2–8 CC Ejector Gun

Customer Product Manual
Part 1040029–04
Issued 7/20

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

Change Record

Revision	Date	Change
03	03/14	Changed part number for Fluid Cartridge Service kit from 1039759 to 1101753 in the Repair section.
04	07/20	New ejector gun manifold.

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 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 them this card
- Tell them what 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:

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

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

Action in the Event of a Malfunction

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

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

Disposal

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

Specifications

See Figure 1.

Minimum Mounting Space
1.8 in. (4.6 cm) center to center

Shot Size
2–8 ccs

Minimum Cycle Time
4 sec (1.5 sec dispense; 2.5 sec refill)

Compressed Air Requirements
60–90 psi (4.1–6.2 bar)

Electrical Requirements
Supply Voltage: 10–30 Vdc
Operational Current ≤200 mA

Operating Temperature Range
35–140 °F (1.67–60 °C)

Fluid Orifice
$^1/_4$ NPT

Minimum Material Viscosity
50,000 centipoise

Operating Pressure Range
750–3500 psi (52–241 bar)
(proportional to fluid viscosity)

Maximum Operating Air Pressure
90 psi (6 bar)

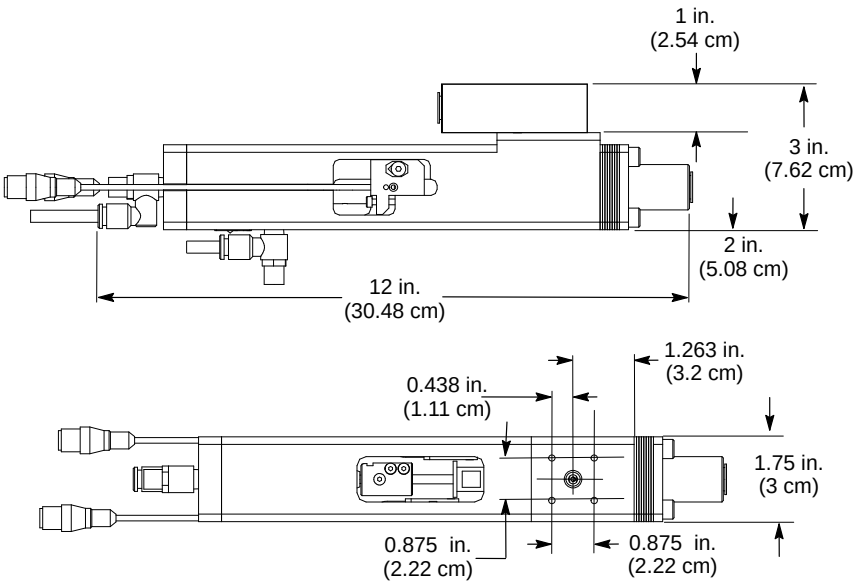

Figure 1 Specifications

Description

See Figure 2. The Nordson Ejector gun is an air-actuated, fluid-driven self-metering shot valve used in body shop applications to dispense epoxy and sealer-type mastic materials. The Ejector guns are typically used in applications with an Ejector gun controller, a bulk material delivery pump, and customer-specific components. The Ejector gun can be adjusted to dispense varying amounts of material between 2–8 cc.

Table 1 lists the major Ejector gun components.

