Fulfill Retrofit Kit for 100-Liter DuraBlue and VersaBlue Adhesive Melters

Customer Product Manual
Part 1106395A
Issued 01/2013

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

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

CE

For CE Declaration, refer to equipment documentation.

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address: http://www.nordson.com.

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Notice

Trademarks

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

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 and that the processing characteristics of the material will not create a hazardous environment. Refer to the Material Safety Data Sheet (MSDS) 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 MSDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.

Maintenance and Repair Practices

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

  NOTE: MSDSs for cleaning compounds that are sold by Nordson are available at www.nordson.com or by calling your Nordson representative.

- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable MSDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

Equipment Safety Information

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

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

Equipment Shutdown

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

Relieving System Hydraulic Pressure

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

De-energizing the System

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

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

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

Disabling the Applicators

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

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

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

General Safety Warnings and Cautions

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

Equipment types are designated in Table 1 as follows:

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

PC = Process control

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

Table 1 General Safety Warnings and Cautions

Equipment Type	Warning or Caution
HM	**WARNING!** Hazardous vapors! Before processing any polyurethane reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's MSDS. 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 MSDS requirements can cause personal injury, including death.
HM	**WARNING!** Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.
HM, CA	**WARNING!** System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.

Continued...

General Safety Warnings and Cautions (contd)

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

Equipment Type	Warning or Caution
HM	**WARNING!** Molten material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.
HM, PC	**WARNING!** Equipment starts automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an operating applicator, disable the applicator's triggering device and remove the air supply to the applicator's solenoid valve(s). Failure to disable the applicator's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.
HM, CA, PC	**WARNING!** Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.
HM, CA, PC	**WARNING!** Risk of fire or explosion! Nordson adhesive equipment is not rated for use in explosive environments and should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the MSDS 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.

Continued...

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

Equipment Type	Warning or Caution
HM, CA, PC	**WARNING!** Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others and can damage to the equipment.
HM	**CAUTION!** Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.
HM	**CAUTION!** Some Nordson melters are specifically designed to process polyurethane reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.
HM, CA	**CAUTION!** Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the MSDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt or cold adhesive, resulting in damage to the equipment.
HM	**CAUTION!** Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains polyester adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

Other Safety Precautions

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

First Aid

If molten hot melt comes in contact with your skin:

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

Safety Labels and Tags

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

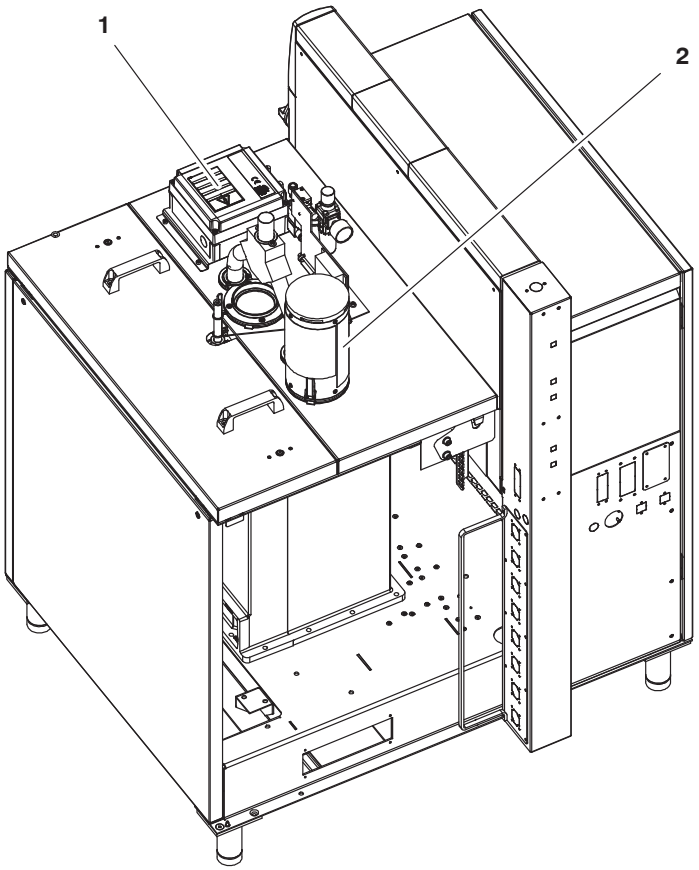

Figure 1 Safety labels and tags

Table 2 Safety Labels and Tags

Item	Part	Description
1.	1100253	 **WARNING!** Hazardous voltage. Disconnect all power supply connections before servicing.
2.	1087952	Tag, warning, hot adh, power

