with a wrench and unscrew the ball tip from the ball tip fitting.
    - b. Apply a removable thread locking adhesive to the threads of the new ball tip.
    - c. Screw the new ball tip into the ball tip fitting. Tighten the ball tip finger tight until it bottoms against the fitting. Wipe off excess adhesive.

## Ball Tip and Packing Cartridge Installation

See Figure 7-5.

**NOTE:** Make sure all residual coating material has been removed from all of the parts before installing.

1. Apply a removable threadlocking adhesive to the threads of the puller fitting (B).
2. Screw the pull shaft onto the packing cartridge (36).
3. Apply liberal amount of dielectric grease to the puller fitting and the puller shaft then insert the packing cartridge and pull shaft into the extension from the back.
4. Apply a thin coating of dielectric grease to the outside of the sleeve retainer (34) then slide the sleeve retainer over the pull shaft (35) and push down over the fluid bores.
5. Generously lubricate the end of the pull shaft and the inside of the packing cartridge retainer (33) with MagnaLube G or an equivalent PTFE-based lubricant.
6. Apply a thin coating of dielectric grease to the threads of the packing cartridge retainer. Screw the packing cartridge retainer into the extension.
7. Push the pull shaft forward and tighten the packing cartridge retainer with the combination tool hand-tight.
8. Wipe off excess dielectric grease.
9. Apply a removable thread-locking adhesive to the threads of the adapter link (32) and screw the adapter link onto the pull shaft.
10. Assemble the spray gun. Refer to *Spray Gun Assembly* on page 7-11.

## Spray Gun Assembly

**NOTE:** A set of small face-seal O-rings is located on each side of the spacer block for the air cores. One large face-seal O-ring is located on each side of the spacer block to seal the multiplier.

1. See Figure 7-4. Make sure the four face-seal O-rings (29) are correctly installed. Lubricate the O-rings with O-ring grease.
2. Make sure the two large face-seal O-rings (27) are correctly installed. Apply dielectric grease to these O-rings.
3. Grasp the adapter link (32) and pull it until the ball tip is fully retracted.

**NOTE:** It is critical that the pins on the puller link engage the grooves in the retainer bushing for the remainder of the assembly procedure. If not, the packing cartridge wire will bend and the spray gun will not trigger properly.

4. Generously lubricate the pins on the top and bottom of the puller link and the grooves on the end of the retainer bushing (31) with MagnaLube G or an equivalent PTFE-based lubricant.

## ***Spray Gun Assembly*** (contd)

5. Apply threadlocking adhesive to the threads of the puller link then align the pins in the link with the grooves on the retainer bushing. Push the extension against the spacer block.
6. Grasp the entire spray gun making sure to hold onto the piston block body, extension, and spacer block. Turn the spray gun so it is on its side. Attach the connecting rod by tightening it with the flat-blade screwdriver on the combination tool.

**NOTE:** The ball tip should not rotate during this procedure. If it does then the pins are not engaged in the retainer bushing grooves and step 3 should be repeated.

7. Secure the extension to the body with the four socket-head screws (40 and 48). Tighten the screws to 2.27–2.83 N•m (20–25 in.-lb).
8. Install the retaining ring; airless cap; nozzle; gasket or gasket with restrictor; PTFE retaining washer; and fluid tip as described in *Nozzle, Restrictor, and Fluid Tip Replacement* on page 7-2.
9. Install the piston return spring, ball tip return spring, and fluid adjuster housing as described in *Return Springs Replacement* on page 7-4.
10. Attach the fluid hose to the bracket.

## **Multiplier Replacement**

### ***Multiplier Removal***

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Turn off the fluid-delivery system and relieve the fluid pressure.
3. See Figure 7-6. Remove the two screws securing the fluid hose to the bracket (53). Remove the fluid hose from the bracket.
4. Remove the four screws (12) securing the bracket to the piston block body.
5. Unplug the gun cable (1) from the multiplier connector (C).
6. Remove the two upper screws (5), spacers (8), and lock washers (6) located inside the piston block body cavity.



