

Prism® Automatic Low-Pressure Spray Guns (Airspray and HVLP)

Customer Product Manual
Part 303869C02

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Section 1

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

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

Intended Use

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

Some examples of unintended use of equipment include

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

Regulations and Approvals

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

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

High-Pressure Fluids

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

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

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



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

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

MEDICAL ALERT—AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

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

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

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

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Halogenated Hydrocarbon Solvent Hazards

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

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

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

Action in the Event of a Malfunction

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

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

Disposal

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

Safety 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.

Section 2

Description

Introduction

This manual covers the Nordson Prism airspray/high-volume low-pressure (HVLP) circulating and non-circulating automatic spray guns. Differences between the two versions are noted where necessary.

Both versions of the spray gun are air-atomizing, low-pressure, automatic spray guns. They can be used in both heated and unheated, circulating and non-circulating spray systems.

Airspray/HVLP spray guns feature

- circulating and non-circulating versions
- adjustable pattern control (horn) air pressure and fluid flow rate
- easy disassembly for cleaning and repair
- self-adjusting packing cartridge

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

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

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

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

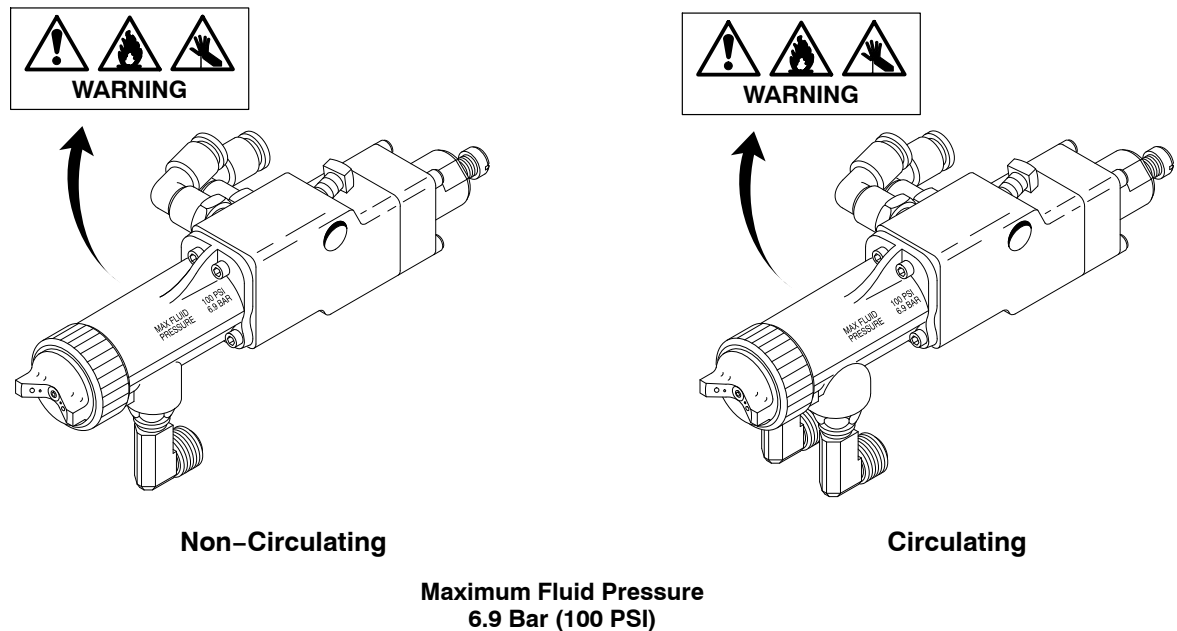


Figure 2-1 Prism Non-Circulating and Circulating HVLP and Airspray Spray Guns

HVLP and Air Spray Process

High-volume low-pressure (HVLP) technology creates a soft spray with high transfer efficiency, reducing emissions of volatile organic compounds (VOC). HVLP uses high volumes of very low pattern control (horn) and atomizing air pressures (less than 0.69 bar (10 psi)). The low atomizing air pressure reduces fluid bounceback and overspray, improving transfer efficiency, while the high air volume provides sufficient energy to atomize sprayed fluids.

To meet California South Coast Air Quality Management District (SCAQMD) environmental regulations, spray guns equipped with HVLP fluid tips and air caps must be tested with HVLP compliance kits. Compliance kits are available for each HVLP air cap.

HVLP and airspray 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.

The airspray process atomizes material at higher air pressures and lower air flows than the HVLP process. Airspray produces a very fine, atomized mist. This is useful for extremely fine finishing work.

HVLP atomization is typically more coarse than air spray when used with high viscosity fluids and high flow rates.

Operation Description

See Figure 2-2. Fluid enters the spray gun through the swivel fitting (8) in the extension (4) and flows to the fluid tip (6). The needle valve (7) controls fluid flow through the fluid tip. The packing cartridge (9) prevents fluid from flowing past it into the spray gun body (1). The adjuster housing (13) controls needle travel allowing adjustments to be made in fluid flow rates at the spray gun. Air enters the spray gun body at three fittings:

Atomization (2)—Atomization air triggers on when the spray gun is activated or triggered. A small amount of atomization air continually flows through the spray gun body.

Horn (3)—Horn air flows directly to the air cap and is responsible for shaping the spray pattern. This air flow is constant unless it is controlled by a separate solenoid valve.

Activation (trigger) (10)—Activation or trigger air moves the air piston which then opens the atomization air valve and develops full atomization air flow. The air piston then pulls on the connecting rod, opening the needle generating fluid flow. There is always maximum airflow prior to fluid flow thus eliminating fluid spitting and poor atomization of the initial fluid flow.

The fluid flow in non-circulating spray guns is dead-ended at the spray gun when the spraying stops. In circulating spray guns, fluid flows through the spray gun and back to the fluid delivery system when spraying stops.

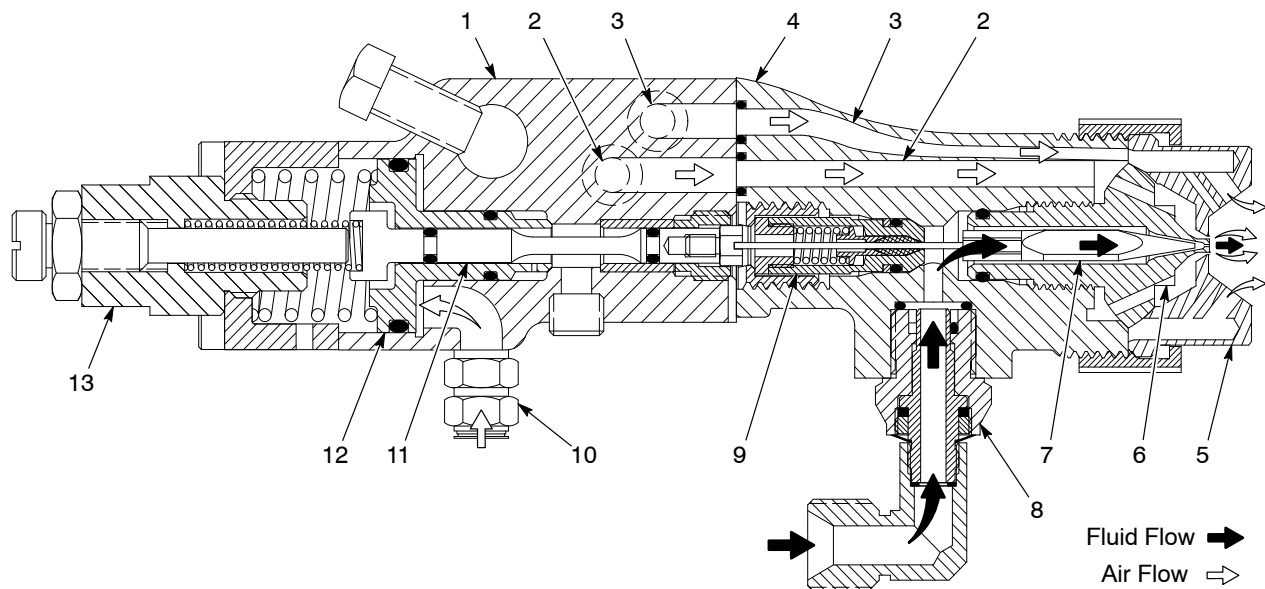


Figure 2-2 Prism Spray Gun Section View

- | | | |
|--------------------------|----------------------|---------------------------------------|
| 1. Gun body | 6. Fluid tip | 10. Actuating (trigger) inlet fitting |
| 2. Atomizing air fitting | 7. Needle valve | 11. Connecting rod |
| 3. Horn air fitting | 8. Swivel fitting | 12. Air piston |
| 4. Extension | 9. Packing cartridge | 13. Adjuster housing |
| 5. Air cap | | |

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.

Introduction

Installation consists of connecting air and fluid hoses and installing a fluid tip and air cap.

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 an HVLP air cap, order the appropriate compliance kit also. Each air cap has a separate and unique compliance kit.



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

Typical Airspray and HVLP Systems

Figure 3-1 shows a typical circulating system. Figure 3-2 shows a typical non-circulating system. Some components shown are optional. Make sure your system contains self-relieving shutoff valves for both air and fluid supply.

