

# Performus X Series Dispensers

## Operating Manual



Electronic pdf files of Nordson EFD  
manuals are also available at  
[nordsonefd.com](http://nordsonefd.com)

**Nordson**  
EFD

You have selected a reliable, high-quality dispensing system from Nordson EFD, the world leader in fluid dispensing. The Performus™ X Series dispensing system 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 Performus dispensing system.

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 [Srini.Subramanian@nordsonefd.com](mailto:Srini.Subramanian@nordsonefd.com).

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

Thanks again for choosing Nordson EFD.

*Srini Subramanian*  
Srini Subramanian, General Manager

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# Nordson EFD Product Safety Statement

## **WARNING**

The safety message that follows has a WARNING level hazard.  
Failure to comply could result in death or serious injury.



### **ELECTRIC SHOCK**

Risk of electric shock. Disconnect power before removing covers and / or disconnect, lock out, and tag switches before servicing electrical equipment. If you receive even a slight electrical shock, shut down all equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

## **CAUTION**

The safety messages that follow have a CAUTION level hazard.  
Failure to comply may result in minor or moderate injury.



### **READ MANUAL**

Read manual for proper use of this equipment. Follow all safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate. Make sure these instructions and all other equipment documents are accessible to persons operating or servicing equipment.



### **MAXIMUM AIR PRESSURE**

Unless otherwise noted in the product manual, the maximum air input pressure is 7.0 bar (100 psi). Excessive air input pressure may damage the equipment. Air input pressure is intended to be applied through an external air pressure regulator rated for 0 to 7.0 bar (0 to 100 psi).



### **RELEASE PRESSURE**

Release hydraulic and pneumatic pressure before opening, adjusting, or servicing pressurized systems or components.



### **BURNS**

Hot surfaces! Avoid contact with the hot metal surfaces of heated components. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.

# Nordson EFD Product Safety Statement (continued)

## 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 the Safety Data Sheet (SDS) or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your EFD representative for compatible EFD components.

## High Pressure Fluids

High pressure fluids, unless they are safely contained, are extremely hazardous. Always release 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.

### 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 the doctor the following note.
- Tell the doctor what kind of material you were dispensing.

### 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.

## Qualified Personnel

Equipment owners are responsible for making sure that EFD 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.

# Nordson EFD Product Safety Statement (continued)

## Intended Use

Use of EFD 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.
- Operating equipment in an explosive atmosphere.

## Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson EFD equipment will be voided if instructions for installation, operation, and service are not followed. If the equipment is used in a manner not specified by Nordson EFD, the protection provided by the equipment may be impaired.

## 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, and 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.
- Make sure spray areas and other work areas are adequately ventilated.
- When using a syringe barrel, always keep the dispensing end of the tip pointing towards the work and away from the body or face. Store syringe barrels with the tip pointing down when they are not in use.
- Obtain and read the Safety Data Sheet (SDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials and use recommended personal protection devices.
- 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.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located.
- Wear hearing protection to protect against hearing loss that can be caused by exposure to vacuum exhaust port noise over long periods of time.

# Nordson EFD Product Safety Statement (continued)

## Fire Safety

To prevent a fire or explosion, follow these instructions:

- 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 the 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.

## Preventive Maintenance

As part of maintaining continuous trouble-free use of this product, Nordson EFD recommends the following simple preventive maintenance checks:

- Periodically inspect tube-to-fitting connections for proper fit. Secure as necessary.
- Check tubing for cracks and contamination. Replace tubing as necessary.
- Check all wiring connections for looseness. Tighten as necessary.
- Clean: If a front panel requires cleaning, use a clean, soft, damp rag with a mild detergent cleaner. DO NOT USE strong solvents (MEK, acetone, THF, etc.) as they will damage the front panel material.
- Maintain: Use only a clean, dry air supply to the unit. The equipment does not require any other regular maintenance.
- Test: Verify the operation of features and the performance of equipment using the appropriate sections of this manual. Return faulty or defective units to Nordson EFD for replacement.
- Use only replacement parts that are designed for use with the original equipment. Contact your Nordson EFD representative for information and advice.