**CAUTION:** Do not use the pigtail (B) to pull out the multiplier.

7. Install one of the upper screws into the standoff (7) and use it to pull the multiplier out of the spray gun.

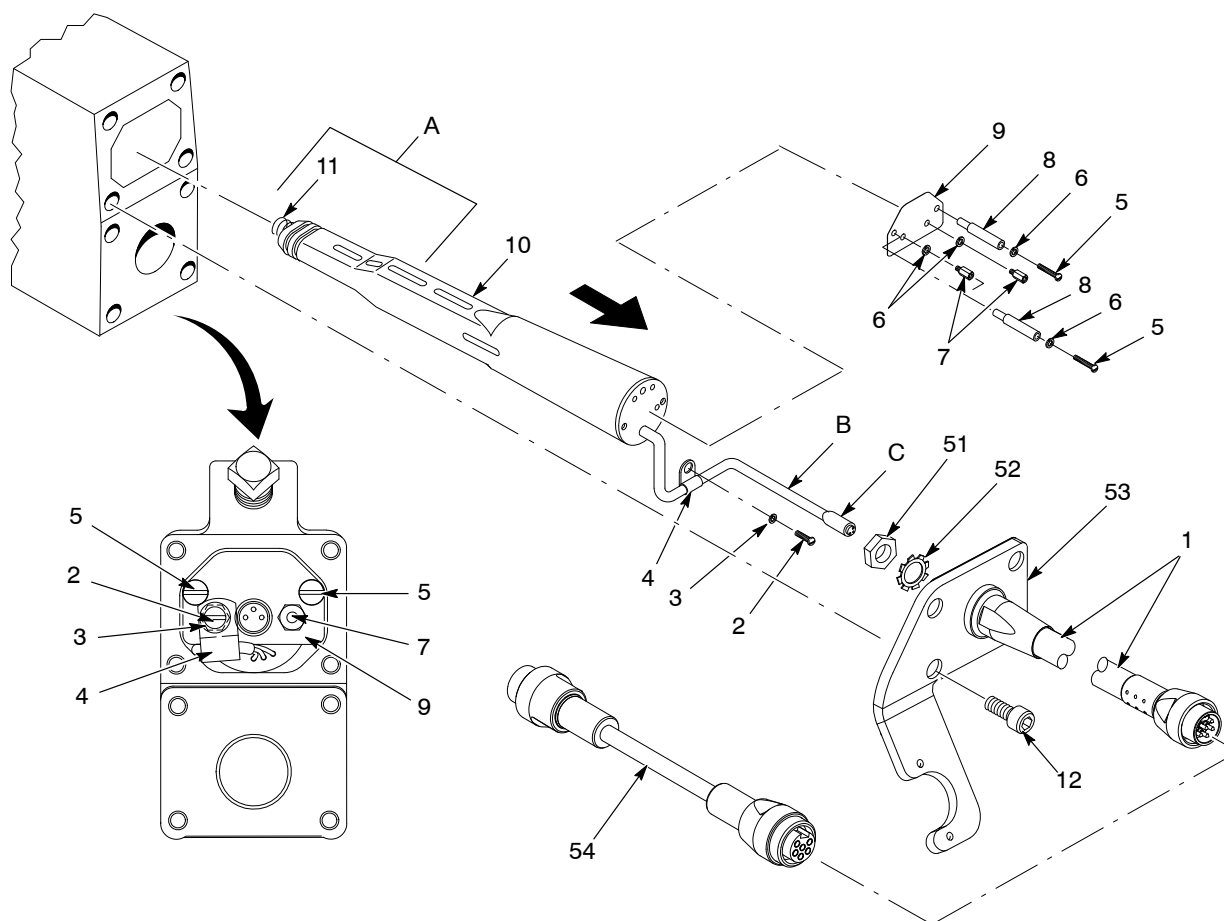


Figure 7-6 Multiplier and Gun Cable Replacement

- |                        |                    |                         |
|------------------------|--------------------|-------------------------|
| 1. Electrostatic cable | 8. Spacers         | 52. Lock washer         |
| 2. Screw               | 9. Heat sink plate | 53. Bracket             |
| 3. Lock washer         | 10. Multiplier     | 54. Extension cable     |
| 4. Cable clamp         | 11. Contact spring | A. Dielectric grease    |
| 5. Upper screws        | 12. Screws         | B. Pigtail              |
| 6. Lock washers        | 51. Nut            | C. Multiplier connector |
| 7. Standoffs           |                    |                         |

## Multiplier Installation

See Figure 7-6.

1. Remove the following items from the old multiplier and install them on the new multiplier.
  - screw (2), lock washer (3), and cable clamp (4)
  - standoff (7)
  - heat sink plate (9)

2. Apply a liberal coating of dielectric grease (A) to the contact spring (11) and front  $\frac{1}{3}$  of the multiplier.
3. Push the new multiplier through piston block body cavity and into the extension.
4. Install the two upper screws (5), spacers (8), and lock washers (6) located inside the piston block body cavity.
5. Attach the gun cable (1) to the spray gun.
6. Screw in the four socket screws (12) to secure the bracket (53) to the piston block body. Tighten the socket screws to 2.27–2.83 N•m (20–25 in.-lb).
7. Attach the fluid hose to the bracket with the two screws.

## Gun Cable Replacement

See Figure 7-6.

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Disconnect the fluid hose from the bracket (53). Refer to *Fluid Supply Hose Replacement*.
3. Disconnect the gun cable (1) from the extension cable (54).
4. Remove the screws (12) from the bracket on the spray gun.
5. Disconnect the gun cable from the multiplier connector (C) on the pigtail (B).
6. Remove the nut (51) and lock washer (52) to remove the gun cable from the bracket.
7. Reverse these steps to install a new gun cable.



## Fluid Supply Hose Replacement

See Figure 7-7.

1. Turn off the gun control unit and ground the spray gun electrode to remove any residual charge.
2. Turn off the fluid-delivery system and relieve the fluid pressure.
3. Remove the two flat-head screws (50) that attach the fluid hose collar (C) to the bracket (53).
4. Remove the fluid hose fitting from the bracket.
5. Loosen the hose retaining nut (B), which is located at the extension fluid inlet boss (A), and unscrew completely.
6. Pull the hose assembly out of the spray gun extension.

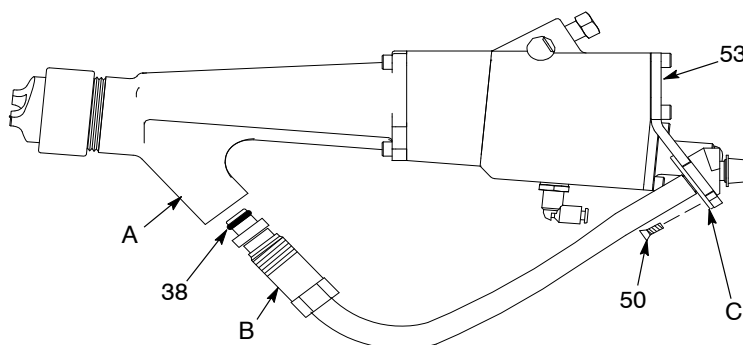


Figure 7-7 Fluid Supply Hose Replacement

- |             |                               |                      |
|-------------|-------------------------------|----------------------|
| 38. O-ring  | A. Extension fluid inlet boss | C. Fluid hose collar |
| 50. Screws  | B. Retaining nut              |                      |
| 53. Bracket |                               |                      |

7. Clean the hose fittings.
8. Inspect the O-ring (38) on the gun end fitting. Replace if necessary.
9. Lubricate the O-ring with O-ring grease.
10. Push the end fitting into the extension fluid inlet boss (A).
11. Apply dielectric grease to the threads of the retaining nut (B) then screw the retaining nut into the extension fluid inlet boss. Do not overtighten.
12. Install the fluid hose collar (C) into the bracket (53).
13. Tighten the two flat-head screws (50) at the bracket to secure the hose.
14. Turn on the fluid-delivery system. Refer to the appropriate fluid-delivery system manual.

# Service Illustration and Notes

Use Figure 7-8 and Table 7-1 to repair the spray gun.