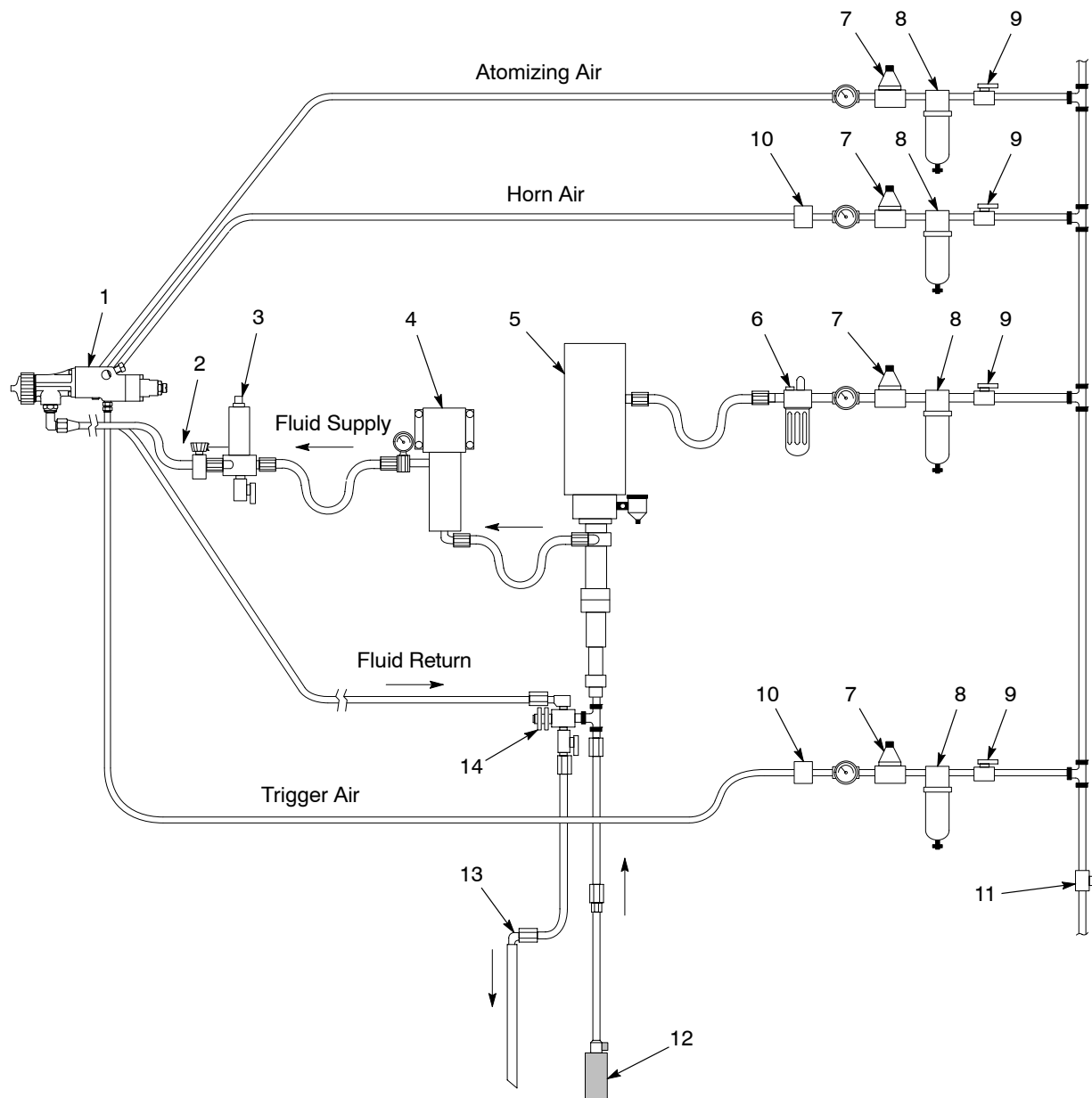


Figure 3-1 Typical Circulating System

- | | | |
|-------------------------|---------------------------------|-----------------------|
| 1. Spray gun | 6. Air lubricator | 11. Drain valve |
| 2. Fluid regulator | 7. Air regulator | 12. Siphon screen |
| 3. Fluid filter | 8. Air filter | 13. Drain rod |
| 4. Heater (as required) | 9. Self-relieving shutoff valve | 14. Circulating valve |
| 5. Pump | 10. Solenoid | |

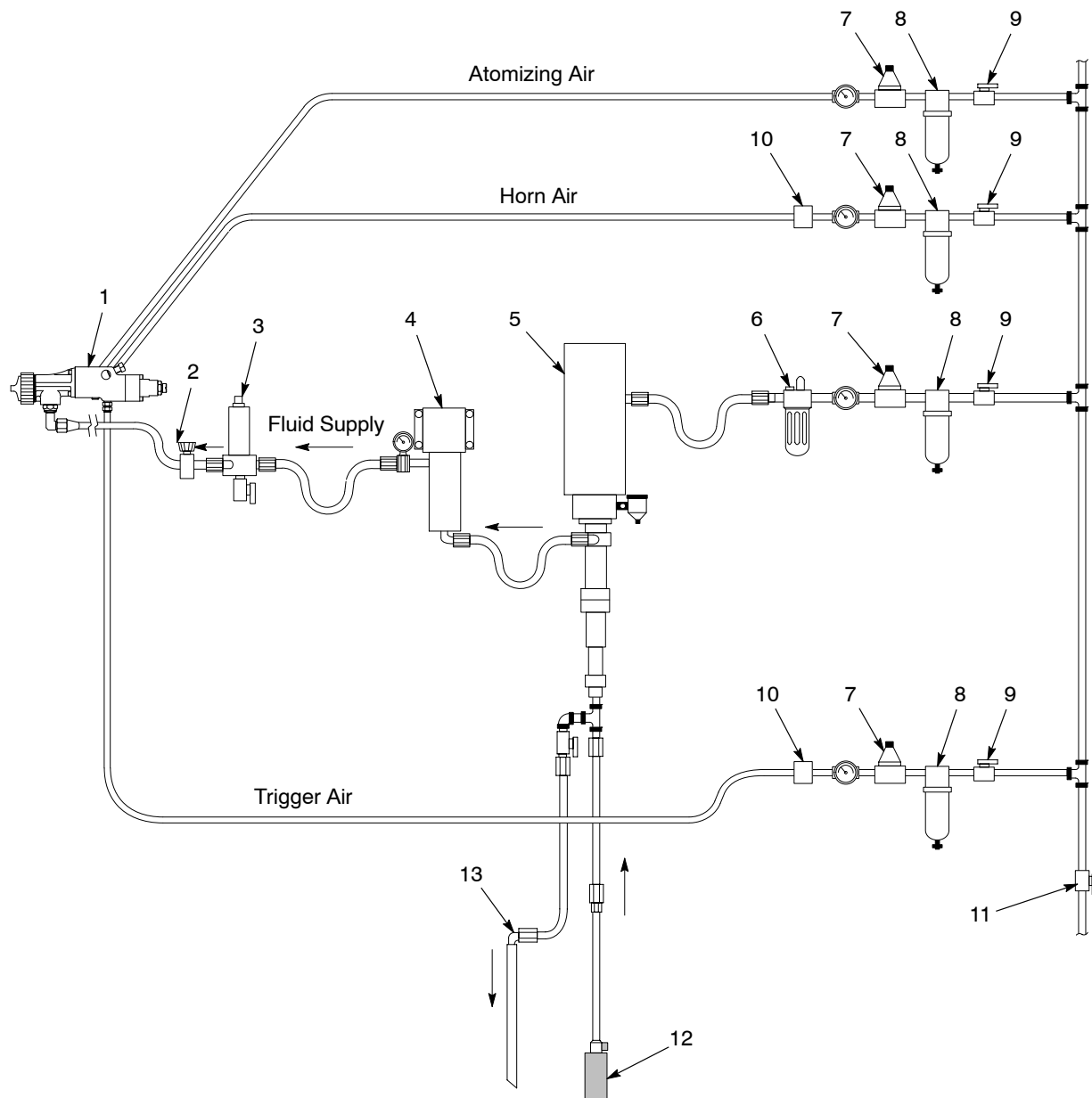


Figure 3-2 Typical Non-Circulating System

- | | | |
|-------------------------|---------------------------------|-------------------|
| 1. Spray gun | 6. Air lubricator | 10. Solenoid |
| 2. Fluid regulator | 7. Air regulator | 11. Drain valve |
| 3. Fluid filter | 8. Air filter | 12. Siphon screen |
| 4. Heater (as required) | 9. Self-relieving shutoff valve | 13. Drain rod |
| 5. Pump | | |

Preparation

Before installation:

- make sure you have an appropriate Nordson fluid tip and air cap for your application.
- make sure you have air and fluid hoses of the correct length, ID, and materials.
- make sure the system is properly grounded.
- remove the spray gun, brushes, and combination tool from the shipping container.

Hose Connections

Spray gun fittings accept standard Nordson air and fluid hoses. See Figures 3-1 and 3-2 for hose connections.

Air Hoses

The air hoses supplying air to the spray gun should be no longer than 7.62 m (25 ft). HVLP spray guns require an air hose with a minimum 6.4-mm ($\frac{1}{4}$ -in.) inside diameter (ID). Limit the number of restrictions in the air supply lines and hose to provide maximum air flow.

1. Clean the air hose fittings with a clean, dry cloth.
2. Connect the atomization and horn air hose between the $\frac{3}{8}$ -in. tube fitting in the spray gun body and the air supply outlet.
3. Connect the trigger air hose between the $\frac{1}{4}$ -in. tube fitting in the spray gun body and the air supply outlet.
4. Regulate the supply air for a maximum pressure of 7 bar (100 psi) or less at the spray gun.

Fluid Hoses

1. Connect the fluid hose(s) between the fluid delivery system outlet and the $\frac{3}{8}$ -inch NPSM swivel fitting(s) on the spray gun extension. Use two wrenches to connect the hose to the swivel fitting — one to hold the swivel fitting and one to tighten the hose fitting.
2. Regulate the fluid supply for a maximum pressure of 7 bar (100 psi) or less at the spray gun.

Completing the Installation



CAUTION: Do not use cable ties to bundle the hoses. Cable ties can crimp or damage the hoses.

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

Fluid Tip and Air Cap Installation

1. See Figure 3-3. Remove the retaining ring (5) and air cap (4).
2. Install the O-ring (2) included with the fluid tip (3) in the groove in the fluid tip. Lubricate the O-ring with O-ring grease.



CAUTION: To prevent damage to the needle and fluid tip seat, always activate the spray gun to pull the needle out of the seat before removing or installing a fluid tip.

3. Activate the spray gun to retract the needle (1). Screw the fluid tip into the threaded bore of the spray gun.
4. Tighten the fluid tip with the internal hex of the combination tool until it is snug. Do not overtighten the fluid tip.



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

5. Thread the air cap into the retaining ring until it rests in the groove in the bottom of the ring. Make sure the air cap rotates freely in the retaining ring.
6. Screw the retaining ring/air cap assembly onto the extension. Tighten the retaining ring until it is snug.