# Nordson EFD Product Safety Statement (continued)

## Important Disposable Component Safety Information

All Nordson EFD disposable components, including syringe barrels, cartridges, pistons, tip caps, end caps, and dispense tips, are precision engineered for one-time use. Attempting to clean and re-use components will compromise dispensing accuracy and may increase the risk of personal injury.

Always wear appropriate protective equipment and clothing suitable for your dispensing application and adhere to the following guidelines:

- Do not heat syringe barrels or cartridges to a temperature greater than 38° C (100° F).
- Dispose of components according to local regulations after one-time use.
- Do not clean components with strong solvents (MEK, acetone, THF, etc.).
- Clean cartridge retainer systems and barrel loaders with mild detergents only.
- To prevent fluid waste, use Nordson EFD SmoothFlow™ pistons.

## 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:

1. Disconnect and lock out system electrical power. If using hydraulic and pneumatic shutoff valves, close and relieve pressure.
2. For Nordson EFD air-powered dispensers, remove the syringe barrel from the adapter assembly. For Nordson EFD electro-mechanical dispensers, slowly unscrew the barrel retainer and remove the barrel from the actuator.
3. 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.



# Specifications

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

Item	Specification
Cabinet size	26.4W x 17.1D x 6.7H cm (10.38W x 6.75D x 2.62H")
Weight	1 kg (2.2 lb)
Power adapter	AC input: 100–240 VAC (+/-10%), ~50/60Hz, 0.6 Amp DC output: 24 VDC @ 0.75 Amp
Internal voltage	24 VDC
Cycle rate	Exceeds 600 cycles per minute
Time range	0–99.9 seconds
Foot pedal	Voltage: 24 VDC Current: 20 mA
End-of-cycle feedback circuits	5–24 VDC, 100 mA maximum
Cycle initiate	Foot pedal, finger switch, or 5–24 VDC signal
Input air pressure	7.0 bar (100 psi) maximum
Air output	0–7.0 bar (0–100 psi)
Pressure readout accuracy	Performus : $\pm 2.0$ psi, 0–7.0 bar (0–100 psi) Ultimus II: $\pm 0.3$ psi, 0–1.0 bar (0–15 psi)
Ambient operating conditions	Temperature: 5–45° C (41–113° F) Humidity: 85% at 30° C (86° F), non-condensing Height above sea level: 5000 m maximum (16404 ft)
Product classification	Installation category II Pollution degree 2
Approvals	CE, ETL, RoHS, WEEE, China RoHS

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

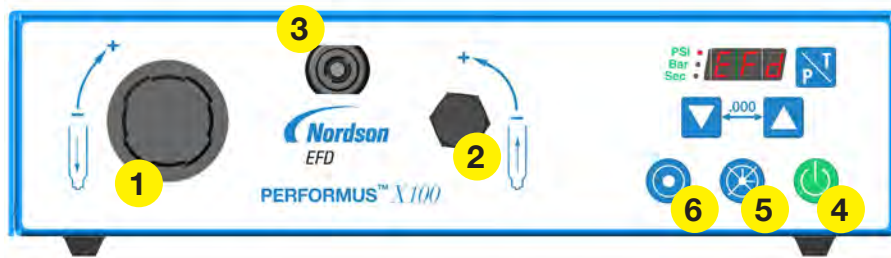
产品名称 Part Name	有害物质及元素 Toxic or Hazardous Substances and Elements					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr6)	多溴联苯 Polybrominated Biphenyls (PBB)	多溴联苯醚 Polybrominated Diphenyl Ethers (PBDE)
外部接口 External Electrical Connectors	<b>X</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0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

## WEEE Directive



This equipment is regulated by the European Union under WEEE Directive (2012/19/EU). Refer to [www.nordsonefd.com/WEEE](http://www.nordsonefd.com/WEEE) for information about how to properly dispose of this equipment.

