ezSPC Manifold

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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Change Record

Revision	Date	Change
01	6/21	Initial Release.
02	11/21	Updated drawings and parts lists.
03	02/23	Updated views with new selection marker and flow control knob. Updated ball and seat replacement procedures.
04	11/23	Updated valve body to new configuration.

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 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 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

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Introduction

The ezSPC manifold is part of the Nordson spray pressure control system. The ezSPC manifold houses a fixed orifice (restrictor) that reduces pressure fluctuations and allows circulation in the fluid system. An integrated T-filter is built into the manifold upstream from the orifice to prevent contaminants from blocking it. A flow control knob that can be turned to either quickly clean a clog or bypass the fixed orifice is mounted on the right side of the manifold.

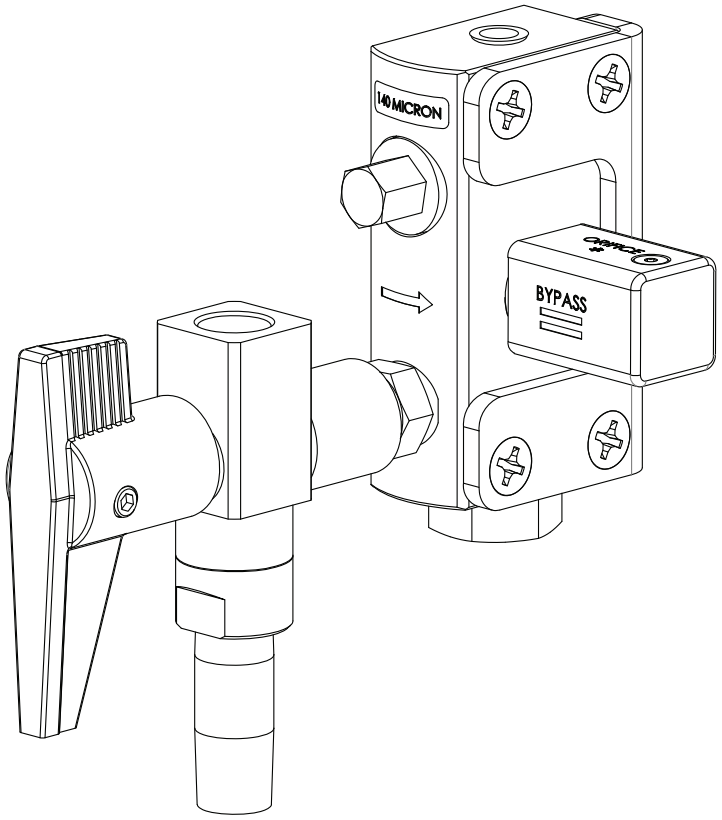

Figure 1 ezSPC Manifold

Installation

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

Recommended Circuit for Spray Pressure Control

See Figure 2 for a typical dual spray gun system using the ezSPC manifold. Review this recommended plumbing circuit before installing any parts into the system. Additional customer-supplied parts may be required for installation.