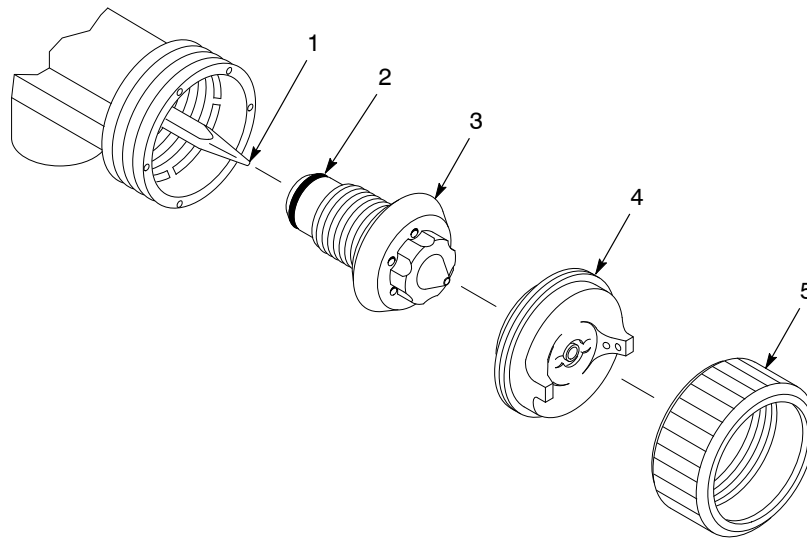


Figure 3-3 Fluid Tip and Air Cap Installation

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

Optional Quick Exhaust Valve Installation

See Figure 3-4. A quick exhaust valve is available for applications requiring a faster air piston response. Follow this procedure to install the quick exhaust valve.

1. Remove and save the $\frac{1}{4}$ -in. tube fitting (2) supplied with the spray gun.
2. Apply PTFE tape to both ends of the $\frac{1}{8}$ NPT x $\frac{1}{8}$ NPT nipple (1).
3. Install the nipple into the quick exhaust valve (3).
4. Apply PTFE tape to the muffler (4) and install into the quick exhaust valve.
5. Install the $\frac{1}{4}$ -in. tube fitting (2) into the quick exhaust valve.
6. Attach the quick exhaust nipple to the spray gun body trigger port (5).

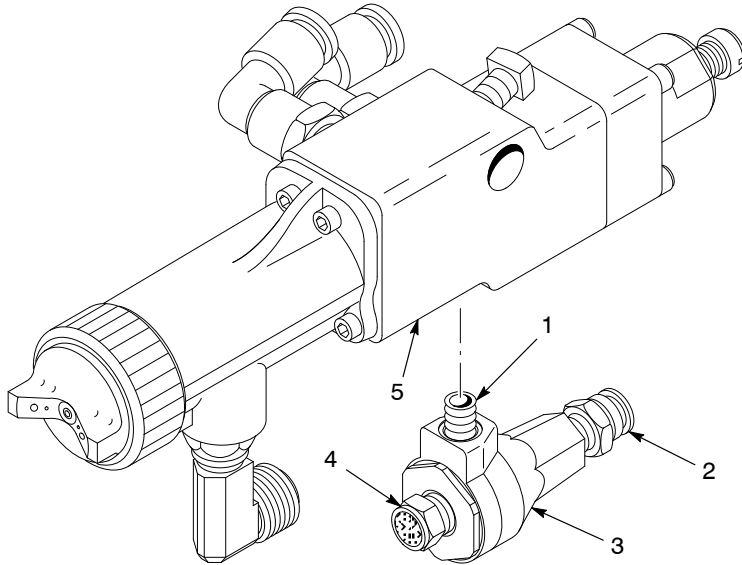


Figure 3-4 Optional Quick Exhaust Valve Installation

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

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.

This section includes startup, daily operation, spray pattern and atomization adjustments, and shut down procedures for your spray gun. Procedures for insuring HVLP compliance are also included.

Startup

Before operating the spray gun, make sure that

- the fluid tip is securely tightened and the air cap is correctly installed and securely held with the retaining ring.
- all fluid and air connections are secure and leak-free. The fluid hose(s) are grounded.
- 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 station, and spray area are clean and free of debris.

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

Daily Operation

1. Turn on the air supply shutoff valve. Adjust the air pressure as required for your application. Do not exceed 7 bar (100 psi).
2. Pressurize the system with fluid. Refer to your pump manual for startup and operating instructions. Do not exceed 7 bar (100 psi).
3. Turn on the fluid heater(s), if used. Refer to your heater manual for operating instructions. Do not exceed 82 °C (180 °F).
4. Turn on the spray booth exhaust fans.
5. Turn the fluid control knob counterclockwise until it disengages from the adjuster housing, then turn the knob clockwise one full turn. The fluid valve will now be fully open. Tighten the jam nut to ensure that the adjuster housing does not move.
6. Check the fluid-delivery system for leaks.
7. Point the spray gun into the booth and activate the spray gun. Adjust the atomization air pressure and horn air valve pressure to obtain the desired atomization and spray pattern. Refer to *Spray Pattern and Atomization Adjustments*.
8. Shut off the air supply to the spray gun and check the fluid flow rate (amount per second).

An appropriate fluid supply pressure for optimum atomization 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.

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.

9. If using HVLP spray guns, remove the air cap, install the appropriate HVLP compliance kit, and test for compliance. Both atomizing and horn air pressures must be 0.69 bar (10 psi) or less.

NOTE: If you make any changes to air pressure or change the fluid tip or air cap size after testing, you must retest for compliance. Refer to *HVLP Compliance Testing*.

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.

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. If using an HVLP spray gun, refer to *HVLP Compliance Testing* for suggested starting air pressures.
2. 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.
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 using HVLP spray guns, test for HVLP compliance. Both atomizing and horn air pressures must be 0.69 bar (10 psi) or less. Refer to *HVLP Compliance Testing*.

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 does not produce the desired results try a different combination of fluid tip and air cap.

A full range of airspray and HVLP fluid tips and air caps are available that can improve coating quality. Refer to the *Parts* section for part numbers. Refer to *HVLP Compliance Testing* for information on HVLP compliance.

Shutdown

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

For long-term shutdowns, shut off the fluid delivery system and relieve system fluid and air pressures. Trigger the spray gun into a waste container, then flush the fluid delivery system, fluid hose(s), and spray gun with a compatible solvent.

Refer to the *Maintenance* section for recommended flushing and cleaning procedures.

NOTE: For multi-component coating applications, refer to the coating material pot-life information to determine the proper shutdown procedures. Leaving the coating 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.

HVLP Compliance Testing

To maintain HVLP compliance, both atomizing and horn pressures must be 0.69 bar (10 psi) or less. Each HVLP air cap has a corresponding HVLP compliance kit that consists of a modified air cap, air tubing, and pressure gauges. Compliance kits must be ordered separately for each type of air cap. Refer to the *Parts* section for part numbers.

Tables 4-1 and 4-2 provide 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 $\frac{3}{8}$ OD (0.050-in.) 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.

Table 4-2 shows the approximate static regulator setting (psig) and resulting airflow (scfm) at a horn air cap pressure of 10 psig. This data was generated using 25-ft of $\frac{3}{8}$ OD (0.050-in.) 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.

The air pressure settings in Tables 4-1 and 4 do not guarantee HVLP compliance. After making an air pressure setting, perform an HVLP compliance test. Refer to *Using the Compliance Kits*.

See Figure 4-1 for compliance kit installation.

Table 4-1 Approximate Static Regulator Setting and Air Flow at 10 psig Atomizing Cap Pressure

Fluid Tip Diameter	Air Cap Designation									
	714		715		716		717		719	
	psig	scfm	psig	scfm	psig	scfm	psig	scfm	psig	scfm
0.020	20	4	25	6	27	6	31	7	39	9
0.025	19	4	24	5	26	6	30	7	38	9
0.030	18	4	23	5	25	6	29	7	37	9
0.035	18	4	23	5	24	6	28	7	36	9
0.040	17	3	22	5	24	6	28	6	35	9
0.050	15	3	20	4	21	5	25	6	33	8
0.060	14	2	18	4	19	4	23	5	31	7
0.070	X	X	16	3	16	3	20	4	28	7
0.080	X	X	X	X	14	2	18	4	25	6
0.100	X	X	X	X	X	X	13	2	19	4
Fluid Tip Diameter	Air Cap Designation									
	721		723		725		727			
	psig	scfm	psig	scfm	psig	scfm	psig	scfm		
0.020	50	12	61	15	72	17	86	21		
0.025	78	12	60	14	70	17	86	21		
0.030	48	12	58	14	70	17	86	21		
0.035	46	11	57	14	69	17	85	21		
0.040	46	11	56	14	68	16	84	20		
0.050	43	10	55	13	66	16	81	19		
0.060	41	10	51	12	63	15	77	19		
0.070	37	9	49	12	60	15	74	18		
0.080	34	8	45	11	57	14	71	17		
0.100	28	7	39	9	50	12	64	16		
NOTE: X represents a non-practical combination. Consult your Nordson representative if this combination is desired.										

Table 4-2 Approximate Static Regulator Setting and Horn Air Flow at 10 psig Horn Air Cap Pressure

Air Cap Designation	psig	scfm
714	46	11
715	46	11
716	46	11
717	46	11
719	46	11
721	46	11
723	56	14
725	56	14
727	56	14
NOTE: Horn flow rates are not a function of the fluid tip used.		

Performing a Compliance Test

See Figure 4-1. Follow these procedures to perform a HVLP compliance test.

1. Shut off the fluid delivery system and relieve fluid pressure. This is not required, but it will prevent fluid from spraying while performing the compliance test.
2. Remove the production air cap and retaining ring and replace with the air cap (4) and retaining ring (1) included with the HVLP compliance kit.
3. Activate the spray gun to fully open the air valve.
4. Check the air pressure gauges (2, 3). Both atomizing and horn pressures should be 0.69 bar (10 psi) or less.
5. If the atomization pressure exceeds 0.69 bar (10 psi), reduce the atomization air supply pressure.
6. If the horn air pressure exceeds 0.69 bar (10 psi), reduce the horn air supply air pressure.
7. Reinstall 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.

