

# Vulcan Jet Dispensing System

Customer Product Manual

Part 1126187\_05

Issued 09/21



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



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# Section 1

## 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.
- Ensure that the equipment is rated for the environment in which it will be used. This equipment has not been certified for compliance with the ATEX directive nor as nonincendive and should not be installed in potentially explosive environments.
- Ensure 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***

- Allow only personnel with appropriate training and experience to operate or service the equipment.
- 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](http://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 shutdown required varies by the type of equipment in use and the procedure being completed. If required, shutdown instructions are specified at the start of the procedure. The levels of shutdown 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 (robot, timer, Programmable Logic Controller [PLC], etc.).
2. Disconnect the input signal wiring to the applicator.
3. Reduce the air pressure to the system, then relieve the residual air pressure between the air control kit and the applicator.

### General Safety Warnings and Cautions

The following table 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 as follows:

**HM** = Hot melt (cartridges, applicators, etc.)

**PC** = Process control

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

Table 1-1 General Safety Warnings and Cautions

Equipment Type	Warning or Caution
HM	 <p><b>WARNING!</b> 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.</p>
HM	 <p><b>WARNING!</b> 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.</p>
HM, CA	 <p><b>WARNING!</b> 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.</p>
<i>Continued...</i>	

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

Equipment Type	Warning or Caution
HM	 <p><b>WARNING!</b> 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.</p>
HM, PC	 <p><b>WARNING!</b> 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.</p>
HM, CA, PC	 <p><b>WARNING!</b> 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.</p>
HM, CA, PC	 <p><b>WARNING!</b> 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.</p>

## General Safety Warnings and Cautions *(contd)*

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

Equipment Type	Warning or Caution
HM, CA, PC	 <p><b>WARNING!</b> 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 the equipment.</p>
HM	 <p><b>CAUTION!</b> Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If contact cannot 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.</p>
HM	<p><b>CAUTION!</b> 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.</p>
HM, CA	<p><b>CAUTION!</b> 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.</p>
HM	<p><b>CAUTION!</b> 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.</p>

***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.

***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 1-1 illustrates the location of the product safety labels and tags affixed to the equipment. Table 1-2 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.

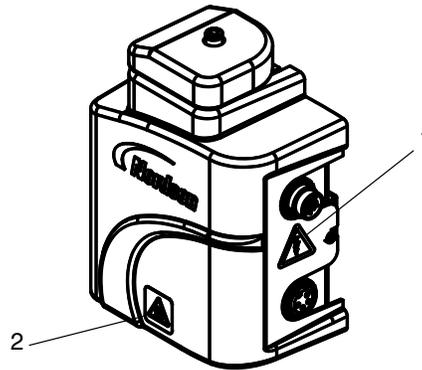
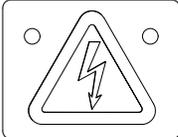


Figure 1-1 Safety labels and tags

Table 1-2 Safety Labels and Tags

Item	Part	Description
1.	-----	 <p data-bbox="657 1014 786 1045">Sign, power</p>
2.	-----	 <p data-bbox="667 1171 766 1203">Sign, hot</p>

## Section 2

# Description

## Overview

This manual describes the installation and use of the Nordson Vulcan Jet™ dispensing system. When necessary, the reader is referred to the documentation supplied with other Nordson products or products supplied by third parties.

The Vulcan Jet dispensing system liquifies solid-form polyurethane reactive (PUR) hot melt adhesive contained in 30-cc cartridges and maintains the adhesive at the desired temperature. When the system is activated, it uses compressed air and jetting to dispense adhesive as a series of joined dots onto the surface of a product or into a product feature, usually in a small to mid-sized electronics assembly application. The system includes:

- the Vulcan Jet controller
- the Vulcan Jet applicator
- a remote air treatment and muffler assembly (hereafter referred to as the pneumatic kit)
- a Nordson Corporation or customer-supplied robot for use with the Vulcan Jet controller and applicator (optional)

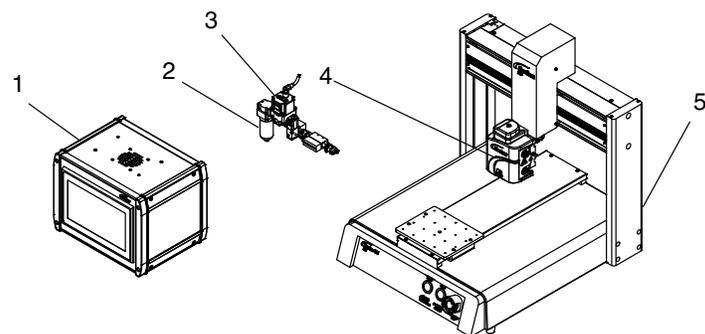


Figure 2-1 Vulcan Jet dispensing system

- |                          |  |
|--------------------------|--|
| 1. Vulcan Jet controller | 4. Applicator                              |
| 2. Air filter            | 5. Robot (Nordson Corporation robot shown) |
| 3. Pneumatic Kit         |  |

## Intended Use

Vulcan Jet dispensing systems are specifically designed to be used:

- With PUR adhesives contained in 30cc cartridges
- With compatible equipment manufactured by Nordson Corporation
- In non-explosive environments

The Vulcan Jet dispensing system is virtually complete, but is intended to be incorporated into machinery or assemblies by an integrator. The equipment must not be placed into use in a member state of the European Union until the parent machinery or assemblies have been declared by the integrator to be in conformity with the applicable directives of the European Commission.

## Limitations of Use

Use Vulcan Jet dispensing systems only for the purpose for which they are designed. Vulcan Jet dispensing systems should not be used to melt or pump any material that creates a health or safety hazard when heated.

## Additional Limitations of Use for PUR Adhesives

When the maximum level of harmful substance concentration is exceeded, use a gas mask and air purifying equipment.

## Unit Identification

See Figure 2-2. You will need the model and part number of the applicator when requesting service or ordering spare parts and optional equipment. The applicator model and part number are indicated on the equipment identification plate.

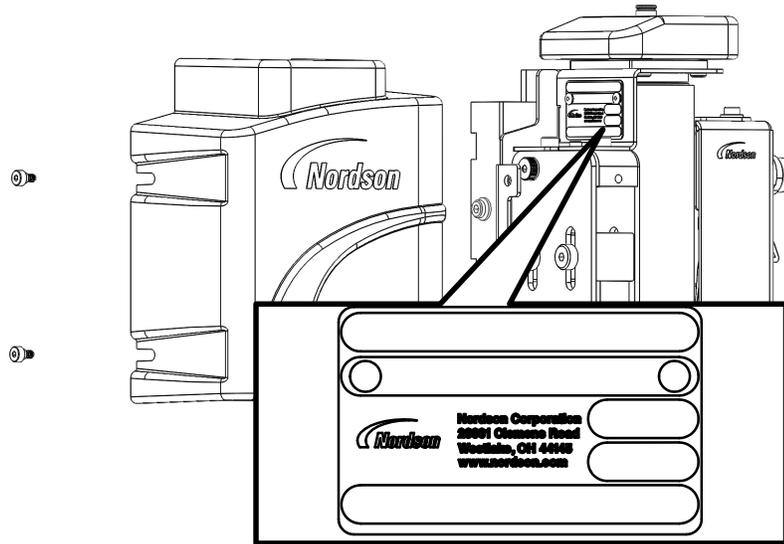


Figure 2-2 Applicator equipment identification plate

## Key Components

Figures 2-3 - 2-6 provide the name and the location of key system components.

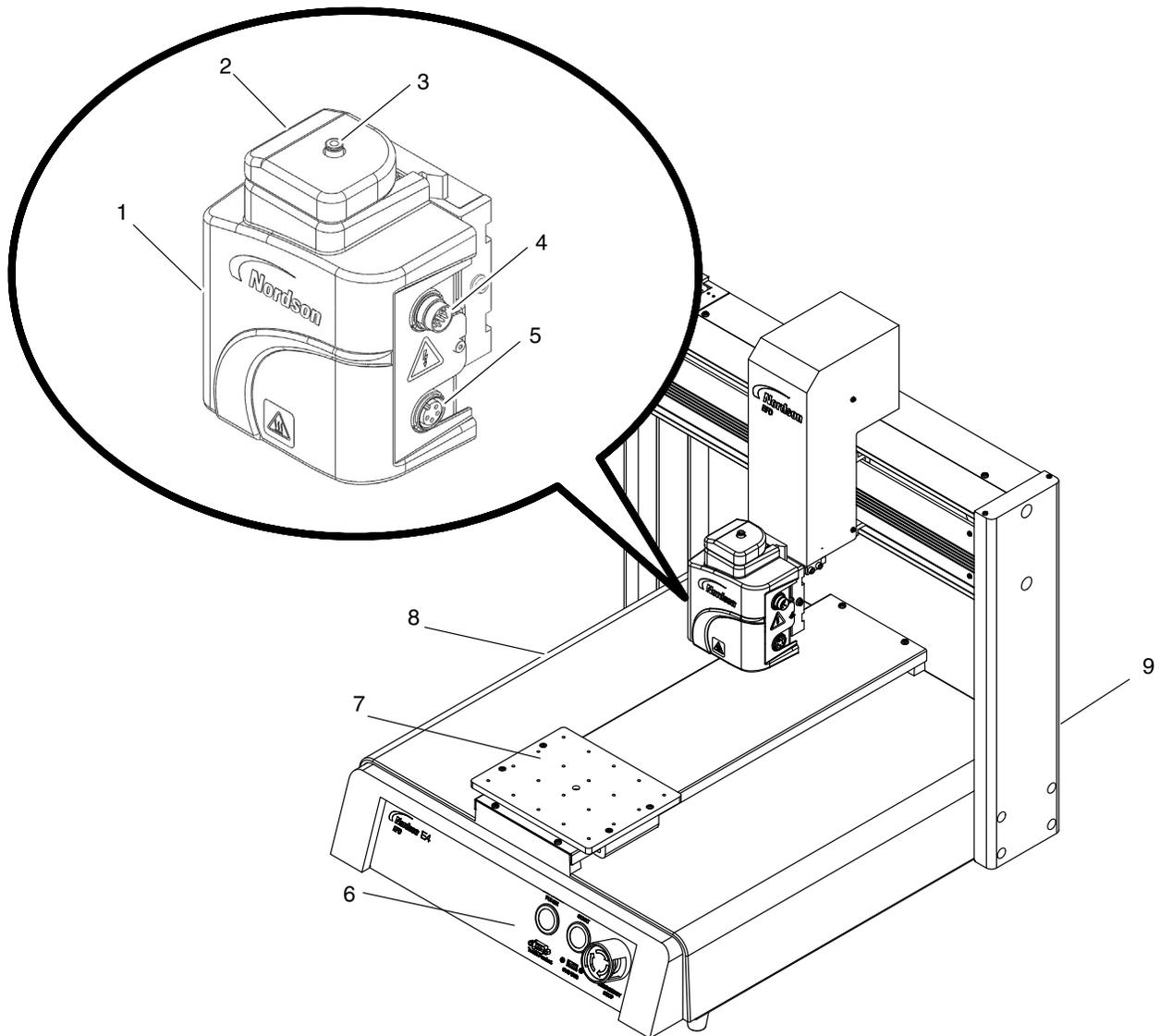


Figure 2-3 Key components of the applicator and robot assemblies

- |                     |                                     |   |
|---------------------|-------------------------------------|---|
| 1. Applicator       | 4. Applicator controller output     | 7. Moving plate                         |
| 2. Air cap          | 5. Applicator piezo actuator output | 8. Robot                                |
| 3. Air supply inlet | 6. Robot controls                   | 9. Robot power switch (on back of unit) |

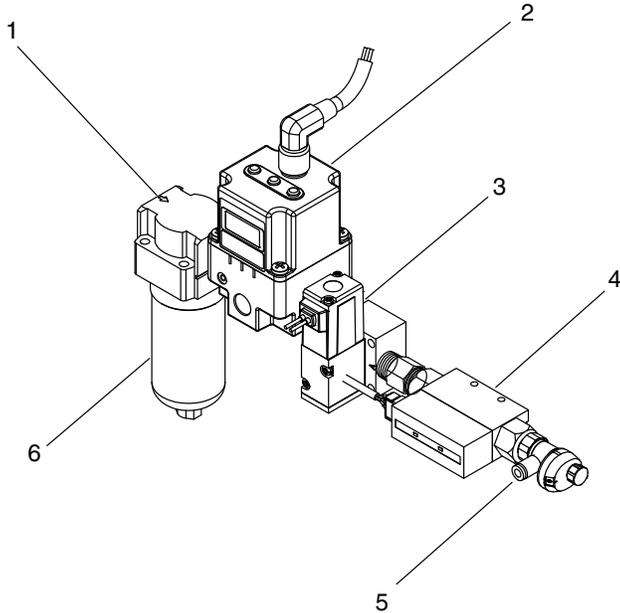


Figure 2-4 Pneumatic Kit Components

- 1. Air supply input
- 2. Air pressure controller
- 3. Flow solenoid
- 4. Flow sensor
- 5. Air output port
- 6. Air filter

## Key Components *(contd)*

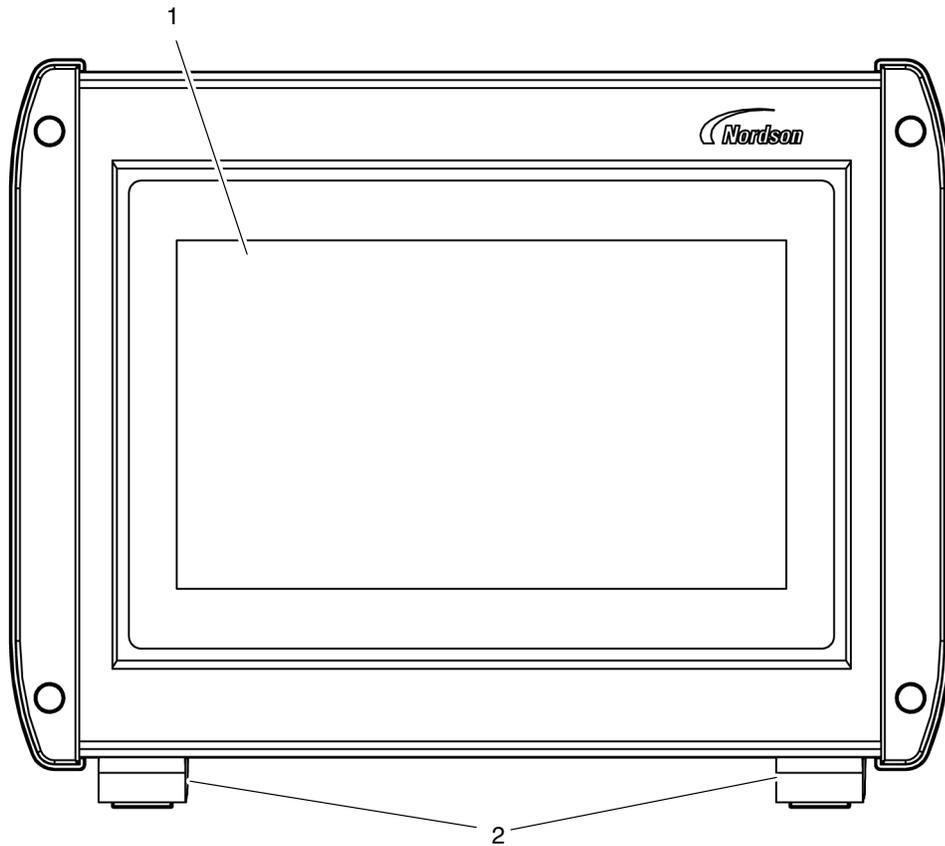


Figure 2-5 Vulcan Jet controller (front view)

- 1. Touch screen
- 2. Supports (two per side)

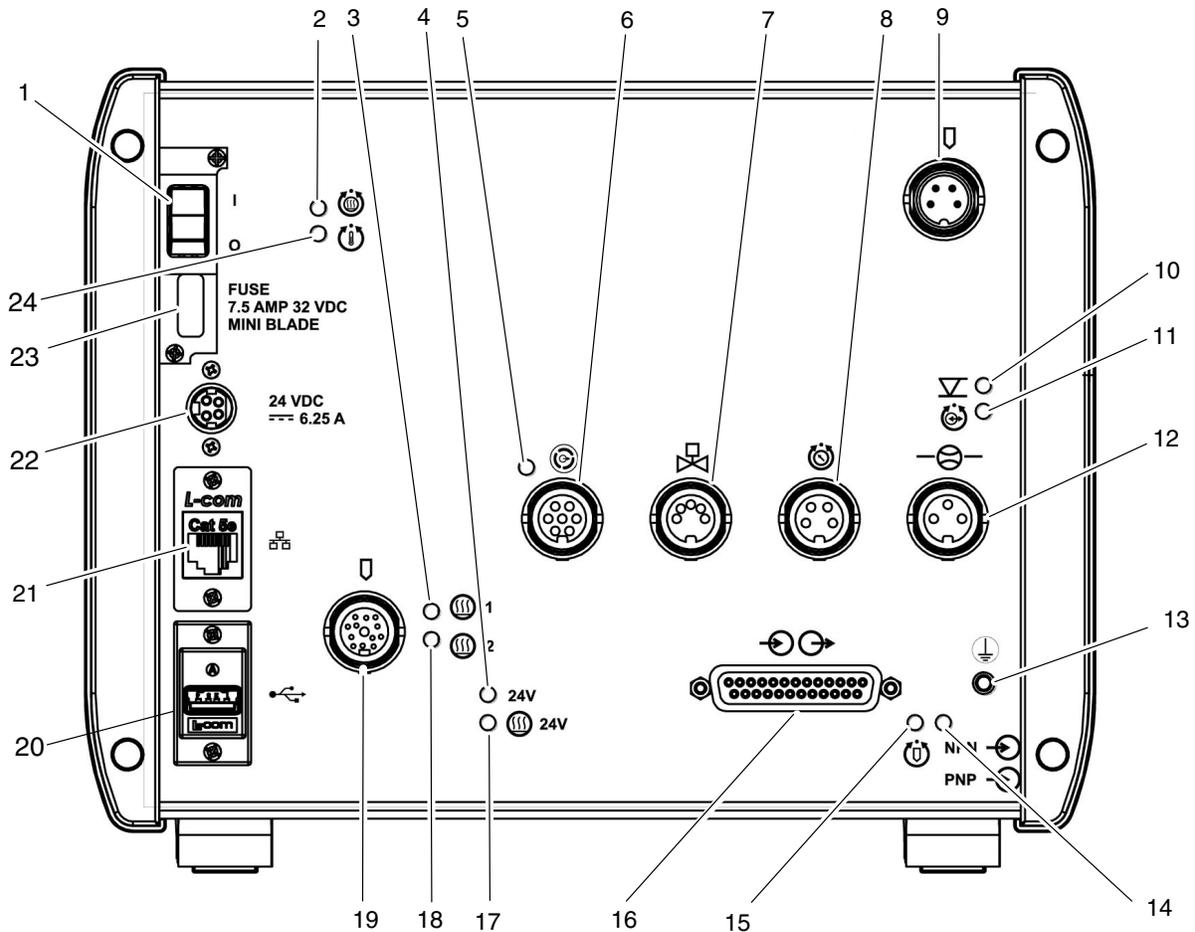


Figure 2-6 Key components of the Vulcan Jet controller (rear view)

- |                                      |  |  |
|--------------------------------------|--|--|
| 1. Power switch                      | 9. Applicator piezo driver output                      | 17. Heater 24 VDC power indicator        |
| 2. Heater status indicator           | 10. PUR cartridge level indicator                      | 18. Cartridge heating indicator          |
| 3. Manifold/Nozzle heating indicator | 11. Control system status indicator (OK, Alert, Fault) | 19. Applicator RTD heater output         |
| 4. Heater Calibrate indicator        | 12. Flow sensor output                                 | 20. USB port                             |
| 5. Air Flow Indicator                | 13. Earth ground                                       | 21. RJ 45 connection                     |
| 6. E-Stop Output                     | 14. NPN/PNP indicator                                  | 22. 24 VDC input                         |
| 7. Flow solenoid output              | 15. Applicator control signal indicator                | 23. 7.5 amp, 32 VDC fuse                 |
| 8. Air controller output             | 16. DB 25 output to robot                              | 24. Temperature control status indicator |

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## Section 3

# Installation



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

## Overview

Installation involves placing the system in the desired location and making the electrical and hydraulic connections.

## Electromagnetic Compliance Information

This system is classified as Class A, Group 2 under the European standard for limits and methods of measurement, EN 55011.

## Experience of Installation Personnel

The instructions provided in this section are intended to be used by personnel who have experience in the following areas:

- Hot melt application processes
- Industrial power and control wiring
- Industrial mechanical installation practices
- Basic process control and instrumentation

## Contents of the Ship-With Kit

Part Number	Item
1125557	Controller Assembly
1125686	Applicator Assembly
1125078	Pneumatic Kit
1125179	Applicator Piezo Cable
1125180	Applicator PCB Cable
1125181	Pressure Regulator Cable
1125182	Flow Meter Cable
1125184	Solenoid Cable
7361296	Touch Controller Power Supply Kit

## Vulcan Jet Controller Hardware Installation Overview

### Overview

Installing the Vulcan Jet Applicator/Controller is a five-step procedure:

Step	Description
1	Mounting the Bracket and Applicator
2	Setting up the Air Kit and Applicator
3	Connecting the Controller and Air Cables
4	Commissioning the Controller
5	Testing/Purging the system for the first time

### Tools you will Need

- 2 mm hex driver
- 2.5 mm hex driver
- 3 mm hex driver
- 4 mm hex driver
- Small flat-head screwdriver
- Small Phillips-head screwdriver
- Wrench

### Components You Must Provide

- IEC Power cable
- For unsupported robots, all associated components (computer, RS-232 cable, etc.) required to program the robot
- Appropriate guarding and signage as required to prevent personal injury during operation and service activities

### ***Step 1: Mounting the Bracket and Applicator***

1. Unpack the Vulcan Jet controller and all components. ***Leave all cables in their bags.***
2. Mounting the bracket and securing the Vulcan Jet Applicator assembly:
  - **For supported robots:** Continue to the next step on page 3-5.
    - ROBOT Unity 2 3 AXIS 200 X 200 X 50 MM
    - ROBOT Unity 3 3 AXIS 300 X 300 X 100 MM
    - ROBOT Unity 4 3 AXIS 400 X 400 X 100 MM
    - ROBOT Unity 5 3 AXIS 500 X 500 X 100 MM
    - ROBOT Unity 4X 3 AXIS 400 X 400 X 100 MM
    - ROBOT Unity 4XP 3 AXIS 350 X 400 X 100 MM
  - **For unsupported robots:** You can mount the Vulcan Jet applicator to just about any robot or to a production line. However, you will have to modify or create your own mounting plate.

Skip the rest of this procedure and proceed to **Step 2, Setting up the Air Kit and Applicator** on page 3-6.

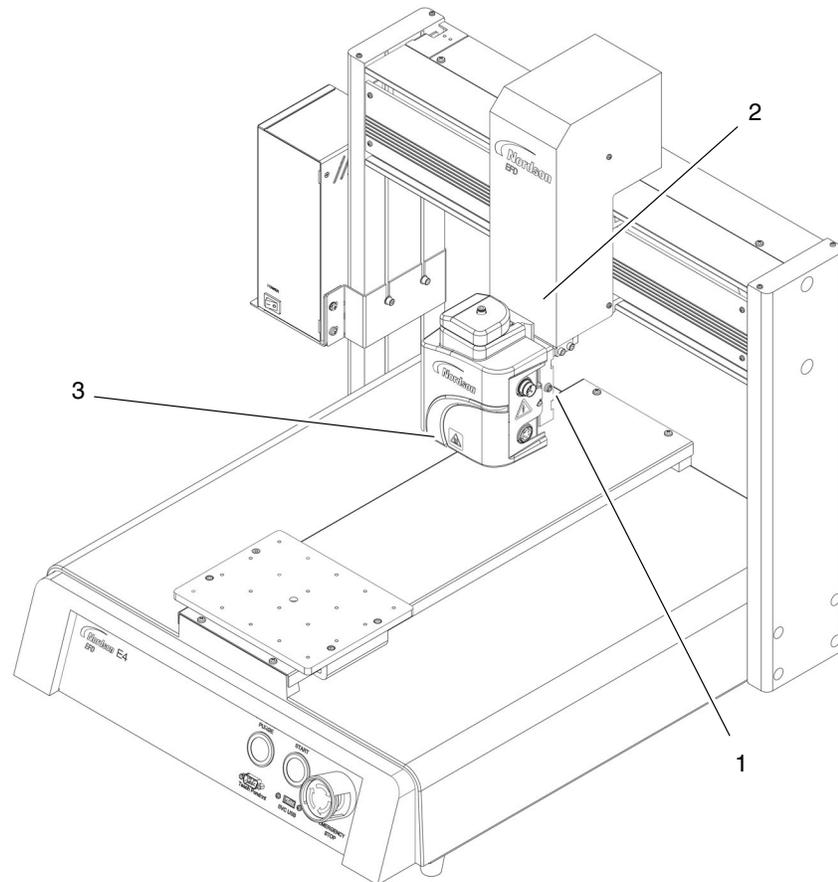


Figure 3-1 Installing a Vulcan Jet applicator on a Nordson supported robot

1. Vulcan Jet-supplied mounting bracket for supported robots
  2. Gantry
  3. Vulcan Jet Applicator Assembly
3. Using a 4 mm hex driver, mount the Vulcan Jet bracket (1) to the supported robot gantry (2). Make sure the catch groove is facing up.
  4. Slide the applicator assembly (3) between the mounting grooves of the mounting plate (1), then secure it to mounting bracket (1) with a 3 mm hex driver.
  5. Proceed **Step 2, Setting up the Air Kit and Applicator**.

## Step 2: Setting up the Air Kit and Applicator

**NOTE:** Make sure the main air supply is switched Off.

1. Unpack the Pneumatic kit. You only need the Pneumatic assembly itself. You will not need anything else in the Pneumatic kit bag.
2. Do the following to continue:
  - With the supplied air hose, connect the Air Output Port (3) to the Air Supply Inlet (4).
  - Verify the Air Restrictor (5) is set to level 4. To change the setting, lightly pull the restrictor knob out, then twist it to indicate **4**. When done, push the knob back in.
  - Using a small flat-head screwdriver, remove the solenoid connector(6).
3. Connect the air kit main air supply input (1) to your primary air supply.

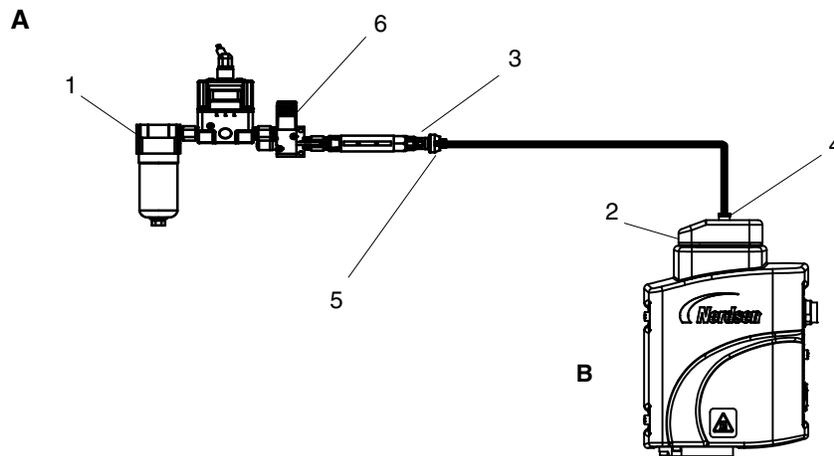


Figure 3-2 Air connections (A: Pneumatic kit/B: Applicator assembly)

- |                          |                     |                       |
|--------------------------|---------------------|-----------------------|
| 1. Main air supply input | 3. Air output port  | 5. Air Restrictor     |
| 2. Air cap               | 4. Air supply inlet | 6. Solenoid Connector |

4. Switch the air supply On.
5. Proceed to **Step 3, Connecting the Controller and Air Cables**.

### NOTES:

- The air supply must be clean, dry, regulated, and unlubricated compressed air. Make sure the air connections are secure and leak free.
- The thread on the Air Kit connector is R ¼. You may need an adaptor for your application.

- In some more demanding applications, use the heat exchanger already installed in your applicator.
- Supply clean air at a pressure less than 30psi (2bar) via 4mm high flex tubing.
- To make the heat exchanger operate, use 1126121 KIT, AIR FLUSH, HEAT XCH, VULCANJET, found on page 9-10.

**Step 3: Connecting the Controller and Air Cables**

1. Refer to figure 3-3. Use the part numbers as a reference when connecting the seven cables.
- Make sure the main power supply is NOT energized or plugged in.
2. When done, proceed to **Step 4, Commissioning the Controller**.

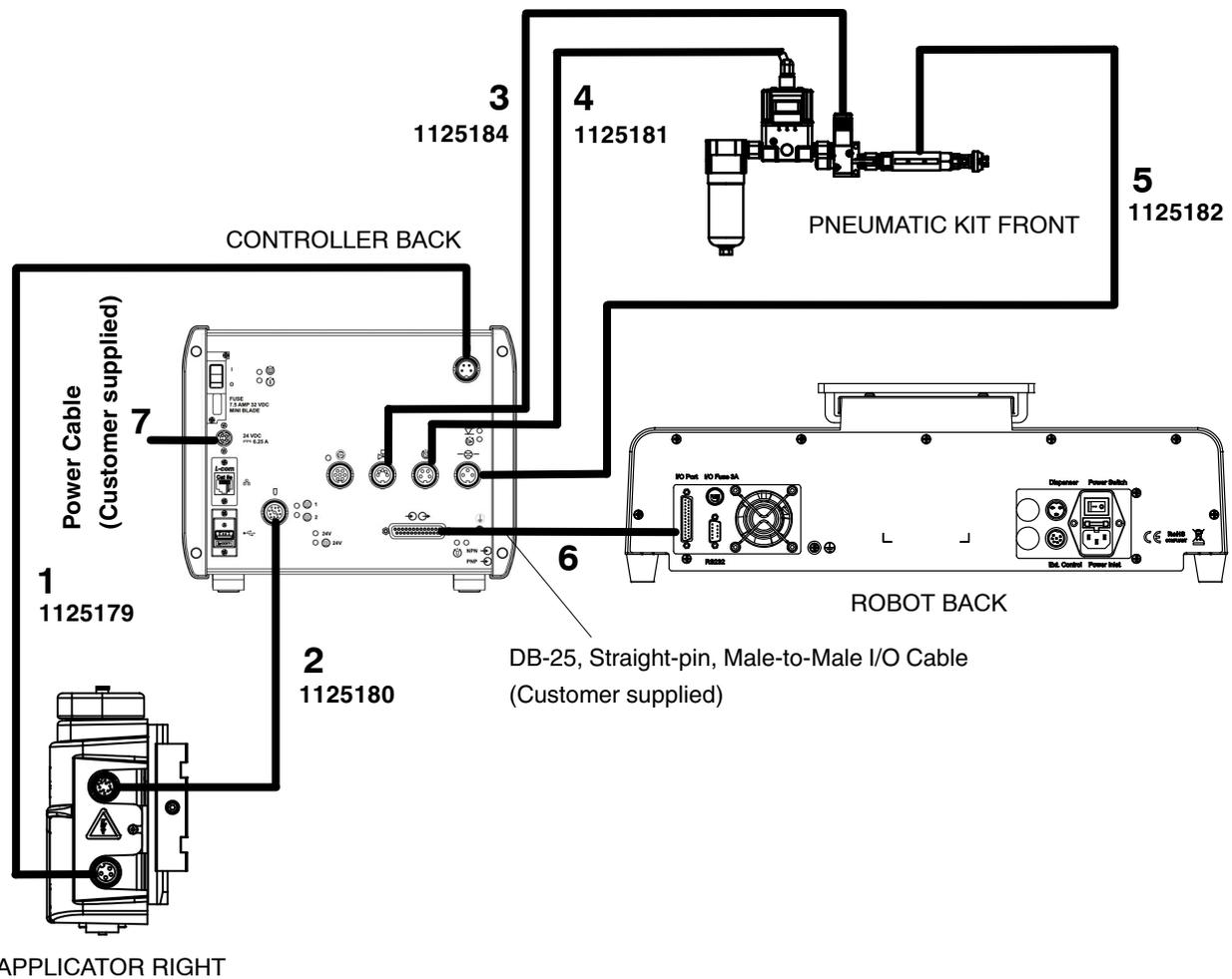


Figure 3-3 Cable connections

**Step 3: Connecting the Controller and Air Cables** (contd)

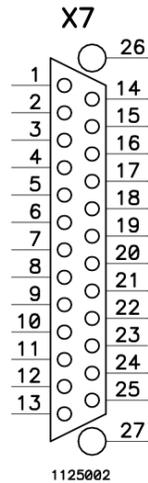


Figure 3-4 I/O Connector

Input	Function	Pin Assignment
<p><b>Note:</b> Pins shown in bold are required for minimum function. Connect the Input pins to Pin 10 (Ground), and set the controller to NPN (default). See page 4-15.</p>		
<b>Applicator Control from Parent Machine (robot)</b>	<b>Causes the applicator to fire a jetting pattern when active. Heaters must be ready and applicator enabled before applicator will dispense.</b>	<b>19</b>
Fault Reset	An active (energized state) pulse will reset all Alarms and Warnings. Equivalent to the Panel Reset function	18
Standby Control	Active state causes the unit to go into Standby.	20
<b>Robot Ready</b>	<b>Activated when the robot is ready to make products</b>	<b>14</b>
Gun OFF Adjust (analog)	0 - 10V analog input. Used to adjust the applicator Off time. 0V = 0 mS, 10V = 10 mS. This input must be enabled from user interface.	22
<b>Applicator Home</b>	<b>Active state indicates that the applicator is in the Home position.</b>	<b>17</b>
Robot Running	Robot is gluing a product.	15
Robert Alert	An Alert has been detected in the robot. Controller should continue to operate.	16
Pressurize Cartridge	The controller should apply air pressure to the cartridge when active	21
<b>Emergency Stop</b>	<b>The controller should stop applying adhesive and turn Off heaters when active.</b>	<b>9</b>

## Step 4: Commissioning the Controller

### NOTES:

- Make sure the Vulcan Jet Controller main power supply is energized or plugged in.
- Facing the Vulcan Jet controller, the power switch is located on the upper- right back corner.

