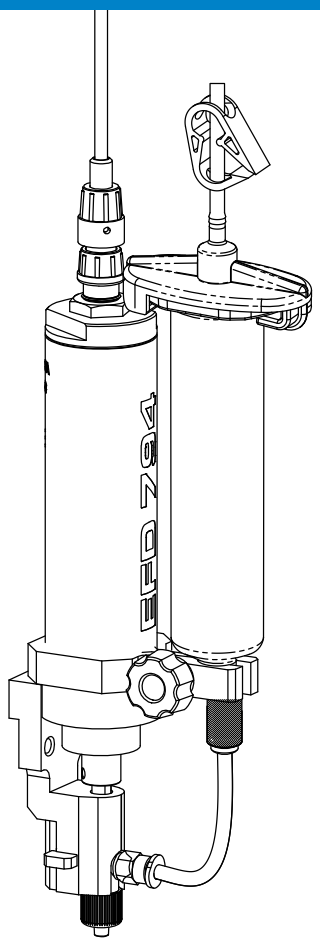
794 Series Auger Valve

Operating Manual



Electronic pdf files of Nordson EFD manuals are also available at www.nordsonefd.com

Nordson EFD

You have selected a reliable, high-quality dispensing system from Nordson EFD, the world leader in fluid dispensing. The 794 auger valve was designed specifically for industrial dispensing and will provide you with years of trouble-free, productive service.

This manual will help you maximize the usefulness of your 794 auger valve.

Please spend a few minutes to become familiar with the controls and features. Follow our recommended testing procedures. Review the helpful information we have included, which is based on more than 50 years of industrial dispensing experience.

Most questions you will have are answered in this manual. However, if you need assistance, please do not hesitate to contact EFD or your authorized EFD distributor. Detailed contact information is provided on the last page of this document.

The Nordson EFD Pledge

Thank You!

You have just purchased the world's finest precision dispensing equipment.

I want you to know that all of us at Nordson EFD value your business and will do everything in our power to make you a satisfied customer.

If at any time you are not fully satisfied with our equipment or the support provided by your Nordson EFD Product Application Specialist, please contact me personally at 800.556.3484 (US), 401.431.7000 (outside US), or Ferran.Ayala@nordsonefd.com.

I guarantee that we will resolve any problems to your satisfaction.

Thanks again for choosing Nordson EFD.

Ferran

Ferran Ayala, Vice President

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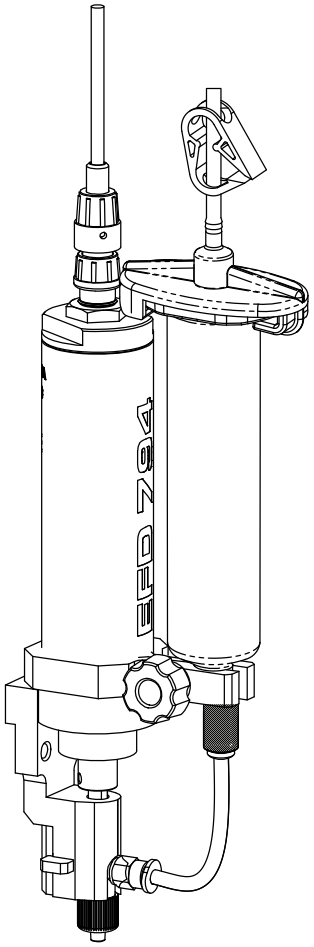
Introduction

The 794 Auger Valve is a precision dispense valve specifically designed for metering controlled deposits of solder pastes, thick sealants, and other particle-filled materials. By combining screw-feed principles with precise time, pressure, and dispensing control, the 794 valve is able to provide accurate, repeatable deposits without damaging the metal particles of the solder. These features are not possible with any other type of conventional control valve.



General Information

It is intended that the 794 auger valve be rigidly mounted to and positioned by a suitable factory automation system and controlled by a suitable valve controller. See the “Specifications” section of this manual to select, install, and configure the automation system and valve controller.

Prohibited Uses

The 794 auger valve should not be operated in the following ways:

- Hand-held
- In damp or wet conditions
- In explosive atmospheres
- Under conditions which violate limits set under “Specifications” on page 6
- Without all system guards, interlocks, and other safety features in place and operational

Warning

It is the responsibility of the factory automation system designer, builder, and / or installer to include safety features sufficient to prevent personal injury or loss of life during operation.

