PatternJet™ Plus Applicators

Customer Product Manual
Part 1095295_03
Issued 4/16

This document contains important safety information Be sure to read and follow all safety information in this document and any other related documentation.

NORDSON CORPORATION • DULUTH, GEORGIA • USA
www.nordson.com

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: http://www.nordson.com.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
11475 Lakefield Drive
Duluth, GA 30097

Notice

Trademarks

Table of Contents

PatternJet™ Plus Applicators

Safety

Read this section before using the equipment. This section contains recommendations and practices applicable to the safe installation, operation, and maintenance (hereafter referred to as “use”) of the product described in this document (hereafter referred to as “equipment”). Additional safety information, in the form of task-specific safety alert messages, appears as appropriate throughout this document.

WARNING! Failure to follow the safety messages, recommendations, and hazard avoidance procedures provided in this document can result in personal injury, including death, or damage to equipment or property.

Safety Alert Symbols

The following safety alert symbol and signal words are used throughout this document to alert the reader to personal safety hazards or to identify conditions that may result in damage to equipment or property. Comply with all safety information that follows the signal word.

WARNING! Indicates a potentially hazardous situation that, if not avoided, can result in serious personal injury, including death.

CAUTION! Indicates a potentially hazardous situation that, if not avoided, can result in minor or moderate personal injury.

CAUTION! (Used without the safety alert symbol) Indicates a potentially hazardous situation that, if not avoided, can result in damage to equipment or property.

Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instructions and regulatory requirements for use of the equipment are met, and for qualifying all potential users.

Safety Information

- Research and evaluate safety information from all applicable sources, including the owner-specific safety policy, best industry practices, governing regulations, material manufacturer's product information, and this document.
- Make safety information available to equipment users in accordance with governing regulations. Contact the authority having jurisdiction for information.
- Maintain safety information, including the safety labels affixed to the equipment, in readable condition.

Instructions, Requirements, and Standards

- Ensure that the equipment is used in accordance with the information provided in this document, governing codes and regulations, and best industry practices.
- If applicable, receive approval from your facility's engineering or safety department, or other similar function within your organization, before installing or operating the equipment for the first time.
- Provide appropriate emergency and first aid equipment.
- Conduct safety inspections to ensure required practices are being followed.
- Re-evaluate safety practices and procedures whenever changes are made to the process or equipment.

User Qualifications

Equipment owners are responsible for ensuring that users:

- receive safety training appropriate to their job function as directed by governing regulations and best industry practices
- are familiar with the equipment owner's safety and accident prevention policies and procedures
- receive equipment- and task-specific training from another qualified individual

  NOTE: Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information
- possess industry- and trade-specific skills and a level of experience appropriate to their job function
- are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities

Applicable Industry Safety Practices

The following safety practices apply to the use of the equipment in the manner described in this document. The information provided here is not meant to include all possible safety practices, but represents the best safety practices for equipment of similar hazard potential used in similar industries.

Intended Use of the Equipment

- Use the equipment only for the purposes described and within the limits specified in this document.
- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Nordson representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.

Instructions and Safety Messages

- Read and follow the instructions provided in this document and other referenced documents.
- Familiarize yourself with the location and meaning of the safety warning labels and tags affixed to the equipment. Refer to *Safety Labels and Tags* at the end of this section.
- If you are unsure of how to use the equipment, contact your Nordson representative for assistance.

Installation Practices

- Install the equipment in accordance with the instructions provided in this document and in the documentation provided with auxiliary devices.
- This equipment has not been certified for compliance with the ATEX directive nor as incendive and should be installed in potentially explosive environments.
- Ensure that the equipment is rated for the environment in which it will be used and that the processing characteristics of the material will not create a hazardous environment. Refer to the Safety Data Sheet (SDS) for the material.
- If the required installation configuration does not match the installation instructions, contact your Nordson representative for assistance.
- Position the equipment for safe operation. Observe the requirements for clearance between the equipment and other objects.
- Install lockable power disconnects to isolate the equipment and all independently powered auxiliary devices from their power sources.
- Properly ground all equipment. Contact your local building code enforcement agency for specific requirements.
- Ensure that fuses of the correct type and rating are installed in fused equipment.
- Contact the authority having jurisdiction to determine the requirement for installation permits or inspections.

Operating Practices

- Familiarize yourself with the location and operation of all safety devices and indicators.
- Confirm that the equipment, including all safety devices (guards, interlocks, etc.), is in good working order and that the required environmental conditions exist.
- Use the personal protective equipment (PPE) specified for each task. Refer to *Equipment Safety Information* or the material manufacturer's instructions and SDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.

Maintenance and Repair Practices

- Perform scheduled maintenance activities at the intervals described in this document.
- Relieve system hydraulic and pneumatic pressure before servicing the equipment.
- De-energize the equipment and all auxiliary devices before servicing the equipment.
- Use only new Nordson-authorized refurbished or replacement parts.
- Read and comply with the manufacturer's instructions and the SDS supplied with equipment cleaning compounds.

  NOTE: SDSs for cleaning compounds that are sold by Nordson are available at www.nordson.com or by calling your Nordson representative.
- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable SDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

Equipment Safety Information

This equipment safety information is applicable to the following types of Nordson equipment:

- hot melt and cold adhesive application equipment and all related accessories
- pattern controllers, timers, detection and verification systems, and all other optional process control devices

Equipment Shutdown

To safely complete many of the procedures described in this document, the equipment must first be shut down. The level of shut down required varies by the type of equipment in use and the procedure being completed.
If required, shut down instructions are specified at the start of the procedure. The levels of shut down are:

Relieving System Hydraulic Pressure

Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the melter-specific product manual for instructions on relieving system hydraulic pressure.

De-energizing the System

Isolate the system (melter, hoses, applicators, and optional devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the equipment from being accidentally energized, lock and tag the disconnect switch(es) or circuit breaker(s) that provide input electrical power to the equipment and optional devices.

   NOTE: Government regulations and industry standards dictate specific requirements for the isolation of hazardous energy sources. Refer to the appropriate regulation or standard.

Disabling the Applicators

NOTE: Adhesive dispensing applicators are referred to as “guns” in some previous publications.

All electrical or mechanical devices that provide an activation signal to the applicators, applicator solenoid valve(s), or the melter pump must be disabled before work can be performed on or around an applicator that is connected to a pressurized system.

1. Turn off or disconnect the applicator triggering device (pattern controller, timer, PLC, etc.).
2. Disconnect the input signal wiring to the applicator solenoid valve(s).
3. Reduce the air pressure to the applicator solenoid valve(s) to zero; then relieve the residual air pressure between the regulator and the applicator.

General Safety Warnings and Cautions

Table 1 contains the general safety warnings and cautions that apply to Nordson hot melt and cold adhesive equipment. Review the table and carefully read all of the warnings or cautions that apply to the type of equipment described in this manual.

Equipment types are designated in Table 1 as follows:

HM = Hot melt (melters, hoses, applicators, etc.)

PC = Process control

CA = Cold adhesive (dispensing pumps, pressurized container, and applicators)

Table 1 General Safety Warnings and Cautions

Equipment Type	Warnings and Cautions
HM	 **WARNING!** Hazardous vapors! Before processing any polyurethane reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's SDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with SDS requirements can cause personal injury, including death.
HM	 **WARNING!** Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.

Continued...

Table 1 General Safety Warnings and Cautions *(contd)*

Equipment Type	Warnings and Cautions
HM, CA	**WARNING!** System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.
HM	**WARNING!** Molten material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.
HM, PC	**WARNING!** Equipment starts automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an operating applicator, disable the applicator's triggering device and remove the air supply to the applicator's solenoid valve(s). Failure to disable the applicator's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.
HM, CA, PC	**WARNING!** Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.

Continued...

General Safety Warnings and Cautions (contd)

Table 1 General Safety Warnings and Cautions *(contd)*

Equipment Type	Warnings and Cautions
HM, CA, PC	 **WARNING!** Risk of fire or explosion! Nordson adhesive equipment is not rated for use in explosive environments and has not been certified for the ATEX directive or as nonincendive. In addition, this equipment should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the SDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.
HM, CA, PC	 **WARNING!** Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others and can damage to the equipment.
HM	 **CAUTION!** Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. 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.

Continued...

Table 1 General Safety Warnings and Cautions *(contd)*

Equipment Type	Warnings and Cautions
HM	**CAUTION!** Some Nordson melters are specifically designed to process polyurethane reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.
HM, CA	**CAUTION!** Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the SDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt or cold adhesive, resulting in damage to the equipment.
HM	**CAUTION!** Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains polyester adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

Other Safety Precautions

- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear, damage, or leaks.
- Never point a dispensing hand-held applicator at yourself or others.
- Suspend dispensing hand-held applicators by their proper suspension point.

First Aid

If molten hot melt comes in contact with your skin:

1. Do NOT attempt to remove the molten hot melt from your skin.
2. Immediately soak the affected area in clean, cold water until the hot melt has cooled.
3. Do NOT attempt to remove the solidified hot melt from your skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Give the SDS for the hot melt to the medical personnel providing treatment.

Safety Labels and Tags

Figure 1 illustrates the location of the product safety labels and tags affixed to the equipment. Table 2 provides an illustration of the hazard identification symbols that appear on each safety label and tag, the meaning of the symbol, or the exact wording of any safety message.

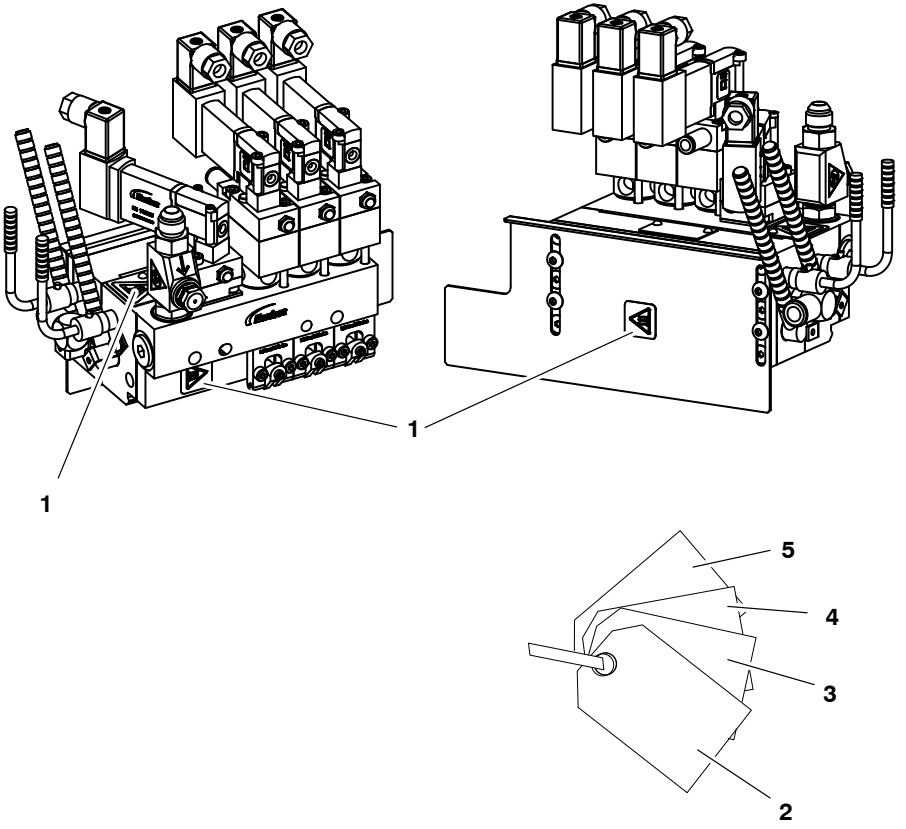


Figure 1: Safety labels and tags

Table 2 Safety Labels and Tags

Item	Part	Description	
1.	N/A		**WARNING**: Hot surface! Before touching the applicator body, allow the applicator to cool or wear heat-protective gloves. Failure to allow the applicator body to cool or to wear heat-protective gloves may cause personal injury.
2.	600137		**WARNING**: Disconnect power and remove system pressure before disassembly or maintenance. Failure to follow these instructions may result in serious personal injury.
3.	243352		**WARNING:** Fire, injury, or equipment damage can result if cleanout materials do not meet the following requirements: a. Minimum flashpoint to be 550°F (288°C). b. Liquid and vapor to be non-toxic at use temperature in equipment. c. Chemical reactions with adhesive and equipment materials must not be violently heat producing. d. Cleanout material must not corrode or otherwise weaken equipment materials.
4.	600103		**CAUTION:** This applicator is RTD (resistance temperature detector) controlled. Prior to operation and before changing adhesive, consult instruction manual for changing operating temperature. Failure to follow instructions may result in personal injury or property damage.
5.	243352		**CAUTION:** This equipment is factory tested with Nordson type R fluid containing Polyester Adipate plasticizer. Certain adhesives may react with the type R fluid residue to form solid gum, which can be difficult to remove.To avoid equipment damage, check with adhesive supplier regarding compatibility and cleanout procedure before putting adhesive into the system.