1. Power up the Vulcan Jet controller.

The Commissioning Wizard starts. You will be asked to provide the following system information:

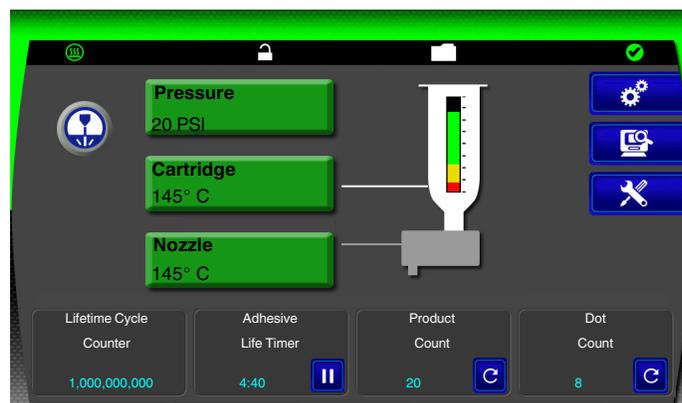
- Language
- Format/Units
- Date and Time
- Cartridge and Nozzle set point temperatures

2. Twist the air cap counterclockwise 45 degrees and lift up to remove it.

- Place a 30cc cleaning or production adhesive cartridge inside the cartridge heater. Make sure the cartridge is flush with the top of the cartridge heater.
- Replace the air cap, starting with the same 45 degree turn position. The beveled top should be positioned opposite of the two side connectors. Place one hand under the Control Assembly from the bottom while you push down hard and twist the air cap clockwise until the air cap is secure.

3. Touch the **Heaters On** button to continue.

4. The last part of the wizard is to perform a stroke adjustment. Follow the instructions on the screen. You will need a 3 mm, 2.5 mm hex driver, and heat-protective gloves to complete this step. When done, the **Home** screen appears



5. Proceed to **Step 5, Testing/Purging the system for the first time.**

### Step 5: Testing/Purging the system for the first time

To successfully test the system, the following must happen:

- Make sure the input type is correct. Most supported robots are NPN (sinking). Refer to **Monitoring Input/Output Statuses** for more information.
- From the robot or parent machine, make sure to send the following input commands:
  - Pressurize Cartridge
  - Robot Ready
  - Applicator Home

**NOTE:** Applicator Home is optional for jetting, but required to adjust the waveform.
- If you are making use of an unsupported robot or a parent machine, make sure to have the E-Stop wired to Pin 9
- The controller must be in a Ready/OK state

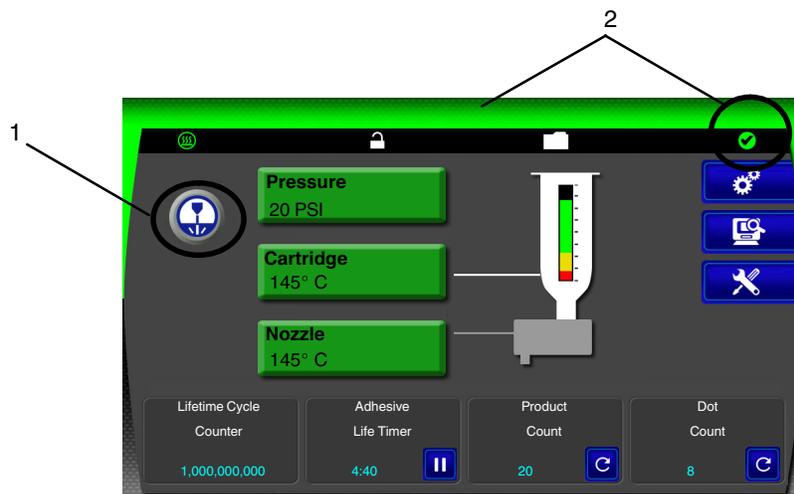


Figure 3-5 Air connections (A: Pneumatic kit/B: Applicator assembly)

1. Purge button

2. Green ribbon band and green check mark

The green ribbon and green check mark indicates that heaters are on, and the cartridge and nozzle are at set point temperature. The controller is in a Ready/OK state - ready for production.

1. Place a collection pan under the applicator, then touch the  button located on the **Home** screen to toggle Purge On.

**CAUTION!** The Vulcan Jet will make a loud sound while purging/jetting.

The system should start jetting. Wait until you see your cleaning or production adhesive come out of the applicator, then toggle Purge Off.

2. Congratulations, you are ready for production.

If you used a cartridge with cleaning material, replace the cartridge with production adhesive. Refer to *Replace/Calibrate Cartridge* later in this manual.

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## *Section 4*

# About the Touch Screen and User Interface



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

## *Overview*

The controller is shipped from the factory with most software settings preconfigured and ready to use. However, there are some settings that you must configure and fine-tune to best fit your manufacturing process.

## Starting the Controller for the First Time

The first time you switch On the controller, the Commissioning Wizard starts, allowing you to:

- calibrate the touch screen, as well as define general system default settings, such as language, time, date, temperature, and pressure formats
- define the two heating zone set point temperatures
- heat the adhesive cartridge to operating temperature
- perform a stroke adjustment.

### **NOTE:**

- Make sure to read and follow the instructions on the screen.
- The Commissioning Wizard should take about 20 minutes to complete, mostly to wait for the heated zones each their set point temperatures.
- You can make changes to these default settings once you are done with this wizard.
- The last procedure in commissioning is adjusting the stroke. This must be done when the controller is in a Ready/OK state.
- You must Purge the system before using it.

## Navigating and Monitoring the Controller

The Vulcan Jet Controller consists of the following primary screens:

- The Home screen
- Master Controls screen
  - System Screen
  - Settings Screen

## About the Home Screen

The Home screen is the default screen.

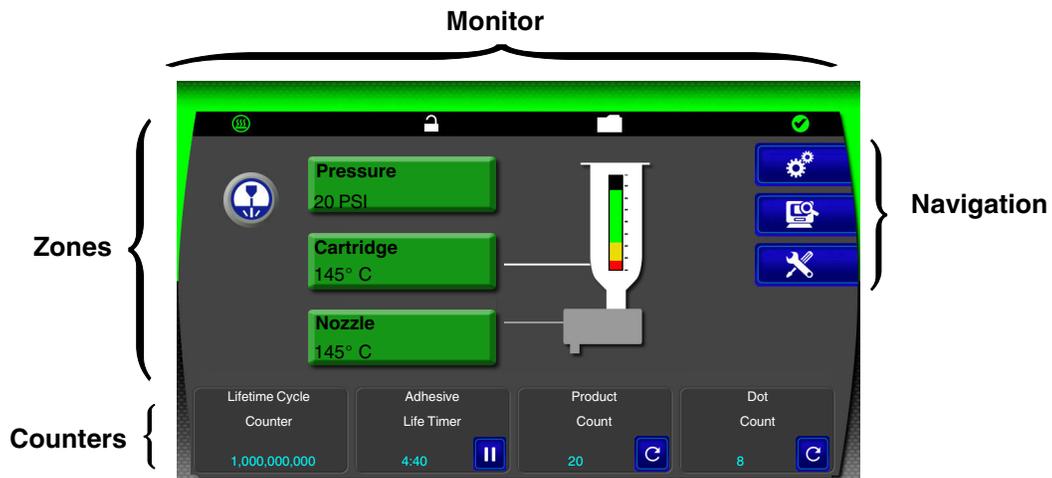


Figure 4-1 The Home Screen

## About the Home Screen *(contd)*

The Home screen is divided into four sections:

Section	Description
Zones	<ul style="list-style-type: none"><li>• Define individual set point temperatures and the pressure set point</li><li>• View state and status for each heated and pressure zones</li></ul>
Counters	<ul style="list-style-type: none"><li>• View the Lifetime Cycle Counter</li><li>• View and pause/resume the adhesive life timer</li><li>• View and reset the Product Count</li><li>• View and reset the Dot Count</li></ul>
Monitor	<ul style="list-style-type: none"><li>• View controller status</li><li>• View state of the Master Heater control, and whether or not password protection is enabled</li><li>• View and manage recipes</li></ul>
Navigation	<ul style="list-style-type: none"><li>• Access the Master Controls screen</li><li>• Access the Settings screen</li><li>• Access the System screen</li></ul>

## Monitoring the Overall Status of the Controller

You can get a quick status of the controller from any screen, just by looking at the color of the Ribbon Status Bar. However, if you want to view more information about the controller, you can view the Top Status Bar, which is available from most any screen, except for Wizards.

The following section details both the Ribbon and Top Status Bars.

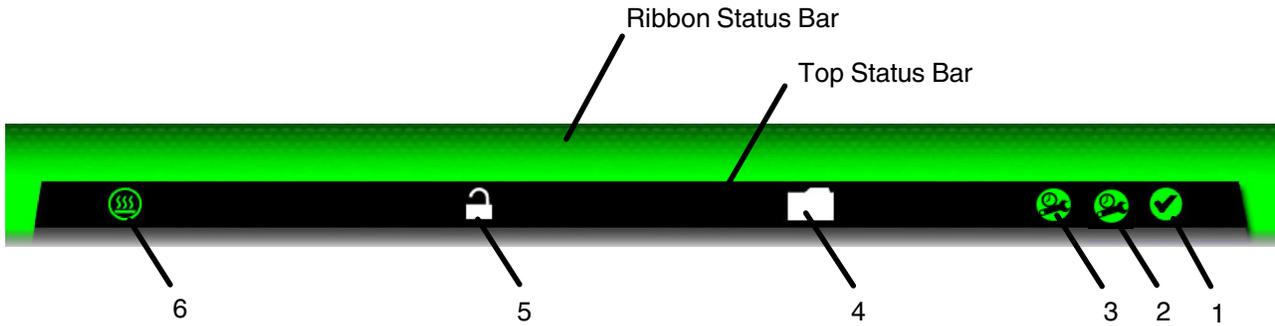


Figure 4-2 The Top Status Bar

### What the Controller Statuses Indicate

The following table details the controller and zone\pump status messages.

Reference number	Top Status Bar Icon	Ribbon Status Bar Color	Heaters	Status/Description
1		Dark Green	On	<b>Ready/OK</b> <ul style="list-style-type: none"> <li>Both the Cartridge and Nozzle heated zones are at set point temperature.</li> <li>No Fault condition exists.</li> <li>No Alert condition exists.</li> <li>Cartridge level is OK.</li> <li>The controller is not in Standby mode (manual, auto, or scheduled).</li> <li>Controller is not in Cartridge Ready Delay mode.</li> </ul>
		Orange	On	<b>Heating</b> Both the Cartridge and Nozzle zones are in the process of heating to their set point temperatures.
				<i>Continued...</i>

**What the Controller Statuses Indicate** (contd)

Reference number	Top Status Bar Icon	Ribbon Status Bar Color	Heaters	Status/Description
1		Gray	Off	<b>Heaters Off</b> <ul style="list-style-type: none"> <li>The Master Heater Control was either manually switched Off, or automatically switched Off as a result of a Fault condition.</li> <li>The controller is in the process of upgrading or restoring to a previous version.</li> </ul>
		Light Blue	On	<b>Ready Delay</b> Although both the Cartridge and Nozzle zones are at set point temperatures, the user has enabled the Ready Delay feature. The system delays the Ready/OK controller status for a user-defined time interval, allowing for enough adhesive to melt for production.
		Yellow	On	<b>Alert</b> Either the system and/or a zone has caused an Alert condition. The controller continues to work, but not properly.
		Red	Off	<b>Fault</b> Either the system and/or a zone has caused a Fault condition. The system automatically switches Off the Master Heater controls.
		Dark Blue	On	<b>Standby</b> The controller was placed into Standby mode using either Manual, Auto, or Scheduled method.
	<i>Continued...</i>			

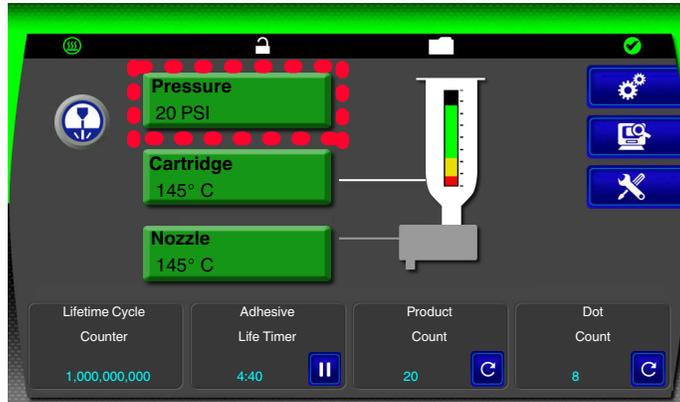
Reference number	Button	Controller Ribbon Color	Heaters	Description
2		Current Status	On or Off	<p><b>Seal Pack Service Reminder</b></p> <p>The defined service interval for number of cycles to replace the seal pack has elapsed. A pop-up message appears. You have the option to just acknowledge the message (touch OK), or you can touch Clear to reset the service interval. After you acknowledge the message, the Service Interval icon appears in the top status bar. You can touch the icon to navigate to the <b>Service Interval</b> screen where you can reset the counter.</p> <p>The controller continues to operate, but servicing may be required.</p>
3		Current Status	On or Off	<p><b>Needle Seat Service Reminder</b></p> <p>The defined service interval for number of cycles to replace the needle seat has elapsed. A pop-up message appears. You have the option to just acknowledge the message (touch OK), or you can touch Clear to reset the service interval. After you acknowledge the message, the Service Interval icon appears in the top status bar. You can touch the icon to navigate to the <b>Service Interval</b> screen where you can reset the counter.</p> <p>The controller continues to operate, but servicing may be required.</p>
4		Current Status	On or Off	<p><b>Recipe</b></p> <p>Touch to access the Recipe Management screen, where you can load/unload a recipe as well as create or delete a recipe.</p>
				<i>Continued...</i>

**What the Controller Statuses Indicate** (contd)

Reference number	Button	Controller Ribbon Color	Heaters	Description
5		Current Status	On or Off	<b>Security</b> Indicates that security is not being enforced.
				<b>Security</b> Indicates that security is being enforced.
				<b>Security</b> Indicates that security is being enforced, and a password code was successfully entered.
6		Green	On	<b>Master Heater Control</b> The Master Heater Control is On.
		Gray	Off	<b>Master Heater Control</b> The Master Heater Control is Off.

## Monitoring the Pressure Zone

Use the **Home** screen to monitor and, if necessary, modify the system pressure.



### About Pressure Statuses

Refer to Table 4-1 for a detailed list and explanation of each pressure status.



Real-time system pressure

Figure 4-3 Pressure button details

## Monitoring the Pressure Zone *(contd)*

Table 4-1 Pressure State Color Reference

Button	Color	Status	Notes
	Bright green	Ready/OK	The pressure zone is ready for operation.
	Light green	Waiting for Ready	One of the following is true: <ul style="list-style-type: none"> <li>The system itself and/or one or both of the heated zones are in a fault condition.</li> <li>The system is either in the process of heating, or the system is in Standby mode.</li> </ul>
	Red	Fault	System pressure has either risen above or fallen below the Fault threshold level. <b>NOTE:</b> In a fault condition, the Master Heater control is switched Off. Production stops.

**NOTE:**

- You can modify the pressure set point regardless of system state or status.
- The state of a zone is independent of the overall status of the applicator/controller.

## Monitoring the Heated Zones

Use the **Home** screen to monitor and if necessary, modify the temperature of the two heated zones (**Cartridge** and **Nozzle**).

### NOTE:

- Although you cannot disable these two heated zones, you can make their set point temperatures very low.
- You cannot rename these two heated zones.

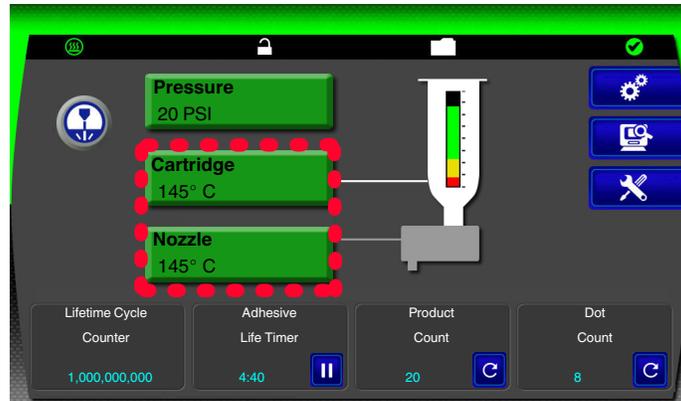


Figure 4-4 About the Heated Zones

### About Zone States and Statuses

Figure 4-5 details what an enabled zone displays. Refer to Table 4-2 for a detailed list and explanation of each zone state and status.

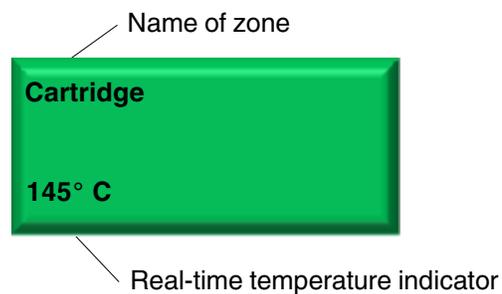
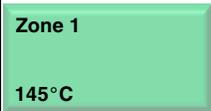


Figure 4-5 Zone button Details

## Monitoring the Heated Zones *(contd)*

Table 4-2 Zone Status Color Reference

Button	Color	Status	Notes
	Bright green	Ready/OK	The zone has reached its set point temperature.
	Light green	Waiting for Ready	The zone is in the process of heating to its set point temperature and/or one of the following is true: <ul style="list-style-type: none"> <li>The other zone or pressure component is in an alert or fault condition.</li> <li>The system itself is in an alert or fault condition.</li> </ul>
	Yellow	Alert	The system has detected an alert condition. <b>NOTE:</b> The controller continues to operate, but attention may be required..  In some alert conditions, you have two minutes from the time the system detects an alert condition before the alert condition is upgraded to a fault condition.
	Red	Fault	The system has detected a fault condition. <b>NOTE:</b> In a fault condition, the Master Heater control is switched Off. Production stops.
	Dark Blue	Standby	The system was placed into Standby.

**NOTE:** You can modify heated zones regardless of system state or status.

## Monitoring the Counters

Use the **Home** screen to view system statistics, such as Lifetime Cycle Counter, Adhesive Lifetime Counter, Product Count, and Dot Count.

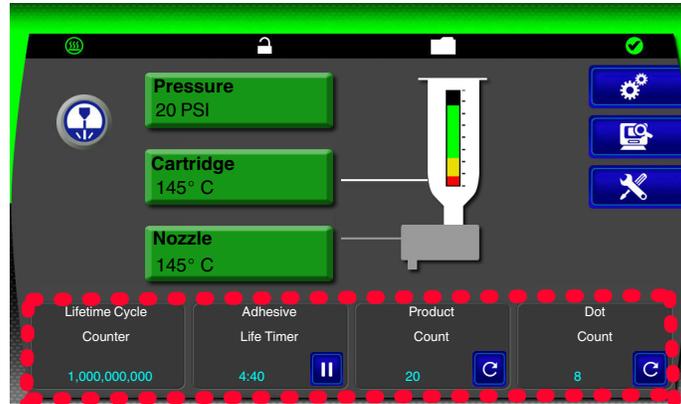
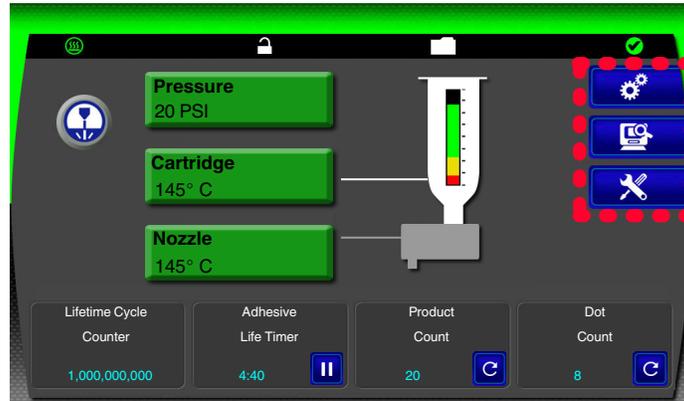


Table 4-3 Zone Status Color Reference

Counter	Options	Displays ...
Lifetime Cycle	None	A continuous view-only count of the total number of completed cycles this controller has done since it was commissioned.  <b>NOTE:</b> You can decide whether or not to reset this counter when you do a factory reset.
Adhesive Life Timer	Toggle Pause/Continue	The amount of time to elapse before the controller displays a Confirmation message, asking you if you want to replace the cartridge now. If you touch No, the counter turns Yellow, indicating that it is past the recommended usage life. If you touch Yes, then the Replace Cartridge Wizard automatically starts.  <ul style="list-style-type: none"> <li>• Timer automatically resets and starts when you use the Replace Cartridge wizard.</li> <li>• Time accrues even when the system is switched Off.</li> <li>• Although you can pause the counter, it is generally not recommended.</li> </ul>
Product Count	Reset	The number of products completed. A product is considered complete when the actuator returns to its Home position.  <b>NOTE:</b> This counter does not interact with any other counter or log.
Dot Count	Reset	The number of dots the controller created. A dot is counted when the actuator completes one complete waveform cycle.  <b>NOTE:</b> This counter does not interact with any other counter or log.

## About the Home Screen Navigation

Use the **Home** screen navigation buttons to access the following:



Button	Touch to access the ...
	<p><b>Master Controls screen.</b></p> <ul style="list-style-type: none"> <li>• Switch On or Off the Master Heater and Standby controls.</li> <li>• Access the Settings <i>and</i> Systems screens as well.</li> </ul>
	<p><b>Settings screen.</b></p> <ul style="list-style-type: none"> <li>• Modify Applicator settings, such as creating a Waveform and to start the Stroke Adjustment Wizard.</li> <li>• Modify Cartridge settings and options, such as Level Thresholds, the Adhesive Lifetime Counter, Ready Delay, as well as to start the Replace/Calibrate Wizard.</li> <li>• Modify Pressure settings and options, such as Set Point, Compensation, and Thresholds.</li> <li>• Modify Temperature Limits.</li> </ul>
	<p><b>System screen.</b></p> <ul style="list-style-type: none"> <li>• Modify system-related defaults, such as Formats/Units, Date/Time, Language, Display, and System Security.</li> <li>• Modify and manage the Seal Pack and Needle Seat Service Reminders.</li> <li>• View system information.</li> <li>• Access the <b>Administration</b> screen to modify and manage advanced system settings, such as:                             <ul style="list-style-type: none"> <li>• System Reset, Diagnostics Log, Reset System Passwords, Recipes, and Network Configuration.</li> <li>• Enable/disable Lockout Communications option.</li> </ul> </li> </ul>

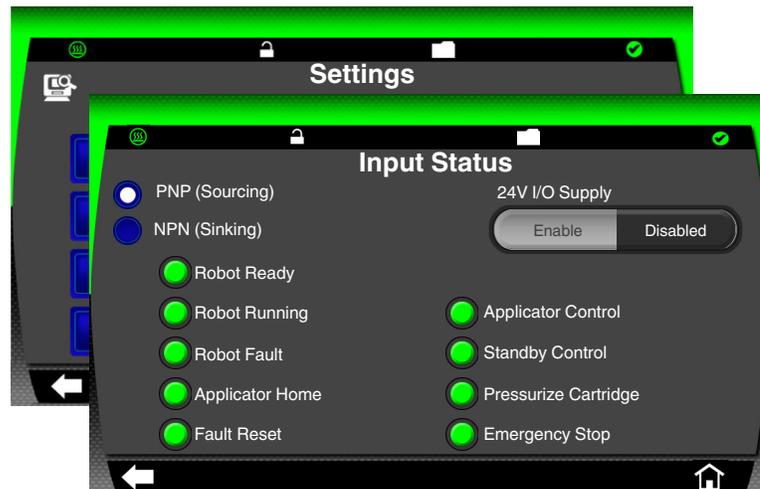
## Monitoring Input/Output Statuses

### *Input Statuses*

You can view the type of Input being used, as well as the hard-wired inputs status. Refer to the table below for details about each input.

**NOTE:** The inputs are hard-wired and cannot be changed to indicate anything else.

Status Indicator	Description
	The input is detected and/or connected.
	The input is undetected and/or unconnected.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

**Input Statuses** (contd)

2. Touch **View Input Status**.
3. Decide if you want to change the input type from PNP (Sourcing) - the default to NPN (Sinking). Most supported robots are NPN.

Input Type	Description
PNP (Sourcing)	Select for signal sources that switch the input to 24V.
NPN (Sinking)	Select for signal sources that switch the input to 0V.

4. Decide if you want to drive the inputs with a relay or switch contact.
  - Disable this control when connecting to a robot that is sourcing (PNP) 24V to prevent power supply overloads.
  - You can switch this voltage through the relay contacts to drive the inputs. Negative (-) Inputs must be set for Sourcing (PNP).

**NOTE:** For signal sources that actively drive the signal to both 24V and 0V, select PNP for the input type to maintain positive logic (24V input is the active state). An NPN setting will provide negative logic (0V is the active state).

## Input Status - Details

Pin Assignment on I/O Connector	Input	Description
19	Applicator Control from parent machine (robot)	When active, causes the applicator to fire a waveform. <b>NOTE:</b> The Vulcan Jet Controller must be in a Ready/OK state.
18	Fault Reset	When active, (energized state) pulse resets all alarms and warnings. Equivalent to the panel reset function.
20	Standby Control	When active, causes the unit to go into Standby mode.
14	Robot Ready	When active, the robot is ready to make products.
22	Gun OFF time adjust (analog)	0-10V analog input. Used to adjust the off time of the applicator. 0 - 3V = 3 ms, 10V = 10 ms. <b>NOTE:</b> This input must be enabled from the user interface before it is used.
17	Applicator Home	When active, indicates that the applicator is in the Home position.
15	Robot Running	The robot is in motion when the following three outputs are active: <ul style="list-style-type: none"> <li>• Pressurized</li> <li>• Robot Ready</li> <li>• Glue On</li> </ul>
16	Robot Fault	When active, a fault has been detected in the robot. The Vulcan Jet Controller stops applying adhesive.
21	Pressurize cartridge	When active, the controller applies air pressure to the cartridge and measures adhesive level.
9	Emergency Stop	When active, the controller stops applying adhesive and switches Off the Master Heater control.

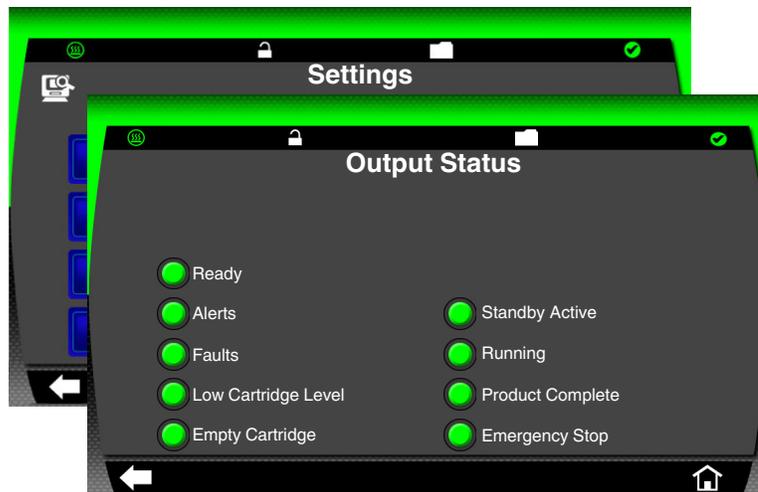
**NOTE:** Verify the input type *before* changing it. If it is wrong, the inputs will not work.

### Output Statuses

You can view the hardwired output status. Refer to the table below for details about each output

Status Indicator	Description
	The output is detected and/or connected.
	The output is undetected and/or unconnected.

**NOTE:** The Fault and Alert outputs are inverted, meaning that if an Alert or Fault condition exists, the corresponding indicator will be dimmed.



1. From the **Home** screen, do one of the following:

- Touch  .
- Touch  , then touch  button.

2. Touch **View Output Status**.

## Output Status - Details

Pin Assignment on I/O Connector	Input	Description
2	Any alert	Output is energized (On) whenever an alert is generated.
3	Any fault	Output is energized (On) whenever a fault is generated.
6	Standby Active	Output is energized when heaters are in Standby mode.
1	Ready	Unit is powered On, no fault is present (alerts do not inhibit ready), the Master Heater control is switched On, and the Cartridge and Nozzle zones are at set point temperature.
8	Product Complete	When active, indicates that a product has been completed. This output stays active until a new product is started.
4	Low cartridge level	Active when the cartridge adhesive level reaches a predefined level.
5	Empty cartridge	Active when the cartridge adhesive level reaches its predefined level.
7	Running	Active when a product is jetting.
N/A	Jetting Applicator Control	An analog output that controls the waveform applied to the piezo element.
N/A	Dump pressure	A second solenoid output that removes pressure from the cartridge.

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## *Section 5*

# Basic Operation and Controller Configuration



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

## Overview

The controller is shipped from the factory with most settings and the system already preconfigured and ready to use. However, there are some settings that you must configure and fine-tune to best fit your manufacturing process.

The following are basic operational topics discussed in this chapter.

- Using the Master Heater and Standby Controls
- Purging
- Replacing the Cartridge
- Creating an Input Waveform
- Managing Recipes

**NOTE:** Before operating the system for the first time, ensure that you have completed the procedures in the *Installation* and *Setup* sections.

## Special Operating Considerations for PUR Adhesive

Because the viscosity of PUR adhesive increases significantly when the system is at operating temperature, the applicator should be heated only for operation or cleaning. If the applicator is held at operating temperature longer than the life of the PUR adhesive, then the risk of cured material inside the applicator increases.

However, even in the best operating scenario it is still likely that over time the PUR will block the inner adhesive passages, requiring the applicator to be cleaned. When the applicator is cleaned, you *must* remove cured PUR adhesive from all adhesive passages (see Figure 5-1), not just the adhesive passages inside the module. Refer to *Cleaning the Applicator* on page 7-8.

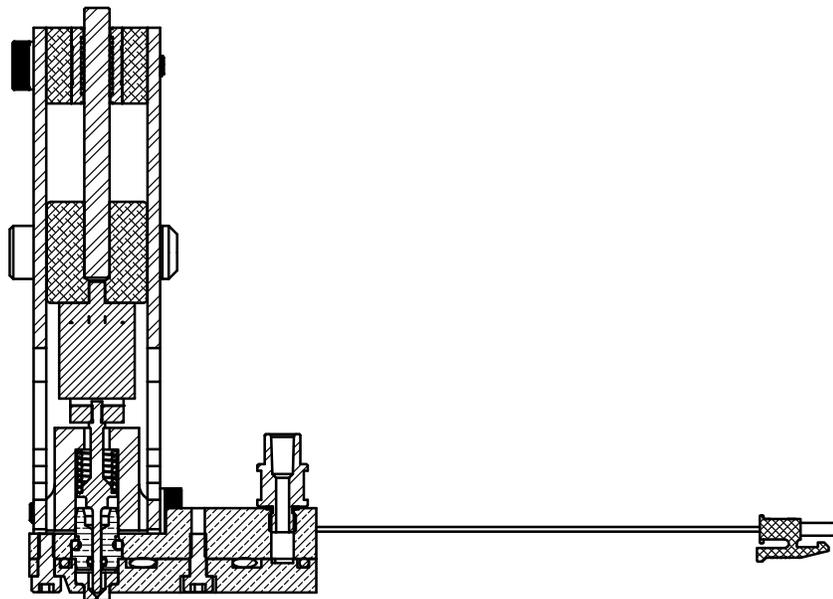
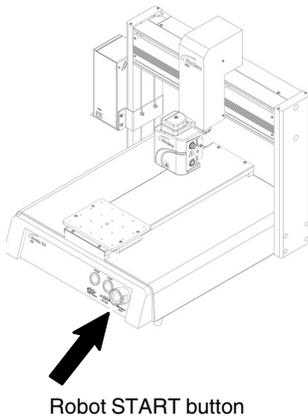


Figure 5-1 Diagram of Adhesive Passages

### ***Daily Start-up Procedure***

1. Switch On the robot.
2. Switch On the controller. The heaters automatically switch On.
3. Turn on the air supply.
4. Verify the cartridge status. You will have to replace the cartridge if:
  - The Adhesive Lifetime Counter has elapsed.
  - The adhesive level is low.
    - Note: Refer to *Replacing the Cartridge* on page 5-6 for more information.
5. The controller is ready for production when:
  - The heated zones are at set point temperature.
  - There are no system or component alert or fault messages.
  - The controller is not in Cartridge Ready Delay or Standby modes.
    - **Tip:** Look in the upper-right hand corner of the touch screen. You should see the following Ready/OK status icon .
6. Place the product on the moving plate and press the START button on the robot to run products.