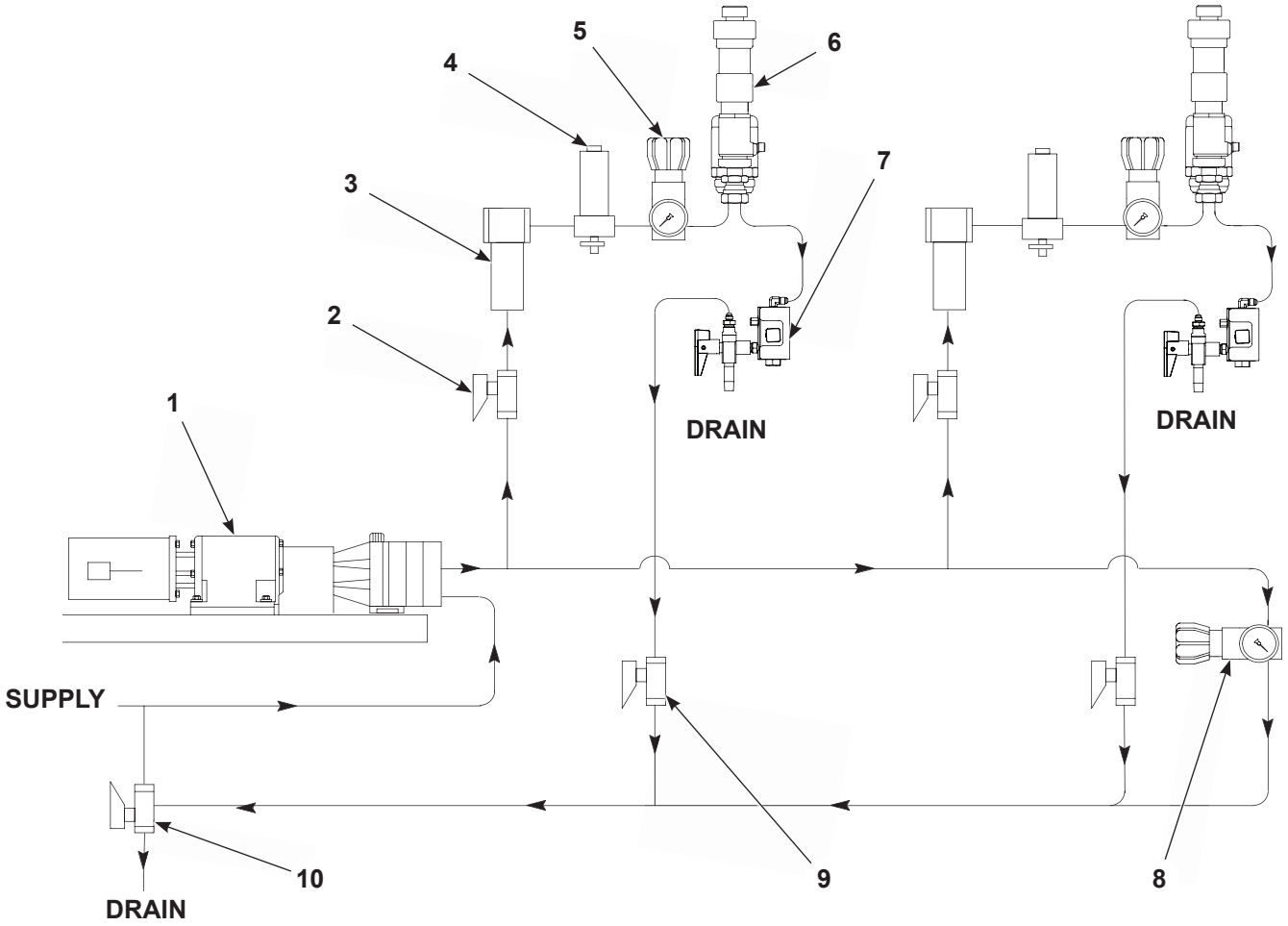

Figure 2 Recommended Circuit for Spray Pressure Control

1. Nordson EP pump
2. Two-way ball valve
3. Heater
4. Filter
5. Pressure-reducing regulator
6. Spray gun
7. ezSPC manifold
8. Back pressure regulator
9. Two-way ball valve
10. Three-way ball valve (drain)

New System Installation

WARNING: Relieve system fluid pressure before installing the ezSPC manifold. Failure to observe this warning may cause personal injury or equipment damage.

NOTE: An optional ball with a larger orifice is available, as the size of the orifice required for the manifold is application-specific. Refer to the *Parts* section for the optional ball.

1. See Figure 3. Use the mounting bracket (4) to install the manifold with the drain nipple (3) facing down.
2. Install one of the supplied hydraulic fittings into the 1/4 NPT port (5). Connect a fluid line from the spray gun output to the fitting.
3. Install one of the supplied hydraulic fittings into the 3/8 NPT outlet port (2). Connect a fluid line from the outlet port to the fluid return line.
4. After the ezSPC manifold has been installed, turn the flow select knob (1) to *Bypass* to flush the fluid delivery system to remove any contaminants from the system.