Description

The PatternJet Plus applicator accurately applies adhesives on high-speed labeling applications. Refer to *PatternJet Plus Applicator Part Numbers* under *Parts* for an illustration of all available applicators. Available nozzles include Universal Controlled Fiberization (CF), Summit, intermittent Signature. Figure 2 shows the key components of the PatternJet Plus applicator parts family.

Theory of Operation

Adhesive is heated to application temperature, which is typically about 177 °C (350 °F), in a melter. The melter pumps the adhesive through a heated hose to the applicator. The applicator then dispenses the adhesive through dispensing modules onto a product. The type of nozzle used on the modules determines the type of adhesive pattern produced.

The applicator requires two air supplies: one to actuate the modules (module-actuating air) and one to supply the air that shapes or fiberizes the adhesive exiting the modules (pattern air). The module-actuating air is controlled through solenoid valves that are installed on the applicator and connected to a module-actuating air supply line with an air pressure regulator. The pattern air is usually controlled through an air pressure regulator installed in a pattern air supply line.

The adhesive manifold and heated air manifold are heated by cartridge-type heaters. Power is supplied to the heaters through a cordset, which is connected electrically to the hose or to some combination of splitter and extension cables. Resistance temperature detectors (RTDs) sense the temperature of the adhesive or air in the manifolds and relay the temperature through the cordsets and hoses to a melter control system or to a standalone temperature controller.

The pattern in which adhesive is dispensed onto the product is determined by:

- the number and spacing of the modules
- the choice of nozzle
- the distance at which the nozzle is placed above the product
- the production line speed
- the adhesive add-on weight (melter pump speed and pressure)
- the pattern air pressure
- the pattern air temperature
- the adhesive application temperature
- the type of adhesive used
- the viscosity of the adhesive used

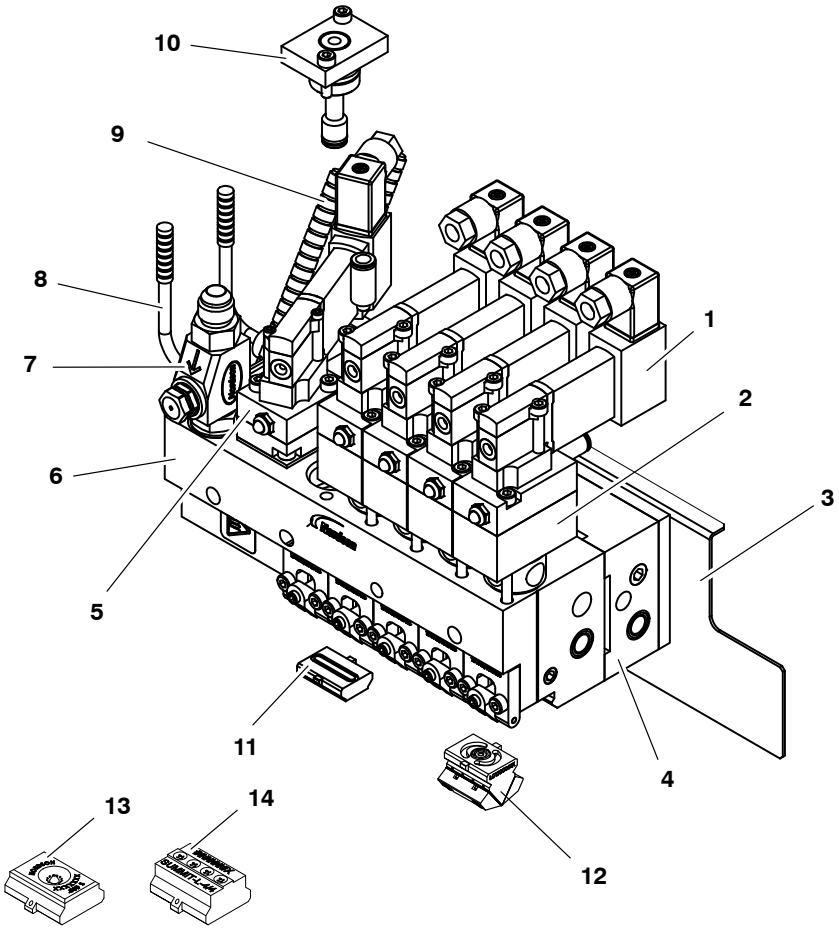


Figure 2: PatternJet Plus applicator and associated nozzles (sold separately)

1. Solenoid valve
2. Speed-Coat adhesive control module
3. Heat shield
4. Air manifold
5. Air control module
6. Adhesive manifold
7. Saturn inline filter (hose connector)
8. RTD portion of cordset
9. Heater portion of cordset
10. Blank module (present only on two-, four-, and six-module applicators)
11. Blank nozzle (present only on two-, four-, and six-module applicators)
12. Intermittent Signature nozzle
13. Universal CF nozzle
14. Summit nozzle

Module Overview

The Speed-Coat adhesive control module used on PatternJet Plus applicators is air-actuated (or air-open), meaning that an air supply controlled by a solenoid valve is required to open the module. The actuating air lifts the needle-and-piston assembly inside the module, thus opening the module and allowing adhesive to flow through the nozzle onto the product. Modules are also air-closed. In air-open, air-close (AOAC) modules, the actuating air (rather than a spring) returns the needle-and-piston assembly to the closed position.

A separate air supply is used to supply pattern air to the module; this air enters the pattern air inlet and is directed onto the adhesive exiting the nozzle, creating the desired spray pattern.

Figure 3 shows the flow of adhesive and air through a Speed-Coat adhesive control module.

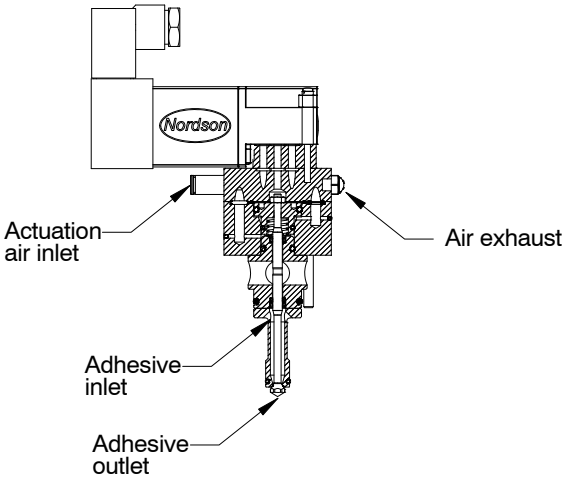


Figure 3: Flow of adhesive and air through a Speed-Coat adhesive control module

Installation

Mount the Applicator

Mounting the applicator includes selecting an appropriate mounting location and installing any necessary mounting hardware on the production line.

1. Select a mounting location. Use the following guidelines:

- Make sure there will be enough clearance to
  - service the Saturn filter
  - drain adhesive
  - replace heaters, sensors, or thermostats
  - replace a solenoid valve, module, or nozzle
  - route and replace air tubing and hoses

  NOTE: Refer to *Dimensions* under *Technical Data* for the applicator dimensions.
- Choose a location that will not subject the applicator to extreme temperature variations or equipment vibration. The ambient temperature should be 0–49 °C (32–120 °F).
- Choose a location that will allow you to properly route the hoses from the applicator to the melter.
- Choose a location close to a supply of dry, regulated, unlubricated air.

2. Secure the applicator at the mounting location. Adjust the applicator height and angle as appropriate.

   NOTE: The applicator should be parallel to the surface onto which the adhesive is to be applied.

Connect the Hose

Do not connect the hose cordsets at this time.

1. Observe the guidelines in Figure 5.

See Figure 4.

2. Connect the hose to the Saturn filter adhesive supply port on the applicator.

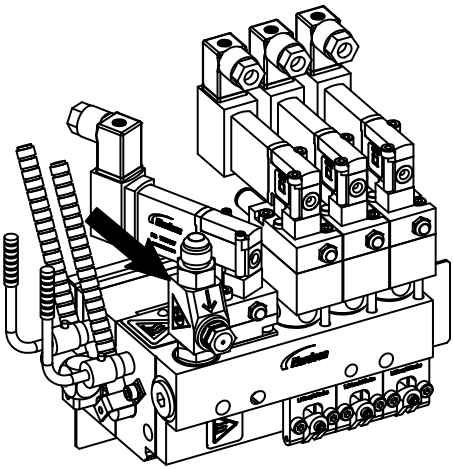


Figure 4: Saturn filter

CAUTION! Risk of equipment damage. Do not use nonconductive pipe compound or tape on hose fittings.

CAUTION! Improper routing and venting of hoses could result in overheating, damage, and poor adhesive flow. To ensure proper operation, do not bundle or tie-wrap hoses, do not bend hoses at sharp angles, and do not allow hoses to lay on concrete floors or other cool surfaces that could conduct heat away from the hoses.

3. Route the hose to the melter and connect it to the melter hydraulically and electrically as directed in the melter manual.

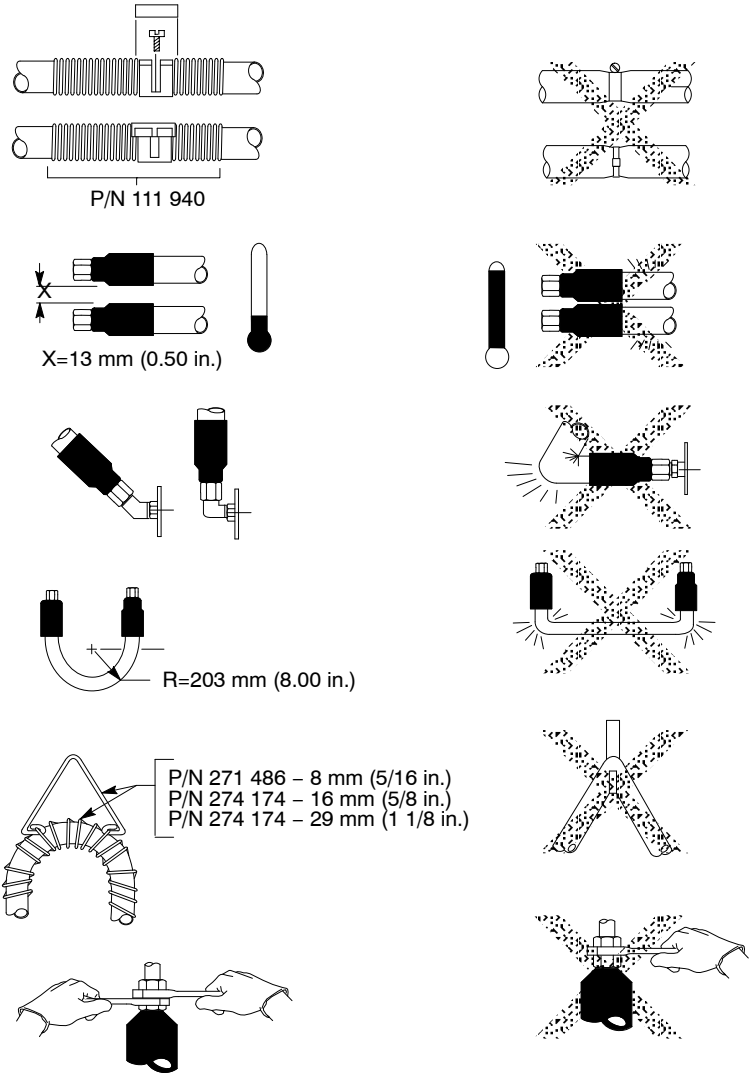


Figure 5: Hose installation guidelines

Air Supply Installation

Follow this procedure to connect module-actuating and pattern air supplies to the applicator.