## Overnight and Long-Term Shutdown Procedures

Because PUR adhesive reacts with moisture in the air, exposure of the PUR adhesive in the system to air must be minimized. The procedures below represent the best practices for overnight or long-term (longer than overnight) shutdown.

### Overnight Shutdown

1. Shut down the system and allow the applicator to cool, **leaving the current cartridge in the applicator**. This retains the seal and minimizes the exposure to air.
2. The next morning, follow the *Daily Startup and Operation* procedure earlier in this section to replace a new cartridge. Refer to *Replacing the Cartridge* on page 5-6 for more information.

### Long-Term Shutdown

1. Place a large collection pan under the applicator.

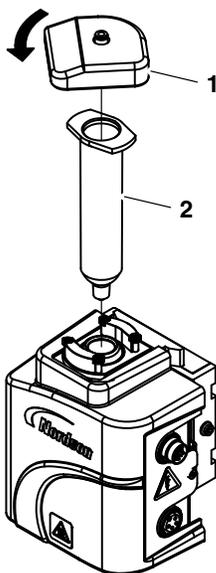


**WARNING!** Risk of burns. When the last drops of adhesive are being purged, the pressurized air will cause some adhesive spray. Make sure that the collection pan is large enough to shield you from the spray.

2. Either touch the Purge button from the controller's Home screen, or from the the robot, until all adhesive is dispensed from the cartridge.

**CAUTION!** Make sure the flushing material is compatible with the PUR adhesive being used. Refer to the SDS for both the adhesive and the flushing material.

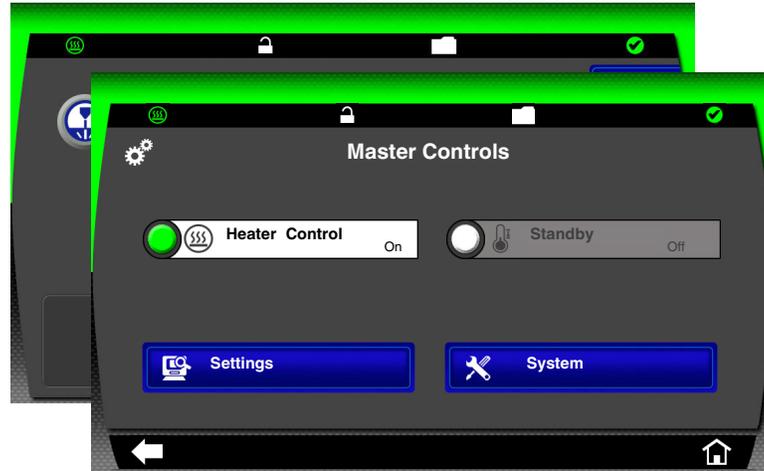
3. Load a flush cartridge in the applicator as follows (see figure at left):
  - a. Remove the applicator air cap (1) and remove and discard the adhesive cartridge (2).
  - b. Remove the caps from both ends of a 30cc flush cartridge (2).
  - c. Insert the flush cartridge in the applicator, with the tapered end pointing down.
  - d. Reinstall the applicator air cap.
4. Purge until a clean flow of flush material is achieved.
5. Leave the flush cartridge in the applicator.
6. Turn off the air supply.
7. Turn off the controller.
8. Turn off the robot.



## Using the Master Heater and Standby Controls

Use the **Master Controls** screen to switch On/Off the following:

- Heaters (On by default)
- Standby (Off by default)



1. From the **Home** screen, touch .
2. Touch the color-coded button to switch On or Off the following:

Master Control	Description
Heater Control	Manually switch the heaters On/Off. <b>NOTE:</b> The Master Heater control automatically switches Off when the controller is in a fault condition.
Standby Control	Manually switch the controller in or out of Standby mode.

3. Touch .

**NOTE:** Refer to the previous chapter for more information about what you can do from the **Settings** and **System** screens.

### What the Button Colors Indicate

The following table details what the Heater and Standby master control button indicate.

Button	Color	Description
	Green	On
	White	Off

## Purging

It is recommended that you purge the system to clear debris within the delivery system after changing a cartridge. You can purge the system from the Vulcan Jet controller only if it is in a Ready/OK state and if the applicator is in its Home position.

You can purge the system by toggling the purge button from:

- The Vulcan Jet Home screen -  .
- The robot itself - **Dispenser Purge** button on.

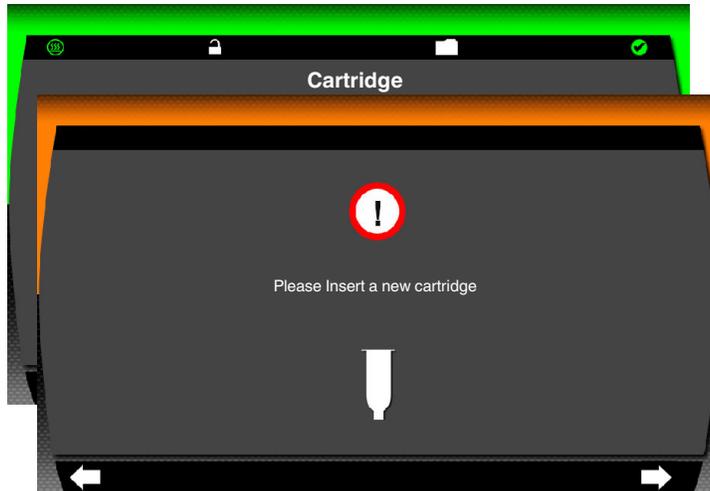
**NOTE:** Refer to the previous section *Overnight and Long-Term Shutdown Procedures* on page 5-4 for more information.

## Replacing the Cartridge

It is strongly recommended that you use the controller's **Replace/Calibrate Cartridge Wizard** when replacing the cartridge. This allows the system to properly manage the state and status of the controller, as well as prepare and calibrate the cartridge for production.

**NOTE:**

- The system checks and updates the adhesive level only upon receiving the Pressurize Syringe input signal.
- The controller automatically resets the Adhesive Lifetime Counter.
- If you have a cartridge pre-warmer, you may want to adjust or even disable the Cartridge Ready Delay option.



Start the Replace/Calibrate Cartridge Wizard by:

- Clicking **YES** from the *Low Level Alert* message
- Clicking **YES** from the *Adhesive Life Timer Alert* message
- Clicking **OK** from the *Empty* message

Navigate through the user interface as follows:

1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, | **Cartridge**, then **Replace/Calibrate**. The controller changes status from Ready/OK to Heating and the Replace/Calibrate Wizard starts. Read and follow the instructions on the screen.
3. When the cartridge is ready, the controller changes status from **Heating** to **Ready/OK** and automatically returns you to the Home screen

**NOTE:**

- You cannot exit out of this wizard.
- If you do not use the **Replace/Calibrate Cartridge Wizard** and if the adhesive level was more than half empty, then the system will display a *Do you want to reset the Adhesive Life Timer?* Message. If you do not reset the timer, you may receive false Adhesive Life Timer alert messages.

## Creating an Input Waveform

To create an Input Waveform, modify the Input Waveform time settings and then test them.

### NOTE:

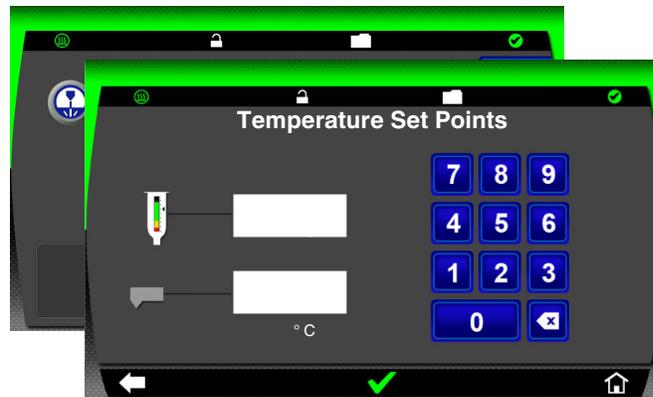
- You can save system and waveform settings to a recipe or job file that you can re-use or share (import/export) with other Nordson Vulcan Jet controllers.
- You cannot access the Input Waveform screen if the system is currently in production.
- The Vulcan Jet controller must be in a Ready/OK state, and the applicator in its Home position.

The following sections describe and detail each step in this process.

### *Modifying Zone Set Point Temperatures*

Refer to the SDS that came with your PUR adhesive for minimum and maximum operating temperatures.

Default	Minimum	Maximum
115°C	37.8°C	190 °C
240 °F	100°F	374°F



1. Access the **Home** screen and touch the zone for which you want to modify the set point temperature.

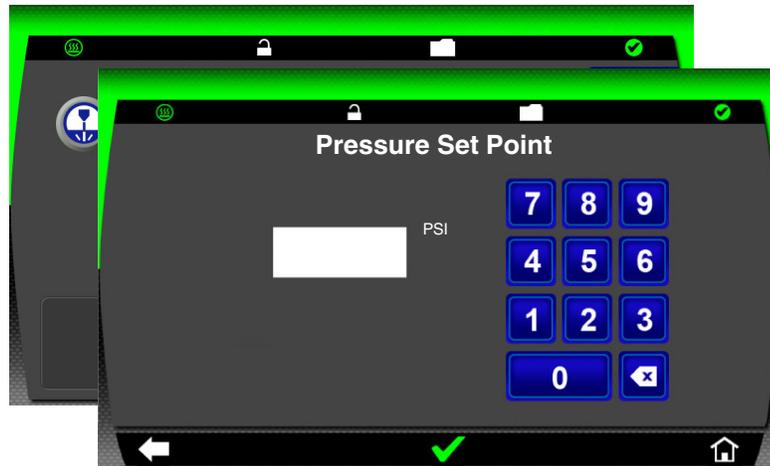
2. Enter the temperature you want for this zone. When done, touch  .

**NOTE:** Although the Cartridge and Nozzle buttons are displayed as two separate zones, the system allows you to modify both set points together.

### ***Modifying System Pressure Set Point***

Refer to the SDS that came with your PUR adhesive for minimum and maximum operating temperatures.

<b>Default</b>	<b>Minimum</b>	<b>Maximum</b>
20 PSI	5 PSI	50 PSI
1.38 Bar	0.34 Bar	3.45 Bar
137.90 kPa	34.47 kPa	344.74 kPa



1. Access the **Home** screen and touch the pressure button.
2. Enter the pressure set point you want to use. When done, touch  .

**NOTE:**

- When purging, the system uses this pressure set point along with the current Input Wave Form settings.
- Use the Pressure Compensation option to help the controller maintain system pressure.

### Creating a Waveform

To create a dot waveform, modify the applicator input signal duration. You can create one of two waveform types:

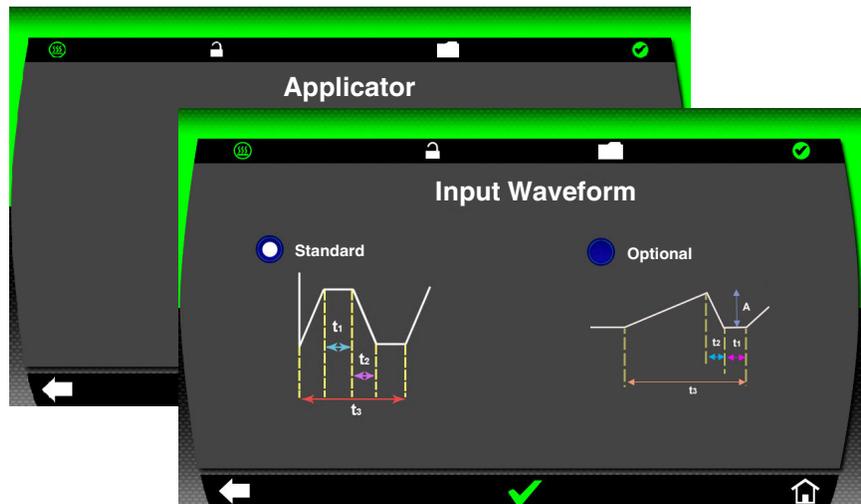
- Standard waveform
- Optional waveform.

**NOTE:** Use the standard waveform as a starting point. If you do not achieve desired results, try the optional waveform.

1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **Settings | Applicator** then touch **Input Waveform**.

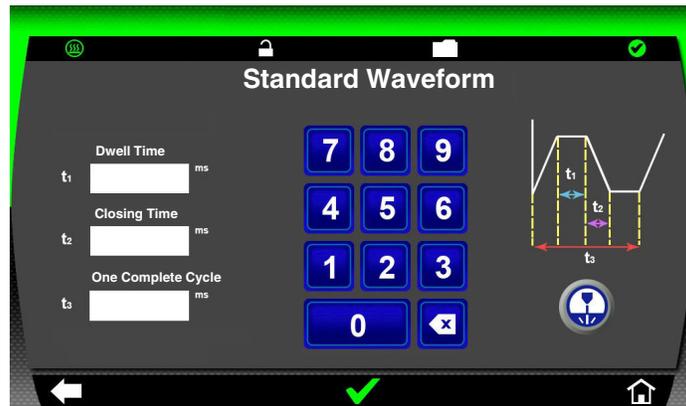


3. From the Input Waveform screen, select one of the following:

- **Standard (default)**
- **Optional.**

**Creating a Standard Waveform**

	<b>Default</b>	<b>Minimum</b>	<b>Maximum</b>
Dwell Time (t1)	0.05 milliseconds (ms)	0.05 ms	0.2 ms
Closing Time (t2)	0.3 ms	0.2 ms	0.4 ms
One Complete Cycle (t3)	3 ms	3 ms	10 ms



1. From the **Standard Waveform** screen, enter the following information:

<b>Waveform Control</b>	<b>Description</b>
Dwell Time	Controls the amount of time in ms that the applicator dispenses adhesive
Closing Time	Controls the amount of time in ms that it takes to stop dispensing adhesive
One Complete Cycle	The total amount of time in ms that it takes to dispense one dot

2. Touch  to test your waveform. Make sure to have something under the applicator so you can view the dot pattern.
3. Touch  when done.

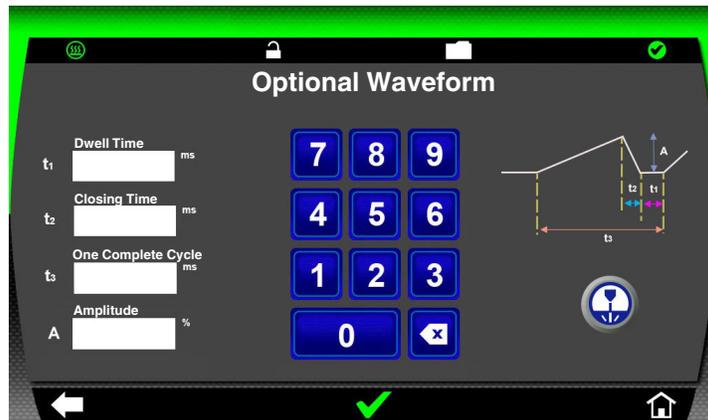
**NOTE:**

- The robot must be in its Home position and the controller must be in a Ready/OK status.
- You can save a waveform or pattern to a recipe for later use.

**Creating an Optional Waveform**

**NOTE:** To create an optional waveform, you must enter an amplitude value for the waveform.

	Default	Minimum	Maximum
Closing Time (t2)	0.2 ms	0.2 ms	0.5 ms
One Complete Cycle (t3)	3 ms	3 ms	10 ms
Dwell Time (t1)	0.2 milliseconds (ms)	0.05 ms	0.5 ms
Amplitude (A)	100%	50%	100%



1. From the **Optional Waveform** screen, enter the following information:
2. Enter the following information.

Waveform Control	Description
Closing Time	Controls the amount of time in ms that it takes to stop dispensing adhesive
One Complete Cycle	The total amount of time in ms that it takes to dispense one dot
Dwell Time	Controls the amount of time in ms that the applicator dispenses adhesive
Amplitude	Controls the waveform amplitude in percent of Maximum

- Touch  to test your waveform. Make sure to have something under the applicator so you can view the dot pattern.

3. Touch  when done.

**NOTE:**

- The robot must be in its Home position and the controller must be in a Ready/OK status.
- You can save a waveform or pattern to a recipe for later use.

## Managing Recipes

Use recipes to save production settings such as temperature, pressure, and waveform, and other controller settings including standby events and security settings to a file that you can use, modify, and share with other Vulcan Jet controllers.

### NOTE:

- You can share recipes with other Vulcan Jet controllers.
- Recipes are stored in system memory.
- The controller retains the settings of the previously loaded recipe, even if you delete or decide to not use a recipe.

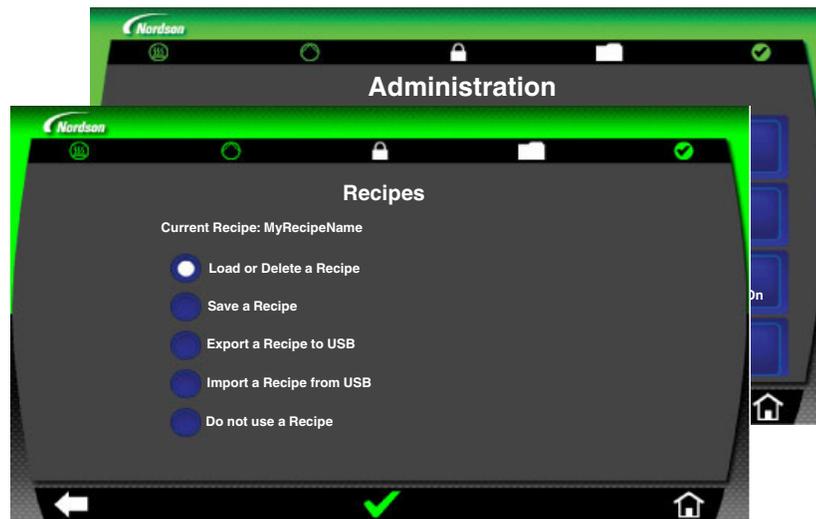


Figure 5-2 Accessing Recipes from the Administration Screen

1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button, then touch **Administration**

2. Decide what you want to do and touch  to continue.

Task	Touch	Description
Load a recipe	Load or Delete a Recipe	<ol style="list-style-type: none"> <li>1. Select an existing recipe you want use.</li> <li>2. Touch <b>Load</b>.</li> </ol>
Delete a recipe		<ol style="list-style-type: none"> <li>1. Select a recipe you no longer want to use.</li> <li>2. Touch <b>Delete</b>.</li> </ol> <p><b>NOTE:</b> The melter retains the settings of the previously loaded recipe.</p>
Create a new recipe	Save a Recipe	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Configure and test controller settings until they meet your manufacturing requirements.</li> <li>2. Access the <b>Recipes</b> screen, touch Save <b>Recipe</b>, and enter an easily identifiable recipe name.</li> </ol>
Modify an existing recipe		<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• To update the recipe settings, enter the identical recipe name.</li> <li>• The system unloads the currently loaded recipe, then saves the new settings and automatically loads the updated recipe.</li> </ul>
Export a recipe to a USB drive	Export a Recipe to USB	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Insert the USB drive into the controller USB port.</li> <li>2. Touch <b>Export a Recipe to USB</b>, then select which recipe you want to export.</li> <li>3. Touch .</li> </ol> <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• This option is unavailable if the system cannot detect a USB drive.</li> <li>• Only one recipe can be exported at a time.</li> <li>• The first time that you export a recipe to a USB drive, the system creates a <b>/Recipes</b> folder on the USB drive. The system exports all recipes to this folder.</li> </ul>

Task	Touch	Description
Import a recipe from a USB drive	Import a Recipe from USB	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Insert the USB drive into the melter USB port.</li> <li>2. Touch <b>Import a Recipe from USB</b>, then select which recipe you want to import. The system looks in the <i>/Recipes</i> folder on the USB drive.</li> <li>3. Touch .</li> </ol> <p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>• This option is unavailable if the system cannot detect a USB drive.</li> <li>• Only one recipe can be imported at a time.</li> <li>• The system can store a maximum of 50 recipes.</li> </ul>
Unload and/or not make use of any recipe	Do not use a Recipe	<p>Unloads the currently loaded recipe</p> <p>Select this option when troubleshooting or performing maintenance on the controller.</p> <p><b>NOTE:</b> The melter retains the settings of the previously loaded recipe.</p>

### ***What's Being Saved in a Recipe***

The following highlights what a recipe is saving to a file.

Table 5-1 Recipe Details

<b>General Information</b>	<b>Administration Information</b>
<ul style="list-style-type: none"> <li>• Software Version</li> <li>• Language</li> <li>• Date, Time, Temperature, and Pressure format</li> <li>• Configuration settings for standard and expanded Inputs and Outputs</li> <li>• Display Settings</li> </ul>	<ul style="list-style-type: none"> <li>• Service Alerts (enabled or disabled)</li> <li>• Service Interval values</li> <li>• Numeric password code</li> <li>• Password Timeout value</li> </ul>
<b>Standby Temperature Information</b>	<b>Temperature and Pressure Zone Information</b>
<ul style="list-style-type: none"> <li>• Standby Temperature</li> <li>• Standby (enabled or disabled)</li> <li>• Auto Exit Standby (enabled or disabled)</li> <li>• Auto Exit Standby Time value</li> <li>• Auto Heaters Off Time value</li> <li>• Auto Standby Time value</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature and Pressure Set Point values</li> <li>• Temperature Threshold values</li> <li>• Pressure Compensation (enabled or disabled) and values</li> </ul>
<b>Cartridge Information</b>	<b>Waveform information</b>
<ul style="list-style-type: none"> <li>• Ready delay (enabled or disabled and value)</li> <li>• Level threshold values</li> <li>• Adhesive lifetime counter</li> </ul>	<ul style="list-style-type: none"> <li>• Waveform (t1, t2 and t3) values</li> <li>• Applicator Mode</li> </ul>

## Section 6

# Advanced Controller Configuration



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

## *Overview*

The controller is shipped from the factory with most temperature, pressure and jetting system settings preconfigured and ready to use. However, there are some settings that you must configure and fine-tune to best fit your manufacturing process.

The following are advanced jetting configuration topics discussed in this chapter.

Section	Tasks
Advanced Temperature Settings	<ul style="list-style-type: none"> <li>• Defining temperature limits</li> <li>• Defining ready delay</li> <li>• Defining standby settings</li> </ul>
Standby Mode Settings	<ul style="list-style-type: none"> <li>• Using on-demand standby</li> <li>• Defining manual standby</li> <li>• Defining standby temperature offset</li> </ul>
Advanced Applicator Settings	<ul style="list-style-type: none"> <li>• Performing a stroke adjustment</li> <li>• Changing applicator modes</li> </ul>
Advanced Pressure Settings	<ul style="list-style-type: none"> <li>• Defining pressure compensation</li> </ul>
Advanced Cartridge Settings	<ul style="list-style-type: none"> <li>• Defining cartridge level thresholds</li> <li>• Defining adhesive lifetime settings</li> </ul>
System Settings	<ul style="list-style-type: none"> <li>• Accessing system settings</li> <li>• Defining format and units</li> <li>• Defining data and time</li> <li>• Defining service intervals</li> <li>• Defining language preference</li> <li>• Defining display settings</li> <li>• Establishing password protection</li> <li>• Defining security settings</li> <li>• Viewing firmware version information</li> <li>• Viewing heaters On hours</li> </ul>
Configuring Password Protection	<ul style="list-style-type: none"> <li>• Establishing password protection</li> <li>• Defining system security settings</li> </ul>
Administrative Options and Settings	<ul style="list-style-type: none"> <li>• Accessing options and settings</li> <li>• Upgrading/downgrading software and firmware</li> <li>• Viewing the event log</li> <li>• Resetting to system defaults</li> <li>• Resetting password codes</li> <li>• Locking out melter communication</li> <li>• Configuring Network Settings</li> </ul>

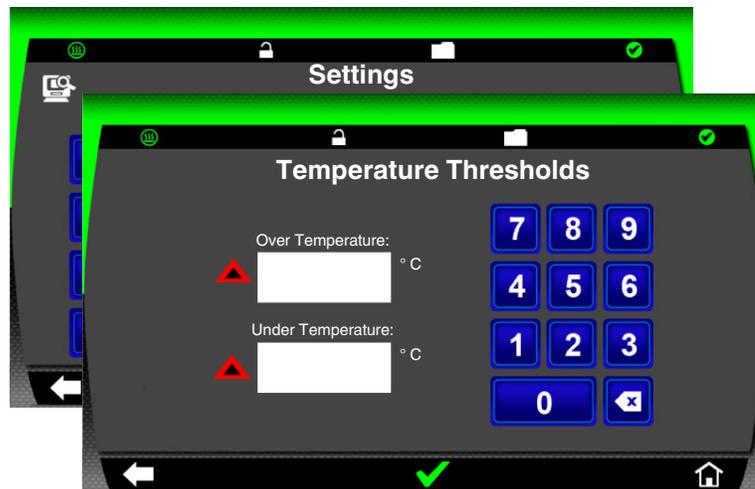
## Advanced Temperature Settings

### *Modifying System Temperature Thresholds*

Use temperature thresholds to prevent the Cartridge and Nozzle heated zones from varying either to high or low from their set point temperatures, thereby changing the viscosity of the PUR adhesive.

Default	Minimum	Maximum
Over Temperature Threshold		
25°C / 45°F	5°C / 9°F	60 °C / 110°F
Under Temperature Threshold		
50°C / 90°F	9°C / 16°F	60 °C / 110°F

**NOTE:** When either an over or under temperature condition is detected, the controller initially displays an Alert message. You have 2 minutes to resolve the condition before the Alert escalates to a Fault condition, thereby causing the Heaters to switch Off – machine stop.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, | **Temperature**, then modify the Over/Under temperature threshold that you want to use.

3. Touch .

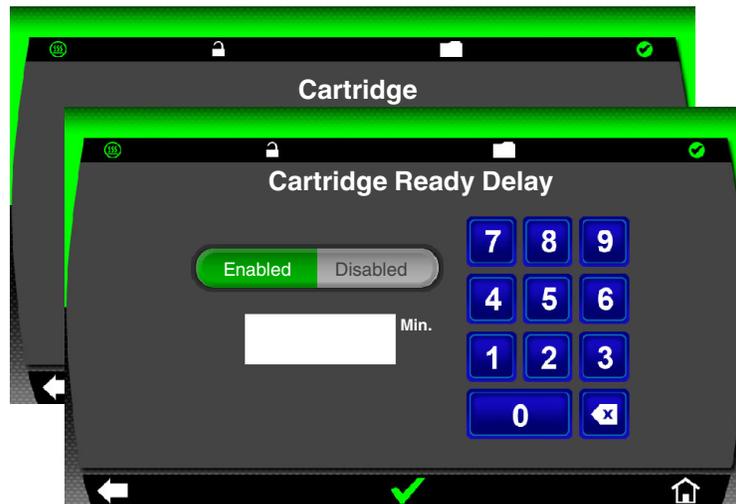
## Configuring Cartridge Ready Delay

Use the Cartridge Ready Delay option to define the amount of time you want to elapse after the zones have reached their set point temperatures before the Vulcan Jet Controller status is **Ready/OK**. This delay allows for the adhesive to melt, ready for production.

Default	Minimum	Maximum
Disabled	---	---
5 minutes	1 minute	60 minutes

### NOTE:

- The ready delay time only functions when the temperature of the Cartridge, at the time the controller is turned On, is more than 27 °C (50 °F) from its set point temperature.
- The ready delay time begins when all components are within 3 °C (5 °F) of their respective set point temperatures.
- You cannot bypass the Cartridge Ready Delay.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **Cartridge**.

3. Touch **Ready Delay**. If you decide to Enable this feature, then enter the number of minutes you want to delay the Ready/OK status.

4. Touch .

## Configuring Standby Mode Settings

There are two Standby options:

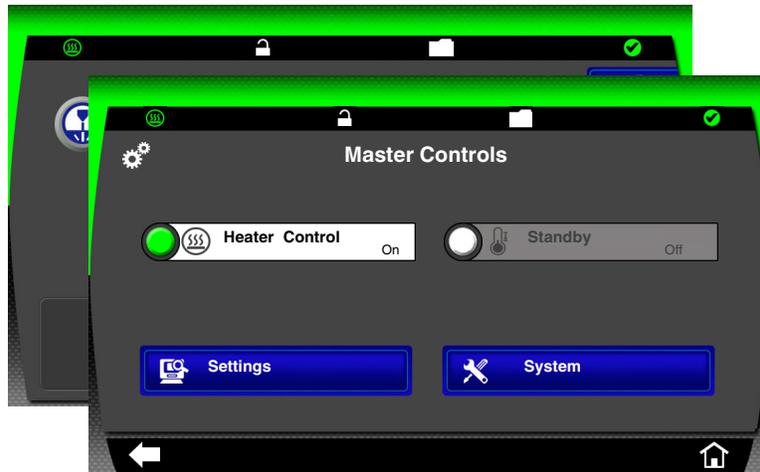
- On-demand enter/exit standby from the Master Controls screen.
- Manual Standby

The following section explains these standby options in greater detail.

### Using On-Demand Standby

You can enter into or exit out of Standby mode from the Master Controls screen.

**NOTE:** Use this Master Standby control to also exit out of Manual Standby mode.



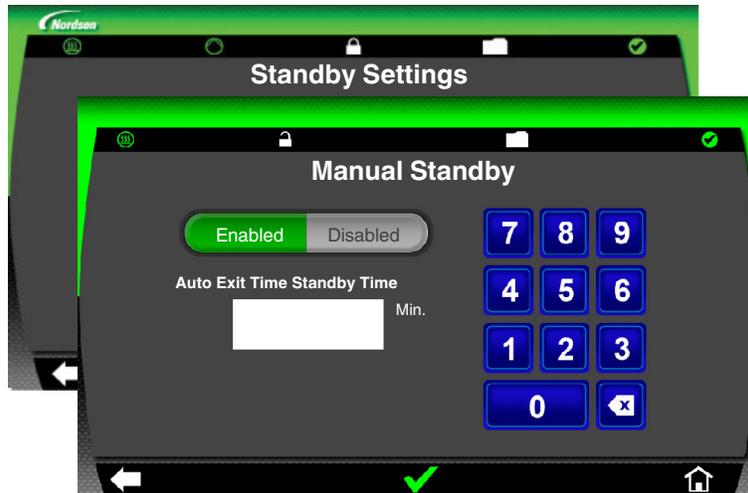
1. From the **Home** screen, touch .
2. Decide if you want to enter into or exit out of the Standby feature.

Button	Color	Description
	Green	Enter into Standby mode
	White	Exit out of Standby mode

## Configuring Manual Standby

Use Manual Standby to define the elapsed time since the controller was manually placed into Standby mode before the melter automatically exits Standby mode.

Item	Default	Minimum	Maximum
Manual Standby	Off	---	---
Auto Exit Standby Time	1 minute	1 minute	180 minutes



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **Standby**.

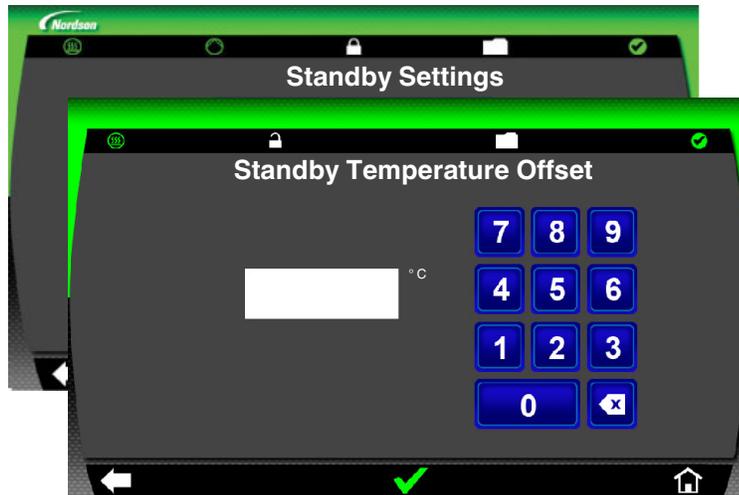
3. Touch **Manual Standby**. If you decide to Enable this feature, then enter the Auto Exit Standby Time you want to use.

