

Kinetix[®] Electrostatic Spray Gun
Manual Version
60 kV Air Spray and KVLP Waterborne

Customer Product Manual

Part 334596H03

Issued 8/08

**For parts and technical support, call the Industrial Coating
Systems Customer Support Center at (800) 433-9319 or
contact your local Nordson representative.**

This document is subject to change without notice.
Check <http://emanuals.nordson.com> for the latest version.



NORDSON CORPORATION • AMHERST, OHIO • USA

OBSOLETE

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
<http://www.nordson.com>.

Address all correspondence to:
Nordson Corporation
Attn: Customer Service
555 Jackson Street
Amherst, OH 44001

Notice

This is a Nordson Corporation publication which is protected by copyright. Original copyright date 2000. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Nordson Corporation. The information contained in this publication is subject to change without notice.

Trademarks

Iso-Flo, Kinetix, Nordson, and the Nordson logo are registered trademarks of Nordson Corporation.

Loctite is a registered trademark of Henkel Loctite Corporation.

MagnaLube is a registered trademark of General Magnaplate Corporation.

Perlast is a trademark of Precision Polymer Engineering Limited.

Viton is a registered trademark of E. I. DuPont de Nemours and Company.

Table of Contents

Safety	1-1
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 Label	1-5
 Description	 2-1
Introduction	2-1
KVLP Description	2-2
Air Spray Description	2-2
Features	2-2
Options	2-2
Coating Materials	2-2
Theory of Operation	2-3
Electrostatic Charge	2-3
Fluid Flow	2-3
Air Flow	2-3
 Installation	 3-1
Preparation	3-1
Typical 60 kV Air Spray and KVLP Waterborne System	3-2
Air and Fluid Hose Connections	3-4
Air Hose	3-4
Fluid Hose	3-4
Securing the Air and Fluid Hoses	3-4
Fluid Tip and Air Cap Installation	3-5
 Operation	 4-1
Introduction	4-1
System Startup	4-2
Fluid Pressure and Flow Rate Adjustments	4-3
Spray Pattern and Atomization Adjustments	4-3
Fluid Tips and Air Caps	4-4
Shutdown	4-4
Short-Term	4-4
Long-Term	4-5
Multi-Component Coatings	4-5
KVLP Performance Testing	4-5
Checking Air Cap Performance	4-7

Maintenance	5-1
Introduction	5-1
Daily	5-1
Periodically	5-2
System Flushing	5-3
Spray Gun Cleaning	5-3
Routine Cleaning	5-3
Extensive Cleaning	5-4
 Troubleshooting	 6-1
Introduction	6-1
Common Problems	6-2
Spray Pattern/Film Build Troubleshooting	6-4
Electrostatic Troubleshooting	6-5
 Repair	 7-1
Tools/Supplies Required	7-2
Air Cap and Fluid Tip Replacement	7-2
Trigger Lock Replacement	7-4
Air Inlet Fitting Replacement	7-4
Air Inlet Fitting Removal	7-4
Air Inlet Fitting Installation	7-5
Needle Replacement	7-6
Preparation	7-6
Needle Removal	7-6
Needle Installation	7-7
Packing Cartridge and Needle Replacement	7-7
Preparation	7-8
Spray Gun Disassembly	7-8
Packing Cartridge and Needle Removal	7-9
Packing Cartridge and Needle Installation	7-11
Spray Gun Assembly	7-11
Horn Air Adjust Valve Replacement	7-12
Horn Air Adjust Valve Removal	7-12
Horn Air Adjust Valve Installation	7-12
Air Valve Replacement	7-14
Back Cover Removal	7-14
Air Valve Removal	7-14
Air Valve Installation	7-15
Fluid Supply Hose Replacement	7-16
Fluid Hose Removal	7-16
Install the Fluid Hose	7-17
Service Illustration and Notes	7-18

Parts	8-1
Introduction	8-1
Using the Illustrated Parts List	8-1
Spray Gun Parts	8-2
Recommended Kits	8-6
Hotpaint Fluid Seal	8-6
Air Seal	8-6
Air Valve	8-6
Packing Cartridge	8-7
Electrostatic Trigger Lock	8-7
Optional Perlast Fluid Seal	8-7
Optional PTFE Packing Cartridge	8-7
Hoses and Couplings	8-8
Adhesives, Sealants, and Lubricants	8-8
Recommended Spare Parts	8-9
KVLP Compliance Kit	8-10
 Specifications	 9-1
Dimensions	9-1
Weight	9-1
Operating Pressures	9-1
KVLP Air Hose Requirements	9-2
Air Spray Air Hose Requirements	9-2
Standard Fitting Sizes	9-2
Gun Electrostatics	9-2
Approvals	9-2

OBSOLETE

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.

Fire Safety *(contd)*

- 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:

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

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

Action in the Event of a Malfunction

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

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





Disposal

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

Safety Label

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

Symbol	Description
	WARNING: Allow only qualified personnel to use this equipment. Observe and follow all safety instructions for this equipment.
	WARNING: Risk of explosion or fire. Fire, open flames, and smoking prohibited.
	WARNING: 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.
	WARNING: 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.

OBSOLETE

Section 2

Description

Introduction

See Figure 2-1.

The Kinetix 60 kV air spray and KVLP manual electrostatic waterborne spray gun is used with the Nordson Iso-Flo system. The Iso-Flo system is an isolated fluid-delivery system, that provides a direct charge to your waterborne coating.

The spray guns are non-circulating and can be used with unheated non-circulating spray systems.

KVLP and air spray systems use low-pressure fluid sources, such as pressure pots, diaphragm pumps, or low-ratio piston pumps. They are commonly used to apply low-to-medium-viscosity fluids to products requiring a high-quality finish.

NOTE: The fluid tip and air cap you choose will determine if you will be using air spray technology or KVLP technology.

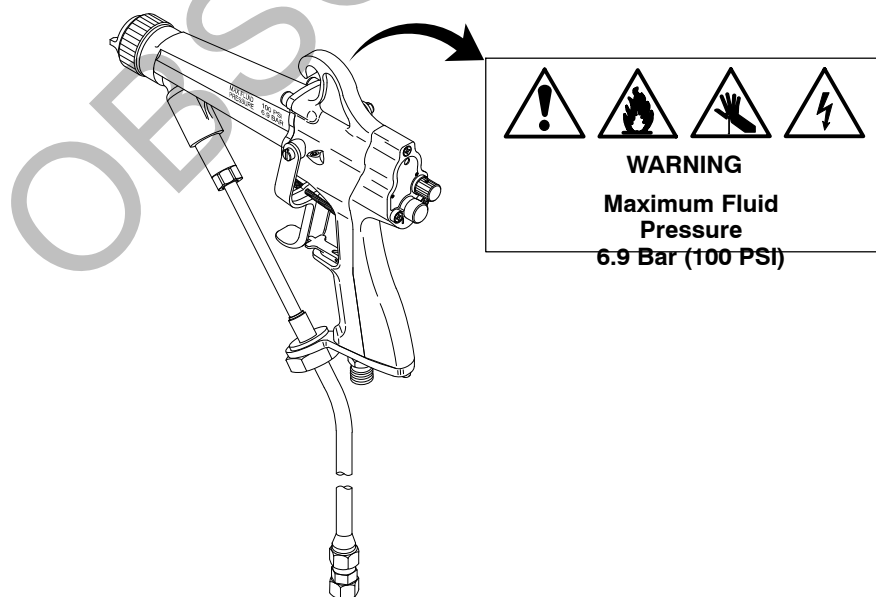


Figure 2-1 Kinetix 60 kV Air Spray and KVLP Manual Electrostatic Waterborne Spray Gun

Note: Refer to *Safety Label* on page 1-5 for a description of the warning labels on the spray gun extension.

KVLP Description

KVLP technology creates a soft spray with high transfer efficiency, reducing emissions of volatile organic compounds (VOCs). KVLP spray guns use high volumes of very low pattern control (horn) and atomizing air pressures (less than 0.69 bar (10 psi)). The high volume of pattern control air provides sufficient energy to atomize sprayed fluids. The low atomizing air pressure reduces fluid bounceback and overspray, which improves transfer efficiency.

KVLP atomization is typically coarser than air spray when used with high-viscosity fluids and high flow rates.

Air Spray Description

Air spray technology atomizes material at higher air pressures and lower air flows than KVLP spray guns. Air spray guns produce a very fine, atomized mist. This makes them useful for extremely fine finishing work.

Features

- adjustable horn air pressure and fluid flow rate
- split horn and atomizing air for superior spray control
- easy disassembly for cleaning and repair
- self-adjusting packing cartridge

Options

Options include a variety of fluid tips; air caps; air and fluid hoses; air pressure regulators and gauges; and fittings. KVLP compliance kits are available for each KVLP air cap.

NOTE: The fluid tip and air cap you choose will determine if you will be using air spray technology or KVLP technology.

Coating Materials

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

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

An electrostatic charge is delivered by a manual Iso-Flo voltage block system. The system delivers pressurized coating material to the spray gun on demand and electrically isolates the charged spray gun and fluid path from the grounded coating material supply.

The charged coating material flows through a special fluid supply hose (5) to the extension (2). 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 supply hose attached to the extension and flows to the fluid tip (1). The needle (9) controls fluid flow through the fluid tip. The packing cartridge (8) prevents fluid from flowing past it into the handle (3).

Air Flow

The atomization and horn air enter through an inlet (4) in the spray gun handle.

Pulling the trigger opens the air valve and develops full atomization air flow. The electrostatics are triggered on by an airflow switch that senses the initiation of air flow.

The atomization air continues through the spray gun through its air core (10) when the spray gun is triggered. The atomization air atomizes the coating material as it exits the nozzle. To control the level of atomization, adjust the air flow regulator that supplies the spray gun.

The horn air (11) flows to the air cap and shapes the spray pattern. The horn air flow is controlled by the horn air adjust valve knob in the handle.

The spray gun includes a trigger lock (6) to prevent accidental triggering of the spray gun and possible injuries.

Theory of Operation *(contd)*

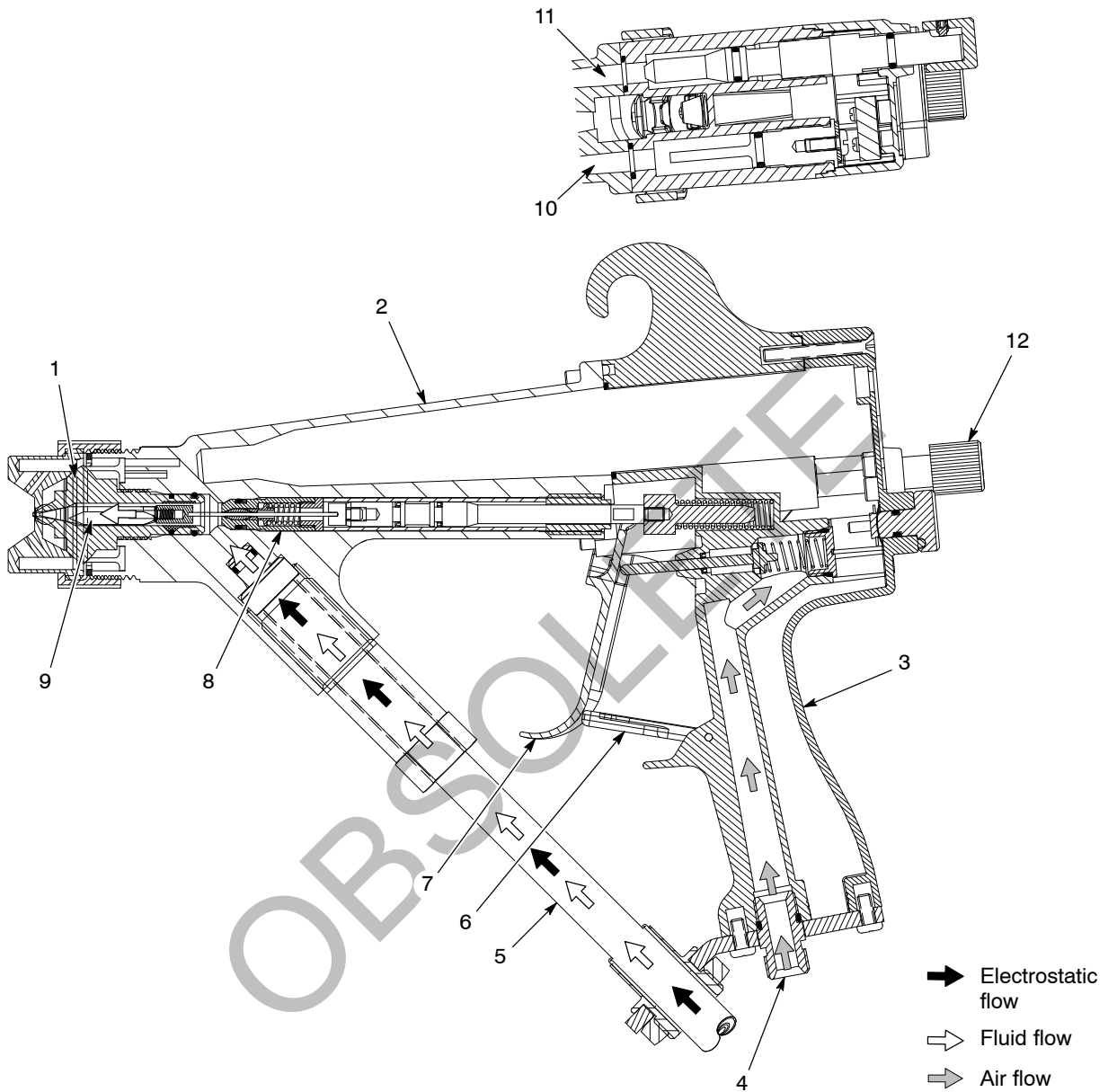


Figure 2-2 Spray Gun Components and Operation

- | | | |
|-----------------------------------|----------------------|--------------------------------|
| 1. Fluid tip | 5. Fluid supply hose | 9. Needle |
| 2. Extension | 6. Trigger lock | 10. Atomization air core |
| 3. Handle | 7. Trigger | 11. Horn air core |
| 4. Atomization and horn air inlet | 8. Packing cartridge | 12. Horn air adjust valve knob |

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: Fluid tips, air caps, and hoses are not shipped with the spray gun. You must order them separately, based on your application. If you order a KVLP air cap, order the appropriate compliance kit also. You will need one compliance kit for each air cap size you use.

NOTE: Compliance caps are used to verify compliance of non-electrostatic KVLP systems. Electrostatic spray guns are by themselves compliant spray technologies, so it is not necessary to verify air cap compliance. Instead, you may want to use a compliance kit to make sure the air cap pressure is at optimum level.