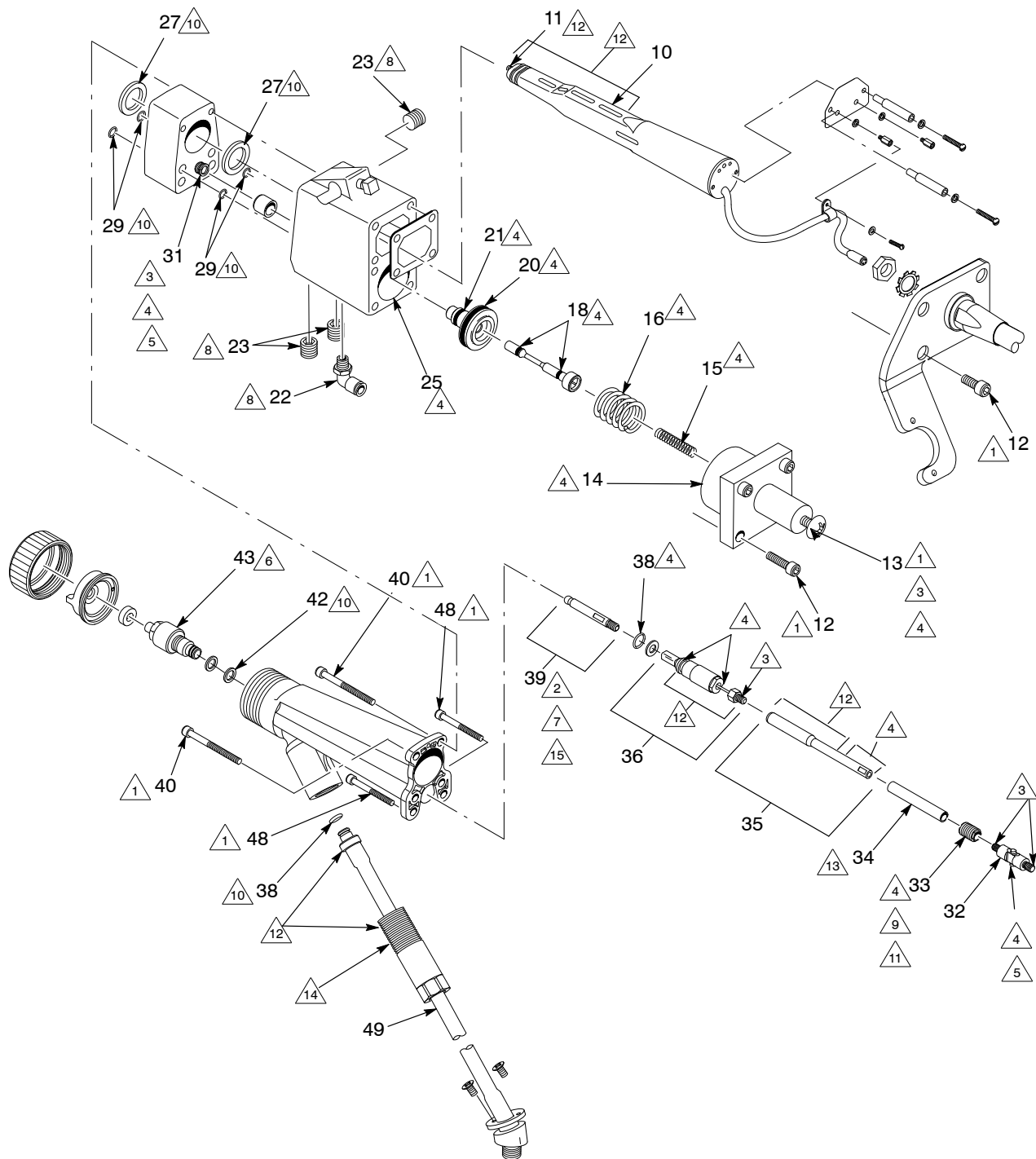

















Figure 7-8 Spray Gun Service Notes

Table 7-1 Spray Gun Service Notes

Note	Item	Description
	12, 13, 40, 48	Tighten to 2.27–2.83 N•m (20–25 in.-lb).
	39	Tighten finger tight.
	13, 31, 32, 35, 36	Apply threadlocking adhesive to the threads.
	13, 15, 16, 18, 20, 21, 38 14 (the housing bores where the springs rest) 25 (inside the piston bore), 31 (the grooves on the retainer bushing) 32 (the top and bottom pins of the adapter link) 33 (inside of packing cartridge retainer), 35 (end of pull shaft), 36 (wire at both ends)	Generously apply MagnaLube G (PTFE-filled lubricant) to these parts.
	31, 32	Make sure the pins on puller link engage in the grooves in the retainer bushing.
	43	Tighten to 0.9–1.13 N•m (8–10 in. lb).
	39	Activate the spray gun to pull the ball tip back before removing or installing a fluid tip.
	22, 23	Apply pipe sealant adhesive if the fitting does not already have thread sealant applied.
	33	Tighten hand tight.
	27, 29, 42	Apply dielectric grease to these O-rings.
	33	Apply a thin coat of dielectric grease to the threads.
	10, 11, 35, 36, 49	Apply a liberal coat of dielectric grease to these areas.
	34	Apply a thin coat of dielectric grease to the outside.
	49	Insert hose end into the extension until the O-ring is seated. Screw in the retaining nut then tighten $\frac{1}{4}$ turn past hand tight.
	39	A removable thread-locking adhesive can be applied to the threads of the needle if there are problems with the needle backing out.



## Section 8

# Parts

### Introduction

To order parts, call the Nordson Finishing Customer Support Center at (800) 433-9319 or contact your local Nordson representative. Use the parts list and accompanying illustrations to locate and describe 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	

# Kinetix Airless Automatic Electrostatic Spray Gun

See Figure 8-1.

**NOTE:** Before ordering parts for your spray gun, review the appropriate procedure in the *Repair* and *Installation* sections to make sure you are ordering the correct parts, lubricant, and adhesives to complete the procedure.

**NOTE:** Contact your Nordson Corporation representative for the correct nozzle, PTFE retaining washer, electrode, and gasket or gasket with restrictor for your applications.