4. Touch .

## Defining Standby Temperature Offset

Use this option to prevent adhesive charring by bringing all enabled heated zones down 50°C (default) from current set point temperature while in any Standby mode.

Default	Minimum	Maximum
50°C / 90°F	5°C / 10°F	60°C / 110°F



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **Standby**.

3. Touch **Standby Temperature Offset** and enter the temperature offset that you want to use while the controller is in Standby mode.

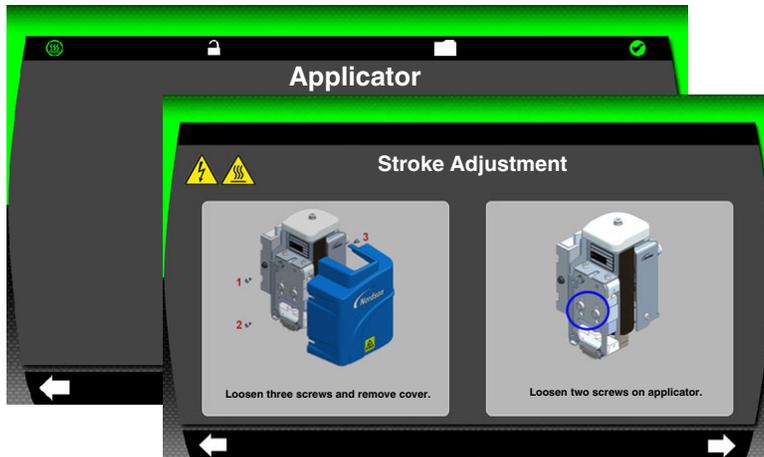
4. Touch .

## Advanced Applicator Settings

### *Performing a Stroke Adjustment*

As part of the initial commissioning of the Vulcan Jet controller, a stroke adjustment is performed. Typically, you perform a stroke adjustment again only when you replace the Needle Seat or Seal Pack components.

**NOTE:** The system must be in a Ready/OK status, and not jetting otherwise. All Applicator buttons are disabled.



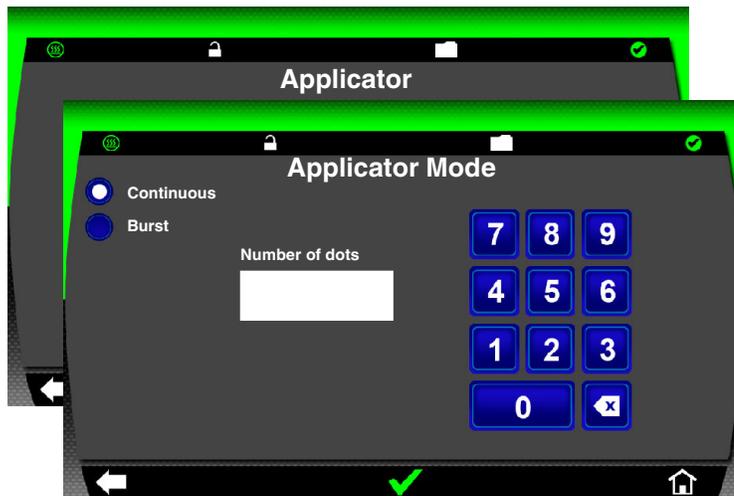
1. From the **Home** screen, do one of the following:
  - Touch  .
  - Touch , then touch  button.
2. Touch **Applicator**.
3. Touch **Stroke Adjustment**. Follow the instructions on the screen to complete this task.
4. Touch .

### Changing Applicator Modes

Use Burst when you want to get a weighted adhesive sample. Otherwise, leave the applicator in Continuous mode.

**NOTE:** The system must be in a Ready/OK status, and not jetting otherwise All Applicator buttons are disabled.

Item	Default	Minimum	Maximum
Applicator Mode	Continuous	--	--
Burst (Number of Dots)	1000	1	65,000



1. From the **Home** screen, do one of the following:

- Touch  .
- Touch  , then touch  button.

2. Touch **Applicator**.

3. Touch **Applicator Mode**, and decide which applicator mode you want to use. When done, Touch .

Touch	Description
Continuous	Applies adhesive as long as the Applicator Control input is active.
Burst	When the Applicator Control input is active, the controller applies a user-defined number of dots. <b>NOTE:</b> Typically used when you want to get a weighted adhesive sample.

## Advanced Pressure Settings

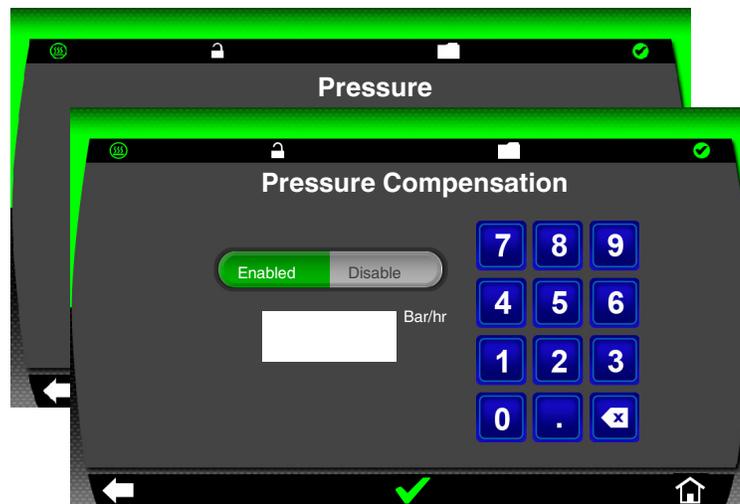
### Modifying Pressure Compensation

Use this option to help the system compensate for changes in adhesive viscosity over time.

#### NOTE:

- The controller has a built-in maximum pressure tolerance of 50 PSI before causing a Fault condition.
- When purging, the system uses this pressure set point along with the current Input Wave Form settings.

Default	Minimum	Maximum
Disabled	---	---
2 PSI	0.5 PSI	5 PSI
0.14 Bar	0.03 Bar	0.34 Bar
13.79 kPa	3.45 kPa	34.47 kPa



1. From the **Home** screen, do one of the following:
  - Touch .
  - Touch , then touch  button.
2. Touch **Pressure**.
3. Touch **Pressure Compensation**. If you decide to Enable this feature, enter the pressure compensation value you want to use.
4. Touch .

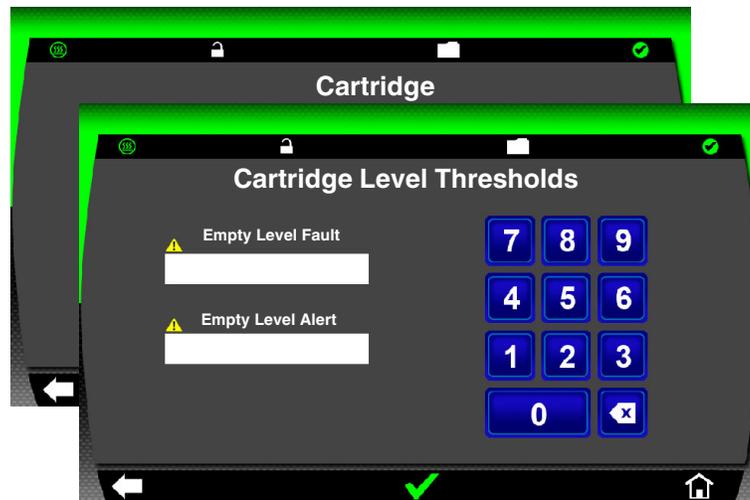
## Advanced Cartridge Settings

### Modifying Cartridge Level Thresholds

You can define when you want the system to:

- Display an Alert message when the adhesive level is either low or empty.
- You can access the **Replace/Calibrate Cartridge Wizard** from either the Low or Empty alert message.

	Default	Minimum	Maximum
Empty Level Alert	0 mL	0 mL	1 mL
Low Level Alert	5 mL	1 mL	20 mL



1. From the **Home** screen, do one of the following:
  - Touch .
  - Touch , then touch  button.
2. Touch **Cartridge**.
3. Touch **Cartridge Level Thresholds**. Enter the low level and Empty adhesive amount (mL) for which you want to receive an Alert message.
4. Touch .

## Modifying Adhesive Lifetime Counter

You can define when you want the system to indicate the amount of time before it is recommended that you replace the adhesive cartridge.

### NOTE:

- Time accrues even when the system is switched Off.
- When the timer exceeds the value you defined, a message appears, from which you can access the **Replace Cartridge Wizard**. When done, the controller automatically resets this timer.
- Refer to the Material Safety Sheet that came with the adhesive for more information.
- The Adhesive Life Timer is displayed on the Home screen.

Default	Minimum	Maximum
300 minutes (5 hours)	25 minutes	960 minutes (16 hours)



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **Cartridge**.

3. Touch **Adhesive Lifetime Counter**. Enter the amount of time (minutes) before you want a notification that it is recommended that you replace the adhesive cartridge.

4. Touch .

## System Settings

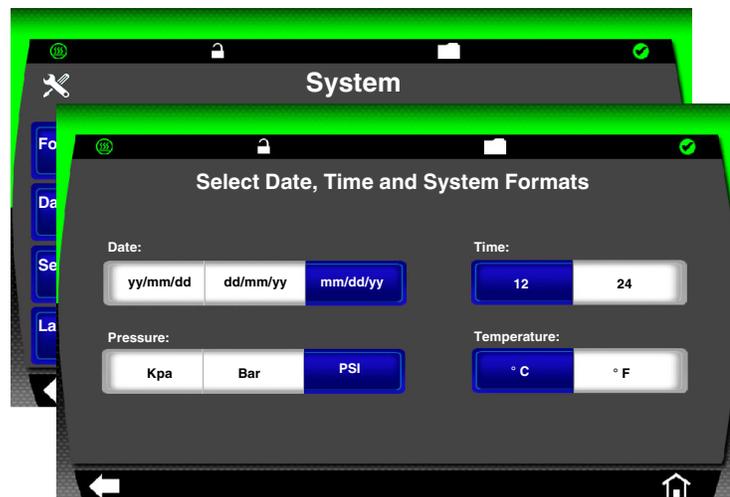
The following sections detail:

- Modifying System Formats and Units
- Modifying System Data and Time
- Managing Applicator Service Reminders
- Defining Language Preference
- Defining Display Settings
- Configuring System Security
- Viewing System Information

## Modifying System Formats and Units

The following table details the default selection for each system-wide format/unit, as well as its available options.

Item	Default	Available Options
Date	mm/dd/yy	<ul style="list-style-type: none"> <li>yy/mm/dd</li> <li>dd/mm/yy</li> <li>mm/dd/yy</li> </ul>
Time	12	<ul style="list-style-type: none"> <li>12</li> <li>24</li> </ul>
Temperature	°C	<ul style="list-style-type: none"> <li>°C</li> <li>°F</li> </ul>
Pressure	PSI	<ul style="list-style-type: none"> <li>kPa</li> <li>Bar</li> <li>PSI</li> </ul>



- From the **Home** screen, do one of the following:
  - Touch .
  - Touch , then touch  button.
- Touch **System**, then touch **Formats/Units**.
- Touch the selection you want to use for each format/unit.

## Modifying System Date and Time

The date and time you define here is used by the system for all time- and date-related functions, such as the Event Log and Standby settings.



1. From the **Home** screen, do one of the following:

- Touch  .
- Touch  , then touch  button.

2. Touch **System**, then touch **Date/Time**.

3. Enter the current date and time. Touch  to move forward between date and time fields.

4. Touch .

**NOTE:** You must manually adjust the date and time for seasonal/regional time changes.

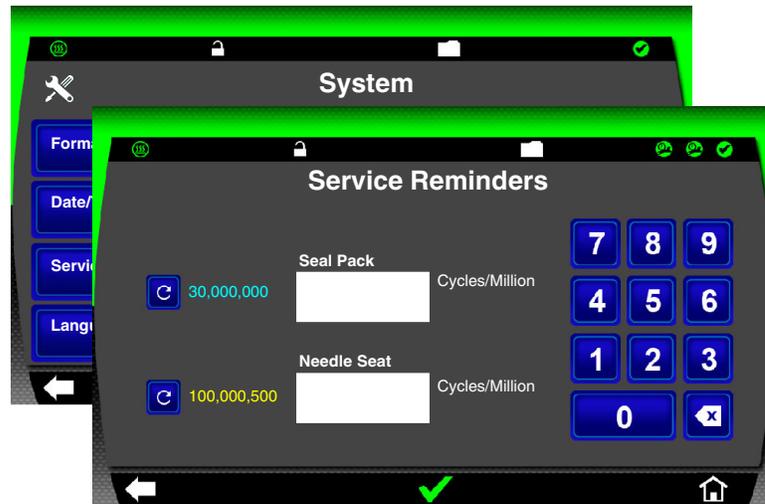
## Managing Applicator Service Reminders

Both of these components wear in time, causing poor jetting performance. The following details how to modify and resolve these reminders in greater detail.

### Modifying the Seal Pack and Needle Seat Service Reminders

You can define when you want the system to display an Alert pop-up message and a service reminder icon in the top status bar when either the Seal Pack and/or the Needle Seat should be replaced.

Item	Default	Minimum	Maximum
Seal Pack	40 Cycles/million	20 Cycles/million	100 Cycles/million
Needle Seat	100 Cycles/million	20 Cycles/million	200 Cycles/million



- From the **Home** screen, do one of the following:

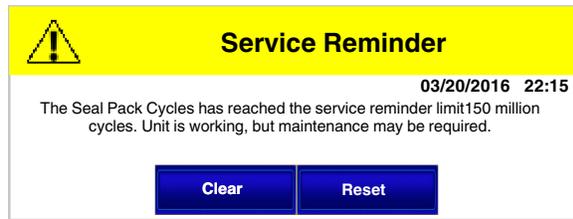
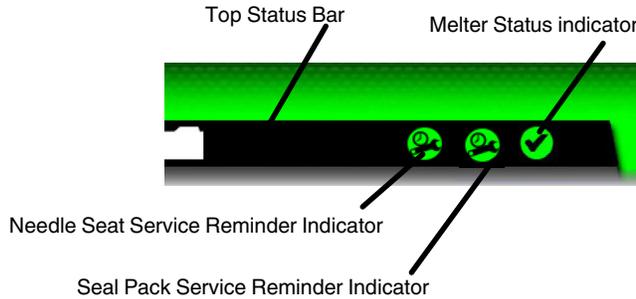
- Touch .
- Touch , then touch  button.

- Touch **Cartridge**.
- Touch **Cartridge Level Thresholds**. Enter the low level adhesive amount (mL) at which you want to receive an Alert or Fault message.
- Touch .

**NOTE:** Numbers appearing in yellow correspond to the item that should be replaced.

### Resetting and Clearing the Service Reminders

When either the Seal Pack and/or the Needle Seat assembly have met their respective maximum number of cycles, a Service Reminder pop-up message appears and one or more icons appear in the upper right-hand corner of the Top Status bar, next to the Melter Status icon.



There are two ways to reset the service interval value:

#### From the pop-up message

Touch	Description
Clear	Closes the pop-up message, but the service reminder condition still exists A Service Reminder icon appears in the Top Status bar.
Reset	Closes the pop-up message, and resets the service reminder counter back to 0 (zero). This assumes that you have performed the required maintenance.

#### From the Service Reminders Screen

- From the Top Status bar, touch . The **Service Reminders** screen appears.
- Touch  corresponding to the numbers that are yellow that you want to reset. This is the item that should have already been replaced.
- Touch . The following happens:
  - The numbers for the item are reset and now appear blue.
  - The Service Reminder icon is removed from the Top Status Bar

## Defining Language Preference

Select the language you want to use.

Default	Available Options	
English	<ul style="list-style-type: none"> <li>• Chinese</li> <li>• Dutch</li> <li>• English</li> <li>• French</li> <li>• German</li> </ul>	<ul style="list-style-type: none"> <li>• Italian</li> <li>• Japanese</li> <li>• Portuguese</li> <li>• Spanish</li> </ul>



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System.**, then touch **Language.**

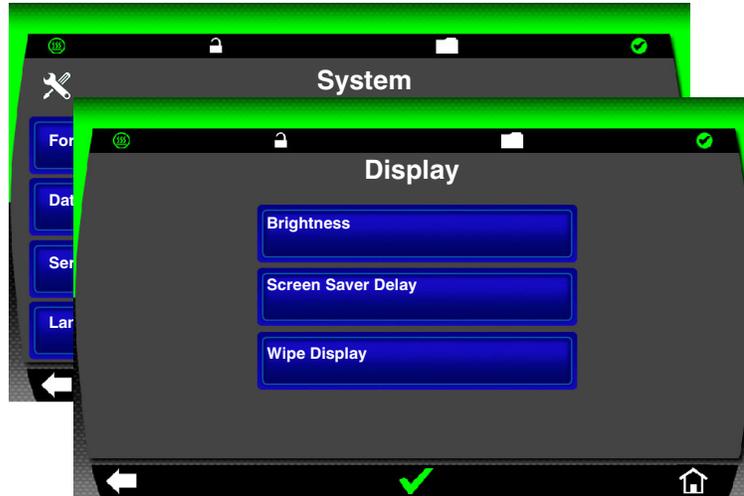
3. Touch the language you want to use.

4. Touch .

## Defining Display Settings

The following table details what you can define, along with the default and available options.

Setting	Default	Minimum	Maximum
Brightness	75%	30%	100%
Screen Saver Delay	(Enabled) 5 minutes	1 minute	120 minutes
Wipe Display	5 seconds	--	--



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **Display**.

**Defining Display Settings** (contd)

3. Do the following to continue:

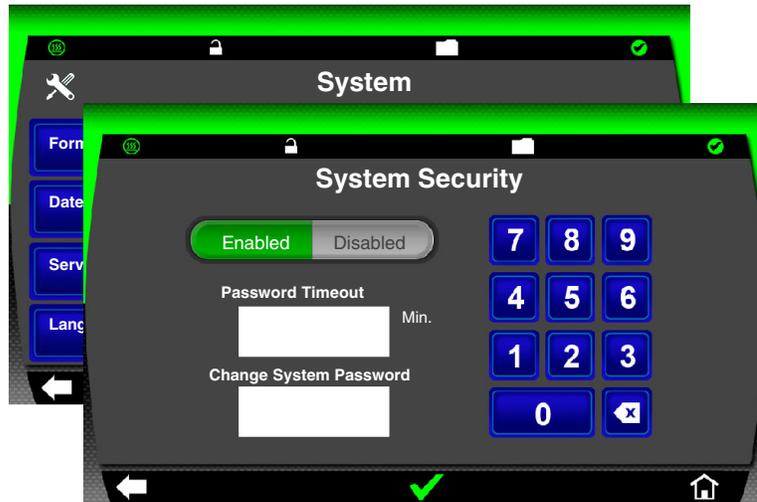
Touch	Description
Brightness	Enhances the visibility and readability of the touch screen
Screen Saver Delay	<p>The amount of time (default [Enabled] 5 minutes) of no user interaction with the touch screen before the screen saver appears</p> <p>The screen saver only displays the melter status and its corresponding color. To extend the lifespan of the touch screen itself, the brightness is reduced from its current setting to 30%.</p> <p>You can disable the Screen Saver Delay. On the Screen Saver Delay screen, touch <b>Disable</b>. The label on the gray indicator will change to <b>Disabled</b> to indicate that Screen Saver Delay is disabled.</p> <p>Touch anywhere on the screen to access the Home screen.</p>
Wipe Display	Locks the screen for 30 seconds, allowing you to clear dust from the touch screen without touching a button and accidentally changing a setting

4. Touch .

### Configuring System Security

Use the built-in security to protect the controller configuration and settings by unauthorized personnel.

	Default	Minimum	Maximum
System Security	Disabled	---	----
Password Timeout	1 minute	1 minute	60 minutes
Change System Password (Code)	1000	1 digit (See notes below)	65535



1. From the **Home** screen, do one of the following:

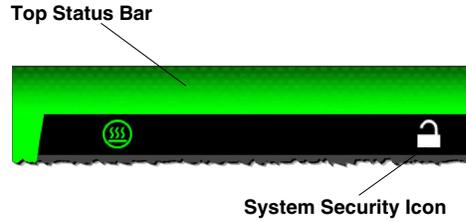
- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **System Security**. If you decide to Enable this feature, enter the following, then Touch .

Touch	Description
Password Timeout	The amount of time the selected password protection becomes active after no user interaction with the touch screen.
Change System Password (code)	Modify the default numeric password code. <b>NOTE:</b> The password code can be from one to five digits, however, the first digit cannot start with the number 0 (zero).

### About Enabling System Security

Refer to the following table for more information about the Top Status Bar - System Security icon.



Icon	Description
	System Security is disabled.
	System Security is enabled and being enforced.
	System Security is enabled and being enforced. A user has entered the correct password code to access a screen or option on a screen.  <b>Tip:</b> Instead of waiting for the Password Timeout, you can touch the security icon to secure the controller and return to the Home screen

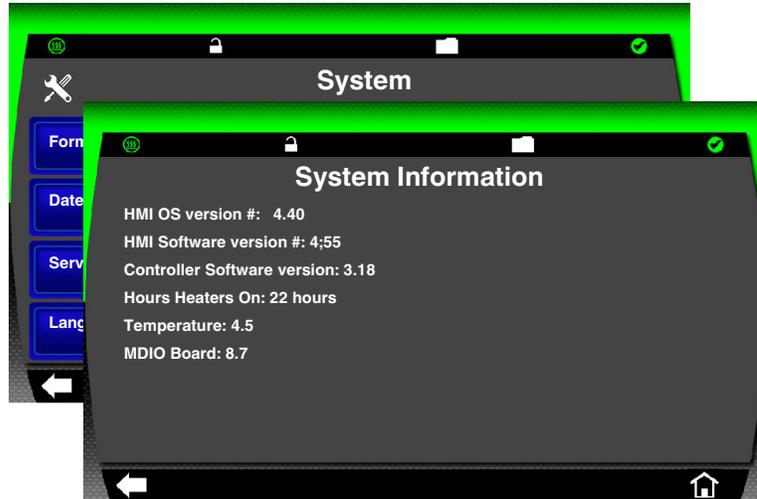
### What is Being Secured

The following table lists, by screen name, what system configuration changes will require a user to enter a password to make these changes.

Temperature Set Points	Temperature Limits
Manual Standby	Standby Temperature Offset
Stroke Adjustment	Input Waveform
System Security	Cartridge Ready Delay
Cartridge Level Thresholds	Input Status (Change between PNP and NPN)
Service Reminders (Reset)	Administration (System Reset)
Network Configuration	

## Viewing System Information

Use the System Information screen to view software and installed hardware component firmware information. This screen may help when troubleshooting the controller.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **System Information**. Review the information. When done, Touch .

## Administrative Options and Settings

The following sections detail:

- Accessing administration settings and options
- Upgrading/Downgrading Software and Firmware
- Viewing the Event Log - Save Diagnostics
- Resetting to System Defaults
  - Managing recipes
- Resetting Password Codes
- Locking Out melter communication
- Connecting to a Network.
- Viewing software/firmware version information
- Viewing heaters On hours
- Changing RTD types

## Upgrading/Downgrading Software and Firmware

Upgrades or downgrades typically include changes to both the CPU software and Driver Control Board firmware.

**NOTE:** The entire upgrade process should take approximately 10 minutes.

1. Do the following:
  - To perform an upgrade, go to <https://emanuals.nordson.com/adhesives/software/>, navigate to *Unity & Vulcan Jet*, and download the .dat file to the root of the USB drive.
  - To perform a downgrade, access the USB drive from a PC, open the **/Old** folder and move the file to the USB Root directory.
2. Make sure that the controller is On. Then, insert the USB drive into the USB port. A pop-up message box appears with the file that you want to use.
3. Select the file that you want from the list and touch **OK**. The touch screen displays a message stating: "Transferring update files to controller."
4. When the file transfer is complete, the touch screen displays a message stating: "Upgrade in Progress." As the system performs upgrades to the boards, the touchscreen displays percent complete for each operation.

**NOTE:** The system reboots itself several times during the upgrade/downgrade process.

**NOTE:** The system may take up to 45 seconds to perform each reboot.

**NOTE:** Do not turn Off the controller during the upgrade/downgrade process.

5. When the upgrade/downgrade is complete, the splash screen appears. The file that was used is moved to the **/Old** folder on the USB drive. If this folder does not exist, the system automatically creates it.

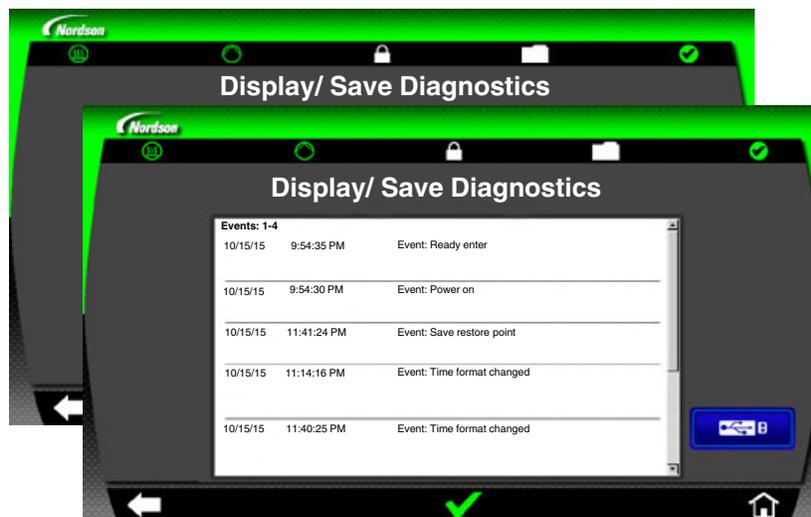
## Viewing the Event Log - Save Diagnostics

Use the event log to view a list of up to 200 of the most recent fault, alert, and parameter change events. You can save those events from memory to a USB drive. The default file name is *EventLog.xml*.

Additionally, a *Diagnosticsfile.xml* file is also written to the USB drive. This file contains detailed melter information. The information contained in both files can help Nordson technical support troubleshoot your issue.

### NOTE:

- The system writes the entire event log to the USB drive, regardless of what level of detail you selected.
- The event log can display up to 200 events, after which the oldest event is overwritten with new events.
- You cannot clear nor change the name of either file.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **Administration**.

3. Touch **Display/Save Diagnostics** and select which level of detail you want to view.

4. Touch  to continue.

5. Decide what you want to do next.

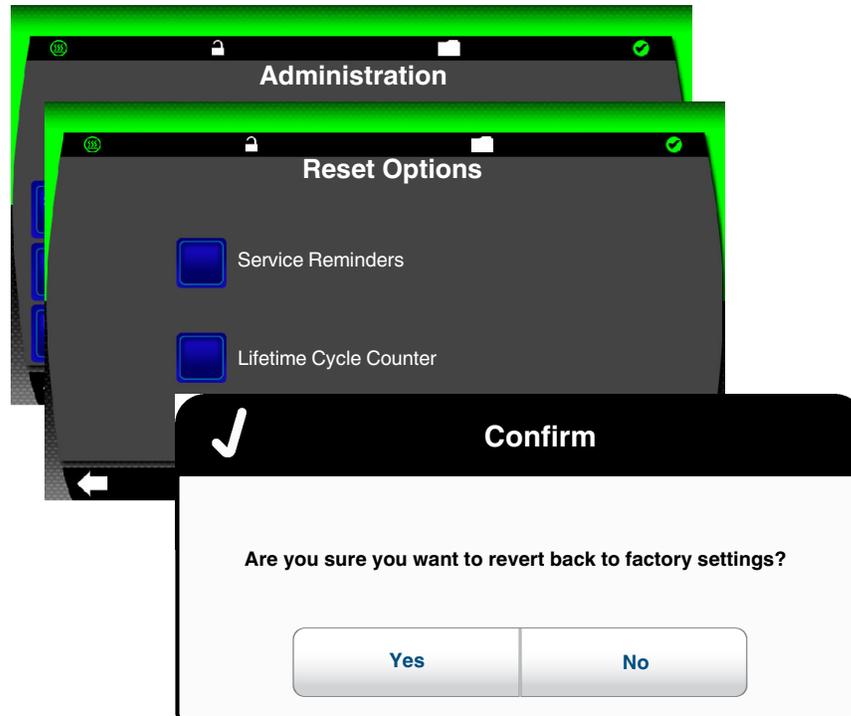
Touch	Description
	Select a different event log option to view.
	Exit the event log.
Save File	<p>Save both the event log and the diagnostic file to the USB drive.</p> <p>Touch this button only once. Depending on the number of events in the log, the save operation can take a few minutes.</p> <p>When done, the Attention message appears, stating: "Diagnostics file has been saved to USB."</p> <p>The default names are:</p> <p><i>EventLog.xml</i></p> <p><i>Diagnosticsfile.xml</i></p>

## Resetting to System Defaults

Use system reset to revert all user-definable software settings back to factory defaults.

### NOTE:

- Recipes and event log information are stored on a customer-supplied USB drive, and are therefore NOT deleted or changed.
- Use a recipe to restore melter settings.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **Administration**.

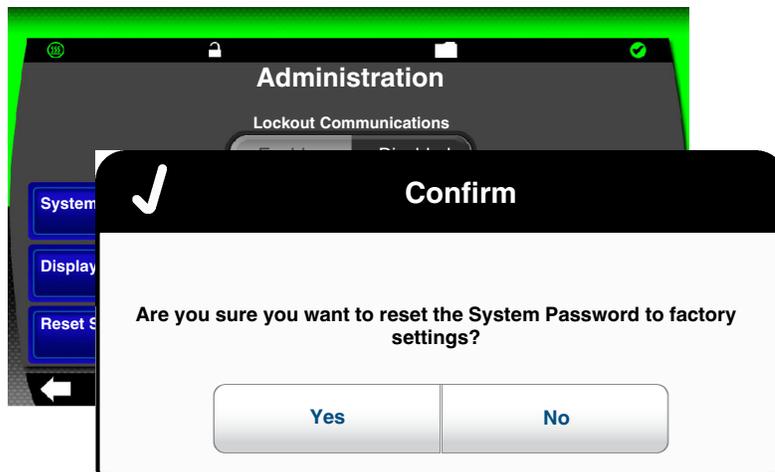
3. Touch **System Reset**. Decide if you want to reset the **Service Reminders** as well as the **Lifetime Cycle Counter**.

4. Touch .

5. A pop-up message appears. Touch **Yes** to revert all user-definable settings back to factory defaults.

## Resetting Password Codes

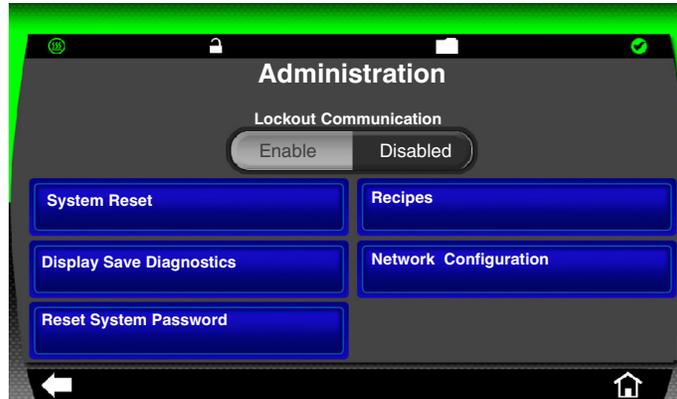
Use **Reset System Password** to revert the password code to the default value of 1000.



1. From the **Home** screen, do one of the following:
  - Touch .
  - Touch , then touch  button.
2. Touch **System**, then touch **Administration**.
3. Do one the following to continue:
  - Touch **Reset System Password**. A pop-up message appears.
4. Touch **Yes** to revert the password code to 1000, the default value.

## Locking Out Communications

Use **Lockout Communication** to prevent remote access to the melter while you are troubleshooting or performing maintenance on the melter.



1. From the **Home** screen, do one of the following:

- Touch .
- Touch , then touch  button.

2. Touch **System**, then touch **Administration**.

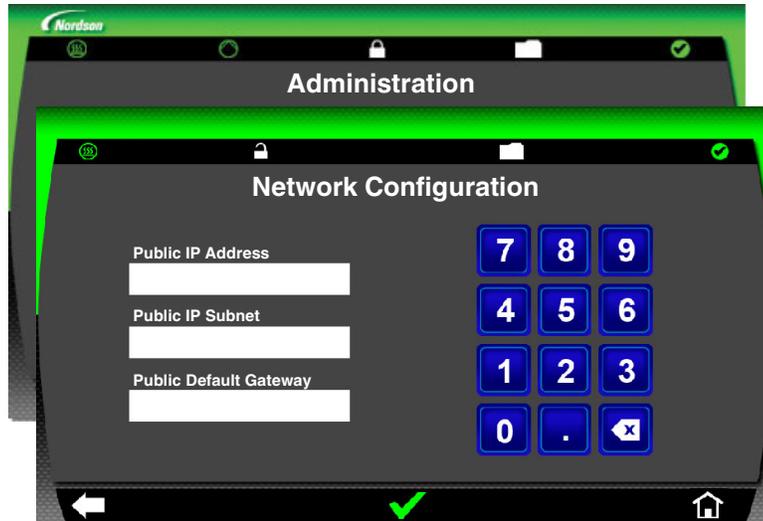
3. Touch the **Lockout Communication** button to toggle it between Enable and Disable.

