Anti-Drool Automatic Dispensing Valve

Customer Product Manual
Part 107025D
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NORDSON CORPORATION • AMHERST, OHIO • USA

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Contact Us

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Anti-Drool Automatic Dispensing Valve

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

NOTE: The Anti-Drool Automatic Dispensing Valve is referred to as the dispensing valve throughout this document.

See Figures 1 and 2. The dispensing valve has a negative pressure material cut-off to eliminate drips and stringing. It can be used to dispense a variety of materials, including silicones, grease, mastics, epoxies, and urethanes. Standalone and manifold mount versions are available.

Theory of Operation

See Figure 1. The needle (2) in the dispensing valve has a recess above the tip. When air is supplied to the valve-open air inlet (6), the piston is pushed downward, aligning the recess and seat. Material flows in the material inlet (4) and out between the recess and seat. When air is shut off from the valve-open air inlet, a spring in the packing cartridge forces the needle upward; the tip returns to the seat and stops material dispensing. When air is supplied to the valve-close air inlet (5), it forces the piston upward to quickly return the needle to the seat.

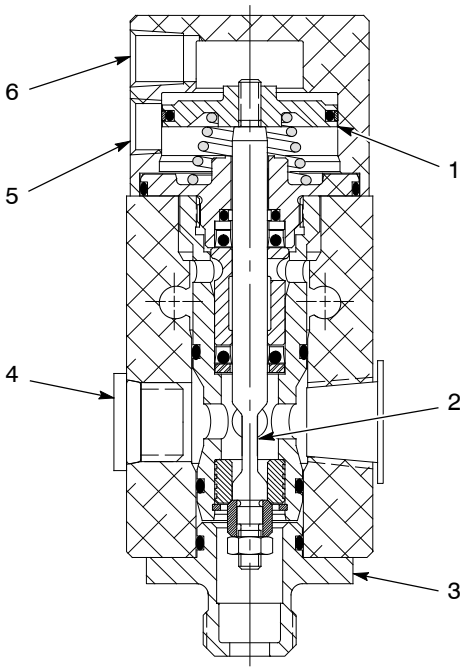
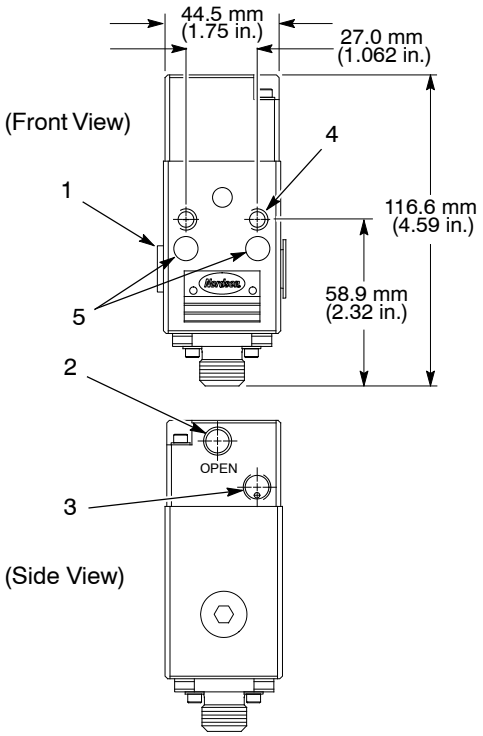


