CE20 2K
Large Cycle Dispense Gun

Customer Product Manual
Part 1107352
Issued 9/11

For parts and technical support, call the
Finishing Customer Support Center at (800) 433-9319.

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NORDSON CORPORATION • AMHERST, OHIO • USA

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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.

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Nordson Corporation
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555 Jackson Street
Amherst, OH 44001

CE20 2K Large Cycle Dispense Gun

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.

Personal Safety *(contd)*

- 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:

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.

Description

See Figure 1. The Nordson CE20 2K Large Cycle dispense gun is used to dispense adhesives, sealants, and other high viscosity materials. The gun can be used in a variety of applications depending on the material to be dispensed and other variables in a given application system.

Installation

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

CAUTION: Route the cables, air line, and material supply hose to avoid contact with workpieces and damage from robot movement.

NOTE: Consider the clearances necessary for the cables, air lines, and material supply hoses when calculating the robot and gun path.

Install the Dispense Gun to a Mounting Fixture

Because the CE20 dispensing gun can be used for a wide variety of applications, mounting configurations vary greatly. Consult a Nordson representative for specific information on your application if necessary.

Connect the Air Supply

Route the gun supply air lines so that they are free and clear of any movement around the wrist and arm of the robot, as well as of any workpiece tooling.

Supply air to the gun solenoid from an oil-free, shop air outlet that will maintain a minimum pressure of at least 4.1 bar (60 psi). The maximum air pressure to the gun is 8.6 bar (125 psi).

NOTE: The gun will not operate properly at a pressure less than 4.1 bar (60 psi).

1. See Figure 2. Connect an air line from the gun-closed solenoid to the elbow at the gun-closed air port (7).
2. Connect an air line from the gun-open solenoid to the elbow at the gun-open air port (8).

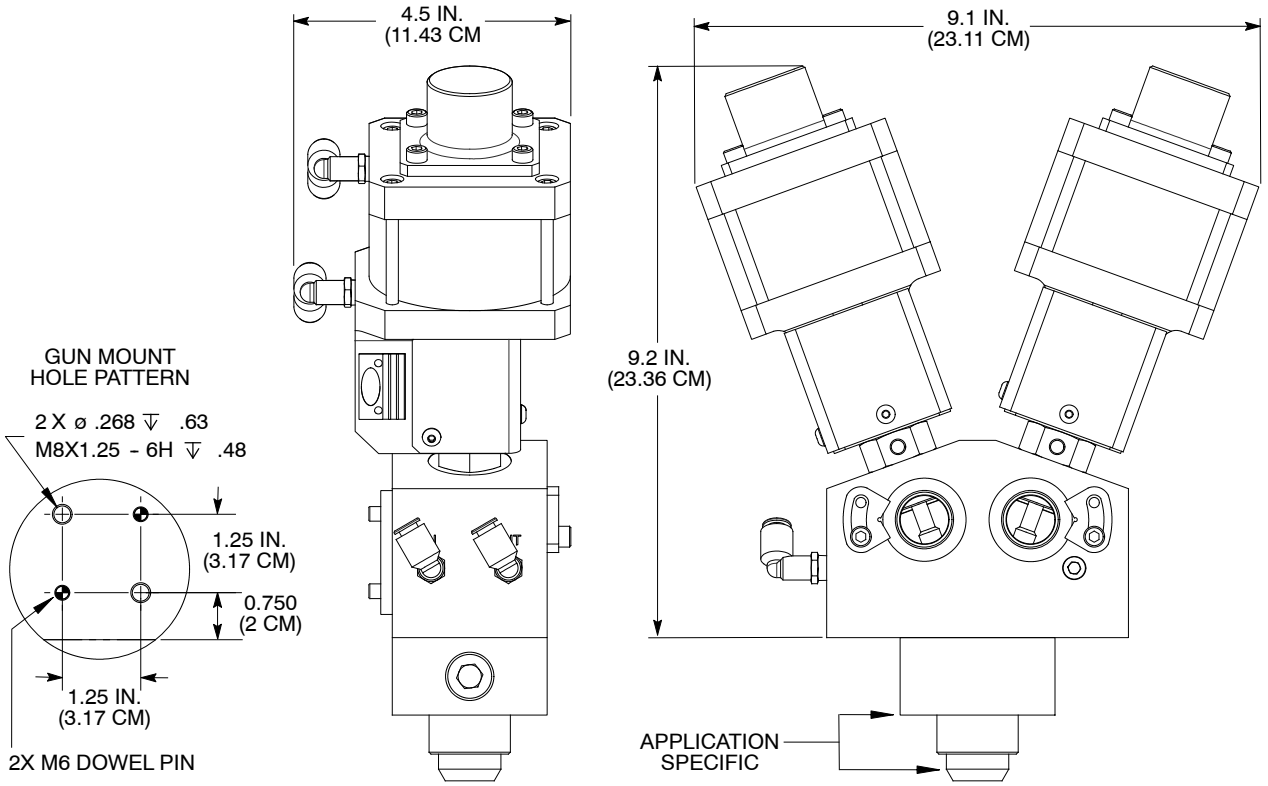

Figure 1 Typical Dispense Gun

Connect the Material Supply Hose

To install the material supply hose from the pump/header system to the gun, use the adapters and reducers specified by Nordson Corporation for the application. Contact a local Nordson representative for a listing of available adapters, reducers, and fitting kits.

