Trilogy® Air-Assisted Airless Automatic Spray Guns

Customer Product Manual
Part 1601057-02
Issued 09/20

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

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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

Trilogy® AAA Automatic Spray Guns

Safety

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 Safety Data Sheets (SDS) 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 SDS 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 SDS 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 SDS 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.

Description

The Trilogy Air-Assisted Airless Automatic Spray Guns are compressed-air operated automatic spray guns for the application of sprayable fluids at high pressures. The gun is shipped configured for remote control of triggering, atomizing air, and fan pattern air. The gun can be converted to manual control of atomizing and fan pattern air if needed.

All wetted parts are stainless steel. The gun can be used in both circulating and non-circulating systems.

Specifications

Item	Specification
Weight	670 grams (1.47 lb)
Dimensions	150 x 75 x 90 mm (5.9 x 2.9 x 3.5 in.) L x W x H
Fittings	Fluid: 1/2–20 JIC elbow (US), G 1/4 straight (EU) Atomizing and Fan Pattern Air: 3/8 in. (US), 8 mm (EU) tube Trigger Air: 1/4 in. (US), 8 mm (EU) tube
Maximum Fluid Pressure	250 bar (3625 psi)
Maximum Fluid Temperature	60 °C (140 °F)
Typical Fluid Flow Rate	0.26 l/min with a 0.23 mm nozzle, 2 bar air pressure, 100 bar fluid pressure, and viscosity of 45 sec in 4 mm DIN-Becher
Maximum Air Pressure	6.0 bar (85 psi)
Recommended Atomizing Air Pressure	1.5–4.5 bar (21–64 psi)
Recommended Trigger Air Pressure	4.5–6 bar (64–85 psi)
Air Consumption	Round Pattern Flat Pattern
At 1.5 bar (21 psi):	6.4 m^3/h (226 ft^3/h) 4.8 m^3/h (169 ft^3/m)
At 2 bar (28 psi):	7.4 m^3/h (261 ft^3/h) 5.8 m^3/h (204 ft^3/h)
At 2.5 bar (36 psi):	8.8 m^3/h (310 ft^3/h 6.7 m^3/h (236 ft^3/h)
At 3 bar (42 psi):	10 m^3/h (353 ft^3/h) 7.9 m^3/h (278 ft^3/h)
Sound Pressure Level (A)	at Round Pattern Flat Pattern 1.5 bar (21 psi): 74 dB/A 73 dB/A 2 bar (28 psi): 76 dB/A 74 dB/A 3 bar (42 psi): 77 dB/A 80 dB/A
(A) Sound pressure level measurements and specifications are in accordance with *Third regulation to apparatus safety law DIN 45635 part 1/04.84*.	

Installation

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

NOTE: Use an air filter/separator to condition your air supply. Clean, dry air enhances spray quality and extends the life of the spray gun.

1. See Figure 1. Using the 10-mm mounting hole (1), mount the spray gun as desired. If using 1/2 in. mounting bars, use the10 mm to 1/2 in. adapter included with the gun.
2. Connect 1/4 in. (US) or 8 mm (EU) trigger air tubing to the fitting marked **St**.

NOTE: Trigger air should be controlled by a 2-position 3-port solenoid valve with quick exhaust.

3. Connect 3/8 in. (US) or 8 mm (EU) air tubing to the F and R ports. The F port is for Fan Pattern air; the R port is for atomizing air. These ports allow the remote control of coating atomization and fan pattern shape.

WARNING: The pressure rating of the fluid hoses should exceed the maximum fluid pressure of the system. Do not use hoses with a lower pressure rating.

4. Connect the fluid delivery and return hoses to the 1/2 in. JIC elbows (3) or G 1/4 straight fittings (2).
5. If the system will be dead-ended, remove the elbow from one fluid fitting and install the cap nut and seal (4, 5) shipped with the gun.

NOTE: Before using your spray gun for production, flush the spray gun with solvent or a waterborne cleaning solution to remove any oil and contaminants left over from the manufacturing process.