Description

The Fulfill retrofit kit for 100-liter DuraBlue and VersaBlue adhesive melters converts a melter into an automatic fill system that maintains adhesive in the melter, improving productivity and reducing maintenance. The fill system adds adhesive to the sealed tank, reducing the possibility of char, contaminants, thermal shock, and incorrect adhesive temperatures that result in poor adhesive bonding.

The Fulfill system is shipped with the components illustrated in Figure 2.

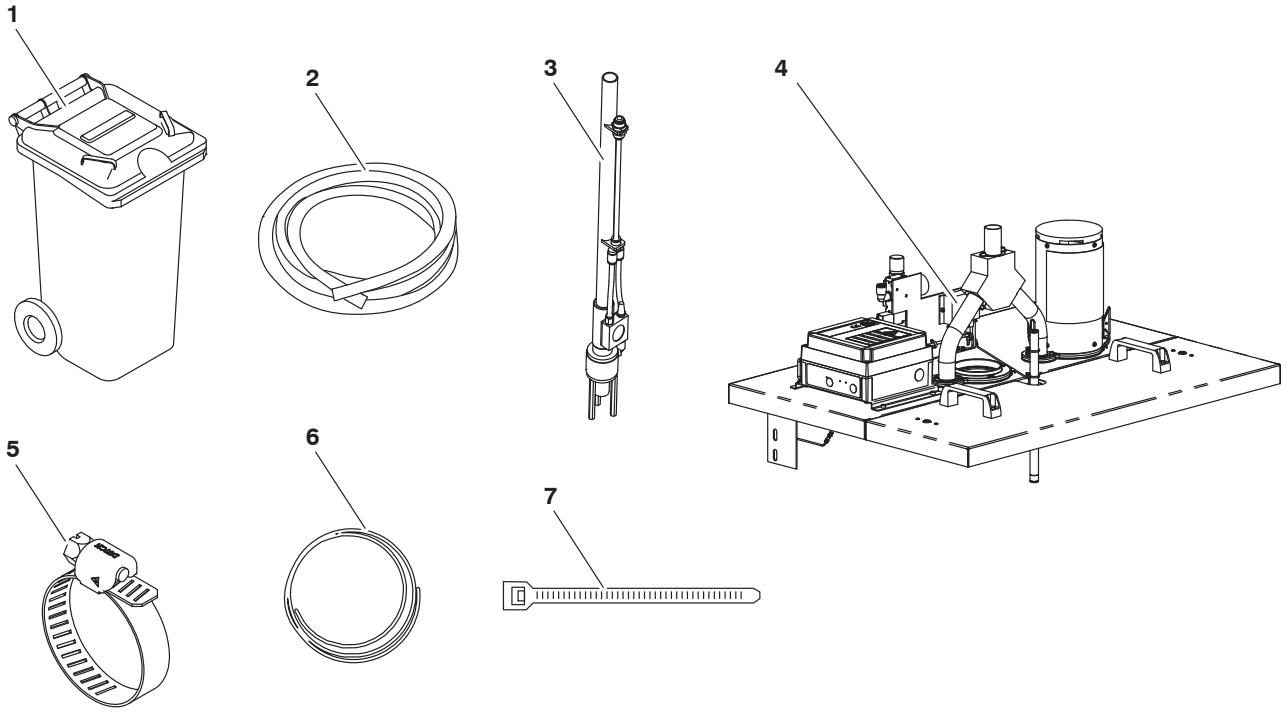

Figure 2 Fulfill system components

1. Adhesive storage bin
2. Transfer hose
3. Suction lance
4. Fulfill lid assembly, with control box, level sensor, and mounting hardware
5. Hose clamp (2)
6. Air line (4 m)
7. Wire tie (5)

Optional accessories available for the Fulfill retrofit include:

- a vibrator kit for the adhesive storage bin
- a light tower kit for audio/visual fill/fault indication of the Fulfill processes

Contact your Nordson representative for more information on these kits.