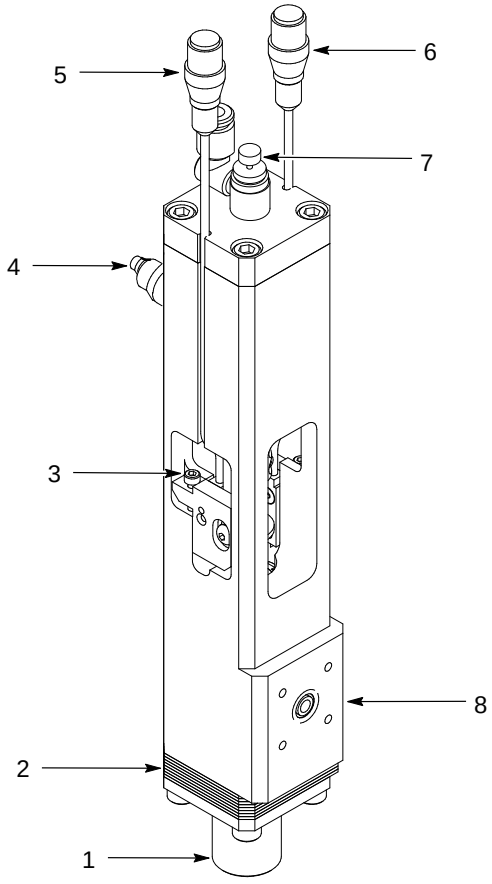

Figure 2 Ejector Gun

Table 1 Ejector Gun Components

Item	Description
1	Nozzle Adapter—for installing a nozzle to the Ejector gun.
2	Spacers—use to either increase or decrease the material shot size. The Ejector gun is shipped with eight installed spacers. Table 2 relates dispense volume to spacer quantity.
3	Proximity Switch Adjustment Screw—one for each proximity switch; use to adjust the position of each proximity switch.
4	Refill Control Valve—controls the speed of the piston during refill operations.
5	Refill Proximity Switch—monitors the position of the Ejector gun fluid cartridge during refill operations; communicates refill data to the controller.
6	Dispense Proximity Switch—monitors the position of the Ejector gun fluid cartridge during dispense operations; communicates dispense data to the controller.
7	Dispense Control Valve—controls the speed of the piston during dispense operations.
8	Mounting Base—for installing a manifold to the fluid inlet.

Table 2 Relation of Dispense Volume to Spacers

Shuttle Travel (in.)	Volume ($in.^3$)	Volume (cc)	Spacer Thickness (in.)	Number of Spacers
0	0	0	none	0
0.5	0.061	1	0.05	1
0.10	0.122	2	0.10	2
0.15	0.183	3	0.15	3
0.20	0.244	4	0.20	4
0.25	0.305	5	0.25	5
0.30	0.366	6	0.30	6
0.35	0.427	7	0.35	7
0.40	0.488	8	0.40	8

WARNING

- Allow only qualified personnel to perform the tasks in the following sections. Follow the safety instructions in this document and all other related documentation.
- High pressure fluids are extremely dangerous. Do not place any part of your body in front of a dispensing device, drain, or leak in a high pressure system. A jet of high fluid can cause serious injury, toxic poisoning, or death. Relieve system and material pressure before disconnecting hoses or components from this equipment.

Installation

See Figure 3 and follow the procedures listed in Table 3.

Table 3 Ejector Gun Connections

Item	Description
Shot Size	The Ejector gun is shipped in the 8 cc configuration (eight spacers installed). Refer to the *Set the Shot Size* procedure to change the configuration.
Mounting	Mount a manifold to the mounting base (4). A manifold without mounting holes is available for configuring the Ejector gun to a specific application. Contact your Nordson Corporation representative for more information about configuring a mounting specific to your application.
Air	Connect $^1/_4$-in. tubing to the refill control valve (7) and dispense control valve (5). The air supply requirement is for standard shop air, 20 cfm momentary at 120 psi (8.3 bar) maximum.
Fluid	Connect the fluid hose as determined by your mounting specification.
Control Valves	Adjust the control valves. Refer to the *Adjust the Control Valves* procedure.
Proximity Switches	Connect the proximity switches (6) to either the controller or a J-box. Adjust and test the proximity switches. Refer to the *Adjust the Proximity Switches* procedure.

Set the Shot Size

The shot size determines the amount of material dispensed by the Ejector gun. Ejector guns are shipped in the 8 cc configuration. Use the following procedure to change the shot size:

1. Refer to Table 2 to determine the desired shot size.
2. See Figure 3. Remove only the two screws (1) as shown on A. Loosen the other screws (3) just enough to add or remove the spacers (2).
3. Either add or remove spacers (2) as shown on B to obtain the desired shot size. Push the nozzle adapter (8) in by hand until it bottoms against the spacers (2).
4. Install the screws (1). Tighten the screws (1, 3) to 11 ft-lb (15 N•m).