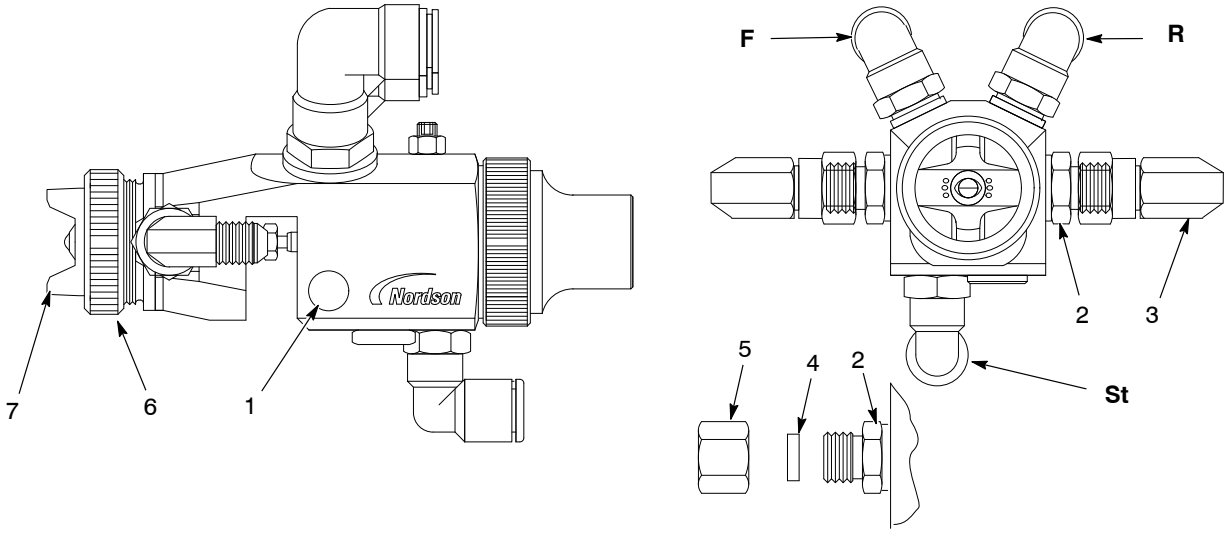

Figure 1 Trilogy AAA Automatic Spray Gun

Converting to Manual Control

To convert the gun to manual control of atomizing and fan pattern air order two optional regulators (29) listed in the spray gun parts list.

1. Replace the **F** and **R** elbows and adapter fittings with the regulators.
2. Remove the plug from the **Sp** port on the bottom of the gun and install one of the elbow fittings removed in Step 1 . Supply air for atomizing and fan pattern to the **Sp** fitting.

Remove Adapter Fittings

Install Regulators

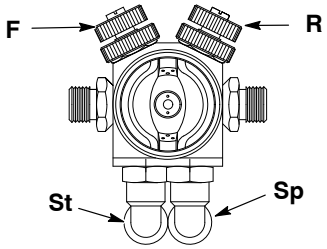

Figure 2 Converting to Manual Control

Operation

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

See Figures 1 and 2. Triggering of the spray gun is accomplished by applying air to the **St** port. Spray pattern adjustments can be made as follows:

Item	Description/Adjustment
Port **R**	Atomizing air: Increase for finer spray, decrease for coarser spray. (Manual control: Turn regulator clockwise to increase, counterclockwise to decrease)
Port **F**	Fan pattern air: Increase for round pattern; decrease for flat pattern. (Manual control: Turn regulator clockwise for a round pattern, counterclockwise for a flat pattern)
Fan Pattern Orientation	1. Relieve all pressure to the spray gun. 2. See Figure 1. Loosen the air cap retainer (6). 3. Rotate the air cap (7) to the desired position. 4. Tighten the retainer securely.