Theory of Operation

Overview

The system adds small quantities of adhesive to the sealed tank at regular intervals, reducing the possibility of adhesive char, contaminants, thermal shock, and incorrect adhesive temperatures that result in poor bonding.

A capacitance sensor located in the melter detects a low adhesive level, and then sends a signal to the Fulfill system control box. A delay timer prevents the fill system from frequently cycling on and off.

At the end of the delay, the control box activates the vacuum via a solenoid valve. Air pressure flows to a suction lance that is placed in the supplied bulk adhesive container. Using vacuum, the system conveys adhesive from the bulk container to the adhesive melter tank. When the adhesive in the melter tank reaches the desired level, the control box shuts off the solenoid valve to stop the flow of adhesive.

The control box activates the suction lance for a limited amount of time to prevent over-fill conditions. If the maximum fill time is exceeded, the control box activates a fault that stops the system from filling.

A safety interlock switch detects whether the removable melter tank lid is in place. If the tank lid is not in place, the fill system will not operate.

Pneumatic and Mechanical Components

See Figure 3 as you learn about the components of the Fulfill retrofit assembly.

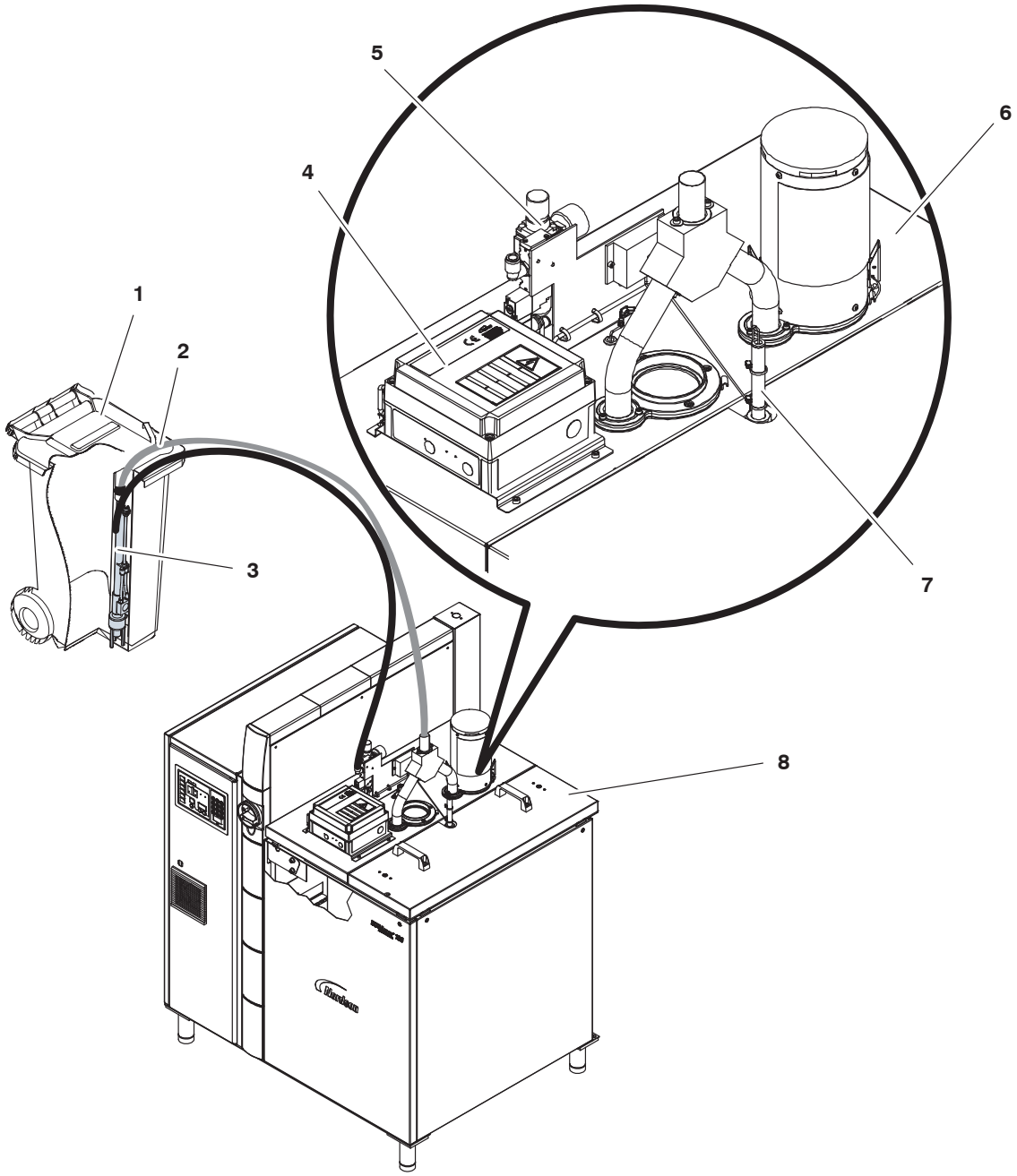

Figure 3 Fulfill retrofit kit assembly components

1. Adhesive storage bin
2. Adhesive transfer hose
3. Suction lance
4. Control box assembly
5. Air pressure regulator/solenoid (pneumatic control unit) assembly
6. Fulfill lid assembly
7. Level sensor probe
8. Melter tank lid

(1). Adhesive Storage Bin

Place adhesive in the adhesive storage bin. The bin contains a gasket that prevents debris from entering the bin. For best results, break up the adhesive as much as possible when emptying into the bin. Do not get the adhesive wet.

(2). Air Pressure Regulator/Solenoid Assembly

The supplied air pressure regulator is permanently set at 65 psig, the optimal setting for most adhesives.

The solenoid valve turns on after the sensor indicates level state and the time delay has been reached. The solenoid directs compressed air to flow to the suction lance.

(3). Suction Lance