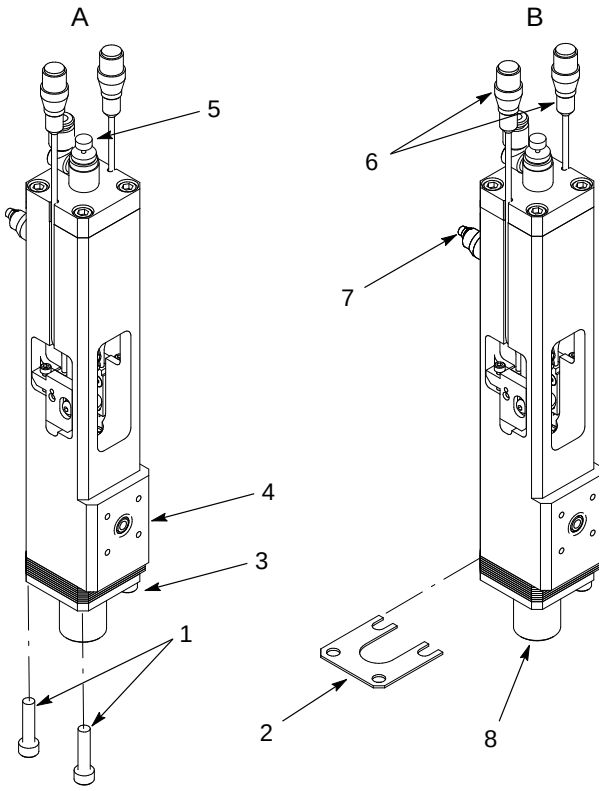

Figure 3 Adjusting Shot Size

Adjust the Control Valves

Adjust the dispense and load valves before starting production operation.

! CAUTION !

Failure to properly adjust the speed control valves will allow the piston to cycle too quickly and may damage parts.

1. See Figure 4. Loosen the locking collar (1) on the dispense valve (3).
2. Turn the knob (2) clockwise until it bottoms out into the dispense valve (3). Back out the knob 2 turns.
3. Tighten the locking collar (1) securely.
4. Perform steps 1 through 3 for the load control valve (4).
5. Cycle the gun. If the needle does not fully stroke within about 0.5–1 seconds, verify that the air supply pressure is between 60–90 psi (4.1–6.2 bar) and readjust the valves.

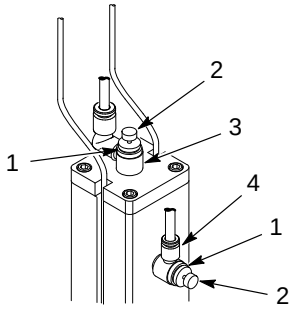

Figure 4 Adjusting a Control Valve

Adjust the Proximity Switches

Use these procedures to adjust the proximity switches.

Use a 2.5-mm ball end hex key to adjust the proximity switches.

Adjust the Refill Proximity Switch

1. Cycle the gun to the refill position.
2. See Figure 5. Loosen the screw (3) until the switch plate (2) moves freely.
3. While applying downward hand pressure on the switch plate (2), perform the following:
   a. Using the ball end of the hex key, turn the adjusting screw (1) clockwise until the LED goes out.
   b. Slowly turn the adjusting screw (1) counter clockwise until the LED comes on. Turn the adjusting screw another $^1/_4$ turn counter clockwise.
   c. Tighten the screw (3) to 14 in.-lb (1.3 N•m).

Adjust the Dispense Proximity Switch

1. Cycle the gun to the dispense position.
2. See Figure 5. Loosen the screw (3) until the switch plate (2) moves freely.
3. While applying downward hand pressure on the switch plate (2), perform the following:
   a. Using the ball end of the hex key, turn the adjusting screw (1) counter clockwise until the trigger point is past and LED is off.
   b. Slowly turn the adjusting screw (1) clockwise until the LED lights. Turn the adjusting screw another $^1/_4$ turn clockwise.
   c. Tighten the screw (3) to 14 in.-lb (1.3 N•m).