4. Touch .

## Connecting to a Network

Use **Network Configuration** to connect the melter to a network.

	Default
Public IP Address	192.168.003.001
Public IP Subnet	255.255.255.000
Public Default Gateway	192.168.003.250



- From the **Home** screen, do one of the following:
  - Touch .
  - Touch , then touch  button.
- Touch **System**, then touch **Administration**.
- Touch **Network Configuration**.
- Enter the following; Public IP Address, Public Subnet Mask and Public Default Gateway. Touch the period on the numeric pad to move to the next address segment.
- Touch . A confirmation message box appears. The controller automatically reboots itself and returns to the Home screen.

### NOTE:

- If you do not know these IP addresses, ask your network administrator.
- Network IP addresses are not saved in a recipe.

## Default User Settings and Ranges

The following table details default settings and ranges for user-definable melter, temperature, pump, and melter settings.

### Temperature Settings

Setting	Default	Range/Option
Heated Zone Set Points / Global Set Point	115°C (240°F)	Minimum: 37.8°C (100°F) Maximum: 190°C (374°F)
Temperature Limits	Over Temp: 15°C (25°F)	Minimum: 5°C (10°F) Maximum: 60°C (110°F)
	Under Temp: 25°C (50°F)	Minimum: 9°C (16°F) Maximum: 60°C (110°F)
Auto Standby Start Time	60 minutes	Minimum: 1 minute Maximum: 180 minutes
Auto Heaters Off Time	60 minutes	Minimum: 0 minutes Maximum: 1440 minutes
Auto Exit Standby Time	Disabled	Enabled Disabled
Auto Exit Standby Time	45 minutes	Minimum: 1 minute Maximum: 180 minutes
Standby Temp	50°C (100°F)	Minimum: 5°C (10°F) Maximum: 60°C (110°F)

**Pressure Settings**

<b>Setting</b>	<b>Default</b>	<b>Range/Option</b>
Pressure Set Point	20 PSI 1.38 Bar 137.90 kPa	Minimum: 5 PSI 0.34 Bar 34.47 kPa Maximum: 50 PSI 3.45 Bar 344.74 kPa
Pressure Compensation	Disabled	Enabled Disabled
Pressure Compensation values	2 PSI 0.14 Bar 13.79 kPa	Minimum: 0.5 PSI 0.03 Bar 34.47 kPa Maximum: 5 PSI 0.34 Bar 34.47 kPa

**Applicator Settings**

<b>Setting</b>	<b>Default</b>	<b>Range/Option</b>
Application Mode	Continuous	Continuous Burst
Burst (Number of Dots)	1000	Minimum: 1 Maximum: 65,000
Waveform - Standard		
Dwell Time (t1)	0.05 ms	Minimum: 0.05 ms Maximum: 0.2 ms
Closing Time (t2)	0.3 ms	Minimum: 0.2 ms Maximum: 0.4 ms
One Complete Cycle (t3)	3 ms	Minimum: 3 ms Maximum: 10 ms
<i>Continued...</i>		

**Applicator Settings(contd)**

Setting	Default	Range/Option
Waveform - Optional		
Dwell Time (t1)	0.2 ms	Minimum: 0.05 ms Maximum: 0.5 ms
Closing Time (t2)	0.2 ms	Minimum: 0.2 ms Maximum: 0.5 ms
One Complete Cycle (t3)	3 ms	Minimum: 3 ms Maximum: 10 ms
Amplitude	100%	Minimum: 50% Maximum: 100%

**Cartridge Settings**

Setting	Default	Range/Option
Ready Delay	1 minute	Minimum: 1 minute Maximum: 60 minutes
Adhesive Lifetime Counter	300 minutes	Minimum: 25 minutes Maximum: 960 minutes
Level Thresholds		
Empty	0 ml	Minimum: 0 ml Maximum: 1 ml
Low	5 ml	Minimum: 1 ml Maximum: 20 ml

**Controller Settings**

Setting	Default	Range/Option
Service Interval: Seal Pack	40 Cycles/million	Minimum: 20 Cycles/million Maximum: 100 Cycles/million
Service Interval: Needle Seat	100 Cycles/million	Minimum: 20 Cycles/million Maximum: 100 Cycles/million
Password Protection	No Password Protection	High Medium Low No Password Protection
Password Timeout	1 minute	Minimum: 1 minute Maximum: 60 minutes
<i>Continued...</i>		

**Controller Settings(contd)**

<b>Setting</b>	<b>Default</b>	<b>Range/Option</b>
Display Brightness	75%	Minimum: 30% Maximum: 100%
Display Screen Saver Delay	Enabled 5 minutes	Minimum: 1 minute Maximum: 120 minutes
Lockout Communications	Off	Off On

**Network Settings**

<b>Setting</b>	<b>Default</b>	<b>Range/Option</b>
Public IP Address	192.168.003.001	---
Public IP Subnet	255.255.255.000	---
Public Default Gateway	192.168.003.250	---

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## Communication Data List

**NOTE:** The following Data Designations are supported for the Vulcan Jet controller.

### Control Data

Modbus Address	R/W	Data Read Size	Data Description	Data Functional Description
40101 - 40102	W	16 bit	Zone 1 Set Point	Unsigned Short: Zone 1 Temperature Set Point in Degrees Fahrenheit, 70 - 374 (Nozzle)
40103 - 40104	W	16 bit	Zone 2 Set Point	Unsigned Short: Zone 2 Temperature Set Point in Degrees Fahrenheit, 70 374 (Cartridge set point cannot be greater than Nozzle set point.)
40105 - 40106	W	16 bit	Pressure Set Point	Unsigned Short: Pressure Set Point in Thousands of a PSI, 5,000 - 50,000 (5 - 50 PSI)
40107 - 40108	W	16 bit	Applicator Dwell Time	Unsigned Short: Applicator Dwell Time in Microseconds, 50 - 200
40109 - 40110	W	16 bit	Applicator Cycle Time	Unsigned Short: Applicator Cycle Time in Microseconds, 3,000 - 10,000
40111 - 40112	W	16 bit	Applicator Close Time	Unsigned Short: Applicator Close Time in Microseconds, 200 - 400
40113 - 40114	W	16 bit	Applicator Off Time	Unsigned Short: Applicator Off Time in Microseconds, 3,000 - 10,000
40115 - 40116	W	16 bit	Input Enable	Unsigned Short: 16 bits Bit 0 : PLC Input Control (1=PLC Control, 0=HMI Control)
40117 - 40118	W	16 bit	Input Control	Unsigned Short: 16 bits Bit 0 : Robot Ready (1=Ready, 0=Not Ready) Bit 2 : Robot Fault (1=Fault, 0=No Fault) Bit 3 : Applicator Home (1=Home, 0=Not Home) Bit 4 : Reset Faults (1=Reset, 0=Do Not Reset) Bit 5 : Applicator Control (1=Applicator Active, 0=Applicator Inactive) Bit 6 : Enter Standby (1=Enter Standby, 0=Leave Standby) Bit 7 : Pressure Control (1=Pressurize Syringe, 0=Do Not Pressurize Syringe)

### Status Data

Modbus Address	R/W	Data Read Size	Data Description	Data Functional Description
40001 - 40002	R	16 bit	Zone 1 Current Temperature	Unsigned Short: Zone 1 Temperature Set Point in Degrees Fahrenheit (Nozzle)
40003 - 40004	R	16 bit	Zone 2 Current Temperature	Unsigned Short: Zone 2 Temperature Set Point in Degrees Fahrenheit (Cartridge)
40005 - 40006	R	16 bit	Pressure Output	Unsigned Short: Pressure Output in Thousands of a PSI
40007 - 40008	R	16 bit	Level Percentage	Unsigned Short: Cartridge Level in Percent, 0 - 100
40009 - 40012	R	32 bit	Adhesive Life	Unsigned Long: Adhesive Life in seconds
40019 - 40020	R	16 bit	System Status	Unsigned Short: 16 bits Bit 0 : System Ready Bit 1 : System Heating Bit 2 : System Alert Bit 3 : System Fault Bit 6 : System Standby Bit 7 : Empty Level Bit 8 : Status Running Bit 9 : Status Finished Bit 15 : Input Control (1=PLC Control, 0=HMI Control)
40021	R	16 bit	Zone 1 Status	Unsigned Char: 8 bits Bit 0 : Zone 1 Ready Bit 1 : Zone 1 Waiting for Ready Bit 2 : Zone 1 Alert Bit 3 : Zone 1 Fault Bit 4 : Zone 1 Unavailable
40022	R	8 bit	Zone 2 Status	Unsigned Char: 8 bits Bit 0 : Zone 2 Ready Bit 1 : Zone 2 Waiting for Ready Bit 2 : Zone 2 Alert Bit 3 : Zone 1 Fault Bit 4 : Zone 1 Unavailable

*Continued on next page*

**Status Data(contd)**

<b>Modbus Address</b>	<b>R/W</b>	<b>Data Read Size</b>	<b>Data Description</b>	<b>Data Functional Description</b>
40023 - 40024	R	16 bit	Piezo Driver Status	Unsigned Short: 16 bits Bit 0 : Piezo Not Present Bit 1 : Piezo Low Voltage Power Supply Fault Bit 2 : Piezo High Voltage Power Supply Over Voltage Bit 3 : Piezo High Voltage Power Supply Overload Bit 4 : Piezo Over Temperature Bit 5 : Piezo Valve Not Present Bit 6 : Piezo Driver Not Enabled Bit 7 : Piezo General Fault Bit 8 : Piezo Isolated 15 Volt Power Supply Fault

**Alert Data**

Modbus Address	R/W	Data Read Size	Data Description	Data Functional Description
40013	R	8 bit	Zone 1 Alerts	Unsigned Short: 8 bits Bit 0 : Zone 1 Low Temperature Alert Bit 1 : Zone 1 High Temperature Alert Bit 2 : Zone 1 RTD Short Alert Bit 3 : Zone 1 RTD Open Alert Bit 5 : Zone 1 Write Temperature Set Point Invalid Alert
40014	R	8 bit	Zone 2 Alerts	Unsigned Char: 8 bits Bit 0 : Zone 2 Low Temperature Alert Bit 1 : Zone 2 High Temperature Alert Bit 2 : Zone 2 RTD Short Alert Bit 3 : Zone 2 RTD Open Alert Bit 5 : Zone 2 Write Temperature Set Point Invalid Alert
40015 - 40016	R	16 bit	Low Level Alerts	Unsigned Char: 16 bits Bit 1 : Cartridge Below Low Level Alert

**Fault Data**

<b>Modbus Address</b>	<b>R/W</b>	<b>Data Read Size</b>	<b>Data Description</b>	<b>Data Functional Description</b>
40017	R	8 bit	Zone 1 Faults	Unsigned Short: 8 bits Bit 0 : Zone 1 Low Temperature Fault Bit 1 : Zone 1 High Temperature Fault Bit 2 : Zone 1 RTD Short Fault Bit 3 : Zone 1 RTD Open Fault Bit 5 : Zone 1 Run Away Temperature Fault
40018	R	8 bit	Zone 2 Faults	Unsigned Char: 8 bits Bit 0 : Zone 2 Low Temperature Fault Bit 1 : Zone 2 High Temperature Fault Bit 2 : Zone 2 RTD Short Fault Bit 3 : Zone 2 RTD Open Fault Bit 5 : Zone 2 Run Away Temperature Fault

**Recipe Data**

40119 - 40120	W	16 bit	Recipe Loading Recipe 1 Loading Recipe 2 Loading Recipe 3 Loading Recipe 4 Loading Recipe 5 Loading Recipe 6 Loading Recipe 7 Loading Recipe 8 Loading Recipe 9 Loading Recipe 10 Loading Recipe 11 Loading Recipe 12 Loading Recipe 13 Loading Recipe 14 Loading Recipe 15 Loading Recipe 16 Loading	Unsigned Short: 8 bits. <b>Note:</b> Only set 1 bit at a time. Bit 0 : Load RECIPE1.xml Bit 1 : Load RECIPE2.xml Bit 2 : Load RECIPE3.xml Bit 3 : Load RECIPE4.xml Bit 4 : Load RECIPE5.xml Bit 5 : Load RECIPE6.xml Bit 6 : Load RECIPE7.xml Bit 7 : Load RECIPE8.xml Bit 8 : Load RECIPE9.xml Bit 9 : Load RECIPE10.xml Bit 10 : Load RECIPE11.xml Bit 11 : Load RECIPE12.xml Bit 12 : Load RECIPE13.xml Bit 13 : Load RECIPE14.xml Bit 14 : Load RECIPE15.xml Bit 15 : Load RECIPE16.xml
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## *Section 7*

# Maintenance



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

## Overview

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

## Recommended Maintenance Schedule

Table 7-1 provides recommended maintenance activities and a schedule for performing those activities. Base how often you perform maintenance on your operating conditions.

Table 7-1 Recommended Maintenance

Component	Activity	Interval	Procedure
Robot and applicator	Inspect for external damage	Daily	When damaged parts pose a risk to the operational safety of the unit and/or safety of personnel, switch off the system and have the damaged parts replaced by qualified personnel. Use only original Nordson spare parts.
	Clean the exterior	Daily	Remove adhesive residue only with a cleaning agent recommended by the adhesive supplier. Heat with an air heater if necessary. Remove dust, flakes, etc. with a vacuum cleaner or a soft cloth. Do not damage or remove warning labels. Replace any damaged or removed warning labels.
Applicator	Flush the applicator	After shutdowns exceeding 2 days	See <i>Flushing the System</i> in the next page.

### Tools you will Need

- 2 mm hex driver
- 2.5 mm hex driver
- 3 mm hex driver
- 4 mm hex driver
- Applicator needle removal tool
- 0.025-inch flat-head screw driver
- Heat-protective gloves

## Flushing the System

**CAUTION!** Make sure the flushing material is compatible with the PUR adhesive being used. Refer to the Safety Data Sheet (SDS) for both the adhesive and the flushing material.

**NOTE:** Before flushing the system, the Vulcan Jet Controller must be in a Ready/OK state.

1. See Figure 7-1. Load a flush cartridge in the applicator as follows:
  - Remove the air cap (1) and remove and discard the adhesive cartridge (2).
  - Remove the caps from both ends of a 30-cc flush cartridge.
  - Insert the flush cartridge in the applicator, with the tapered end of the cartridge pointing down.
  - Reinstall the air cap.
2. Purge again until a clean flow of flush material is achieved (at least one minute).
3. Remove the flush cartridge.

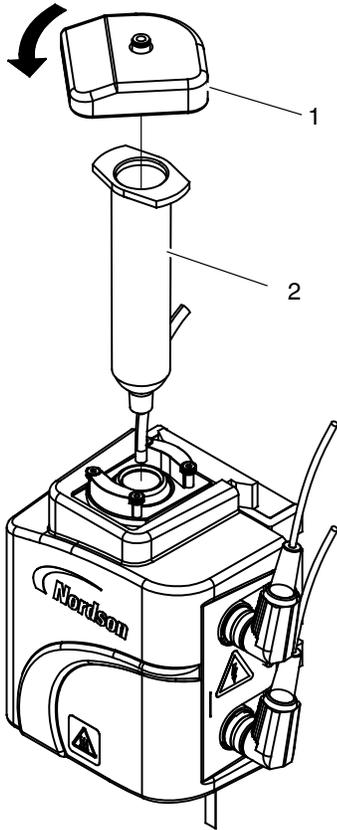


Figure 7-1 Loading a Cartridge

## General Disassembly

See Figures 7-2 and 7-3.

1. Switch Off and de-energize the controller.
2. Remove the following from the applicator:
  - a. unscrew both controller cables (5).
  - b. the air line (1) from the air cap (2).
  - c. the air cap (2) and cartridge (3) from the applicator.

**NOTE:** Cover cartridge (3) opening before removing cartridge to prevent dripping into the cartridge heater, and to prevent debris from entering the system.

3. If the air flush heat exchanger is in use, shut off the air supply at the regulator.
4. Use a 3 mm hex wrench to loosen the mounting block screws (6) and slide the applicator out of the mounting block (7).
5. Use a 2 mm hex wrench to loosen the three screws (4) that hold the applicator cover (8), then do the following:
  - a. Remove the applicator cover (8) from the applicator.
  - b. Use a 3 mm hex wrench to remove the screw (6) that holds the hinged circuit board mount bracket (5) in place.
  - c. Pivot the bracket to access the circuit board. Disconnect the following from the applicator circuit board:
    - X4, Piezo thermocouple wires (1) (using a 0.025-inch flat-blade screwdriver)
    - X5, cartridge heater connector (2)
    - X6, heater block connector (3)
    - X7, Piezo driver connector (4)

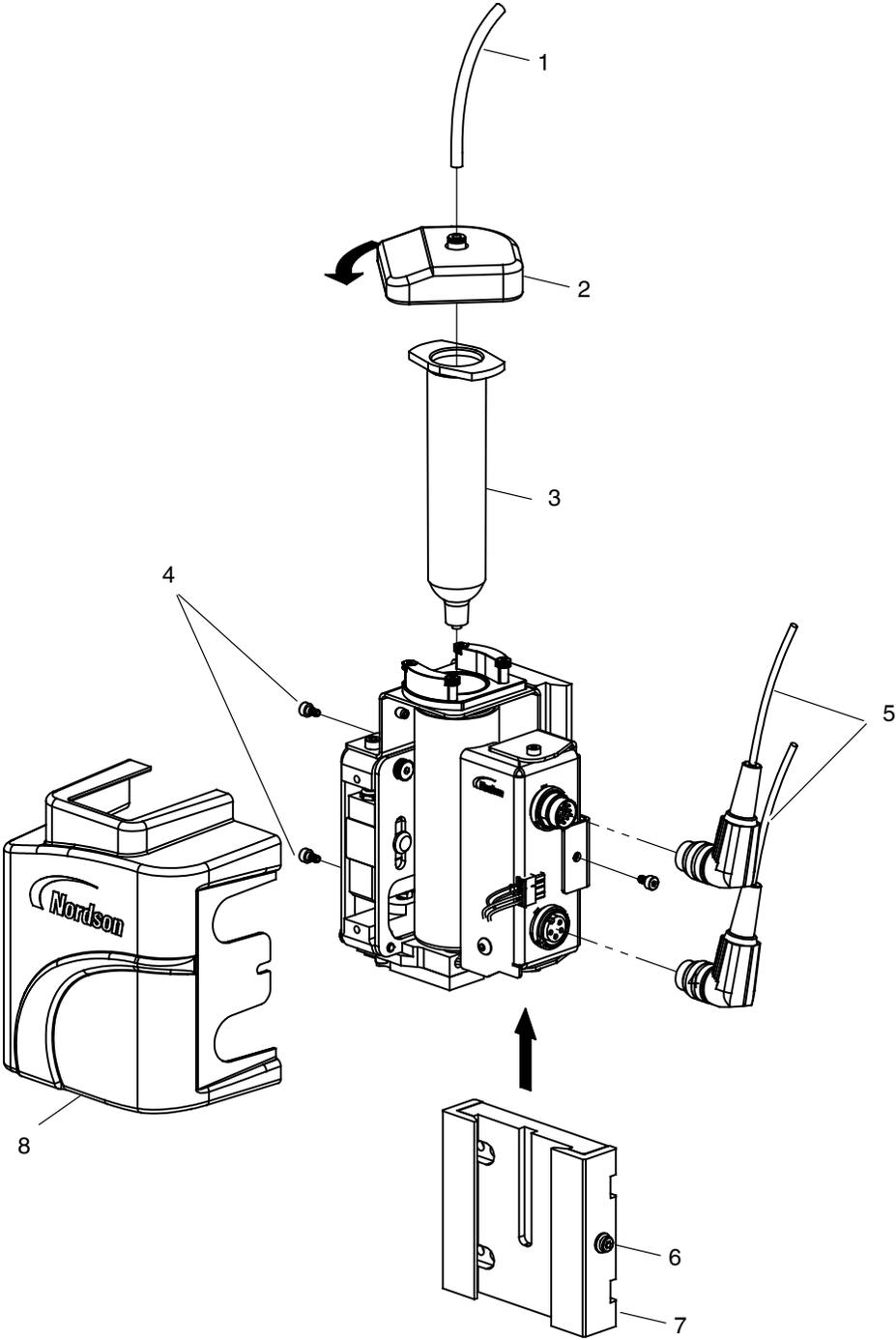


Figure 7-2 General Disassembly

## General Disassembly (contd)

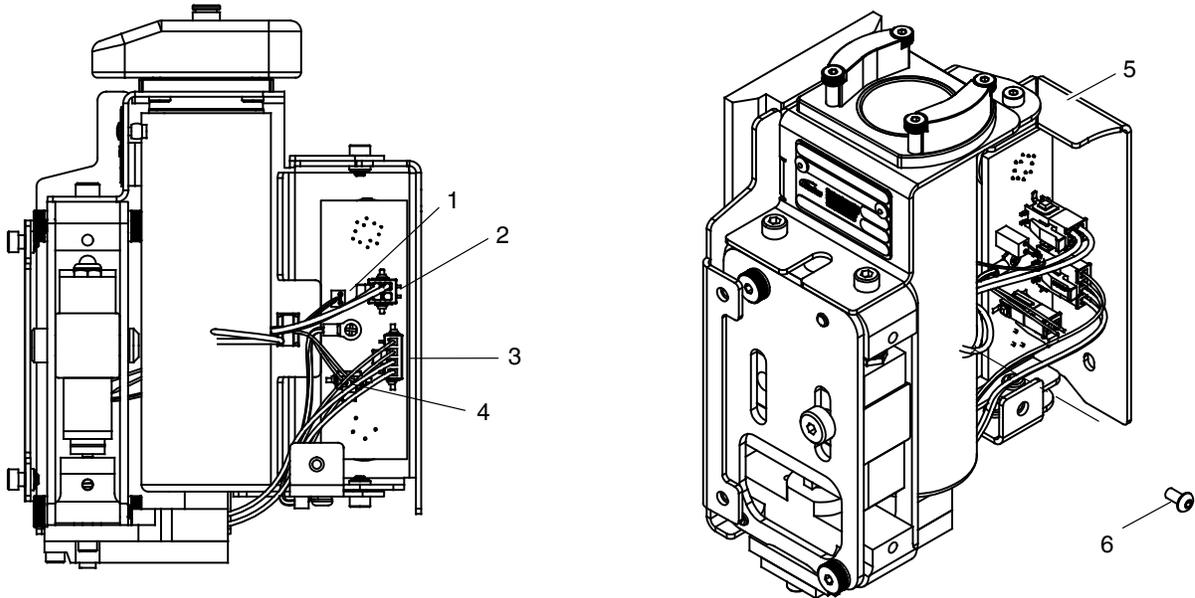


Figure 7-3 Circuit Board Access

6. Use a 3 mm hex wrench to remove the two screws (1) that attach the mounting bracket to the top of the applicator. Then, remove the other two screws (2) that pass through the mounting bracket into the back of the applicator.

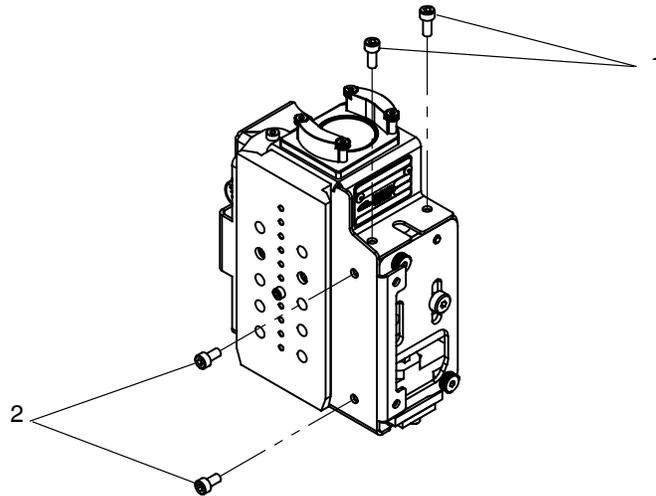


Figure 7-4 Applicator Removal

- Remove the actuator (1) from the frame (2), then remove the cartridge heater (3), and set these components aside.

**NOTE:** Be careful to not damage cartridge heater wiring when removing cartridge.

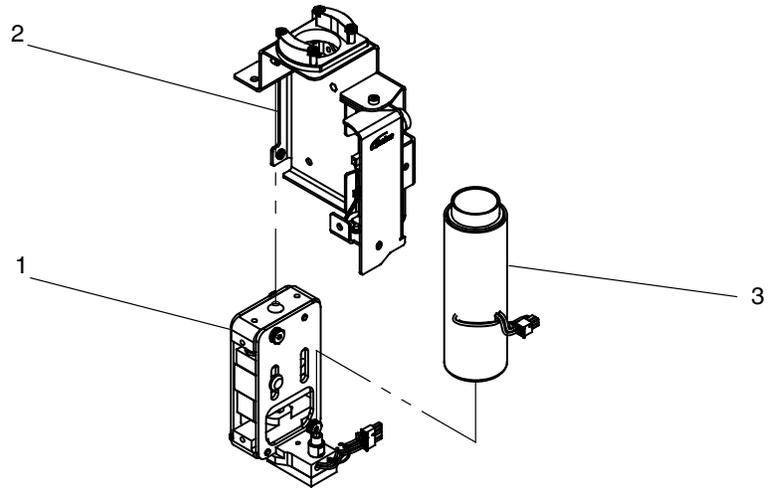


Figure 7-5 Actuator and Cartridge Heater Removal

- Go to *Removing the Nozzle Plate Assembly* given next.

## Removing the Nozzle Plate Assembly



**WARNING!** Risk of burns. Use heat-protective gloves when performing this maintenance task.

1. You should have already completed *General Disassembly* given earlier in this section.
2. Use a 3 mm hex wrench to loosen the two stroke adjustment screws (2). This action allows the applicator needle (8) to move freely.

**NOTE:** Do not remove the stroke adjustment screws.

3. Use a 2.5 mm hex wrench to sequentially loosen and remove the two screws (5, 6) that secure the nozzle plate (4) to the heater block assembly (7).
4. Grasp the applicator (1) and gently loosen the nozzle plate (4), using care to not damage the needle (8), and separate the nozzle plate from the heater block assembly (7).

**NOTE:** If you cannot separate the nozzle plate from the heater block assembly, use a heat gun along the join line between the two parts.

**CAUTION!** Do not bend the applicator needle. The applicator will not operate as intended with a damaged needle. If you do bend the needle, then you must replace it before bringing the applicator back into production.

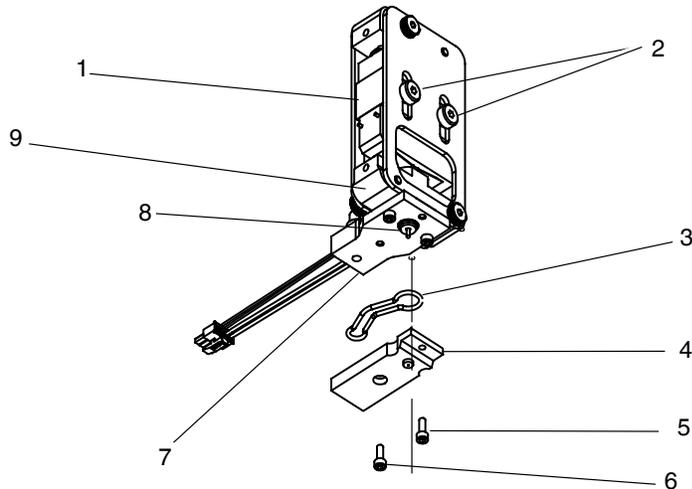


Figure 7-6 Nozzle Plate Removal

- |                          |                 |                           |
|--------------------------|-----------------|---------------------------|
| 1. Applicator            | 4. Nozzle plate | 7. Heater block assembly  |
| 2. Adjustment screws (2) | 5. Screw        | 8. Applicator needle      |
| 3. O-ring                | 6. Screw        | 9. Plastic needle housing |

5. Go to *Removing the Seal Pack* given next to continue.

## Removing the Seal Pack

To remove the seal pack, do the following steps:

1. You should have already done the following, in this sequence:
  - *General Disassembly*, given earlier in this section.
  - *Removing the Nozzle Plate Assembly*, given earlier in this section.
2. Gently remove the old seal pack (5) by pulling downward with pliers.

**CAUTION! Do not** contact the applicator needle. The applicator will not operate as intended with a damaged needle. If the needle is damaged, then you must replace it before bringing the applicator back into production.

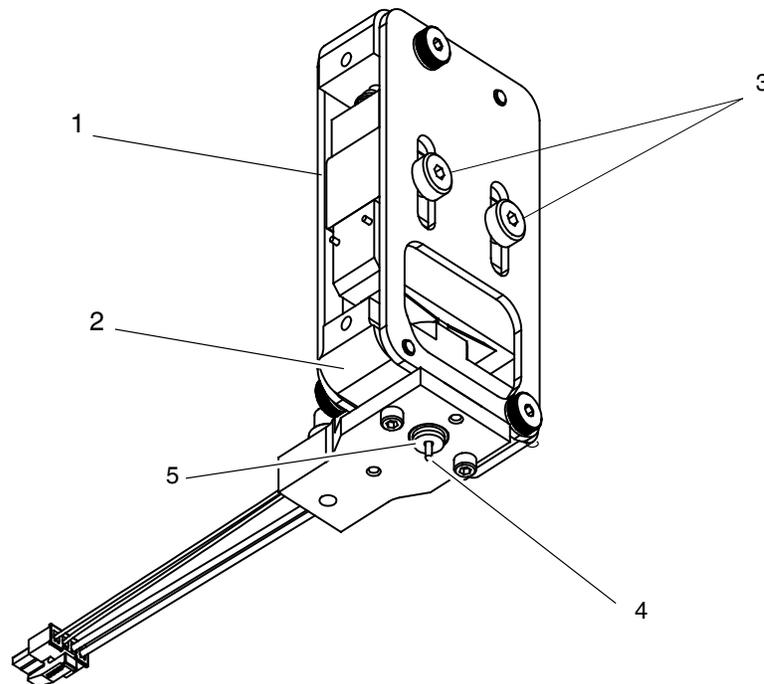


Figure 7-7 Replacing the seal pack

- |                           |                          |              |
|---------------------------|--------------------------|--------------|
| 1. Applicator             | 3. Adjustment screws (2) | 5. Seal pack |
| 2. Plastic needle housing | 4. Applicator needle     |              |

3. Go to *Cleaning the Applicator* given next to continue.

## Cleaning the Applicator

See Figures 7-6 and 7-8.

The nozzle plate and heater block should be cleaned as needed to prevent clogging. If an inspection of the Luer lock discloses dried adhesive, be sure to clean the lock.



**WARNING!** Risk of explosion or fire. Follow the safety guidance and heating recommendations on the SDSs for your adhesives and nozzle plate and heater cleaning solutions.



**WARNING!** Risk of explosion or fire. Use a controlled heating device, such as a thermostatically controlled hot plate, to heat cleaning fluid, including Nordson Type-R fluid.



**WARNING!** Risk of burns. Use heat-protective gloves when performing this maintenance task.

**CAUTION!** Risk of equipment damage. Do not use a wire brush (or a brush with bristles harder than the nozzle plate and heater block) to clean these components.

1. You should have already done the following, in this sequence:
  - *General Disassembly*, given earlier in this section.
  - *Removing the Nozzle Plate Assembly*, given earlier in this section.
  - *Removing the Seal Pack*, given earlier in this section.
2. Remove the O-ring from the nozzle plate (3, Figure 7-6) and then clean all remaining material that can be removed from the adhesive flow channel.
3. Remove the Luer lock (5, Figure 7-8) from the heater block and clean it using a hot air knife or a probe.
4. Clean the nozzle plate and heater block using one of the Nordson-recommended methods shown in Table 7-2. Use only cleaning agents recommended by the adhesive supplier.