See Figure 6.

1. Connect a supply of dry, regulated, unlubricated air to the module-actuating air input fittings (1).

NOTE: Nordson Corporation recommends installing an air pressure regulator and filter in the module-actuating air supply line that is capable of regulating the air pressure up to 6.2 bar (90 psi). For the recommended module-actuating air pressure, refer to *Applicator Specifications* under *Technical Data*.

2. Connect a supply of dry, regulated, unlubricated air to the pattern air input fitting (2).

NOTE: Nordson Corporation recommends installing an air pressure regulator and filter in the pattern air supply line that is capable of regulating the pattern air pressure up to a 28.3 nlm (1 scfm) flow rate per nozzle.

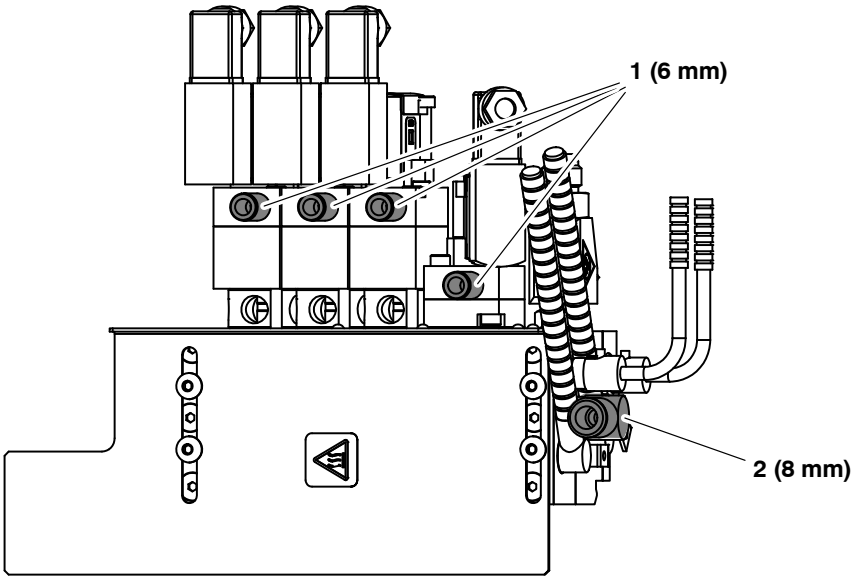


Figure 6: Location of the module-actuating and pattern air input fittings (three-module applicator shown)

1. Module-actuating air input fittings (quantity varies depending on the number of modules present)
2. Pattern air input fitting

Connect the Solenoid Valves

Electrically connect the solenoid valves to a triggering device so that the modules will open and close at the appropriate times.

> **CAUTION!** Solenoid valves must be rated for the output voltage of the triggering device. Make sure the ratings match.

1. The power requirement for the solenoid valve is as follows:
   - Boosted valves—24 VDC, 1 A/solenoid spiked

See Figure 7.

2. Loosen the connector screw (1), and then disconnect the quick-disconnect connector(s) (2) from the solenoid valve coil(s) (4).
3. Loosen the connector strain relief nut (2).

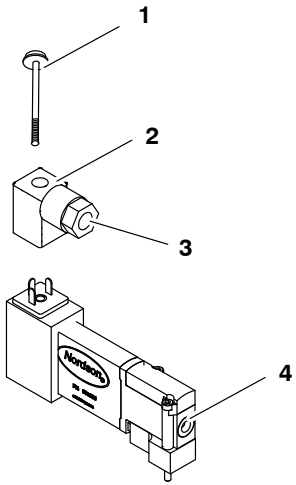


Figure 7: Remove the quick-disconnect connector from a solenoid valve

1. Connector screw
2. Quick-disconnect connector
3. Strain relief
4. Solenoid valve

Connect the Solenoid Valves (contd)

4. Use one of the following power supplies:
   - In North America, use a National Electrical Code (NEC) Class 2 or equivalent power supply.
   - In Europe, use a Protective Extra Low Voltage (PELV) or Safety Extra Low Voltage (SELV) power supply. This supply must provide 24 VDC, have an output limited to 8 A, and must not be capable of providing more than 240 VAC under any fault condition. The supply must be certified for use in the country of installation.

See Figure 8.

5. Thread a customer-supplied 0.75–0.34 mm^2 (18–22 AWG) three-conductor cable through the strain relief, and then connect
   - the positive and negative leads to terminals 1 and 2 [normal polarity, 1 = (+) and 2 = (–)]
   - the ground wire to the ground terminal.

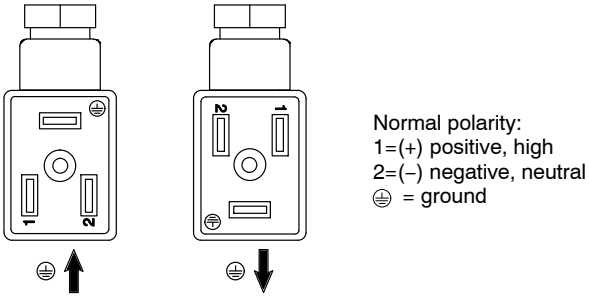


Figure 8: Solenoid valve terminal block configurations

See Figure 7.

6. Snap the quick-disconnect connector (2) onto the solenoid, and then tighten the strain relief nut (3).
7. Plug the connector into the solenoid valve, securing it with the screw (1) removed earlier.
8. Connect the three-conductor cable to the triggering device. Refer to the instructions that came with the triggering device.

Connect the Cordsets

Refer to the melter manual for instructions regarding proper cordset connection to the melter.

Flush the Applicator

Flushing the applicator removes cleaning solution, adhesive, and other contaminants from the equipment. The applicator should be flushed before initial use and anytime you change the adhesive in the hot melt system. This helps prevent clogging of the filter or nozzles and makes the applicator work more efficiently.

Prepare for Applicator Flushing

1. Determine whether you need to flush the applicator with adhesive or with cleaning fluid and then with adhesive. Refer to Table 3.

Table 3 Applicator Flushing Situations

Situation	Flushing Materials to Use
Initial startup	Adhesive only
Changing adhesive in the system	a. Cleaning solution compatible with both the old and new adhesive b. New adhesive (to remove the cleaning solution)

2. Heat the system to application temperature. Refer to the melter manual as needed.
3. Stop the melter pump(s).
4. Place drain pans under the applicator, the hose connections, and the modules.

WARNING! Risk of burns. Failure to relieve system pressure can cause hot adhesive to spray from a connecting point. Relieve system pressure before loosening or removing a hose, module, or any other part of the hot melt system. Wear heat-protective clothing, safety goggles (ANSI Z87.1 or equivalent), and safety gloves.

5. Relieve system pressure. Refer to *Safety*.
6. Flush the applicator by performing the following procedures with each flushing material to be used.

Flush the Hose

Follow this procedure to flush the hose. Refer to the melter manual as needed for instructions on starting and stopping the melter pump(s).

a. Disconnect the hose from the applicator and direct the end of the hose into a waste container.

b. Start the melter pump(s).

c. When the adhesive flowing from the hose is free of any solvent or contaminants, stop the melter pump(s).

d. Wipe any adhesive from the hose connector.

e. Reconnect the hose to the applicator.

Flush the Applicator

Follow this procedure to flush the applicator. Refer to the melter manual as needed for instructions on starting and stopping the melter pump(s).

a. Set the pattern air pressure to 0.1–0.3 bar (2–5 psi).

b. Remove the nozzles from the manifold. Refer to the nozzle removal procedure as needed.

c. Place a drain pan under the manifold.

d. Turn on the module-actuating air.

e. Start the melter pump(s).

f. Allow some adhesive to drain from the manifold. When the adhesive flowing from the manifold is free of any contaminants, stop the melter pump(s).

g. Wipe any adhesive from the manifold.

h. Reinstall the nozzles onto the manifold.

Test the Applicator

Perform tests as needed to ensure that the applicator output meets the requirements of your application. When testing, proceed systematically by changing only one production variable (such as the system pressure) at a time. If changing the variable does not produce the desired result, return it to its original state and try changing a different variable. Proceed in this manner until the desired applicator performance is achieved. Contact your Nordson representative for assistance as needed.

Operation

WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

This section provides procedures for operating the applicator. Before you operate the applicator for the first time, make sure you have

- completed the installation procedures in *Installation*
- flushed the applicator
- optimized the applicator output for your application as described under *Test the Applicator* in *Installation.*

Before you perform any operating procedures, review the *Safety* section of this manual.

Starting Up and Shutting Down the Applicator

Because the melter supplies the adhesive and the electrical power to the applicator, the procedures for starting and stopping the applicator vary depending on the type of melter you are using. Refer to the melter manual for complete startup and shutdown procedures.

Start the Applicator

Starting the applicator involves starting the melter and enabling the module-actuating and pattern air supplies. Refer to the melter manual as needed to operate the melter.

1. Start the melter and heat the system to application temperature.
2. Turn on the pattern air.
3. Turn on the module-actuating air.
4. Start the melter pump(s).
5. Start the production line.

NOTE: Pneumatic and hydraulic pressure ranges are provided in *Specifications*.

Shut Down the Applicator

1. Stop the production line.
2. Stop the melter pump(s).
3. Relieve system pressure. Refer to *Safety.*
4. Shut off the pattern air.
5. Shut off the module-actuating air.
6. Shut down the melter.

Adjust the Adhesive Pattern

Use the following techniques to modify the adhesive pattern:

- adjust the adhesive add-on weight (melter pump speed and pressure)
- adjust the electronic control device (timer or pattern controller)
- adjust the pattern air pressure
- adjust the pattern air temperature
- adjust the adhesive application temperature
- change the type of adhesive used
- change the nozzle type or size
- adjust the applicator height

If you experience problems obtaining the desired adhesive pattern, refer to *Pattern Control Problems* under *Troubleshooting*.

Maintenance

WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

This section contains a list of recommended maintenance activities and a recommended schedule for performing those activities. Attempting any other maintenance procedures can result in equipment damage, improper system operation, or personal injury.

Before you perform any maintenance procedures, review the *Safety* section.

Required Tools and Supplies

To perform maintenance or repairs, you will need:

- a set of metric Allen (hex) wrenches
- a set of metric T-handle hex keys
- a set of metric open-ended wrenches
- drain pans and large waste containers
- other tools and supplies as noted

Recommended Maintenance Schedule

Table 4 provides a list of recommended maintenance activities. Base how often you perform these activities on your specific operating needs. The frequency shown is for reference only.