Item	Part	Description	Quantity	Note
—	336683	GUN, Kinetix, airless, automatic, electrostatic	1	
1	1045531	• CORDSET ASSEMBLY, Kinetix, automatic	1	A
2	981496	• SCREW, pan head, #4–40 x 0.375 in., zinc	1	
3	983531	• WASHER, flat, 0.125 x 0.25 x 0.032 in., zinc	1	
4	336732	• CLAMP, cable, miniature, electrostatic, automatic	1	
5	336707	• SCREW, pan, #4–40, 1.75 in.	2	
6	983526	• LOCK WASHER, split, #4, steel, zinc	4	
7	336705	• STANDOFF, hex, male/female, #4–40 x 0.5 in.	2	
8	336706	• SPACER, round, clearance, #4	2	
9	336625	• PLATE, heat sink, electrostatic, automatic	1	
10	336505	• MULTIPLIER, 93 kV, Kinetix	1	
11	336383	• • SPRING ASSEMBLY, contact	1	
12	981104	• SCREW, socket, #10–24 x 0.5 in., zinc	8	
13	338903	• CAPSCREW, button head, $\frac{3}{8}$ –24, 0.5 in., stainless steel	1	
14	336623	• HOUSING, adjuster, electrostatic, automatic	1	
15	325537	• SPRING, fluid return, high pressure	1	
16	241176	• SPRING, compression, 1.24 x 1.093 OD x 0.094 in.	1	
17	325693	• ROD, connecting, automatic	1	
18	940063	• O-RING, Viton, 0.125 x 0.25 x 0.063 in.	2	B
19	243975	• PISTON, air	1	
20	941210	• O-RING, Viton, 1.063 x 1.25 x 0.094 in.	1	B
21	940125	• O-RING, Viton, 0.375 x 0.50 x 0.063 in.	1	B
22	972119	• ELBOW, $\frac{1}{4}$ -in. tube x $\frac{1}{8}$ -in. NPT	1	
23	973410	• PLUG, pipe, socket, standard, $\frac{1}{4}$ in., zinc	3	
24	336626	• GASKET, cable bracket, Kinetix, automatic	1	
25	336620	• BODY, piston block, automatic	1	
26	981405	• SCREW, square set, $\frac{3}{8}$ –16 x 0.75 in., cup, zinc	1	
27	336499	• O-RING, PTFE, 1.051 x 0.07 in.	2	B, C
28	336621	• SPACER, electrostatic, automatic	1	C
29	940110	• O-RING, hotpaint, 0.313 x 0.438 x 0.063 in.	4	B, C
<p>NOTE A: Included in automatic spray gun cordset kit(s). Refer to <i>Cordset Assemblies</i> on page 8-8.</p> <p>B: Included in air seal service kit 336656. Refer to <i>Air Seal</i> on page 8-7.</p> <p>C: Included in puller link upgrade kits. Refer to <i>Puller Link Upgrade Kits</i> on page 8-7. The kit parts can be ordered separately but you cannot use one part without the others.</p>				