Safety Precautions

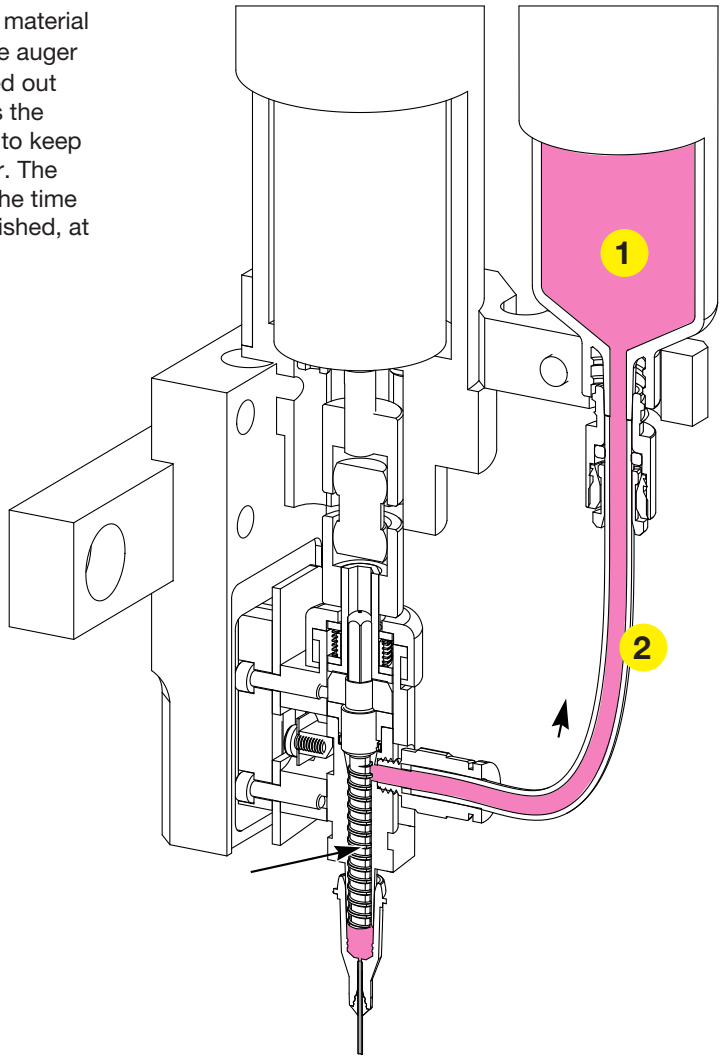
The 794 auger valve should be installed, configured, and operated only by qualified personnel who have read and understood all appropriate sections of this manual as well as the operating instructions supplied with the factory automation system onto which it is installed. Protective eyewear should always be worn while operating, adjusting, and servicing the valve. Additional personal protective equipment should be used appropriate to the material being dispensed. An SDS for all materials to be dispensed should be available at or near the operator’s station. The factory automation system should be designed and installed so as to allow the operator to be positioned at a safe distance while operating and adjusting the valve.

Valve Models

- 794-FR: 8 pitch, brush motor, fixed head
- 794-FR-16: 16 pitch, brush motor, fixed head

How the Valve Operates

Input air pressure at up to 2.1 bar (30 psi) is applied to the material reservoir 1, forcing fluid into the path of the auger. As the auger rotates, fluid moves along the auger flutes 2 and is forced out through the dispense orifice. The valve controller regulates the reservoir pressure, ensuring that there is enough pressure to keep the valve primed with fluid without forcing it past the auger. The duration of the dispensing time is controlled by adjusting the time control up or down until the required deposit size is established, at which point it is repeated with each initiate cycle.



Specifications

NOTE: Specifications and technical details are subject to engineering changes without prior notification.

Item	Specification
Size	237.5 mm length x 31.8 mm diameter (9.35 x 1.25")
Weight	544.0 g (19.2 oz)
Auger speed (dry)	250–500 RPM based on voltage input
Auger pitch	8, 16
Input voltage	10–24 VDC (<10% ripple)
Maximum acceleration	2.0 g (0.07 oz)
Maximum continuous current	240 mA
Input air pressure	0–2.07 bar (0–30 psi)
Maximum fluid pressure	2 bar (30 psi)
Fluid inlet	304 stainless steel, #10-32 UNF x 5/32" Optional push-in fitting: Polypropylene
Mounting	10-32, low profile
Fluid body	440C hardened stainless steel
Auger	440C hardened stainless steel
Approvals	China RoHS

All stainless steel parts are passivated.