## Features and Controls



1. Output Air Regulator Adjustment Knob — Controls air pressure in syringe barrel
  - Performus X100: 0–7.0 bar (0–100 psi)
  - Performus X15: 0–1.0 bar (0–15 psi)
2. Vacuum Control Adjustment Knob — Controls syringe barrel vacuum
3. Output Quick Connector — Syringe barrel adapter connection
4. Power On / Off Button — Main DC power control
  - Press once to power on the unit (unit will display a self-diagnostic sequence before displaying the previously set time / pressure setting). Press again and the unit will power off.
5. Steady Mode Button — Toggles the unit between timed dispense and steady mode
  - Press steady mode button once and (---) will appear on the display. If the unit is displaying pressure (psi or bar) the display will now show (---), upon pressing the steady mode. Simply press the P/T button while in the steady mode to view the pressure in steady mode.

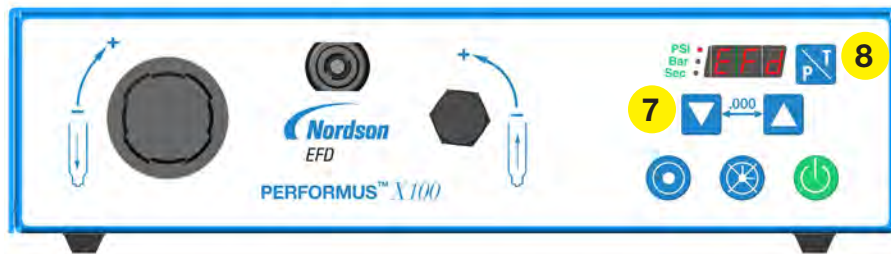
The pressure display will be interrupted and an animated (---) will display when the dispenser is initiated at this point. The animated (---) will immediately return to displaying pressure at end of the dispenser initiation. The dispenser will remain in steady mode until the steady mode button is pressed again.
6. Program / Teach Button — Used to program or teach a dispense duration
  - Press once and the current dispense time will flash. Pressing and holding the button for more than two seconds will erase the display and dispense memory, resetting to 0.000.

Press and hold the foot pedal / finger switch to teach the desired deposit (the display will still be flashing at this point).

Press the Program / Teach button when finished to lock in the new settings.

**NOTE:** The time on the display will increase (while flashing) every time the foot pedal or finger switch is initiated until the Program / Teach button is pressed to lock in settings. Time can be added to the current time without having to clear to zeros.

## Features and Controls (continued)



- 7.** Up / Down Arrows — Used to make adjustments or set dispense time. Can also be used to zero / clear initially programmed dispense time.
- Press and hold either of the up or down arrows to scroll the time display to the desired setting. Decimal placement will automatically shift as the time increases or decreases. For example, if the up button is pressed while the display is 0.999 (nine hundred and ninety-nine milliseconds), the display will automatically shift the decimal to 1.00.
- Pressing both the up and down buttons at the same time for more than two seconds will erase the memory and display a 0.000 value.

- 8.** P/T Button — Used to change the display from pressure to time
- To change the display from psi to bar to seconds (dispense time), press the P/T button.

**NOTE:** The LED indicator on the left side of the display signifies the units being displayed. For example, a lit “Sec” indicator means the display is showing dispense time in seconds.



## Features and Controls (continued)



9. Power Input Jack — DC power input
10. Foot Pedal / Finger Switch Connector — Connection for dispenser actuating device
  - Connection is for a momentary “Contact Closure” switching device. EFD strongly suggests the use of EFD foot pedals and finger switches, which are specifically designed for this application.
11. Chassis Connection — This symbol identifies the chassis connection terminal, used for grounding the chassis to shunt leakage current and / or for enhancing system ESD (electro-static discharge) protection.
12. Air Input Push-in Fitting — Main filtered air supply input
  - 6 mm push-in fitting, used to connect main air supply: minimum 5.5 bar (80 psi), maximum 7.0 bar (100 psi) to unit.
13. Air Exhaust Port — Syringe barrel air exit
  - Output air from the syringe barrel exits from this port at the end of every dispense cycle.

**NOTE:** Air exiting the exhaust port should be free from any obstruction or blockage. Make sure this port is not obstructed or blocked in any manner as the performance of the unit will be compromised.