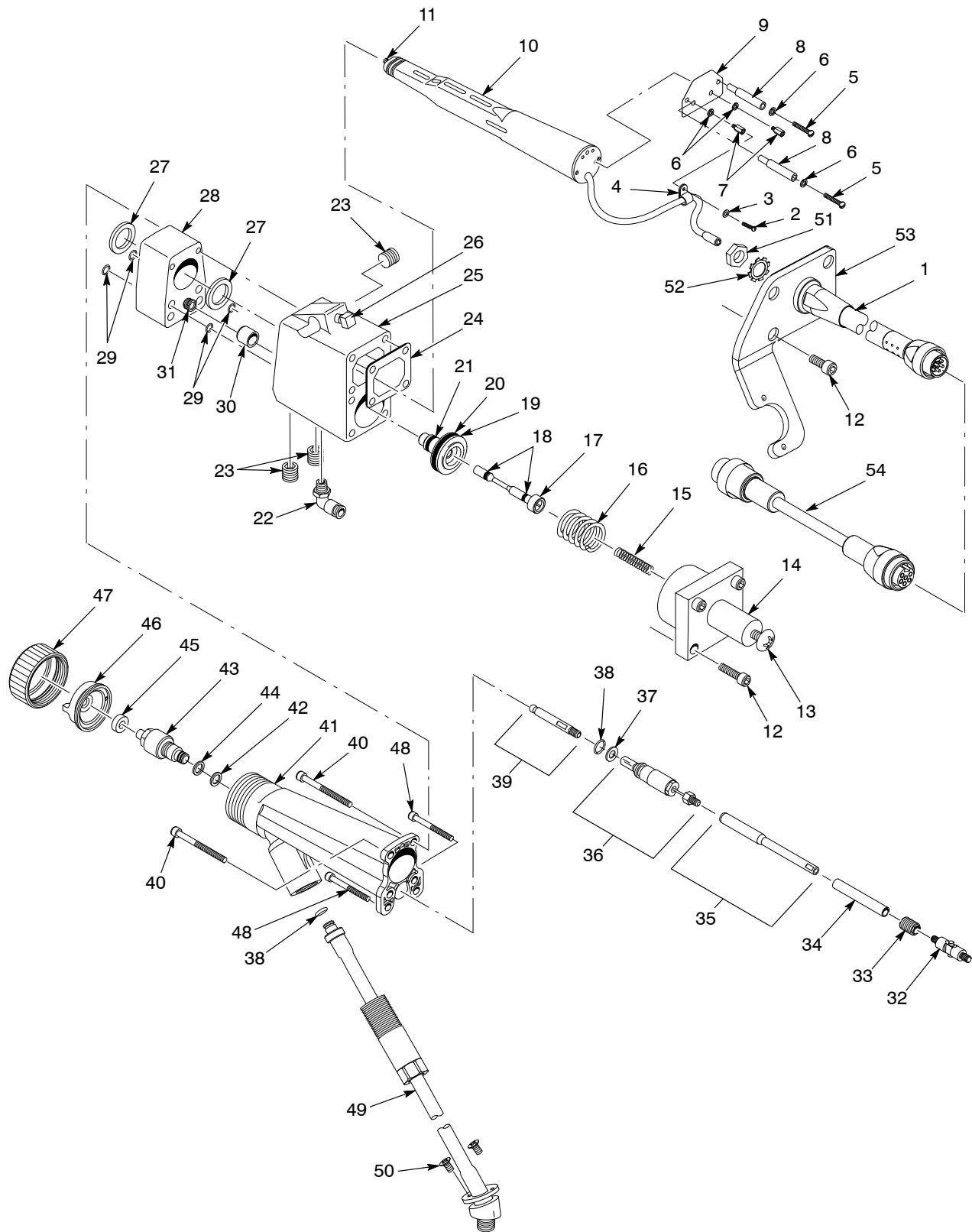


Figure 8-1 Kinetix Airless Automatic Electrostatic Spray Gun

# Kinetix Airless Automatic Electrostatic Spray Gun *(contd)*

Item	Part	Description	Quantity	Note
30	325694	• BUSHING, automatic	1	
31	1045778	• RETAINER, bushing, electrostatic, automatic	1	C
32	1045777	• ADAPTER, link-pin 8-32 UNC-2A Kinetix	1	C
33	325749	• RETAINER, packing cartridge, electrostatic	1	
34	325748	• RETAINER, sleeve, packing cartridge	1	
35	325747	• SHAFT, packing cartridge, Kinetix	1	
36	-----	• CARTRIDGE ASSEMBLY, packing, electrostatic	1	D
37	105527	• SERVICE KIT, ring, backup, quantity 4	1	D
38	336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	2	D, E
39	336636	• KIT, ball tip assembly	1	F
40	338909	• CAPSCREW, socket head, #10-24 x 2.25 in., stainless steel	2	
41	336643	• KIT, extension, high pressure, electrostatic, machined	1	
42	336678	• O-RING, Perlast, 0.375 x 0.50 x 0.063 in.	1	E, G
43	-----	• TIP, fluid, high pressure, Kinetix	1	G
44	336569	• BACKUP RING, conductive, 0.39-in. ID x 0.045 in., thick cut	1	E, G
45	-----	• RING, conductive, high pressure tip	1	G
46	336558	• CAP, airless, electrostatic	1	
47	325547	• RING, retaining, air cap	1	
48	338910	• CAPSCREW, socket head, #10-24 x 2 in., stainless steel	2	
49	-----	• HOSE, Kinetix, high-pressure, standard, 1/4-in. ID, automatic, 1 ft, straight fitting	1	H
50	346725	• MACHINE SCREW, flathead, recessed, 4-40, 0.250 in., stainless steel	2	A
51	238331	• NUT, hex, jam, 9/16-18, steel	1	A
52	983513	• LOCK WASHER, E, external, 9/16, steel	1	A
53	1045076	• BRACKET, cable, automatic, long, Kinetix	1	A
54	336531	• CABLE, 50 ft, electrostatic, extension	1	A
NS	901905	• BRUSH (wooden toothbrush type)	1	
NS	247066	• BRUSH	1	
NS	336642	• WRENCH, Kinetix, combination tool	1	
NS	156098	• BAG, gun cover, polyethylene	3	I

NOTE A: Included in automatic spray gun cordset kit(s). Refer to *Cordset Assemblies* on page 8-8.

C: Included in puller link upgrade kits. Refer to *Puller Link Upgrade Kit* on page 8-7. The kit parts can be ordered separately but you cannot use one part without the others.

D Included in packing cartridge service kit 1089861. Refer to *Packing Cartridge* on page 8-7.

E: Included in Perlast fluid seal service kit 336679. Refer to *Perlast Fluid Seal* on page 8-6.

F: The optional ball tip kit 336637, may improve performance in some applications. Talk to your Nordson representative for more information.

G: Part is included in fluid tip service kit 336560. Refer to *Fluid Tip* on page 8-6.

H: Refer to *Hoses and Tubing* on page 8-9.

I: The gun cover bag may be ordered in larger quantities. Order 106403 for a quantity of 10 cover bags. Order 106404 for a quantity of 50 cover bags.