RoHS标准相关声明 (China RoHS Hazardous Material Declaration)

产品名称 Part Name	有害物质及元素 Toxic or Hazardous Substances and Elements					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr6)	多溴联苯 Polybrominated Biphenyls (PBB)	多溴联苯醚 Polybrominated Diphenyl Ethers (PBDE)
外部接口 External Electrical Connectors	**X**	**0**	**0**	**0**	**0**	**0**

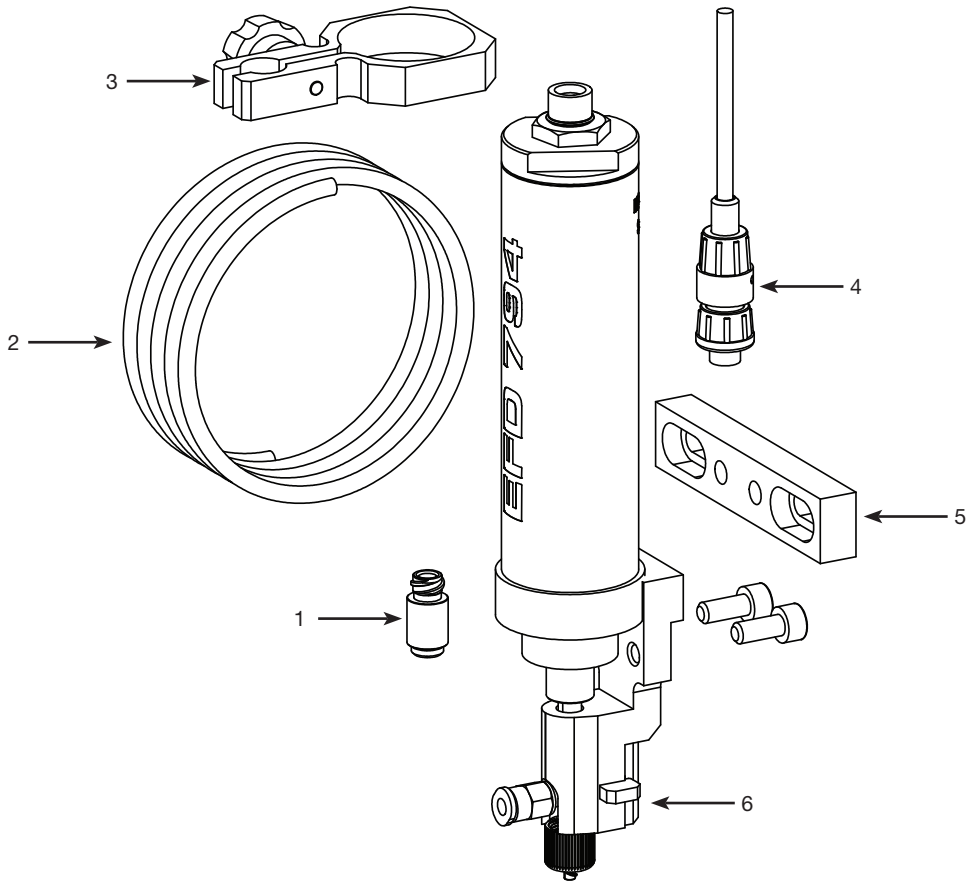
0: 表示该产品所含有的危险成分或有害物质含量依照EIP-A, EIP-B, EIP-C 的标准低于SJ/T11363-2006 限定要求。
Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C is below the limit requirement in SJ/T11363-2006.

X: 表示该产品所含有的危险成分或有害物质含量依照EIP-A, EIP-B, EIP-C 的标准高于SJ/T11363-2006 限定要求.
Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C is above the limit requirement in SJ/T11363-2006.

Packing List

The following items are included with the 794 auger valve.