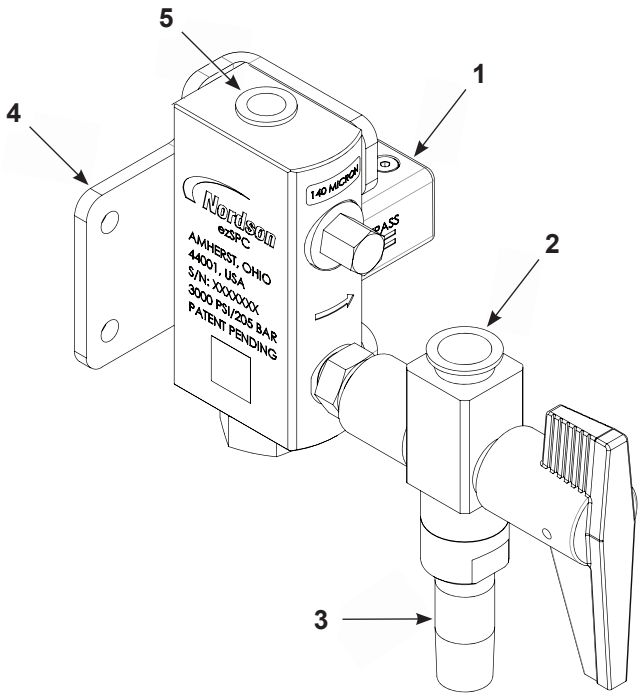

Figure 3 Complete ezSPC Installation

Retrofit Installation

To install the ezSPC manifold into an existing fluid system, it may be necessary to install the system with available retrofit fittings. See the *ezSPC Manifold Ball and Seat Installation Tool* instruction sheet to order the retrofit fittings kit and see proper installation procedure.

Maintenance

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

The ezSPC manifold requires periodic maintenance when system performance has been impacted by a clogged filter, worn seals, or a damaged or plugged orifice ball. See the *Parts* section for available kits.

Removing the Orifice Ball and Seats

The available ball and seat installation tool is reversible and allows for complete installation of the orifice ball and the seats into the ezSPC manifold body.

If the system controller detects low fluid flow or pressure in a system with ezSPC manifolds, the filter may be clogged or blocked and ready to be cleaned or replaced.

The ezSPC manifold operates by utilizing a stainless steel ball with precisely machined orifices to control the flow of the system's fluids. A machined notch on the orifice ball fits in the flow control handle to keep the ball in place in the ezSPC manifold. The orifice ball can be rotated using the flow control handle for cleaning potential clogs or bypassing the pressure control orifice completely.

The flow control orifice ball service kit has two orifice sizes available. The size of the orifice on the ball is etched onto the ball next to the handle slot.