NOTE: The maximum fluid pressure for the gun is 344.8 bar (5000 psi).

1. Apply pipe sealant or PTFE tape to the threads of the material inlet fittings.
2. See Figure 2. Install the material inlet fittings into the material inlet ports (3) and connect the material supply hoses.
3. Install the material supply hose locking keys (4) using the washers (5) and screws (6). Tighten the screws securely.

Connect the Temperature Conditioning Supply

See Figure 2. To install the temperature conditioning supply lines, connect the coolant tube to the temperature conditioning inlet port (1) and another tube to the temperature conditioning outlet port (2).

Install a Nozzle

See Figure 2. Nozzle adapters (9) and mixer tubes (10) are application specific. Refer to the *Mixer Tubes, Shrouds, and Teach Nuts* section for more information. If necessary, contact a Nordson representative for assistance in selecting and installing the appropriate nozzle for the application.

Lubricate the nozzle adapter o-rings before installing the nozzle adapter onto the dispense gun.

Purge the Gun

Purge the gun to remove air trapped in the system material hoses and nozzle which may cause inaccurate transducer readings.

1. Place a material waste container under the gun.
2. From the system controller, initiate the gun dispensing and purge routine until material flows freely from the nozzle.

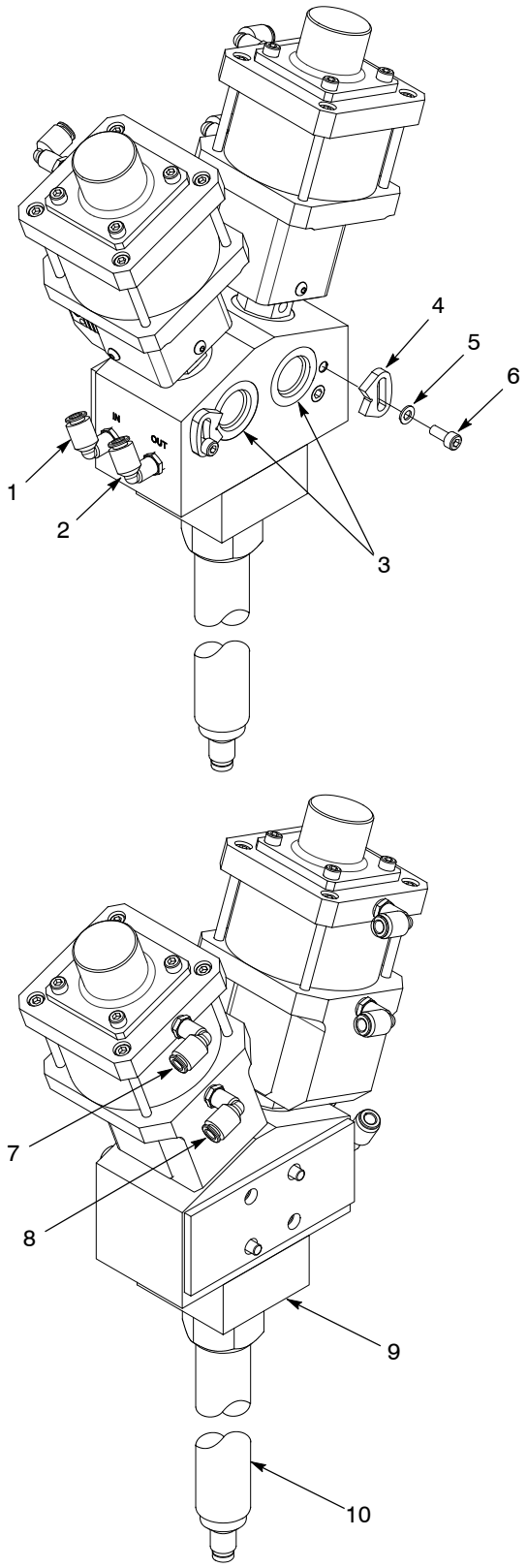

Figure 2 Installation

Operation

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

Operation is dependent upon your application requirements and fluid delivery options. Refer to Operation Parameter sheet provided with the system documentation for operating parameters.