Table 4 Recommended Maintenance Schedule

Frequency	Maintenance Activity
Daily	• Keep the supply of adhesive clean and free of contaminants. Foreign particles in the adhesive can clog the filter or nozzles. • Clean all exterior applicator surfaces. Accumulated adhesive can char and cause erratic operation. • Check the hose connections for leaks. If a leak is found, replace the hose fitting and/or O-ring as appropriate.
Weekly	• Clean nozzles. Refer to the nozzle-cleaning instruction sheet, P/N 1053027. Visit emanuals.nordson.com to download technical documentation.
As needed	• Service the Saturn filter. • Verify that all electrical connections are secure. Vibration and heating or cooling cycles can loosen wire connections. • Clean the air pressure regulator filter elements. Refer to the air pressure regulator documentation. • Clean the system. Refer to the system cleaning procedure in the melter manual.

Troubleshooting

WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your Nordson representative for assistance.

Troubleshooting begins when the flow of adhesive from the applicator stops or diminishes unexpectedly or when a control system alerts you of a problem through an alarm or visual display.

Troubleshooting Tables

The troubleshooting tables in this section describe the kinds of problems you may encounter and provide corrective actions for those problems. When necessary, the tables refer to more detailed troubleshooting procedures located in the *Troubleshooting Procedures* part of this section.

Refer to the appropriate troubleshooting table for the type of problem you are experiencing:

- *Applicator Heating Problems*
- *Adhesive Output Problems*
- *Adhesive Leakage Problems*
- *Air Supply Problems*
- *Pattern Control Problems*

To troubleshoot melter or hose problems, refer to the melter manual.

NOTE: Some of the problems listed in these troubleshooting tables may not apply to the adhesive application you are troubleshooting. Contact your Nordson representative as needed for troubleshooting assistance.

Applicator Heating Problems

Refer to this troubleshooting table if the applicator does not heat, underheats, or overheats.

NOTE: Each heated component in a hot melt system (typically the grid, the reservoir, each hose, and each applicator) is referred to as a heated zone. The applicator heated zones are the applicator adhesive manifold and the heated air manifold.

WARNING! Risk of personal injury or death. Allow only qualified personnel to perform electrical installation, troubleshooting, or repair procedures. Before performing any electrical procedure, review *Safety*, and disconnect and lock out electrical power to the system.

Problem	Possible Cause	Corrective Action
1. Applicator does not heat	System power not on	Verify that the system power is turned on.
	Loose electrical connection	Verify that all electrical connections (cordsets and cables at the melter and the applicator ends of the hoses) are secure.
	Broken or missing electrical pins	Check for broken or missing pins at all electrical connections. Repair or replace damaged components.
	Adhesive or heated air manifold temperature setpoints too low	Adjust the temperature setpoints as necessary. Refer to the melter or temperature controller manual.
2. Applicator underheats or overheats	System in standby or setback mode	Take the system out of standby or setback mode.
	Adhesive manifold, heated air manifold, or hose temperature setpoints too low or too high	Adjust the temperature setpoints as necessary. Refer to the melter or temperature controller manual.
	Failed heater, RTD, or cable	Check the heaters, sensors and cables for the problem zones.

Adhesive Output Problems

Refer to this troubleshooting table if the adhesive output is too low or too high or if there is no adhesive output.

NOTE: Each heated component in a hot melt system (typically the grid, the reservoir, each hose, and each applicator) is referred to as a heated zone. The heated zones are the applicator adhesive manifold and the heated air manifold.

Problem	Possible Cause	Corrective Action
1. Adhesive output too low or too high	Heated zone temperature setpoints too low or too high	Adjust the temperature setpoints as necessary. Refer to the melter or temperature controller manual.
	Melter pump not supplying correct amount of adhesive	Troubleshoot and correct the adhesive supply problem from the melter. Refer to the melter manual.
	Blockage in hose-to-applicator or hose-to-melter connection	Check for blockages in the connections. Check also for a cold connection. Install insulation around any cold connections. If the adhesive output does not improve, install a heated inline filter at the connection.
	Clogged filter	Replace the Saturn filter screen.
	Blockage in module or nozzle	Check for blockage in the module or nozzle. Refer to *Check for Blockages* under *Troubleshooting Procedures*.

Continued...

Adhesive Output Problems *(contd)*

Problem	Possible Cause	Corrective Action
2. No adhesive output	Adhesive not at application temperature	Wait for the system to reach application temperature.
	Heated zone temperature setpoints too low or too high	Adjust the temperature setpoints as necessary. Refer to the melter or temperature controller manual.
	Adhesive level in melter low	Add adhesive to the melter. Refer to the melter manual.
	Blockage in hose-to-applicator or hose-to-melter connection	Check for blockages in the connections. Check also for a cold connection. Install insulation around any cold connections. If the adhesive output does not improve, install a heated inline filter at the connection.
	Clogged filter	Replace the Saturn filter screen.
	Blockage in module or nozzle	Check for blockage in the module or nozzle. Refer to *Check for Blockages* under *Troubleshooting Procedures*.
	Failed module or module loading screw not properly adjusted on adjustable modules	Check or replace the module. Refer to *Module Service*.
	Failed solenoid valve	Check the solenoid valve. Refer to *Check Solenoid Valve Mechanical Operation* and *Check Solenoid Valve Electrical Operation* under *Troubleshooting Procedures*.
	Failed or faulty solenoid valve triggering device	Troubleshoot the triggering device. Refer to the manufacturer's documentation.

Adhesive Leakage Problems

Refer to this troubleshooting table if you find adhesive leaks.

Problem	Possible Cause	Corrective Action
1. Leaks between the adhesive manifold and the module	Insufficient torque on module socket-head screws	Tighten the module screws to 3–4 N•m (25–32 in.-lb).
	Damaged or worn O-rings	Replace.
2. Leaks at bleed hole on module (see Figure 9)	Adhesive seal failure	Replace the module. Refer to *Module Service.* For kit part numbers, refer to *Parts*.
3. Leaks at nozzle	System pressure too high	Decrease system pressure. Refer to the melter manual.
	Damaged or worn O-ring in module seat	Replace.
4. Leaks at hose connection	Loose hose connection	Tighten.
	Failed hose fitting O-ring	Replace. Refer to the the melter or hose manual.

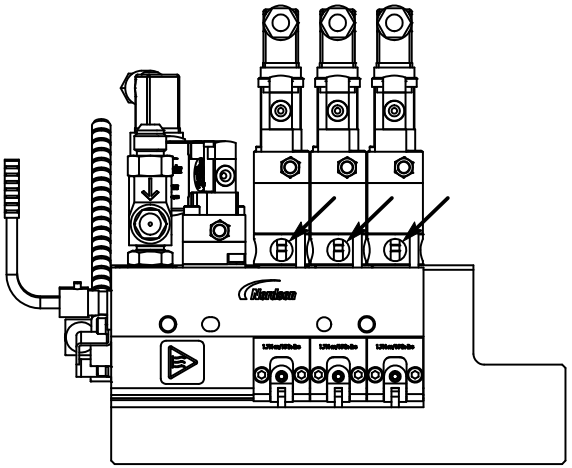


Figure 9: Location of the module bleed hole

Air Supply Problems

Refer to this troubleshooting table if you experience problems related to the air supply.

Problem	Possible Cause	Corrective Action
1. Air leaks from the top of a module	Air seal failure	Replace the module. Refer to *Module Service*. For kit part numbers, refer to *Parts*.
2. No module actuating air	Failed solenoid valve	Check the solenoid valve and replace if necessary. Refer to *Check Solenoid Valve Mechanical Operation* and *Check Solenoid Valve Electrical Operation* under *Troubleshooting Procedures*.
	Failed air pressure regulator or insufficient air supply to the regulator	Check the regulator and the air supply to the regulator. Refer to *Check an Air Pressure Regulator* under *Troubleshooting Procedures*.
3. No pattern air	Failed air pressure regulator or insufficient air supply to the regulator	Check the regulator and the air supply to the regulator. Refer to *Check an Air Pressure Regulator* under *Troubleshooting Procedures*.
	Failed solenoid valve on air control module	Replace the solenoid valve.
	Clogged air passage in nozzle	Clean or replace the nozzle. Refer to *Clean Nozzles* under *Module Service*.

Pattern Control Problems

NOTE: To aid in detecting pattern control problems, direct a strobe light on the adhesive as it flows onto the product.

Problem	Possible Cause	Corrective Action
1. Pattern off-center (skewed) or gaps in pattern	Blocked adhesive or air passages in nozzle	Clean or replace the nozzle. Refer to *Clean Nozzles* under *Module Service*. If cleaning or replacing the nozzle does not improve the pattern, check for blockages in the module, applicator, or hose. Refer to *Check for Blockages* under *Troubleshooting Procedures*.
2. End pattern oriented toward center of applicator	Air currents in area near module	Eliminate the air current or add a blank module that provides only pattern air next to the end module.

Continued...

Pattern Control Problems *(contd)*

Problem	Possible Cause	Corrective Action
3. Adhesive droplets thrown from adhesive stream, pattern break up (overspray)	Adhesive and/or pattern air temperature too hot	Adjust the temperature settings. Refer to *Applicator Specifications* under *Technical Data* for temperature recommendations.
	Pattern pressure too high	Decrease.
	Adhesive output rate too low	Increase system pressure or troubleshoot the output rate problem at the melter. Check for blockages in the nozzle, applicator, filter or hose. Refer to *Check for Blockages* under *Troubleshooting Procedures*.
	Damaged nozzle (adhesive leaking into air passages and being blown into the pattern)	Replace the nozzle. Refer to the nozzle removal and installation procedures under *Module Service*.
	Applicator too far from product	Adjust the applicator position.
	Adhesive patterns overlapping and interfering with one another	Replace the nozzles on the modules that are producing adhesive streams that interfere with the other module adhesive streams.

Continued...

Problem	Possible Cause	Corrective Action
4. All patterns too narrow	Adhesive and/or pattern air temperature too cool	Adjust. Refer to *Applicator Specifications* under *Technical Data* for temperature recommendations.
	Pattern air pressure too low	Increase.
	Applicator too close to product	Adjust.
	Adhesive flow rate too high	Decrease the system pressure or troubleshoot the output rate problem at the melter.
5. One pattern too narrow	System pressure too high	Reduce system pressure or clean the nozzles. Refer to *Clean Nozzles* under *Module Service*.
	Incorrect or damaged nozzle	Verify that the nozzle part number is correct. Replace damaged nozzles.
	Blocked air passage in nozzle	Clean or replace the nozzle. Refer to *Clean Nozzles* under *Module Service*.
	Blocked air passage in module or heated air manifold	Check for blockage in the pattern air path.
6. All patterns too wide	Adhesive and/or pattern air temperature too hot	Adjust the temperature settings. Refer to *Applicator Specifications* under *Technical Data* for temperature recommendations.
	Pattern air pressure too high	Decrease the pattern air pressure.
	Applicator too far from product	Adjust.
	Adhesive flow rate too low	Increase the system pressure or troubleshoot the output rate problem at the melter.
	Nozzle adhesive opening too large	Change to a nozzle with a smaller adhesive opening. Refer to *Nozzle Part Numbers* under *Parts*.

Continued...

Pattern Control Problems *(contd)*

Problem	Possible Cause	Corrective Action
7. One pattern too wide	Incorrect or damaged nozzle	Verify that the nozzle part number is correct. Replace damaged nozzles. Refer to *Nozzle Part Numbers* under *Parts*.
	Blocked adhesive or air passages in nozzle	Clean or replace the nozzle. Refer to *Clean Nozzles* under *Module Service*.
8. Irregular pattern or adhesive leakage on one module	Nozzle O-ring missing or nozzle too loose (under-tightened)	Install a new nozzle O-ring, replace the nozzle, or tighten the nozzle-retaining clamp screw. Refer to the nozzle removal and installation procedures under *Module Service*.
9. Adhesive flow not cutting off properly, causing a poor adhesive pattern	Worn or charred module ball and/or seat	Replace the module. Refer to *Module Service*.

Troubleshooting Procedures

Use these troubleshooting procedures as directed in the *Troubleshooting Tables* part of this section.