Test Adjustments

1. Cycle the Ejector gun.
2. The dispense LED should light when the shuttle moves to the end of the dispense travel. The refill LED should be off.
3. The refill LED should light when the shuttle moves to the end of the refill travel. The dispense LED should be off.
4. Readjust the settings as necessary.

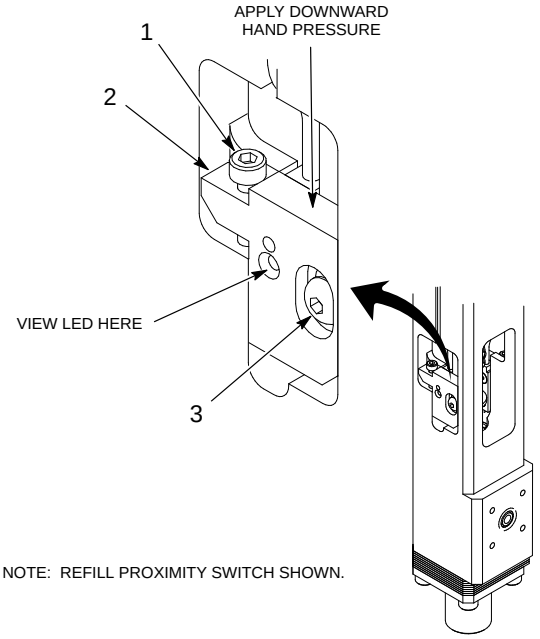

Figure 5 Typical Proximity Switch Adjustment

Operation

Ejector gun operation is dependent upon the system configuration. Refer to your system manual or contact your Nordson representative for more information.

Maintenance

To maintain optimum operation, check for leaks around the coupling slot at the end of every shift.

Troubleshooting

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

Ejector Gun		
Problem	**Possible Cause**	**Corrective Action**
1. Air or fluid leaking around coupling slot	Failed seals	Rebuild the air section. Refer to the *Air Section Rebuild* procedure in the *Repair* section.
	Worn fluid cartridge	Replace the fluid cartridge.
2. No proximity switch signals being received at the controller	Proximity switches not adjusted properly	Verify that the cables from the proximity switches are attached to the controller and that the cables are intact. Re-adjust the proximity switch locations. Refer to the *Adjust the Proximity Switches* procedure in the *Installation* section. If the switches have failed, replace the switches. If the gun is not operating properly and is preventing the switches from signalling the controller, identify and correct the operation problems: If the needle is sticking or if the shuttle is stopped due to leaking, replace the seals. Refer to the *Air Section Rebuild* procedure in the *Repair* section.
3. Gun cycling too fast or too slow	Speed control valves not adjusted properly	The needle should take about 0.5–1 seconds to fully stroke. Refer to the *Adjust the Control Valves* procedure in the *Installation* section to modify the speed control valve adjustments.
Ejector Gun Controller		
Problem	**Possible Cause**	**Corrective Action**
1. Receiving dispense fault (Gun #X: DISP-FLT) at controller	Proximity switch not adjusted properly	Adjust the proximity switch locations. Refer to the *Adjust the Proximity Switches* procedure in the *Installation* section.
	Timer not set properly	Change the dispense timer value from the **SETUP** menu. Refer to the *Operation* section in the *Ejector Gun Controller* manual for complete instructions. You may have to adjust the dispense timer when you change materials.
2. Receiving load fault (GUN #X: LOAD-FLT) at controller	Proximity switch not adjusted properly	Adjust the proximity switch locations. Refer to the *Adjust the Proximity Switches* procedure in the *Installation* section.
	Timer not set properly	Change the load timer value from the **SETUP** menu. Refer to the *Operation* section in the *Ejector Gun Controller* manual for complete instructions. You may have to adjust the load timer when you change materials.
	No material to Ejector guns	Check the material supply and the unloader material supply hoses. Load new material or troubleshoot for material blockages, as indicated. Refer to your unloader manual for more information.