Clear a blocked Nozzle

1. Shut off the air pressure to the material supply pump.
2. Carefully bleed off the residual pressure in the material supply lines.
3. Shut off and lock out all power to the system.
4. Remove the nozzle.
5. Clean the nozzle thoroughly with an appropriate solvent.
6. Install the nozzle.

Maintenance

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

Do not loosen any hydraulic/pneumatic fitting or connection without first relieving system hydraulic/pneumatic pressure.

System or material pressurized. Relieve pressure. Failure to observe may result in equipment damage, serious personal injury, or death.

NOTE: Always perform preventive maintenance and lubrication procedures according to the facility maintenance schedule. Use the frequencies listed in Table 1 if the facility does not have a maintenance schedule.

Table 1 Maintenance Schedule

Component	Frequency		
	Weekly	Monthly	Quarterly
Body and Seat Mounting: Check for loose body and seat connection to air cylinder and tighten, if necessary.	X		
Material Shelf Life: Check material expiration date.	X		
Bonnet Condition: Check for leaking bonnet.	X		
Filter/Regulator: Check regulator setting and adjust, if necessary.	X		
Air Supply: Check tubing and connectors.	X		
Pneumatic Regulator: Clean and drain filter. Change filter as needed.		X	
Heater Cable Condition: Check for loose and damaged connectors.		X	
Pressure Transducer, if used: Remove and clean the transducer.			X

Troubleshooting

This section contains troubleshooting procedures. 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.

WARNING: To prevent injury to personnel or damage to equipment, review the follwing:

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Ensure all power, air pressure, and fluid pressure is removed from the CE20 gun before performing any troubleshooting procedures.
- Remove input air supply to the material pump. Refer to pump manual for procedures. To avoid injury, do not troubleshoot with the pump turned on, unless directed otherwise.

Problem	Possible Cause	Corrective Action
1. No material dispensed	No material supply pressure to gun	Ensure pump air motor is on. Increase air motor pneumatic pressure as required. If system uses a booster pump, ensure motor is on. Increase motor torque as required.
	Blockage at nozzle — Controller may indicate FULL CLOSED and/or OVERPRESSURE	Perform the steps listed in *Clear a Blocked Nozzle*.
	Blockage upstream from gun	Start at the pump and work toward the gun. Shut down system and relieve hydraulic pressure. Disconnect the material supply hoses at each junction. Power up the system and carefully check for flow. Make sure to shut off power/pressure after each check before the next disconnection. Material pressure must be available at the gun.
2. Material leaks from packing around stem	Lip-seal failed	Replace the bonnet assembly.
3. Insufficient material pressure at gun for application requirements — Controller indicates gun FULL OPEN	Not enough pressure at pump or pump output insufficient	Increase system hydraulic pressure until it reaches the maximum rating of the component with the lowest pressure rating. If this does not correct the problem, contact a Nordson representative for additional guidance and recommendations.

Repair

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

Do not loosen any hydraulic/pneumatic fitting or connection without first relieving system hydraulic/pneumatic pressure.

System or material pressurized. Relieve pressure. Failure to observe may result in equipment damage, serious personal injury, or death.

Replace the Bonnet Assembly

The bonnet assembly is not serviceable, only replaceable.

Remove the Bonnet Assembly

1. See Figure 3. Remove the screws (7) securing the guard (8) to the yoke (5).
2. Hold the air shaft hex (1) with a 10-mm wrench and loosen the jam nut (2) with a second 10-mm wrench.
3. Using a 1-in. open-end wrench, unscrew the retaining nut (4) securing the yoke (5) onto the bonnet hex (6).
4. Hold the air shaft hex (1) with a 10-mm wrench and apply a second 10-mm wrench to the coupler nut (3). Unscrew the coupler nut to remove the air cylinder assembly (11).
5. Hold the bonnet hex (6) with a 1-in. open-end wrench and unscrew the bonnet from the body (9). Discard the old bonnet.

Install the Bonnet Assembly

1. See Figure 3. Coat the new bonnet O-ring and threads with PTFE grease and thread it into the body (9). Tighten the bonnet to 54.2 N•m (40 ft-lb).
2. Lower the air cylinder assembly (10) with the retaining nut (4) held in place onto the bonnet hex (6).
3. Holding the coupler nut (3) in place, finger-tighten the retaining nut (4) onto the bonnet.
4. Using the coupler nut (3), screw the bonnet stem up into the air cylinder shaft at the air shaft hex (2) until it bottoms out. Do not over tighten using the coupler nut.
5. Using a 10-mm wrench to hold the air shaft hex (2), tighten the jam nut (3) into the air shaft hex using a second 10-mm wrench. Tighten the jam nut to 9 N•m (80 in.-lb).
6. Tighten the retaining nut (4) to 40.7 N•m (30 ft-lb).
7. Coat the screws (7) with Loctite 242. Install the guard (8) onto the yoke (5) and tighten the screws securely.