Check for Blockages

1. Relieve system pressure. Refer to *Safety.*
2. Place a drain pan under the applicator.
3. Decrease the pattern air pressure. Leave just enough air pressure to prevent adhesive from entering the pattern air outlet.
4. Remove a module from the adhesive manifold.
5. Observe the adhesive opening (the lower opening) on the adhesive manifold:
   - If there is no adhesive flow from the adhesive opening, there may be blockage in the adhesive manifold. Clean the system or replace the applicator. Refer to the system cleaning procedure in the melter manual.
   - If adhesive is flowing from the adhesive opening, there is no blockage in the adhesive package.

Check Solenoid Valve Mechanical Operation

Solenoid valves are used to control the module-actuating air. Follow this procedure to check the mechanical operation of a solenoid valve. To check the electrical operation of a solenoid valve, refer to the next procedure, *Check Solenoid Valve Electrical Operation.*

1. Turn on the air supply to the solenoid valve.
2. Trigger the applicator at the solenoid valve and check for adhesive flow:
   - If adhesive flows from the module, the solenoid valve is operating normally. Return to the appropriate troubleshooting table.
   - If no adhesive flows from the module, continue to the next step.
3. Manually trigger the solenoid valve and listen to its response:
   - If you hear a clicking noise, the valve is operating normally. Return to the appropriate troubleshooting table.
   - If you do not hear a clicking noise, the solenoid valve is not engaging. This could be caused by an electrical problem or by low air pressure to the solenoid valve. To check the solenoid valve electrically, go to the next procedure, *Check Solenoid Valve Electrical Operation*. To check the air pressure regulator, go to *Check an Air Pressure Regulator* later in this section.

Check Solenoid Valve Electrical Operation

Solenoid valves are used to control the module-actuating air. Follow this procedure to check the electrical operation of a solenoid valve. To check the mechanical operation of a solenoid valve, refer to the previous procedure, *Check Solenoid Valve Mechanical Operation*.

1. Disconnect and lock out electrical power to the solenoid valve.
2. Disconnect the solenoid wires.
3. Connect a standard ohmmeter across the solenoid valve wires to check the solenoid valve coil for electrical continuity:
   - if the resistance is excessively high, there is no continuity. Replace the solenoid valve.
   - If the resistance is normal, return to the appropriate troubleshooting table.

Check an Air Pressure Regulator

An air pressure regulator is used to control the air pressure to the solenoid valves for the module-actuating air and to control the pattern air. Follow this procedure to check a regulator.

1. Relieve system pressure. Refer to *Safety.*
2. Reduce the air pressure to 0 psi at the regulator.
3. Disconnect the regulator air line that is connected to the solenoid valve or to the pattern air.
4. Slowly increase the regulator air pressure:
   - If no air flows from the regulator, it is faulty. Replace the regulator.
   - If air flows, the air pressure may be low. Continue to the next step.
5. Determine the pressure of the air being supplied to the regulator:
   - If the air pressure is below 2.0 bar (30 psi), there is an input air pressure problem. Troubleshoot and correct the air pressure problem.
   - If the air pressure is 2.1 bar (30 psi) or greater, the input air pressure is okay. Return to the appropriate troubleshooting table.

Module Service

This section provides module-related service procedures.

Tools Required

You will need the following items to replace the module:

- torque wrench
- drain pans and disposable rags
- replacement module
- replacement O-rings (if needed)
- O-ring lubricant (if needed)
- anti-seize lubricant

NOTE: Refer to *Parts* for the part numbers of parts, tools, and supplies.

Remove a Module

1. Heat the system to application temperature.
2. Relieve system pressure. Refer to *Safety.*
3. Trigger the applicator solenoid valves to relieve any remaining pressure.
4. Shut off the module-actuating air and disconnect the module-actuating air supply from the module to be removed.
5. Decrease the pattern air pressure. Leave just enough air pressure (2–5 psi) to prevent adhesive from entering the pattern air outlet.
6. Disconnect the solenoid valve electrical connections from the module to be removed.

See Figure 10.

7. Remove the control module mounting screws (1, 2) and then remove the module from the adhesive manifold.
8. Remove the air input fitting (3) from the old module and install it on the replacement module.

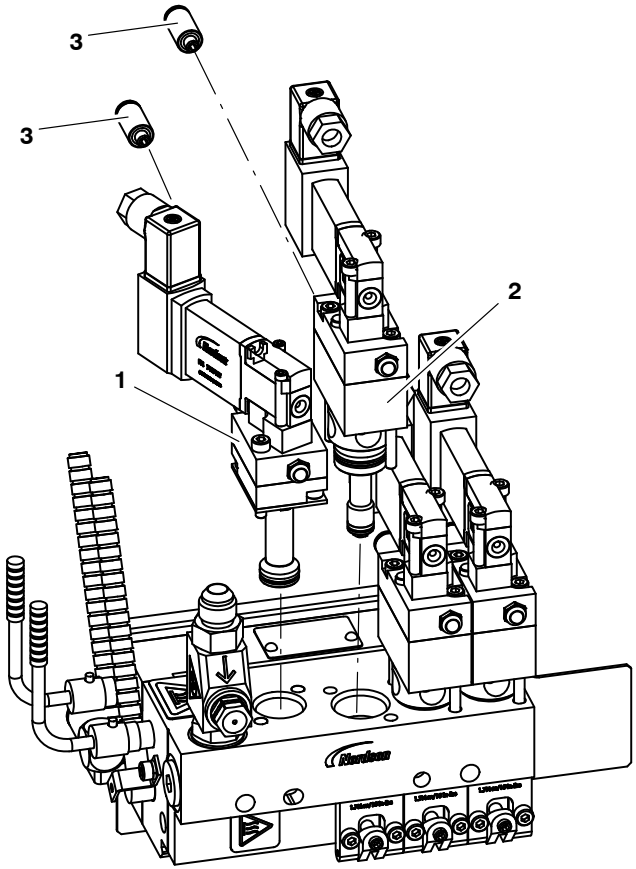


Figure 10: Removing a control module

1. Air control module mounting screw
2. Speed-Coat adhesive control module mounting screw
3. Air input fitting on control module

Note: The air input fittings on the adhesive control modules are not visible.

Install a Module

1. Wipe off any adhesive on the adhesive manifold.
2. See Figure 11. Apply high-temperature lubricant to the O-rings on the module and to the module mounting screws (under the screw head and on the threads).

   NOTE: Nordson Corporation recommends high-temperature PTFE grease, P/N 394769.

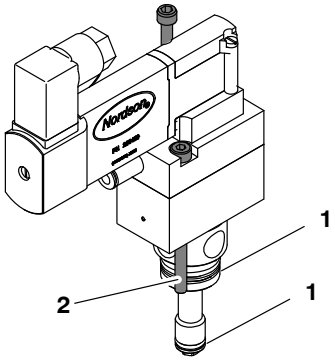


Figure 11: Adhesive control module lubrication areas

1. Lubrication areas
2. O-rings

3. See Figure 10. Insert the module and mounting screws in the manifold or adapter, **ensure that the module is fully seated,** and hand-tighten the mounting screws.
4. *(Adhesive control modules only)* See Figure 11. Using a torque wrench, **tighten the screws alternately** (from screw 1 to screw 2, then back to screw 1 and screw 2, and so on) in increments of approximately 0.9 N•m (8 in.-lb) until you reach a torque of 2.7 N•m (24 in.-lb).
5. Reconnect the module-actuating air supply and solenoid valve electrical connections.
6. Restore the system to normal operation. Tighten the mounting screws again after the applicator reaches application temperature.

This page intentionally left blank.

Replace a Cordset

1. Disconnect and lock out electrical power to the system.
2. Disconnect the electrical plug of the cordset to be replaced.
3. See Figure 12. Loosen the heater retainer screw, rotate the heater retainer to one side, and remove the heater.

   NOTE: If the heater does not easily slide out of its bore, insert a $^{3}/_{8}$-in. diameter or smaller rod into the access hole on the opposite applicator side and gently push or tap on the rod to loosen the heater.

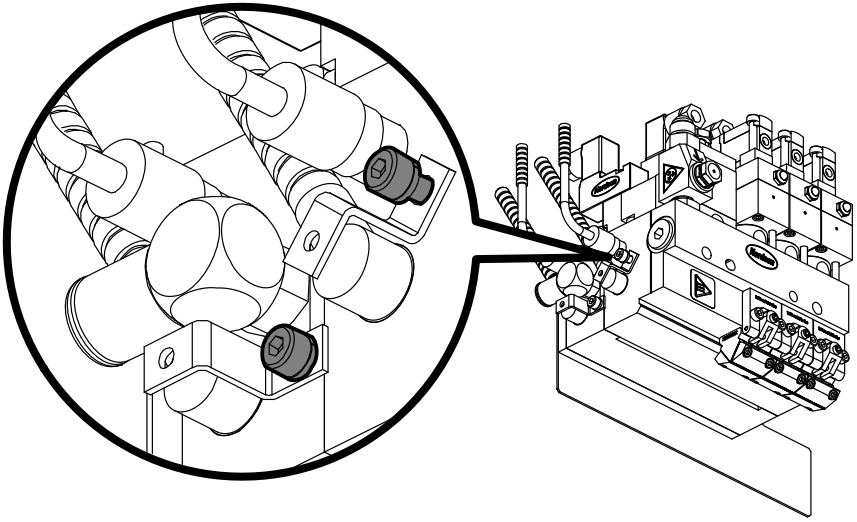


Figure 12: Heater retainer screw locations

4. See Figure 13. Press in the RTD bayonet adapter, rotate the adapter approximately $^1/_4$-turn clockwise, and remove the RTD. The cordset should now be completely disconnected from the applicator.

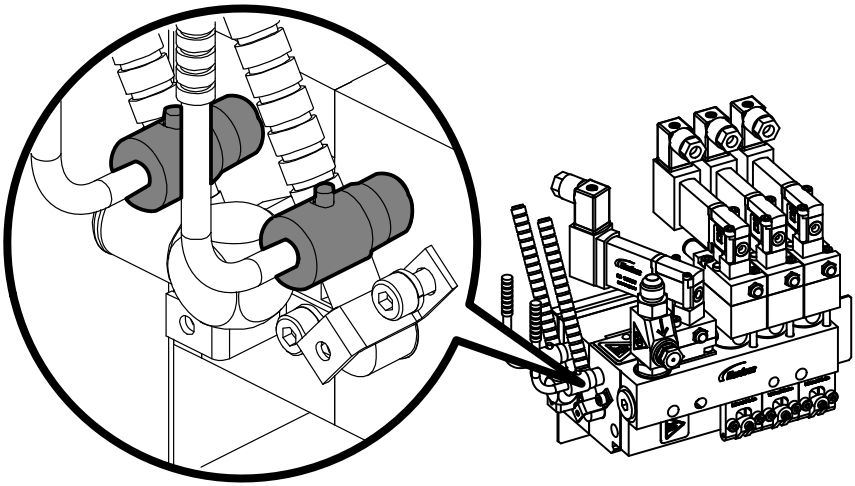


Figure 13: RTD bayonet adapter locations

5. Coat the new heater with heater lubricant and insert it in the manifold.
6. Rotate the heater retainer over the heater and then tighten the screw.
7. Coat the new RTD with thermal paste and insert it in the manifold. Press in the bayonet adapter and then turn the adapter approximately $^1/_4$-turn clockwise.
8. Connect the new cordset electrical connector.

Remove a Nozzle

Several types of nozzle may be installed on the applicator. Follow this procedure to remove or install nozzles as needed. You will need the following items:

- appropriate tools, including a torque wrench
- drain pans and disposable rags
- replacement nozzle

NOTE: Refer to *Parts* for the part numbers of parts, tools, and supplies.