Repair

Repair consists of rebuilding the Ejector gun air section.

Procedures for replacing the fluid cartridge are included in Fluid Cartridge Service Kit 1101753.

Consumable Items

Keep the items listed in Table 4 on hand when performing repairs.

Table 4 Consumable Items

Item	Part	Application
Threadlocking Adhesive	900200	Apply to threads of applicable parts.
TFE Grease	1031834	Lubricate o-rings and applicable parts.

Air Section Rebuild

See Figure 6 and use the following procedure to rebuild the air section.

Disassemble the Air Section

1. Loosen the coupling screws (1). Cycle the gun to disconnect the needle (3) from the coupling (2). Relieve the material and air pressure.
2. Remove the coupling (2) from the piston shaft (9).
3. Disconnect the tubing (15) from the fittings (16, 17).
4. Remove the screws (14) securing the end cap (13) to the gun body (4). Remove and discard the end cap o-ring (12).
5. Remove the piston shaft (9) from the gun body (4). Remove the glyde ring (10) and o-ring (11) from the piston shaft. Discard the o-ring and glyde ring.
6. Remove the spring (8) and spring retainer (7) from the gun body (4). Remove and discard the spring retainer o-rings (5, 6).

Assemble the Air Section

1. Apply TFE grease to the new o-rings (5, 6, 11, 12) and glyde ring (10).
2. Insert the air section parts into the gun body in reverse order of disassembly.
3. Apply threadlocking compound to the threads of the screws (14). Tighten the screws to 9.7 ±1 ft-lb (13.2 ±1.3 N•m).
4. Connect the tubing (15) to the fittings (16, 17).
5. Install the coupling (2). Using a small diameter hex wrench (18), push on the needle (3) until it bottoms out into the coupling (2). Tighten the coupling screws (1) to 7 in.-lb (0.75. N•m).

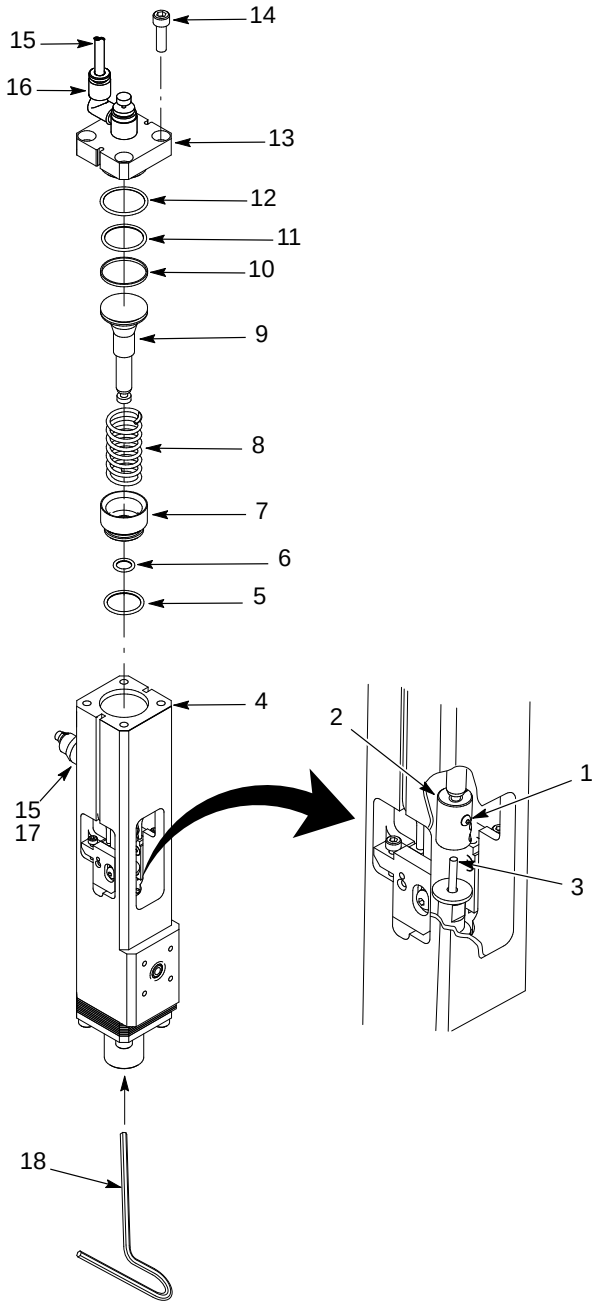

Figure 6 Air Section Seals

Parts

To order parts, call the Nordson Customer Service Center or your local Nordson representative.