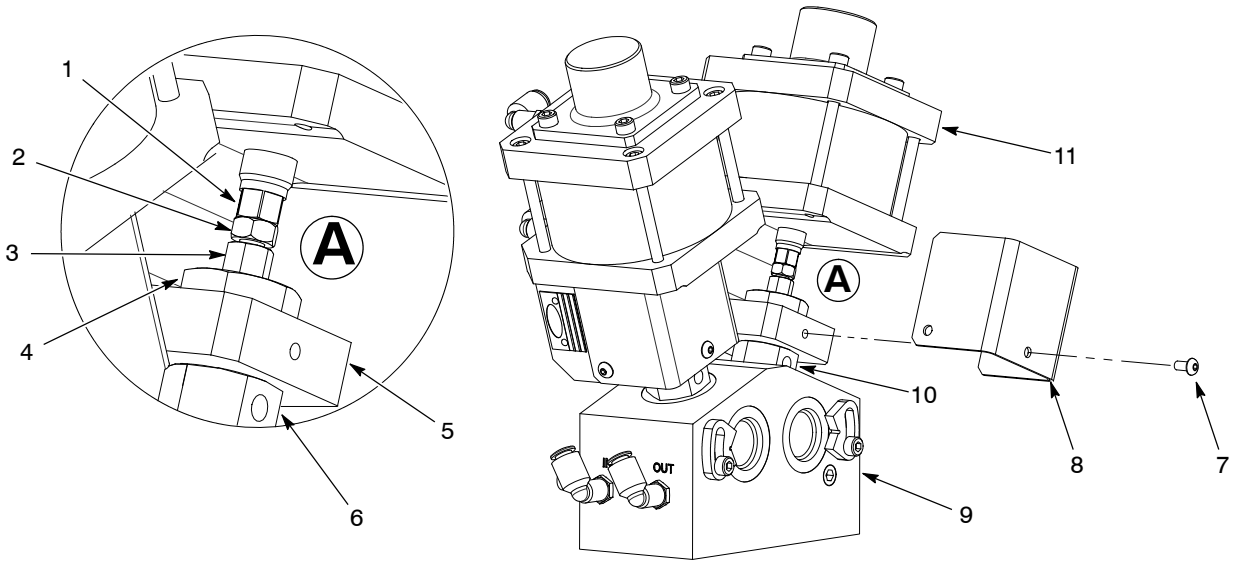

Figure 3 Replacing the Bonnet Assembly

Notes:

Replace the Air Cylinder Piston Assembly

The air cylinder piston assembly is not serviceable, only replaceable.

Remove the Piston Assembly

1. See Figure 4. Remove the screws (7) securing the guard (8) to the yoke (5).
2. Hold the air shaft hex (1) with a 10-mm wrench and loosen the jam nut (2) with a second 10-mm wrench.
3. Using a 1-in. open-end wrench, unscrew the retaining nut (4) securing the yoke (5) onto the bonnet hex (6).
4. Hold the air shaft hex (1) with a 10-mm wrench and apply a second 10-mm wrench to the coupler nut (3). Unscrew the coupler nut.
5. Remove the air cylinder assembly (9). from the dispense gun.
6. See Figure 5. Using a 4-mm hex key, remove the four socket head screws (1) from the upper cylinder head (3).
7. Separate the upper cylinder head from the yoke/lower cylinder head (8).
8. Remove the cylinder sleeve (7) and the piston/shaft assembly (6). Discard the old piston assembly.
9. Remove the lip-seals (4) from the grooves inside the upper and lower cylinder heads.
10. Remove the cylinder head O-rings (5) and discard.

Install the Piston Assembly

NOTE: Always use new O-rings and lip seals when reassembling the gun.

1. See Figure 5. Lubricate new lip-seals (4) with Magnalube-G and install them as shown.
2. Lubricate and install two new cylinder head O-rings (5).
3. Lubricate the inside diameter of the cylinder sleeve (7) and the outer blue seal of the piston/shaft assembly (6).
4. Insert the piston assembly squarely, with uniform pressure, into the cylinder sleeve, taking care not to pinch the seal.
5. Install the piston shaft into the yoke/lower cylinder head (8). Snap the cylinder sleeve onto the yoke.
6. Snap the upper cylinder head (3), O-ring side down, onto the cylinder sleeve (7).
7. Line up the upper cylinder head and lower cylinder heads squarely, so that the air fittings (2) are aligned.
8. Lubricate the threads of the four socket head screws (1) and install them to secure the upper cylinder head onto the lower cylinder head. Tighten the screws 5.2 N•m (46 in.-lb).