1. Heat the system to application temperature.
2. Relieve system pressure. Refer to *Safety*.
3. Trigger the applicator solenoid valves to relieve any remaining pressure.
4. Shut off the module-actuating air.
5. Decrease the pattern air pressure. Leave just enough air pressure to prevent adhesive from entering the pattern air outlet on the module.

See Figure 14.

6. Back the nozzle-retaining clamp screw (1) to loosen the clamp.
7. Push the nozzle retaining clamp (2) toward the module to eject the nozzle.

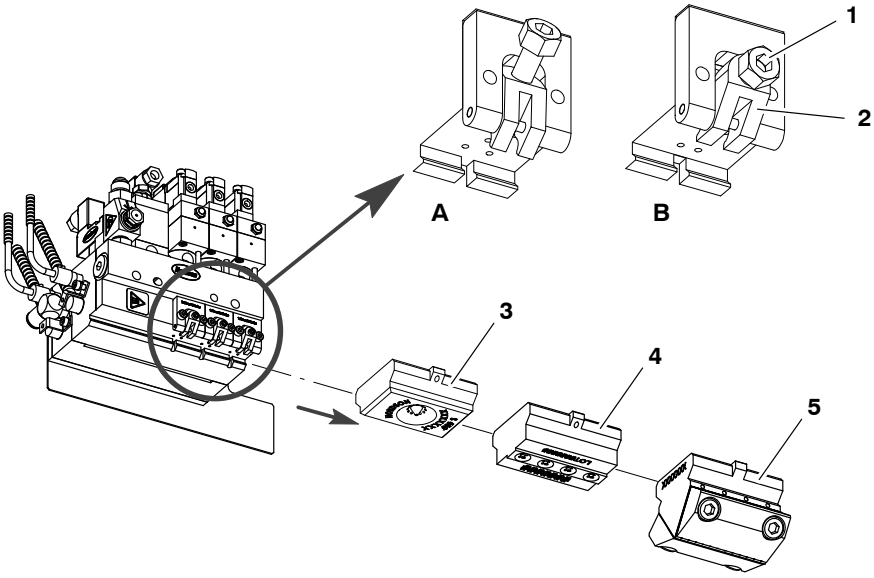


Figure 14: Nozzle retaining clamp in open (A) and closed (B) positions

1. Nozzle-retaining clamp screw
2. Nozzle-retaining clamp
3. Universal CF module
4. Summit nozzle
5. Intermittent Signature nozzle

Install a Nozzle

1. Clean the mating surface where the nozzle will be seated.
2. See Figure 14. Inspect the nozzle O-ring, replace if necessary, and ensure that the O-ring is lubricated and properly positioned in the O-ring bore.
3. Carefully insert the nozzle onto the seat.

   CAUTION! Overtightening a nozzle-retaining clamp screw can damage the module.

4. Tighten the nozzle-retaining clamp screw to 1.7 N•m (15 in.-lb).

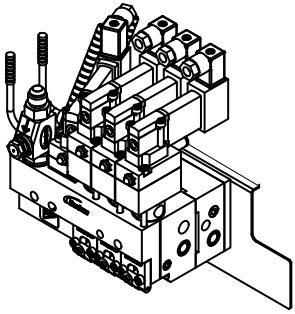
Clean Nozzles

To clean nozzles, obtain the nozzle-cleaning instruction sheet (P/N 1053027) from http://emanuals.nordson.com/, or contact your Nordson representative for assistance.

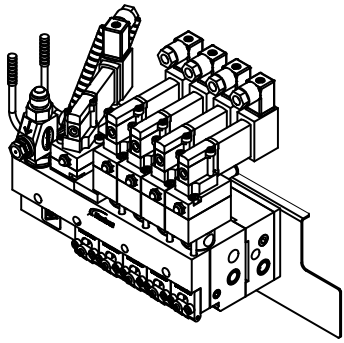
Parts

To order parts, call the Nordson Customer Service Center at (888) NORDSON, or contact your local Nordson representative.

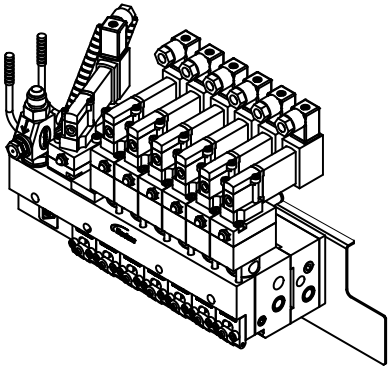
PatternJet Plus Applicator Part Numbers



Two- and Three-Module Applicators
P/N 1094916, two-module
P/N 1094917, three-module



Four- and Five-Module Applicators
P/N 1094918, four-module
P/N 1094934, five-module



Six- and Seven-Module Applicators
P/N 1094935, six-module
P/N 1094936, seven-module

Figure 15: PatternJet Plus applicators

Note: All applicators include cordsets. Nozzles must be purchased separately.

Service Kits

Part	Description	Note
1065916	Service kit, spare parts, boosted, PatternJet (4)	A
1080415	Service kit, spare parts, boosted, PatternJet (2)	B
1065917	Service kit, module blank, PatternJet	
1062137	Nozzle, blank, Universal, 25 mm	
1069784	Service kit, rod mount, PatternJet	

NOTE A: Includes four replacement modules with solenoids and two 100-mesh Saturn in-line replacement filter screens.

B: Includes two replacement modules with solenoids and two 100-mesh Saturn in-line replacement filter screens.

Cordsets

Part	Description	Note
1065947	CORDSET ASSY, 310 W, 5.30 L, PATTERNJET	A
1065948	CORDSET ASSY, 400 W, 7.30 L, PATTERNJET	B
1069782	CORDSET ASSY, 480 W, 9.30 L, PATTERNJET	C

NOTE A: Order for applicators with two or three modules.

B: Order for applicators with four or five modules.

C: Order for applicators with six or seven modules.

PatternJet Plus Applicator Parts

See Figure 16.

Item	Part	Description	Qty	Note
—	- - - - - -	APPLICATOR,PATTERN JET PLUS	—	A
01	- - - - - -	• MANIFOLD,ADH,PATTERN JET	1	
02	- - - - - -	• MANIFOLD,AIR,HTD,THIN FILM	1	
03	- - - - - -	• PLATE,COVER,AIR HEATER	1	
04	- - - - - -	• PLATE,HEAT SHIELD,PATTERN JET	1	
05	7162080	• CONTROL MODULE SC 24V BOOSTER AP CPL.FIX	2–7	B
06	7333608	• CONTROL MODULE, PJ+, MEMBRANE AIR (air control module)	1	C
07	204970	• PLUG, SPEED COAT, COMPLETE	1	D
08	1062137	• NOZZLE,BLANK,UNIVERSAL,25MM	1	D
09	1056018	• FILTER,SATURN,IN-LINE, 200 MESH, STR	1	
10	- - - - - -	• CORDSET ASSY	2	E
11	1065895	• ADAPTER,RTD,BAYONET,1/8BSPT	2	
12	462975	• PLUG-TYPE THREAD-IN-FTG. -W-D08-G1/8-TURN	1	
13	1065945	• CLAMP ASSY,NOZZLE,PATTERN JET	3	
14	- - - - - -	• SCR,SKT,M4X16,ZN	6	
15	- - - - - -	• PLUG,O RING,STR THD,9/16-18	3–7	
16	- - - - - -	• PLUG,PIPE,SKT,FLUSH,1/16,ZN	6–14	
17	- - - - - -	• PLUG,PIPE,SKT,FLUSH,R1/8,ZN	1	
18	157946	• RETAINER,HEATER,.312x.937x.050,2 BEND	2	
19	- - - - - -	• WASHER,LK,M,SPT,M4,STL,ZN	2	
20	- - - - - -	• SCR,SKT,CAP,M4 X 12MM,ZN,71086-5	2	
21	- - - - - -	• TAG,HOT SURFACE	2	
22	940133	• O RING,VITON,.426ID X .070W,BR,10413	1	
23	- - - - - -	• TAG,WARNING,HOT,E700	1	
24	- - - - - -	• TAG,STAMPING,CE,W/ADDRESS,.921X1.469	1	
25	- - - - - -	• SCR,DRIVE,RD,2X .187,ZN	4	
26	466428	• PLUG-TYPE THREAD-INFTG.-GD06-M5-0000	3–8	
29	- - - - - -	• SCR,FLT,SKT,M5X50,ZN	4	
30	- - - - - -	• SCR,FLT,SKT,M5X20,ZN	8–10	
31	- - - - - -	• CAPSCR,BTN-HD,SKT,M5 X 6.0,STL/ZNC	4	

Continued...

PatternJet Plus Applicator Parts (contd)

Item	Part	Description	Qty	Note
NS	1108369	• SEALANT,PASTE,NSF-H1,FOOD GRADE	1	
NS	1108371	• LUBRICANT,NEVER-SEEZ,NSF-H1,FOOD GRADE	1	
NS	1108372	• LUBRICANT,O-RING,NSF-H1,FOOD GRADE,4L	1	
NS	1054755	• RELEASE AGENT,HIGH-TEMP, BORON NITRIDE (heater lubricant)	1	
NS	900298	• COMPOUND,HEAT SINK,5 OZ TUBE,11281 (thermal paste)	1	
NS	- - - - - -	• TAG SET,GUNS	1	
NS	- - - - - -	• TUBING,PTFE,8MMX6MM,SEMI-CLEAR WHITE	2	
NS	- - - - - -	• TUBFTG,PUSHIN,CONN,8MMx8MM	1	
NS	- - - - - -	Nozzle	AR	F

NOTE A: Refer to *PatternJet Plus Applicator Part Number*s for applicator part numbers.

B: Refer to *Boosted Speed-Coat Adhesive Control Module Parts*.

C: Refer to *Air Control Module Parts*.

D: This item is present only on two-, four-, and six-module configurations.

E: Refer to *Cordsets* for part numbers.

F: Order separately. Refer to *Nozzle Parts Numbers*.

NS: Not Shown

AR: As Required

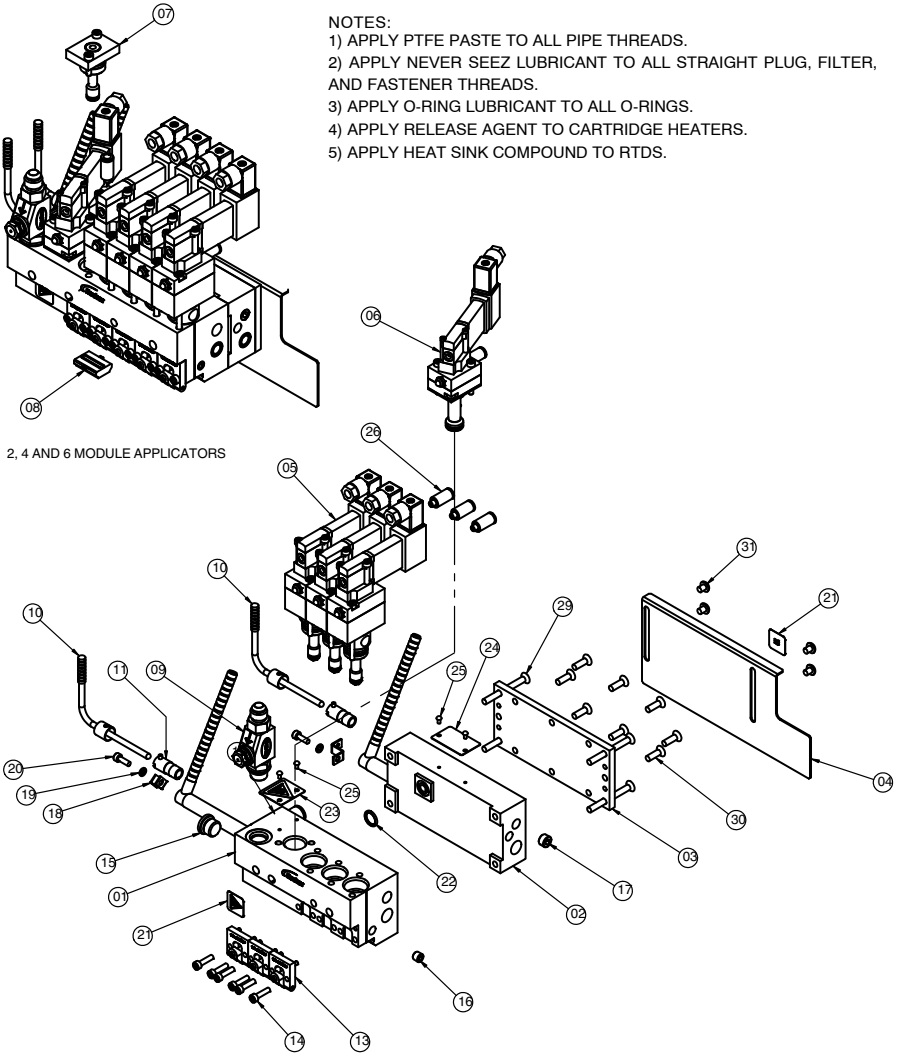


Figure 16: PatternJet Plus applicator parts (three-module applicator shown)

Boosted Speed-Coat Adhesive Control Module Parts

See Figure 17.