See Figure 7 and refer to the following parts list.

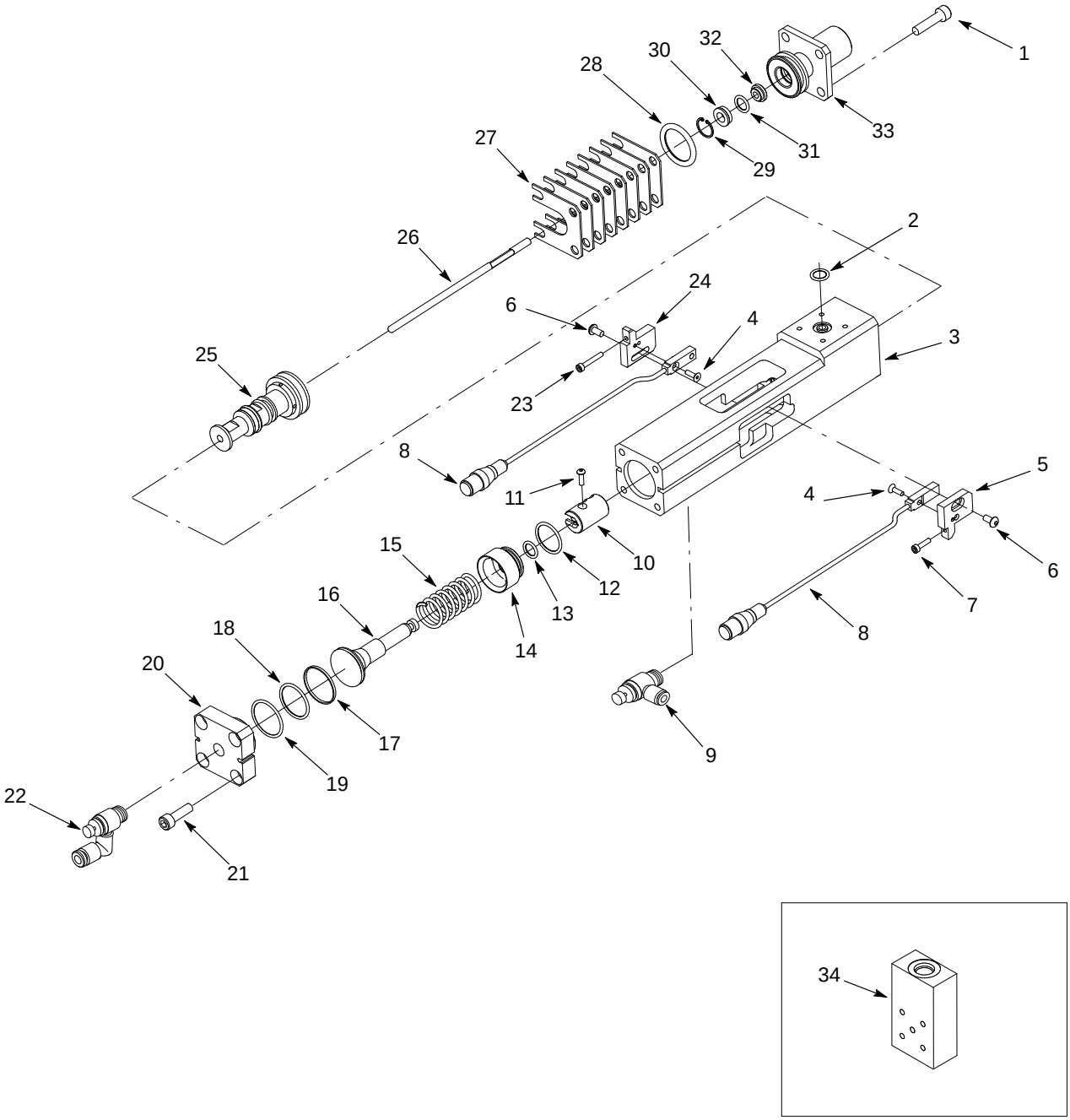

Figure 7 2–8 CC Ejector Gun

Item	Part	Part	Part	Description	Quantity	Note
—	1101750			Gun, Ejector, 2–8 cc	1	
—		1101751		Gun, Ejector, 2–8 cc, UHMW	1	
—			1101761	Gun, Ejector, 2–8 cc, metal seal	1	
1	982032	982032	982032	• Screw, M6 x 30	4	
2	940120	940120	940120	• O-ring, 0.375 x 0.500 x 0.063	1	
3	- - - - - -	- - - - - -	- - - - - -	• Body, gun	1	
4	- - - - - -	- - - - - -	- - - - - -	• Screw, M3 x 12, zinc	2	
5	- - - - - -	- - - - - -	- - - - - -	• Plate, switch, refill	1	
6	982446	982446	982446	• Screw, M4 x 8, zinc	2	
7	982775	982775	982775	• Screw, M3 x 12	1	
8	1038326	1038326	1038326	• Switch, proximity	2	
9	1034040	1034040	1034040	• Speed control, elbow $^1/_4$ tube x $^1/_8$ NPT	1	
10	1037453	1037453	1037453	• Coupling	1	
11	982383	982383	982383	• Screw, M3 x 10	3	
12	940190	940190	940190	• O-ring, 0.813 x 0.938 x 0.063	1	A
13	940128	940128	940128	• O-ring, Viton, black 0.375 x 0.500	1	A
14	1037500	1037500	1037500	• Retainer, spring	1	
15	1064071	1064071	1064071	• Spring	1	
16	1037501	1037501	1037501	• Shaft, piston	1	
17	- - - - - -	- - - - - -	- - - - - -	• Glyde ring, piston	1	A
18	940211	940211	940211	• O-ring, Viton, 0.938 x 1.063 x 0.063	1	A
