

781S Series Spray Valve

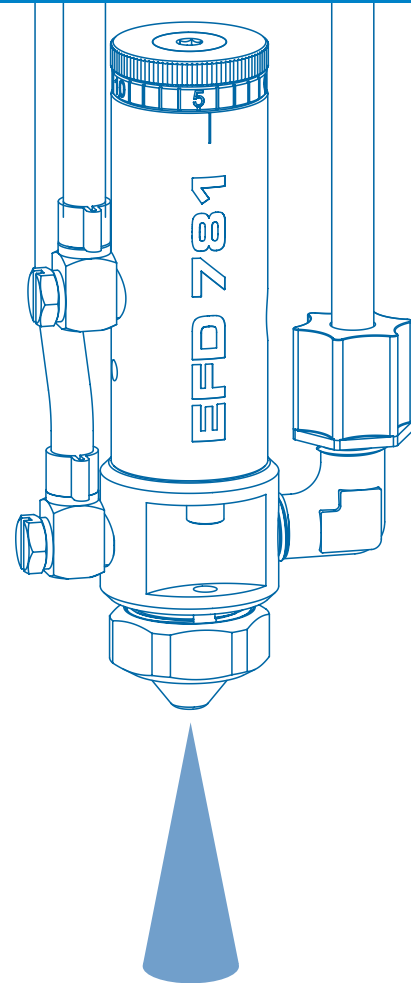
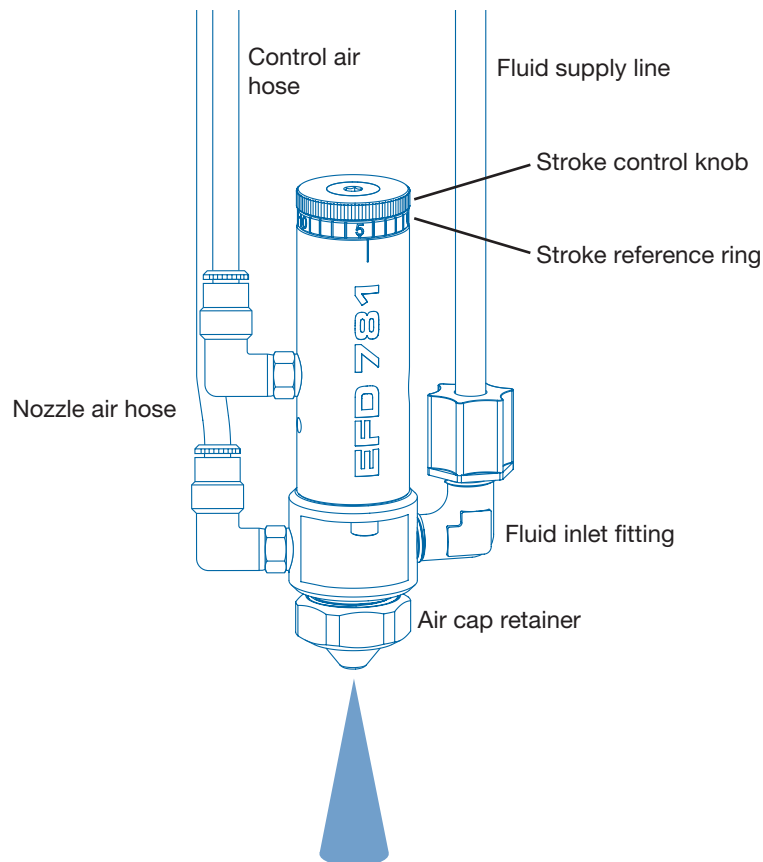
Installation Guide

Introduction

The 781S Series precision Low Volume Low Pressure (LVLP) liquid spray valves are designed for high transfer efficiency without overspray or airborne mist and provide consistent coating of low- to medium-viscosity fluids.

781S Series valves are simple to use and will operate many millions of cycles without maintenance. Spray valve cleaning is accomplished by purging with the appropriate solvent.

The 781S air cylinder body and fluid body are hard-coated aluminum. The 781S-SS valve model uses stainless steel throughout.



Installation

Prior to installing this valve, please read the associated reservoir and valve controller operating instructions to become familiar with the operation of all components of the spray system.