Before installation,

- make sure you have the appropriate fluid tip and air cap for your application.
- make sure you have air and 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 when sprayed.

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

Typical 60 kV Air Spray and KVLP Waterborne System

See Figures 3-1 and 3-2.

A typical 60 kV air spray and KVLP system contains the following components. The systems are available in either a wall mount or a dolly mount version.

NOTE: Some components shown are optional. Make sure your system contains self-relieving shutoff valves for both air and fluid supply control.

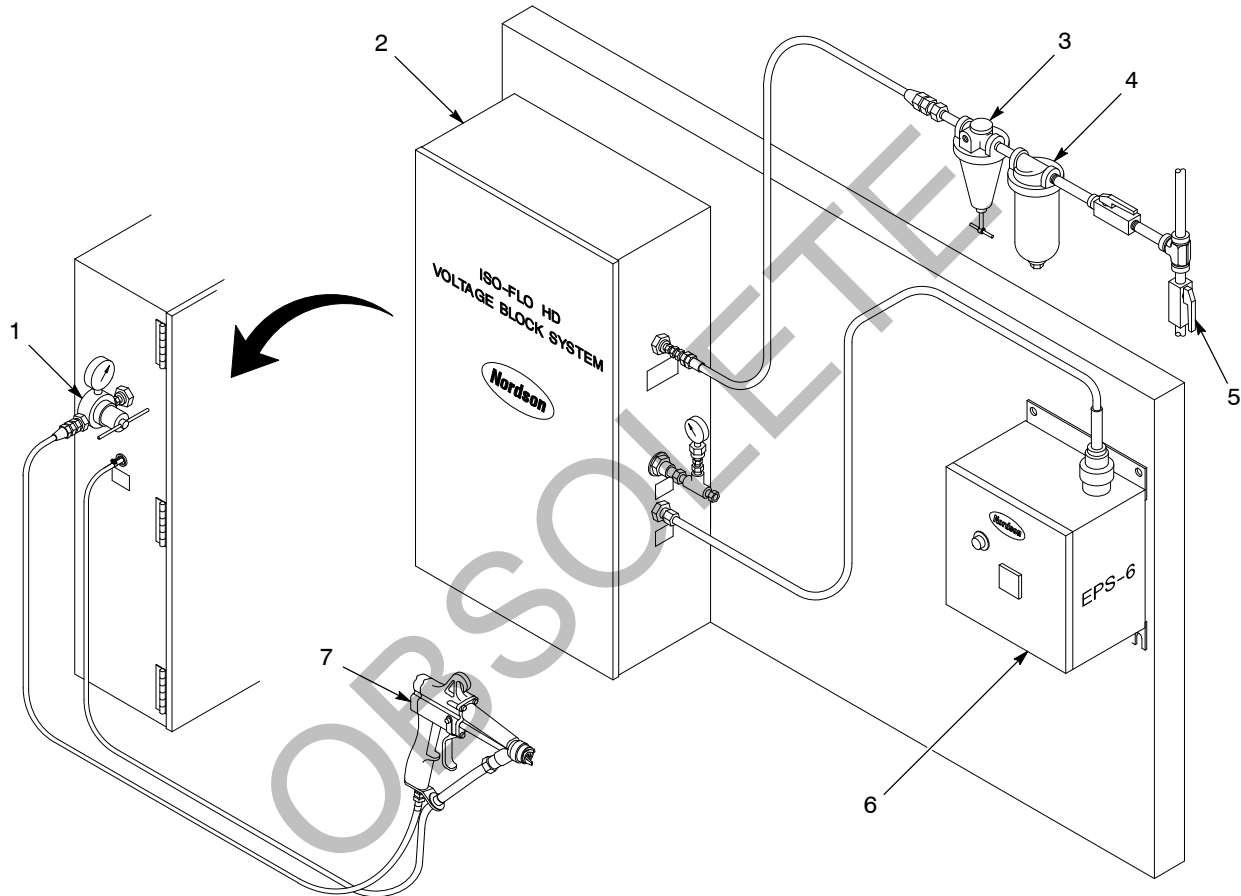


Figure 3-1 Typical 60 kV Air Spray and KVLP System — Wall Mount

- | | | |
|------------------------------------|----------------|-----------------|
| 1. Fluid pressure regulator | 4. Air filter | 6. Power supply |
| 2. Iso-Flo HD voltage block system | 5. Drain valve | 7. Spray gun |
| 3. Air regulator | | |

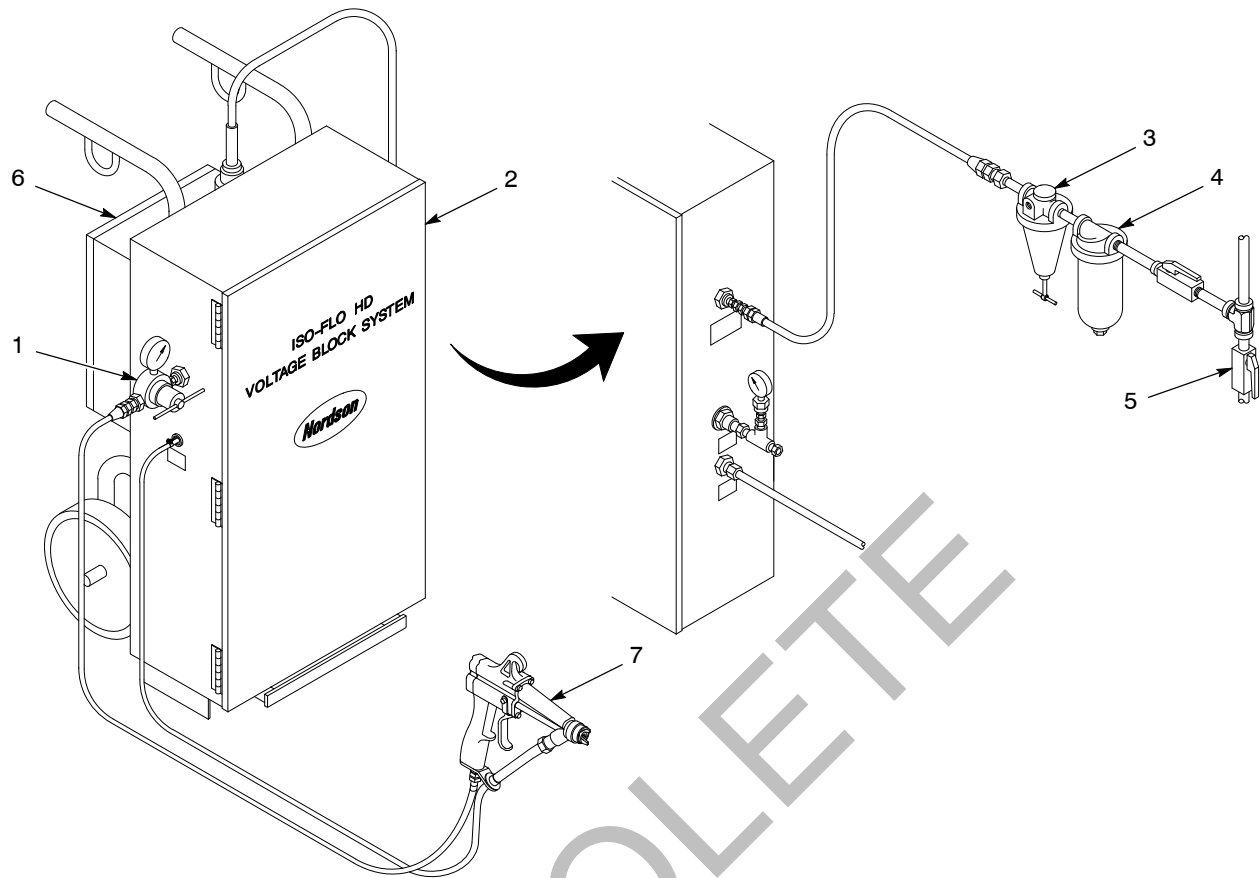


Figure 3-2 Typical 60 kV Air Spray and KVLP System — Dolly Mount

- | | | |
|------------------------------------|----------------|-----------------|
| 1. Fluid pressure regulator | 4. Air filter | 6. Power supply |
| 2. Iso-Flo HD voltage block system | 5. Drain valve | 7. Spray gun |
| 3. Air regulator | | |

Air and Fluid Hose Connections



WARNING: The fluid and air hose must be grounding-type hoses with continuity between fittings. Use only the Nordson-approved fluid and air hoses with this system. 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 grounding cable, should be a part of your regular maintenance procedures.

Air Hose

The air hoses supplying air to the spray gun should be no longer than 9.14 m (30 ft).

Limit the number of restrictions in the air supply lines and hose to provide maximum air flow. For optimum KVLP performance, a $\frac{3}{8}$ -in. ID hose is recommended.

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

Fluid Hose

1. Clean the fluid hose fittings with a clean, dry cloth.
2. Connect the fluid hose between the fluid delivery system outlet and the fluid hose fitting on the spray gun extension. Use two wrenches to connect the hose to the fitting — one to hold the fitting and one to tighten the hose fitting.

Securing the Air and Fluid Hoses

- Bundle the air and fluid hose 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.

Fluid Tip and Air Cap Installation

See Figure 3-3.



WARNING: Ground the spray gun to remove any residual charge. Failure to observe this warning could result in personal injury.



WARNING: Make sure the trigger lock is engaged, 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. Shut down the Iso-Flo system. Refer to the appropriate Iso-Flo manual gun power supply manual.
2. Point the spray gun into the booth or waste container and trigger the spray gun to relieve residual pressure. Engage the trigger lock to prevent inadvertent activation of the spray gun.
3. Unscrew the retaining ring (5). Remove the retaining ring and air cap (4) assembly.
4. Install the O-ring (2) in the groove in the fluid tip (3). Lubricate the O-ring with dielectric grease.



CAUTION: To prevent damage to the needle and fluid tip seat, trigger the spray gun to pull the needle tip back before removing or installing a fluid tip.

5. Trigger the spray gun to retract the needle (1). Screw the fluid tip into the threaded bore of the spray gun.

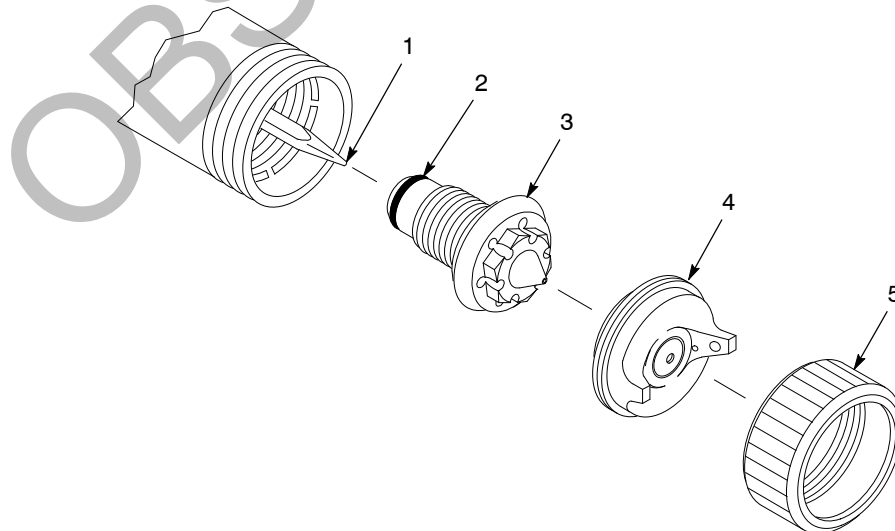


Figure 3-3 Fluid Tip and Air Cap Installation

- | | |
|--------------|-------------------|
| 1. Needle | 4. Air cap |
| 2. O-ring | 5. Retaining ring |
| 3. Fluid Tip | |



CAUTION: The spray gun fluid seal is an O-ring. The O-ring sealing capability is provided by radial squeeze. Tightening the fluid tip beyond snug does not prevent or eliminate fluid leaks.

6. Tighten the fluid tip with the internal hex of the combination tool until it is snug. Do not overtighten the fluid tip.
7. Make sure the air cap rests in the groove in the bottom of the retaining ring and that it rotates freely.

NOTE: You may want to remove the air cap, install the appropriate KVLP compliance kit, and test for optimum performance. Refer to *KVLP Performance Testing* on page 4-5.

8. Screw the retaining ring and air cap assembly onto the extension. Hold the air cap in the desired position and tighten the retaining ring until it is snug.

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

OBSOLETE

Section 4

Operation



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



WARNING: The Kinetix spray gun, EPS6 power supply, Nordson high-voltage cable, Nordson waterborne hose, and the Iso-Flo unit are considered a system. The stored energy of the system could be dangerously increased by any changes. Nordson Corporation should be contacted before any changes are made.



WARNING: Do not add any joints or fittings to the waterborne fluid hose intended for use with spraying charged fluid. If the hose becomes damaged replace the entire hose assembly with the appropriate Nordson Corporation hose of identical length.

Introduction



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



WARNING: Do not exceed the maximum fluid pressure rating of 6.9 bar (100 psi). Failure to follow this warning may result in death or personal injury.



WARNING: The spray gun includes a trigger lock. Engage the trigger lock to prevent accidental triggering of the spray gun and possible injection injuries. Failure to observe this warning may result in injury.

Introduction *(contd)*

NOTE: Read this entire section before performing any procedures.

Before operating the spray gun, make sure that

- the fluid tip is securely tightened and the air cap is correctly installed and secured with the retaining ring.
- all fluid and air connections are secure and leak-free. The fluid hose is grounded to the Iso-Flo cabinet.
- air supply and fluid-delivery components are correctly installed. All conductive system components and flammable material containers are securely connected to a true earth ground.
- the operator's station and spray area are clean and free of debris.

System Startup



WARNING: Never operate the spray gun with a worn or damaged trigger lock. Failure to observe this warning may result in injury.

NOTE: When starting a new spray system for the first time, flush the fluid delivery system, hose, and spray gun with a solvent compatible with the coating material to be used. Remove the air 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 then turn on the air supply shutoff valve. Adjust the air pressure as required for your application. Do not exceed 6.9 bar (100 psi).
2. Pressurize the system with fluid. Do not exceed 6.9 bar (100 psi).
3. Turn on the fluid heaters, if used. Do not exceed 82 °C (180 °F).
4. Check the fluid-delivery system for leaks.
5. Adjust the fluid and air pressures to achieve optimum atomization and desired pattern width. Refer to *Spray Pattern and Atomization Adjustments* on page 4-3.
6. Lock the spray gun trigger and turn on the Iso-Flo system. Refer to the appropriate Iso-Flo system manual for procedures.
7. Unlock the trigger and trigger the spray gun to verify that electrostatics are on.