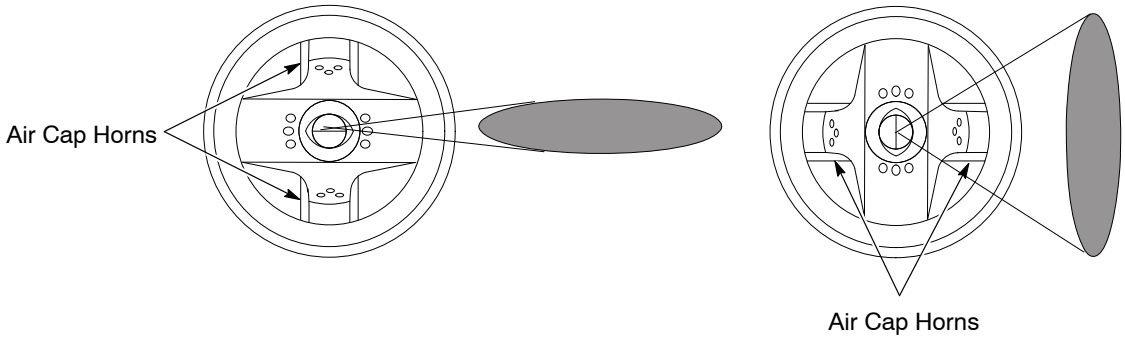

Figure 3 Fan Pattern Orientation

Maintenance

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

WARNING: High pressure fluids are extremely dangerous. Relieve all fluid and air pressure to the gun before performing these procedures.

Cleaning

1. Flush the gun with solvent or waterborne cleaning solution at the end of each shift or at the beginning of long breaks in production. **Do not immerse the gun in solvent or cleaning solution.**
2. Relieve the fluid and trigger air pressure and lock out the gun controls. Clean the air cap and nozzle with a soft bristle brush and solvent or waterborne cleaning solution. Clean the gun body as necessary.

NOTE: Use only tools designed for nozzle cleaning to clean the nozzle orifice. Contact your Nordson representative for nozzle cleaning kits.

Lubrication

- Lubricate the piston O-rings, piston guide, and piston gasket daily with silicone-free oil or thin grease, using the lubrication hole in the gun body.
- If using the regulators for manual control of atomizing and fan pattern air, unscrew the F and R regulators counterclockwise until the seals are visible and lubricate them.

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. See Figure 4 for parts information.

Problem	Possible Cause	Corrective Action
1. Paint flow decreases while spraying	Fluid filter clogged	Clean the filter.
	Viscosity too high	Lower the material viscosity.
	Nozzle too big or worn out	Replace the nozzle.
	Fluid pressure too low	Increase fluid pressure.
		Continued...
2. Irregular fan pattern	Nozzle orifice clogged	Clean or replace nozzle.
	Fluid filter clogged	Clean the filter.
	Nozzle too big or worn out	Replace the nozzle.
	Viscosity too high	Lower the material viscosity.
	Either not enough or no atomizing air	Adjust atomizing air flow with regulator R.
	Air cap orifices clogged	Use a soft bristle brush and solvent or waterborne cleaning solution to clean the air cap.
3. Nozzle clogs	Material pigment too coarse for nozzle size	Use a larger nozzle.
	Fluid filter mesh too big	Use a smaller filter mesh.
4. Spraying continues when gun is triggered off	Nozzle seal or needle ball worn out	Replace the nozzle or needle.
	Needle packing gland too tight; needle cannot move	Loosen the needle packing gland or replace the seals.
	Piston springs worn out	Replace springs. Make sure piston moves smoothly in cylinder.
	Solenoid valve triggering gun is malfunctioning	Check solenoid valve operation.

Problem	Possible Cause	Corrective Action
5. Fluid leaking from packing gland	Packing gland too loose	Tighten packing gland.
	Needle seals worn.	Replace seals.
6. Air leaking from air cap when gun not spraying	Piston seals worn	Replace piston.
7. Air leaking from lubrication port in gun body when operating	Piston seals worn	Replace piston.
8. Air leaking from spring cap	Piston seals worn	Replace piston.
9. When triggered, atomizing air does not start flowing before fluid	Pre-air stop needs to be adjusted	Refer to piston replacement procedure for proper adjustment.
10. Gun does not spray properly: not enough atomizing air and fluid	Piston not opening properly	Remove piston, clean piston cylinder, replace piston if worn or damaged.