## Features and Controls (continued)



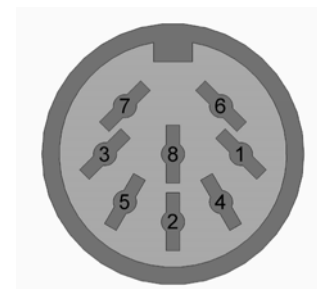
**14.** I/O (Input / Output) Connection — Used to connect to any input and output signals when the Performus unit is interfaced with external control circuits.

- **Voltage Initiate Circuit:** The Performus unit may be initiated with a 5 to 24 VDC signal across pins 1 and 2. The signal can be momentary (no less than 0.01 seconds) or maintained. The start of a new cycle will only begin once the signal is removed and then reapplied.
- **Mechanical Contact Initiate:** The Performus unit may also be initiated via the closure of mechanical contacts, such as a relay or switch, using pins 7 and 8. Closure of the contacts can be momentary (no less than 0.01 seconds) or maintained. The start of a new cycle will only begin once the contacts are opened and then closed.
- **End-of-Cycle Feedback Circuit:** Upon completion of a dispense cycle, an electronic switch closes and remains closed until the next dispense cycle. Pins 3 and 4 of this circuit can be used to signal back to a host controller (PLC), start another device in sequence, or initiate other operations that need to be tied to the completion of the dispense cycle.

The circuit is designed to operate between 5 to 24 VDC, 100 mA maximum.

An 8-pin DIN I/O cable assembly is available. For dispenser accessories, refer to “Accessories” on page 24.

Cable Wire Color	Pin #	Function
Red	1	Voltage initiate +, 5–24 VDC (19 mA maximum)
Yellow	2	Voltage initiate -
Blue	3	End-of-cycle feedback output +, 5–24 VDC (100 mA maximum)
Orange	4	End-of-cycle feedback output -
Green	5	24 VDC supply + (100 mA maximum)
Brown	6	24 VDC supply -
Grey	7	Contact closure +, 24 VDC @ 19 mA
Purple	8	Contact closure -



Back panel I/O pin diagram

# Installation

## 1

### Unpack Unit / Warranty

Unpack the contents of the package and lay them out on a clean work bench. The following items should be included with your Performus dispensing system:

- Dispenser
- Syringe barrel adapter with safety clip
- Syringe barrel stand
- Air supply tubing
- Foot pedal assembly
- Power supply



Now is a good time to activate your EFD Performus dispensing system warranty. Register online at [www.nordsonefd.com/warranty/dispensers/two](http://www.nordsonefd.com/warranty/dispensers/two).

## 2

### Connect Air Supply

**NOTE:** Clean, dry filtered factory air is required to meet warranty. If your air supply is not filtered, order the EFD 5-micron filter / regulator. For dispenser accessories, refer to “Accessories” on page 24.

Turn the air regulator adjustment knob to zero (0) before connecting the main air input to the Performus.

- Push one end of the 6 mm air input hose into the input fitting on the back of the Performus.
- Connect the other end of the hose to your plant air supply.
- Set the plant air supply from 5.5–7.0 bar (80–100 psi).

**NOTE:** For the best performance, the plant air supply pressure should be as high as the pressure required to dispense.

- Keep the vacuum feature turned off by turning the vacuum control knob all the way clockwise. If the fluid you are dispensing is a low viscosity, refer to “Using the Vacuum Control Feature for Low Viscosity Fluids” on page 21. Return here to continue.

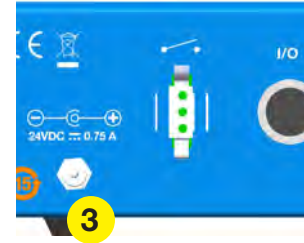


## Installation (continued)

# 3

### Connect Power

- Connect the power plug to the power pack. The unit is shipped with a USA-compatible plug and three international plugs. Attach the correct plug to match local power outlets.
- Connect the power cord to the back of the Performus.
- Connect the power cord to your local power source.
- Press the power button on the front panel.