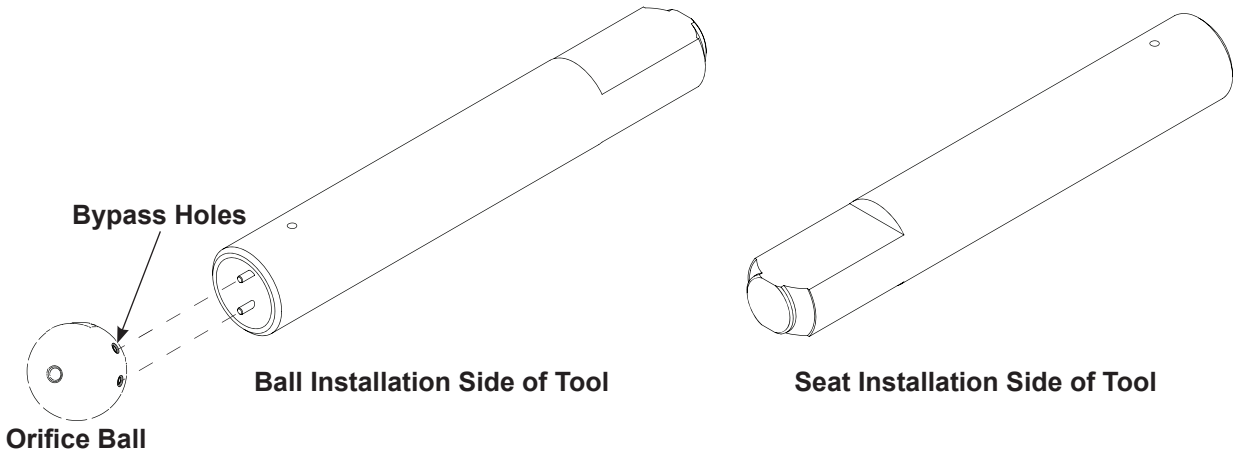

Figure 4 ezSPC Ball and Seat Installation Tool

Removing the Orifice Ball and Seats *cont...*

See Figure 5.

1. With the flow control knob (1) in *Bypass* position, use a fixed or adjustable wrench to remove the retainer (2) from the bottom of the ezSPC manifold body.
2. If the orifice ball (3) does not fall from the ezSPC manifold (8), use a straight pick to remove it from the upper seat (7) within the ezSPC manifold body.
3. Using a 90 degree pick, carefully remove the upper seat (7) from the manifold body (8).
4. Remove the lower seat (4) from the retainer (2) using a 90 degree pick.
5. Remove the used upper O-ring (5) and lower O-ring (6) from the retainer (2).

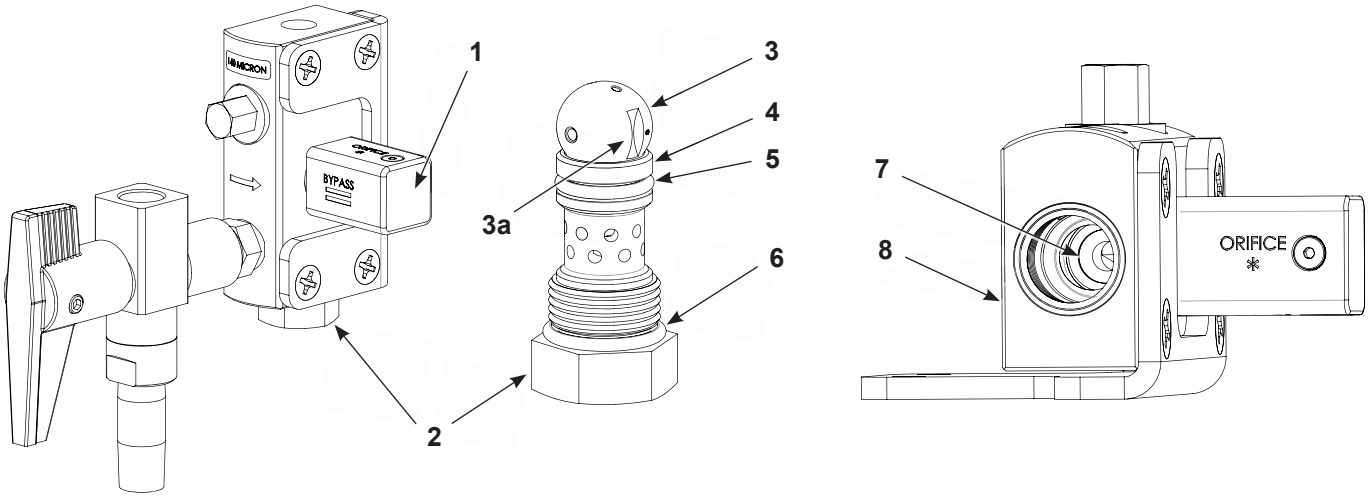

Figure 5 ezSPC Manifold Ball and Seat Installation

1. Flow selector knob
2. Retainer
3. Orifice ball

3a Notch
4. Lower seat
5. Upper O-ring

6. Lower O-ring
7. Upper seat
8. Manifold body

Installing the Orifice Ball and Seats

See Figure 4 and Figure 5.