Fluid Pressure and Flow Rate Adjustments

Shut off the air supply to the spray gun and check the fluid flow rate.

For optimum atomization, an appropriate fluid supply pressure should develop an unatomized fluid stream that breaks at a distance of 25.4–35.6 cm (10–14 in.). If the flow rate does not have an acceptable fluid stream, increase the fluid tip diameter and adjust the fluid pressure until a break of 25.4–35.6 cm (10–14 in.) is achieved at your required flow rate.

If the flow rate is too high, turn the fluid control knob clockwise in small increments. This will decrease needle travel and fluid flow. For more significant flow rate changes, adjust the fluid supply pressure or use the next smallest or largest fluid tip.

For best results, leave the fluid control knob adjusted fully open. If you have to limit the stroke to less than half the needle travel, you are using too large a fluid tip.

NOTE: Make sure that the atomization and horn air pressures are 0.69 bar (10 psi) or less. KVLP spray guns will provide optimum transfer efficiency when air pressures are limited to less than 0.69 bar (10 psi) but it is not required.

Spray Pattern and Atomization Adjustments

Obtaining the correct spray pattern, 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 steps:



WARNING: Shut off the power supply. Failure to observe this warning could result in personal injury.

1. Set the supply air pressures to the spray gun. Use the lowest possible air pressure to obtain proper atomization of the coating material. Increasing the air pressure provides finer atomization. Decreasing the air pressure provides coarser atomization. Refer to *KVLP Performance Testing* on page 4-5 for suggested starting air pressures.
2. Point the spray gun into a booth and trigger the spray gun.
3. Adjust the horn air supply pressure to achieve the desired spray pattern. Higher pressures will generate a wider fan pattern. Lowering the pressure will decrease the pattern width and create a rounder pattern.

Spray Pattern and Atomization Adjustments *(contd)*

4. Repeat steps 1, 2, and 3 until you achieve the desired spray pattern and atomization. If necessary, adjust the fluid and air pressure at the fluid and air delivery systems. Use the lowest atomizing air pressure possible along with the appropriate fluid flow rates to ensure maximum transfer rates and highest quality finishes.
5. **If you are using a KVLP air cap and fluid tip:** Test for optimum KVLP performance. Both atomizing and horn air pressures must be 0.69 bar (10 psi) or less. Refer to *KVLP Performance Testing* on page 4-5.

Fluid Tips and Air Caps



WARNING: Shut off the fluid-delivery system and relieve system fluid pressure before removing the air cap or fluid tip. Failure to observe this warning could result in personal injury.

Different combinations of fluid tips and air caps can improve atomization and spray patterns with various coating materials and viscosities. If the fluid flow and air adjustments described previously do not produce the desired results, try a different combination of fluid tip and air cap.

A full range of airspray and KVLP fluid tips and air caps are available that can improve coating quality. Refer to the *Kinetix KVLP and Air Spray Fluid Tip and Aircap Selection Charts* included with this manual for part numbers. Refer to *KVLP Performance Testing* on page 4-5 for information on optimum KVLP performance.

Shutdown



WARNING: Shut off the power supply. 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 before removing any spray gun components. Failure to observe this warning could result in personal injury.

Short-Term

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

Long-Term



WARNING: Shut off the fluid delivery system and relieve the system fluid pressure before removing any spray gun components. Failure to observe this warning may result in personal injury.,

1. Shut off the power supply.
2. Flush the fluid-delivery system, fluid hose, and spray gun with a compatible solvent.

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

3. Shut off the Iso-Flo fluid-delivery system.
4. Relieve system fluid and air pressures.
5. Trigger the spray gun into a waste container to relieve fluid and air pressures.
6. Remove the air cap or fluid tip.

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.

KVLP Performance Testing

To maintain optimum KVLP performance, both atomizing and horn air pressures should be 0.69 bar (10 psi) or less. Each KVLP air cap has a corresponding KVLP compliance kit that consists of a modified air cap, air tubing, and pressure gauges. Kits must be ordered separately for each type of air cap. Refer to the *Kinetix KVLP and Air Spray Fluid Tip and Aircap Selection Charts* included with this manual for part numbers.

NOTE: The 0.69 bar (10 psi) limit is for reference only and is not required. Many coating materials can be atomized using less pressure. Lower pressures will result in a softer pattern which will lead to better transfer efficiency, assuming that there is enough air to adequately atomize the coating material.

Table 4-1 provides air pressure settings you can use as an approximate starting point when setting up your spray gun. Table 4-1 shows the approximate static regulator setting (psig) and resulting airflow (scfm) at an atomizing air cap pressure of 10 psig. This data was generated using 25-ft of $\frac{3}{8}$ -in. OD wall tubing. Note that any restrictions in the line after the regulator, such as 90-degree fittings, quick disconnects, or valves, will affect the pressures at the air cap.

KVLP Performance Testing *(contd)*

The air pressure settings in Table 4-1 do not guarantee optimum KVLP performance. After making an air pressure setting, perform an KVLP compliance test. See Figure 4-1 and refer to *Checking Air Cap Performance* on page 4-7 for kit installation.

Table 4-1 Air Pressure Settings – Wall Mounted Regulator with 7.62-m (25-ft), 9.5-mm ($\frac{3}{8}$ -in.) ID Air Hose

Fluid Tip Orifice	Approximate Static Regulator Pressure Setting (psig) and Approximate Air Flow (scfm) at Maximum Compliance Condition									
	Air Cap									
	325714		325715		325716		325717		325719	
	psig	scfm	psig	scfm	psig	scfm	psig	scfm	psig	scfm
0.030	23	11	25	12	27	13	30	15	37	18
0.035	22	11	25	12	27	14	30	15	37	19
0.040	23	11	24	12	26	14	30	15	36	19
0.050	20	10	22	11	24	12	26	13	32	17
0.060	X	X	20	10	22	11	24	12	30	15
0.070	X	X	X	X	21	10	23	11	29	15
0.080	X	X	X	X	X	X	23	11	29	14
0.100	X	X	X	X	X	X	X	X	24	12
Fluid Tip Orifice	Approximate Static Regulator Pressure Setting (psig) and Approximate Air Flow (scfm) at Maximum Compliance Condition									
	Air Cap									
	325721		325723		325725		325727			
	psig	scfm	psig	scfm	psig	scfm	psig	scfm		
0.030	46	23	57	28	65	32	69	34		
0.035	46	23	57	28	66	33	70	34		
0.040	45	22	56	28	66	33	67	33		
0.050	40	20	49	25	59	29	68	33		
0.060	38	19	49	25	60	30	66	32		
0.070	36	18	45	23	56	28	65	32		
0.080	36	18	46	23	58	28	66	32		
0.100	30	15	38	20	48	24	62	31		
NOTE: X represents combination that is not practical. Consult your Nordson Corporation representative if this combination is desired.										

Checking Air Cap Performance



WARNING: Shut off the fluid-delivery system and relieve system fluid pressure before performing a compliance test. Failure to observe this warning could result in personal injury.

NOTE: This procedure is only necessary to achieve optimum air cap performance in order to achieve optimum transfer efficiencies. It is acceptable to exceed pressure limits. The lower the air pressure, the softer the spray.

1. Turn off the Iso-Flo power supply.
2. Shut off the Iso-Flo fluid-delivery system and relieve fluid pressure to prevent fluid from spraying while performing the compliance test.
3. See Figure 4-1. Remove the production air cap and retaining ring and replace them with the air cap (4) and retaining ring (1) included with the KVLP compliance kit.
4. Trigger the spray gun to fully open the air valve.
5. Check the air pressure gauges (2, 3). Both atomizing and horn pressures should be 0.69 bar (10 psi) or less.
6. If the atomization pressure exceeds 0.69 bar (10 psi), reduce the atomization air supply pressure and check the atomization quality.
7. If the horn air pressure exceeds 0.69 bar (10 psi),
 - turn the horn air valve clockwise to reduce the pressure. This will automatically increase the atomization air pressure.
 - or
 - reduce the supply pressure. This will automatically lower both the atomizing and horn air pressures.
8. Install the production air cap and check the fluid atomization.

NOTE: You can check the atomization quality with the compliance cap installed. Simply make sure the tubing is not interfering with the spray pattern and is not crimped when held back.

9. If atomization quality is unacceptable, install the next size larger air cap or increase the air pressure above optimum level.

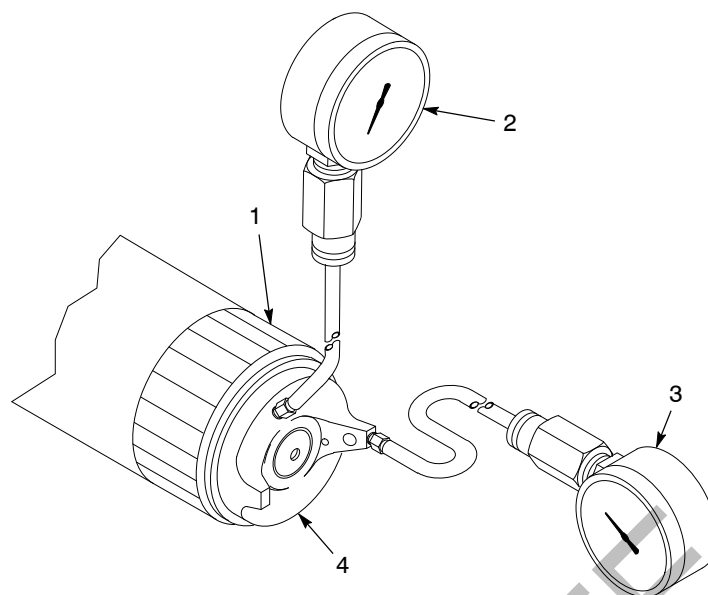


Figure 4-1 Checking Air Cap Performance

- 1. Retaining ring
- 2. Atomizing air gauge

3. Horn air gauge

4. Compliance air cap

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.

NOTE: Three spray gun covers are provided with each spray gun. Keeping the spray gun clean can minimize wrapback and improve transfer efficiency.

Daily

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



WARNING: Shut off the power supply. Failure to observe this warning could result in personal injury.



WARNING: Shut down the system and relieve all fluid and air pressures before performing these procedures. Failure to observe this warning could result in injury.

1. Turn off the Iso-Flo power supply. Refer to the appropriate Iso-Flo system manual.
2. Shut down the atomizing and horn air pressures.
3. Flush the fluid delivery system, fluid hose, and spray gun with a compatible solvent.
4. Shut down the fluid-delivery system and relieve all fluid and air pressures.
5. Point the spray gun into the booth or grounded waste container. Trigger the spray gun to relieve any residual pressure. Lock the trigger.



CAUTION: To prevent damage to the needle and fluid tip seat, trigger the spray gun to pull the needle back before removing or installing a fluid tip.

6. Remove the fluid tip and air cap.

Daily *(contd)*



CAUTION: Use a non-conductive solvent compatible with your coating material. Cleaning with conductive solvents can result in loss of kV, carbon tracking, and permanent damage to spray gun components.



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



CAUTION: Avoid cleaning the spray gun with pressurized solvents. Spraying with pressurized solvents can force the solvent into spray gun cavities, potentially damaging spray gun components.

7. Remove the O-ring from the fluid tip then soak the fluid tip and air cap in a suitable non-conductive solvent to dissolve any accumulated coatings, then use the brush included with the spray gun to clean them.
8. Clean the spray gun extension frequently with a clean cloth dampened with non-conductive solvent. Do not soak the spray gun in solvent.
9. Dry the fluid tip, air cap and spray gun with low-pressure air from an OSHA-approved blowgun.
10. Replace the O-ring on the fluid tip. Lubricate the O-ring with O-ring grease.

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. 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 our coating material. Cleaning with conductive solvents can result in carbon tracking and loss of kV.



CAUTION: Avoid cleaning the spray gun with pressurized solvents. Spraying with pressurized solvents can force the solvent into spray gun cavities, potentially damaging spray gun components.

System Flushing

1. Relieve system air and fluid pressure and make sure the spray gun cannot be activated.
2. Turn off the Iso-Flo power supply. Refer to the appropriate Iso-Flo system manual.
3. Remove the retaining ring and air cap.
4. Point the spray gun down into a grounded waste container. Trigger the spray gun to drain the spray gun and hose. Lock the trigger.
5. Turn on the solvent supply and adjust it to the lowest possible pressure.
6. Unlock the trigger and spray 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, atomization, and horn air hoses.

Spray Gun Cleaning

NOTE: Trigger the spray gun to pull the needle out of the seat before removing the fluid tip. This will prevent damage to the needle and the seat.

Routine Cleaning

1. Remove the fluid tip.
2. Disconnect the air hose and fluid hose.



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 air cap. Using metal tools will damage the fluid tip and air 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.
4. Dampen a soft cloth with a compatible cleaning solvent. Point the spray gun downward and clean the exterior.
5. Clean the fluid tip, air cap, and retaining ring as described in the *Daily* maintenance procedure on page 5-1.
6. Install the retaining ring, air cap, and fluid tip making sure the needle is retracted before installing the fluid tip.
7. Install the air hose and fluid hose.

Extensive Cleaning

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

NOTE: Allow parts that have been soaked or heavily washed in solvent to dry thoroughly (overnight) before assembling and reusing the spray gun.

OBSOLETE

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. 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 procedures 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
1. Spray gun spitting	Clogged or damaged fluid tip or needle	Clean or replace the needle and/or fluid tip.
	Partially plugged or dirty air cap	Clean the air cap.
	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.
2. Air leaks	Foreign matter on air valve or worn air valve	Remove and clean the air valve and its seals.
	Worn or damaged air seal O-rings or other air seals	Replace the air seal O-rings or other or other seals.
3. Fluid leak from front of spray gun	Worn or damaged fluid tip O-ring	Replace the fluid tip O-ring.
	Worn or damaged needle or seat	Replace the fluid tip if the seat is damaged. Replace the needle if it is damaged.
4. Fluid leaking from rear of extension	Worn or damaged packing cartridge O-ring	Replace the O-ring and backup ring.
	Worn or damaged packing cartridge	Replace the packing cartridge (packing cartridge cannot be repaired).
5. Spray pattern not affected by air adjustments	No air to spray gun	Supply air to the spray gun. Check for blockage in the air spray line. Adjust the supply air regulator.
	Atomization air pressure too high	Decrease the atomization air pressure.
	Plugged holes in air cap	Clean the air cap.
6. Low or erratic fluid flow	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	WARNING: Do not exceed the maximum fluid pressure rating of 6.9 bar (100 psi). Slowly raise the fluid pressure until the desired fluid flow is obtained.
	Fluid too viscous	Lower viscosity by adding solvent or increasing the fluid temperature.