Item	Part	Description	Qty	Note
—	7162080	Control module, SC, 24V booster AP cpl. fix	—	
1	7162079	• Control module SC basic assy booster fix	1	
1A	7162021	• • Cylinder S.C. w/sensor-drill f.shaped g.	1	
2	7162043	• • Cylinder SC screwed flange valve D20/14	1	
16	423855	• • Allan head cap screw M4x55 DIN912 SST	2	
25	635926	• • O-ring 17x1.5 Viton	2	
29	251755	• • O-ring 7x1,5 Viton	1	
50	7103652	• • Plug,sensor SC w. O-ring	1	
3	7157157	• Fast switch valve SC 24V booster 80C	1	
12	396252	• Insulation plate SC	1	
20	401899	• Valve socket 2+PE 90 LED 24/48VDC 9, 4 mm	1	
90	7113424	• Gasket for fast switch valve	1	

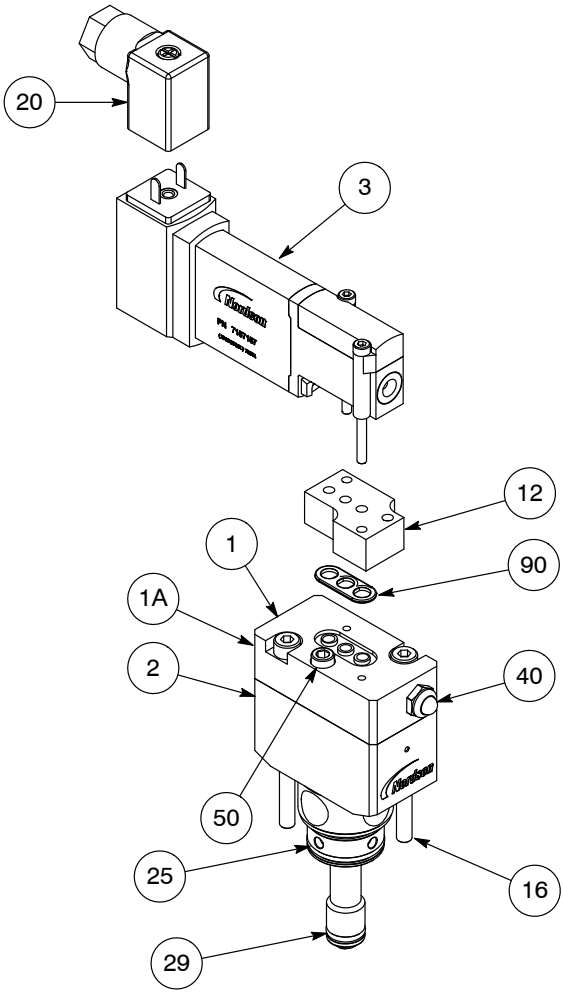


Figure 17: Boosted Speed-Coat adhesive control module parts

Air Control Module Parts

See Figure 18.

Item	Part	Description	Qty	Note
—	7333608	CONTROL MODULE, PJ+, MEMBRANE AIR	—	
1	7333609	• CARTRIDGE, AIR MEMBRANE MODULE, PJ+	1	
2	7333611	• COVER, CONTROL MODULE, AIR MEMBRANE, PJ+	1	
3	466423	• SEAL F.MEMBRANE, CONTROL MODULE CC2003	1	
4	7333615	• INSULATION, MEMBRANE AIR MODULE, PJ+	1	
5	7157157	• FAST SWITCH VALVE, SC, 24V BOOSTER, 80 °C	1	
6	401899	• VALVE SOCKET, 2+PE 90° LED, 24/48 VDC, 9.4 MM	1	
7	396252	• INSULATION PLATE, SC	1	
9	204211	• SILENCER, M5X3.9, L=8.8, SK=8	1	
10	253890	• O-RING, 3X1, VITON	3	
11	250075	• ALLAN HEAD CAP SCREW, M4X12, DIN912 SST	2	
12	250015	• ALLAN HEAD CAP SCREW, M4X30, DIN912 SST	2	
13	7333610	• INSERT, ADAPTER, TC TO AIR MEMBRANE	1	
14	466428	• PLUG-TYPE THREAD-IN FTG.-G-D06-M5-0000	1	
16	252205	• O-RING, 12X1.5, VITON	1	

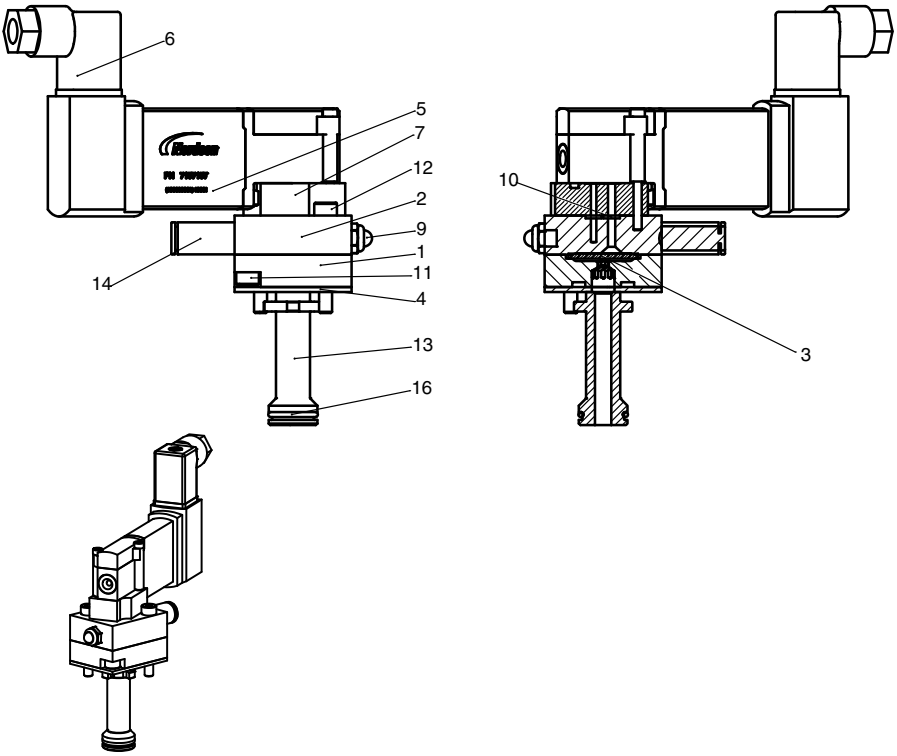


Figure 18: Air control module parts

Standard Nozzle Part Numbers

Normally, the choice of nozzle for your applicator will have already been made by you and your Nordson representative. Refer to your sales order to determine what nozzle choices were made. The part numbers for the most commonly used nozzles are provided here. Other nozzles sizes and types are available. Contact your Nordson representative for additional information.

Universal CF Nozzles

Universal CF nozzles are one-piece, high-frequency CF nozzles with 12 air openings.

Orifice Diameter	Pattern Width	Nozzle Part Number
0.012 in.	Standard	1053960
0.012 in.	Wide	1053964
0.016 in.	Standard	1053961
0.016 in.	Wide	1053966
0.018 in.	Standard	1054730
0.018 in.	Wide	1054731
0.020 in.	Standard	1049565
0.020 in.	Wide	1052500
0.025 in.	Standard	1053962
0.025 in.	Wide	1053967
0.030 in.	Standard	1053963
0.030 in.	Wide	1053968
NOTE: All nozzles include O-ring part 1019706.		

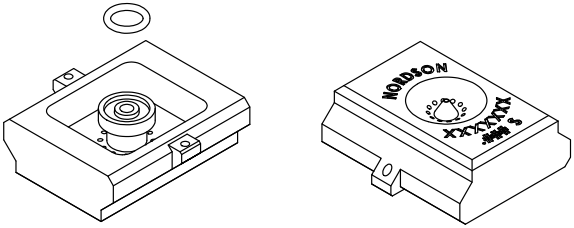


Figure 19: Universal CF nozzle

Summit Nozzles

A Summit laminating nozzle has one to four adhesive openings that are oriented to apply adhesive starting at the left, right, or center of the nozzle. The adhesive coating width ranges from 6–25 mm (0.25–1.00 in.), depending on the number of openings.

Number of Openings	Coating Width	Distance Between Openings	Orientation of Openings	Brass Nozzle Part Number	Stainless-Steel Nozzle Part Number
1	~6 mm ($1/4$ in.)	not applicable	Left or right	1035875	1035877
		not applicable	Center	1035876	1035878
2	~12–13 mm ($1/2$ in.)	6.25 mm	Left or right	1035879	1035881
			Center	1035880	1035882
3	~19 mm ($3/4$ in.)	6.25 mm	Left or right	1035629	1035884
		6.25 mm	Center	1035883	1035885
4	~25 mm (1 in.)	6.25 mm	Full	1035886	1035887

NOTE A: The Universal Summit nozzle is symmetrical. Nozzles may be positioned for right- or left-side coverage.

B: Summit nozzles use O-ring part 1022028.

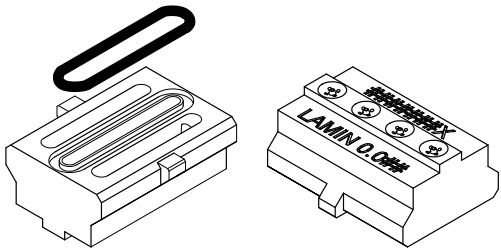


Figure 20: Summit laminating nozzle

Signature Nozzles

A Signature nozzle is an assembly of parts that are collectively referred to as a “nozzle.” A parts list for the Signature nozzle assembly is provided on the following page. Signature nozzles are available in full coverage or partial coverage versions. A partial coverage nozzle can be positioned for either right-side or left-side coverage.

Signature Nozzle (Intermittent Applications) Parts

Table 5 shows the nozzle part numbers. See Figure 22 and the accompanying parts list for the individual nozzle parts.

Table 5 Signature Nozzle Part Numbers (Intermittent Applications)

Coverage	Orientation	Nozzle Part Number
3 mm	1/4 left or right side	1088481
6 mm	1/2 left or right side	1088480
9 mm	3/4 left or right side	1088479
12 mm	Center (full coverage)	1088478

NOTE A: Signature nozzles may be custom-fabricated. Contact your Nordson representative for more information.

B: All nozzles include quad-ring seal part 254146.