The suction lance draws adhesive from the adhesive storage bin. The suction lance includes:

- A venturi pump to draw in and transport the adhesive.
- A vibrator to keep the adhesive in loose condition. The vibrator is active as long as compressed air is supplied to the suction lance.

Air line tubing and the adhesive transfer hose are connected to the suction lance. The lance is placed in the PVC pipe located in the adhesive storage bin.

(4). Adhesive Transfer Hose

The adhesive transfer hose connects the suction lance to the lid assembly. The transfer hose conveys adhesive from the adhesive storage bin to the melter tank.

(5). Lid Assembly

The Fulfil lid assembly includes the filter stack, lid, fill tube, baffle, and deflector:

- The filter stack contains a replaceable filter sock to prevent adhesive fines and powder in the adhesive from being emitted into the ambient air.
- The fill tube attaches to the adhesive transfer hose.
- The baffle prevents adhesive from entering the filter sock.
- The deflector distributes adhesive evenly in the tank.

A safety interlock switch detects whether the removable melter tank lid is in place. If the tank lid is not in place, the fill system will not operate.

Electrical Components

(6). Control Box

The control box contains the membrane panel and refill board.

Membrane Panel

The front panel of the electrical control box shown in Figure 4 contains three LEDs that have different colored lights to indicate the unit condition:

- Enable On/Off LED (green light)—Indicates that the system is enabled. Pressing the Enable On/Off key will toggle the indicator. If the melter tank lid is removed, this LED will flash, indicating that the fill system is disabled.
- Enable On/Off key—Press the Enable On/Off key to turn the fill system on or off.
- Adhesive transfer LED (blue light)—Indicates adhesive delivery is active. When a low level is detected, the indicator notes that adhesive is being transferred from the adhesive storage bin into the melter tank through the transfer hose.
- Fault LED (red light)—Activates if the system exceeds the user defined fill time limit. The system will not resume operation until the fault is cleared by pressing the Clear Fault key.
- Clear Fault key—Press the Clear Fault key to reset the fault status and resume normal activity.