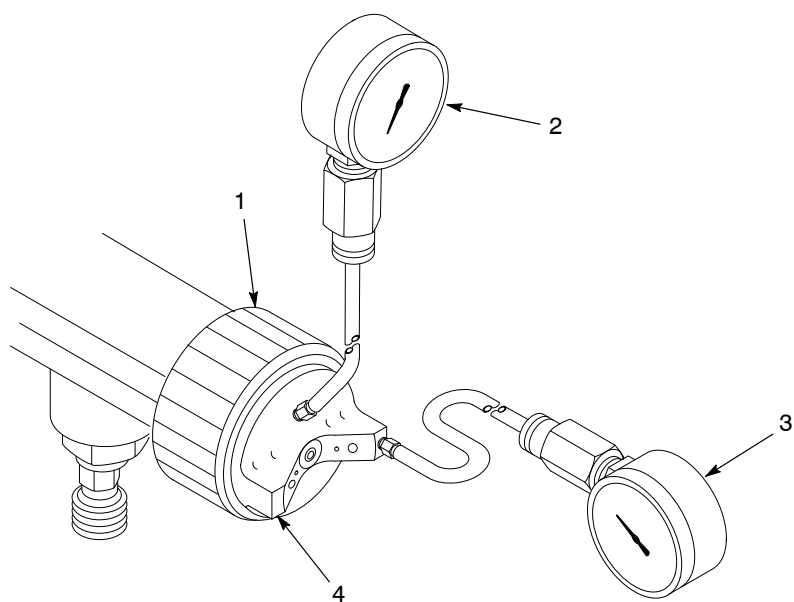


Figure 4-1 Compliance Testing

- 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.

Because of its simple construction, the spray gun requires very little routine maintenance beyond cleaning. For best results, keep the spray gun as clean as practical.

Daily

At the end of each work shift:

1. Shut down the fluid delivery system and air supply.
2. Point the spray gun into the booth or grounded waste container and activate to relieve any residual pressure.
3. Remove the fluid tip and air cap.



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



CAUTION: If the standard fluid tip O-ring is incompatible with the cleaning solvent, remove it before cleaning the fluid tip. If the O-ring appears swollen or damaged due to the solvent attack, contact your Nordson Corporation representative for a suitable replacement.

4. Soak the fluid tip and air cap in a suitable solvent to dissolve any accumulated coatings, then use the brush included with the spray gun to clean them.
5. Clean the spray gun extension frequently with a clean cloth dampened with solvent. Do not soak the spray gun in solvent.
6. Dry the fluid tip, air cap and spray gun with low-pressure air from an OSHA-approved air gun.

Periodically

Flush the spray gun periodically with a solvent compatible with the coating material you are using.

1. Relieve system air and fluid pressure and make sure spray gun can not be activated.
2. Remove the retaining ring and air cap.
3. Point the spray gun down into a grounded waste container. Activate the spray gun to drain the spray gun and hose(s).
4. Turn on the solvent supply and adjust it to the lowest possible pressure.
5. Activate the spray gun into a suitably grounded container. Allow solvent to flow until it runs clear.
6. Turn off the solvent supply and relieve the pressure. Disconnect the fluid and atomizing and horn air hoses.

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

7. Remove the fluid tip.
8. Remove the activation air hose.
9. Point the spray gun down and clean the front of the spray gun with a soft-bristled brush dampened with a compatible cleaning solvent.
10. Dampen a soft cloth with a compatible cleaning solvent. Point the spray gun downward and clean the exterior.
11. Clean the fluid tip, air cap, and retaining ring as described in the *Daily* maintenance procedures.
12. Install the retaining ring, air cap, and fluid tip, making sure that the needle is retracted before installing the fluid tip.
13. Install all three air hoses.

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

NOTE: Replace the fluid tip O-ring if it is excessively swollen due to solvent exposure. The seals installed in your spray gun are compatible with many coating materials. If the materials and solvents you are using damage the seals, contact your Nordson Corporation representative for compatible replacements.

Multi-Component Coatings

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

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.

These troubleshooting procedures cover only the most common problems. If you cannot solve a problem with the information given here, contact your local Nordson representative for help.

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 piston seal or seat	Remove and clean the air valve stem and seat.
	Worn or damaged air piston O-rings or other air seals	Replace the air piston O-rings or other seals, using correct seals or the air seal kit.
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 needle seat damaged. Replace needle if damaged.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
4. Fluid leaking from rear of extension (weep hole)	Worn or damaged packing cartridge O-ring	Replace the O-ring and backup ring.
	Worn or damaged packing cartridge	Replace the packing cartridge (the 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.
	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	If within the fluid pressure limit of the spray gun, slowly raise the fluid pressure.
		NOTE: The spray gun is rated for a maximum fluid pressure of 0.69 bar (10 psi).
	Fluid too viscous	Lower the viscosity by adding solvent or increasing the fluid temperature.
7. Coarse spray	Air pressure too low for fluid flow rate	Decrease the fluid flow rate or increase the air pressure. Change the air cap and fluid tip.
	Fluid viscosity too high for atomizing air pressure	Increase the atomizing air pressure, use a larger air cap or reduce the fluid viscosity by either adding solvent or increasing the fluid temperature.
	Obstructed atomizing air orifice	Clean the air cap and exterior surface of the 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	Atomizing air pressure too high	Reduce the atomizing air pressure.
9. Excessive bounce back	Air and fluid pressures too high	Reduce the air and fluid pressures.
	Horn air pressure too high	Reduce the horn air pressure.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
10. Dry spray	Spray gun held too far away from substrate	Move closer to the substrate.
	Horn air pressure too high or fluid pressure too low	Reduce the horn air pressure or increase the fluid pressure. Change the air cap or fluid tip.

Spray Pattern and Film Build Troubleshooting

Figure 6-1 illustrates common spray pattern and film-build faults. Troubleshooting procedures for these and other common film-build faults are listed in the following troubleshooting chart.

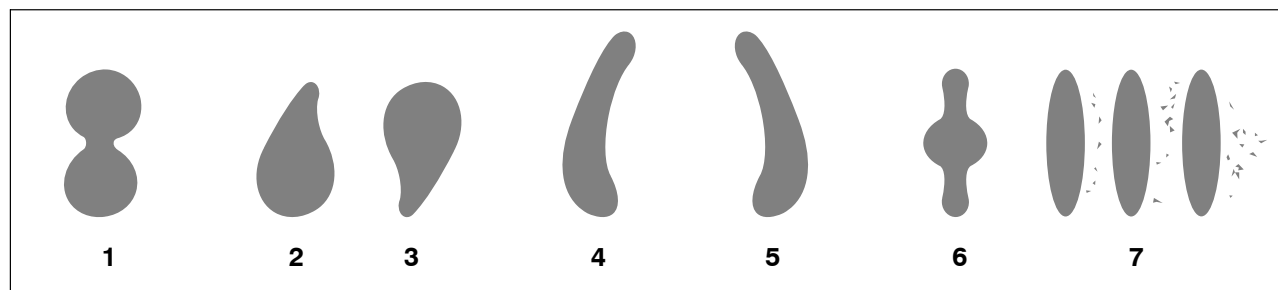


Figure 6-1 Common Spray Problems

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

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 top (3), bottom (2), left (4) or right (5) pattern	Partially clogged air cap or fluid tip	Rotate the air cap and activate 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.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
3. Heavy center (6)	Atomizing or horn pressure too low	Increase the atomizing and horn air pressures.
	Fluid pressure too high	Reduce the fluid pressure.
	Fluid viscosity too low	Increase the fluid viscosity.
4. Spitting (7)	Air in fluid line	Purge air from the fluid delivery system.
	Atomizing or horn pressure too low	Increase the atomizing air and fluid pressure. Increase the horn air pressure.
	Fluid viscosity too high	Decrease the fluid viscosity.
5. Runs and sags	Air in fluid line	Purge air from the fluid delivery system.
	Atomizing air pressure too low	Increase the atomizing air pressure.
	Fluid pressure too high	Decrease the fluid pressure.
	Spray gun too close to the substrate	Move the spray gun farther from the substrate.
	Horn air pressure is too low	Increase the horn air pressure.
	Fluid viscosity too high	Decrease the fluid viscosity.
6. Dry spray	Atomizing air pressure too high	Reduce the atomizing air pressure.
	Spray gun too far from the substrate	Move the spray gun closer to the substrate.
	Horn air pressure too low	Increase the horn air pressure.
	Fluid viscosity incorrect	Change the fluid viscosity.
7. Poor coverage in recesses	Atomizing air pressure too high	Increase the atomizing 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.

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.

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.



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

Preparation

Tools and Supplies Required

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

- Combination tool provided with your spray gun (see Figure 7-1)
- $\frac{9}{64}$ -in. hex wrench
- $\frac{5}{32}$ -in. hex wrench
- Flat-bladed screwdriver
- Service kits and replacement parts (refer to the *Parts* section)

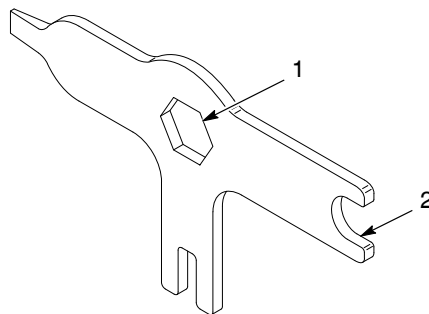


Figure 7-1 Combination Tool

1. Fluid tip removal

2. Packing cartridge removal

Before making any repairs to the spray gun, perform the following tasks:

- Flush the fluid delivery system, hoses, and spray gun.
- Turn off the fluid delivery system and air supplies. Relieve system fluid and air pressures. Point the spray gun into the booth and activate it to relieve and residual pressure.
- Disconnect the air and fluid hoses from the spray gun.
- Move the spray gun to a clean, dry, flat surface.



CAUTION: 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 loss of approvals by agencies such as Factory Mutual (FM).