1. Apply low temperature lithium grease to the replacement lower seat (4) and upper seat (7).
2. Place the concave side of a greased replacement seat onto the installation tool.
3. Using the installation tool, insert the upper seat (7) into the manifold body (8), ensuring the flat bottom side is seated properly in the manifold.
4. Turn the flow selector knob (1) to the *Bypass* position to ready the knob's internal stem to engage with the machined notch (3a) on the orifice ball.
5. Align the bypass holes on the orifice ball (3) and the installation tool. Note, the installation tool ensures the machined notch (3a) on the orifice ball will install in a vertical position.

6. See Figure 6. Install the orifice ball (3) into the manifold body (8), ensuring the machined notch (3a) on the orifice ball fits onto the flow selector knob's stem (9) which protrudes into the inside of the manifold body (8).
7. Gently holding the orifice ball (3) in place with the installation tool, temporarily rotate the flow selector knob (1) into *Orifice* position to keep the orifice ball (3) in place. Remove the installation tool.

CAUTION: Performing maintenance with the flow selector knob (8) in *Orifice* position outside of these steps may damage the seats or orifice ball.

8. See Figure 5. Install a new upper O-ring (5) and lower O-ring (6) onto the retainer (2).
9. Apply Parker® O-ring lubricant to both O-rings on the retainer (2).
10. Install a new greased lower seat (4) onto the retainer (2).

CAUTION: Do not overtighten the retainer (5). Overtorquing may result in damage to the seats and O-rings.

11. Begin threading the retainer (2) into the manifold body until it is finger tight. Once the retainer is finger tight, rotate the flow selector knob (1) into *Bypass* mode so that the slot in the ball and stem are vertical and won't restrict tightening. Using a fixed or adjustable wrench, continue tightening the retainer until the retainer is completely installed in the manifold body.

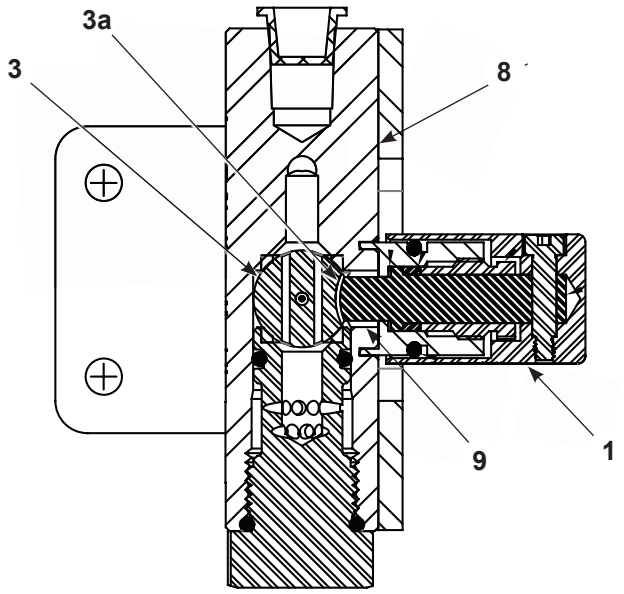

Figure 6 Cross-section View of Stem Seated in Notch

1. Flow selector knob
3. Ball Orifice
3a. Notch
8. Manifold body
9. Stem

Removing the Filter

The ezSPC manifold utilizes a T-filter in the manifold body to filter particulate from the coating material in the system. If the system controller detects low fluid flow or pressure, the filter may be clogged or blocked and ready to be cleaned or replaced.

WARNING: Shut off the system pump or close the gun circuit and relieve the fluid pressure before cleaning or replacing the filter. Failure to relieve system pressure could result in serious injury.

NOTE: For clarity, some parts are not shown.

See Figure 7.