# 4

### Connect Foot Pedal

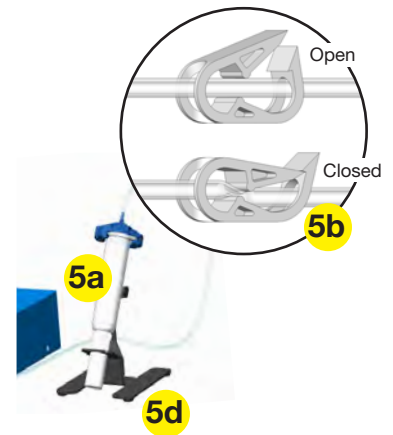
- The Performus is normally operated using the foot pedal provided.
- Connect the foot pedal to the back of the Performus.
- If you prefer, you can also operate the Performus with an optional finger switch. For dispenser accessories, refer to "Accessories" on page 24.



# 5

### Attach Syringe Barrel / Dispense Tip

- Attach an EFD syringe barrel filled with your fluid to the adapter assembly.
- Snap the safety clip on the adapter hose closed to prevent dripping. Remember to unsnap the clip when ready to dispense.
- Replace the tip cap with an EFD precision dispense tip.
- Place the syringe barrel in the barrel holder.

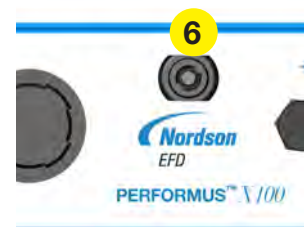


# 6

### Connect Air Output

- Push the black male quick-connect on the syringe barrel adapter assembly into the front of the Performus.
- Twist clockwise to lock.

Initial setup is now complete. At this point you are ready to set up your dispensing flow rate and time to suit your application needs.





## System Setup and Operation

Deposit size is controlled by dispense time, pressure, and tip size.

Follow these instructions to test each function. Use the convenient Dot Standards sheet included in your dispensing kit.

**NOTE:** Tips and helpful suggestions for setup are provided under “Helpful Hints / Suggestions on Settings” on page 22. Refer to this information as needed during initial setup and testing.

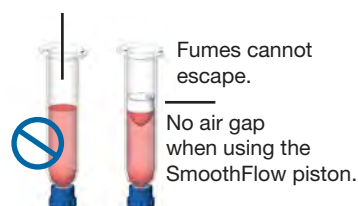
### Selecting a Piston

Choose the best piston for your material. Precision molded in six unique styles, Optimum® pistons ensure precise control for virtually any fluid in any application:

- White SmoothFlow (general purpose): For use with most fluids.
- Red SmoothFlow (tight fit): For use with mechanical dispensing equipment.
- Beige SmoothFlow (loose fit): Loose-fitting pistons are used with air-entrapped fluids.
- Orange flatwall: Flat-walled pistons have a looser fit to prevent “bouncing” when dispensing stringy, air-entrapped fluids.
- Blue LV Barrier: LV Barrier pistons are used with cyanoacrylates and very low viscosity fluids.
- Clear Flex: Flex pistons are flexible and reduce “bouncing” in viscous fluids while maintaining excellent wall wiping.

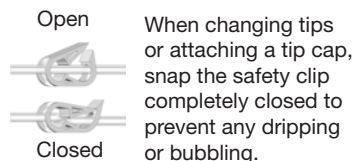
#### Remember

For best results, EFD strongly recommends the use of a piston as part of your dispensing system.



If you choose to not use a piston when dispensing thin fluids, remember these important points.

Do not tip the barrel upside down or lay flat. This will cause the liquid to run into the dispenser.





# System Setup and Operation (continued)

## Filling the Syringe Barrel

**NOTE:** Refer to the Nordson EFD catalog for filling equipment options, such as the Atlas™ filling system.

### CAUTION

Do not overfill a syringe barrel. Leave room for the piston and adapter. If the installed adapter touches the piston, material will be forced out of the syringe barrel.

### CAUTION

To the greatest extent possible, prevent air from being trapped under the piston. Air trapped under the piston, either mixed uniformly in the material or larger bubbles trapped during the filling process, can cause several dispense problems including, but not limited to, drooling after dispense, piston bouncing, and tunneling of air through thick materials.

