179 Series Valve

Customer Product Manual

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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:
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179 Series Valve

Safety

Introduction

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

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

Qualified Personnel

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

Intended Use

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

Some examples of unintended use of equipment include:

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

Regulations and Approvals

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

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read 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 them this card
- Tell them 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 Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

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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 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

See Figures 1 and 2.

The 179 series valve assembly from Nordson® is a dispense tool to be utilized with two part materials. It incorporates low and high volume dispense valves and may be mounted to a stand, robot, or other fixture via mounting holes located in the manifold. This tool is best suited to dispense urethanes. The valve assembly comes standard with dispense valves and a manifold. Optional equipment includes a thermocouple, heat cartridge, mixer, mixer shroud, and mixer nozzle.

Table 1 179 Valve Series Assembly

Item	Description
1	Thermocouple jack
2	Thermocouple plug
3	Thermocouple
4	Low volume dispense valve
5	Manifold
6	High volume dispense valve
7	Heat cartridge
8	Heat cartridge plug
9	Heat cartridge connector
10	Mixer
11	Mixer shroud
12	Mixer nozzle

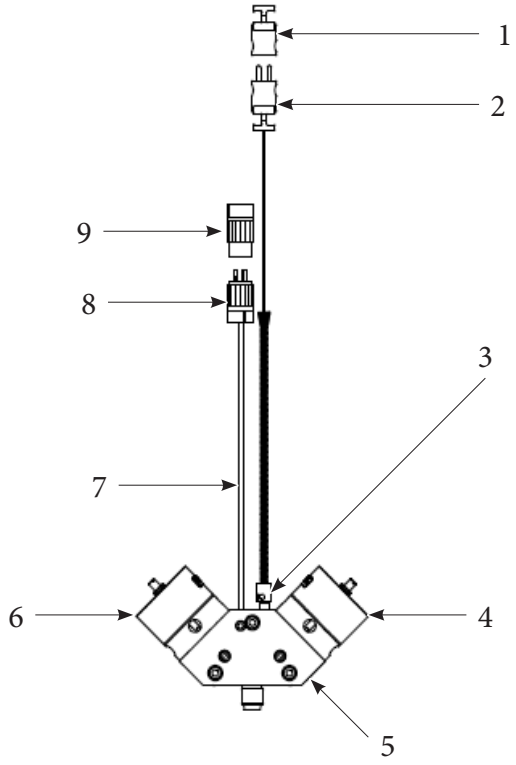

Figure 1 179 Series Valve Assembly With Heated Manifold

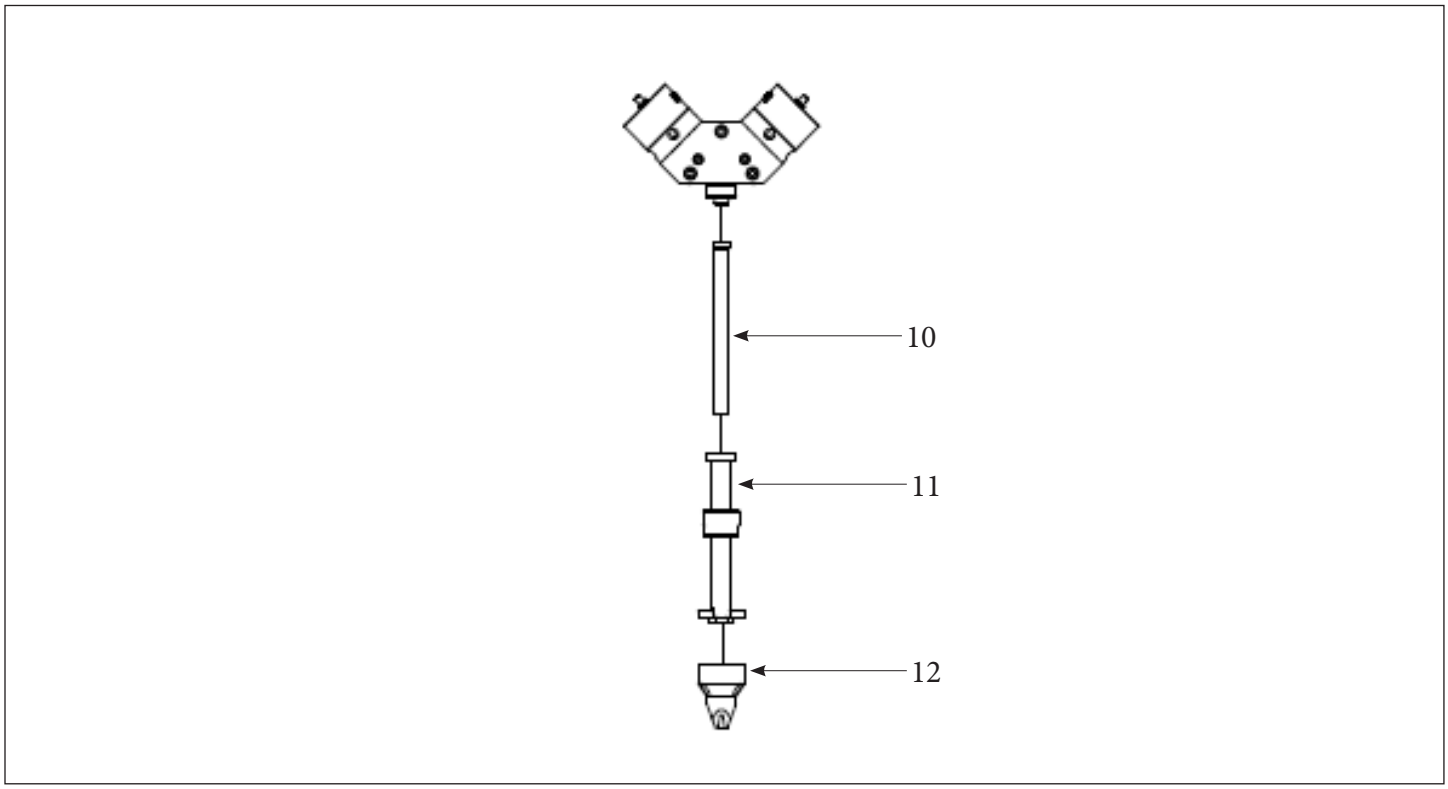

Figure 2 179 Series Valve Assembly - Less Heated Manifold With Mixer, Mixer Shroud, And Mixer Nozzle

Specifications

Table 2 Specifications

Dispense valve cylinder bore diameter	1.75 in (44.45 mm)
Dispense valve maximum working pressure	3,000 psi (206.8 bar, 20.7 MPa)
Dispense valve dry weight	1.53 lb (0.69) kg
Dispense valve minimum air pressure to open	60 psi (4.1 bar, 0.41 MPa)
Dispense valve piston stroke	0.225 in (2.54 cm)
Dispense valve power factor	47:1
Facilty operating temperature	60°F to 110°F (15.6°C to 43.3°C)
Material compatibility	Urethanes
Mininum operating air pressure requirements	½ in. air line 43.5 - 116 psi (3 - 8 bar, 0.3 - 0.8 MPa)

Maintenance

It is imperative to follow the safety instructions outlined in this manual. Refer to *Safety* for additional information. Contact a Nordson® representative regarding these procedures (if necessary).

WARNING:

- Safety glasses are to be worn at all times while installing, servicing, operating, or observing equipment. The sudden release of air or fluid can cause damage to eyes.
- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Relieve air and material pressure before performing maintenance.
- Shut off and lock out power prior to performing maintenance.

WARNING: Any material injected into flesh can cause severe injury or death. Keep body parts away from material discharge ports. If injection occurs, seek medical attention immediately.

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

CAUTION: Relieve air and material pressure when equipment is not in use for prolonged periods of time. Do not allow pressure to remain static when equipment is idle as this may cause material to pack and harden.