1. Connect the fluid supply line to valve.
2. Connect the fluid supply line to the reservoir.
3. Connect the control air hose and the nozzle air hose to corresponding outputs on solenoid block.
4. Fill reservoir by pouring fluid directly into tank liner or manufacturer's bottle placed

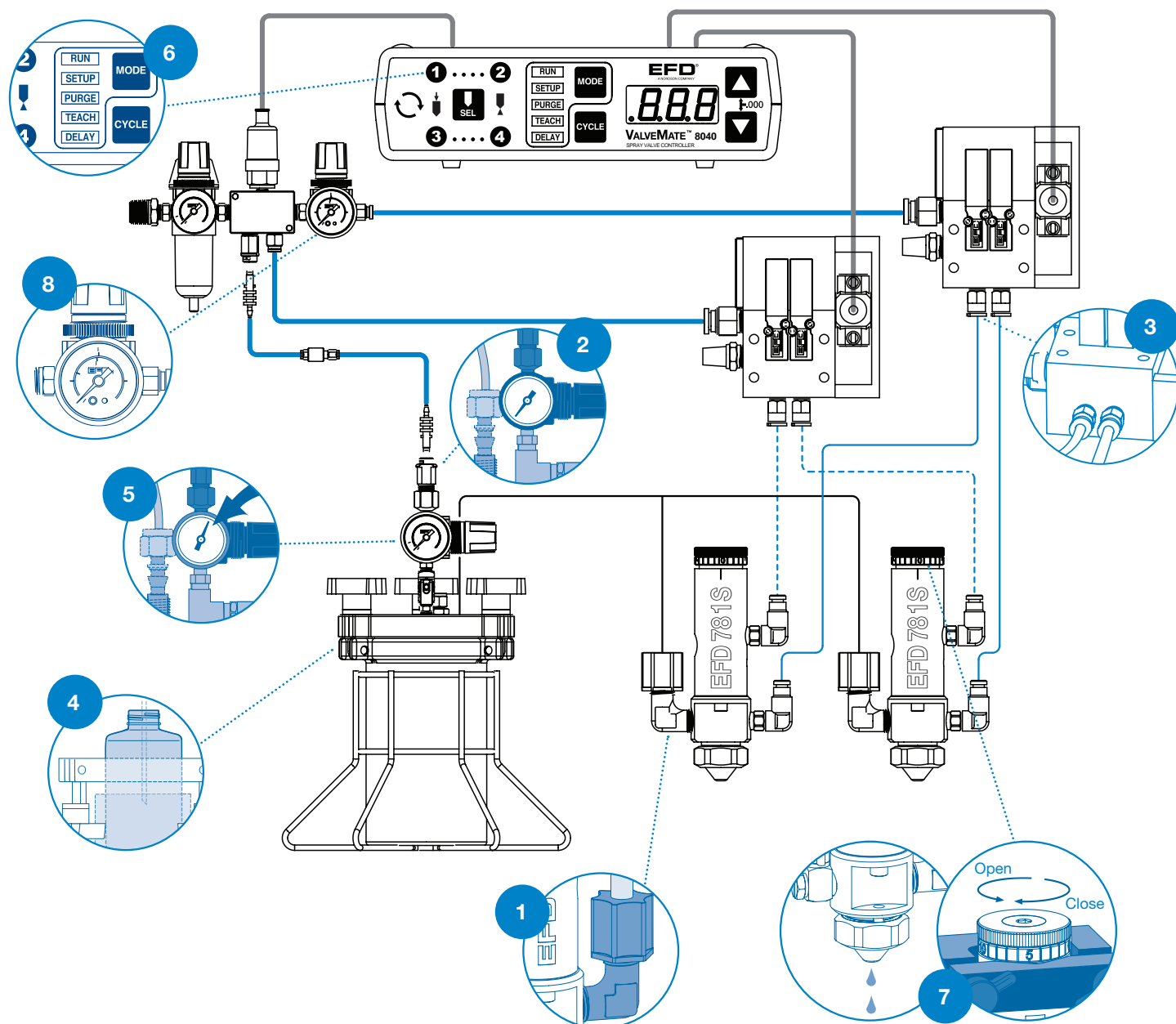
inside reservoir. Secure cover prior to setting pressure.