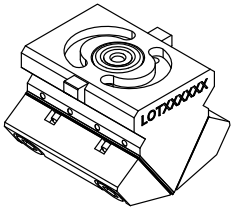


Figure 21: Signature nozzles (intermittent applications)

Item	Part	Description	Qty	Note
—	- - - - - -	Nozzle, Signature, intermittent, 25 mm	—	A
1	- - - - - -	• BASE, NOZZLE,SIGNATURE, 25MM	1	
2	254146	• QUADRING 4,47x1,78	1	
3	- - - - - -	• SHIM,NOZZLE, ADHESIVE, 25MM	1	
4	- - - - - -	• SHIM, NOZZLE, SEPARATOR, 25MM	1	
5	- - - - - -	• SHIM, NOZZLE, ISPRAY AIR, 25MM	2	
6	- - - - - -	• CLAMP, SIGNATURE,NOZZLE, 25MM	2	
7	308586	• SCR,SKT,M3 X 6,BL	4	
8	1072599	• PIN,DOWEL,M2X6,H&G	4	
NOTE A: Refer to Table 5 for nozzle part numbers.				

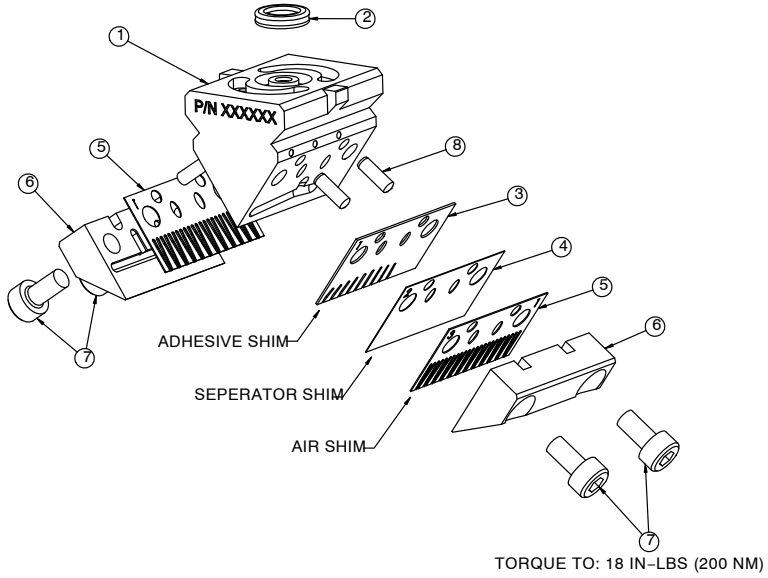


Figure 22: Signature nozzle (intermittent applications) parts

Labeling Application Nozzle Part Numbers

PatternJet Plus applicators may be used in a roll-fed labeling system. The following nozzles are specifically suited for labeling applications.

Summit Nozzles (Labeling Applications)

Number of Openings	Coating Width	Orifice Diameter	Orientation of Openings	Nozzle Part Number
1	~6 mm ($^1/_4$ in.)	0.063 mm (0.25 in.)	Center	1075036
2	~12–13 mm ($^1/_2$ in.)	0.063 mm (0.25 in.)	Center	1075037
3	~19 mm ($^3/_4$ in.)	0.063 mm (0.25 in.)	Center	1075038
4	~25 mm (1 in.)	0.063 mm (0.25 in.)	Full	1075039
	~25 mm (1 in.)	0.3 mm (0.12 in.)	Full	1093160
	~25 mm (1 in.)	0.46 mm (0.018 in.)	Full	1082337
	~25 mm (1 in.)	0.81 mm (0.032 in.)	Full	1077539

NOTE A: The Universal Summit nozzle is symmetrical. Nozzles may be positioned for right- or left-side coverage.

B: Summit nozzles use O-ring part 1022028.

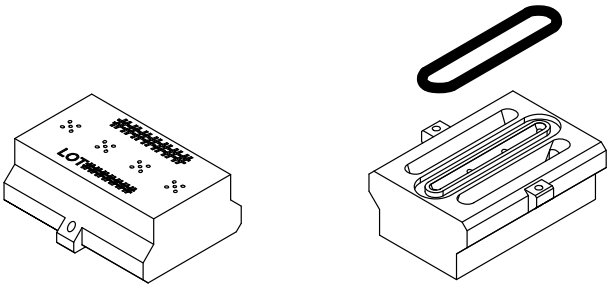


Figure 23: Summit laminating nozzle (labeling applications)

This page intentionally left blank.

Signature Nozzles (Labeling Applications)

A Signature nozzle is an assembly of parts that are collectively referred to as a “nozzle.” A parts list for the Signature nozzle assembly is provided on the following page. Signature nozzles are available in full coverage or partial coverage versions. A partial coverage nozzle can be positioned for either right-side or left-side coverage.

Signature Nozzle (Intermittent Labeling Applications) Parts

Table 6 shows the nozzle part numbers. See Figure 25 and the accompanying parts list for the individual nozzle parts.

Table 6 Signature Nozzle Part Numbers (Intermittent Labeling Applications)

Coverage	Orientation	Nozzle Part Number
3 mm	1/4 left or right side	1095197
6 mm	1/2 left or right side	1095198
9 mm	3/4 left or right side	1095199
12 mm	Center (full coverage)	1095210

NOTE A: Signature nozzles may be custom-fabricated. Contact your Nordson representative for more information.

B: All nozzles include quad-ring seal part 254146.

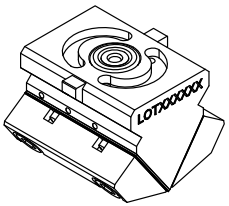


Figure 24: Signature nozzles (intermittent labeling applications)

Item	Part	Description	Qty	Note
—	- - - - - -	Nozzle, Signature, intermittent, 25 mm	—	A
1	- - - - - -	• BASE, NOZZLE,SIGNATURE, INT, 25MM, FULL W	1	
2	254146	• QUADRING 4,47x1,78	1	
3	- - - - - -	• SHIM,NOZZLE, INT, ADHESIVE, FULL W, 25MM	1	
4	- - - - - -	• SHIM, NOZZLE, INT, SEPARATOR, 25MM	1	
5	- - - - - -	• SHIM, NOZZLE, INT, SPRAY AIR, 25MM	2	
6	- - - - - -	• CLAMP, SIGNATURE,NOZZLE, INT, 25MM	2	
7	308586	• SCR,SKT,M3 X 6,BL	4	
8	1072599	• PIN,DOWEL,M2X6,H&G	4	
NOTE A: Refer to Table 6 for nozzle part numbers.				

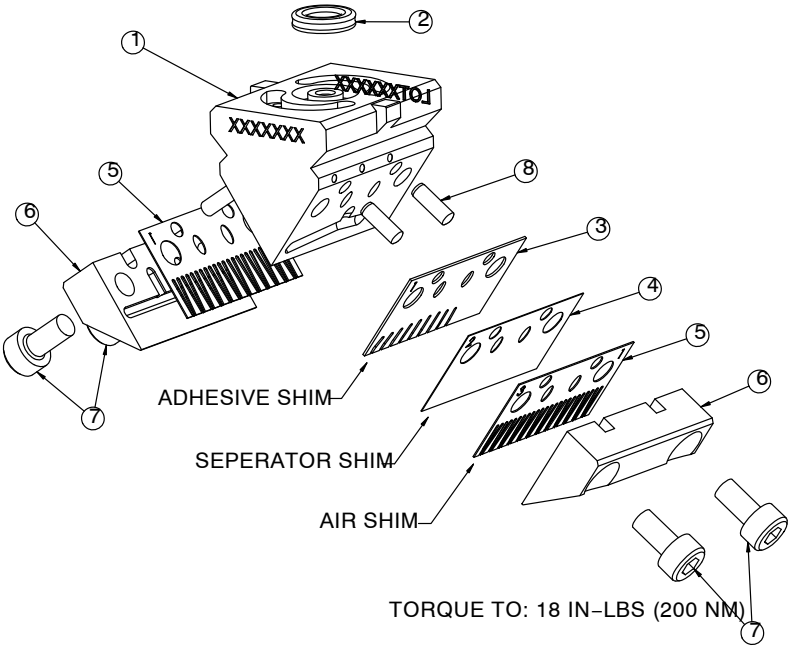


Figure 25: Signature nozzle (intermittent labeling applications) parts

Technical Data

Applicator Specifications

Table 7 provides specifications for a PatternJet Plus applicator.

Table 7 PatternJet Plus Applicator Specifications

Parameter	Specification
Operating hydraulic temperature	93–191 °C (200–375 °F)
Maximum closing pressure without compressed air	15 bar (218 psi)
Maximum closing pressure with compressed air	60 bar (870 psi)
Maximum air temperature (applicable only to spray applications)	191 °C (375 °F)
System hydraulic pressure	89.6 bar (1,300 psi) maximum
Module-actuating air pressure	4 bar (58 psi) minimum 6 bar (87 psi) recommended
Air consumption per spray nozzle (applicable only to spray applications)	~28.8 nlm (~1.0 scfm)
Adhesive viscosity	500–15,000 cps
Adhesive applications supported	CF, Summit, intermittent Signature
Adhesive pattern capability	Continuous or intermittent

Dimensions

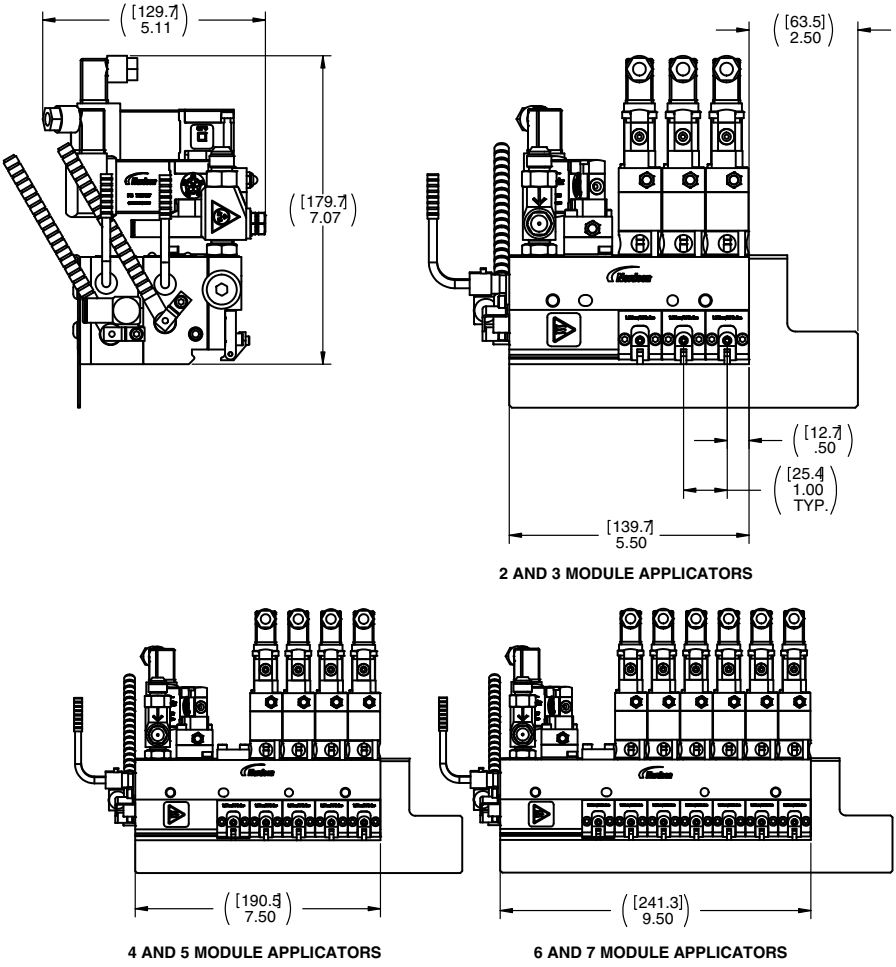


Figure 26: Dimensions [mm (in.)]

This page intentionally left blank.