NS: Not Shown



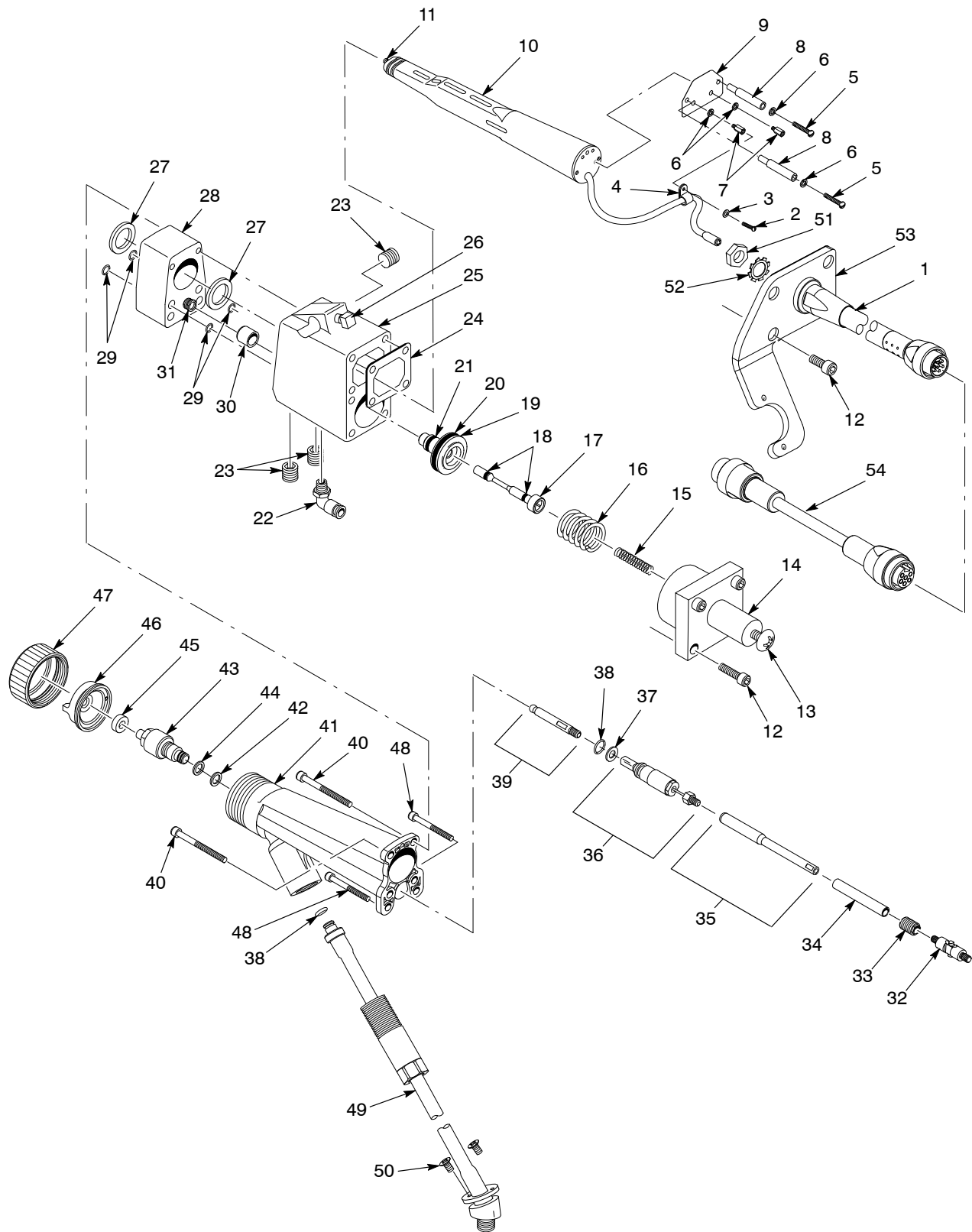


Figure 8-1 Kinetix Airless Automatic Electrostatic Spray Gun

## Adhesives, Sealants, and Lubricants

Use these adhesives, sealants, and lubricants when repairing your unit. Refer to the *Repair* or *Installation* sections in this manual for application instructions.

Part	Description	Quantity
900481	ADHESIVE, pipe/thread/hydraulic sealant (Loctite High Temp SS567 for stainless steel threads)	1
900464	ADHESIVE, threadlocking (Loctite Removable 242)	1
900349	PTFE-FILLED LUBRICANT, O-ring, (MagnaLube) , 0.75-oz tube	1
247658	APPLICATOR, dielectric grease, 10 cc, 12 count	1

## Recommended Kits

### Perlast Fluid Seal

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	336679	PERLAST FLUID SEAL KIT, gun, Kinetix	1	
38	336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	2	A
42	336678	• O-RING, Perlast, 0.375 x 0.50 x 0.063 in.	1	B, C
44	336569	• BACKUP RING, conductive, 0.39-in ID x 0.045-in. thick, cut	1	B
NOTE A: Used on the packing cartridge and fluid hose. B: Used on the fluid tips. C: Lubricate with dielectric grease.				

### Fluid Tip

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	336560	TIP fluid, high pressure, Kinetix	1	
42	336678	• O-RING, Perlast, 0.375 x 0.50 x 0.063 in.	1	
43	-----	• TIP, fluid, high pressure, Kinetix	1	
44	336569	• BACKUP RING, conductive, 0.39-in. ID x 0.045-in., thick cut	1	
45	-----	• RING, conductive, high pressure tip	1	

## Air Seal

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	336656	AIR SEAL KIT, automatic	1	
18	940063	• O-RING, Viton, 0.125 x 0.25 x 0.063 in.	2	
20	941210	• O-RING, Viton, 1.063 x 1.25x 0.094 in.	1	
21	940125	• O-RING, Viton, 0.375 x 0.50 x 0.063 in.	1	
27	336499	• O-RING, PTFE, 1.05 x 0.07 in.	2	
29	940110	• O-RING, hotpaint, 0.313 x 0.438 x 0.063 in.	4	

## Standard Gold Packing Cartridge

See Figure 8-1.

**NOTE:** The gun is shipped with the standard gold packing cartridge, which is appropriate for most coating materials. An optional PTFE packing cartridge is available when spraying harsh chemical solvents such as MEK.

Item	Part	Description	Quantity	Note
—	1089861	PACKING CARTRIDGE KIT, gold, Kinetix	1	
36	-----	• CARTRIDGE ASSEMBLY, packing, gold	1	
37	-----	• BACKUP RING, single, $\frac{1}{4} \times \frac{3}{8}$ in.	1	
38	336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	1	

## Puller Link Upgrade Kits

See Figure 8-1.

### Puller Link Upgrade with Spacer Block

Item	Part	Description	Quantity	Note
—	1045984	PULLER LINK KIT, with spacer block, Kinetix	1	
27	336499	• O-RING, PTFE, 1.051 x 0.07 in. wide	2	
28	336621	• SPACER, electrostatic , automatic	1	
29	940110	• O-RING, hotpaint, 0.313 x 0.438 x 0.063 in.	4	
31	1045778	• RETAINER, bushing, Kinetix	1	
32	1045777	• ADAPTER, link-pin, 8–32 UNC-2A Kinetix	1	

### Puller Link Upgrade

Item	Part	Description	Quantity	Note
—	1045981	PULLER LINK KIT, Kinetix	1	
31	1045778	• RETAINER, bushing, Kinetix	1	
32	1045777	• ADAPTER, link-pin, 8–32 UNC-2A Kinetix	1	

## Cordset Assemblies

See Figure 8-1.

### Automatic Cordset with 50-ft Extension

Item	Part	Description	Quantity	Note
—	1046521	CORDSET KIT, automatic with 50 ft cable	1	
1	1045531	• CORDSET ASSEMBLY, Kinetix, automatic	1	
50	346725	• MACHINE SCREW, flathead, recessed, 4–40, 0.25 in., stainless steel	2	
51	1046703	• LOCKNUT, bulkhead, $\frac{9}{16}$ –18, brass	1	
52	983513	• LOCK WASHER, E, external, $\frac{9}{16}$ , steel	1	
53	1045076	• BRACKET, cable, automatic, long, Kinetix	1	
54	336531	• CABLE, 50 ft, electrostatic, extension	1	

### Automatic Cordset

Item	Part	Description	Quantity	Note
—	1045983	CORDSET KIT, automatic, Kinetix	1	
1	1045531	• CORDSET ASSEMBLY, Kinetix, automatic	1	
50	346725	• MACHINE SCREW, flathead, recessed, 4–40, 0.25 in., stainless steel	2	
51	1046703	• LOCKNUT, bulkhead, $\frac{9}{16}$ –18, brass	1	
52	983513	• LOCK WASHER, E, external, $\frac{9}{16}$ , steel	1	
53	1045076	• BRACKET, cable, automatic, long, Kinetix	1	

## Optional Quick-Exhaust Valve

Part	Description	Quantity
325529	MUFFLER/EXHAUST VALVE KIT	1
973000	• NIPPLE, steel, sched 40, $\frac{1}{8}$ in., 0.75 in.	1
901262	• VALVE, exhaust	1
272556	• MUFFLER, low profile, $\frac{1}{4}$ -in. NPT	1

## Optional Hot Paint Fluid Seal Kit

The standard fluid seal O-rings for all Kinetix products provide solvent resistance. If a particular application does not require solvent resistance then the hotpaint seal kit can be used instead. These O-rings should not be used with highly polar solvents like Acetone and MEK, Chlorinated Hydrocarbons and Nitro Hydrocarbons unless they will be replaced regularly.