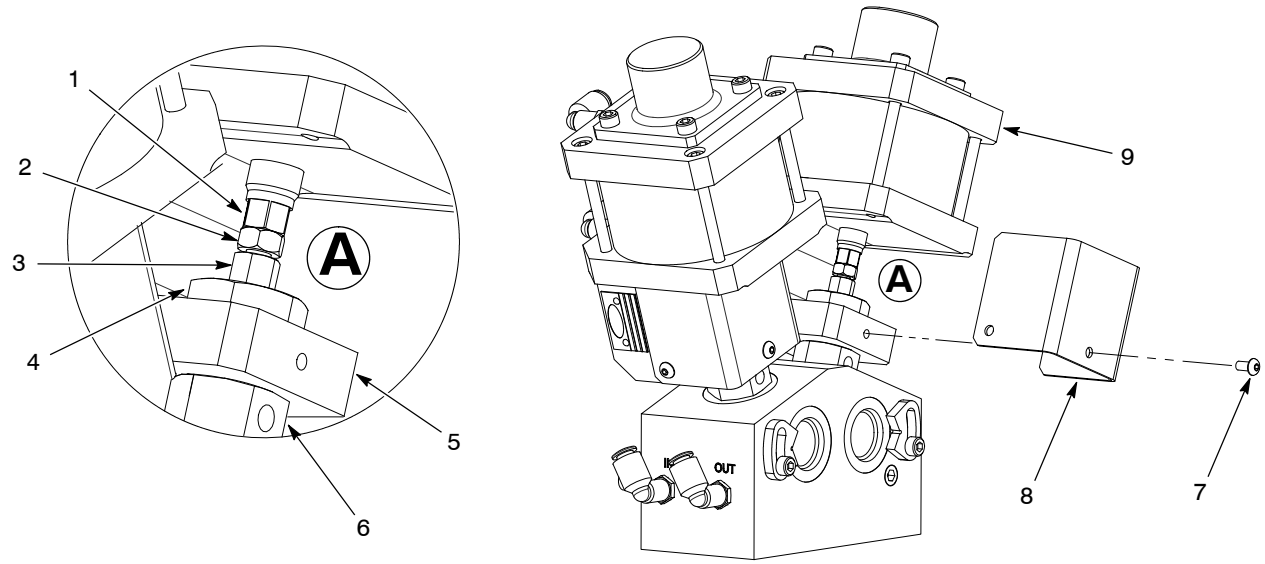

Figure 4 Removing the Air Cylinder Assembly

9. See Figure 4. Position the retaining nut (4) onto the yoke (5). Lower the air cylinder assembly (9) onto the bonnet (6).
10. Hold the coupler nut (3) in place and finger-tighten the retaining nut (4) onto the bonnet (6).
11. Using the coupler nut (3), screw the bonnet stem up into the air cylinder shaft until it bottoms out. Do not over tighten using the coupler nut.
12. Using a 10-mm wrench to hold the air shaft hex (1), tighten the jam nut (2) into the air shaft using a second 10-mm wrench. Tighten the jam nut to 9 N•m (80 in.-lb).
13. Tighten the retaining nut (4) to 40.7 N•m (30 ft-lb).
14. Coat the screws (7) with Loctite 242. Install the guard (8) onto the yoke (5) and tighten the screws securely.