Table 3 Preventative Maintenance

Item	Task	Completion Time	Frequency			
			Weekly	Monthly	Yearly	Cycles
Air fittings and tubing	Check for air leaks	5 Min.	•			
Material fittings and hoses	Check for material leaks	5 Min.	•			
Material manifold valves	Check for leakage and tighten any loose valve mounting screws. Replace if necessary.	Inspect: 5 Min. Tighten: 5 Min. Replace: 30 - 60 Min.	•			
NOTE: The frequencies listed are only guidelines. It may be necessary to adjust frequencies due to the facility environment, process parameters, material being applied, or experience. All scheduled maintenance should be visually inspected weekly, until consumer develops the correct maintenance schedule for a particular application. Always listen for air leaks, keep work area clean of material, and check with material supplier for specific cleaning procedures for the material being used in an application.						

Consumables

Table 4 Consumables

Item	Part	Application
Donnelly Bros. Inc. APG #2	7426965	Applied to wearable parts such as O−rings, seals, and bearings.
Loctite® 242/248	N/A	Apply when assembly drawing requires. Used for locking fasteners.
Loctite® 577	N/A	Used for fluid section thread sealant. Never used for air fitting threads.
Seal Sav'r Oil	7428656	Used to lubricate seal(s) in the metering cylinder assembly.
CAUTION: Check your MSDS or contact your material supplier for grease/oil compatibility.		

Installation

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

Operation

WARNING:

- Safety glasses are to be worn at all times while installing, servicing, operating, or observing equipment. The sudden release of air or fluid can cause damage to eyes.
- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Relieve air and material pressure prior to servicing components.
- Disconnect and lock out power prior to servicing components.

NOTE: Operation is dependent upon system application requirements and the material utilized.

CAUTION: Relieve air and material pressure when equipment is not in use for prolonged periods of time. Do not allow pressure to remain static when equipment is idle as this may cause material to pack and harden.

Calibration

1. Screw the dispense valve stroke adjustment screw into valve cap until it stops.

CAUTION: Ensure there is no air or material pressure.

NOTE: Stroke adjustment screw will reach its stop point when it has contacted the piston.

2. Tighten the stroke adjustment lock nut until it contacts the valve cap.
3. Restore air and material pressure.

NOTE: Utilize an adjustable wrench, or equivalent tool, to tighten the stroke adjustment lock nut while holding the stroke adjustment socket head cap screw with a hex key.

4. Operate the valve to see if the desired dispense pattern is achieved.
5. Continue to make fine adjustments by backing out the stroke adjustment screw until the desired dispense pattern is observed.

How To Clear A Blocked Nozzle

Refer to Figure 2.

1. Shut off system air pressure.
2. Bleed off residual pressure via the material supply line pressure relief valve.
3. Shut off and lock out all power.
4. Carefully remove the mixer (10), mixer shroud (11), and mixer nozzle (12) from the valve. Clean components with a compatible solvent.
5. Lubricate the mixer nut threads with a compatible lubricant.

CAUTION: If the threads are not lubricated, damage may occur to the manifold when removing the mixer nut.

6. Install the mixer nozzle (12) and hand tighten until it is snug.
7. Operate the valve to see if the desired dispense pattern is achieved.

Valve Purge

NOTE: Perform the following procedure prior to putting a new valve into service for the first time.

1. Connect all air and material supply lines.
2. Establish system electrical power.
3. Establish system air pressure.
4. Dispense material until it emerges air free.

WARNING: Utilize a suitable container to collect material dispensed.

Replacement

It is imperative to follow the safety instructions outlined in this manual. Refer to *Safety* for additional information. Contact a Nordson® representative regarding these procedures (if necessary).

WARNING:

- Safety glasses are to be worn at all times while installing, servicing, operating, or observing equipment. The sudden release of air or fluid can cause damage to eyes.
- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Relieve air and material pressure before servicing components.
- Disconnect and lock out power prior to servicing components.

WARNING: Any material injected into flesh can cause severe injury or death. Keep body parts away from material discharge ports. If injection occurs, seek medical attention immediately.