Part	Description	Quantity	Note
336633	HOTPAINT FLUID SEAL KIT, electrostatic	1	
940100	• O-RING, hotpaint, 0.25 x 0.375 x 0.063 in.	2	A
940120	• O-RING, hotpaint, 0.375 x 0.50 x 0.063 in.	1	B
336569	• BACKUP RING, conductive, 0.39-in. ID x 0.045-in. thick, cut	1	B
NOTE A: Used on the packing cartridge and fluid hose. B: Used on the fluid tips.			

## Optional PTFE Packing Cartridge

**NOTE:** The PTFE packing cartridge is available for use with harsh chemical solvents such as MEK.

Part	Description	Note
1089862	KIT, cartridge, packing, Kinetix, electrostatic, PTFE	
-----	• CARTRIDGE ASSEMBLY, packing, electrostatic	
-----	• BACKUP RING, single, $\frac{1}{4} \times \frac{3}{8}$ in.	
336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	

## Hoses and Tubing

Hoses and tubing must be ordered separately.

Part	Description	Quantity	Note
336629	KIT, hose, Kinetix, high pressure, standard, automatic, 1.5 ft, $\frac{1}{4}$ -in. ID, straight fitting	1	A
336628	KIT, hose, Kinetix, high pressure, long, automatic, 25 ft, $\frac{1}{4}$ -in. ID	1	
900509	TUBING, air, polyethylene, 0.25-in. OD x 0.04-in. wall	AR	B
900556	TUBING, air, nylon, 0.25-in. OD x 0.035-in. wall	AR	B
NOTE A: Any high-pressure hose can be added to this hose to increase the length. Refer to the <i>High-Pressure Fluid Hoses</i> instruction sheet for ordering information. B: Order tubing in one-foot increments. AR: As Required			

## Recommended Spare Parts

Keep the following parts in inventory to avoid unplanned downtime. Quantities listed support a single spray gun. Adjust order quantities based on the number of spray guns in service.

Part	Description	Quantity	Note
336679	PERLAST FLUID SEAL KIT, gun, Kinetix	1	A
336633	HOTPAINT FLUID SEAL KIT, electrostatic	1	A
336656	AIR SEAL KIT, automatic	1	
1089861	PACKING CARTRIDGE KIT, Gold, Kinetix	1	B
1089862	PACKING CARTRIDGE KIT, PTFE, Kinetix	1	B
336560	FLUID TIP KIT, Kinetix, high-pressure	1	
1046521	CORDSET KIT, automatic, gun, with 50-ft cable	1	
336531	CABLE, 50 ft, electrostatic extension	1	
1045983	CORDSET KIT, automatic extension	1	
1046144	FITTING TUBE, swivel nut branch tee, $\frac{5}{16}$ -in. tube	1	C
122481	GASKET, NES, 10 pack	1	
336675	SEAL WASHER KIT, high-pressure gun, 12 pack	1	
336676	SEAL WASHER KIT, high-pressure gun, 100 pack	1	
336384	ELECTRODE, high pressure, electrostatic	6	
336505	MULTIPLIER KIT, 93 kV, Kinetix	1	
336643	EXTENSION KIT, Kinetix, high pressure	1	
336642	WRENCH, Kinetix, combination tool	1	
156098	BAG, gun cover, polyethelene	6	
247658	APPLICATOR, dielectric grease, 10 cc, 12 count	1	
900349	PTFE-FILLED LUBRICANT, O-ring, (MagnaLube) , 0.75-oz tube	1	
-----	NOZZLE	1	
-----	RESTRICTOR	1	
1043237	PARTS POSTER, Kinetix Automatic Airless Electrostatic Spray Gun	1	

NOTE A: Fluid seal kit 336679 is standard, fluid seal kit 336633 is optional.

B: The Kinetix spray gun is shipped with the standard gold packing cartridge. This durable packing cartridge is appropriate for most coating materials. Use the optional PTFE packing cartridge with harsh chemical solvents such as MEK.

C: A swivel nut branch that mounts the existing hose fitting on the Kinetix hose providing a clean way to circulate paint close to the spray gun.

## Section 9

# Specifications

### Dimensions

Dimensions	Metric (cm)	English (in.)
Height	12.29	4.84
Length	35.4	13.92
Width	7.92	3.12
<b>NOTE:</b> The spray gun dimensions include the fluid and air fittings.		

### Weight

Weight	Metric (g)	English (oz)
Airless, automatic, non-circulating	1465	51.6
<b>NOTE:</b> The spray gun weight includes the fluid and air fittings.		

### Operating Pressures

Operating Pressures	Metric	English
Maximum air input pressure	6.9 bar	100 psi
Maximum fluid input pressure	103 bar	1500 psi
Maximum fluid temperature	82 °C	180 °F
<b>NOTE:</b> Supply air must be particulate free (5 microns maximum) and oil free. Use coalescing-type air filters.		

### Standard Fitting Sizes

Spray Gun Standard Fitting Size	
Activation (trigger) air fitting	1/4-in. tube
Fluid fitting	1/2-20 JIC male

## Gun Electrostatics

Maximum voltage: 93 kV

Maximum output rating current: 122 microamps

**NOTE:** Current draw greater than 50  $\mu\text{A}$  may affect spray pattern, transfer efficiency and finish. If the conductivity of your material causes excessive current draw, changing to the longer hose may be necessary.

### *Conductivity Range*

Material Resistivity	Hose Length
Greater than 25 megohms/cm	Standard hose
Less than 25 megohms/cm	Long hose

## Approvals

This spray gun has met the requirements for ATEX, CE and FM approval.

### *Special Conditions for Safe Use in the European Union*

- The applicator must be installed according to the standard EN50176.
- The equipment is intended to be used in the ambient temperature range of 0–40 °C.
- This applicator must be used with the Kinetix Automatic Gun Power Supply.