Repair

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

WARNING: High pressure fluids are extremely dangerous. Relieve all fluid and air pressure to the gun before performing these procedures.

Nozzle and Air Cap Replacement

1. See Figure 4. Unscrew the air cap retainer (1) and remove it, the air cap and seal (2,3), and the nozzle (4) from the gun.
2. Remove the nozzle from the air cap.
3. Inspect the air cap seal (3) and replace it if damaged.
4. Install a new nozzle in the new air cap.
5. Install the air cap, seal, and nozzle in the retainer and install them on the gun. Orient the air cap as desired, then tighten the retainer securely.

Needle Replacement

1. See Figure 4. The spring cap (21) is under spring pressure. Carefully unscrew the spring retainer nut (20), and remove the spring cap.
2. Remove the large and small springs (22, 23). Grasp the guide nut (24)and pull the needle assembly (7, 24, 25) out of the gun.
3. Remove the guide nut (24) and stop nut (25) from the old needle and install them on the new needle.
4. Install the needle through the piston and into the gun.
5. Adjust the position of the stop nut so that there is a 1–1.5 mm (0.04–0.06 in.) gap between it and the face of the piston.
6. Tighten the guide nut down on the stop nut. Recheck the gap and adjust if necessary.
7. Install the springs into the spring cap, then install the spring cap on the gun and secure it with the spring retainer nut. Tighten the nut securely.

Needle Seal Replacement

1. See Figure 4. Remove the needle as described in *Needle Replacement*.
2. Unscrew the chamber nut (12) and slide it off the packing gland (11).
3. Remove the atomizing chamber (13) from the gun. Note the two O-rings (9) mounted in the grooves in the face of the gun body. Do not lose these O-rings. Replace them if damaged.
4. Unscrew the packing gland (11) from the atomizing chamber, and remove the two O-rings (9), two inverted cup seals (10), and gland seal (8) from the chamber.
5. Inspect the gland seal and replace it if damaged.
6. Install the gland seal into the chamber, then install the O-rings and inverted cup seals as shown.
7. Thread the packing gland into the chamber, then install the chamber into the gun after first making sure the two O-rings in the face of the gun body are installed correctly.
8. Install the chamber nut over the packing gland and tighten it securely.
9. Install the needle as described in *Needle Replacement*.

Piston Replacement

1. See Figure 4. Remove the needle as described in *Needle Replacement*.
2. Loosen the hex nut (14) on the retaining screw (15), then remove the retaining screw from the gun body.
3. Use a low pressure air gun to blow air into the actuating air port and push the piston out of the cylinder.
4. Install a new piston all the way into the cylinder, thread the retaining screw into the gun body until it contacts the piston, then tighten the hex nut to hold the screw securely in place.
5. Install the needle as described in *Needle Replacement*.

Seal Ring Replacement

1. See Figure 4. Remove the air cap and nozzle.
2. Unscrew the spring retainer nut (20) and remove the spring cap and springs (21, 22, 23).
3. Remove the seal retaining screw (5) and aluminum seal ring (6).
4. Install a new seal ring and seal retaining screw.
5. Install the springs, spring cap, and spring retainer nut.
6. Install the nozzle and air cap.

Parts

To order parts, call the Nordson Industrial Coating Systems Customer Support Center at (800) 433-9319 or contact your local Nordson representative. For customers outside the USA, refer to the list of Nordson Global Locations at www.nordson.com.