Table 7-2 Nozzle Plate and Heater Block Cleaning Methods

Cleaning Method	Procedure
Electric heat gun/hot air knife  <b>NOTE:</b> This is the most thorough method.	a Heat the nozzle plate, heater block, and Luer lock with a flameless electric heat gun or hot air knife.  b Scrub the nozzle plate and heater block with a soft, non-metallic brush to remove debris.  c Use a probe to clean the Luer lock.
<i>Continued...</i>	

Cleaning Method	Procedure
Ultrasonic tank	<p>a Place the nozzle plate and heater block in an alkaline solution heated to the appropriate temperature (refer to the SDS) in an ultrasonic tank. Soak the nozzle plate and heater block for approximately 10 minutes.</p> <p>b Scrub the nozzle plate and heater block with a soft, non-metallic brush to remove debris.</p> <p>c Gently blow air through the nozzle plate and heater block orifices.</p>
Oven	<p> <b>WARNING:</b> Risk of explosion, fire, or toxic vapor release. Depending on the type of adhesive and/or organic solvent used with the nozzle plate and heater block, heating them in an oven can cause a hazardous event. Before using an oven to clean nozzle plate or heater block, consult with the oven manufacturer about the viability of this method and the safety risks. Follow the manufacturer's recommendations.</p> <p> <b>WARNING:</b> Use the oven heating controls to keep the oven at the desired temperature. Do not use an oven that does not have heating controls.</p> <p> <b>WARNING:</b> The heating temperature and time may need to be adjusted based on the oven type, the adhesive type, and the amount of char buildup on the nozzle plate and heater block. Nordson Corporation recommends testing this procedure on discarded heater blocks and nozzle plates prior to using them on good components.</p> <p>d Ensure that the seal pack has been removed from the nozzle plate, then place the nozzle plate and heater block in an electric oven heated to approximately 385 °C (725 °F). Allow the nozzle plate and heater block to bake for approximately 3-4 hours.</p> <p>e Turn off the oven and allow the nozzle plate to cool; then remove the nozzle plate.</p> <p> <b>WARNING:</b> Risk of fire. Use a heat-proof cloth to clean nozzle plate and heater block. Even cotton can burn in high-temperature conditions.</p> <p> <b>WARNING:</b> Risk of equipment damage. Handle nozzle plate and heater block carefully to avoid denting the orifices, which can degrade the adhesive pattern.</p> <p>f Wipe the nozzle plate and heater block with a soft cloth and then gently blow air through the nozzle plate and heater block orifices from the mounting side of both components.</p>

5. When done, go to *Removing the Applicator Needle* given next.

## Removing the Applicator Needle

To remove the needle, do the following steps.

1. You should have already done the following, in this sequence:
  - *General Disassembly*, given earlier in this section.
  - *Removing the Nozzle Plate Assembly*, given earlier in this section.
  - *Removing the Seal Pack*, given earlier in this section.
  - *Cleaning the Applicator*, given earlier in this section.
2. Remove the two screws (4) holding the heater block in place and remove the heater block.
3. Using the special needle removal tool, rotate the needle (3) counterclockwise to remove it from the piezo actuator (1). The spring (2) will come out of the applicator when the needle is removed.

**NOTE:** The P/N 1125092 needle removal tool is included with the P/N 1126067 needle replacement kit.

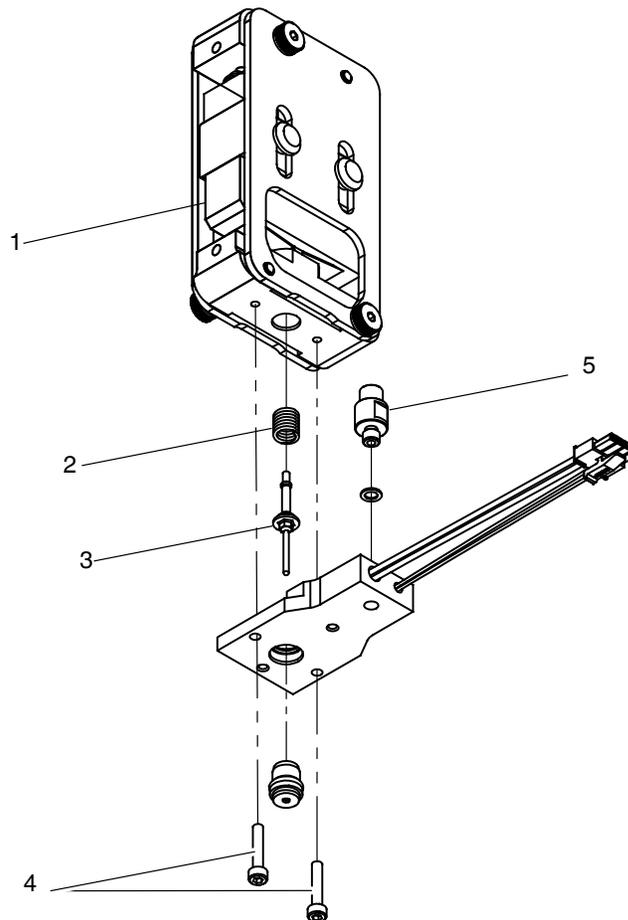


Figure 7-8 Applicator Needle Removal

## Installing the Applicator Needle

**NOTE:** Before putting the needle and other items back together, follow the alignment instructions given in *Vulcan Jet Alignment Tool* (P/N 1130498).

1. Obtain a new applicator needle (5).
2. Hold the top and bottom of the frame plates (1) and insert the spring (4) and needle (5) into the plastic needle housing (3). Make sure the top part of the needle housing is in contact with the bottom of the piezo actuator (2). Using the special needle removal tool, rotate the needle clockwise until you feel it threading into the piezo actuator. Torque the needle to a value of 7-8 in-lb.

**CAUTION!** Be careful not to cross-thread the needle.

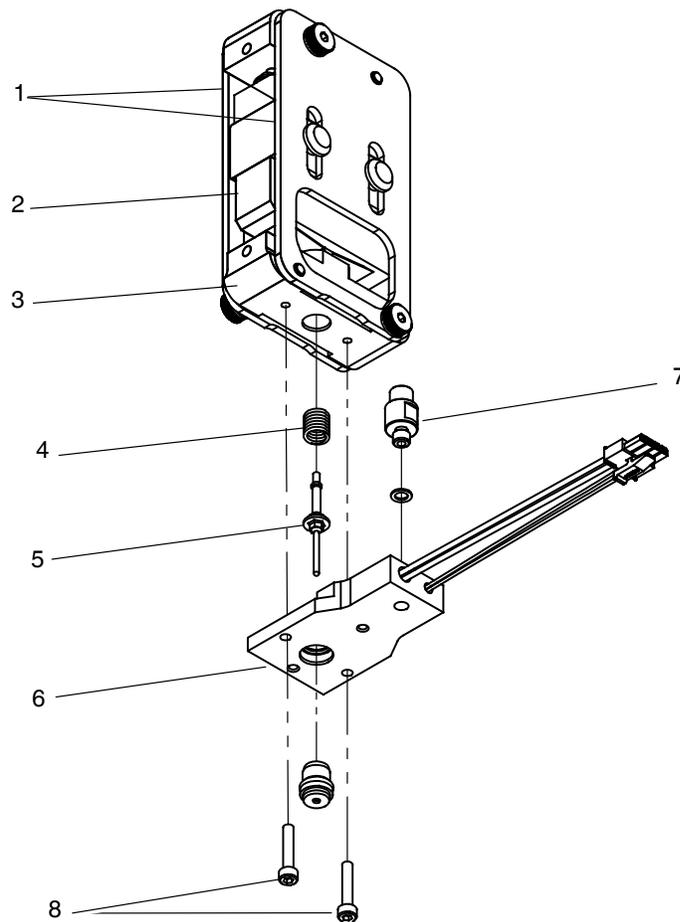


Figure 7-9 Applicator Needle Installation

- |                           |                          |              |
|---------------------------|--------------------------|--------------|
| 1. Frame plates           | 4. Spring                | 7. Luer lock |
| 2. Piezo actuator         | 5. Applicator needle     | 8. Screws    |
| 3. Plastic needle housing | 6. Heater block assembly |              |

3. Refer to *Installing the Seal Pack* given next.

## Installing the Seal Pack

1. Obtain a new seal pack (5).
2. Fill the seal pack with lubricant.
3. Lubricate the external seal pack O-ring.
4. Decide if you are going to replace the applicator needle:
  - If No, go to step 5.
  - If Yes, skip step 5 and refer to *Removing the Applicator Needle* given earlier in this section to continue.
5. Lubricate the needle.

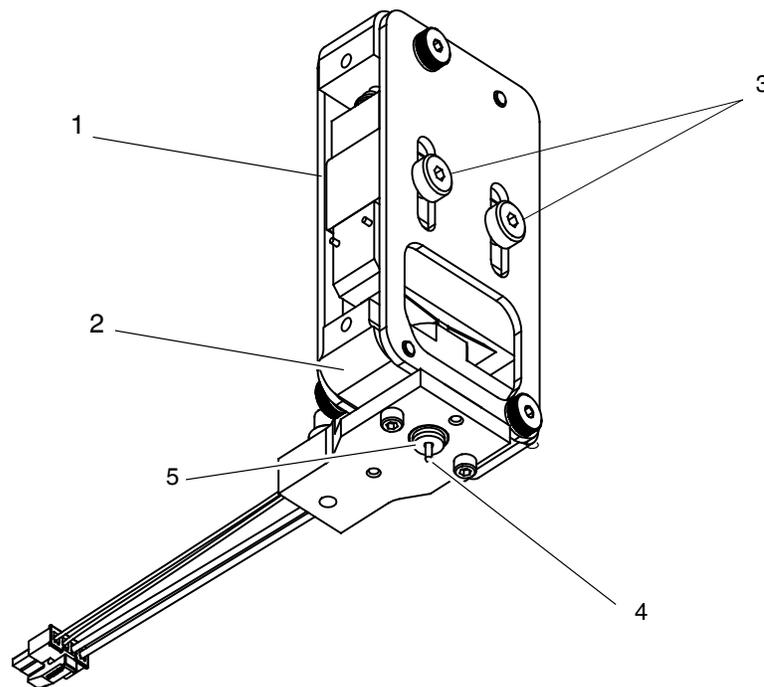


Figure 7-10 Replacing the seal pack

- |                           |                          |              |
|---------------------------|--------------------------|--------------|
| 1. Applicator             | 3. Adjustment screws (2) | 5. Seal pack |
| 2. Plastic needle housing | 4. Applicator needle     |              |

6. Gently push the seal pack into the heater block.
7. When done, go to *Installing the Nozzle Plate Assembly* given next.

## Installing the Nozzle Plate Assembly

1. Install the O-ring (4).
2. Grasp the applicator (1) in one hand and carefully align the applicator needle (3) with its orifice in the nozzle plate assembly (5).
3. Use a 2.5mm hex driver to sequentially tighten the two screws (6) that secure the nozzle plate (5) to the heater block (7). Torque the screws to a value of 8-9 in-lb.
4. Go to *General Reassembly* given later in this section.

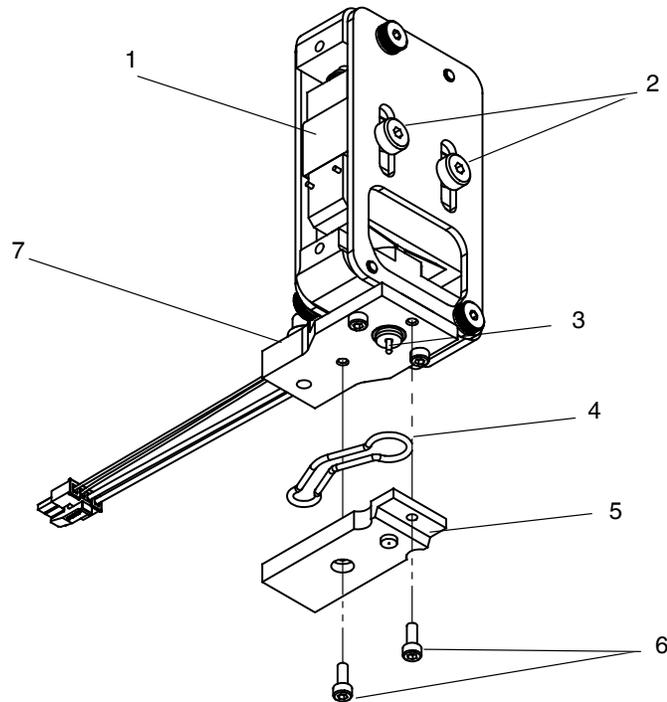


Figure 7-11 Nozzle Plate Installation

- |                          |                          |                 |
|--------------------------|--------------------------|-----------------|
| 1. Applicator            | 3. Applicator needle     | 6. Screws (2)   |
| 2. Adjustment screws (2) | 4. O-ring                | 7. Heater block |
|                          | 5. Nozzle plate assembly |                 |

## Removing the Piezo Actuator

To replace the piezo actuator, do the following steps.

1. You should have already done the following, in this sequence:
  - Refer to *General Disassembly* given earlier in this section.
  - Refer to *Removing the Nozzle Plate Assembly* given earlier in this section.
  - Refer to *Removing the Seal Pack Assembly* given earlier in this section.
  - Refer to *Cleaning the Applicator*, given earlier in this section.
  - Refer to *Removing the Applicator Needle* given earlier in this section.
2. Place the applicator on a table as shown in Figure 7-12.
3. Use a 2.5 mm hex driver to remove the top shoulder screw (2) from the frame plate (3).
4. Use a 3 mm hex driver and fingers to remove the two stroke adjustment screws (1) from the frame plate.

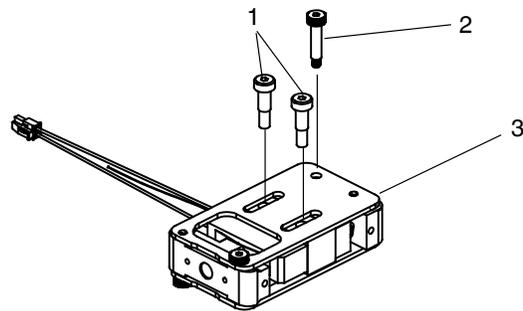


Figure 7-12 Frame Plate Disassembly

5. Turn the applicator over as shown in Figure 7-13 and place back on table.

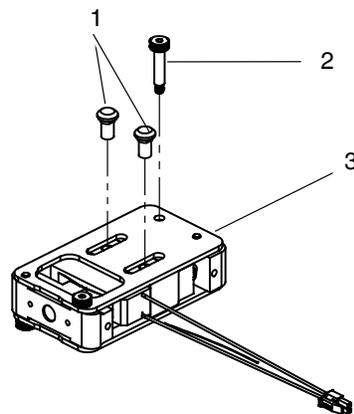


Figure 7-13 Frame Plate Disassembly

6. Use a 2.5 mm hex driver to remove the top shoulder screw (2) from the frame plate (3).
7. Use your fingers and a flat-blade screwdriver to remove the two clamp nuts (1) from the frame plate.
8. See Figure 7-14. Slide the the aluminum block (5) away from the air flush heat exchanger and put it aside.
9. Slide the the piezo actuator (2), along with the slide block (3), and the air flush heat exchanger (4) up and out of the frame plates (1).

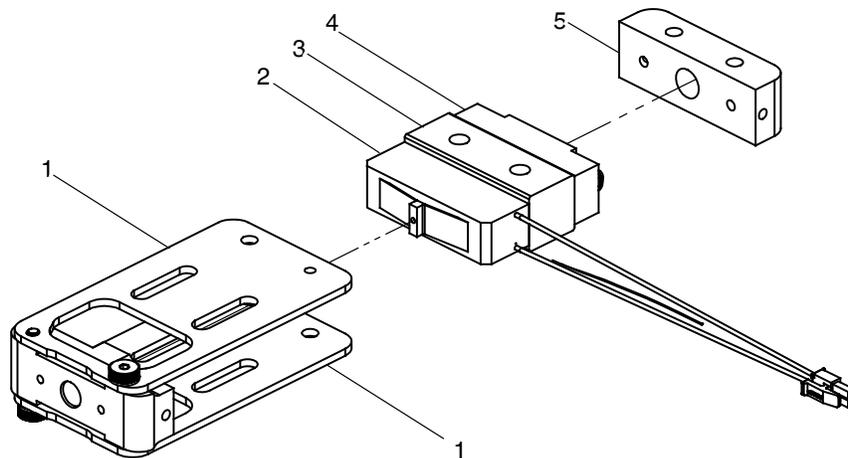


Figure 7-14 Piezo Actuator Disassembly

10. See Figure 7-15. Use a 2.5 mm hex wrench to sequentially loosen and remove the two screws (2) that hold the air flush heat exchanger (3) to the slide block (5).

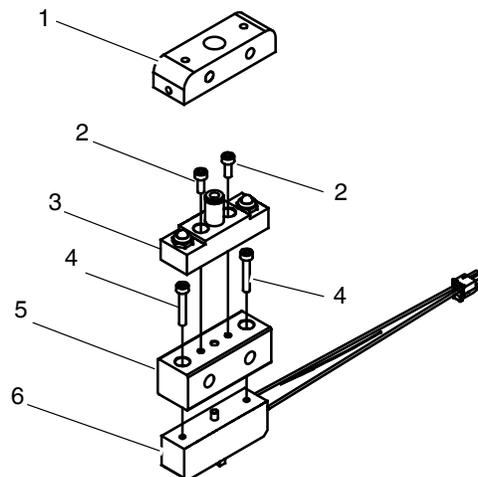


Figure 7-15 Piezo Actuator Disassembly

11. Use a 2.5 mm hex driver to remove the two screws (4) that hold the slide block (5) to the piezo actuator (6).

## Installing the Piezo Actuator

To install the piezo actuator, do the following steps.

1. Obtain a new piezo actuator (6).
2. Use a 2.5 mm hex driver to tighten the two screws (4) that hold the slide block (5) to the piezo actuator (6). Torque the screws to a value of 8-9 in-lb.

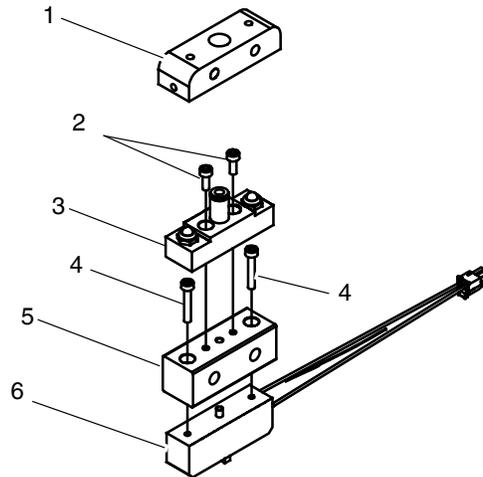


Figure 7-16 Piezo Actuator Assembly

3. Use a 2.5 mm hex wrench to tighten the two screws (2) that hold the air flush heat exchanger (3) to the slide block (5). Torque the screws to a value of 8-9 in-lb.
4. Slide the the piezo actuator (2) down into the frame plates (1), along with the slide block (3) and air flush heat exchanger (4).

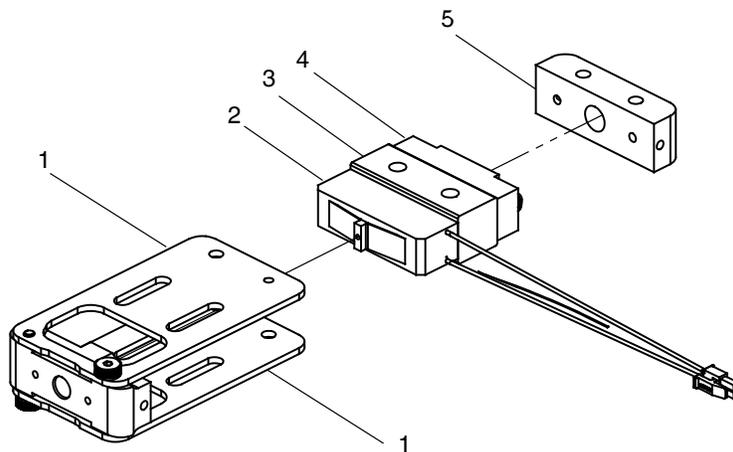


Figure 7-17 Piezo Actuator Assembly

5. Slide the aluminum block (5), onto the air fitting on the air flush heat exchanger (4).
6. Place the applicator on a table as shown in Figure 7-18.

7. Use your fingers to insert the two clamp nuts (1) into and flush with the frame plate (3).
8. Use a 2.5 mm hex driver to secure the top shoulder screw (2) to the frame plate (3). Torque the screw to a value of 8-9 in-lb.

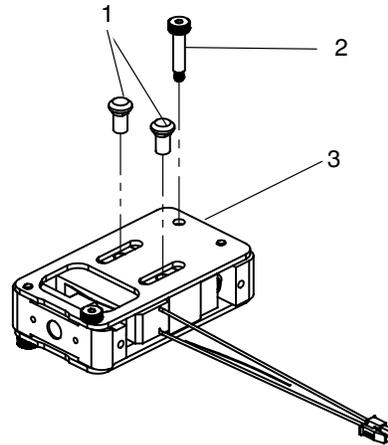


Figure 7-18 Frame Plate Assembly

9. Flip the applicator over as shown in Figure 7-19, and place back on table.
10. See Figure 7-19. Use a 3 mm hex driver and fingers to secure the two stroke adjustment screws (1) into and flush with the frame plate (3).

**NOTE:** To allow the slide assembly to move during stroke adjustment, do not tighten these screws.

11. Use a 2.5 mm hex driver to secure the top shoulder screw (2) into the frame plate (3). Torque the screw to a value of 8-9 in-lb.

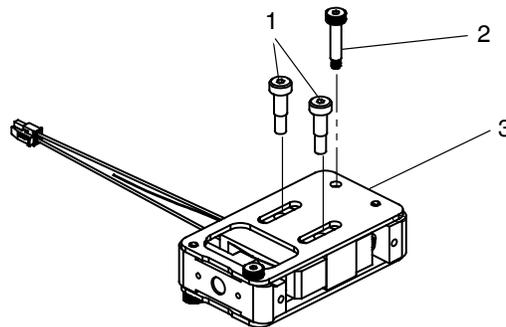


Figure 7-19 Frame Plate Assembly

12. When done, do the following in the sequence listed:

- Refer to *Installing the Applicator Needle* given earlier in this section.
- Refer to *Installing the Seal Pack* given earlier in this section.
- Refer to *Installing the Nozzle Plate Assembly* given earlier in this section.
- Refer to *General Reassembly* given next.

## General Reassembly

1. You should have already done one or more of the following, in this sequence:
  - Refer to *Installing the Piezo Actuator* given earlier in this section..
  - Refer to *Installing the Applicator Needle* given earlier in this section.
  - Refer to *Installing the Seal Pack* given earlier in this section.
  - Refer to *Installing the Nozzle Plate Assembly* given earlier in this section.
2. Place the cartridge heater (3) onto the Luer lock (4), then place the actuator (1) into the frame (2).

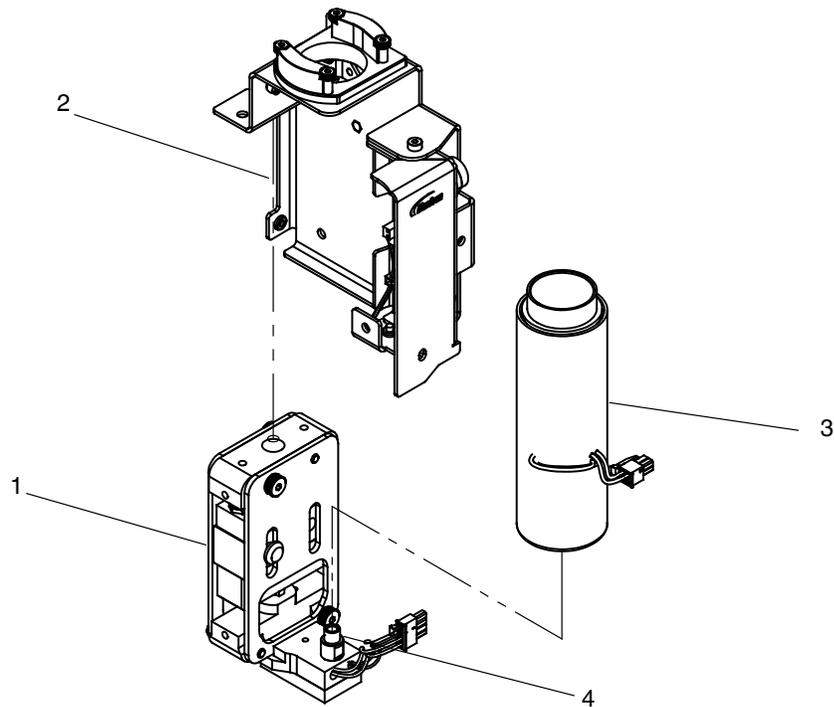


Figure 7-20 Actuator and Cartridge Heater Installation

3. Grasp the applicator and use a 3 mm hex wrench to tighten the two screws (1) that secure the mounting bracket to the top of the applicator. Then, tighten the other two screws (2) that pass through the mounting bracket into the back of the applicator. Torque the screws to a value of 8-9 in-lb.

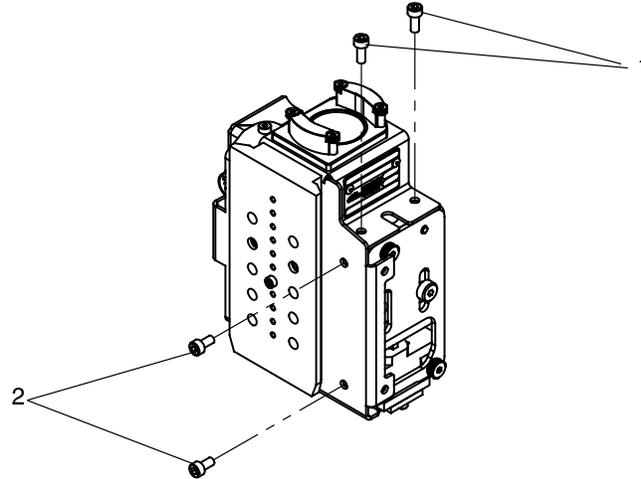


Figure 7-21 Applicator Installation

4. Pivot the the circuit board mount bracket (5) to access the circuit board. Connect the following wires to the applicator circuit board.
  - X4, piezo thermocouple (1), using a 0.025-inch flat-blade screwdriver
  - X5, cartridge heater (2)
  - X6, heater block (3)
  - X7, piezo driver (4)

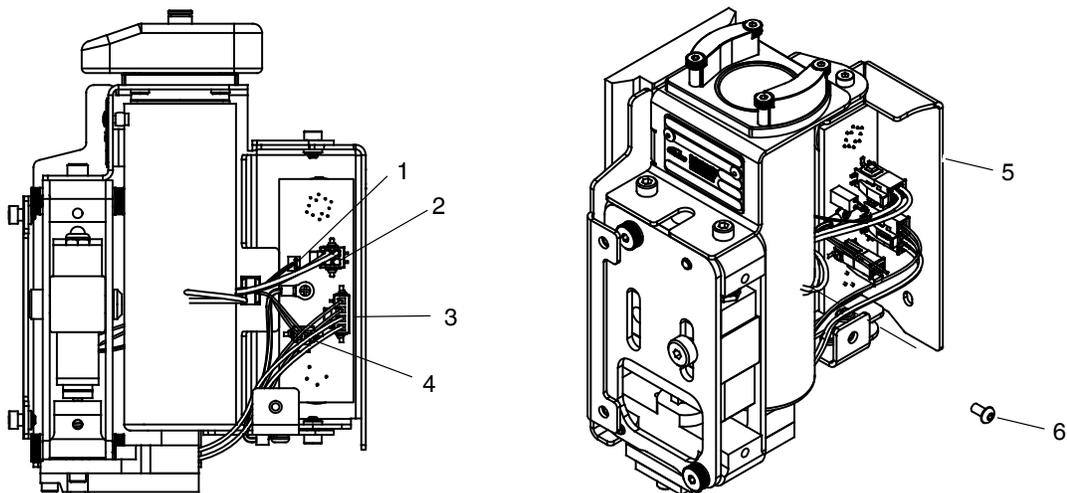


Figure 7-22 Circuit Board Access

5. Tighten the screw (6) that holds the hinged circuit board mount bracket (5) in place.

## General Reassembly *(contd)*

6. Install the applicator cover (9) onto the applicator (8) by using a 2 mm hex wrench. Tighten the three screws (4) that hold the applicator cover (9) on the applicator (8).

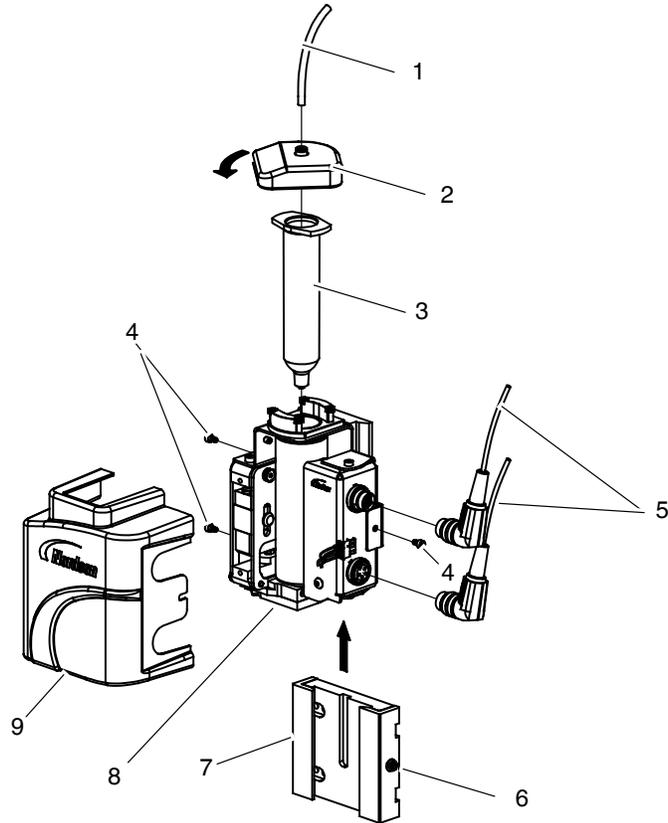


Figure 7-23 General Assembly

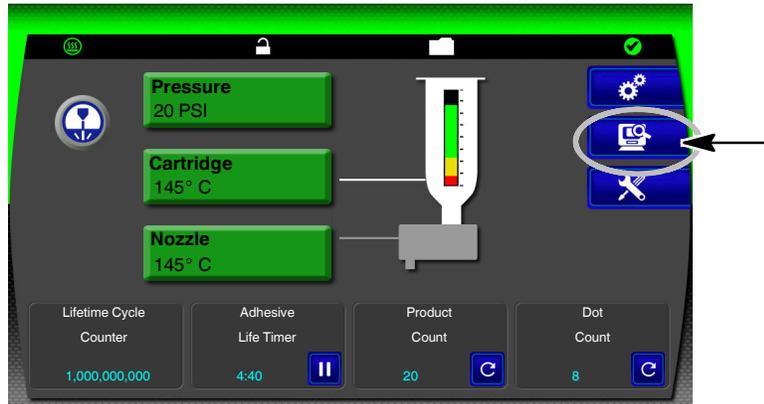
7. Attach the following to the applicator:
  - a. the air line (1) to the air cap (2)
  - b. both cables (5) from the controller
8. Slide the applicator into the mounting block (7) and tighten the mounting block screw (6).

9. Install an adhesive cartridge as follows:
  - a. remove the caps from both ends of a 30-cc adhesive cartridge (3).
  - b. insert the cartridge in the applicator (8), with the tapered end pointing down.
  - c. Install the air cap (2).
10. Energize the controller, then switch it On.
11. Perform stroke adjustment. Refer to *Advanced Applicator Settings* given in *Advanced Controller Configuration*, Section 6.
12. Restore the system to normal operation.

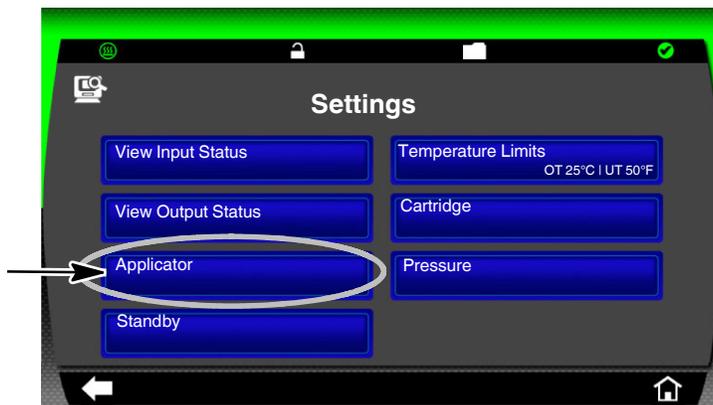
## Adjusting the Stroke Settings

Perform stroke adjustment using the controller:

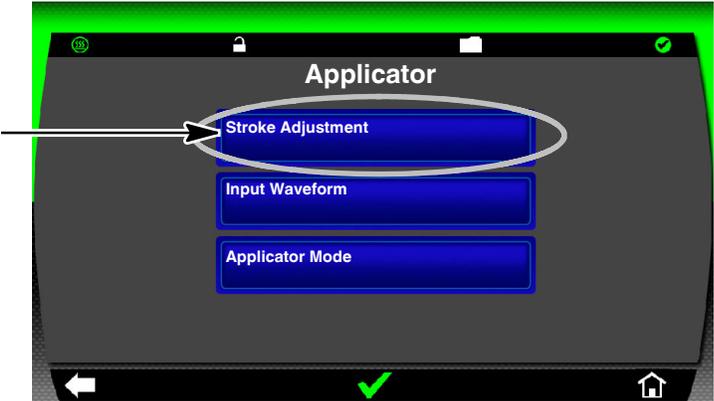
1. Touch  on the **Home** screen.