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

CAUTION:

- Relieve air and material pressure when equipment is not in use for prolonged periods of time. Do not allow pressure to remain static when equipment is idle as this may cause material to pack and harden.
- Do not allow any lubricants to enter fluid passageways during repair.
- Do not use sharp or pointed tools to service components.
- Apply thread locker and sealant strictly in accordance to the replacement procedures detailed in this section.

Standard Components

Block Spacer

See Figure 5.

1. Remove valve assembly from stand, robot, or fixture.

CAUTION: Be careful not to damage dispense valve air and material lines.

2. Remove socket head cap screws (26) securing block spacer (18) to manifold.
3. Remove block spacer (18).
4. Installation of the block spacer is in the reverse order of removal. Note the following:

CAUTION:

- Apply Loctite® 242 or 248 (or equivalent removable thread locker) to block spacer socket head cap screws.
- Tighten block spacer M8 socket head cap screws to 32 N•m (23.6 ft−lb).

Dispense Valve

See Figure 3.

1. Remove material supply lines from dispense valve.
2. Remove air lines from dispense valve.
3. Remove socket head cap screw (13) securing dispense valve (14) to manifold (15).
4. Remove dispense valve (14) from manifold (15).
5. Installation of dispense valve is in the reverse order of removal. Note the following:

CAUTION:

- Apply Loctite® 242 or 248 (or equivalent removable thread locker) to dispense valve socket head cap screws.
- Tighten dispense valve socket head cap screws to 7.9 N•m (5.9 ft−lb).

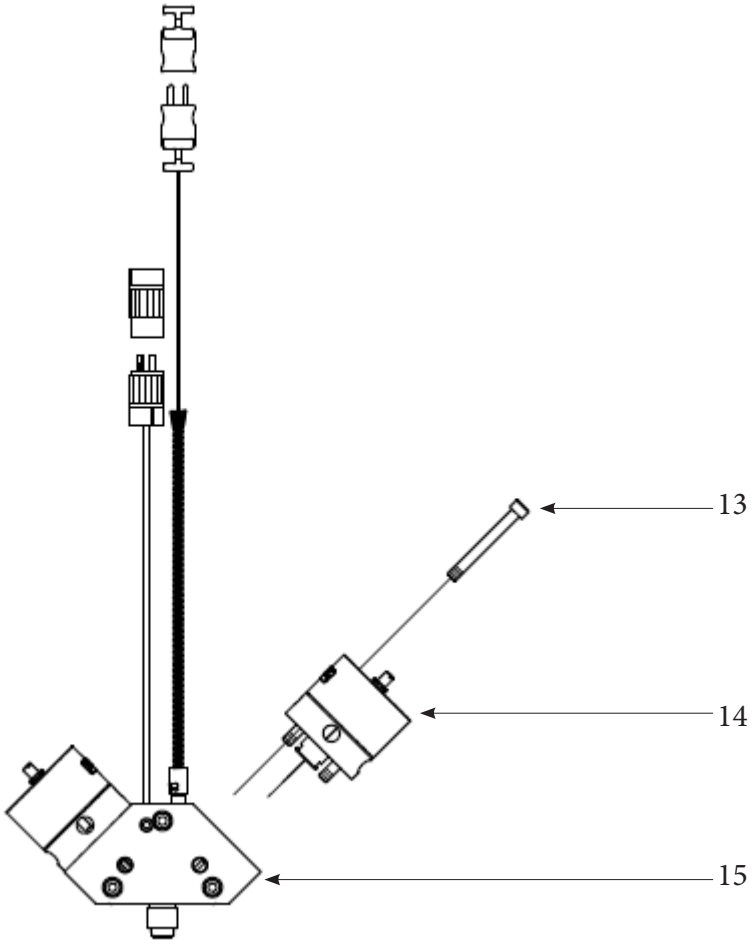

Figure 3 Dispense Valve Replacement

Optional Components

Heat Cartridge

See Figure 4.

1. Disconnect heat cartridge plug.
2. Remove set screw (16) securing heat cartridge (17) to manifold.
3. Remove heat cartridge (17) from manifold.
4. Installation of heat cartridge is in the reverse order of removal.