Air Cap and Fluid Tip Replacement

1. See Figure 7-2. Unscrew the retaining ring (1).
2. Unscrew the air cap (2) from the retaining ring.
3. Activate the spray gun to retract the needle (5). Place the hex in the combination tool over the fluid tip (3) hex and unscrew it from the extension.
4. Make sure the O-ring (4) is correctly installed on your new fluid tip. Lubricate the O-ring with O-ring grease.
5. Activate the spray gun to retract the needle. Screw the new fluid tip in the extension. Tighten the fluid tip snugly. Do not overtighten it or you could damage the extension threads.
6. Screw the new air cap into the retaining ring until it bottoms out in the groove and turns freely.
7. Screw the retaining ring onto the extension and tighten it securely by hand.

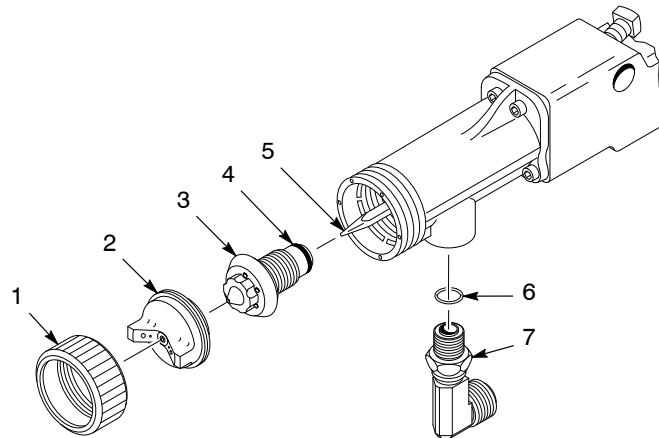


Figure 7-2 Air Cap and Fluid Tip Replacement

- | | | |
|-------------------|-----------|-------------------|
| 1. Retaining ring | 4. O-ring | 6. O-ring |
| 2. Air cap | 5. Needle | 7. Swivel fitting |
| 3. Fluid tip | | |

Fluid Inlet Fitting Replacement

1. See Figure 7-2. Unscrew the swivel fitting (7) and remove the O-ring (6).
2. Clean the sealing surface at the bottom of the extension bore.
3. Inspect the O-ring and replace if worn or damaged.
4. Lubricate the new O-ring and install the O-ring in the bore.
5. Screw the new swivel fitting into the extension. Tighten the fitting to 3.3–4.4 N•m (30–40 in.-lbs). Do not overtighten the fitting.

Body Repair

Use the following procedures to repair the adjuster housing, air piston, packing cartridge and needle.

Adjuster Housing Removal

1. See Figure 7-3. Use an adjustable wrench on the wrench flats (2) to loosen the adjuster housing (1) from the spray gun body cover (4).

NOTE: A return spring (3) is located behind the adjuster housing. This spring will begin to push the adjuster housing out as it is loosened. Be sure to keep a firm grip on the adjuster housing.

2. Remove the adjuster housing by turning it counterclockwise.

NOTE: When replacing the adjuster housing into the spray gun body, hold the adjuster housing firmly and turn clockwise. The spring will provide some resistance. Tighten the adjuster housing with an adjustable wrench.

3. Inspect the fluid adjuster and hex jam nut. Replace if worn or damaged.
4. Inspect the packing cartridge return spring. Replace if worn or damaged.

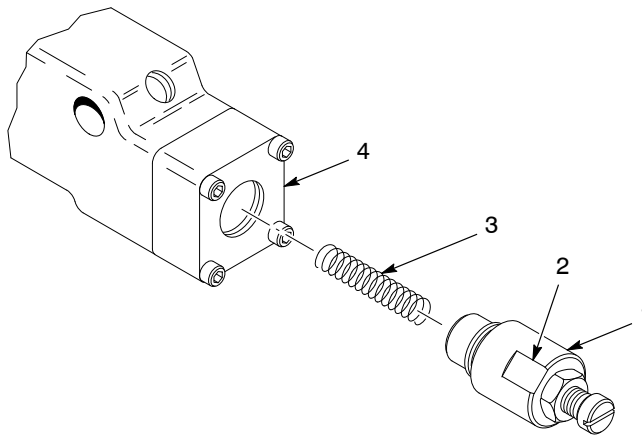


Figure 7-3 Adjuster Housing Removal

- | | |
|---------------------|------------------------------------|
| 1. Adjuster Housing | 3. Packing cartridge return spring |
| 2. Wrench flats | 4. Spray gun body cover |

Air Piston and Connecting Rod Repair

Disassembly

1. Remove the fluid tip and air cap as described in *Air Cap and Fluid Tip Replacement*.
2. Remove the adjuster housing as described in *Adjuster Housing Removal*.
3. See Figure 7-4. Insert a flat blade screwdriver into the end of the spray gun body cover to loosen the connecting rod (5) from the packing cartridge. The connecting rod will not remove from the spray gun body (9).
4. Remove the four socket-head screws (13) with a $\frac{9}{64}$ -in. hex wrench to remove the extension (12).
5. Remove the extension from the spray gun body. Do not lose the two face-seal O-rings (10) installed around the extension air cores.

NOTE: If the extension remains on spray gun body, loosen the connecting rod from the packing cartridge again.

6. Use a $\frac{5}{32}$ -in. hex wrench to remove the four hex screws (1) securing the spray gun body cover (3).

NOTE: A compression spring (4) is located behind the spray gun body cover. This spring will begin to push the spray gun body cover out as it is loosened. Be sure to keep a firm grip on the cover as you remove the hex screws.

7. Remove the spray gun body cover and the compression spring. Inspect the compression spring and replace it if it is worn or damaged.
8. Using the $\frac{5}{32}$ -in. hex wrench, push the connecting rod (5) out of the spray gun body. Inspect and replace worn or damaged O-rings (6) on the connecting rod.
9. Push the air piston (7) out of the spray gun body. Inspect the air piston and replace if necessary.
10. Inspect the O-rings (8) on the air piston and replace if necessary.

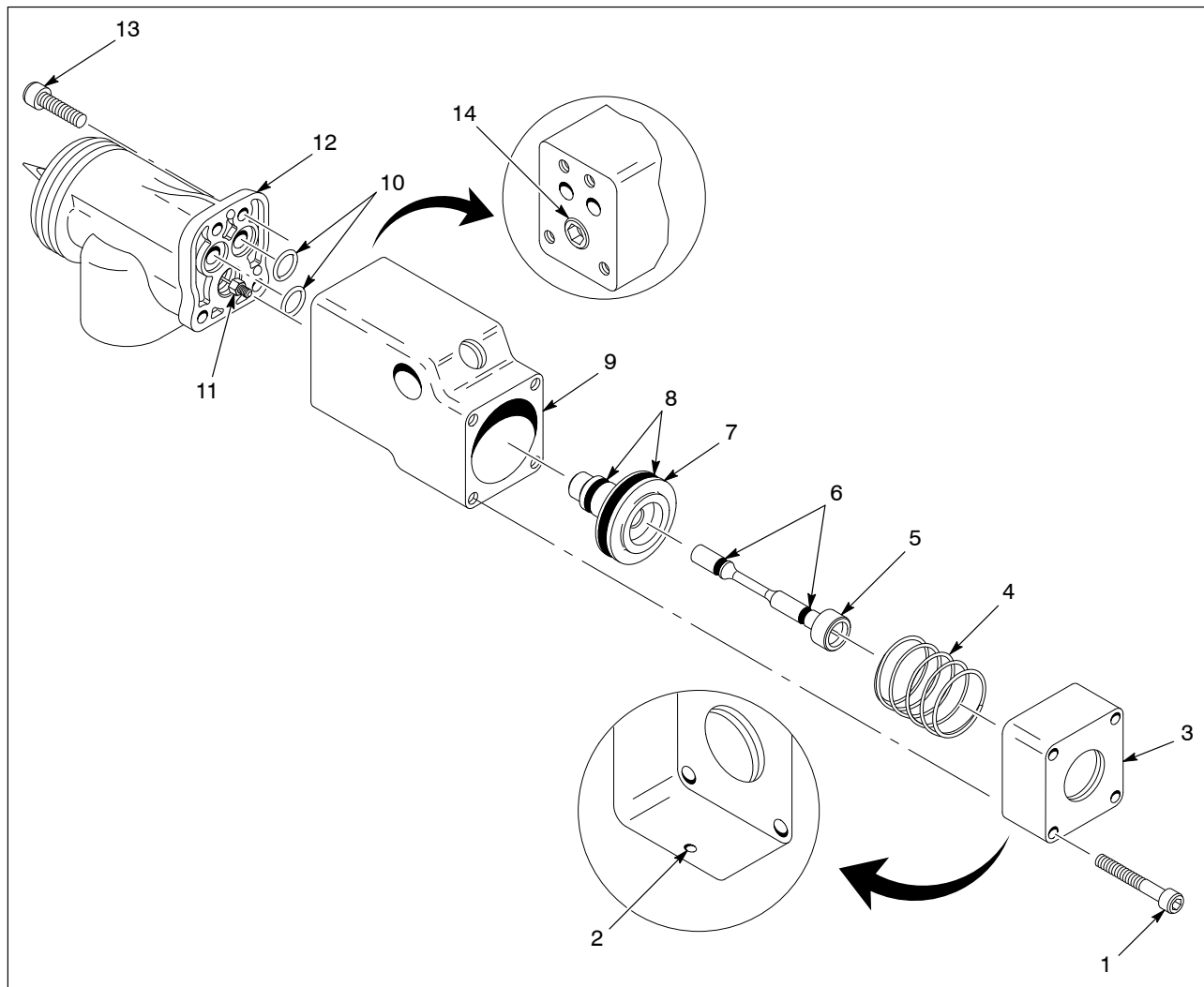


Figure 7-4 Air Piston and Connecting Rod Disassembly and Assembly

- | | | |
|-------------------------|-----------------------|-------------------------------|
| 1. Socket head screws | 6. O-ring | 11. Packing cartridge fitting |
| 2. Relief hole | 7. Air piston | 12. Extension |
| 3. Spray gun body cover | 8. O-ring | 13. Socket head screws |
| 4. Compression spring | 9. Spray gun body | 14. Retainer bushing |
| 5. Connecting rod | 10. Face-seal O-rings | |

Assembly

1. See Figure 7-4. Generously lubricate the air piston (7) and its O-rings (8) and reinstall into the spray gun body (9).
2. Lubricate the O-rings (6) on the connecting rod (5) and push it through the air piston.
3. Place the compression spring (4) on the air piston.
4. Place the spray gun body cover (3) over the compression spring so the relief hole (2) is on the bottom. Secure the cover with the four hex screws (1).