Problem	Possible Cause	Corrective Action
6. Low or erratic fluid flow (<i>contd</i>)	Damaged fluid tip or air cap	Inspect the fluid tip and air cap; replace them if they are damaged.
	Fluid needle has backed out of packing cartridge fitting	Screw the needle into the packing cartridge fitting. If the problem persists, make sure the operators are pulling the trigger before removing the fluid tip. A removable threadlocking compound can be applied to the threads of the needle to keep it in place.
7. Coarse spray	Air pressure too low for fluid flow rate	Decrease the fluid flow rate or increase the air pressure. Change air cap and fluid tip.
	Fluid viscosity too high for atomization air pressure	Increase atomization air pressure, use a larger air cap, or reduce fluid viscosity by either adding solvent or increasing fluid temperature.
	Obstructed atomizing air orifice	Clean the air cap and exterior surface of fluid tip.
	Damaged fluid tip or air cap	Inspect the fluid tip and air cap; replace them if they are damaged.
	Solvent evaporates too quickly	Use slower evaporating solvent. Contact your material supplier.
8. Excessive overspray	Atomization air pressure too high	Decrease the atomization air pressure.
	Fluid pressure too high	Use a larger fluid tip and reduce the fluid pressure.
9. Excessive bounce back	Air and fluid pressures too high	Decrease the air pressures.
	Horn air pressure too high	Decrease the horn air pressure.
10. Dry spray	Spray gun held too far away from substrate	Move the spray gun closer to the substrate.
	Horn air pressure too high or fluid pressure too low	Decrease the horn air pressure or increase the fluid pressure. Change the air cap or fluid tip.
11. Paint or coating material is wrapped back	Spray gun needs to be cleaned	Clean the spray gun. Refer to <i>Spray Gun Cleaning</i> on page 5-3. Use a gun cover.

Spray Pattern/Film Build Troubleshooting

See Figure 6-1.

Problem	Possible Cause	Corrective Action
1. Blown pattern (1)	Horn air pressure too high.	Decrease the horn air pressure.
	Fluid pressure too low	Increase the fluid pressure.
2. Heavy bottom (2), top (3), left (4) or right (5) pattern	Partially clogged air cap or fluid tip	Rotate the air cap and trigger the spray gun. If the problem persists, clean the air cap. If the problem still persists, clean the fluid tip or inspect the air cap and fluid tip for damage. Replace if necessary.
	Fluid viscosity incorrect	Change the fluid viscosity.
3. Heavy center (6)	Atomization or horn pressure too low	Increase the atomization and horn air pressure.
	Fluid pressure too high	Decrease the fluid pressure.
	Fluid too viscous	Decrease the fluid viscosity.
4. Spitting (7)	Air in fluid line	Purge air from the fluid-delivery system.
	Atomization or horn air pressure too low	Increase the atomization air and fluid pressure and/or increase the horn air pressure.
	Fluid too viscous	Decrease the fluid viscosity.
5. Runs and sags	Air in fluid line	Purge air from the fluid-delivery system.
	Atomization air pressure too low	Increase the atomization air pressure.
	Fluid pressure too high	Decrease the fluid pressure.
	Spray gun too close to substrate	Move the spray gun farther from the substrate.
	Horn air pressure is too low	Increase the horn air pressure.
	Fluid too viscous	Decrease the fluid viscosity.
6. Dry spray	Atomization air pressure too high	Decrease the atomization air pressure.
	Spray gun too far from the substrate	Move the spray gun closer to the substrate.
	Horn air pressure too high	Decrease the horn air pressure.
	Fluid viscosity incorrect	Change the fluid viscosity.
7. Poor coverage in recesses	Atomization air pressure too high	Decrease the atomization air pressure.
	Fluid pressure too low	Increase the fluid pressure.
	Spray gun too far from the substrate	Move the spray gun closer to the substrate.

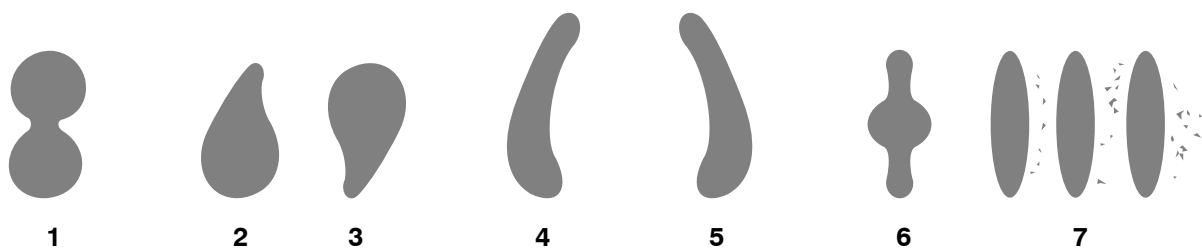


Figure 6-1 Common Spray Pattern Faults

- | | | |
|------------------|---------------------|-----------------|
| 1. Blown pattern | 4. Heavy left side | 6. Heavy center |
| 2. Heavy bottom | 5. Heavy right side | 7. Spitting |
| 3. Heavy top | | |

Electrostatic Troubleshooting

Problem	Possible Cause	Corrective Action
1. No electrostatic voltage, or the electrostatic voltage is low or erratic	Coating material is grounding out	Inspect the hose and repair or replace it as necessary.
	Defective electrostatic power supply, electrostatic cable, cable connection, or control circuit	Check the electrostatic equipment and repair or replace as necessary. Refer to the appropriate Iso-Flo system manual.
	Leaking packing cartridge	Check the packing cartridge for leaks. Clean the packing cartridge bore and install a new packing cartridge and dielectric grease.
2. Supply system malfunction	Supply system grounding out	Check the supply system.

OBSOLETE

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. Failure to observe this warning could result in personal injury.



WARNING: Shut down the system and relieve all fluid and air pressures before performing these procedures. Failure to observe this warning could result in 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).



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
- Needle tool (provided with your spray gun)
- Needle nose pliers (provided with your spray gun)
- $\frac{5}{32}$ -in. hex wrench
- Small, flat-blade screwdriver
- Phillips-head 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.

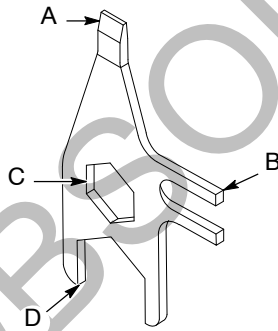


Figure 7-1 Combination Tool

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

Air Cap and Fluid Tip Replacement

See Figure 7-2.

1. Turn off the Iso-Flo system. Refer to the appropriate Iso-Flo system manual.
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. Move the spray gun to a clean, dry, flat surface.
5. Unscrew the retaining ring (1) and air cap (A) assembly from the extension, then unscrew the air cap from the retaining ring.

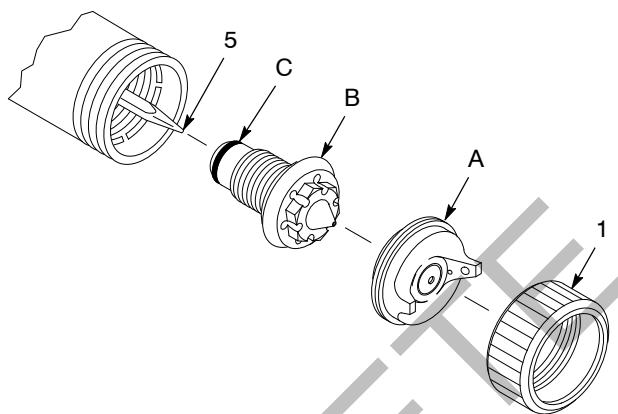


Figure 7-2 Air Cap and Fluid Tip Replacement

- | | |
|-------------------|--------------|
| 1. Retaining ring | B. Fluid tip |
| 5. Needle | C. O-ring |
| A. Air cap | |



CAUTION: To prevent damage to the needle and fluid tip seat, trigger the spray gun to pull the needle back before removing or installing a fluid tip.

6. Trigger the spray gun to retract the needle (5). Place the hex on the combination tool over the hex on the fluid tip (B) and unscrew it from the extension.
7. Make sure the O-ring (C) is installed on the new 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.



CAUTION: To prevent damage to the needle and fluid tip seat, trigger the spray gun to pull the needle back before removing or installing a fluid tip.

8. Trigger the spray gun to retract the needle. Screw the new fluid tip into the extension. Tighten the fluid tip snugly.
9. Screw the new air cap into the retaining ring until it bottoms out in the groove and turns freely then screw the retaining ring onto the extension and tighten it securely by hand.

Trigger Lock Replacement

See Figure 7-3.



WARNING: Never operate the spray gun with a worn or damaged trigger lock. Failure to observe this warning could result in injury.

1. Drive the pin (20) out of the trigger lock (19) and handle (10) with a small dowel pin.
2. Hold the new trigger lock in place and drive the new pin through the lock and handle holes. The pin should be approximately flush with the trigger lock surfaces.

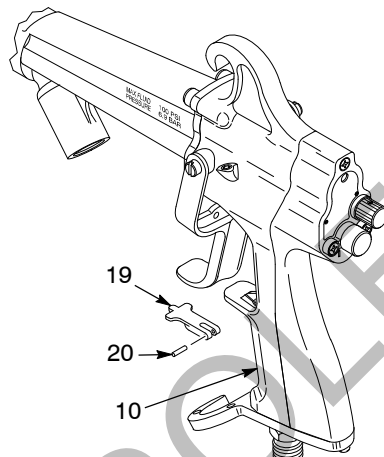


Figure 7-3 Trigger Lock Replacement

10. Handle
19. Trigger lock

20. Pin

Air Inlet Fitting Replacement

See Figure 7-4.

Air Inlet Fitting Removal

1. Remove the horn air adjust valve knob (36) by loosening its set screw (37).
2. Loosen the fluid hose collar nut (A) to remove the fluid hose from the ground bracket (23).
3. Remove the screws (38, 24) to remove the back cover (33) from the handle and the bracket.
4. Slowly pull the back cover away from the handle.

5. Unscrew the air inlet fitting/coupling (26) from the handle base and replace its O-ring (25). Lubricate the O-ring with MagnaLube G or an equivalent PTFE-based lubricant.

Air Inlet Fitting Installation

1. Screw the end of the air inlet fitting/coupling into the handle base. Tighten the fitting finger-tight.
2. Install the bracket over the fitting hex. Tighten or loosen the air inlet fitting/coupling slightly to align the fitting to the hex in the bracket.
3. Install the back cover using the three screws (38). Tighten the screws to 0.9–1.13 N•m (8–10 in.-lb).
4. Secure the bracket to the handle and back cover using the two screws (24). Tighten the screws to 1.36–1.69 N•m (12–15 in.-lb).
5. Secure the fluid hose to the ground bracket by tightening the fluid hose collar nut (A).
6. Secure the horn air adjust valve knob on the back cover by tightening its set screw.

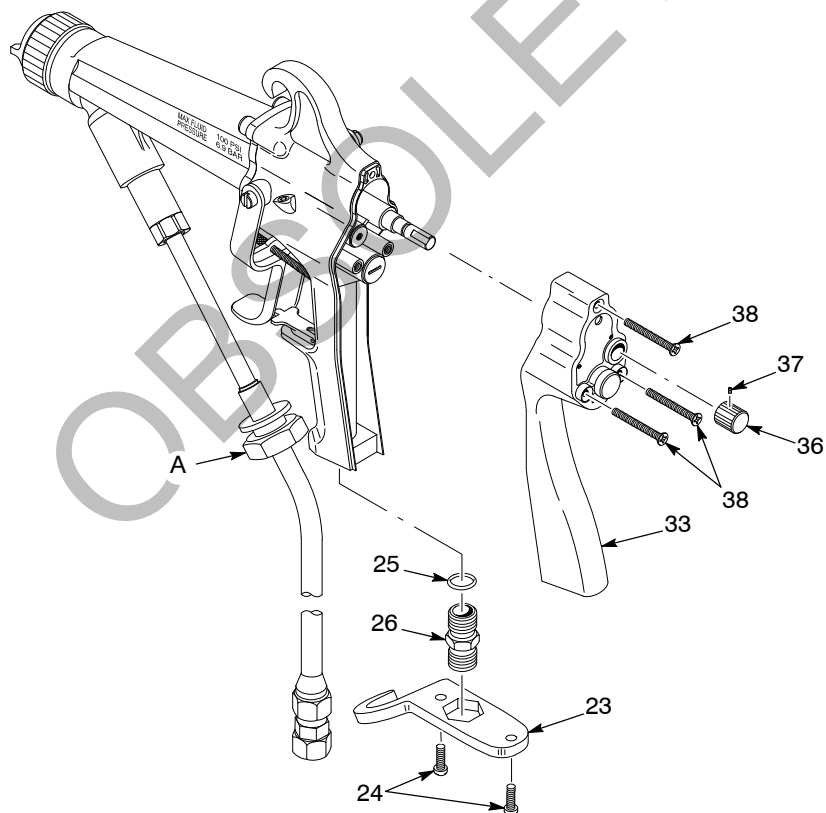


Figure 7-4 Air Inlet Fitting Replacement

- | | | |
|--------------------|--------------------------------|--------------------------|
| 23. Ground bracket | 26. Air inlet fitting/coupling | 37. Set screw |
| 24. Screws | 33. Back cover | 38. Screws |
| 25. O-ring | 36. Horn air adjust valve knob | A. Fluid hose collar nut |

Needle Replacement

NOTE: You do not need to completely disassembly the spray gun for this procedure. To replace the entire packing cartridge and needle assembly, refer to *Packing Cartridge and Needle Replacement* on page 7-8.

Preparation

1. Turn off the power supply. Refer to the Iso-Flo system manual.
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 air cap and fluid tip as described in *Air Cap and Fluid Tip Replacement* on page 7-2.

Needle Removal

NOTE: Be careful not to bend the connecting wire on the packing cartridge.

1. See Figure 7-5. Insert the bent needle nose pliers into the gun body and grasp the square needle fitting on the end of the packing cartridge.
2. Line up the open end of the needle tool over the needle and slide it down over the needle.
3. Hold the pliers tightly then begin turning the needle removing tool to loosen the needle from the packing cartridge.

NOTE: If the needle does not break lose easily, make sure the pliers are preventing the square fitting from turning. If the needle still does not loosen, it may be necessary to remove the packing cartridge to replace the needle. Refer to *Packing Cartridge and Needle Replacement* on page 7-8.

4. Once it is loose, remove the needle.

NOTE: See Figure 7-7. The washer (6) may come out with the needle.