#### Top Filling of Pourable Materials

1. Install the tip cap.
2. Pour material into the syringe barrel to the appropriate fill level, leaving room to install the piston and the adapter.
3. To minimize the formation of trapped air under the piston and to prevent material from leaking past the piston wiper, insert the piston until it fully engages with the material.

**EXCEPTION:** If using the Blue LV Barrier piston, fill the syringe barrel to 1/2 of the barrel capacity and position the piston above the fluid and just below the adapter.



#### Top Filling of Medium- to High-Viscosity Materials

1. Install the tip cap.
2. Pour material into the syringe barrel to the appropriate fill level, leaving room to install the piston and the adapter. Observe the following guidelines:
  - Transfer material using the best available tools to minimize the formation of air bubbles in the material.

**NOTE:** To quickly and efficiently remove entrapped air from material packaged in syringes, consider using a Nordson EFD centrifuge, such as the ProcessMate™ 5000.

  - Take care to minimize the formation of residue on the syringe barrel walls. When a piston is inserted, residue can form a seal at the piston wiper, interfering with proper installation.
3. To minimize trapped air under the piston and to prevent material from leaking past the piston wiper, insert the piston until it fully engages with the material.



## System Setup and Operation (continued)

### Bottom Filling of All Materials

1. Insert the piston in the syringe barrel and push it down until it is flush with the bottom of the barrel.
2. Control the flow rate of the material to prevent trapping air bubbles at the barrel shoulder and at the piston wiper. If bubbles are being trapped, the flow rate is probably too fast.
3. Apply steady pressure on the piston to maintain full engagement with the material during fill.

#### NOTES:

- If the material pressure is too high, material can leak past the piston wiper.
  - If the material pressure is too low, the piston may float on the rising material, increasing the possibility of trapped air bubbles under the piston.
  - If either of the above occurs, press down on the piston until it fully engages with the material.
4. Install the tip cap.

### Purging the Dispensing Tip

Put the dispenser in Steady mode and press the foot pedal until the material flowing from the tip is free of air, then release the foot pedal.

Continue to the next section as applicable for your dispensing application. This manual provides the following detailed procedures:

- “Using Steady Mode to Dispense a Dot or Stripe or to Fill a Cavity” on page 19.
- “Using Timed Mode to Make a Repeatable Deposit” on page 20.
- “Using the Vacuum Control Feature for Low Viscosity Fluids” on page 21.

## System Setup and Operation (continued)

### Using Steady Mode to Dispense a Dot or Stripe or to Fill a Cavity

1. Pull the air regulator adjustment knob out until it clicks into the unlocked position. Start with the pressure set to zero (0).
2. Place the syringe barrel over a piece of paper or test surface.
3. Use the P/T button to display pressure in bar or psi. Place the unit in the Steady mode.
4. Unsnap the safety clip. Depress and hold the foot pedal for the remainder of this setup.
5. While resting the tip on the paper (test surface), slowly turn the air regulator adjustment knob clockwise until fluid starts to exit from the tip.
6. Keep increasing the air pressure until you have reached the desired fluid dispensing flow rate.  
**NOTE:** Always use the lowest possible pressure and the largest possible tip size. The combination of the lowest possible output pressure + largest possible tip size + longest possible dispense duration = most consistent and accurate deposits.
7. Release the foot pedal.
8. Retest the dispensing rate a few more times. Fine-tune as needed by making small changes in pressure.
9. Push the air regulator adjustment knob in to lock the setting.



Remember — always bring the tip in contact with the work surface at the illustrated angle. After the tip is in position, press the foot pedal. Release the pedal and remove the tip by lifting straight up.



Correct angle for consistent deposits.