Item	Part #	Description	Qty.
1	—	Fitting, 4 mm push-in to luer	1
2	7016761	Urethane tubing, 0.3 m (1 ft)	1
3	—	Barrel clamp and knob	1
4	7021981	Brush-motor valve cable	1
5	7021960	Mounting bar and screws	1
6	—	794 valve assembly	1
Not shown	7016129	Adapter, 10cc, 1.8 m (6 ft)	1
Not shown	7016134	Adapter, 30cc, 1.8 m (6 ft)	1
Not shown	7012526	Standard high flow kit (optional stainless steel kit available)	1
Not shown	7019147	8 g valve purge compound	1
Not shown	7021996	794 valve tip kit	1
Not shown	—	Dot Test Kit Sheet	3
Not shown	—	Valve purge compound Safety Data Sheet (SDS)	1
Not shown	—	Valve purge instructions	1

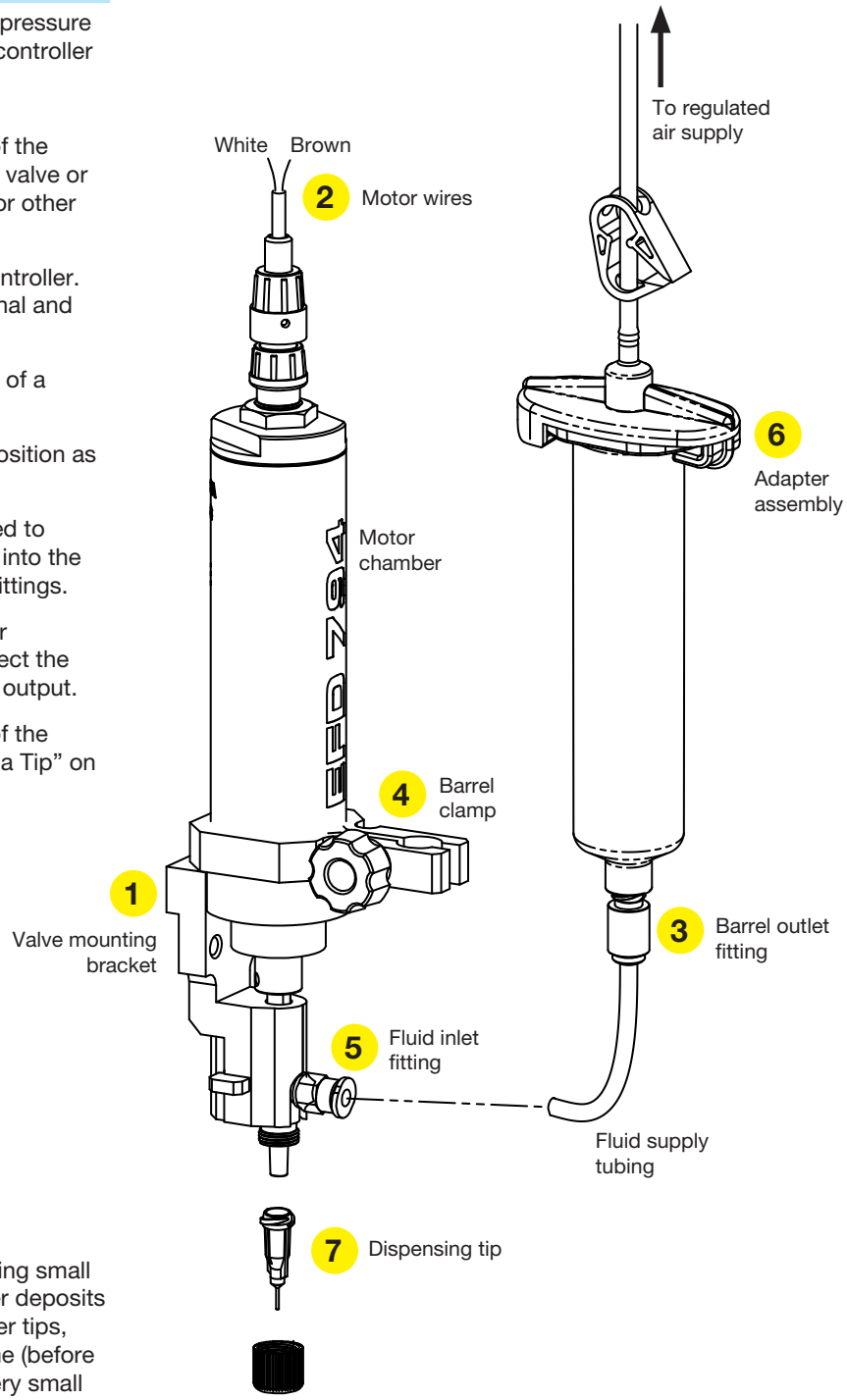


Installation

⚠ WARNING

Disconnect the electrical power and inlet air pressure to the factory automation system and valve controller prior to proceeding.