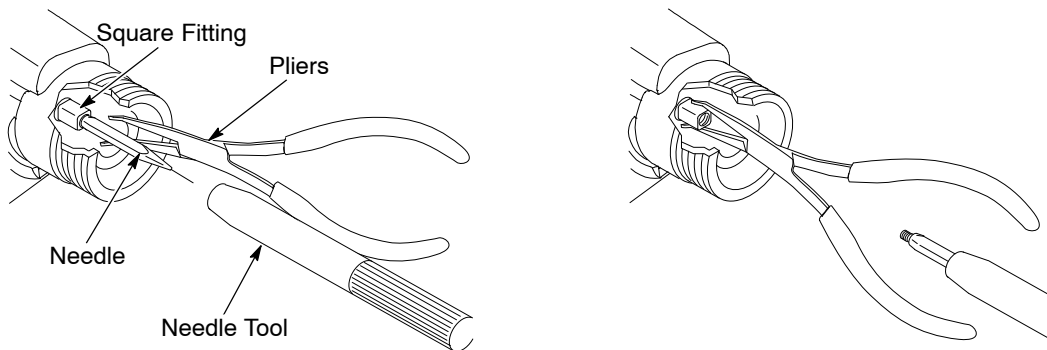


Figure 7-5 Needle Replacement

Note: The bent needle nose pliers and the needle tool are shipped with the spray gun.

Needle Installation

1. Inspect the extension bore and the threads of the packing cartridge fitting for residual material. If necessary, clean them using a squirt bottle filled with a compatible solvent.

2. See Figure 7-7. Inspect the washer (6) and replace if damaged.

NOTE: A removeable threadlocking adhesive can be applied to the threads of the new needle if there are problems with the needle backing out.

3. Screw the new needle into the square needle fitting. Tighten the needle finger tight. Wipe off excess adhesive, if used.

NOTE: Be careful not to bend the connecting wire on the packing cartridge.

4. See Figure 7-5. Insert the bent needle nose pliers into the gun body and grasp the square needle fitting on the end of the packing cartridge.
5. Line up the open end of the needle tool over the needle and slide it down over the needle.
6. Hold the pliers tight then begin turning the needle tool to tighten the needle into the packing cartridge.
7. Inspect the needle and packing cartridge fitting to make sure that the needle threads are completely engaged. If not, remove and install the needle again.
8. Install the retaining ring, air cap, and fluid tip as described in *Air Cap and Fluid Tip Replacement* on page 7-2.

Packing Cartridge and Needle Replacement



CAUTION: If the packing cartridge leaks, it is important to thoroughly 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 may 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 needle is not a component of the packing cartridge. To replace the needle only, refer to *Needle Replacement* on page 7-6. You must order the needle separately.

Preparation

1. Turn off the Iso-Flo system. Refer to the appropriate Iso-Flo system manual.
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. Move the spray gun to a clean, dry, flat surface.
5. Remove the air cap and fluid tip as described in *Air Cap and Fluid Tip Replacement* on page 7-2.

Spray Gun Disassembly

See Figure 7-6.

1. Loosen the fluid hose collar nut (A) that attaches the fluid hose to the ground bracket (23) and remove the fluid hose from the bracket.
2. Remove the two pivot screws (21) and the trigger (22).
3. Using a $\frac{5}{32}$ -in. hex wrench, remove the four socket-head screws (3) to remove the extension (2) from the handle (10). Do not lose the two face-seal O-rings (42) or the large face seal O-ring (4) installed in the handle.

NOTE: Hold on to the extension as you remove it from the handle. The packing cartridge spring will push the extension away from the handle.

4. Carefully slide the extension off of the handle. Do not lose the packing cartridge/fluid return spring (16).

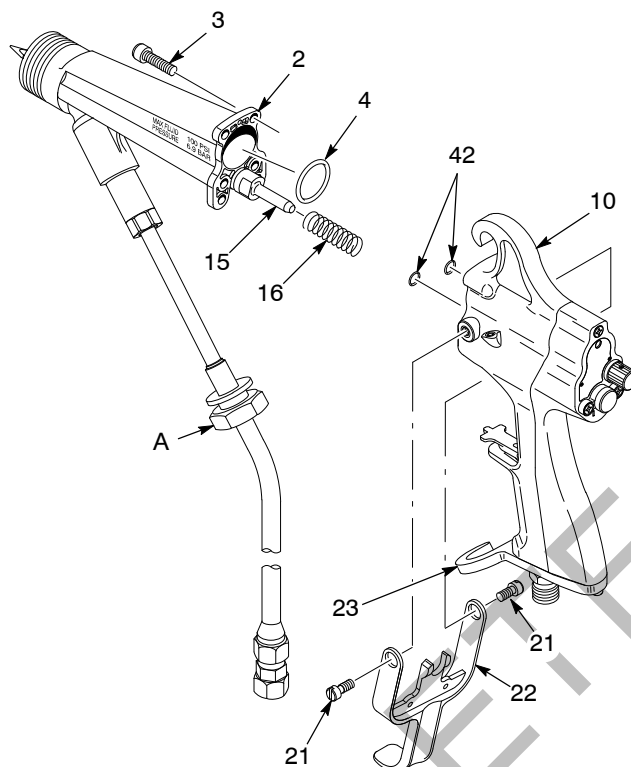


Figure 7-6 Spray Gun Disassembly

- | | | |
|---------------------------|---|--------------------------|
| 2. Extension | 15. Puller | 23. Ground bracket |
| 3. Socket-head screws | 16. Packing cartridge/fluid return spring | 42. Face-seal O-rings |
| 4. Large face-seal O-ring | 21. Pivot screws | A. Fluid hose collar nut |
| 10. Handle | 22. Trigger | |

Packing Cartridge and Needle Removal

See Figure 7-7.

1. Hold the the puller (15) by its flats and unscrew it from the pull shaft (11).
2. Push the pull shaft forward and unscrew the packing cartridge retainer (14) with the combination tool.
3. Pull the pull shaft out of the back of the extension to remove the pull shaft, packing cartridge (9), and sleeve retainer (13). Do not bend the connecting wire (A).
4. Remove the sleeve retainer from the pull shaft and unscrew the pull shaft from the packing cartridge.
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.

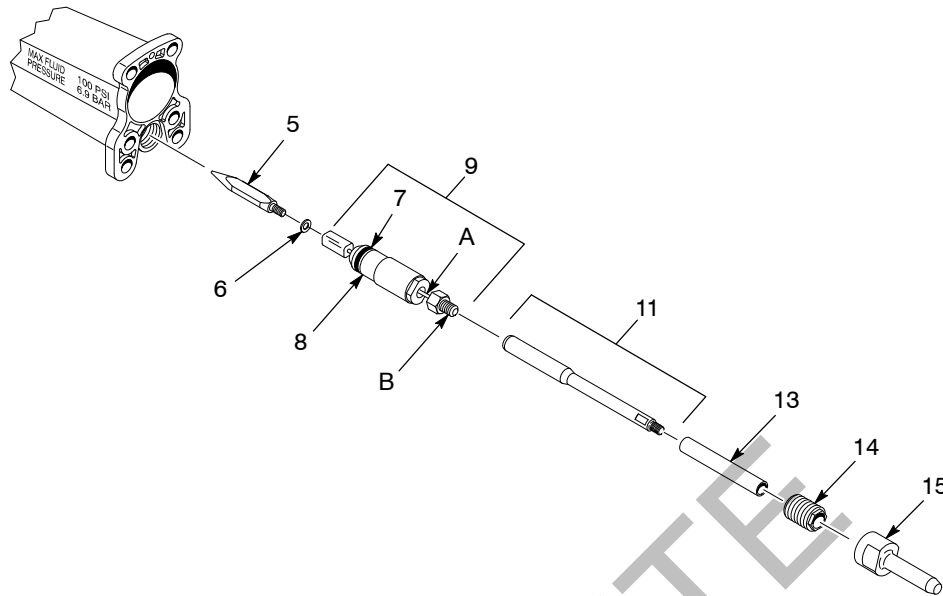
Packing Cartridge and Needle Removal (contd)

Figure 7-7 Needle and Packing Cartridge Replacement

- | | | |
|-----------------|--------------------------------|--------------------|
| 5. Needle | 9. Packing cartridge | 15. Puller |
| 6. Washer | 11. Pull shaft | A. Connecting wire |
| 7. O-ring | 13. Sleeve retainer | B. Puller fitting |
| 8. Back-up ring | 14. Packing cartridge retainer | |

6. Inspect the packing cartridge (9). If the packing cartridge is damaged, replace it with a new one.
7. Inspect and replace the packing cartridge O-ring (7) and back-up ring (8) if they are damaged. Lubricate the packing cartridge O-ring 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.
9. If the needle (5) is damaged, replace it as follows:
 - a. Hold the needle fitting on the end of the packing cartridge assembly with a wrench, slide the needle removal tool over the needle and unscrew the needle from the needle fitting.

NOTE: A removeable threadlocking adhesive can be applied to the threads of the new needle if there are problems with the needle backing out.

- b. Screw the new needle into the needle fitting. Tighten the needle finger tight until it bottoms against the fitting. Wipe off excess adhesive, if used.

Packing Cartridge and Needle Installation

See Figure 7-7.

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

1. Apply a removeable threadlocking adhesive to the threads of the packing cartridge puller fitting (B).
2. Screw the pull shaft onto the packing cartridge (9).



CAUTION: Apply dielectric grease as instructed in steps 3, 4, and 5. If it is not applied as instructed, damage to the spray gun is likely and spray gun performance and safety may be compromised.

3. Apply a liberal amount of dielectric grease to the puller fitting and the pull 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 (13) then slide the sleeve retainer over the pull shaft and push it down into the fluid bore.
5. Generously lubricate the end of the pull shaft and the inside of the packing cartridge retainer (14) 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 then 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 removeable threadlocking adhesive to the threads of the pull shaft and screw the puller onto the pull shaft.
10. Assemble the spray gun. Refer to *Assemble the Spray Gun* on page 7-11.

Spray Gun Assembly

See Figure 7-6.

1. Generously lubricate the outside diameter of the shaft puller (15) and the packing cartridge/fluid return spring (16) with MagnaLube G or an equivalent PTFE-based lubricant.
2. Generously lubricate the inside of the fluid return spring bore in the handle with MagnaLube G or an equivalent PTFE-based lubricant.
3. Insert the packing cartridge/fluid return spring and the end of the puller into the handle trigger bore and mate together the handle (10) and the extension (2).

Spray Gun Assembly (contd)

4. Secure the extension to the handle with the four socket-head screws (3). Tighten the screws to 2.27–2.83 N•m (20–25 in.-lb).
5. Insert the pivot screws (21) through the holes in the trigger (22) and into the greased insert in the handle. Make sure the trigger forks engage the pull shaft. Tighten the screws to 0.9–1.13 N•m (8–10 in.-lb).

NOTE: Pull the trigger and make sure it presses the air valve stem into the handle and pulls the needle into the spray gun.

6. Install the air cap and fluid tip as described in *Air Cap and Fluid Tip Replacement* on page 7-2.
7. Secure the fluid hose to the ground bracket (23) by tightening the fluid hose collar nut (A).
8. Turn on the fluid-delivery system and the Iso-Flo system.
9. Make sure the spray gun is working correctly and that atomization quality and spray pattern are at optimum conditions. Refer to *Fluid Pressure and Flow Rate Adjustments* on page 4-3 and *Spray Pattern and Atomization Adjustments* on page 4-3.

Horn Air Adjust Valve Replacement

See Figure 7-8.

Horn Air Adjust Valve Removal

1. Loosen the set screw (37) in the horn air adjust valve knob (36) with a $\frac{1}{16}$ -in. hex wrench. Remove the knob from the valve.
2. Loosen the fluid hose collar nut (A) to remove the fluid hose from the cable bracket (23).
3. Remove the screws (24, 38) to remove the back cover (33) from the handle and the bracket.
4. Slowly pull the back cover away from the handle.
5. Install the horn air adjust valve knob on the horn air adjust valve (40) and tighten the set screw. Unscrew the valve from the handle.

Horn Air Adjust Valve Installation

1. Inspect the horn air adjust valve and its O-rings (39, 42). Replace any damaged parts. Lubricate O-ring (39) with MagnaLube G or an equivalent PTFE-based lubricant. Lubricate O-ring (42) with dielectric grease.
2. Install the horn air adjust valve in the handle then loosen the set screw and remove the horn air adjust valve knob from the horn air adjust valve.
3. Secure the back cover using the screws (38). Tighten the screws to 0.9–1.13 N•m (8–10 in.-lb).

4. Secure the bracket to the handle and back cover with the two screws (24). Tighten the screws to 1.36–1.69 N•m (12–15 in.-lb).
5. Secure the fluid hose within the cable bracket by tightening the fluid hose collar nut (A).
6. Install the horn air adjust valve knob on the back cover and tighten the set screw.

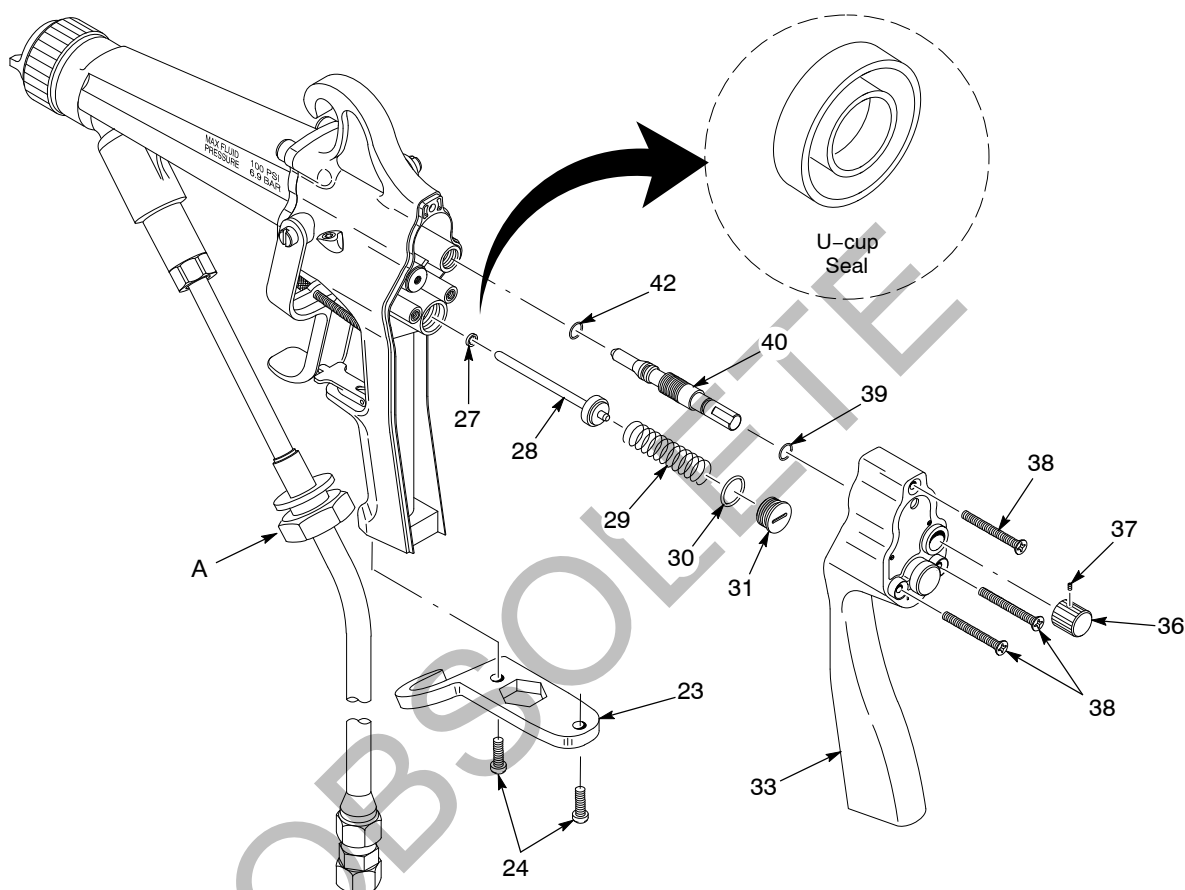


Figure 7-8 Air Valve Replacement

- | | | |
|----------------------|--------------------------------|---------------------------|
| 23. Cable bracket | 30. O-ring | 38. Screws |
| 24. Screws | 31. Air valve plug | 39. Split O-ring |
| 27. U-cup seal | 33. Back cover | 40. Horn air adjust valve |
| 28. Air valve stem | 36. Horn air adjust valve knob | 42. O-ring |
| 29. Air valve spring | 37. Set screw | A. Fluid hose collar nut |

Air Valve Replacement



CAUTION: A worn or damaged air valve could result in an air leak that triggers on the electrostatics. Replace a worn or damaged air valve immediately.