CAUTION: Hand tighten heat cartridge set screw until it is snug.

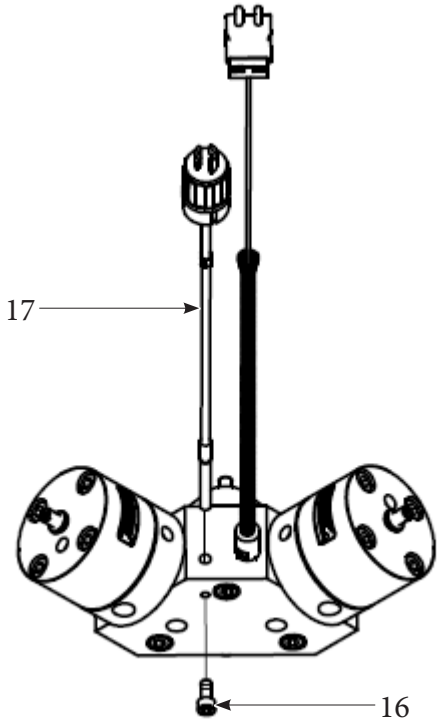

Figure 4 Heat Cartridge Replacement

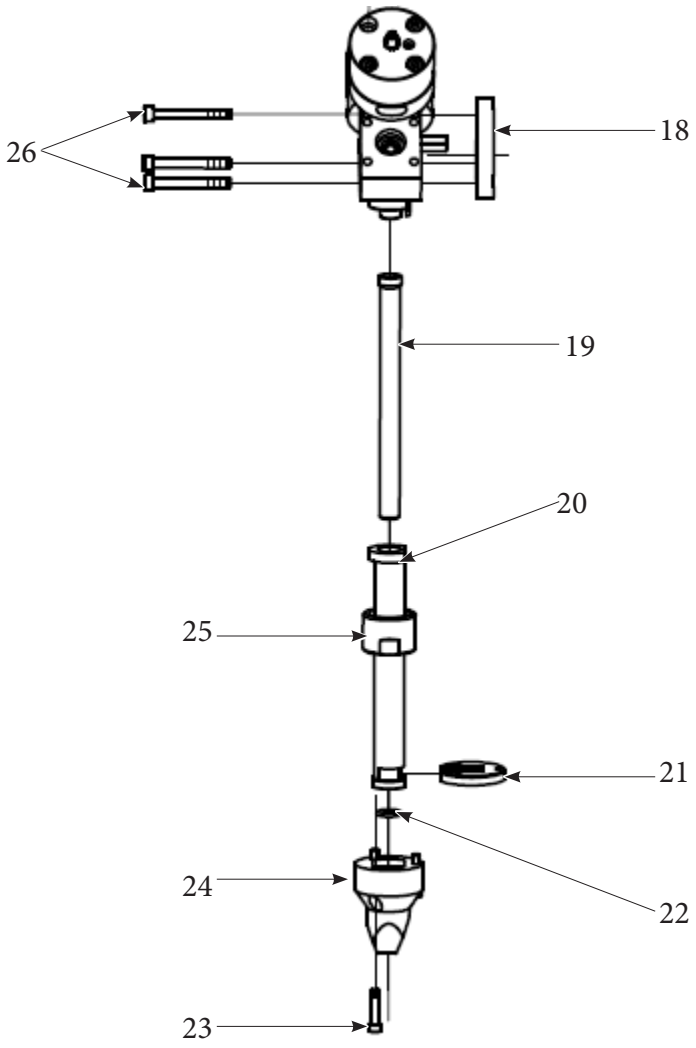

Figure 5 179 Series Valve Assembly Block Spacer and Optional Components

18. Block spacer
19. Mixer
20. Mixer shroud
21. Shroud adapter
22. O-ring
23. M6 socket head cap screw
24. Mixer nozzle
25. Mixer nut
26. M8 socket head cap screw

Mixer

See Figure 5.