Figure 1 Cutaway View of Dispensing Valve

1. Piston
2. Needle
3. Seat
4. Material inlet
5. Valve-close air inlet
6. Valve-open air inlet

Standalone



Manifold Mount

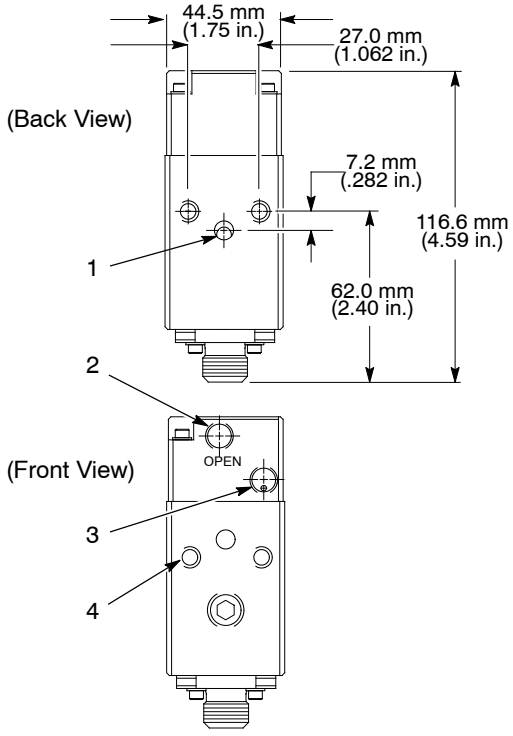


Figure 2 Dispensing Valves

1. Material inlet
2. Valve-open air inlet
3. Valve-close air inlet
4. Hollow dowel
5. Temperature conditioning ports

Specifications

Refer to Table 1.

Table 1 Specifications

Item	Specification
Dimensions	See Figure 2.
Weight	0.4726 kg (17.0 oz)
Maximum Fluid Pressure Rating, Static	275.87 bar (4000 psi)

Installation

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

Inspect the dispensing valve for dents, scratches, corrosion, and other physical damage. If any damage is visible, contact a Nordson representative immediately.

Mounting the Standalone Dispensing Valve

Figure 3 shows the mounting plate preparation specifications for mounting a stand alone dispensing valve.

To prepare the mounting plate, drill two holes in the mounting plate. The specifications for those holes are:

- drill 4.19 mm (0.165 in.) dia. x 16.0 mm (0.63 in.) deep, maximum
- counterbore 8.13 mm (0.320 in.) / 8.33 mm (0.328 in.) dia. x 7.92 mm (0.312 in.) deep
- tap for an M5 x 0.8-6h threads 12.7 mm (0.50 in.) deep or #10-32 threads by 12.7 mm (0.50 in.) deep

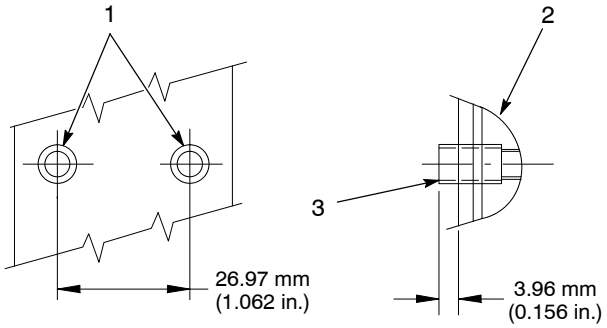


Figure 3 Mounting Hole Spacing

1. Mounting plate holes
2. Dispensing valve body
3. Hollow dowel pin (2 shipped with each dispensing valve)

Mounting the Manifold Mount Dispensing Valve

Figure 4 shows the mounting plate preparation specifications for mounting the dispensing valve on a manifold. In addition to drilling the mounting holes (2), drill a hole for the material inlet (1).

For specifications on drilling the mounting holes, refer to *Mounting the Standalone Dispensing Valve.*

The specifications for the material inlet are:

- drill 5.84–6.10 mm (0.230–0.240 in.) dia. x the required depth
- counterbore 9.53–9.63 mm (0.375–0.379 in.) dia. x 1.27–1.32 mm (0.050–0.052 in.) deep

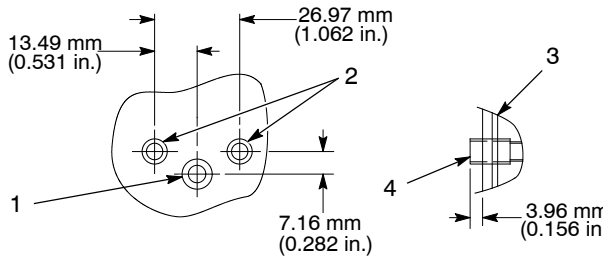


Figure 4 Mounting Dimensions for Manifold Mount Dispensing Valve

1. Material inlet
2. Mounting surface holes
3. Dispensing valve body
4. Hollow dowel pin (2 shipped with each dispensing valve)

Supply Air Connection

See Figure 1. Air must be supplied to the valve-open air inlet (6). A spring will force the valve closed when air is shut off to the valve-open air inlet. To obtain quicker response:

- mount an air-operated, quick-release valve near the valve-open air inlet, or
- supply air to the valve-close air inlet (5).