Back Cover Removal

See Figure 7-8.

1. Loosen the set screw (37) in the horn air adjust valve knob (36) with a $\frac{1}{16}$ -in. hex wrench. Remove the knob from the valve.
2. Loosen the fluid hose collar nut (A) to remove the fluid hose from the cable bracket (23).
3. Remove the screws (24, 38) to remove the back cover (33) from the handle and the bracket.
4. Slowly pull the back cover away from the handle.

Air Valve Removal

See Figure 7-8.

1. Remove the air valve plug (31) with the combination tool. Inspect the O-ring (30). Replace it if it is damaged. Lubricate the O-ring with MagnaLube G or an equivalent PTFE-based lubricant.
2. Remove the air valve spring (29) from the handle. Do not lose the spring.
3. The air valve stem (28) may come out with the spring. If it does not, push it out from the trigger side of the handle. Do not use any tools to force the stem; you may damage the U-cup seal (27) or stem bore.
4. Inspect the air valve stem. Replace the valve stem if the elastomeric seat is damaged or the stem is worn or damaged.

NOTE: If there is no damage to the air valve stem, and air does not leak from the stem bore when the trigger is pulled, you should not have to replace the U-cup seal.

5. If necessary, remove and replace the U-cup seal:
 - a. Use a small pick to pull the U-cup seal out of the handle.
 - b. Install a new U-cup seal on the air valve stem with the U facing outward. Carefully insert the stem into the stem bore and seat the U-cup into the recess surrounding the stem bore.
 - c. Remove the air valve stem. Use the blunt end of a dowel with a larger diameter than the inside diameter of the U-cup spring seal to press the seal into the bore. Make sure the end of the dowel does not have sharp edges.

Air Valve Installation

See Figure 7-8.

1. If the spring (29) comes off the air valve stem (28), snap it back on. The spring must be attached to the air valve stem or the spray gun will not work properly.
2. Insert the air valve stem through the U-cup seal (27) and through the stem bore.
3. Push the valve stem back and forth through the U-cup several times with your fingers. Pull the spring and air valve stem back out of the bore. If the U-cup spring seal comes out with the valve stem, reinstall it and reseal it.
4. Lubricate the air valve plug O-ring (30) with MagnaLube G or an equivalent PTFE-based lubricant and screw the air valve plug (31) into the handle until it is snug.
5. Secure the cable bracket (23) to the handle and back cover using the two screws (24). Tighten the screws to 1.36–1.69 N•m (12–15 in.-lb).
6. Replace the back cover with screws (38). Tighten the screws to 0.9–1.13 N•m (8–10 in.-lb).
7. Secure the fluid hose within the cable bracket by tightening the fluid hose collar nut (A).
8. Install the horn air adjust valve knob (36) on the back cover and tighten the set screw (37).

Fluid Supply Hose Replacement

See Figure 7-9.

Fluid Hose Removal

1. Turn off the power supply. Refer to the Iso-Flo system manual.
2. Turn off the fluid-delivery system and relieve the fluid pressure.
3. Loosen the collar nut (A) located at the cable bracket (23).
4. Slide the hose from the bracket.
5. Loosen the hose retaining nut (B), which is located at the extension fluid inlet boss (C), and unscrew completely.
6. Pull the hose assembly out of the extension.

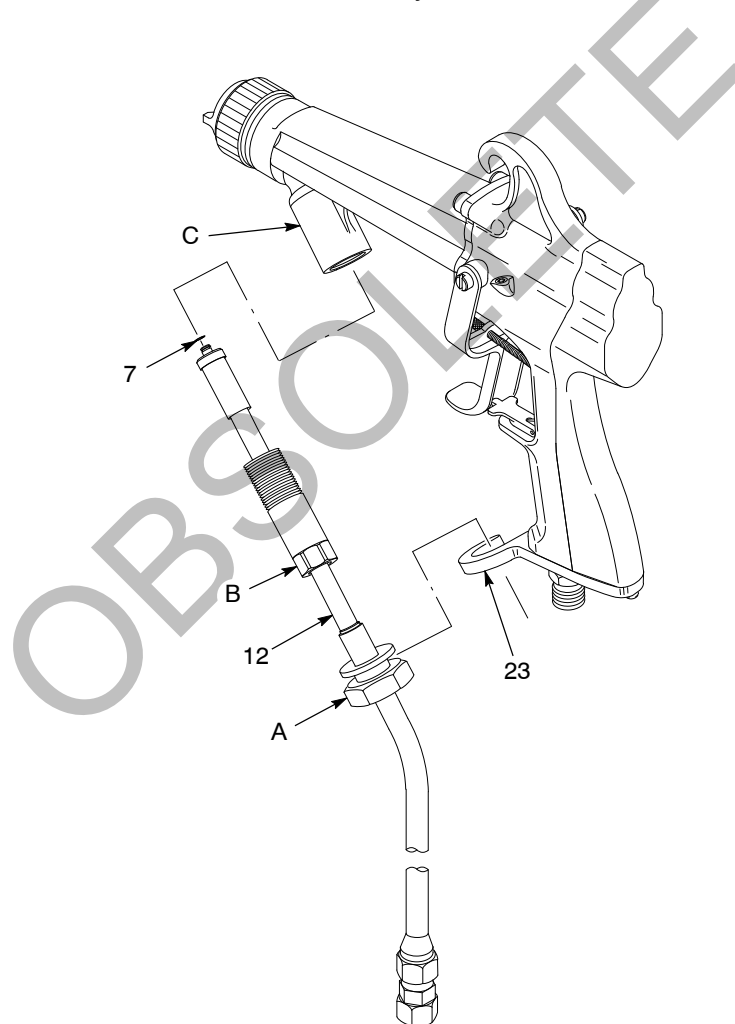


Figure 7-9 Replacing the Fluid Supply Hose

- | | |
|-------------------------|-------------------------------|
| 7. O-ring | A. Collar nut |
| 12. Fluid hose assembly | B. Retaining nut |
| 23. Cable bracket | C. Extension fluid inlet boss |

Install the Fluid Hose

1. Clean the end fittings of the hose.
2. Inspect the O-ring (7) on the end fitting. Replace it if necessary.
3. Lubricate the O-ring with dielectric grease.
4. Push the end fitting into the extension fluid inlet boss (C).
5. Screw the retaining nut (B) into the extension. Tighten the nut $\frac{1}{4}$ turn past hand tight. Do not overtighten.
6. Install the fluid hose into the cable bracket (23).
7. Tighten the collar nut (A) at the bracket to secure the fluid hose.
8. Turn on the fluid-delivery system. Refer to the appropriate fluid-delivery system manual.

NOTE: Attach a ground strap to the Iso-Flo power supply unit.

9. Turn on the power supply. Refer to the appropriate Iso-Flo system manual.

OBSOLETE

Service Illustration and Notes

Use Figure 7-10 and Table 7-1 when repairing the spray gun.

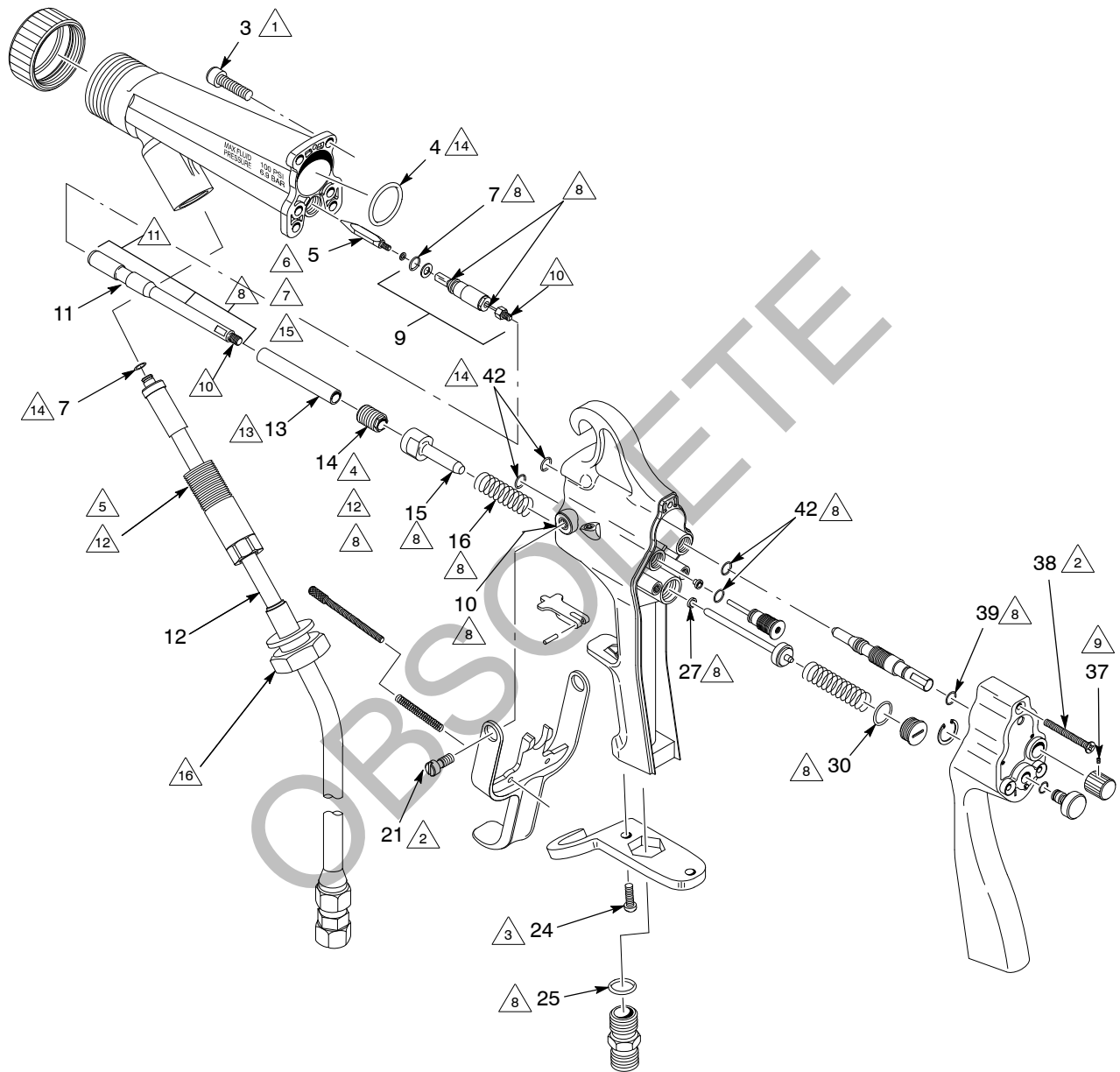


















Figure 7-10 Spray Gun Service Notes

Table 7-1 Spray Gun Service Notes

Note	Item	Description
	3	Tighten these items to 2.27–2.83 N•m (20–25 in.-lb).
	21, 38	Tighten these items to 0.9–1.13 N•m (8–10 in.-lb).
	24	Tighten these items to 1.36–1.69 N•m (12–15 in.-lb).
	14	Tighten this item hand tight.
	12	Tighten the retaining nut into the extension inlet $\frac{1}{4}$ turn past hand tight.
	5	Trigger the spray gun to pull the needle back before removing or installing a fluid tip.
	5	Tighten this item finger tight.
	7, 16, 25, 27, 30, 39, 42 9 (wire at both ends) 10 (inside the fluid return bore) 11 (end of pull shaft), 14 (inside of packing cartridge retainer) 15 (the small outside diameter)	Generously apply MagnaLube G (PTFE-filled lubricant) to these parts.
	37	Align the set screw with the flat on the the knob.
	9, 11	Apply threadlocking adhesive to the threads of these items.
	11	Apply a liberal coat of dielectric grease to these areas.
	12, 14	Apply a thin coat of dielectric grease to the threads of this item.
	13	Apply a thin coat of dielectric grease to the outside of this item.
	4, 7, 42	Apply dielectric grease to these O-rings.
	5	A removeable threadlocking adhesive can be applied to the threads of the needle if there are problems with the needle backing out.
	12	Tighten this nut $\frac{1}{2}$ turn past hand tight.