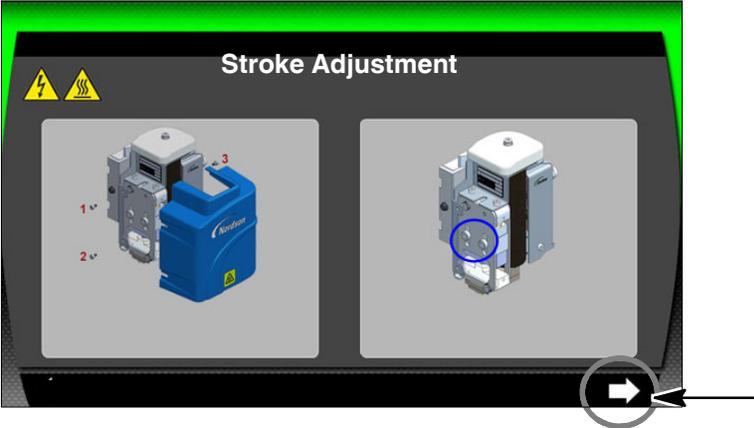
2. Touch the **Applicator** button on the **Settings** screen.



3. Touch the **Stroke Adjustment** button on the **Applicator** screen.

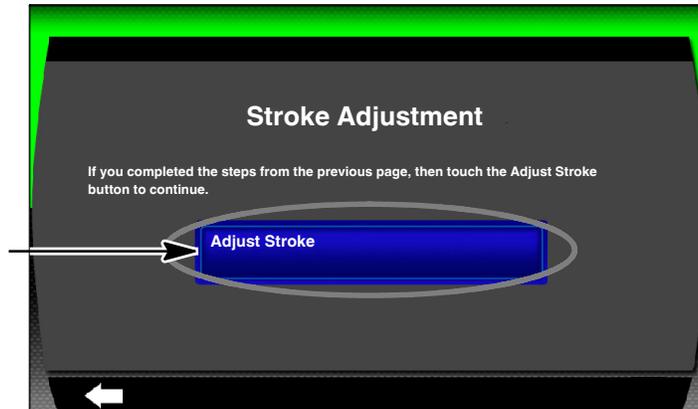


4. Review the two images in the following screen and touch .

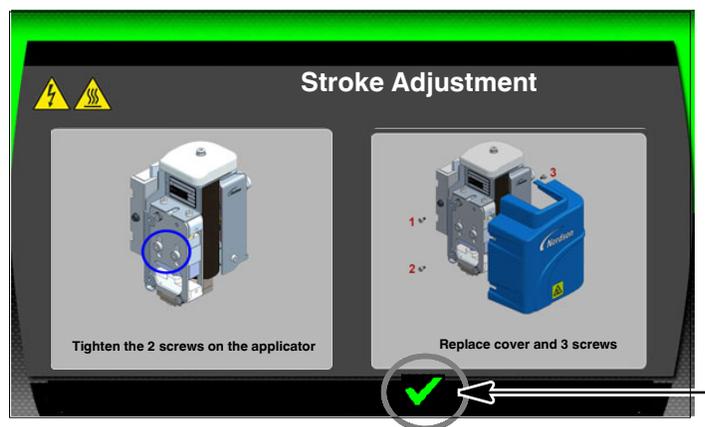


## Adjusting the Stroke Settings *(contd)*

5. After completing steps 1 - 4, touch the **Adjust Stroke** button to correct the settings.



6. Review the two images and make sure the green  is displayed on the screen.



7. Tighten the screws for stroke adjustment. Torque the screws to 11-12 in-lb.
8. Install the applicator cover by reattaching the three screws.

## Section 8

# Troubleshooting



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

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 local Nordson representative for help.

## Overview

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. This section covers only the most common problems you may encounter. If you cannot solve a problem with the information given here, contact your local Nordson representative for help.

For additional troubleshooting information, refer to the manuals provided with the other equipment used in the hot melt system.

## Heater/RTD Alarm Troubleshooting

Refer to the figure below and the following table to troubleshoot the alarms generated by the heater/RTD.

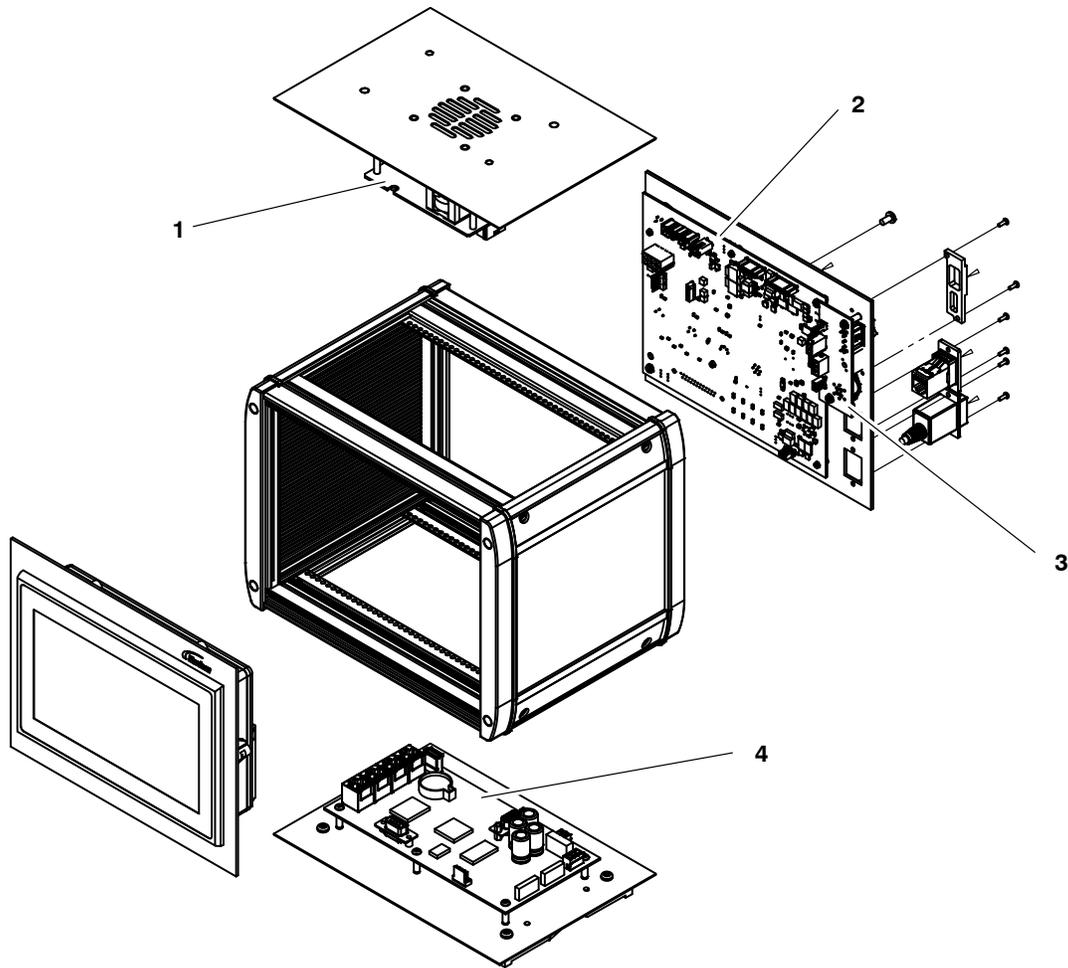


Figure 8-24 System Board Locations

- 1. Piezo driver
- 2. I/O board

- 3. Power distribution board
- 4. Communications board

Table 8-1 Heater/RTD Alerts/Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Nozzle Heater Current Overload Fault	Nozzle heater current has exceeded the allowable limit. Heater turned off.	<ul style="list-style-type: none"> <li>• Defective heater</li> <li>• Short circuit in heater wires</li> </ul>	Inspect heater wiring. Otherwise, replace heater assembly. If condition still exists, replace I/O PCA board.
Cartridge Heater Current Overload Fault	Cartridge heater current has exceeded the allowable limit. Heater turned off.		
Nozzle Heater Open	<p><b>Alert condition</b> - nozzle heater current has exceeded the allowable limit.</p> <p><b>Fault condition</b> - if the issue is not resolved within 2 minutes of the alert message, the heater is switched off.</p>	<ul style="list-style-type: none"> <li>• Defective heater</li> <li>• Open circuit in the heater wiring</li> <li>• Defective I/O Printed Circuit Assembly (PCA) board</li> </ul>	
Cartridge Heater Open	<p><b>Alert condition</b> - cartridge heater current has exceeded the allowable limit.</p> <p><b>Fault condition</b> - if the issue is not resolved within 2 minutes of the alert message, the heater is switched off.</p>		

## Pressure/Adhesive Alarm Troubleshooting

Refer to this table to troubleshoot the alarms generated by the pressure/heater controls.

Table 8-2 Pressure/Adhesive Alerts/Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
High Pressure Fault	The air pressure is above the fault threshold.	<ul style="list-style-type: none"> <li>Low-pressure air to the controller is either off or disconnected.</li> </ul>	<ul style="list-style-type: none"> <li>Clean the orifice.</li> <li>Check Air pressure connection to the controller.</li> </ul>
Low Pressure Fault	The air pressure is below the alert threshold.	<ul style="list-style-type: none"> <li>Pressure sensor/transducer failure</li> <li>Solenoid failure</li> </ul>	<ul style="list-style-type: none"> <li>Replace sensor/transducer.</li> <li>Replace solenoid.</li> </ul>
Cured Adhesive	The cartridge has been in use for longer than the programmed adhesive life.	<ul style="list-style-type: none"> <li>Adhesive in cartridge is cured.</li> </ul>	Replace cartridge
Low Cartridge Level Alert	The available adhesive in the cartridge is equal to or less than the Low Level Alert threshold value. The system continues to operate normally, but you will need to replace the cartridge soon.	The result of creating product	Replace cartridge.
Empty Cartridge Fault	The available adhesive in the cartridge is equal to or less than the Empty Level Fault threshold value. Production stops.		

## Input/Output Alarm Troubleshooting

Refer to this table to troubleshoot the alarms generated by the inputs/outputs.

Table 8-3 Input/Output Alerts

Screen Message	Effect on Controller	Cause	Corrective Action(s)
System Power Supply Overload Alarm	The total 24V power supply current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>External devices miswired</li> <li>Short circuit on 24V power bus due to defective internal cable or defective PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check output wiring for incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace Communications PCA, I/O PCA, and/or Piezo Driver PCA.</li> <li>Inspect internal cables for damage. Replace cables as needed.</li> </ul>
HMI Power Supply Overload Alarm	Power supply current to HMI has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>HMI miswired</li> <li>Defective cables</li> </ul>	<ul style="list-style-type: none"> <li>Check output wiring for incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> </ul>
USB Power Supply Overload Alarm	Power supply current on USB host connection has exceeded the allowable limit.	Defective USB drive	Try using a different USB drive.
Air Flow Meter Power Supply Overload Alarm	The air flow meter power supply current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>Defective air flow meter or cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Replace air flow meter.</li> <li>Check wiring for incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace I/O PCA.</li> </ul>
I/O Connector Power Supply Overload Alarm	I/O connector 24V output current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>Short circuit on the 24V output signal</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check wiring for incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Check external devices attached to the 24V output supply for short circuits.</li> <li>Replace I/O PCA.</li> </ul>

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Applicator Power Supply Overload Alarm	The 5V supply to the applicator has exceeded the allowable current limit.	<ul style="list-style-type: none"> <li>Defective cables to applicator</li> <li>Defective applicator PCA</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Replace/inspect cables to applicator.</li> <li>Replace PCA in applicator.</li> <li>Replace I/O PCA.</li> </ul>
Air Pressure Control Valve Power Supply Overload Alarm	The air pressure control valve power supply current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>Defective air pressure control valve or cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check wiring for incorrect connection.</li> <li>Replace/inspect cables to nozzle.</li> <li>Replace PCA in nozzle.</li> <li>Replace I/O PCA.</li> </ul>
Air Control Solenoid Power Supply Overload Alarm	The air control solenoid power supply current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>Defective air control solenoid or cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Replace air control solenoid.</li> <li>Check wiring for incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace I/O PCA.</li> </ul>
Pressure Dump Solenoid Power Supply Overload Alarm	The air dump solenoid power supply current has exceeded the allowable limit.	<ul style="list-style-type: none"> <li>Defective air dump solenoid or cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Replace air dump solenoid.</li> <li>Check wiring for wear or incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace I/O PCA.</li> </ul>
Standby Output Diagnostic Failure Alarm	Standby output diagnostic failure	<ul style="list-style-type: none"> <li>Output state does not match programmed state.</li> <li>Overload on the output</li> <li>Defective cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check load connected to output.</li> <li>Check wiring for wear or incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace I/O PCA.</li> </ul>
Ready Output Diagnostic Failure Alarm	Ready output diagnostic failure		
Fault Output Diagnostic Failure Alarm	Fault output diagnostic failure		
Alarm Output Diagnostic Failure Alarm	Alarm output diagnostic failure. Output state does not match programmed state.		
Running Output Diagnostic Failure Alarm	Running output diagnostic failure. Output state does not match programmed state.		

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Finished Output Diagnostic Failure Alarm	Finished output diagnostic failure	<ul style="list-style-type: none"> <li>Output state does not match programmed state.</li> <li>Overload on the output</li> <li>Defective cable</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check load connected to output.</li> <li>Check wiring for wear or incorrect connection.</li> <li>Check output wiring and cables for wear. Replace cables as needed.</li> <li>Replace I/O PCA.</li> </ul>
Low Output Diagnostic Failure Alarm	Low output diagnostic failure		
Empty Output Diagnostic Failure Alarm	Empty output diagnostic failure		
Air Flow Meter Disconnected Alarm	The air flow meter is not connected to the controller.	<ul style="list-style-type: none"> <li>Cable unplugged</li> <li>Defective air flow meter</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check/replace cabling.</li> <li>Check for improperly wired cabling.</li> <li>Replace air flow meter.</li> <li>Replace I/O PCA.</li> </ul>
Air Pressure Control Valve Disconnected Alarm	The air pressure control valve is not connected to the controller.	<ul style="list-style-type: none"> <li>Cable unplugged</li> <li>Defective air pressure control valve</li> <li>Defective I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check/replace cabling.</li> <li>Replace air pressure control valve.</li> <li>Replace I/O PCA.</li> </ul>
Open Thermocouple Circuit Alarm	The thermocouple used to measure the piezo temperature is open.	<ul style="list-style-type: none"> <li>Broken or unconnected cable or thermocouple</li> <li>Defective nozzle or I/O PCA</li> </ul>	<ul style="list-style-type: none"> <li>Check thermocouple connections.</li> <li>Check/replace cables from controller to nozzle.</li> <li>Replace thermocouple.</li> <li>Replace Nozzle and/or I/O PCA.</li> </ul>
NordBus #1 Power Switch Alarm	The feedback signal for the Nordbus power output does not match the actual power output state.	<ul style="list-style-type: none"> <li>Short circuit or overload on the NordBus power bus</li> <li>Defective Communications PCA</li> </ul>	<ul style="list-style-type: none"> <li>Remove overload or short circuit on NordBus.</li> <li>Replace Communications PCA.</li> </ul>
NordBus #2 Power Switch Alarm	The feedback signal for the Nordbus power output does not match the actual power output state.		
Piezo Temperature Too High Alarm	The temperature of the piezo (measured with thermocouple) is too high.	<ul style="list-style-type: none"> <li>High ambient temperature</li> <li>Cycling applicator too fast</li> </ul>	<ul style="list-style-type: none"> <li>Decrease actuator cycle rate.</li> <li>Decrease ambient temperature.</li> <li>Increase pause time between products.</li> </ul>

## Storage Alarm Troubleshooting

Refer to this table to troubleshoot the alarms generated by the storage components.

Table 8-4 Storage Alerts/Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
USB File Error - Disk Full Alert	Error saving file. Not enough space to save the file		<ul style="list-style-type: none"> <li>Use a different USB drive.</li> <li>Delete some files from the disk.</li> </ul>
USB File Error - Corrupt File Alert	Error reading file. File is corrupt.		Reload file onto USB drive.
CRC File Error On Panel Fault	Error verifying panel software		Reinstall software using the archive recovery screen. If recovery fails, upgrade software via USB
File Transfer Failed Alert	File fails to transfer during back-up or restore operation.		Try backup or restore again.
Recipe File Error Alert	CRC check fails when recipe is opened.		Delete the recipe and re-create it
Recipe Changes Not Saved Alert	Changes made to the recipe are not saved due to power loss or remote recipe change.		Always save recipe changes that you wish to save.

## System Board Alarm Troubleshooting

Refer to following figure and table to troubleshoot the alarms generated by the system boards.

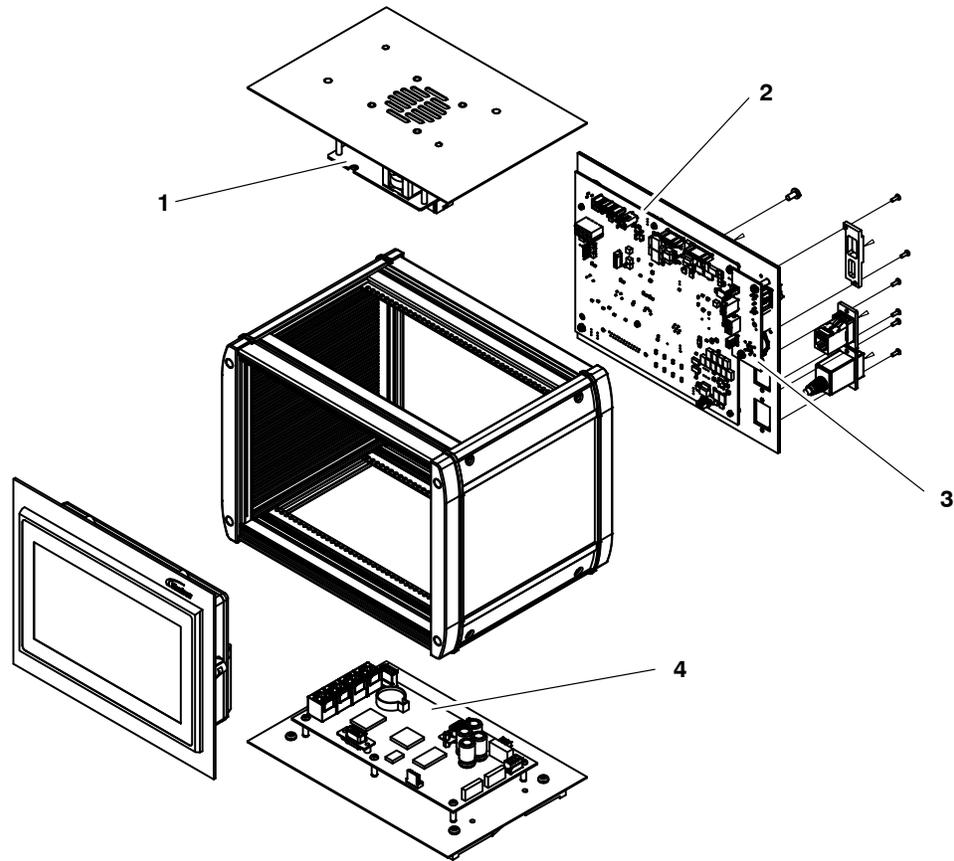


Figure 8-25 System Board Locations

- 1. Piezo driver
- 2. I/O board
- 3. Power distribution board
- 4. Communications board

Table 8-5 System Board Alerts/Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Controller Board Failure Fault	Controller board hardware failure		Replace Controller Board.
RAM Test Fault	RAM failure. Checked at power up		Reload file onto USB drive.

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Communication Failure Fault	No Ethernet communication between touch screen and controller board		<ul style="list-style-type: none"> <li>• Check Ethernet cable connections at both ends.</li> <li>• Check Ethernet diagnostic LEDs.</li> <li>• Check Controller Board CPU Not Loaded LED. <ul style="list-style-type: none"> <li>• Steady = failed to boot. Replace Controller Board (Part Number xx).</li> <li>• Flashing = replace or reload Controller Board SD card.</li> </ul> </li> </ul>
Controller Board Software Error Alert	Software malfunction on controller board		<ul style="list-style-type: none"> <li>• Turn power to the system Off and On.</li> <li>• Perform a software upgrade.</li> <li>• Perform a Factory Reset.</li> </ul>
Maximum Internal Operating Temperature Exceeded Alert	Internal temperature sensor reports that the internal operating temperature has been exceeded.		Install fan kit.
Power Supply Low Voltage Alert	The system power supply voltage drops below the minimum operating limit.	Brownout condition on incoming line power	
Failed Controller Board Software Upgrade Alert	<p>The software upgrade fails due to a problem upgrading the controller board:</p> <ul style="list-style-type: none"> <li>• Fails to prepare for upgrade</li> <li>• Fails to send DAT file</li> <li>• Controller board cannot upgrade (nError code = %d)</li> <li>• The system remains on the current software version.</li> </ul>		
Touchscreen Calibration Fault	The touchscreen calibration fails.	Bad HMI	<ul style="list-style-type: none"> <li>• Try to calibrate again.</li> <li>• Otherwise, replace touchscreen panel.</li> </ul>

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Internal Communication Alert	The board returns one of the following fault codes: <ul style="list-style-type: none"> <li>• CPU PCA</li> <li>• I/O and Temperature Control Board</li> </ul>	Improperly connected or defective board-to-board wiring	<ul style="list-style-type: none"> <li>• Check board-to-board wiring.</li> <li>• Replace the board.</li> <li>• Check diagnostic indicator lights on each board.</li> </ul>
Software Upgrade Fail Fault	The upgrade is unsuccessful.	<ul style="list-style-type: none"> <li>• Power interruption while the upgrade is in progress</li> <li>• The file is not properly downloaded or is corrupt.</li> </ul>	<ul style="list-style-type: none"> <li>• Try upgrading again.</li> <li>• Download the upgrade file again.</li> </ul>
External Communication Alert	The controller cannot communicate with robot or parent machine (external device).	<ul style="list-style-type: none"> <li>• Cable not connected or connected properly.</li> <li>• Parent machine is Off.</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the cable connections are seated properly.</li> <li>• Make sure the parent machine is not On.</li> </ul>

## Temperature Alarm Troubleshooting

Refer to this table to troubleshoot temperature alarms generated by the heater/RTD.

Table 8-6 Temperature Alerts/Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Overtemperature	<p><b>Alert condition</b> - Temperature for Zone &lt;&lt;# or Name&gt;&gt; rises above defined Set Point threshold. The controller continues to work, but maintenance may be required.</p> <p><b>Fault condition</b> - Temperature for Zone &lt;&lt;# or Name&gt;&gt; rises above defined Set Point threshold. Heaters turned Off.</p>	The actual temperature of the component has risen above the set temperature limit.	<ul style="list-style-type: none"> <li>• Check the connections or replace the RTD.</li> <li>• Check for conditions that may cause an increase in ambient temperature.</li> <li>• Replace the component.</li> <li>• Install P/N 1126121 Heat Exchanger Air Flush Kit. See page 3-7.</li> </ul>
Undertemperature	<p><b>Alert condition</b> - Temperature for Zone &lt;&lt;# or Name&gt;&gt; drops below defined Set Point threshold. The controller continues to work, but maintenance may be required.</p> <p><b>Fault condition</b> - Temperature for Zone &lt;&lt;# or Name&gt;&gt; drops below defined Set Point threshold. Heaters turned Off.</p>	The actual temperature of the component has dropped below the set temperature limit.	<ul style="list-style-type: none"> <li>• Check the connections or replace the RTD.</li> <li>• Check for conditions that may cause a drop in ambient temperature.</li> <li>• Replace the component.</li> </ul>
Open/Shorted	RTD on shorted or open on <<# or Name>>. Controller not working.	<ul style="list-style-type: none"> <li>• The RTD for the component indicated has failed.</li> <li>• The component was disconnected from the controller.</li> </ul>	Check the connections or replace the RTD.

## Piezo Driver Board Alarm Troubleshooting

Refer to this table to troubleshoot alarms generated by the piezo driver board.

Table 8-7 Piezo Driver Board Faults

Screen Message	Effect on Controller	Cause	Corrective Action(s)
Piezo Not Present Fault	Piezo actuator not detected	<ul style="list-style-type: none"> <li>• Cable not connected</li> <li>• Cable improperly connected</li> <li>• Defective piezo actuator</li> </ul>	<ul style="list-style-type: none"> <li>• Check cables to piezo actuator.</li> <li>• Replace piezo actuator.</li> </ul>
Piezo LVPS Fault	Low-Voltage Power Supply (LVPS) fault inside the piezo driver board	Defective piezo driver	Replace piezo driver.
Piezo HVPS Overvoltage Fault	High-Voltage Power Supply (HVPS) over voltage fault inside the piezo driver board		
Piezo HVPS Overload Fault	HVPS overload fault inside the piezo driver board	<ul style="list-style-type: none"> <li>• Defective piezo actuator cable</li> <li>• Defective piezo actuator</li> <li>• Defective piezo driver</li> </ul>	<ul style="list-style-type: none"> <li>• Replace piezo actuator cable.</li> <li>• Replace piezo actuator.</li> <li>• Replace piezo driver.</li> </ul>
Piezo Overtemperature Fault	HVPS overtemperature fault inside the piezo driver board	<ul style="list-style-type: none"> <li>• Defective piezo driver</li> <li>• Applicator is being cycled too fast.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace piezo driver.</li> <li>• Reduce applicator cycle rate.</li> </ul>
Piezo Valve Not Present Fault	Piezo valve not detected	<ul style="list-style-type: none"> <li>• Cable not connected</li> <li>• Cable improperly connected</li> <li>• Defective piezo actuator</li> </ul>	<ul style="list-style-type: none"> <li>• Check cables to piezo actuator.</li> <li>• Replace piezo actuator.</li> </ul>
Piezo Valve Not Enabled Fault	Piezo driver not enabled	One or more other piezo fault conditions may exist.	<ul style="list-style-type: none"> <li>• Check Event Log.</li> <li>• If fault persists, replace piezo driver board.</li> </ul>
Piezo ISO 15V Fault	15 volt power supply fault inside the piezo driver board	Defective piezo driver	Replace piezo driver.

## Piezo Alarm Troubleshooting

Refer to this table to troubleshoot alarms generated by the piezo.

Table 8-8 Piezo Alerts

Screen Message	Effect on Controller	Cause	Corrective Action(s)
The piezo has over heated, Please wait for piezo temperature to return to safe temperature.	The temperature of the piezo (measured with thermocouple) exceeds 183 °F (84 °C). Production stops until piezo temperature falls below 150 °F (65.5 °C).	<ul style="list-style-type: none"> <li>Applicator is being cycled too fast.</li> </ul>	<ul style="list-style-type: none"> <li>Connect heat exchanger using heat exchanger kit.</li> </ul>

## General System Troubleshooting

Refer to this table for general system troubleshooting.

Table 8-9 General System Troubleshooting

Problem	Possible Cause	Corrective Action
<b>1. Applicator does not heat</b>	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 controller and the applicator are secure.
	Broken or missing electrical pins	Check for broken or missing pins at all electrical connections. Repair or replace damaged components.
	Applicator temperature setpoint too low	Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.
<b>2. Applicator under-heats or overheats</b>	System in Setback (Standby) mode	Take the system out of the Setback mode.
	Applicator temperature setpoints too low or too high	Increase or decrease the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.
	Failed heater or sensor	Check the applicator heater or sensor.

*Continued...*

## General System Troubleshooting *(contd)*

Problem	Possible Cause	Corrective Action
<b>3. Erratic bead width (from part to part)</b>	Applicator temperature setpoint too low  Old PUR adhesive in system  Adhesive leaking under the cartridge flange  Top of adhesive cartridge plugged	Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.  Clean or replace the nozzle plate, clean the adhesive passages (see Figure 8-1), and/or replace the module. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i> .  Check the cartridge seal and clean the interface as needed.  Remove the cured layer of adhesive from the top of the adhesive cartridge.
<b>4. Bead too small</b>	Low input air supply  Old PUR adhesive in system  Applicator temperature setpoint too low  Top of adhesive cartridge plugged  Damaged parts	Ensure that the input air pressure is greater than 3.4 bar (50 psi).  Clean or replace the nozzle plate, clean the adhesive passages (see Figure 8-1), and/or replace the module. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i> .  Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.  Remove the cured layer of adhesive from the top of the adhesive cartridge.  Clean, inspect, and replace parts as needed.

*Continued...*

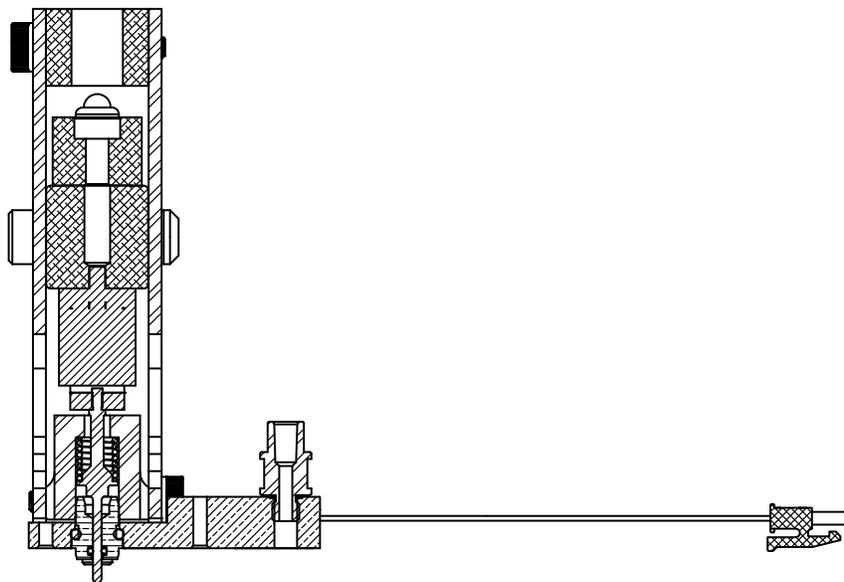


Figure 8-1 Location of adhesive passages

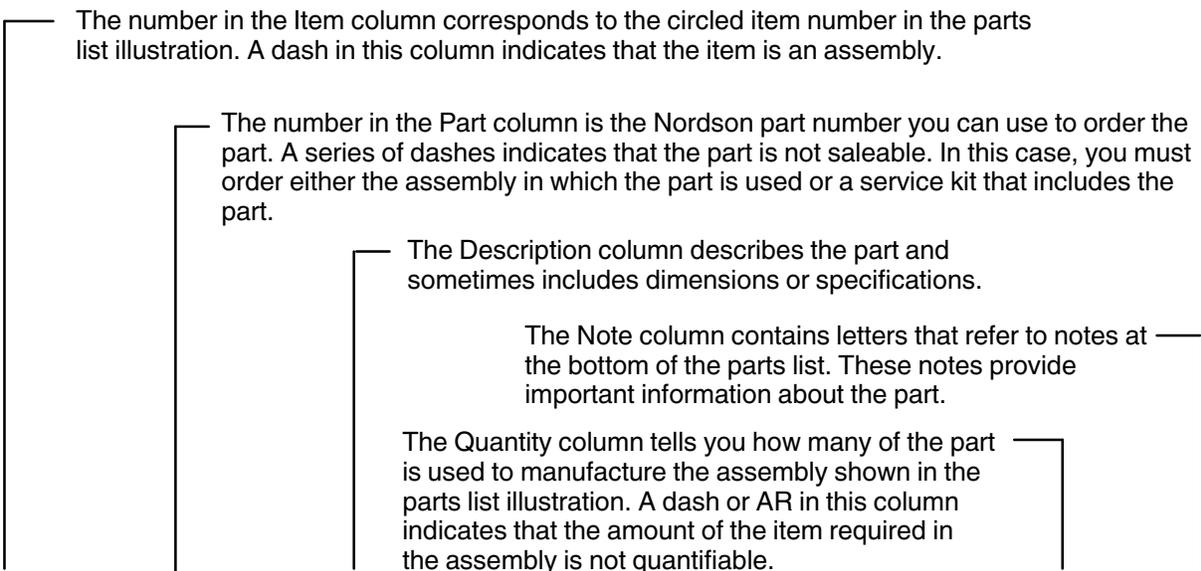
Problem	Possible Cause	Corrective Action
<b>5. Bead width changes on the part</b>	<p>Robot speed inconsistent</p> <p>Applicator position too high/low</p>	<p>Check the program speed settings. Refer to the robot documentation.</p> <p>Check the program height settings and/or check the height of the product. Refer to the robot documentation.</p>
<b>6. No adhesive output</b>	<p>Low or no input air supply</p> <p>No signal from robot</p> <p>Old PUR adhesive in system</p> <p>Cured material inside of applicator</p> <p>Applicator temperature setpoint too low</p> <p>Module needle stroke too short</p>	<p>Ensure that the input air pressure is greater than 3.4 bar (50 psi).</p> <p>Test the signal using the robot purge switch. If the applicator purges, the problem is in the robot. Refer to the robot documentation to troubleshoot the robot. If the applicator does not purge, check the setup. Refer to <i>Installation</i> as needed.</p> <p>Clean or replace the nozzle plate, clean the adhesive passages (see Figure 8-1), and/or replace the module. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i>.</p> <p>Clean or replace the nozzle plate, clean the adhesive passages (see Figure 8-1), and/or replace the module. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i>.</p> <p>Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.</p> <p>Refer to the needle stroke adjustment steps in <i>Set Up the Vulcan Jet Applicator</i> under <i>Setup</i> as needed.</p>
<b>7. Leaks at needle</b>	Adhesive seal failure	Replace the seal pack.
<b>8. Controller does not power on</b>	Open fuse	Replace the open fuse.
<b>9. Dots jetting in random directions</b>	<p>Applicator temperature setpoint too low</p> <p>Nozzle obstructed</p>	<p>Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.</p> <p>Clean the nozzle plate. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i>.</p>
<b>10. Adhesive building up on nozzle</b>	<p>Applicator temperature setpoint too low</p> <p>Nozzle obstructed</p> <p>Module needle stroke too short</p>	<p>Increase the temperature setpoint. Refer to <i>Set Up the Vulcan Jet Controller</i> under <i>Setup</i> as needed.</p> <p>Clean the nozzle plate. Refer to <i>Cleaning the Applicator</i> under <i>Maintenance</i>.</p> <p>Perform stroke adjustment. Refer to the needle stroke adjustment steps in <i>Set Up the Vulcan Jet Applicator</i> under <i>Setup</i> as needed.</p>

# Section 9

## Parts

### Using the Illustrated Parts Lists

To order parts, call the Nordson Customer Service Center or your local Nordson representative. Use these five-column parts lists, and the accompanying illustrations, to describe and locate parts correctly. The following chart provides guidance for reading the parts lists.