Supply air must be taken from an oil-free shop air outlet that will maintain a pressure of at least 4.83 bar (70 psi). The dispensing valve will not operate properly without the required amount of air pressure (4.83–8.28 bar (70–120 psi)). Dispensing performance will increase at higher pneumatic pressures.

Follow these steps to install a dispensing valve:

1. See Figure 5. Install a filter (1), lubricator (2), and regulator (3) in the air supply line.
2. Install a solenoid valve (4) as close to the dispensing valve as possible. Attach an air line to the A port of the solenoid valve.

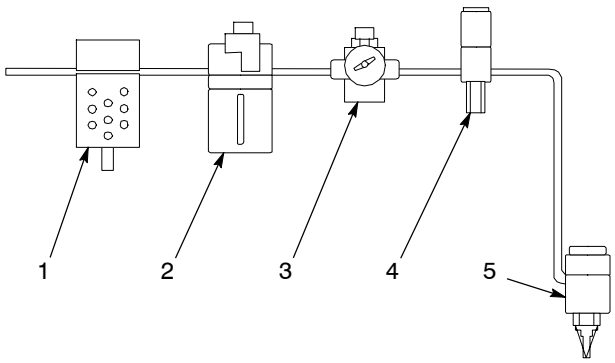


Figure 5 Air Line Connection Schematic to Dispensing Valve

1. Filter
2. Lubricator
3. Regulator
4. Solenoid valve
5. Dispensing valve

NOTE: Dispensing action may lag if the solenoid is too far from the dispensing valve (5).

3. See Figure 6. If you are using a quick-release valve (5), install it as close to the valve-open air inlet as possible.
4. Attach the air supply line to the valve-open air inlet.

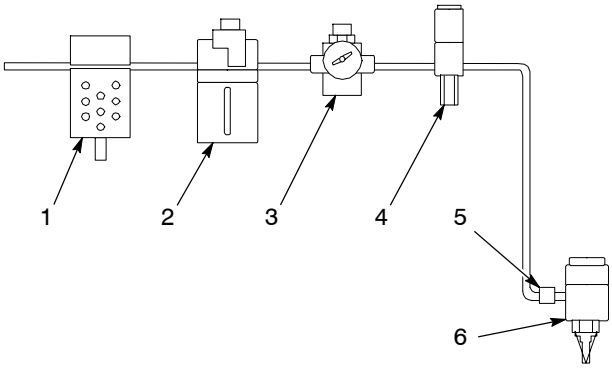


Figure 6 Air Line Connection Schematic with Quick-Release Valve on Valve-Open Air Inlet

1. Filter
2. Lubricator
3. Regulator
4. Solenoid valve
5. Quick-release valve
6. Dispensing valve

5. See Figure 7. If you are using air-assisted closure, attach an air line (5) to the B port of the solenoid valve. Attach the air supply line to the valve-close air inlet.

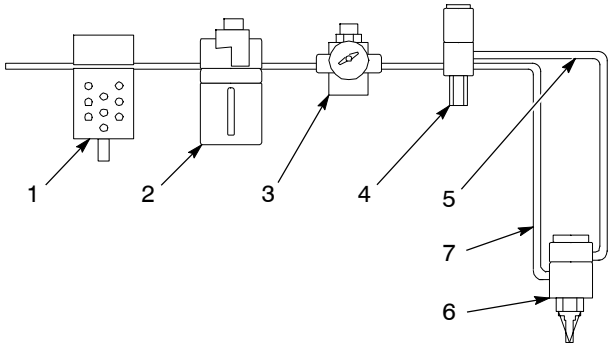


Figure 7 Air Line Connection Schematic for Air-Assisted Valve Closure

1. Filter
2. Lubricator
3. Regulator
4. Solenoid valve
5. Air line to valve-close air inlet
6. Dispensing valve
7. Air line to valve-open air inlet

Material Supply Line

Each dispensing valve has two material inlet ports located on opposite sides of the body. Use either port and leave the other plugged.