# DECLARATION of CONFORMITY

*Nordson Corporation*

*declare under our sole responsibility that the products*

**Kinetix High Pressure or Trilogy Low Pressure, automatic liquid electrostatic applicators including control cables used with the IPS-20 Automatic Controller**

*to which this declaration relates complies with the following Directives:*

- **Machinery Directive 2006/142/EC**
- **EMC Directive 2004/108/EEC**
- **ATEX Directive 94/9/EC**

*The conformity is under observance of the following standards or standards documents:*

EN12100 (2003) EN60204 (2006)	EN60079-0 (2006) EN50050 (2006) EN50176 (2007)	EN61000-6-3 (2007) EN61000-6-2 (2005) EN55011 (2007)
		FM7260 (1996)

*Type of protection:*

- **II 2 G, EEx 0.24 mJ (type A), Ambient temperature: 0 °C to +40 °C**

*N ° of EC type Certificate:*

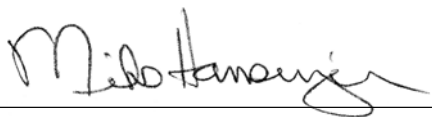
- **INERIS 05 ATEX 0069X**
- **Location: Verneuil en Halatte, FRANCE**

*N ° of notified body (ATEX surveillance)*

- **1180 (Baseefa) Buxton, Derbyshire, UK**

*ISO9000 certificate*

**DNV**



Mike Hansinger  
ICS Manager Engineering Development

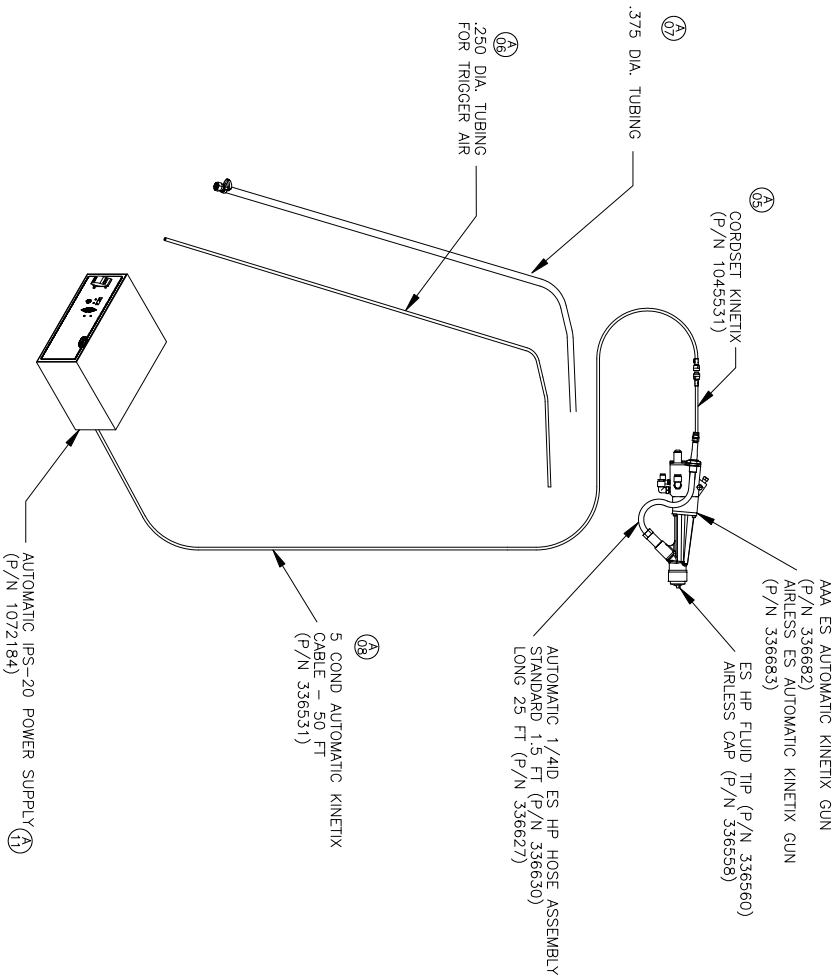
Date: 09 Sept 2010

## **Nordson Authorized Representative in the EU**

**Contact:** Operations Manager  
Industrial Coating Systems  
Nordson Deutschland GmbH  
Heinrich-Hertz-Straße 42-44  
D-40699 Erkrath



HIGH PRESSURE



CHG LTR	REVISION	BY	CH	ECR NO.	DATE
A00	00) ISSUED	JRH	-	---	23NOV99
A01	01) KITS AND TUBING ADDED				
A02	02) PRE-RELEASED	DAK		LQ 9379	23OCT00
A03	03) RELEASED	DAK		LQ 9377	
A04	04) 336657 REMOVED	DAK		LQ31671	03JAN02
A05	05) ADDED CORDSET				
A06	06) ADDED .25 DIA. TUBING				
A07	07) WAS AIR HOSE 336733				
A08	08) WAS 336731	JW		LQ34507	27JAN04
A09	09)ADDED KINETIX BELLOWS GUN	JB	JW	LQ300570	30OCT06
A10	10) ADDED OPTIONAL LP HOSE.	DC	MPM	GN300298	27FEB07
A11	11) PART NUMBER WAS 336374	MHH	JF	LQ300509	15AUG07
A12	12) LOW PRESSURE VERSION	BB	TT	LQ601914	7JUL10
	OBSQL. REMOVED FROM DRW.				

CRITICAL  
NO REVISIONS PERMITTED WITHOUT  
APPROVAL OF THE PROPER AGENCY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
		ALL DIMENSIONS IN INCHES EXCEPT AS NOTED	
		SIZE C	NORDSON CORPORATION Amherst, Ohio 44001
		X.XX ± .030   X.XXX ± .010	
		NEXT ASSEMBLY	
		MACHINED SURFACES 125/AA	
		FIRST PRODUCT USED ON: BREAK OUTSIDE AND INSIDE CORNERS .004/.032 MAX. THREAD LENGTH DIMENSIONS ARE FULL THREADS	
		INTERPRET DRAWINGS PER ASME Y14.5M-1994 STD	
		PERFECT FORM AT MMC REQUIRED FOR INTERRELATED FEATURES	
		THIRD ANGLE PROJECTION	
		SCALE: NONE	
		DRAWING NUMBER	
		336469	
		REF DWG, SOLVENTBORNE, AUTO KINETIX	
		DATE 24NOV99	
		CHECKED BT	
		APPD BT	
		REL. NO. LQ 9377	
		REV A12	
		PAGE 1/1	