1. Using an ½ inch standard wrench or an adjustable crescent wrench, unscrew the plug (4) on the front of the ezSPC manifold body (5). Some excess coating material may drip from the system.

NOTE: The filter (1) is held in place with a compression spring (2), which may still be compressed in the ezSPC manifold body (5).

2. Carefully remove the plug (4) from the manifold. Note the orientation of the filter (1) within the ezSPC manifold body.
3. Set the plug (4) aside for reuse. Set aside the compression spring (2) and filter (1) for ultrasonic cleaning or replacement.
4. Remove the O-ring (3) from the plug (4).

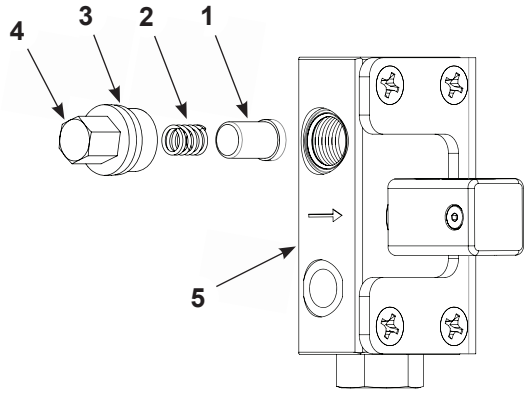

Figure 7 ezSPC Filter Removal

Installing the Filter Replacement Kit

See Figure 7.

1. Install the new O-ring (3) onto the plug (4) from the service kit. Lightly coat the new O-ring in Parker® O-ring lubricant.
2. Set the new or cleaned compression spring (2) inside the plug (4). Place the new or cleaned filter (1) on top of the compression spring.
3. Place the loaded plug (4) into the ezSPC manifold body (5).

CAUTION: Do not overtighten the plug. Overtorquing the plug may result in damage to the O-ring.

4. Using an ½ inch standard wrench or an adjustable wrench, tighten the plug (4) until it is snug in the ezSPC manifold body (5).

Parts

To order parts, call the Nordson 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. Indentations show the relationships between assemblies, subassemblies, and parts.

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.

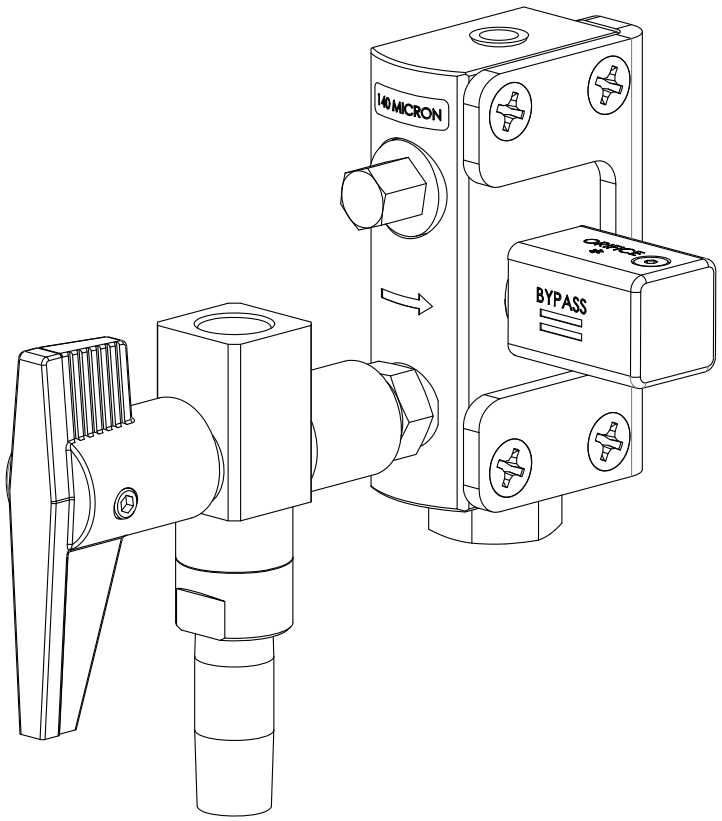

Figure 8 ezSPC Manifold Assembly

ezSPC Assembly

See Figure 8.