Connect a Nordson swivel (purchased separately) to the material inlet. Refer to the *Nordson High Pressure Fluid Swivel Connections* manual for appropriate part numbers, connector sizes, and possible configurations. If additional assistance is needed, contact your Nordson representative.

If a standard material inlet fitting is required, use either a straight fitting or a 90-degree elbow with a JIC-6 hose connection ($^{9}/_{16}$-18 thread).

Temperature Conditioning for Standalone Dispensing Valves

The standalone dispensing valve can be temperature conditioned using a fluid system to heat the material between 15–65 °C (60–150 °F).

Install the supplied $^{1}/_{8}$ NPT elbows into the temperature conditioning ports (1).

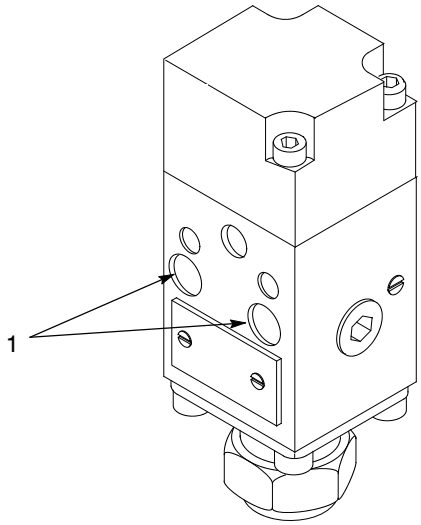


Figure 8 Temperature Conditioning Connections

1. Temperature conditioning ports

Nozzles

Your Nordson representative can help select the correct nozzles for your applications. Nozzle selection depends on the type of material being dispensed, the desired bead size, and your production rate requirements.

Operation

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

First-Time Operation

After the dispensing valve has been installed, purge it to remove air from the material hose and nozzle:

1. Place a material waste container under the nozzle.
2. Purge the dispensing valve until material flows freely from the nozzle.

Daily Operation

Begin material dispensing by activating the valve-open air through the A port of the solenoid valve. Stop dispensing by turning off the air through the A port. For air-assisted closure, activate the valve-close air through the B port of the solenoid valve.

Maintenance

Follow a preventive maintenance schedule to keep the dispensing valve operating efficiently.

Item	Daily	Periodically
Check the nozzle for wear. Replace it when necessary.	X	
Check the air lines and the material supply hose for leaks or damage. Replace lines and hoses when necessary.		X
Make sure the dispensing valve is mounted securely.		X
Clean the filter in the air supply line.		X

Troubleshooting

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

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.

NOTE: Some problems presented in this section may originate with other components in the system and not with the dispensing valve. If the corrective actions described here do not solve the problem, see the appropriate system manuals for further suggestions.

Problem	Possible Cause	Corrective Action
1. Leaking around nozzle or nozzle nut	Dirty or damaged metal sealing surfaces	Clean nozzle, and clean or replace needle and seat.
2. Leaking through weep hole in valve body	Worn packing cartridge	Replace packing cartridge.
3. Dispensing valve responds slowly	Packing cartridge air piston worn or out of adjustment	Adjust or replace packing cartridge.
	Low air pressure to solenoid	Increase air pressure to solenoid.
	Long air supply lines to valve	Mount solenoid on dispensing valve or as close as possible.

Repair

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

WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING: System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious injury or death.

Required Tools and Supplies

Using the following items is required or recommended when repairing the anti-drool dispensing valve. Refer to the *Parts* section for ordering information.

- Two adjustment wrenches (required)
- PTFE grease (recommended)
- Thread locking compound (recommended)

Clearing a Blocked Nozzle

1. Shut off air pressure to the drum unloader.
2. Bleed off residual pressure through the in-line pressure relief valve in the material supply line. This valve should be located near the drum unloader.
3. Shut off and lock out all power to the system.
4. Remove the nozzle nut and nozzle. Clean the nozzle thoroughly with an appropriate solvent.
5. Reinstall the nozzle.