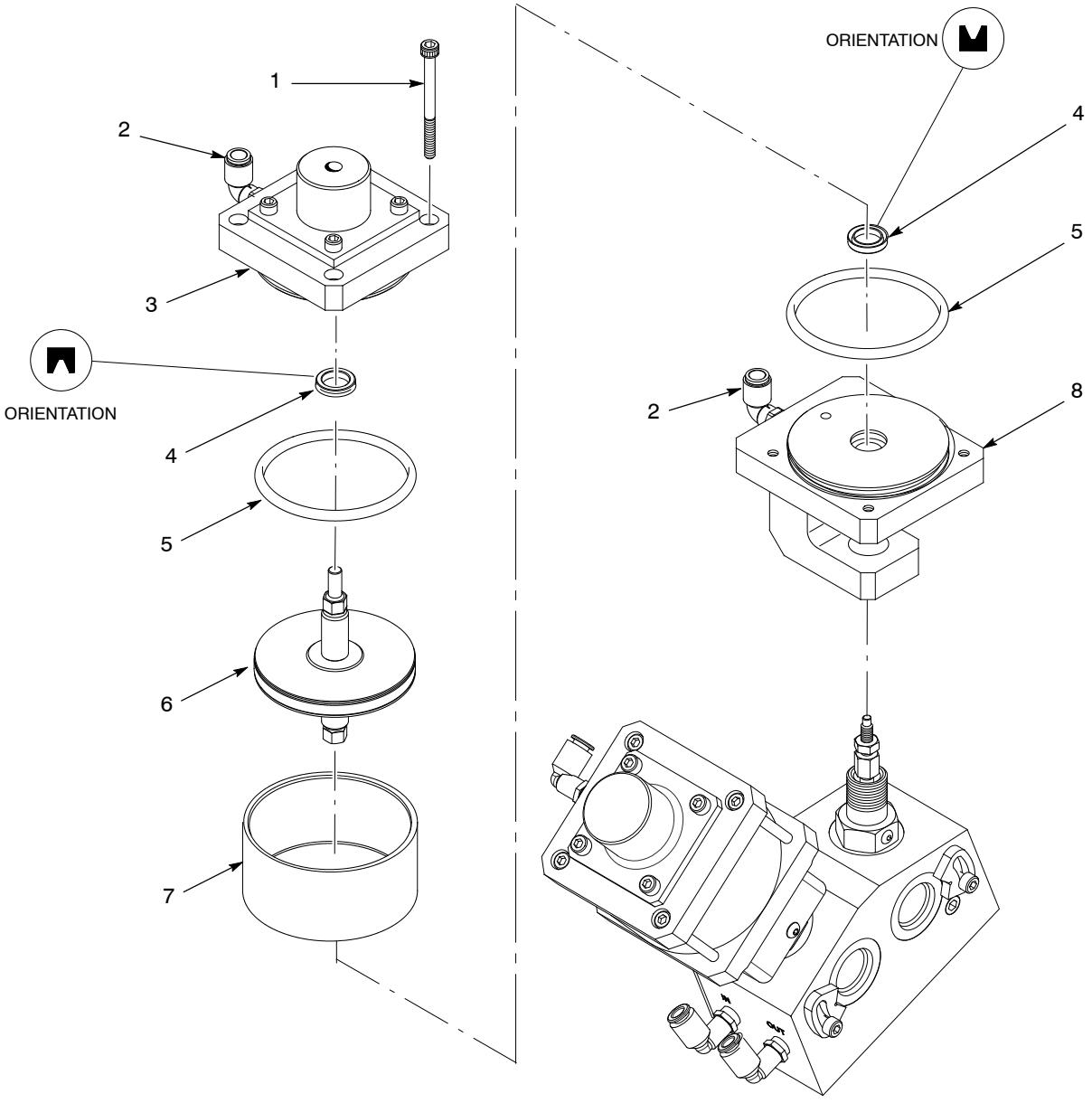

Figure 5 Replacing the Air Piston assembly

Parts

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	

Dispense Gun

See Figure 6 and the following parts list.