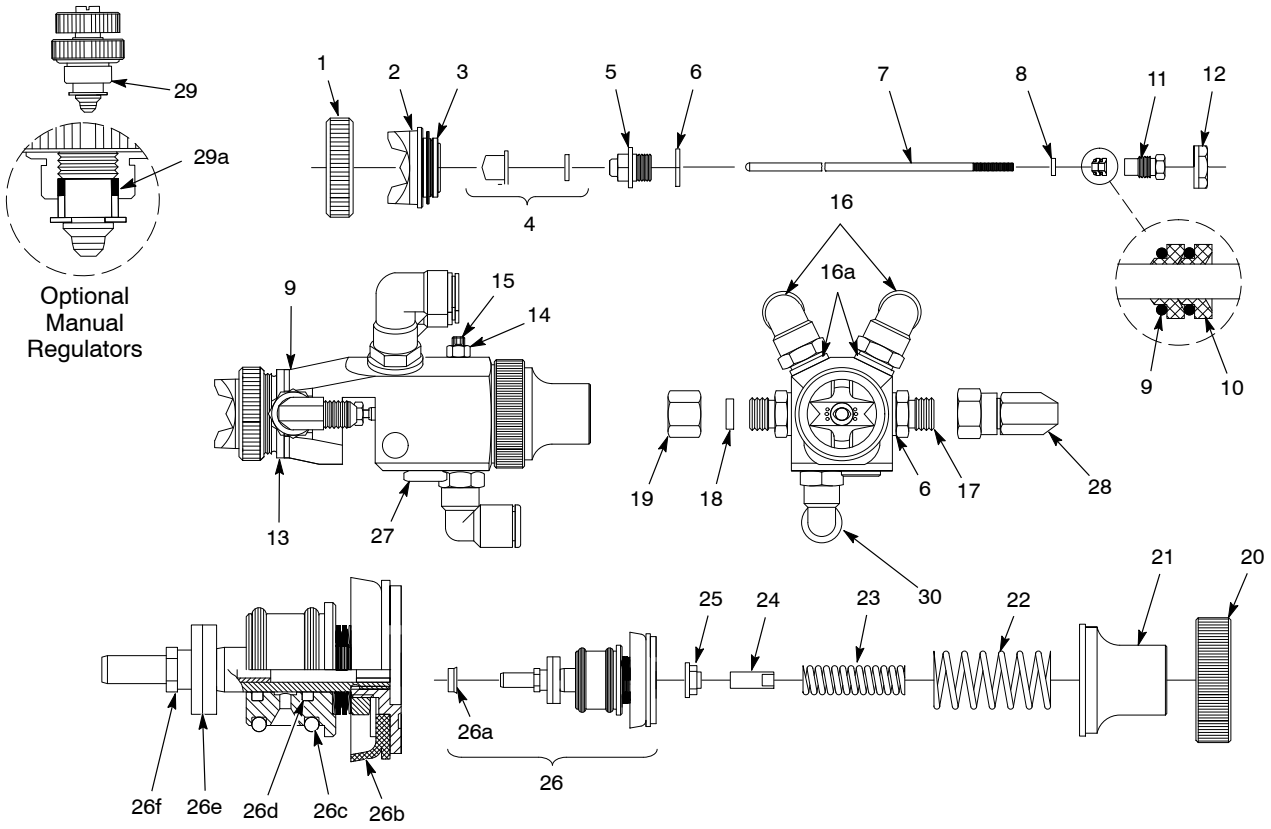

Figure 4 Trilogy AAA Automatic Spray Guns

Item	Part	Description	Quantity	Note
–	1600769	Gun, auto, NES, Trilogy AAA	1	
	1600801	Gun, auto, NES, Trilogy AAA, metric		
1	1601016	• Retainer, air cap, AAA LT/auto, Trilogy NES	1	
2	1600913	• Air cap, AAA, Trilogy NES	1	
3	1601028	• Seal, air cap, AAA auto, Trilogy NES	1	
4	1600878	• Nozzle, .33 mm, 50 degree, AAA, Trilogy NES	1	A
5	------	• Screw, retaining, seal	1	C
6	------	• Seal ring, aluminum	1	B, C
7	1601026	• Needle, AAA auto, Trilogy NES	1	
8	1601030	• Seal, gland, AAA auto, Trilogy NES	1	
9	------	• O-ring, 4.0 x 1.2, Viton, Trilogy NES	2	B, C
10	------	• Seal, cup, inverted	2	C
11	1601027	• Gland, packing, AAA auto, Trilogy NES	1	
12	1601040	• Nut, chamber, auto, Trilogy NES	1	
13	1601034	• Chamber, atomizing, AAA auto, Trilogy NES	1	

Continued...