## System Setup and Operation (continued)

### Using Timed Mode to Make a Repeatable Deposit

1. Purge the dispensing tip of air by filling it with the material to be dispensed. (Refer to “Purging the Dispensing Tip” on page 18 as needed.)
2. Place the unit in the Timed mode.
3. Set the dispense time. The dispense time or duration may be set in one of two ways:
  - Using the Up / Down Arrows to set time. Refer to page 11 for details on using this function.
  - Using the Program / Teach button to set time. Refer to page 10 for details on using this function.
4. Press the foot pedal / finger switch to activate the dispense cycle. The dispenser will now continuously dispense for the pre-set duration of time. If time is being displayed on the seven-segment display, the time will count up the value of the pre-set dispense time while dispensing. Once the time has expired, the dispenser will stop dispensing and await another triggering signal from the foot pedal / finger switch or signal from the host controller.

**NOTE:** The foot pedal / finger switch only needs to be pressed for a moment.

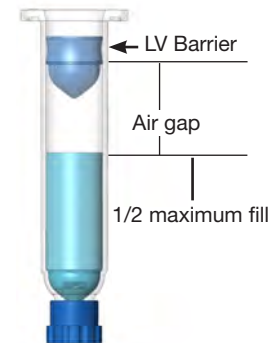
If the foot pedal / finger switch or contact closure I/O signal is initiated at any time during the dispense cycle, the Performus dispenser will immediately abort and stop dispensing. This is a unique safety feature built into Performus dispensers to prevent accidental dispensing.

## System Setup and Operation (continued)

### Using the Vacuum Control Feature for Low Viscosity Fluids

The vacuum control feature allows you to dispense low viscosity fluids consistently without dripping between cycles. The vacuum overcomes head pressure on the fluid within the barrel, which prevents dripping.

1. Make sure that you have attached an EFD syringe barrel filled with the fluid intended for dispensing, and that the air pressure is turned all the way to zero (0). EFD recommends the use of a Blue LV Barrier piston for watery, low viscosity materials.
2. Make sure the barrel adapter safety clip is secure.
3. Remove the tip cap and replace it with an appropriate EFD dispense tip.
4. Set the air pressure at 0.1 bar (2 psi).
5. While pointing the tip over a container or resting it on a test surface, release the safety clip on the adapter hose assembly.
6. Place the Performus unit in Steady mode. Depress and hold the foot pedal until a drip begins to form at the end of the tip.
7. Release the foot pedal. At this point, fluid will continue to exit the tip.
8. Slowly turn the vacuum control knob counterclockwise until the fluid deposit size stabilizes without growing.  
**NOTE:** Do not increase the vacuum to the point where the deposit is actually drawn back into the tip or to where bubbles form in the barrel. Excessive vacuum causes inconsistent dispensing.
9. Lift the tip off the test surface, wipe the tip end, and retest by pressing the foot pedal momentarily. The deposit should stay at the intended size and not increase or decrease in size. If it does, repeat steps 4–8 to fine-tune the vacuum control.
10. Once the vacuum is properly set, increase the air pressure to the desired production setting before beginning your dispensing.



# System Setup and Operation (continued)

## Helpful Hints / Suggestions on Settings

### Helpful Hints

- There are three core variables to the Performus dispenser: dispense time, pressure, and vacuum. Adjust just one of these at a time, in small increments, to achieve the correct deposit.
- Another variable is tip size. Choose the right tip for the deposit type. Remember, smaller tips require more pressure and more dispense time. Try different tips without changing the dispense time or pressure settings and observe the results.
- Tapered tips reduce the amount of air pressure needed to dispense thick materials. They also help prevent drooling at the end of a dispense cycle.
- To ensure smooth fluid flow and to make consistent deposits, keep the dispense tip at a 45° angle to the work surface.
- Use EFD SmoothFlow pistons to make barrel loading, dispensing, and handling cleaner, safer, and more accurate.

### CAUTION

If you dispense watery fluids and choose not to use EFD pistons, do not increase vacuum pressure rapidly and do not tip the barrel. Vacuum may pull fluid into the adapter hose, or, if the syringe barrel is tipped, fluid may flow back into the dispenser.

- Always use new EFD syringe barrels and tips. Carefully dispose of after use. This practice ensures maximum cleanliness, prevents contamination, and provides proper safety.
- Do not completely fill the syringe barrel. For most fluids, optimum fill is a maximum 2/3 of the barrel capacity. For cyanoacrylates or watery fluids, optimum fill is 1/2 of the barrel capacity.