Item	Part	Description	Quantity	Note
—	0000000	Assembly A	—	
1	000000	• Part of assembly A	2	A
2	-----	• • Part of item 1	1	
3	0000000	• • • Part of item 2	AR	
NS	000000	• • • • Part of item 3	2	
NOTE A: Important information about item 1				
AR: As Required				
NS: Not Shown				

## Vulcan Jet Dispensing System Assemblies

See Figure 9-1.

**NOTE:** Refer to *Cable Part Numbers* later in this section for a list of all cables that may be used with the Vulcan Jet system.

Item	Part	Description	Quantity	Note
1	1125686	VULCAN JET APPLICATOR	1	A
2	1125078	KIT, PNEUMATIC, VULCAN JET	1	B
3	1125557	VULCAN JET CONTROLLER	1	C
4	7407852	ROBOT,UNITY 4XP,3AXIS,350 X 400 X 100MM	1	D

NOTE A: Refer to *Vulcan Jet Applicator Parts* later in this section.  
 B: Refer to *Air Kit Parts* later in this section.  
 C: Refer to *Controller Assembly Parts* later in this section.  
 NS: Not Shown

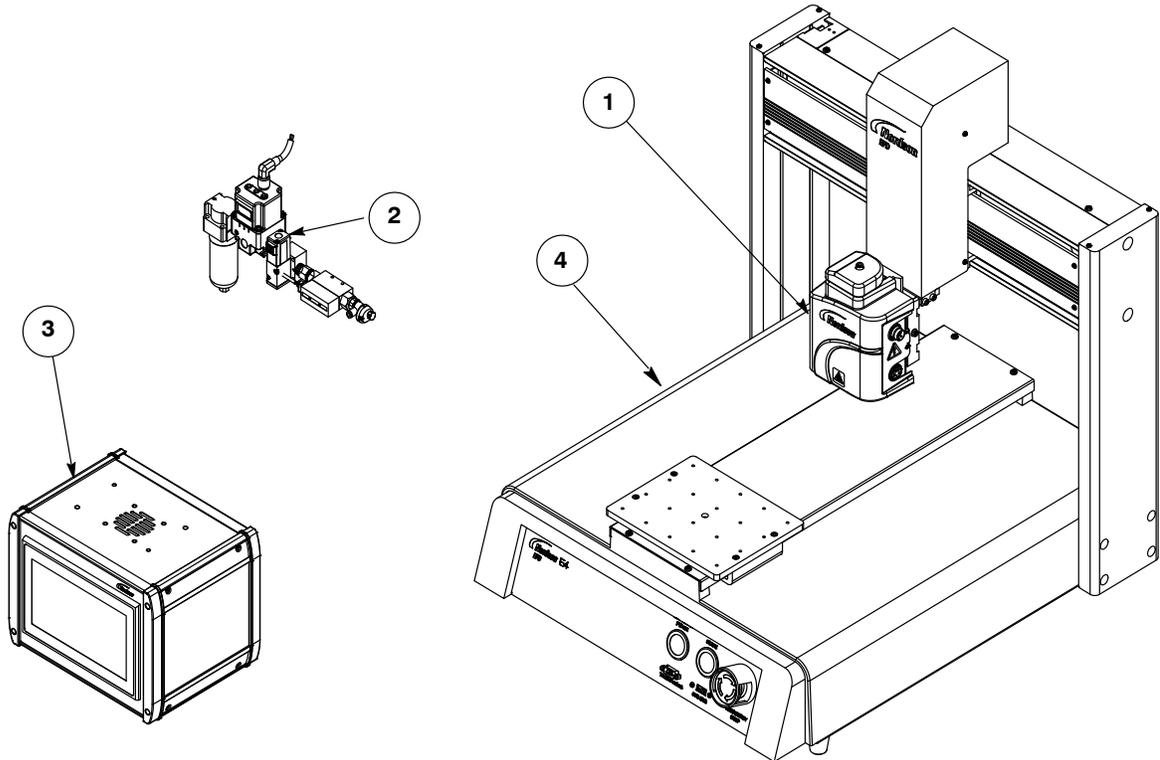


Figure 9-1 Vulcan Jet dispensing system assemblies

## Vulcan Jet Applicator Parts

See Figure 9-2 and Figure 9-3.

Item	Part	Description	Quantity	Note
01	1125971	• BRACKET, MOUNTING, VULCANJET	1	
02	1124940	• • FRAME, PLATE, VULCANJET	2	
03	1124941	• • FRAME, TOP, VULCANJET	1	
04	1124942	• • BLOCK, SLIDE, MOUNT, VULCANJET	1	
05	1124939	• FRAME, BOTTOM, VULCANJET	1	
06	1128208	• NOZZLE PLATE, ASSEMBLY, 100UM, VJ	1	
07	1125692	• HEATER, BLOCK ASM, VULCANJET	1	
08	1125690	• ACTUATOR, ASM, PIEZO, VULCANJET	1	
09	1125698	• SEAL PACK, ASSEMBLY, VULCANJET	1	
10	1125691	• HEATER, SYRINGE, ASM, VULCANJET	1	
11	1125726	• CAP, SYRINGE, VULCANJET	1	
12	1125727	• COLLAR, SYRINGE HTR, VULCANJET	1	
13	1126070	• KIT, APPLICATOR PCA, VULCANJET	1	
14	1125242	• COVER, APPLICATOR, VULCANJET	1	
15	1124951	• NEEDLE, RADIUS, VULCANJET	1	
16	1125707	• LUER LOCK, MALE, M5, SS, VULCANJET	1	
17	1125720	• COMPRESSION SPRING, 0.3X.038X0.69, SS	1	
18	7361452	• WASHER FLAT .15"ID .24"OD .022"T EPDM	2	
19	463135	• plug-type thread-in ftg.-G-D04-M5-0000	2	
20	940261	• O RING, VITON, 1.250X1.375X.063	1	
21	941151	• O RING, VITON, .688X .875X.094, 10515	1	
22	1125705	• SCREW, SHOULDER, 5X20XM4, SS	4	
23	982849	• SHLDRSCR, SKT, M5X12, STAINLESS, 303	2	
24	1124943	• NUT, CLAMP, SLIDE CLOCK, VULCANJET	2	
25	1125731	• SCREW, SHOULDER, 4X2XM3, SS	5	
26	1037910	• SCREW, SHCS M3X8 ZINC PLATE	2	
27	982611	• SCR, SKT, M3.0.5X18, ZN	2	
28	105800	• SCREW, SKTHD, M4X.7X8, ZN	2	
29	1101669	• SCREW, SHCS M4X10, GD12.9, ZN	2	
30	982611	• SCR, SKT, M3.0.5X18, ZN	2	
31	1033409	• MACHSCR, PAN, REC, M3X6, SEMS	1	
32	1125866	• SCREW, SHOULDER, 4X10XM3, SS	4	
33	1097291	• TAG, STAMPING, W/ADDRESS, .921X1.469	1	
34	985101	• RIVET, POP, 3/32X.125, ALUMINUM	2	
37	1061381	• TAG, WEEE SYMBOL, .884x.905	1	
40	1129411	• PLATE, MOUNT, VULCANJET	1	
41	1125984	• CLAMP, MOUNT, VULCANJET	2	
42	1125985	• BRACKET, APPL. MOUNT, VULCANJET	1	
43	1094080	• CAPSCR, SOC HD/FLANGED, M4X12, STL, BLK0	2	
44	174962	• SPRING, COMPRESSION, HANDGUN	4	
45	1037910	• SCREW, SHCS M3X8 ZINC PLATE	3	
46	1125987	• HARNESS, GROUND STRAP, VULCANJET	1	
47	204211	• silencer M5x3,9 L=8,8 SK=8	2	
48	1126120	• BLOCK, HEAT XCH, VULCANJET	1	

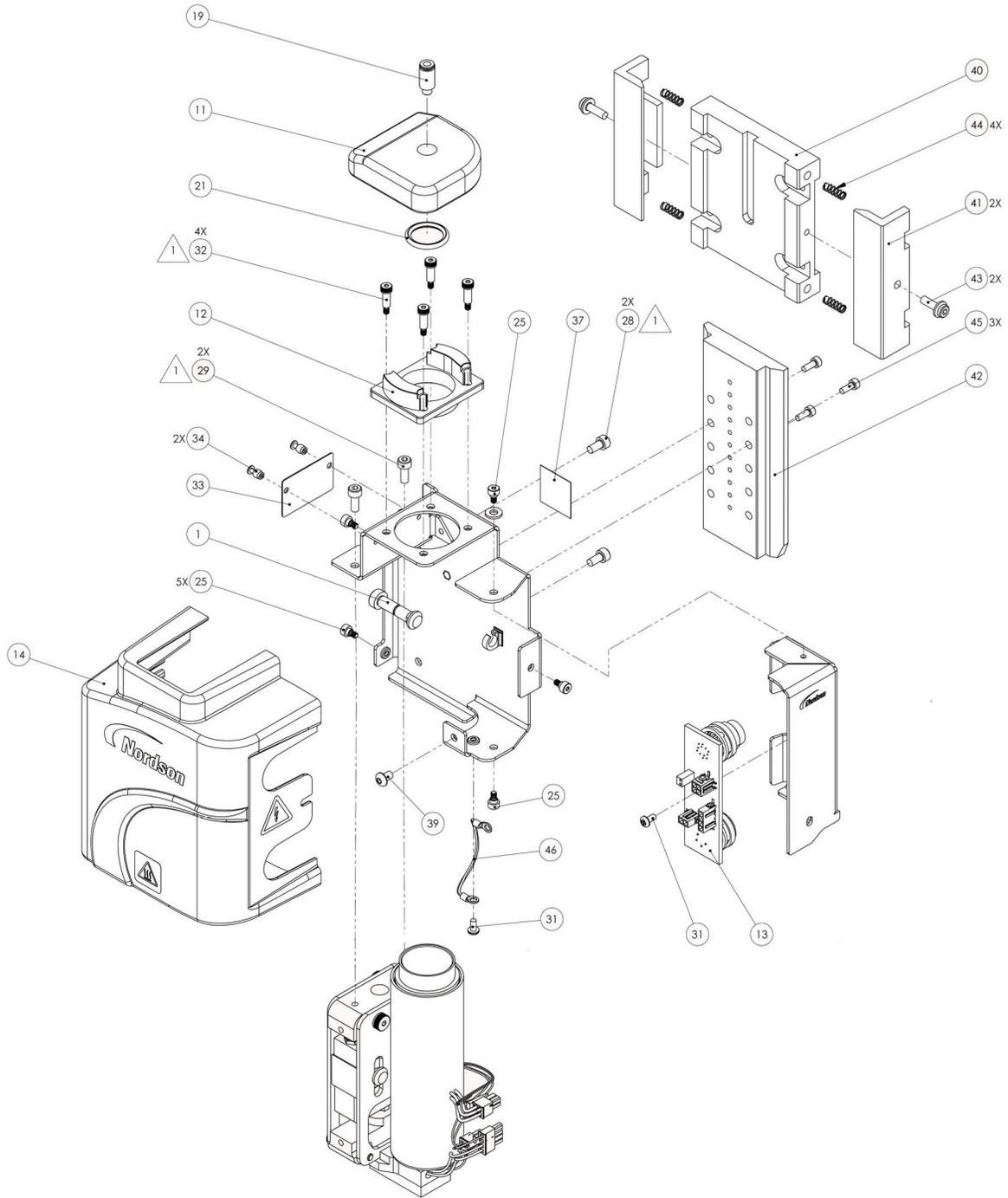


Figure 9-2 Vulcan Jet applicator parts

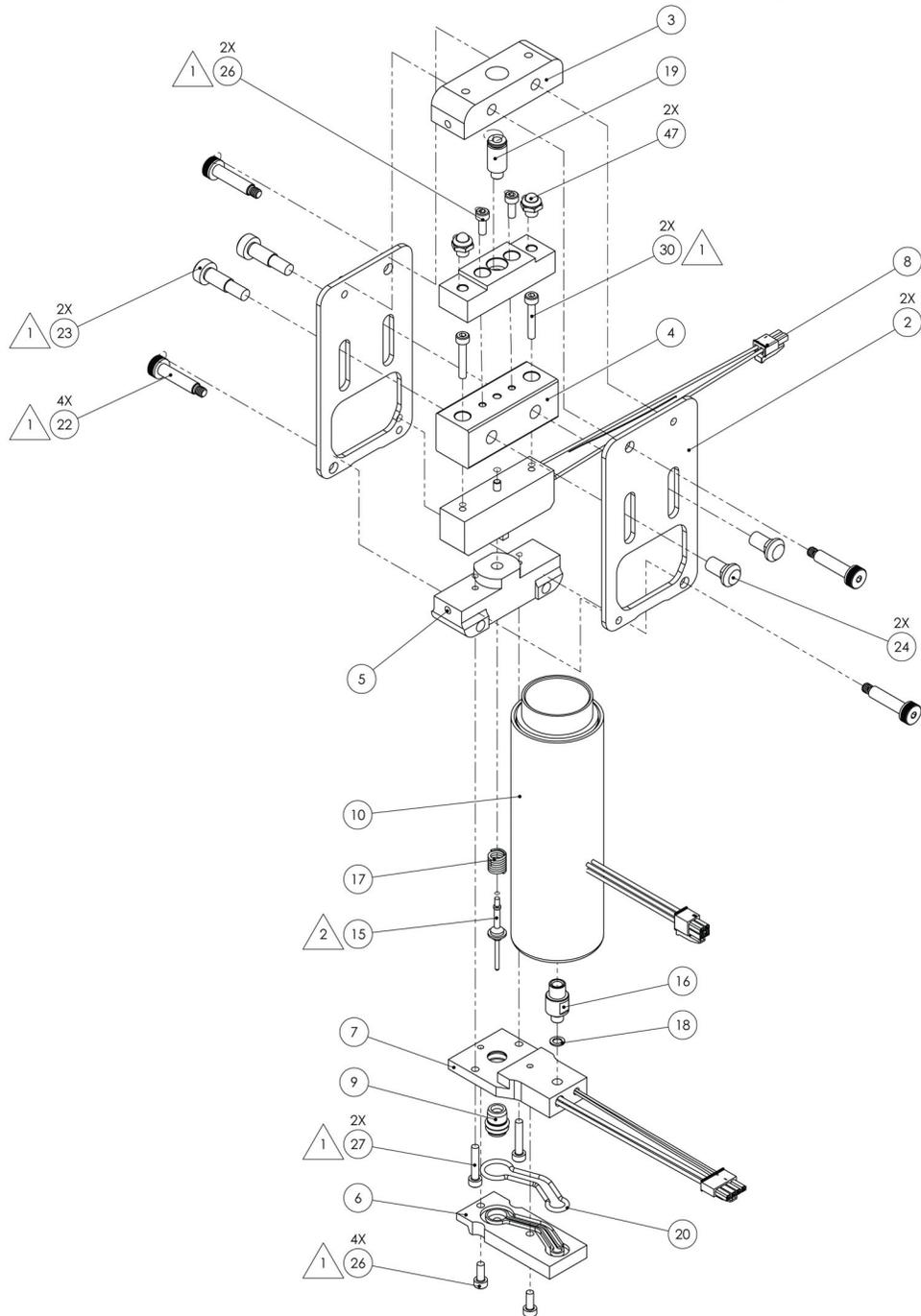


Figure 9-3 Vulcan Jet applicator parts

## Vulcan Jet Applicator Parts

See Figure 9-4.

Item	Part	Description	Quantity	Note
—	1125078	KIT, PNEUMATIC, VULCAN JET	—	

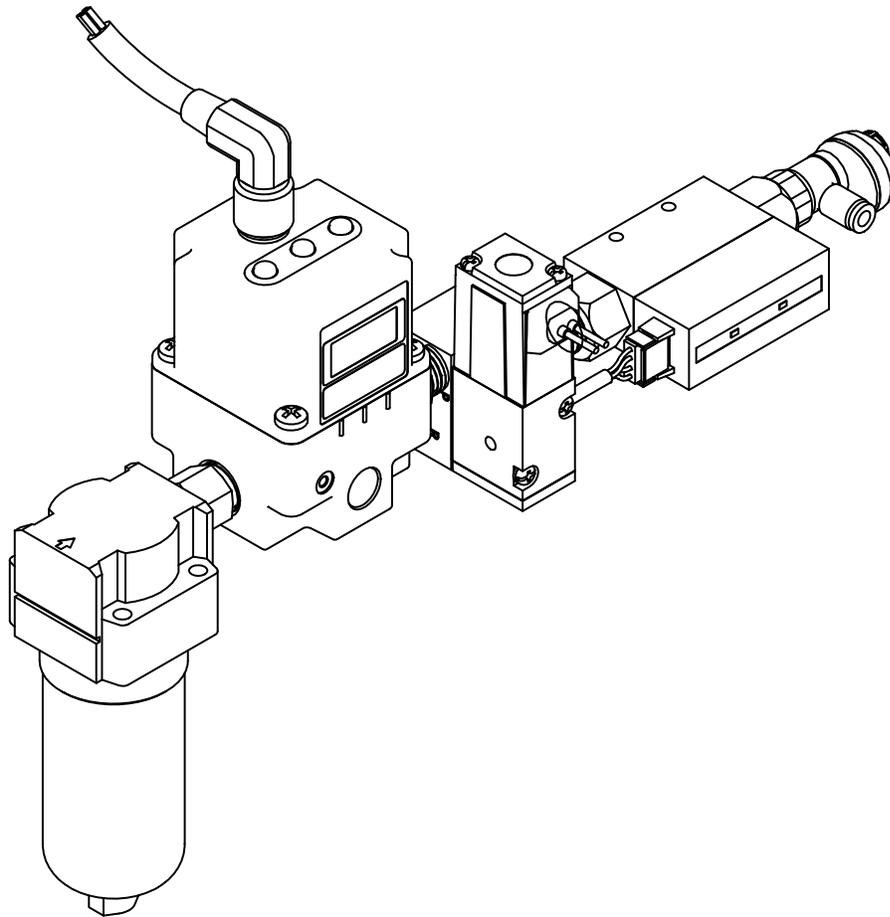


Figure 9-4 Air kit parts

## Controller Assembly

See Figure 9-5.

Item	Part	Description	Quantity	Note
—	1125557	VULCAN JET CONTROLLER	—	
01	1125075	• ENCLOSURE, NXGN PJ	1	
02	1125595	• KIT,FRONT PANEL,ASSY,VULCANJET	1	
03	1125592	• KIT,BOTTOM PANEL,ASSY,VULCANJET	1	
04	1125593	• KIT, TOP PANEL,ASSY,VULCANJET	1	
05	1125594	• KIT,REAR PANEL,ASSY,VULCANJET	1	
06	1122909	• CABLE,USB,TYPE A COUPLER,FEMALE BULKHEAD	1	
07	1125077	• COVER, TRIM, SWITCH, CONTROLLER	1	
08	1052111	• CONNACCY,COUPLER,RJ45,SHIELD,PANEL-MNT	1	
09	810486	• SCREW,MCH,FILLHEAD, 4-40 X .250	6	
19	1041036	• STDBTRY,LITH,COIN,3.0V,225MA	1	
20	982768	• MACHSCRMPAN,REC,M4X8,SEMS	1	

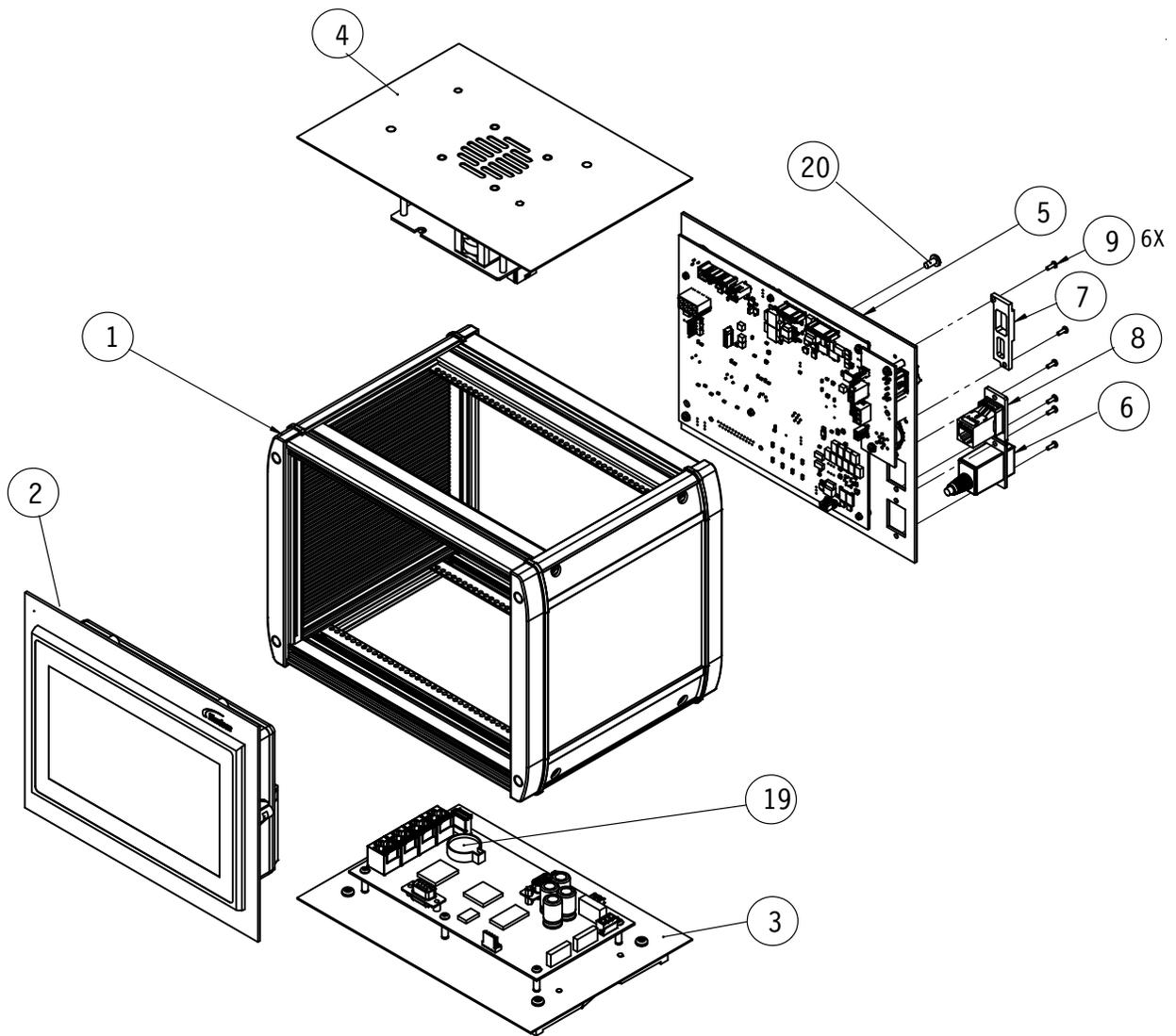


Figure 9-5 Controller Assembly

## Cable Part Numbers

The cables shown below are for use only in systems using 120-ohm nickel sensors.

Part	Description	Note
1034148	CABLEASSY,DSUB,25POS,M/M,25FT (not included)	
1125179	CABLE,APPLICATOR PIEZO, VULCAN JET	
1125180	CABLE ,APPLICATOR PCB, VULCAN JET	
1125181	CABLE,PRESSURE REGULATOR, VULCAN JET	
1125182	CABLE,FLOWMETER, VULCAN JET	
1125183	CABLE,E-STOP, VULCAN JET	
1125184	CABLE,SOLENOID, VULCAN JET	

## Optional Accessories

Part	Description	Note
1108193	Preheater, adhesive cartridge	

## Recommended Spare Parts and Supplies

Equipment	Part	Item	Note
Vulcan Jet controller	1125557	VULCAN JET CONTROLLER	
	1122386	FUSE,MINI-BLADE,7.5AMPS,32VDC	
	1041036	STDBTRY,LITH,COIN,3.0V,225MA (battery)	
Vulcan Jet applicator	1126063	KIT, SEAL PACK, VULCANJET	A
	1126064	KIT, SPRING, VULCANJET	
	1126065	KIT, HEATER BLOCK, VULCANJET	
	1126066	KIT, NOZZLE PLATE, VULCANJET	A
	1126067	KIT, NEEDLE, VULCANJET	A
	1126068	KIT, PIEZO ACTUATOR, VULCANJET	
	1126069	KIT, O-RINGS, VULCANJET	
	1126070	KIT, APPLICATOR PCA, VULCANJET	
	1126071	KIT, AIR CAP, VULCANJET	
	1126072	KIT, SYRINGE HEATER, VULCANJET	
	1126073	KIT, APPLICATOR COVER, VULCANJET	
	1126074	KIT, MOUNTING CLAMP, VULCANJET	
	1126121	KIT, AIR FLUSH, HEAT XCH, VULCANJET	

Needle	1126067	KIT, NEEDLE, VULCANJET	A
	1120201	LUBRICANT, O-RING, NSF-H1, 10 ML TUBE	
	783959	HIGH-TEMP. GREASE GLS 595/N2 TUBE:250G	
	394769	HIGH-TEMP.GREASE GLS 595/N2 CAN:10G	

NOTE A: Refer to *Applicator Component Expected Life* under *Technical Data* for the expected life of these components.

## Technical Data

### Vulcan Jet Dispensing System Specifications

Component	Item	Specification
System	Transport temperature	-45 - 75 °C (-49 - 167 °F)
	Storage temperature	-45 - 75 °C (-49 - 167 °F)
	Ambient temperature	0 - 45 °C (32 - 113 °F)
	Humidity	10 - 95% non-condensing
Vulcan Jet controller	Operating air pressure	1 - 3.45 bar (15 - 50psi)
	Weight	7.2 kg (15.9 lb)
	Dimensions (l x w x h)	250 mm (W) x 200 mm (D) x 200 mm (H)
Vulcan Jet applicator	Weight (without adhesive cartridge)	1.9 kg (4.2 lb)
	Material compatibility	Rated for use with all commercially available pressure-sensitive and Ethylene Vinyl-Acetate (EVA) hot melt adhesives and polyurethane reactive (PUR) adhesives, excluding any compound that contains polyamides

### Electrical Specifications

Component	Item	Specification
Vulcan Jet controller	Supply voltage	100 - 240 VAC, 1-phase, 50/60 Hz, 2.0 amps
	Heating zones	Nozzle zone, 30W; Cartridge zone, 42 W
	Control temperature range	37.8 – 190 °C (100 – 374 °F)
	Control temperature stability	±0.5 °C (±1 °F)
Vulcan Jet applicator	Supply voltage	Applicator cartridge: 24 VDC, 42 W (supplied from controller) Applicator nozzle: 24 VDC, 30 W (supplied from controller)
	Sensor type	120-ohm nickel

### Applicator Component Expected Life

Applicator Component	Expected Life (number of cycles)
Actuator	100 million
Needle	50 million
Seal pack	40 million (material-dependent)
Nozzle	100 million

## Applicator Dimensions

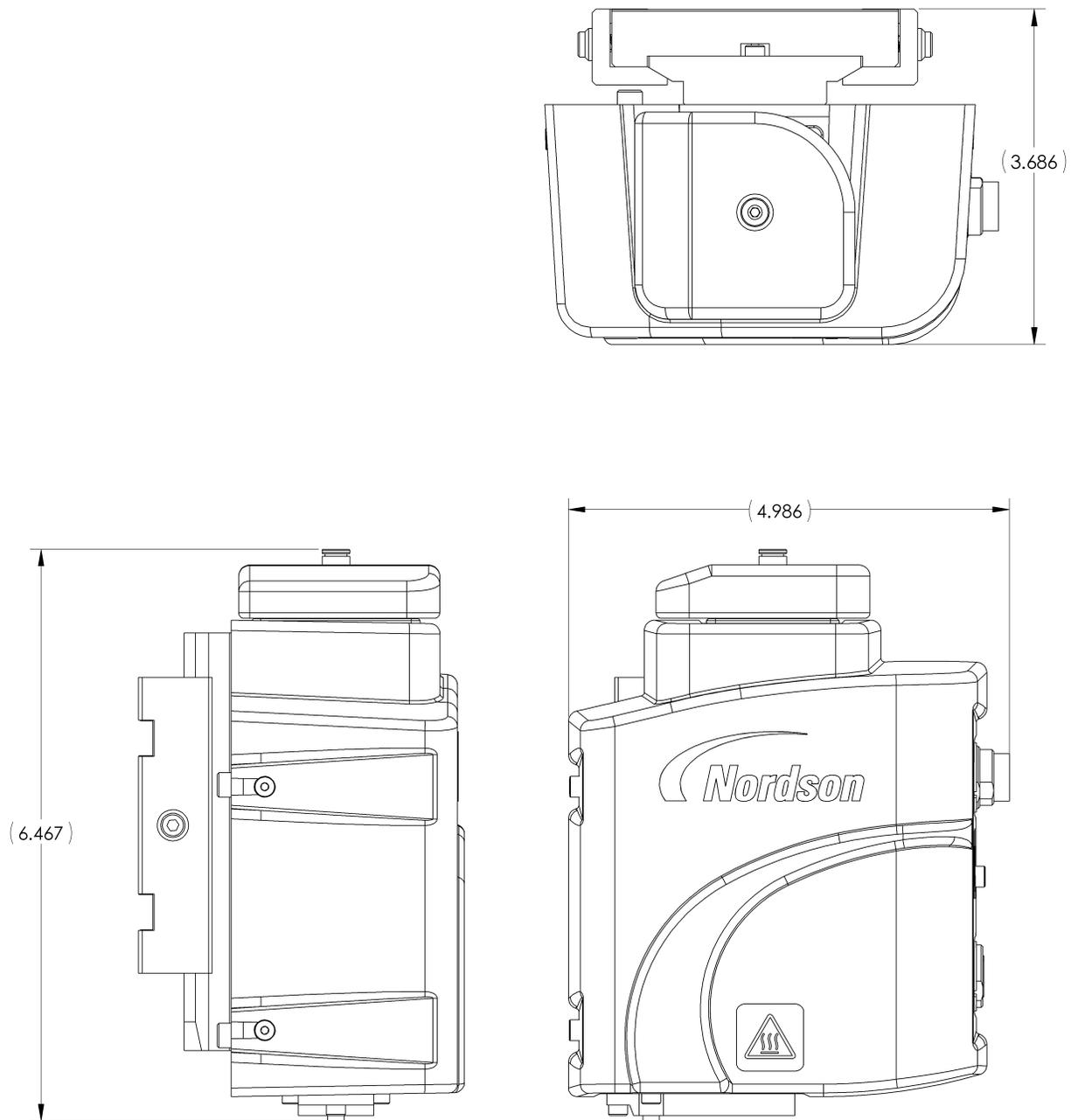


Figure 9-6 Vulcan Jet applicator dimensions, (in.)