Item	Part	Description	Quantity	Note
14	–––––––	• Nut, hex, M5, DIN 934	1	
15	1601041	• Screw, retaining, auto, Trilogy NES	1	
16	972858	• Elbow, male, 3/8 tube x 1/8 NPT	2	D
16	972276	• Connector, male, elbow, 8 mm tube x 1/8 uni	2	D
16a	1601822	• Insert, adapter, 1/8 NPT, Trilogy NES	2	D
16a	1601823	• Insert, adapter, 1/8 G, Trilogy NES	2	D
17	1601032	• Nipple, fld, M10 x 1/4 G, AAA auto, Trilogy NES	2	
18	–––––––	• Seal	1	B, C
19	1601033	• Nut, cap, 1/4 G, AAA auto, Trilogy NES	1	
20	1601025	• Nut, spring retainer, AAA auto, Trilogy NES	1	
21	1601038	• Cap, spring, AAA auto, Trilogy NES	1	
22	1601039	• Spring, outer, AAA, auto, Trilogy NES	1	
23	1601029	• Spring, inner, AAA auto, Trilogy NES	1	
24	1601036	• Nut, guide, AAA auto, Trilogy NES	1	
25	1601035	• Nut, stop, AAA auto, Trilogy NES	1	
26	1601037	• Piston, complete, AAA auto, Trilogy NES	1	
26a	–––––––	• • Ring, seal	1	B, C
26b	–––––––	• • Gasket, piston	1	B, C
26c	–––––––	• • O-ring, 16 x 2.0	2	B, C
26d	–––––––	• • Ring, square	2	B, C
26e	–––––––	• • Seal, take up, complete	1	B, C
26f	–––––––	• • Nut, counter	1	C
27	1601824	• Plug, auto, Trilogy NES	1	
28	1601888	• Elbow, 1/2–20 JIC x 1/4 G, stainless steel	2	E
NS	1600808	• Adapter, gun bar mount, Trilogy NES	1	
29	1601042	Regulator, air, auto, Trilogy NES	2	F
29a	–––––––	• • Seal	1	B, C
30	1617891	Elbow, female, ¼ T x ¼ NPT, Trilogy NES	1	D, G
30	1617892	Elbow, female, 6 mm T x R¼, Trilogy NES	1	D, G

NOTE A: Also available in additional sizes. Refer to the Nozzles list.

B: Included in 1601043 Kit, seal, AAA auto, Trilogy NES.

C: Included in 1601044 Kit, repair, AAA auto, Trilogy NES. Repair kit includes 1601043 seal kit.

D: If replacing, order correct thread size for your application.

E: Special screw connection, 90° JIC ½ in. x 20.

F: Optional, order separately. Use to convert atomizing and fan pattern air from remote control to manual control.

G: Sold separately.

Nozzles

Part	Description	Note
1600878	Nozzle, .33 mm, 50 degree, AAA, Trilogy NES	
1600879	Nozzle, .23 mm, 40 degree, AAA, Trilogy NES	
1600880	Nozzle, .23 mm, 50 degree, AAA, Trilogy NES	
1600881	Nozzle, .28 mm, 40 degree, AAA, Trilogy NES	
1600882	Nozzle, .28 mm, 50 degree, AAA, Trilogy NES	
1600883	Nozzle, .38 mm, 50 degree, AAA, Trilogy NES	
1600884	Nozzle, .38 mm, 60 degree, AAA, Trilogy NES	
1600885	Nozzle, .70 mm, 50 degree, AAA, Trilogy NES	
1600886	Nozzle, .70 mm, 60 degree, AAA, Trilogy NES	

EU DECLARATION of Conformity

Product: Trilogy Non-Electrostatic Automatic Spray Guns

Model: AAA, LP, GP, LP QC

Description: These are non-electrostatic manual spray guns, both high pressure and low pressure.

Applicable Directives:
2006/42/EC **-** Machinery Directive
2014/34/EU - ATEX Directive

Standards Used for Compliance:
EN ISO 12100
EN 1127-1
EN 13463-1
EN 1953

ATEX marking:
- Ex II 2G T6 X

Date: 30Sept20

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