Removing the Valve from the Fixture

1. Shut off the drum unloader.
2. Purge the dispensing valve to relieve the pressure in the hose and valve.
3. Shut off and lock out all power to the system.
4. Disconnect the material supply hose from the material inlet fitting on the valve.
5. Disconnect the air lines from the valve.
6. Remove the valve from the fixture.

Replacing the Packing Cartridge

1. See Figure 9. Remove the screws (1) securing the air cylinder cap (2) to the body (4).
2. Lift out the packing cartridge (3).
3. Lubricate the outside of the O-rings on the new packing cartridge with PTFE grease.
4. Insert the new packing cartridge in the body.
5. Replace the air cylinder cap using the screws. Tighten the screws to 5.6 N•m (50 in. lb).

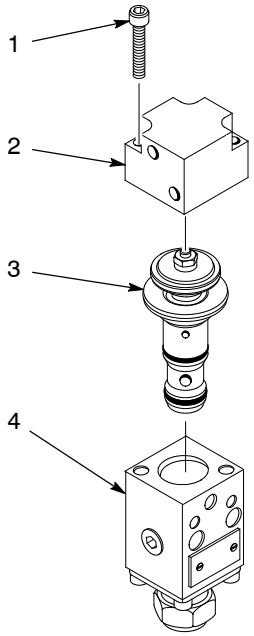


Figure 9 Replacing a Packing Cartridge

1. Screw
2. Air cylinder cap
3. Packing cartridge
4. Body

Parts

See Figure 10 and refer to the following parts list.

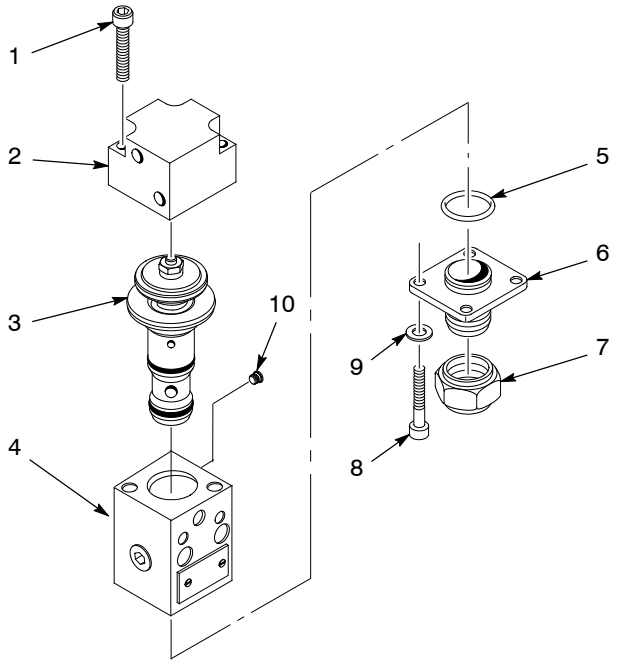


Figure 10 Anti-Drool Dispensing Valve Parts

Note: Standalone version shown.

Item	Part	Part	Description	Quantity	Note
—	181934		Dispensing valve, anti-drool, standalone	1	
—		329464	Dispensing valve, anti-drool, manifold	1	
1	982386	982386	• Screw, socket head, M5 x 35 mm	3	
2	181936	181936	• Cylinder, cap, air	1	
3	182207	329469	• Cartridge, packing	1	
4	- - - - - -	- - - - - -	• Body, module, antidrool	1	
5	940161	940161	• O-ring, Viton, 0.614 ID x 0.070 in.	1	
6	- - - - - -	- - - - - -	• Adapter with seat	1	
7	152290	152290	• Nut, retaining	1	
8	982027	982027	• Screw, socket head, M5 x 14 mm	4	A
9	983408	983408	• Washer, flat, M, narrow, M5	4	
10	973466	- - - - - -	• Plug, pipe, flush, $^{1}/_{16}$	1	
NS	- - - - - -	- - - - - -	Nozzle, dispensing valve	1	B
NS	156289	156289	Lubricant, O-ring	1	
NS	901911	901911	Wrench, adjustment, module	1	
NS	900424	900424	Compound, thread lock	1	

NOTE A: Torque value is 5.6 N•m (50 in. lb).

B: Contact your Nordson representative to order the correct nozzle for your application.

NS: Not Shown