19	- - - - - -	- - - - - -	- - - - - -	• O-ring, Buna N, 1 x 1.125 x 0.063	1	A
20	- - - - - -	- - - - - -	- - - - - -	• Cap, end	1	
21	982030	982030	982030	• Screw, M6 x 20	1	
22	1034044	1034044	1034044	• Speed control, universal $^1/_4$ tube x $^1/_8$ NPT	1	
23	982650	982650	982650	• Screw, M3 x 20	1	
24	- - - - - -	- - - - - -	- - - - - -	• Plate, switch, dispense	1	
25	- - - - - -			• Cartridge, fluid	1	B
25		- - - - - -		• Cartridge, fluid	1	C
25			- - - - - -	• Cartridge, fluid	1	D
26	1037723	1037723	1037723	• Needle	1	
27	1042270	1042270	1042270	• Spacer, shot size	8	
28	942142	942142	942142	• O-ring, Viton, 1 x 1.250 x 0.125	1	
29	986023	986023	986023	• Ring, retaining, 56	1	
30	1003172	1003172	1003172	• Washer, hat, 0.541 x 0.188	1	
31	940121	940121	940121	• O-ring, Viton, 0.364 I.D. x 0.070 w, 10411 SB	1	
32	341341	341341	341341	• Seat, gun	1	
33	1037750	1037750	1037750	• Nozzle, $^1/_4$ NPT	1	
34	1616178	1616178	1616178	Manifold, no mounting holes	1	E

NOTE A: These parts are included in the O-Ring Service Kit 1040767.

B: Order Fluid Cartridge Service Kit 1101753.

C: Order Fluid Cartridge Service Kit 1101754.

D: Order Fluid Cartridge Service Kit 1101762.

E: This item is not part of the assembly and must be ordered separately.