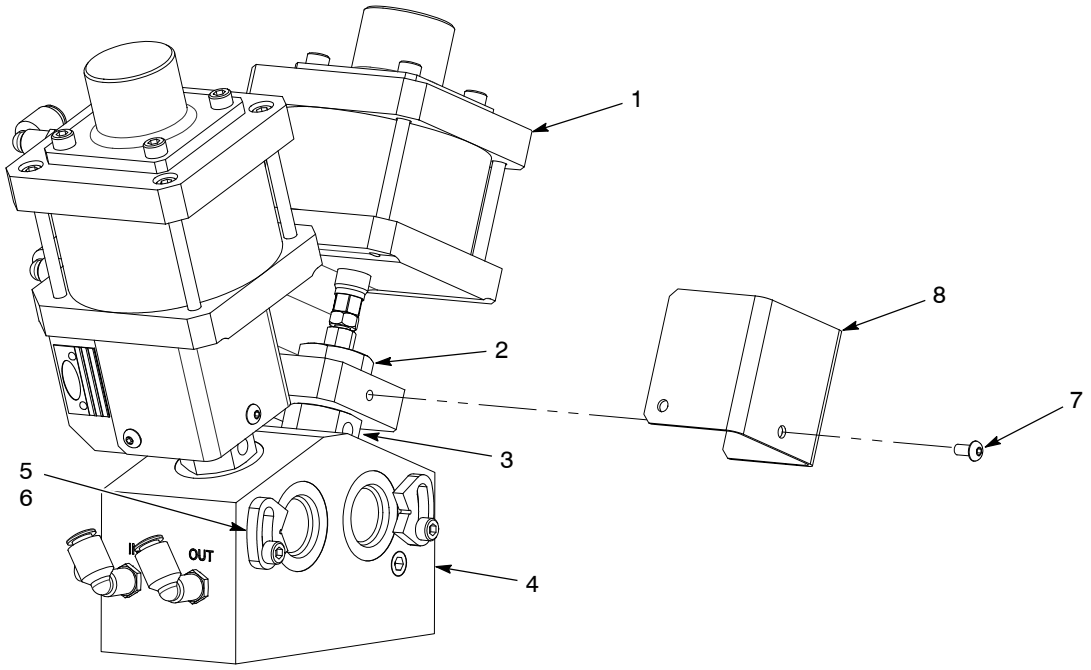

Figure 6 Parts

Item	Part	Description	Quantity	Note
—	1106719	Gun, CE20, unheated, large cylinder, CE	1	
—	341454	• Service kit, cylinder, CE20, 3-in. dia	2	
1	- - - - - -	• • Cylinder, CE20, 3-in. dia	2	
2	1072893	• • Nut, lock, bulkhead, $^{3}/_{4}$-16, nylon	2	
3	346021	• Service kit, bonnet, CE20, filled	2	
4	- - - - - -	• Body, CE20, with seat, standard	1	
5	982372	• • Screw, socket, M5 x 12, black	2	
6	156208	• • Key, locking swivel (For 1¼ in. Hex)	2	
	1063081	• • Key, locking swivel (For 1 ⅜ in. Hex)	2	
7	982758	• Screw, pan, slotted, M4 x 8	4	
8	346167	• Cover, pinch point	2	

Mixer Tubes, Shrouds, and Teach Nuts

See Figure 7 and the following parts lists.

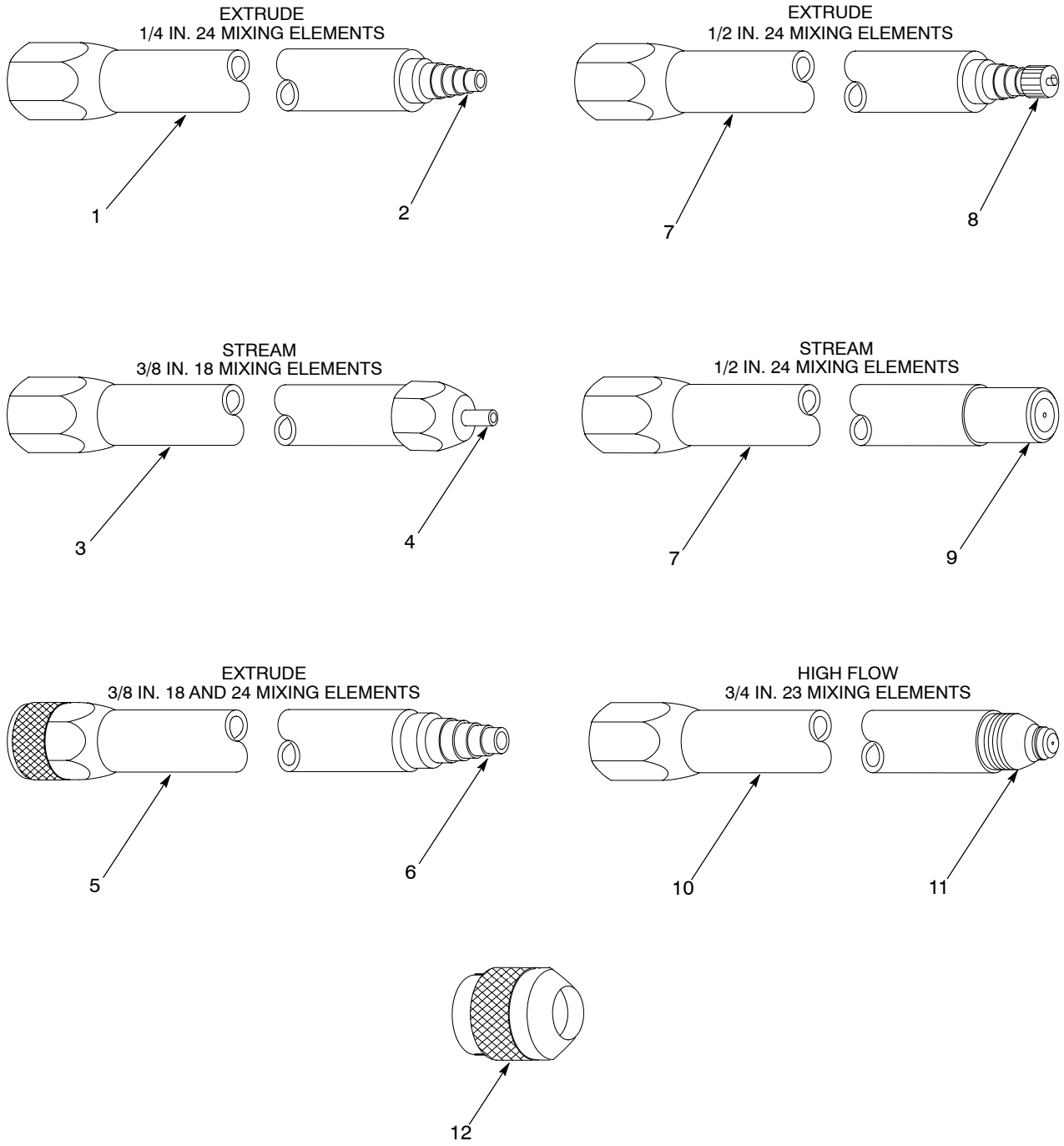

Figure 7 Mixer Tubes, Elements, and Teach Nuts

Extrude 1/4-Inch I.D. 24 Mixing Elements

Item	Part	Description	Quantity
1	238326	Shroud, nozzle, stream and extrude, 0.248 I.D. mixer, 24 mixing elements	1
2	238325	Tube, mixer, extrude, 0.248 I.D., 24 mixing elements, 0.090 tip orifice	1
12	1004384	Teach nut, 0.248 I.D. mixers, 7/8-14 thread	1