1. Remove mixer shroud (20). Refer to *Replacement, Optional Components, Mixer Shroud* for additional information.
2. Remove mixer (19).
3. Installation of the mixer (19) is in the reverse order of removal.

Mixer Shroud

See Figure 5.

1. Unscrew mixer nut (25) from manifold.
2. Remove mixer shroud (20) from manifold.
3. Remove mixer (19), if necessary. Refer to *Replacement, Optional Components, Mixer* for additional information.
4. Remove mixer nozzle (24), if necessary. Refer to *Replacement, Optional Components, Mixer Nozzle* for additional information.
5. Installation of the mixer nozzle is in the reverse order of removal. Note the following:

CAUTION:

- Apply Loctite® 242 or 248 (or equivalent removable thread locker) to block spacer socket head cap screws.
- Inspect condition of O-ring (22). Replace O-ring (22) if damage is observed.
- Apply Donnelly Bros. Inc. APG #2 to O-ring (22).
- Hand tighten mixer nut (25) until it is snug.

Mixer Nozzle

See Figure 5.

1. Remove M6 socket head cap screws (23) securing mixer nozzle (24) to shroud adapter (21)
2. Remove mixer nozzle (24) from mixer shroud (20).
3. Installation of the mixer nozzle is in the reverse order of removal. Note the following:

CAUTION:

- Apply Loctite® 242 or 248 (or equivalent removable thread locker) to mixer nozzle socket head cap screws.
- Inspect condition of O-ring (22). Replace O-ring (22) if damage is observed.
- Apply Donnelly Bros. Inc. APG #2 to O-ring (22).

Troubleshooting

It is imperative to follow the safety instructions outlined in this manual. Refer to *Safety* for additional information. Contact a Nordson® representative regarding these procedures (if necessary).

WARNING:

- Safety glasses are to be worn at all times while installing, servicing, operating, or observing equipment. The sudden release of air or fluid can cause damage to eyes.
- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Relieve air and material pressure before performing troubleshooting.
- Shut off and lock out power prior to performing troubleshooting.

WARNING: Any material injected into flesh can cause severe injury or death. Keep body parts away from material discharge ports. If injection occurs, seek medical attention immediately.

WARNING: Operating faulty electrostatic equipment is hazardous and can cause electrocution, fire, or explosion. Make resistance checks part of your periodic maintenance program. If you receive even a slight electrical shock or notice static sparking or arcing, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

CAUTION: Relieve air and material pressure when equipment is not in use for prolonged periods of time. Do not allow pressure to remain static when equipment is idle as this may cause material to pack and harden.

Problem	Possible Cause	Corrective Action
Valve(s) inoperable	Blocked material path	Ensure material is passing through all hoses, mixer, and mixer nozzle.
	Supply equipment not cycling	Ensure there is sufficient material pressure.
	Dispense valve not opening	Ensure air is on. Inspect valve piston(s) for binding. Inspect valve piston(s) and O-rings for wear or damage. Ensure there is sufficient air pressure. Refer to *dispense valve manual* for additonal information.
	Material pack out around dispense valve seals	Material can collect around dispense valve seals. Ensure seals are clean and correctly lubricated. Refer to *dispense valve manual* for additonal information.
Valve leakage	Dispense valve seal failure	Replace seal(s). Replace or repair scored or damaged needle (if necessary). Refer to *dispense valve manual* for additonal information.

Parts

Introduction

To order parts, contact Industrial Coating Systems 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.

179 Series Valve Assembly

Standard Components

Item	Part	Description	Quantity	Notes
—	2600-179 Series	179 VALVE SERIES ASSEMBLY	1	
1	7430259	• THERMOCOUPLE	1	
2	7444774	• DISPENSE VALVE	2	A
3	−−−−−−−	• MANIFOLD	1	
4	−−−−−−−	• M8 SOCKET HED CAP SCREW	3	
5	−−−−−−−	• BLOCK SPACER	1	
6	−−−−−−−	• HEATER CARTRIDGE	1	

NOTE: A. Component has service kit. Refer to dispense valve manual located in *System Manual* for additional information.