### Suggestions on Settings:

- To reduce air pressure, turn the knob counterclockwise until the display reads at a lower-than-needed pressure setting. Then turn clockwise to increase pressure until you reach the correct setting.
- Avoid high pressure settings with very small deposit settings. The ideal setup matches air pressure and tip size to create a workable flow rate — no splashing, but not too slow either.
- With any fluid, always give the air pressure time to do its job. Moderate time and pressure provides the best results since dispensing pressure remains at its peak for a longer period of time.

## Part Numbers

Part #	Description
7363256	Performus X100 dispenser, 0–7 bar (0–100 psi) pressure regulator
7363257	Performus X15 dispenser, 0–1 bar (0–15 psi) pressure regulator

## Replacement Parts

**NOTE:** Refer to the Nordson EFD catalog for Optimum components, including adapter assemblies, syringe barrels, pistons, dispensing tips, and tip caps.

Item	Part #	Description
1	7363268	Foot pedal assembly
2	7363265 (X100) 7363266 (X15)	Pressure regulator
3	7363264	Vacuum regulator and associated hardware
4	7363261 (X100) 7363262 (X15)	PC board, display (LCD)
5	7363263	Valve, solenoid assembly
6	7363258	Universal power supply
7	7363269	Barrel stand with bottle
8	7363259 (X100) 7363260 (X15)	Case, overlay, and feet
Not shown	7363267	Cable assemblies, internal hoses, and fittings



## Accessories

See the Dispenser Accessories data sheet for a complete list of optional accessories that will maximize the performance of your dispenser. Visit [www.nordsonefd.com/DispenserAccessories](http://www.nordsonefd.com/DispenserAccessories) for details.

## Troubleshooting

An EFD Customer Service or Technical Services representative is always available to assist you with any question you may have about your Performus dispensing system.

Problem	Solution
No power	Check the power supply connection and DC power supply to the unit.
No fluid being dispensed	Check the main air supply and primary regulator.
	Check to make sure that the main air supply is connected to the back of the unit and has not come loose.
	Check to make sure that the regulator is not turned off (fully counterclockwise).
	If dispensing thicker materials, try increasing output air pressure slightly.
	Vacuum level is set too high.
	Barrel adapter safety clip may be clamped shut.
Inconsistent dispense output	Check the dispensing tip, barrel, and material for possible contamination or clogs. <b>NOTE:</b> Dispensing system components are disposable. Do not attempt to reuse.
	Check for air supply pressure fluctuation.
	Air bubbles in the fluid path and entrapped air within the fluid may cause inconsistency. For best dispensing results, remove all entrapped air before dispensing.
	Vacuum level is set too high.
	Barrel adapter safety clip may be clamped shut.
Material suck-back	Always use an appropriate piston to prevent material from being drawn back into the dispenser. For thick-to medium-viscosity fluids, use EFD SmoothFlow pistons. For thin, low-viscosity fluids, use EFD LV Barrier pistons.
	Another option is to order optional barrel adapters with filter traps. Part numbers for all adapters are listed on the components poster included with your Performus system.



## Notes

[illegible]

## Nordson EFD Two Year Limited Warranty

This Nordson EFD dispenser is warranted to the original end user for two years from date of purchase. Within the period of this warranty, EFD will repair or replace any defective component, or the entire dispenser at EFD's option, on authorized return of the part or the complete dispenser, prepaid to the factory.

In no event shall any liability or obligation of EFD arising from this warranty exceed the purchase price of the equipment. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith.

EFD makes no warranty whatsoever of merchantability or fitness for a particular purpose. In no event shall EFD be liable for incidental or consequential damages.

To register your warranty in the USA, please call 800-828-3331 within 30 days, or go to [www.nordsonefd.com/warranty/dispensers/two](http://www.nordsonefd.com/warranty/dispensers/two).



For Nordson EFD sales and service in over 40 countries, contact Nordson EFD or go to [www.nordsonefd.com](http://www.nordsonefd.com).

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