NOTE: The compression spring will provide some resistance as the hex screws are tightened. Keep a firm grasp on the cover as you tighten the screws.

5. Make sure the two face-seal O-rings (10) in the extension air bores are correctly installed. Align the hex on the packing cartridge fitting (11) with the hex on the retainer bushing (14).

NOTE: The packing cartridge should already be installed in the extension.

6. Grasp the entire spray gun, making sure to hold onto both the spray gun body and the extension. Turn the spray gun so it is on its side. Reattach the connecting rod (5) by tightening it with a flat-blade screw drive.

NOTE: You may have to hold the needle to keep the hex fitting from disengaging from the body.

7. When the connecting rod is reattached, turn the spray gun over so the spray gun body is facing downward and secure the extension to the handle with the four socket-head screws (13). Tighten the screws to 1.36–1.58 N•m (12–14 in.-lbs).
8. Install the fluid tip and air cap as described in *Air Cap and Fluid Tip Replacement*.
9. Reinstall the return spring and adjuster housing as described in *Adjuster Housing Removal*.

Packing Cartridge and Needle Replacement

The 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. You must order the needle separately.



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

Disassembly

1. Remove the air cap as described in *Replacing the Air Cap and Fluid Tip*.
2. Remove the adjuster housing as described in *Removing the Adjuster Housing*.
3. See Figure 7-4. Insert a flat-bladed screwdriver into the spray gun body cover (3) to loosen the connecting rod (5) from the packing cartridge. The connecting rod will not remove from the spray gun body.

4. Remove the four socket-head screws (13) with a $\frac{9}{64}$ -in. hex wrench to remove the spray gun extension (12).
 5. Remove the extension from the spray gun body. Do not lose the two face-seal O-rings (10) installed around the extension air cores.
- NOTE:** If the extension remains on the spray gun body, loosen the connecting rod from the packing cartridge again.
6. See Figure 7-5. Push the packing cartridge fitting (8) forward and unscrew the packing cartridge retainer (9) from the extension (1) with the combination tool.
 7. Pull on the packing cartridge fitting to remove it from the extension. Do not bend the connecting wire.
 8. Clean the extension fluid bores with a round, soft-bristled brush and a compatible solvent. For thorough cleaning, remove the fluid fittings.
 9. Inspect the packing cartridge (7) assembly. Replace the O-ring (5) and backup ring (6) if they are damaged. If the packing cartridge assembly is damaged, replace it with a new one. Inspect the face-seal O-rings (2) in the extension. Replace them if they are damaged.
 10. If the needle (3) is damaged, replace it as follows:
 - a. Hold the pusher fitting (4) with a wrench and unscrew the needle from the pusher fitting.
 - b. Apply a removable thread-locking adhesive, such as Loctite 242 Blue, to the threads of the new needle.
 - c. Screw the new needle into the pusher fitting. Hand-tighten the needle until it is bottomed against the fitting. Wipe off excess adhesive.

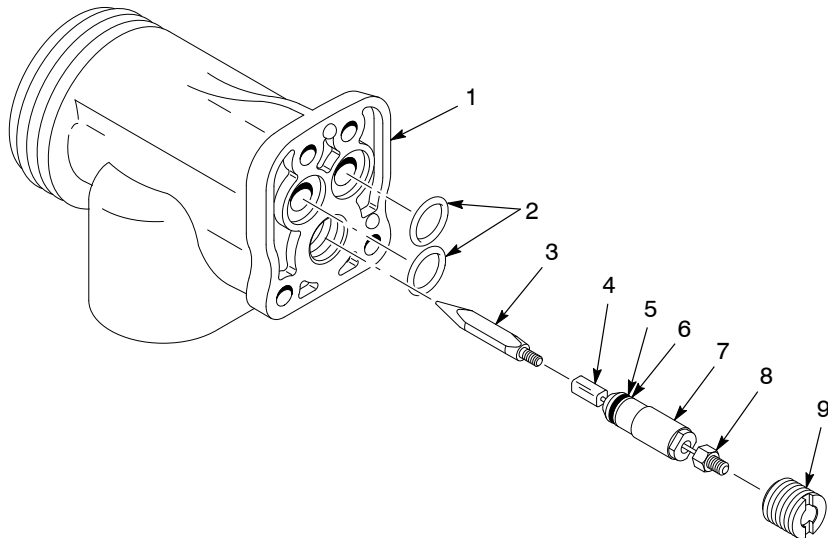


Figure 7-5 Packing Cartridge Replacement

- | | |
|----------------------|-------------------------------|
| 1. Extension | 6. Backup ring |
| 2. Face-seal O-rings | 7. Packing cartridge |
| 3. Needle | 8. Packing cartridge fitting |
| 4. Pusher fitting | 9. Packing cartridge retainer |
| 5. O-ring | |

Assembly

1. See Figure 7-5. Lubricate the packing cartridge O-ring (5) and backup ring (6) and the face-seal O-rings (2) in the extension (1) with O-ring grease.
2. Insert the packing cartridge (7) assembly into the extension.
3. Screw the packing cartridge retainer (9) into the extension. Tighten the retainer with the combination tool hand-tight.

NOTE: It may be necessary to push the fitting into the extension to engage the combination tool.

4. Apply a removable thread-locking adhesive, such as Loctite 242 Blue, to the threads of the packing cartridge fitting (8).
5. Gently push the needle back into the extension to adequately expose the hex on the packing cartridge fitting.
6. Make sure the two face-seal O-rings in the extension air bores are correctly installed. Align the hex on the fitting with the hex on the retainer bushing.
7. Grasp the entire spray gun making sure to hold onto both the spray gun body and the extension. Turn the spray gun so it is on its side. Reattach the connecting rod by tightening it with a flat-blade screw driver.

NOTE: The needle should not rotate during this procedure. If it does then the hex is not engaged in the retainer bushing and step 6 should be repeated.

8. When the connecting rod is reattached, turn the spray gun over so the spray gun body is facing downward and secure the extension to the handle with the four socket-head screws. Tighten the screws to 1.36–1.58 N•m (12–14 in.-lbs).
9. Install the fluid tip and air cap as described in *Air Cap and Fluid Tip Replacement*.
10. Reinstall the return spring and adjuster housing as described in *Adjuster Housing Removal*.

NOTE: If the adjuster housing is not installed it is not necessary to trigger the gun to move the needle.

Section 8

Parts

Introduction

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

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	

Circulating Spray Gun Parts

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	1089971	Gun, automatic, NES, airspray/HVLP, circulating	1	
1	325496	• Ring, retaining	1	
2	981069	• Screw, socket, 8–32 x 0.50 in.	4	
3	325646	• Extension, NES, circulating	1	A
4	940110	• O-ring, hotpaint 0.313 x 0.438 x 0.063 in.	2	B
5	325554	• Needle, NES	1	
6	940100	• O-ring, hotpaint, 0.25 x 0.375 x 0.063 in.	1	C, D
7	954036	• Back-up ring, single, 1/4 x 3/8 in.	1	C, D
8	-----	• Cartridge, assembly packing	1	D
9	325495	• Retainer, packing, cartridge, NES	1	
10	940130	• O-ring, hot paint, 0.483 x 0.563 x 0.063 in.	2	C
11	325696	• Elbow, swivel, low pressure	2	
12	981405	• Screw, set, 3/8–16	1	
13	325695	• Retainer, bushing	1	
14	325694	• Bushing, NES, automatic	1	
15	940125	• O-ring, Viton, 0.375 x 0.50 x 0.063 in.	1	B
16	243975	• Piston, air	1	
17	941210	• O-ring, Viton, 1.063 x 1.25 x 0.094 in.	1	B
18	940063	• O-ring, Viton, 0.125 x 0.25 x 0.063 in.	2	B
19	325693	• Rod, connecting, automatic, NES	1	
20	325692	• Adjuster, fluid	1	
21	984156	• Nut, hex, jam, 3/8–24, brass	1	
22	325689	• Housing adjuster, low pressure	1	
23	981171	• Screw, socket, 10–32 x 1.25 in.	4	
24	325534	• Spring, fluid, return, low pressure	1	
25	325688	• Cover, body, NES	1	
26	972716	• Connector, male, 1/4 tube x 1/8 in. NPT	1	
27	241176	• Spring, compression, 1.24 x 1.093 in.	1	
28	973402	• Plug, pipe, socket, flush, 1/8 in.	1	
29	325687	• Body, piston block, NES	1	
30	972183	• Elbow, male, 3/8 tube x 1/4 in. NPT	2	
NS	901905	• Brush	1	
NS	-----	• Brush	1	
NS	325 642	• Wrench, NES, manual	1	

NOTE A: Included in circulating extension kit 325646.

B: Included in air seal kit 325654.

C: Included in fluid seal and swivel kit 325653.

D: Included in packing cartridge kit 1089861.