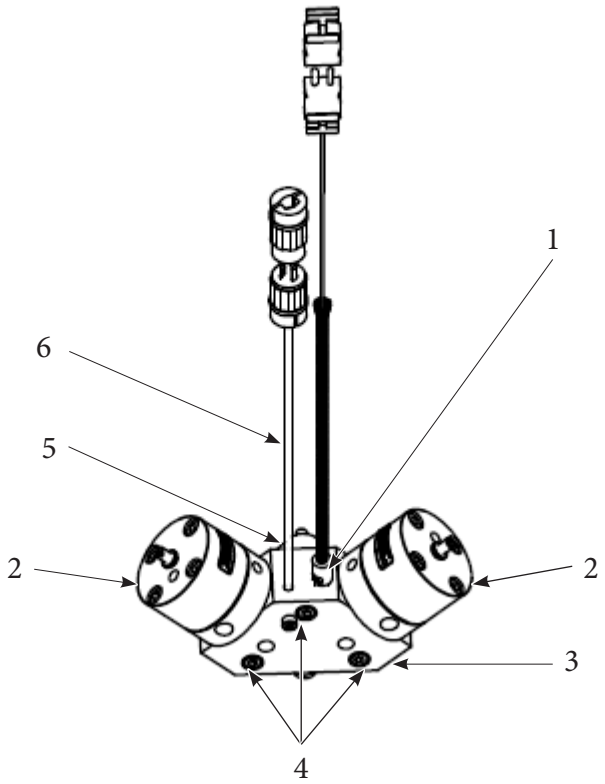

Figure 6 179 Series Valve Assembly Standard Components

Optional Components

Item	Part	Description	Quantity
1	-------	MIXER	1
2	7447779	MIXER SHROUD	1
3	7443470	MIXER NUT	1
4	7444780	SHROUD ADAPTER	1
5	7444781	MIXER NOZZLE	1
6	-------	M6 SOCKET HEAD CAP SCREW	3
7	7427954	O-RING	1

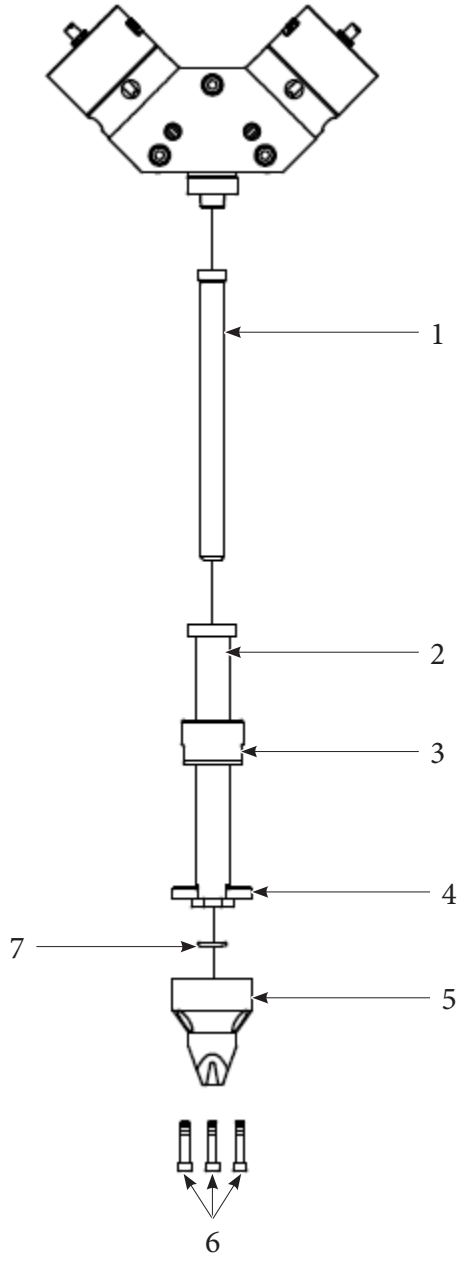

Figure 7 179 Series Valve Assembly Optional Components

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