Part	Description	Quantity	Note
1620559	VALVE, ezSPC bypass/orifice, assembly, 0.008 in.	1	A, B
- - - - - -	• SPRING, compression, 0.36 OD x 0.041 width , 0.50 length, stainless	1	
- - - - - -	• KNOB, ezSPC, bypass/orifice	1	
- - - - - -	• VALVE, ball, 3-way, stainless	1	
- - - - - -	• NIPPLE, hex, ⅜ in. x ¼ x 1.406, stainless	1	
- - - - - -	• NIPPLE, ex heavy, ⅜ x 2 in., stainless	1	
- - - - - -	• BRACKET, mounting, ezSPC	1	
- - - - - -	• SCREW, shoulder, 8-32, .18 shoulder, .62 length, 316 stainless	1	
- - - - - -	• O RING, Viton™,1/2 TUBE	1	
- - - - - -	• SCREW, full thread HD ,¼-20 X ⅜ in length, stainless	4	

NOTE: A. 0.008 in. orifice is standard. Order part number 1620635 for the optional 0.010 in. assembly.

B. Refer to the *Three-Way Ball Valve* instruction sheet for ball valve parts.

Service Kits and Consumables

Part	Description	Quantity	Note
1620640	SERVICE KIT, retrofit fittings, ezSPC	—	
- - - - - -	• FITTING, elbow ,1/4 NPTF X 1/2-20 M JIC, stainless	1	
- - - - - -	• FITTING, pipe ,1/4 NPTF X 1/4 NPTF X 2 in., stainless	1	
1620636	SERVICE KIT, filter, ezSPC, 140 micron	—	A
179498	• FILTER	1	
- - - - - -	• SPRING, compression, 0.36 OD X 0.041 width, 0.50 length,stainless	1	
945027	• O RING, Viton™,1/2 in. tube	1	
1620638	SERVICE KIT, ball, bypass/orifice, 0.008 in.	—	B
- - - - - -	• BALL, bypass/orifice, ezSPC	1	
- - - - - -	• SEAT, 5150, ball	2	
941136	• O-RING,Viton™, 0.562 X 0.750, black	1	
- - - - - -	• O-RING,Viton™, 0.737 X 0.103 TK, black	1	
941151	• O-RING,Viton™, 0.674 X 0.880 X .103	1	
1621597	• SCREW, shoulder, 8-32, .18 shoulder, .62 length, 316 stainless	1	
900464	ADHESIVE, Loctite® 242, blue, removable	AR	
900336	GREASE, lithium, low temperature	AR	
1612251	LUBRICANT, O-Ring ,Parker®	AR	
900481	ADHESIVE, pipe/thread sealant	AR	

NOTE: A. The 140 micron service kit is standard. Order part number 1620637 for the optional 230 micron filter service kit.

B. 0.008 in. orifice is standard. Order part number 1620639 for the optional 0.010 in. orifice ball service kit.

AR: As Required

Continued...

Service Kits and Consumables *cont...*

Part	Description	Quantity	Note
1624381	SERVICE KIT, fittings, ezSPC	—	
- - - - - -	• CONNECTOR, male, 37°, 1/2-20 X 3/8 in. NPT, stainless	1	
- - - - - -	• FITTING, elbow, male, 37°,1/2-20 X 1/4,stainless	1	
- - - - - -	• CONNECTOR, male, 37°, 1/2-20 X 1/4 in., stainless		
- - - - - -	• FITTING, elbow,1/4 NPTF X 1/2-20 M JIC, stainless		
- - - - - -	• FITTING, pipe,1/4 NPTF X 1/4 NPTF X 2 in., stainless		
902504	• TAPE, PTFE, roll, 1/2 in. X 520 in.,15015-2	1	AR
900431	• ADHESIVE, pipe/thread/sealant	1	AR
AR: As Required			