NS: Not Shown

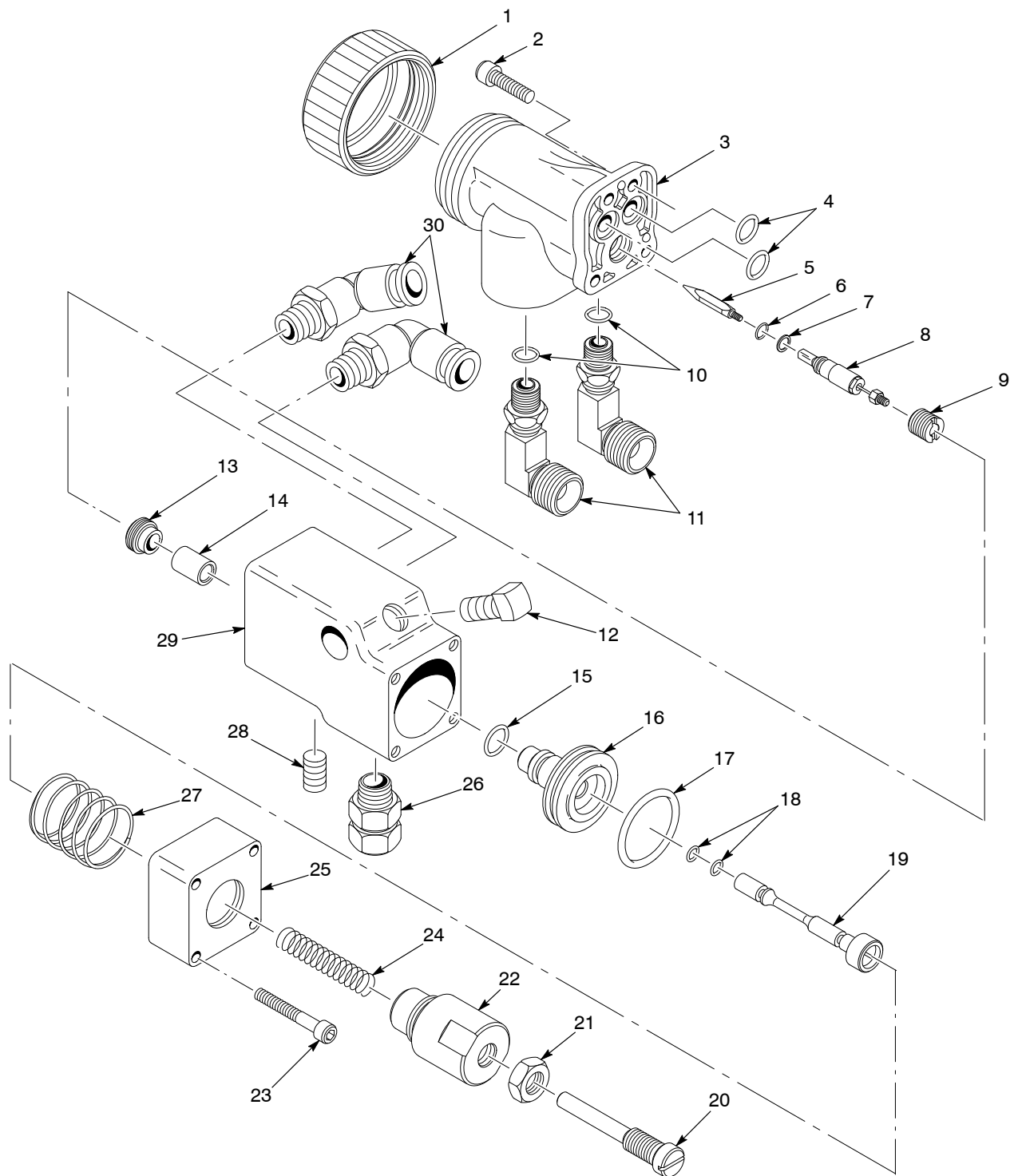


Figure 8-1 Circulating Spray Gun Parts – Circulating Gun Shown

Non-Circulating Spray Gun Parts

See Figure 8-1.

Item	Part	Description	Quantity	Note
—	1089973	Gun, automatic, NES, airspray/HVLP	1	
1	325496	• Ring, retaining	1	
2	981069	• Screw, socket, 8-32 x 0.50 in.	4	
3	325647	• Extension, NES	1	A
4	940110	• O-ring, hotpaint 0.313 x 0.438 x 0.063 in.	2	B
5	325554	• Needle, NES	1	
6	940100	• O-ring, hotpaint, 0.25 x 0.375 x 0.063 in.	1	C, D
7	954036	• Back-up ring, single, $\frac{1}{4}$ x $\frac{3}{8}$ in.	1	C, D
8	-----	• Cartridge, packing	1	D
9	325495	• Retainer, packing, cartridge, NES	1	
10	940130	• O-ring, hot paint, 0.483 x 0.563 x 0.063 in.	1	C
11	325696	• Elbow, swivel, low pressure	1	
12	981405	• Screw, set, $\frac{3}{8}$ -16	1	
13	325695	• Retainer, bushing	1	
14	325694	• Bushing, NES, automatic	1	
15	940125	• O-ring, Viton, 0.375 x 0.50 x 0.063 in.	1	B
16	243975	• Piston, air	1	
17	941210	• O-ring, Viton, 1.063 x 1.25 x 0.094 in.	1	B
18	940063	• O-ring, Viton, 0.125 x 0.25 x 0.063 in.	2	B
19	325693	• Rod, connecting, automatic, NES	1	
20	325692	• Adjuster, fluid	1	
21	984156	• Nut, hex, jam, $\frac{3}{8}$ -24, brass	1	
22	325689	• Housing adjuster, low pressure	1	
23	981171	• Screw, socket, 10-32 x 1.25 in.	4	
24	325534	• Spring, fluid, return, low pressure	1	
25	325688	• Cover, body, NES	1	
26	972716	• Connector, male, $\frac{1}{4}$ tube x $\frac{1}{8}$ in. NPT	1	
27	241176	• Spring, compression, 1.24 x 1.093 in.	1	
28	973402	• Plug, pipe, socket, flush, $\frac{1}{8}$ in.	1	
29	325687	• Body, piston block, NES	1	
30	972183	• Elbow, male, $\frac{3}{8}$ tube x $\frac{1}{4}$ in. NPT	2	
NS	901905	• Brush	1	
NS	247066	• Brush	1	
NS	325642	• Wrench, NES, manual	1	

NOTE A: Included in extension kit 325647.

B: Included in air seal kit 325654.

C: Included in fluid seal and swivel kit 325653.

D: Included in packing cartridge kit 1089861.

NS: Not Shown

Recommended Kits

See Figure 8-1.

Air Seal Kit

Item	Part	Description	Quantity	Note
—	325654	Kit, air seal, hot paint	1	
4	940110	• O-ring, hot paint, 0.313 x 0.438 x 0.063 in.	2	
15	940125	• O-ring, Viton, 0.375 x 0.50 x 0.063 in.	1	
17	941210	• O-ring, Viton, 1.063 x 1.25 x 0.094 in.	1	
18	940063	• O-ring, Viton, 0.125 x 0.25 x 0.063 in.	1	

Fluid Seal Kit

Item	Part	Description	Quantity	Note
—	325653	Kit, fluid seal, swivel, hot paint	1	
6	940100	• O-ring, hot paint, 0.25 x 0.375 x 0.063 in.	1	
7	954036	• Back-up ring, single, 0.25 x 0.375 in.	1	
10	940130	• O-ring, hot paint, 0.438 x 0.563 x 0.063 in.	2	A
NS	152270	• Ring, PTFE	2	A
NS	941102	• O-ring, Buna N, 0.25 x 0.375 x 0.063 in.	2	A
NS	940120	• O-ring, hot paint, 0.375 x 0.50 x 0.063 in.	1	B
NS	954012	• Back-up ring, single, 0.375 x 0.50 in.	1	C

NOTE A: Kit includes enough parts for a circulating spray gun. If you are using a non-circulating spray gun, save the extra pieces as spare.

B: Used on fluid tips.

C: Used only on high-pressure fluid tips.

NS: Not Shown

Packing Cartridge Kit

NOTE: The spray guns are shipped with the standard gold packing cartridge, which is appropriate for most coating materials. Use the optional PTFE packing cartridge, part 1089862 with harsh chemical solvents such as MEK.

Item	Part	Description	Quantity	Note
—	1089861	Kit, cartridge, packing, gold, Kinetix	1	A
6	940100	• O-ring, hot paint, 0.25 x 0.375 x 0.063 in.	1	
7	954036	• Back-up ring, single, 0.25 x 0.375 in.	1	
8	-----	• Cartridge assembly, packing	1	

Extension Kits

Item	Part	Description	Quantity	Note
3	325647	Extension, NES, air, HVLP, non-circulating	1	
3	325646	Extension, NES, air, HVLP, circulating	1	

Optional PTFE Packing Cartridge

NOTE: Use the PTFE packing cartridge with harsh chemical solvents such as MEK.

Part	Description	Note
1089862	KIT, cartridge, packing, Kinetix, electrostatic, PTFE	
-----	• CARTRIDGE ASSEMBLY, packing, electrostatic	
-----	• BACKUP RING, single, $\frac{1}{4} \times \frac{3}{8}$ in.	
336677	• O-RING, Perlast, 0.250 x 0.375 x 0.063 in.	

Optional Quick Exhaust Valve

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

Optional HVLP Fluid Tips and Air Caps

Fluid Tips

Fluid tips are marked with the orifice size.

Part	Description	Note
325571	Tip, fluid, HVLP, NES, 0.020	
325572	Tip, fluid, HVLP, NES, 0.025	
325573	Tip, fluid, HVLP, NES, 0.030	
325574	Tip, fluid, HVLP, NES, 0.035	
325575	Tip, fluid, HVLP, NES, 0.040	
325576	Tip, fluid, HVLP, NES, 0.050	
325577	Tip, fluid, HVLP, NES, 0.060	
325578	Tip, fluid, HVLP, NES, 0.070	
325579	Tip, fluid, HVLP, NES, 0.080	
325580	Tip, fluid, HVLP, NES, 0.100	
940120	• O-ring, hotpaint, 0.375 x 0.500 x 0.063 in.	A
NOTE A: This O-ring is included with all fluid tips.		

HVLP Air Caps and Compliance Kits

The following table lists the parts numbers and descriptions for the available HVLP air caps and matching compliance kits. The right-most column lists the part numbers of the compliance air caps included in the kits. The air caps can also be ordered separately.

To maintain HVLP compliance, order a compliance kit for each size air cap you order. Air caps are marked with the last 3 digits of the part number. Compliance kit air caps are marked with the last three digits of the part number of the corresponding production air cap. For example, the 325624 air cap included in the 325633 compliance kit is marked 714.

See Figure 8-2 and refer to the accompanying parts lists for the rest of the compliance kit parts.