5. Set reservoir pressure to low for thin fluids and higher for thick fluids.
6. Using the Mode **MODE** button on the ValveMate controller, place the controller in the PURGE **PURGE** mode. In PURGE **PURGE** mode only, channels **1**...**2** and **3**...**4** can be selected **SEL** independently without nozzle air pressure.
7. Using the needle stroke control knob on the 781S valve, set the fluid flow rate to one or two drops per second. Check the

flow rate by actuating the controller in the time override mode. Make valve stroke adjustments when the controller is off.

8. Set the nozzle air pressure on the nozzle to 0.7 bar (10 psi) and actuate the controller. The valve will produce a fine spray. To change fluid flow, use the needle stroke control knob and / or reservoir pressure. To change nozzle air, use the nozzle air pressure regulator. Higher pressures will provide finer spray.

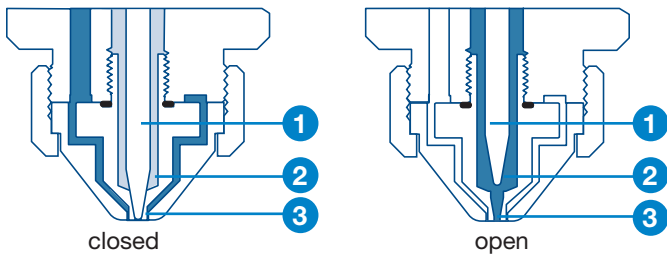
NOTE: The area of spray coverage is determined by the distance between the spray valve nozzle and the work surface. Refer to the charts on the back page to determine this distance.



How the Valve Operates

Input air pressure at 4.8 bar (70 psi) retracts the needle ① from its nozzle seat, ② allowing liquid to flow from the nozzle. At the same time, nozzle air is turned on and flows from the annulus ③ around the liquid nozzle. This adjustable nozzle air creates a pressure drop around the nozzle, causing the liquid to atomize into fine droplets.

The amount sprayed is controlled by the valve open time, reservoir pressure, and needle stroke*. Area of coverage is determined by the nozzle size and the distance between the nozzle and work surface.

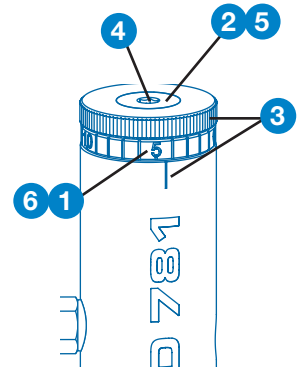


*The 781S valve can be ordered in a tamper-resist configuration to limit unauthorized adjustment. Specify part #7021616.

Calibration Feature

The stroke control reference ring of each 781S-SS valve is factory calibrated to the zero position. After cleaning, disassembly and reassembly, the stroke control zero position may require recalibration. To do so:

1. Make a note of the current stroke setting number.
2. Turn the calibration adjustment knob (inner) counterclockwise two full turns.
3. Turn the stroke knob (outer) clockwise until it stops. Note reference ring "0" (zero) location. If "0" is not positioned above either reference mark on air cylinder body, rotate outer stroke knob counterclockwise until "0" is positioned above preferred reference mark. Select reference mark that is more clearly visible based on valve mounting location.
4. Insert 1/8" hex allen wrench (included) into calibration adjustment knob.
5. Turn the calibration adjustment knob clockwise until it stops. The stroke adjustment is now calibrated to zero.
6. Reset stroke to the required position noted in step 1.

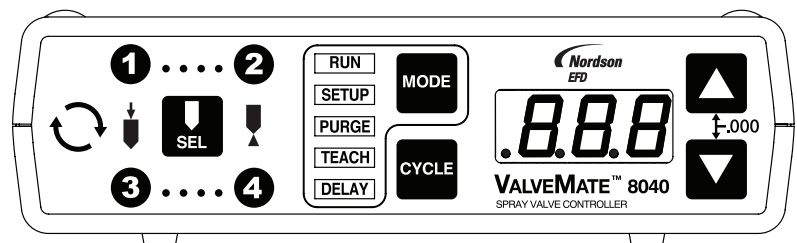


The primary control of deposit size is the valve open time.