OBSOLETE

Section 8

Parts

Introduction

To order parts, call the Nordson Finishing Customer Support Center at (800) 433-9319 or your local Nordson representative. Use the parts lists 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	

Spray Gun Parts

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

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	336671	SPRAY GUN, Kinetix, 60 kV, low pressure, manual, electrostatic, waterborne	1	
1	325547	• RING, retaining, air cap	1	
2	336648	• EXTENSION, machined, 60 kV	1	
3	325752	• SCREW, socket, #10–24 x 0.625 in., stainless steel, A-286	4	
4	336499	• O-RING, PTFE, 1.05 x 0.07 in.	1	A
5	336640	• NEEDLE, electrostatic, Kinetix, 60 kV	1	
6	336396	• WASHER, flat, nylon, 0.141 x 0.187 x 0.015 in.	1	
7	940100	• O-RING, hotpaint, 0.25 x 0.375 x 0.063 in.	2	B, C
8	105527	• SERVICE KIT, ring, backup, quantity 4	1	C
9	-----	• CARTRIDGE ASSEMBLY, packing	1	C
10	336380	• HANDLE, machined, Kinetix	1	
11	336638	• SHAFT WITH STUD, packing cartridge, Kinetix	1	
12	-----	• HOSE, Kinetix, low pressure, 60 kV, 1/4-in. ID, manual, 25 ft	1	D
13	325748	• RETAINER, sleeve, packing cartridge	1	
14	325749	• RETAINER, packing cartridge, electrostatic	1	
15	325751	• PULLER, shaft, trigger, electrostatic	1	
16	325534	• SPRING, fluid return, low pressure	1	
17	336350	• SCREW, adjustment, #6–32 x 1.5 in.	1	
18	336353	• SPRING, compression, fluid adjustment	1	
19	-----	• LOCK, trigger, Kinetix	1	E
20	985438	• PIN, dowel, 0.094 x 0.438 in., alloy steel, hardened and ground	1	E
21	246526	• SCREW, pivot, trigger/handle	2	
22	336365	• TRIGGER, Kinetix	1	
23	325736	• BRACKET, cable, electrostatic, 60 kV	1	
24	325754	• SCREW, cross recess, pan, #8–32 x 0.375 in., stainless steel, A-286	2	
25	940130	• O-RING, hotpaint, 0.438 x 0.563 x 0.063 in.	1	A
<p>NOTE A: Included in air seal service kit 336634. Refer to <i>Air Seal</i> on page 8-6.</p> <p>B: Included in hotpaint fluid seal service kit 336633. Refer to <i>Hotpaint Fluid Seal</i> on page 8-7.</p> <p>C: Included in packing cartridge service kit 1089861. Refer to <i>Packing Cartridge</i> on page 8-7.</p> <p>D: Refer to <i>Hoses and Couplings</i> on page 8-8.</p> <p>E: Included in trigger lock service kit 336631. Refer to <i>Electrostatic Trigger Lock</i> on page 8-7.</p>				
Continued...				

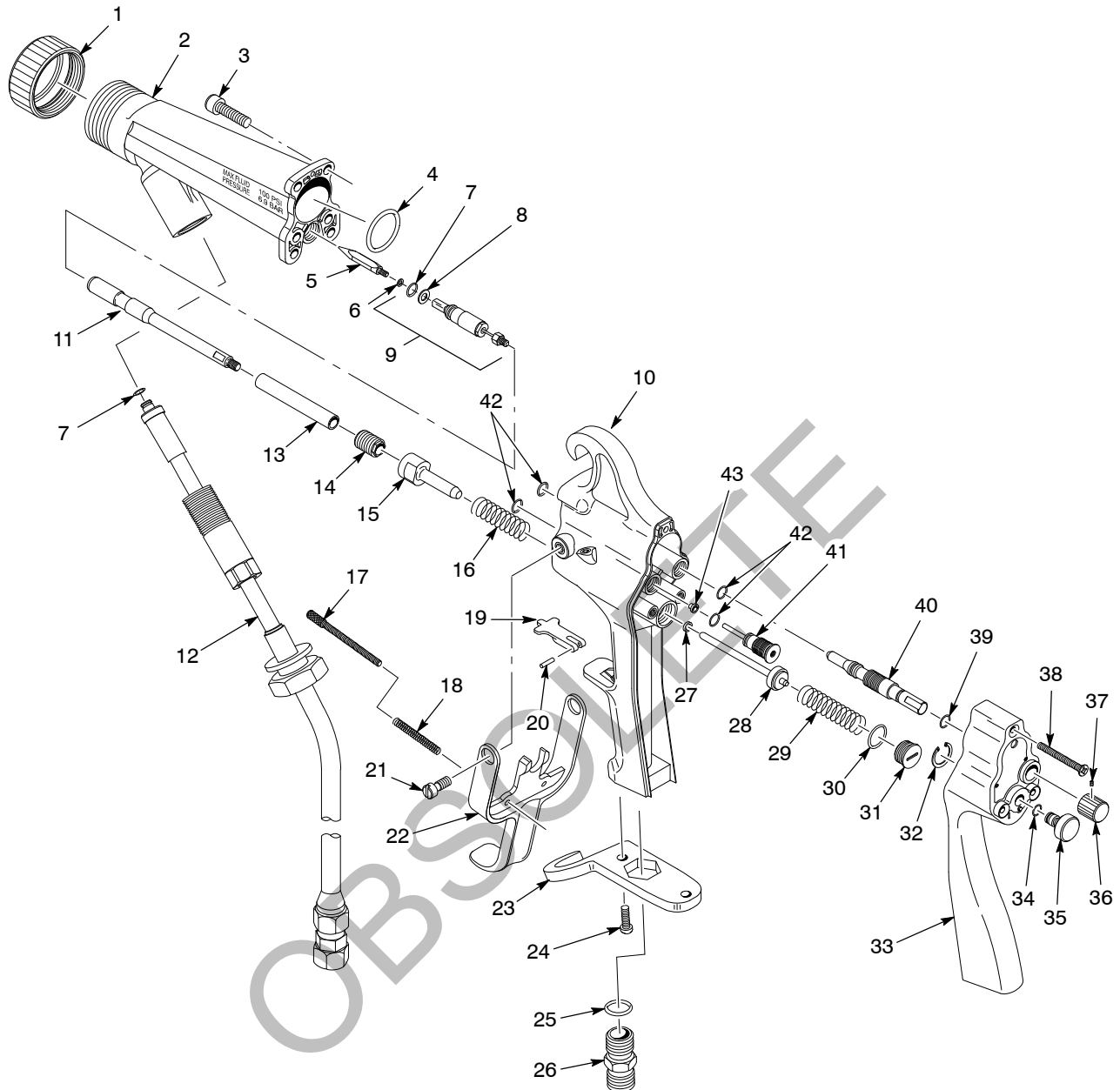


Figure 8-1 Kinetix 60 kV Air Spray and KVLP Waterborne Manual Electrostatic Spray Gun

Spray Gun Parts *(contd)*

Item	Part	Description	Quantity	Note
26	973505	• COUPLING, 1/4 x 1/4 in., brass	1	
27	955076	• SEAL, 1/8 x 1/4 x 1/16 in., PTFE	1	F
28	325523	• STEM, air valve, trigger assembly	1	F
29	325499	• SPRING, air valve	1	F
30	940140	• O-RING, hotpaint, 0.50 x 0.625 x 0.063 in.	1	A
31	1090742	• PLUG, valve, air trigger, 0.688 in. dia. head	1	
32	986030	• RETAINING RING, external, 31, basic	1	
33	336411	• COVER, electrostatic, molded	1	
34	940090	• O-RING, Viton, 0.208-in. ID x 0.07-in. wide, brown	1	A
35	325738	• PLUG, switch, hole	1	
36	325533	• KNOB, valve adjustment	1	
37	981030	• SCREW, socket set, #6-32 x 0.187 in., dog, zinc	1	
38	325760	• SCREW, cross recess, flat, #8-32 x 1.375 in., #18-8, stainless steel	3	
39	336512	• O-RING, PTFE, 0.313 x 0.438 x 0.063 in., special	1	A
40	336334	• VALVE, air adjust, electrostatic	1	
41	336376	• HEAT SINK, electrostatic	1	
42	940110	• O-RING, hotpaint, 0.313 x 0.438 x 0.063 in.	4	A
43	336427	• PLUG, air adjust, KVLP, electrostatic	1	
NS	901905	• BRUSH (wooden toothbrush type)	1	
NS	247066	• BRUSH	1	
NS	336642	• WRENCH, Kinetix, combination tool	1	
NS	227583	• BAG, cover, Kinetix	3	G
NS	1028630	• PLIERS, needle nose bent, Kinetix	1	
NS	1028631	• TOOL, needle, Kinetix	1	
<p>NOTE A: Included in air seal service kit 336634. Refer to <i>Air Seal</i> on page 8-6.</p> <p>F: Included in air valve service kit 325657. Refer to <i>Air Valve</i> on page 8-6.</p> <p>G: Order 227584 for a quantity of 12 cover bags.</p> <p>NS: Not Shown</p>				

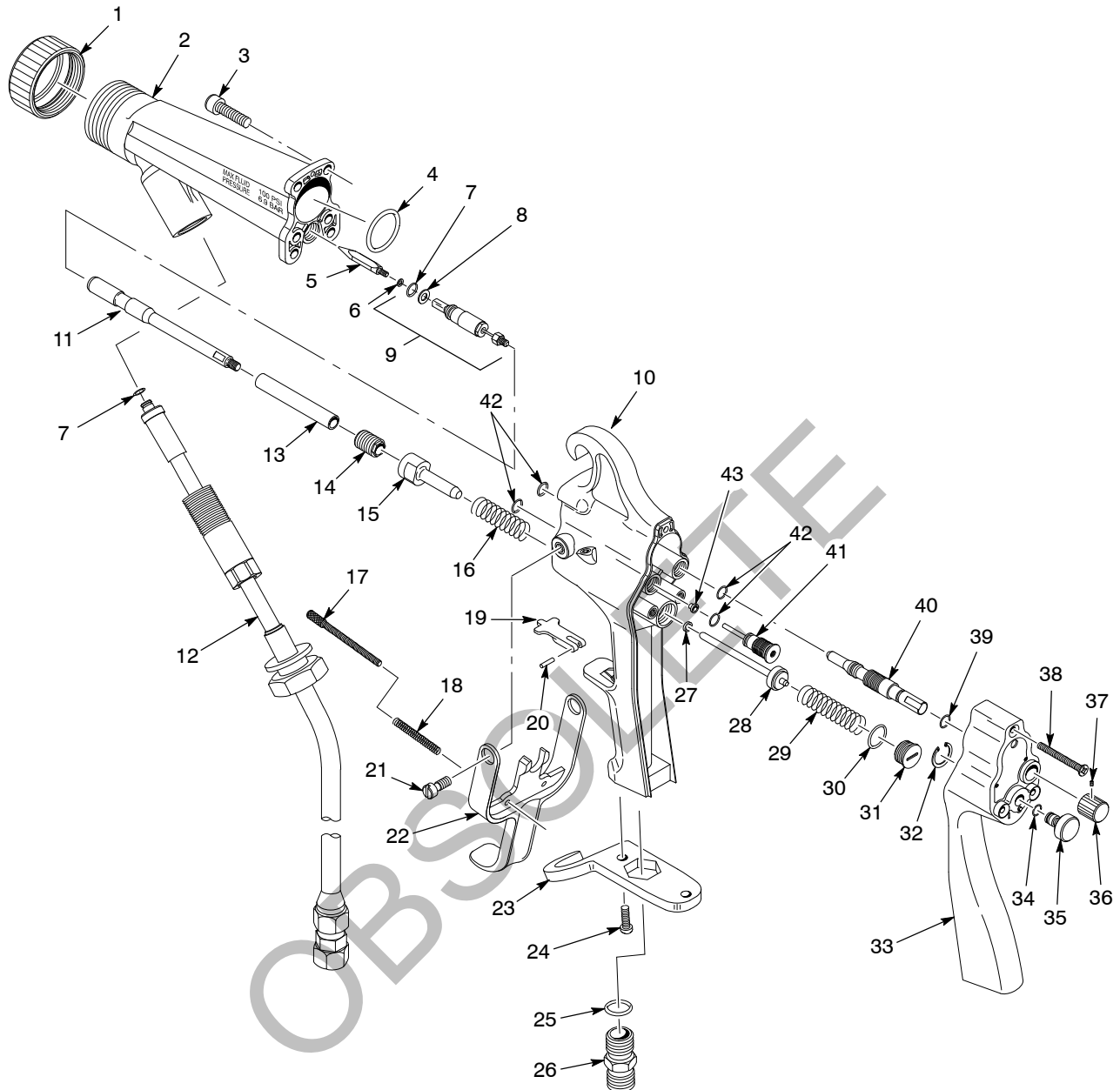


Figure 8-1 Kinetix 60 kV Air Spray and KVLP Waterborne Manual Electrostatic Spray Gun

Recommended Kits

See Figure 8-1.

Hotpaint Fluid Seal

NOTE: The hotpaint 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, C
NOTE A: Used on the packing cartridge and fluid hose. B: Used on the fluid tips. C: This part is not required for 60 kV spray guns.			

Air Seal

Item	Part	Description	Quantity	Note
—	336634	AIR SEAL KIT, hotpaint, electrostatic	1	
4	336499	• O-RING, PTFE, 1.05 x 0.070 in.	1	
25	940130	• O-RING, hotpaint, 0.438 x 0.563 x 0.063 in.	1	
30	940140	• O-RING, hotpaint, 0.50 x 0.625 x 0.063 in.	1	
34	940090	• O-RING, Viton, 0.208-in. ID x 0.07-in. wide, brown	1	
39	336512	• O-RING, PTFE, 0.313 x 0.438 x 0.063 in., special	1	
42	940110	• O-RING, hotpaint, 0.313 x 0.438 x 0.063 in.	4	

Air Valve

Item	Part	Description	Quantity	Note
—	325657	AIR VALVE KIT	1	
27	955076	• SEAL, $\frac{1}{8} \times \frac{1}{4} \times \frac{1}{16}$ in., PTFE	1	
28	325523	• STEM, air valve, trigger assembly	1	
29	325499	• SPRING, air valve	1	

Packing Cartridge

NOTE: The Kinetix spray gun is shipped standard with the gold packing cartridge, which is appropriate for most coating materials. An optional PTFE packing cartridge, part 1089862, is available for use with harsh chemical solvents such as MEK.

Item	Part	Description	Quantity	Note
—	1089861	PACKING CARTRIDGE KIT, gold, Kinetix	1	
7	336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	1	
8	-----	• BACKUP RING, single, $\frac{1}{4} \times \frac{3}{8}$ in.	1	
9	-----	• CARTRIDGE ASSEMBLY, packing	1	

Electrostatic Trigger Lock

Item	Part	Description	Quantity	Note
—	336631	TRIGGER LOCK KIT, electrostatic	1	
19	-----	• LOCK, trigger, Kinetix	1	
20	985438	• PIN, dowel, 0.094 x 0.438 in., alloy steel, hardened and ground	1	

Optional Perlast Fluid Seal

NOTE: The optional Perlast fluid seal O-rings provide solvent resistance.