Production Air Caps		Compliance Kits and Air Caps		
Part	Description	Compliance Kit Part	Description	Air Cap Part
325714	Air cap, HVLP, 0.140	325633	Kit, compliance, HVLP, 0.140	325624
325715	Air cap, HVLP, 0.150	325634	Kit, compliance, HVLP, 0.150	325625
325716	Air cap, HVLP, 0.160	325635	Kit, compliance, HVLP, 0.160	325626
325717	Air cap, HVLP, 0.170	325636	Kit, compliance, HVLP, 0.170	325627
325719	Air cap, HVLP, 0.190	325637	Kit, compliance, HVLP, 0.190	325628
325721	Air cap, HVLP, 0.210	325638	Kit, compliance, HVLP, 0.210	325629
325723	Air cap, HVLP, 0.230	325639	Kit, compliance, HVLP, 0.230	325630
325725	Air cap, HVLP, 0.250	325640	Kit, compliance, HVLP, 0.250	325631
325727	Air cap, HVLP, 0.270	325641	Kit, compliance, HVLP, 0.270	325632

Compliance Air Caps

Part	Description	Note
325624	Cap, compliance, HVLP, 0.140	
325625	Cap, compliance, HVLP, 0.150	
325626	Cap, compliance, HVLP, 0.160	
325627	Cap, compliance, HVLP, 0.170	
325628	Cap, compliance, HVLP, 0.190	
325629	Cap, compliance, HVLP, 0.210	
325630	Cap, compliance, HVLP, 0.230	
325631	Cap, compliance, HVLP, 0.250	
325632	Cap, compliance, HVLP, 0.270	
971620	• Connector, barbed, 3-56 x 1/8, brass	A
NOTE A: Two barbed connectors are included with all compliance air caps listed. Compliance air caps with barbed fittings may also be purchased separately.		

Compliance Kit Parts

See Figure 8-2. Refer to *HVLP Air Caps*, *Compliance Kits*, and *Compliance Air Caps* on the previous page for kit part numbers, and the part numbers of the air caps included in the kits.

Item	Part	Description	Quantity	Note
—	-----	Kit, compliance	1	A
1	325643	• Gauge, air, 1.5 in. diameter, 0–15 psi	2	
2	972937	• Connector, female, 1/8 in. tube x 1/8 in. NPT	2	
3	234132	• Tubing, 1/8 in. diameter, gray (18 in.)	2	B
4	-----	• Cap, compliance, HVLP	1	C, D
5	971620	• • Connector, barbed, 3-56 x 1/8 in., brass	2	
6	325496	• Ring, retaining	1	
NOTE A: For compliance kit part numbers, refer to <i>HVLP Air Caps</i> , <i>Compliance Kits</i> , and <i>Compliance Air Caps</i> in this section.				
B: Bulk item. Order length desired in one-foot increments.				
C: For compliance air cap part numbers, refer to <i>HVLP Air Caps</i> , <i>Compliance Kits</i> , and <i>Compliance Air Caps</i> in this section.				
D: Compliance caps can be ordered separately corresponding to different air caps used.				

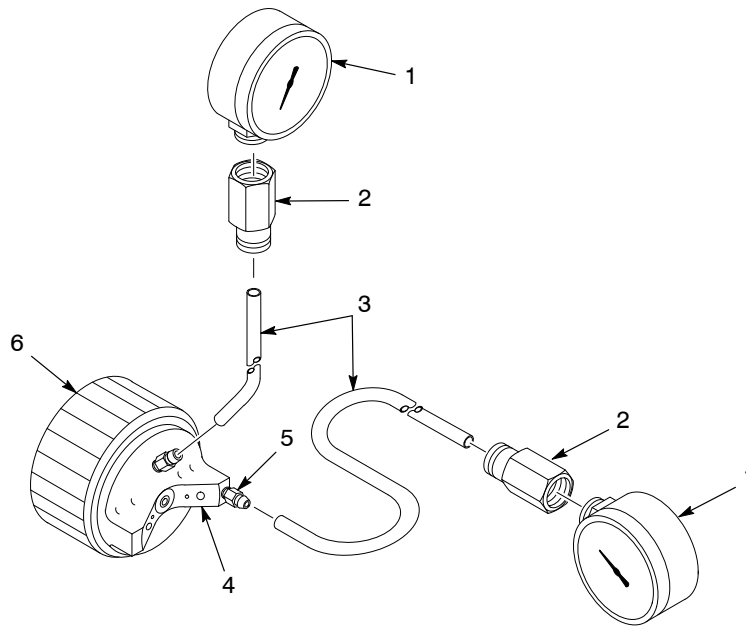


Figure 8-2 Compliance Kit Parts

Air Spray Fluid Tips and Air Caps

Fluid Tips

Fluid tips are marked with the orifice size. Fluid tips are optional and must be ordered separately.

Part	Description	Note
325591	Tip, fluid, NES, 0.012	
325592	Tip, fluid, NES, 0.020	
325593	Tip, fluid, NES, 0.030	
325594	Tip, fluid, NES, 0.040	
325595	Tip, fluid, NES, 0.046	
325596	Tip, fluid, NES, 0.059	
325597	Tip, fluid, NES, 0.070	
325598	Tip, fluid, NES, 0.080	
325599	Tip, fluid, NES, 0.090	
325600	Tip, fluid, NES, 0.100	
325601	Tip, fluid, NES, 0.132	

Air Caps

Air caps are optional and must be ordered separately. Air caps are marked with the numbers in the description.

Air Cap	Description	Specification	Usage
325615	Air cap, 985	Atomization air pressure: less than 2.41 bar (35 psi) Flow rate: 0.059–0.295 l/min (2–10 oz/min) Fan pattern width: 15.24–30.48 cm (6–12 in.)	Used as a universal air cap; low flow rates
325616	Air cap, 986	Atomization air pressure: 2.07–4.14 bar (30–60 psi) Flow rate: 0.236–0.345 l/min (8–12 oz/min) Fan pattern width: 30.48–45.72 cm (12–18 in.)	Medium flow rates
325617	Air cap, 987	Atomization air pressure: 1.38–4.14 bar (20–60 psi) Flow rate: 0.295–0.591 l/min (10–12 oz/min) Fan pattern width: 30.48–45.72 cm (12–18 in.)	High flow rates
325618	Air cap, 988	Atomization air pressure: less than 2.41 bar (35 psi) Flow rate: 0.295–0.591 l/min (10–12 oz/min) Fan pattern width: 30.48–45.72 cm (12–18 in.)	Low flow rates, high solids or metallics
325611	Air cap, 991	Atomization air pressure: less than 2.76 bar (40 psi) Flow rate: 0.295–0.591 l/min (2–12 oz/min) Fan pattern width: less than or equal to 40.64 cm (16 in.)	Low flow rates, high viscosities
325612	Air cap, 992	Atomization air pressure: less than 2.76 bar (40 psi) Flow rate: 0.295–0.591 l/min (2–12 oz/min) Fan pattern width: less than or equal to 40.64 cm (16 in.)	Low flow rates, high solids or metallics

Air Tubing

Air tubing is optional and must be ordered separately. Order tubing in 1 foot increments.

Part	Description	Note
900511	Tubing, polyethylene, 0.375 x 0.062 in.	
900557	Tubing, nylon, 0.375 x 0.05 in.	
900509	Tubing, polyethylene, 0.25 x 0.04 in.	
900556	Tubing, nylon, 0.25 x 0.035 in.	

Fluid Tubing and Fittings

Fluid hoses and fittings are optional and must be ordered separately.

Black Rubber Hose

Nylon lining, black neoprene cover, 14 bar (200 psi) maximum pressure.

Hose			Fittings	
Part	ID (in.)	OD (in.)	Part	Size (in.) NPSM
900552	$\frac{1}{4}$	$\frac{1}{2}$	971764	$\frac{1}{4} \times \frac{3}{8}$
900553	$\frac{5}{16}$	$\frac{39}{64}$	971767	$\frac{5}{16} \times \frac{3}{8}$
900554	$\frac{3}{8}$	$\frac{11}{16}$	971766	$\frac{3}{8} \times \frac{3}{8}$

Nylon Single Layer Hose

Semi-transparent, 14 bar (200 psi) maximum pressure.

Hose			Fittings	
Part	ID (in.)	OD (in.)	Part	Size (in.) NPSM
900531	0.250	0.050	971770	$\frac{1}{4} \times \frac{3}{8}$
900520	0.375	0.062	971760	$\frac{3}{8} \times \frac{3}{8}$

Section 9

Specifications

All specifications are subject to change without notice

Dimensions

Dimensions	Metric (cm)	English (in.)
Height	9.5	3.75
Length	23.4	9.23
Width	7.4	2.91
NOTE: The spray gun dimensions include the fluid and air fittings.		

Weight

Weight	Metric (g)	English (oz)
HVLP, airspray, non-circulating	729	25.7
HVLP, airspray circulating	798	28.1
NOTE: The spray gun weight includes the fluid and air fittings.		

Operating Pressures

Air	Metric	English
Maximum input pressure	6.9 bar	100 psi
Fluid		
Maximum 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.		

Air Hose

Weight	Metric	English
Length (optimum for HVLP)	7.62 m	25 ft
Minimum ID required for HVLP	6.4 mm	1/4 in.

Fitting Sizes

Air	
Standard Fittings	
• Atomization	$\frac{3}{8}$ tube
• Horn	$\frac{3}{8}$ tube
• Trigger	$\frac{1}{4}$ tube
Fluid	
Standard swivel fitting(s)	$\frac{3}{8}$ -18 NPSM, male

DECLARATION of CONFORMITY

MODEL: Prism Automatic Spray Applicators

The Prism family includes airless, air spray, air assisted airless (AAA), and HVLP to cover a wide variety of applications.

APPLICABLE DIRECTIVES:

94/9/EC (ATEX equipment for use in potentially explosive atmospheres)

98/37/EEC (Machinery)

STANDARDS USED FOR COMPLIANCE:

IEC417

EN1127-1

EN13463-5

EN292

EN13463-1

PRINCIPLES:

This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

FLAMMABLE ATMOSPHERE MARKING: Ex II 2 G c T6

TECH FILE: Notified Body #0518

NOTE: The year the unit is manufactured is shown in the serial number "AA04A" indicates the unit was built in 2004, "A" means month of January.

CERTIFICATES:

DNV ISO9001: 2000

ATEX Quality Notification — Baseefa (2001) Ltd.



Joseph Schroeder
Engineering Manager,
Finishing Product Development Group

Date: 30 Aug 2005