ValveMate Concept

The ValveMate™ 8040 provides easy adjustment of spray valve output for maximum end-user convenience and efficiency. Valve open time is the primary control of deposit size. The ValveMate 8040 puts adjustment of valve open time where it needs to be — near the spray valve.

External solenoids, combined with a 0–2 bar (0–30 psi) nozzle air pressure regulator, provide Low Volume Low Pressure (LVLP) air to the nozzle, for high transfer efficiency.



NOTE: Order your single or dual valve solenoid assemblies separately. Consult Nordson EFD for recommendations.



Specifications

781S and MM781-SYS

Weight: 235.3 g (8.29 oz)

Fluid body: Hard-coated aluminum

Air cylinder body: Hard-coated aluminum

781S-SS / 781RC-SS*

Weight: 405.3 g (14.29 oz)

Fluid body: 303 stainless steel

Air cylinder body: 303 stainless steel

General

781S Size: 104.6L x 26.9DIA mm (4.12" x 1.06")

781RC Size: 114.91L x 26.92DIA mm (4.52" x 1.06")

Air cap: 303 stainless steel

Piston: 303 stainless steel

Needle and nozzle: 303 stainless steel

Free flow orifice: 1.17 mm (0.046"), 0.71 mm (0.028"), or 0.36 mm (0.014")

Needle packings: PTFE

*Fluid outlet thread: 1/8 NPT female (recirculation models only)

Mounting: (1) 1/4-28 UNF tapped hole

Air pressure required: 4.8–6.2 bar (70–90 psi)

Maximum input fluid pressure: 20.7 bar (300 psi)

Maximum operating temperature: 102° C (215° F)

Operating frequency: Exceeds 400 cycles/min

*781RC-SS has an additional 1/8 NPT outlet port for fluids requiring recirculation back to the primary reservoir. the recirculation process keeps fluid moving so solids remain in suspension.

All stainless steel valve parts are passivated.

For consistent dispense valve operation and easy adjustment of valve output, Nordson EFD recommends using the ValveMate 8040 controller on all automatic, semi-automatic and benchtop applications.

Nordson EFD automated dispensing systems integrate with ValveMate controllers for operating all pneumatic dispense valves.

Contact Nordson EFD for details.

Spray Patterns

Round Pattern Spray Area Coverage

Nozzle	Nozzle Distance from Work Surface			
	25.4 mm 1.0"	50.8 mm 2.0"	76.2 mm 3.0"	152.4 mm 6.0"
#7007021 Standard 1.17 mm (0.046")	6.35 mm 0.25"	12.70 mm 0.50"	19.05 mm 0.75"	38.10 mm 1.50"
#7021783 Wide-angle 1.17 mm (0.046")	19.05 mm 0.75"	38.10 mm 1.50"	50.80 mm 2.00"	Not recommended
#7007022 0.71 mm (0.028")	5.08 mm 0.20"	10.16 mm 0.40"	15.24 mm 0.60"	30.48 mm 1.20"
#7007023 0.36 mm (0.014")	4.32 mm 0.17"	8.64 mm 0.34"	12.70 mm 0.50"	25.40 mm 1.00"

Fan Pattern Spray Area Coverage

Nozzle	Nozzle Distance from Work Surface			
	25.4 mm 1.0"	50.8 mm 2.0"	76.2 mm 3.0"	152.4 mm 6.0"
#7021787 Standard 1.17 mm (0.046")	25.40 mm 1.00"	38.10 mm 1.50"	50.80 mm 2.00"	82.55 mm 3.25"
#7021784 Wide-angle 1.17 mm (0.046")	38.1 mm 1.50"	63.5 mm 2.50"	82.55 mm 3.25"	165.1 mm 6.50"
#7021876 0.71 mm (0.028")	10.16 mm 0.40"	20.32 mm 0.80"	30.48 mm 1.20"	60.96 mm 2.40"
#7021785 0.36 mm (0.014")	8.63 mm 0.34"	17.27 mm 0.68"	25.4 mm 1.00"	50.8 mm 2.00"



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

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