Part	Description	Quantity	Note
336679	PERLAST FLUID SEAL KIT, gun, Kinetix	1	
336677	• O-RING, Perlast, 0.25 x 0.375 x 0.063 in.	2	A
336678	• O-RING, Perlast, 0.375 x 0.50 x 0.063 in.	1	B, C
336569	• BACKUP RING, conductive, 0.39-in. ID x 0.045-in. thick, cut	1	B, D
NOTE A: Used on the packing cartridge and fluid hose. B: Used on the fluid tips. C: Lubricate with dielectric grease. D: This part is not required for 60 kV spray guns.			

Optional PTFE Packing Cartridge

NOTE: The PTFE packing cartridge is available if you are spraying 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 Couplings

Hoses and couplings are not included with the spray gun and must be ordered separately.

Part	Description	Quantity
336722	HOSE KIT, Kinetix, low pressure, 60 kV, manual, 25 ft, 1/4-in. ID (standard)	1
1074130	30-FT AIR HOSE, with fittings	1
-----	• FITTING, barb, 1/4-in. NPSF x 3/8-in. hose	2
-----	• HOSE, air, 3/8-in. ID	1
-----	• CLAMP, hose	2
1074131	50-FT AIR HOSE, with fittings	1
-----	• FITTING, barb, 1/4-in. NPSF x 3/8-in. hose	2
-----	• HOSE, air, 3/8-in. ID	1
-----	• CLAMP, hose	2
1074132	100-FT AIR HOSE, with fittings	1
-----	• FITTING, barb, 1/4-in. NPSF x 3/8-in. hose	2
-----	• HOSE, air, 3/8-in. ID	1
-----	• CLAMP, hose	2
176546	25-FT AIR HOSE, with fittings	1
-----	• FITTING, barb, 5/16 x 1/4-in. NPSM	2
-----	• HOSE, 5/16 in., PVC core TPU cover	1
184367	• CLAMP, hose	2
336470	COUPLING, 3/8-in. NPSM x 3/8-in. NPSM, brass	1
972637	COUPLING, 3/8-in. NPSM x 3/8-in. NPSM, brass, electroless nickel plate	1

Adhesives, Sealants, and Lubricants

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

Part	Description	Quantity
900464	THREADLOCKING ADHESIVE (Loctite Removable 242)	1
900349	PTFE-FILLED LUBRICANT, O-ring, (MagnaLube) , 0.75-oz tube	1
247658	DIELECTRIC GREASE, applicator, 10 cc, 12 count	1

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
336633	HOTPAINT FLUID SEAL KIT, electrostatic	1	A
336679	PERLAST FLUID SEAL KIT, gun, Kinetix	1	A
336634	AIR SEAL KIT, hotpaint, electrostatic	1	
325657	AIR VALVE KIT	1	
1089861	PACKING CARTRIDGE KIT, gold, Kinetix	1	B
1089862	PACKING CARTRIDGE KIT, PTFE, Kinetix	1	B
336631	TRIGGER LOCK KIT, electrostatic	1	
336640	NEEDLE KIT, electrostatic, Kinetix, 60 kV	1	
336648	EXTENSION KIT, Kinetix, Watermark	1	
336642	WRENCH, Kinetix, combination tool	1	
227583	PROTECTIVE COVER, bag, Kinetix	6	C
900349	PTFE-FILLED LUBRICANT, O-ring, (MagnaLube) , 0.75-oz tube	1	
247639	DIELECTRIC GREASE, applicator, 10 cc, 12 count	3	
-----	FLUID TIP	1	D
-----	AIR CAP	1	D
1028630	PLIERS, needle nose bent, Kinetix	1	
227583	BAG, cover, Kinetix	6	E
1028631	TOOL, needle, Kinetix	1	
1043240	PARTS POSTER, Kinetix Manual 60 kV Air Spray and KVLP Electrostatic Spray Gun	1	
<p>NOTE A: Fluid seal kit 336633 is standard, fluid seal kit 336679 is optional.</p> <p>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.</p> <p>C: Order 227584 for a quantity of 12 protective cover bags.</p> <p>D: Refer to the <i>Kinetix Air Spray Fluid Tip and Air Cap Selection Chart</i> and the <i>Kinetix KVLP Fluid Tip and Air Spray Selection Chart</i> included with this manual for available part numbers and descriptions.</p> <p>E: For a quantity of twelve bags, order 227584.</p>			

KVLP Compliance Kit

See Figure 8-2.

Refer to the *Kinetix KVLP Fluid Tip and Air Cap Selection Chart* foldout included with this manual for kit part numbers and the part numbers of the air caps included in the kits.

Item	Part	Description	Quantity	Note
—	-----	COMPLIANCE KIT	1	A
1	325643	• GAUGE, air, 1.5-in. diameter, 0–30 psi	2	
2	972937	• CONNECTOR, female, 1/8-in. tube x 1/8-in. NPT	2	
3	-----	• TUBING, 1/8-in. diameter, gray (18 in.)	3	B
4	-----	• CAP, compliance, KVLP	1	A, C
5	971620	• • CONNECTOR, barbed, #3-56 x 1/8 in., brass	2	
6	325547	• RING, retaining, air cap	1	

NOTE A: Refer to *Kinetix KVLP Fluid Tip and Air Cap Selection Chart* included with this manual for the correct part number.

B: Order tubing in one-foot increments. Two 18-in. sections are required.

C: Compliance caps can be ordered separately corresponding to different air caps used.

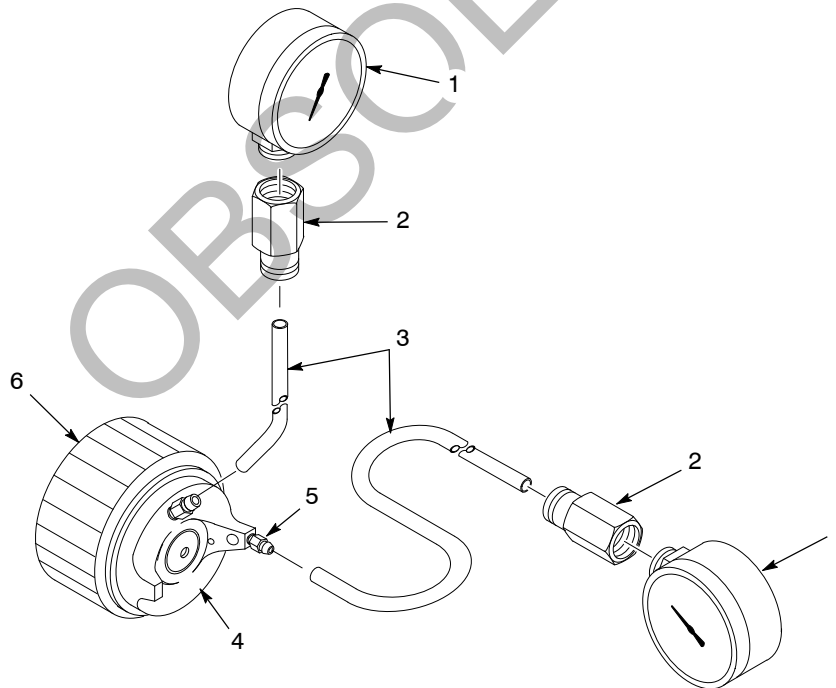


Figure 8-2 Compliance Kit Parts

Section 9

Specifications

Dimensions

Dimensions	Metric (cm)	English (in.)
Height	22.28	8.77
Length	30.48	12.00
Width	5.58	2.20
NOTE: The spray gun dimensions include the fluid and air fittings.		

Weight

Weight	Metric (g)	English (oz)
60 kV manual spray gun	661	23.3
NOTE: 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	6.9 bar	100 psi
Maximum fluid temperature	82 °C	180 °F
NOTE: Supply air must be particulate free (5 microns maximum) and oil free. Use coalescing-type air filters.		

KVLP Air Hose Requirements

KVLP Air Hose	Metric	English
Length	7.62 m 9.144 m	25 ft 30 ft
Available ID for 7.62 m (25 ft) hose	7.94 mm	$\frac{5}{16}$ in.
Available ID for 9.53 m (30 ft) hose	9.53 mm	$\frac{3}{8}$ in.

Air Spray Air Hose Requirements

Air Spray Air Hose	Specification
Fitting size	$\frac{1}{4}$ -in. NPSM, Male
Hose	You may use any grounding-type hose appropriate for your application needs.

Standard Fitting Sizes

Spray Gun Standard Fitting Sizes	
Activation (trigger) air	$\frac{1}{4}$ -in. NPSM, Male
Fluid fitting	$\frac{3}{8}$ -in. NPSM, Female

Gun Electrostatics

Maximum voltage: 60 kV

Maximum output rating current: 150 microamps

Approvals

This spray gun has met the requirements for CE and FM approvals.

1. DESCRIPTION of EQUIPMENT

TRILOGY Manual Low Pressure Air Spray / KVLP (WATERBORNE) are hand-held applicators for spraying of waterborne paint. They are supplied by HD ISO-FLO (voltage block system) and EPS6 manual controller (associated apparatus). The HD ISO-FLO system and EPS6 manual controller are installed in a safe area. The category 2 G of the TRILOGY manual applicator is strictly related to the use of waterborne paints only.

2. ELECTRICAL CHARACTERISTICS

KINETIX / TRILOGY manual waterborne applicator

Maximum voltage: 60kV
Maximum current: 150μA
Ambient temperature: 0°C to +40°C

EPS6 Manual Controller

Rated voltage: 120 – 240VAC
Rated frequency: 50 / 60 Hz
Rated current: 0.75 A
Maximum voltage out: 60kV
Maximum current out: 150μA

HD ISO-FLO Manual System

Maximum voltage: 60kV

3. MARKING

CE 1180 Ex II 2 G

1180

II

2

G

94 mJ

n° of notified body (ATEX surveillance)

group II (surface)

category 2 apparatus

explosive atmospheres caused by gas, mists or vapours of waterborne

Maximum energy at the gun tip.

<i>Hazardous area</i>		<i>Categories according to 94/9/CE Directive</i>
Gas, mists or vapours	Zone 0	1 G
Gas, mists or vapours	Zone 1	2 G
Gas, mists or vapours	Zone 2	3 G

4. SAFETY INSTRUCTIONS FOR THE INSTALLATION IN HAZARDOUS AREA

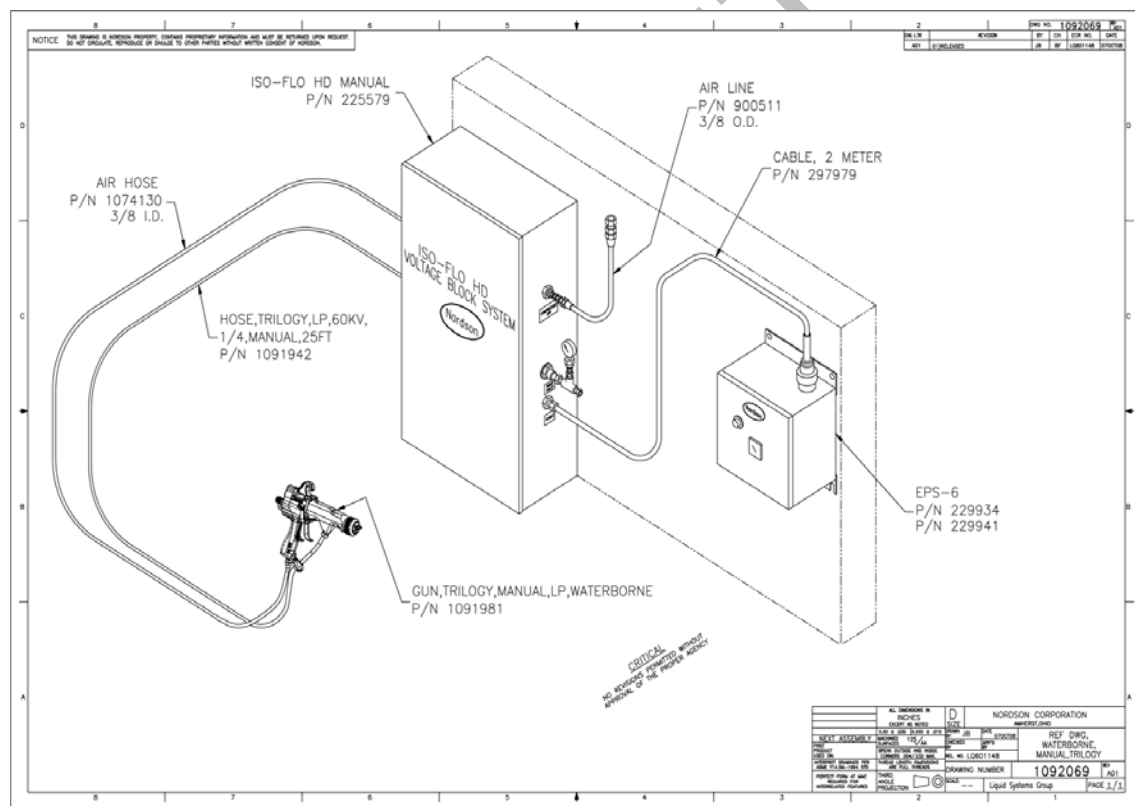
TRILOGY liquid applicator shall be installed & maintained according to the applicable standards regarding electrical installations in hazardous area.

Before the installation READ CAREFULLY the INSTRUCTION MANUAL of the TRILOGY liquid applicator and the associated apparatus HD Manual ISO-FLO and EPS6.

FOR USE WITH WATERBORNE PAINTS ONLY!

5. EXAMPLE OF APPLICATION

This shows the applicators and how a typical system is configured.



6. DECLARATION OF CONFORMITY

Nordson Corporation
Headquarters in Westlake Ohio, USA
declare under our sole responsibility that the products

**TRILOGY Liquid Applicators including Air Spray / KVLP Models used with HD Manual ISO-FLO
and EPS6. FOR USE WITH WATERBORNE PAINTS ONLY.**

to which this declaration relates complies with the following Directives:

- Machinery Directive 2006/42/EC
- EMC Directive 2004/108/EC
- ATEX Directive 94/9/EC

The conformity are under observance of the following standards or standards documents:

EN12100 (2003)	EN61000-6-2 (2007)	FM7260 (1996)
EN50059 (1990)	EN61000-6-3 (2005)	
EN60204 (2006)	EN55011 (2009)	

Type of protection:

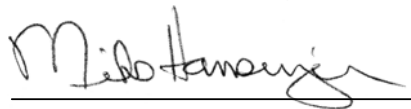
- II 2 G, max energy 94 mJ, Ambient temperature: 0°C to +40°C

EC type-examination certificate no:

- CESI 01 ATEX 030
- Milan Italy

N° of notified body (ATEX surveillance)

- 1180 (Baseefa) Buxton, Derbyshire, UK



Mike Hansinger
Manager Engineering Development

Date: 30 Aug 2010

Nordson Authorized Representative in the EU

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