1. Mount the valve securely to the Z-axis of the robot using the bracket provided for the valve or another appropriate mounting bracket for other machines.
2. Connect the motor wires to the valve controller. The white wire connects to the (+) terminal and the brown wire to the (–) terminal.
3. Attach the barrel outlet fitting to the end of a barrel of material to be dispensed.
4. Insert the barrel into the barrel clamp, position as required, and clamp securely.
5. Trim a length of the supply hose provided to approximately 80 mm (3 1/8") and push into the barrel outlet and auger assembly input fittings.
6. Attach the blue end of the barrel adapter assembly to the end of the barrel. Connect the bayonet fitting to the valve controller air output.
7. Install an EFD 1/4" long dispensing tip of the appropriate gauge. (Refer to “Changing a Tip” on page 9.)



Making Adjustments

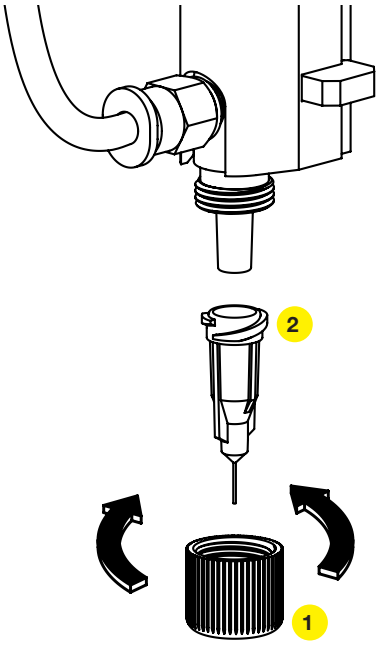
Dispense time is the primary method of making small adjustments in deposit size. In general, larger deposits require longer dispense times, larger diameter tips, and larger gaps. Be sure to allow settling time (before dispense) and dwell time (after dispense). Very small deposits may require chamfered tips. Air pressure should be set to a point just below where drooling occurs without the auger turning.

Changing a Tip

1. Loosen and remove the tip retaining nut 1.
2. Remove the tip and install the replacement tip 2 (1/4" only).
3. Reinstall and tighten the tip retaining nut.

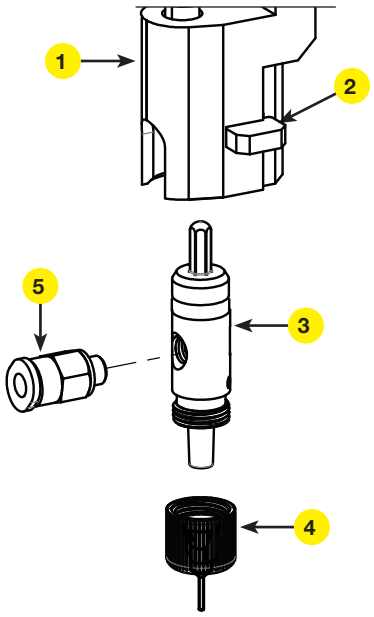
NOTES:

- To ensure proper axial location of the tip, tighten the cap on the fine-adjust assembly until it bottoms out firmly against the end of the auger assembly.
- Use only EFD 1/4" long tips, tip sizes 7018029 through 7018462. Refer to the EFD Precision Dispense Tip Sheet for available gauge sizes and dimensions.



Changing the Auger Assembly

1. Do the following to disconnect the fluid supply:
   a. Loosen the barrel clamp.
   b. Raise the barrel.
   c. Disconnect the tubing from the fluid inlet fitting 5 and pull it out through the slot in the clamp.
2. Push back the lever 2 on the valve fluid body.
   The entire auger assembly 3 drops out of the fluid body.
3. Remove the fluid inlet fitting 5 and tip/retaining nut 4 from the auger assembly and install these components on the replacement auger assembly.
4. Insert the hex drive of the replacement auger assembly into the valve fluid body 1, rotate the auger assembly until the hex engages, and then push up until the auger assembly snaps into place.
5. Reconnect the fluid supply and restore the barrel and barrel clamp to the normal operating position.



Solder Paste

Nordson EFD's comprehensive line of ISO-certified solder paste solutions include high quality printing and dispensing soldering pastes that meet the most stringent application requirements. Visit www.nordsonefd.com/SolderPlusPaste for details or to request a free sample.

Service

Refer to the **794 Service & Replacement Parts Manual** for service procedures.