Stream 3/8-Inch I.D. 18 Mixing Elements

Item	Part	Description	Quantity
3	1008425	Shroud, nozzle, stream and extrude, 0.366 I.D. mixer, 18 mixing elements	1
4	1005696	Tube, mixer, stream, static, 0.366 I.D., 18 mixing elements, 0.060 tip orifice	1
12	1009680	Teach nut, 0.366 I.D. mixers, 7/8-14 thread	1

Extrude 3/8-Inch I.D. 18 Mixing Elements

Item	Part	Description	Quantity
5	1076018	Shroud, nozzle, extrude, 0.366 I.D. mixer, 18 mixing elements	1
6	1076019	Tube, mixer, static, 0.366 I.D., 18 mixing elements, 0.120 tip orifice	1
12	1009680	Teach nut, 0.366 I.D. mixers, 7/8-14 thread	1

Extrude 3/8-Inch I.D. 24 Mixing Elements

Item	Part	Description	Quantity
5	331627	Shroud, nozzle, extrude, 0.366 I.D. mixer, 24 mixing elements	1
6	331628	Tube, mixer, static, 0.366 I.D., 24 mixing elements, 0.120 tip orifice	1
12	1009680	Teach nut, 0.366 I.D. mixers, 7/8-14 thread	1

Stream and Extrude 1/2-Inch I.D. 24 Mixing Elements

Item	Part	Description	Quantity
7	186473	Shroud, nozzle, stream and extrude, 0.497 I.D. mixer, 24 mixing elements	1
8	186481	Tube, mixer, extrude, static, 0.497 I.D., 24 mixing elements, 0.115 tip orifice	1
9	296544	Tube, mixer, stream, static, 0.497 I.D., 24 mixing elements, 0.050 tip orifice	1
12	186482	Teach nut, 0.497 I.D. mixers, 7/8-14 thread	1

High Flow 3/4-Inch 23 Mixing Elements

Item	Part	Description	Quantity
10	7701226	Shroud, 23 mixing elements	1
11	7701059	Tube, mixer, ¾-in. high-flow, 23 mixing elements	1

Kits

See Figure 8. The following kits are available.

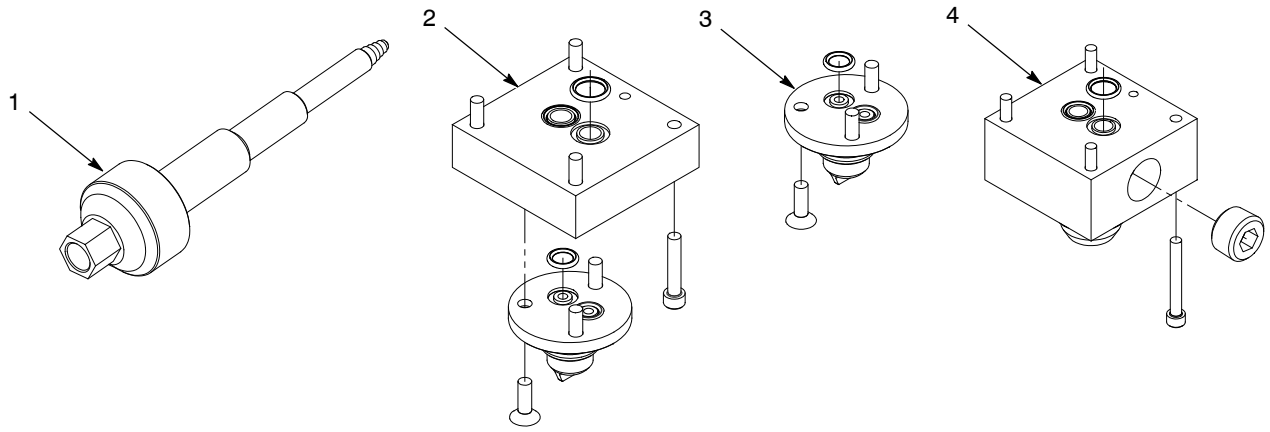

Figure 8 Kits

Item	Part	Description	Quantity	Note
1	1084655	Module, 2K gun, swivel shroud, nozzle, FMT	1	
2	1107063	Module, CE20, connector ⅞–14	1	
3	1078394	Module, 2K, connector ⅞–14	1	
4	1107066	Module connector, $1^{5}/_{16}$–12	1	