Valve Part Numbers

Part #	Pitch	Model	Description
7029745	8	794-FR	Auger valve, 8 pitch, brush motor, fixed head
7029746	16	794-FR	Auger valve, 16 pitch, brush motor, fixed head

Replacement Parts

Refer to the **794 Service & Replacement Parts Manual** for replacement parts.

Troubleshooting

Problem	Possible Cause	Solution
Auger not turning	Wiring fault	Check accuracy and tightness of all connections
	Cable damaged	Check cable for damage, replace if necessary
	Controller fault	Check controller output with voltmeter; refer to “Specifications” on page 6.
	Controller set incorrectly	Check settings of controller: motor voltage, direction, dispense duration; refer to “Specifications” on page 6.
	Motor fault	Contact your Nordson EFD representative for assistance.
	Auger jammed	Clean auger assembly
	Coupling loose	Tighten set screws
No deposit	Motor turning in wrong direction (should be clockwise when viewed from above)	Check controller motor direction settings
		Reverse motor wires
	Depleted barrel	Replace with filled barrel
	No air pressure	Check controller input air and air settings
	Material cured or dried	Replace with fresh material
	Insufficient air pressure	Increase pressure
	Delivery path clogged	Run one or more purge routines
		Clean delivery path
		Replace tip, supply hose and / or fittings
Smeared deposits	Automated dispensing system hunting for position	Tune the automated dispensing system. Contact your Nordson EFD representative for assistance.
	Slide position not settled	Increase settling and / or dwell times. Decrease velocity and / or acceleration rates
	Valve loose	Tighten mounting connections
	Automated dispensing system fault	Service the automated dispensing system. Contact your Nordson EFD representative for assistance.
Skipped deposits	Automated dispensing system fault	Service the automated dispensing system. Contact your Nordson EFD representative for assistance.
		Switch to chamfered tip
	Tip too small	Change to larger (smaller number) tip
	Gap too large	Decrease gap (turn ring counter clockwise)
	Inconsistent material	Check and / or mix material
	Air in material	Run one or more purge routines
		De-air material (vacuum or centrifuge)
	Damaged tip	Replace tip

Continued on next page

Troubleshooting (continued)

Problem	Possible Cause	Solution
Inconsistent deposits	Poor material cut-off	Reverse motor briefly at end of deposit routine
		Switch to chamfered tip
	Tip too large	Change to smaller (larger number) tip
	Gap too small	Increase gap
	Inconsistent material	Replace and / or mix material
	Air in material	Run one or more purge routines until cleared
		De-air material (vacuum or centrifuge)
	Premature retraction	Increase dwell time
	Process temperature changing	Install temperature control system, such as the EFD ProcessMate® 6500 temperature controller
	Damaged tip	Replace tip
Leaking at fittings	Fittings loose	Tighten fittings
	Hose loose on fittings	Replace hose
	Fitting(s) cracked	Replace barbed fitting(s) (Recommended: P/N 7014845)
	Material incompatibility	Switch to optional metal fittings (P/N 7021724)
Leaking at auger	Worn or damaged auger seal	Replace auger seal
Material being damaged	Bent auger	Replace auger
	Worn auger bearing	Replace auger bearing
Residual material at material change-over	Dead spots in material path at barbs	Switch to optional metal fittings (P/N 7021724)

Notes

NORDSON EFD ONE YEAR LIMITED WARRANTY

This Nordson EFD product is warranted for one year from the date of purchase to be free from defects in material and workmanship (but not against damage caused by misuse, abrasion, corrosion, negligence, accident, faulty installation, or by dispensing material incompatible with equipment) when the equipment is installed and operated in accordance with factory recommendations and instructions.

Nordson EFD will repair or replace free of charge any defective part upon authorized return of the part prepaid to our factory during the warranty period. The only exceptions are those parts which normally wear and must be replaced routinely, such as, but not limited to, valve diaphragms, seals, valve heads, needles, and nozzles.

In no event shall any liability or obligation of Nordson EFD arising from this warranty exceed the purchase price of the equipment.

Before operation, the user shall determine the suitability of this product for its intended use, and the user assumes all risk and liability whatsoever in connection therewith. Nordson EFD makes no warranty of merchantability or fitness for a particular purpose. In no event shall Nordson EFD be liable for incidental or consequential damages.

This warranty is valid only when oil-free, clean, dry, filtered air is used, where applicable.

Nordson EFD

For Nordson EFD sales and service in over 40 countries, contact Nordson EFD or go to www.nordsonefd.com.

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