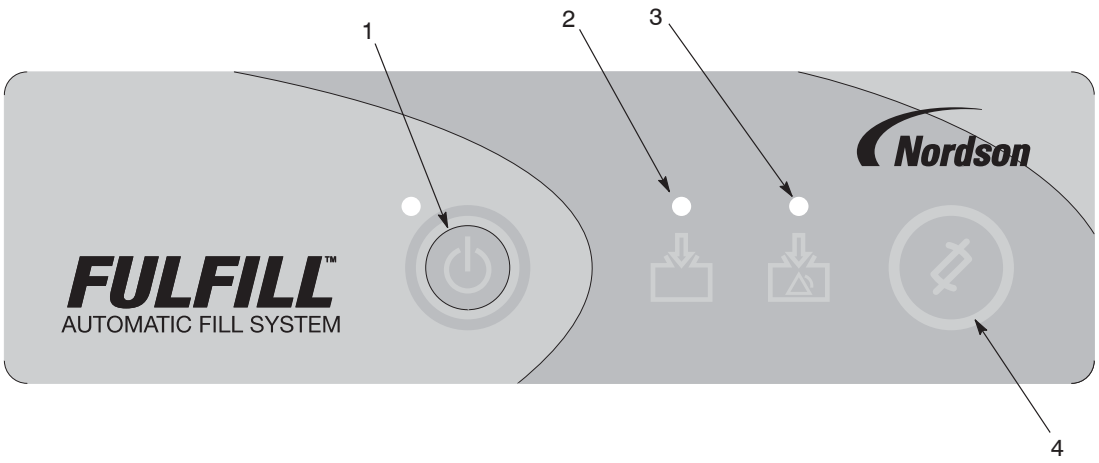

Figure 4 Fulfill system controls and indicators

1. Enable On/Off key and LED (green)
2. Adhesive transfer LED (blue)
3. Fault LED (red)
4. Clear Fault key

Refill Board

See Figure 5. The refill board is inside the control box:

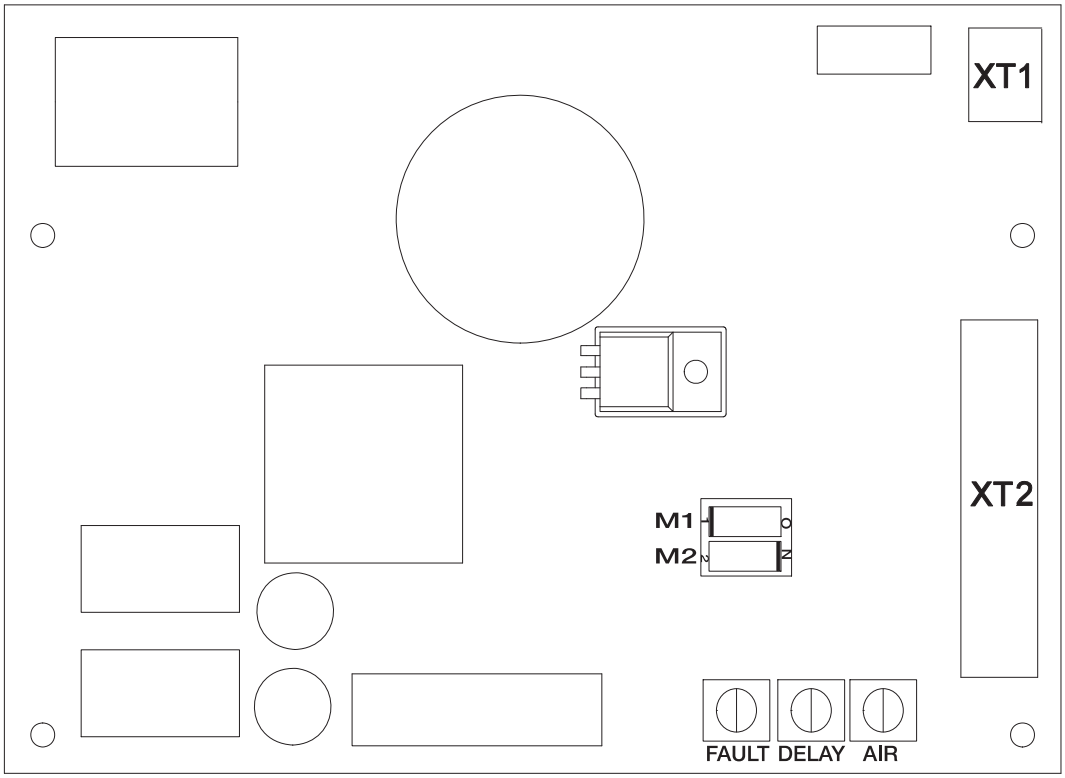

Figure 5 Refill board (located inside the control box)

- Connect line voltage to the control box at the supplied terminal block and ground. Power can be supplied from the plant service.
- A potentiometer labeled “Fault” limits the amount of filling time in case of level sensor failure. It is only for overflow protection. The fault limit time is preset from the factory at 60 seconds, but can be adjusted from 5 to 115 seconds. The factory sets the potentiometer at the 12 o’clock position, which is sufficient for the majority of applications. For reference, the 9 o’clock position is 22 seconds and the 3 o’clock position is 98 seconds.

- A potentiometer labeled “Delay” is for a fill time delay. This delay is the time duration between the level sensor calling for more adhesive and when the fill system activates. The delay time prevents the system from frequently turning on and off. The delay time is preset from the factory at 60 seconds, but can be adjusted from 0 to 119 seconds. The factory sets the potentiometer at the 12 o’clock position, which is sufficient for the majority of applications. For reference, the 9 o’clock position is 20 seconds and the 3 o’clock position is 100 seconds.
- A potentiometer labeled “AIR” is a pre-vibrate timer for the optional storage bin vibrator kit. The range for this potentiometer is 0 to 20 seconds. When installed, this vibrator will activate up to 20 seconds before the fill system activates and stay on until the level sensor is satisfied. This kit is well suited for adhesives and plant conditions that are prone to bridging.
- A dip switch labeled SW1 is preset at the factory. Position M1 should always be OFF and position M2 should always be ON.
- A terminal block labeled “XT2”. An optional light tower may be attached here. The functions of the light tower are
  - Fill (Blue)—visual
  - Fault (Red)—visual
  - Fault (Alarm)—audible

NOTE: The fault outputs will engage simultaneously.

(7). Sensor

The level sensor detects the level of adhesive in the melter tank. When the adhesive falls below the set point, the level sensor sends a signal to the Fulfill control box. For optimal performance based on specific applications, see the *Level Sensor Adjustment and Calibration* detailed later in the manual.

Installation

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

Remove the Melter Lid

1. Operate the melter until the adhesive level is at least 0.2 m (8 in.) below the top of the tank.
2. De-energize the system as directed in the *Maintenance* section of the melter manual.
3. Remove the front and rear panels from the melter. Refer to the melter manual as needed.
4. Open the tank lid completely.
5. Remove the four M8 screws and washers that secure the lid hinge assembly to the melter.
6. Remove the lid assembly from the melter by lifting it straight up.
7. Clean any adhesive buildup from the melter lid tray.

Install the Fulfill Lid Assembly

See Figure 6.

1. Position the Fulfill lid assembly (1) on top of the melter.
2. Ensure that the ground wire (3) from the lid assembly is routed to the front of the tank as shown.
3. Remove one screw from the underside of the tank flange and install the spade terminal (4) from the kit as shown.
4. Connect the ground wire to the spade terminal.
5. Secure the lid assembly to the melter with the four M8 screws, flat washers and nuts (2) from the kit.
6. Reinstall the front and rear melter panels.

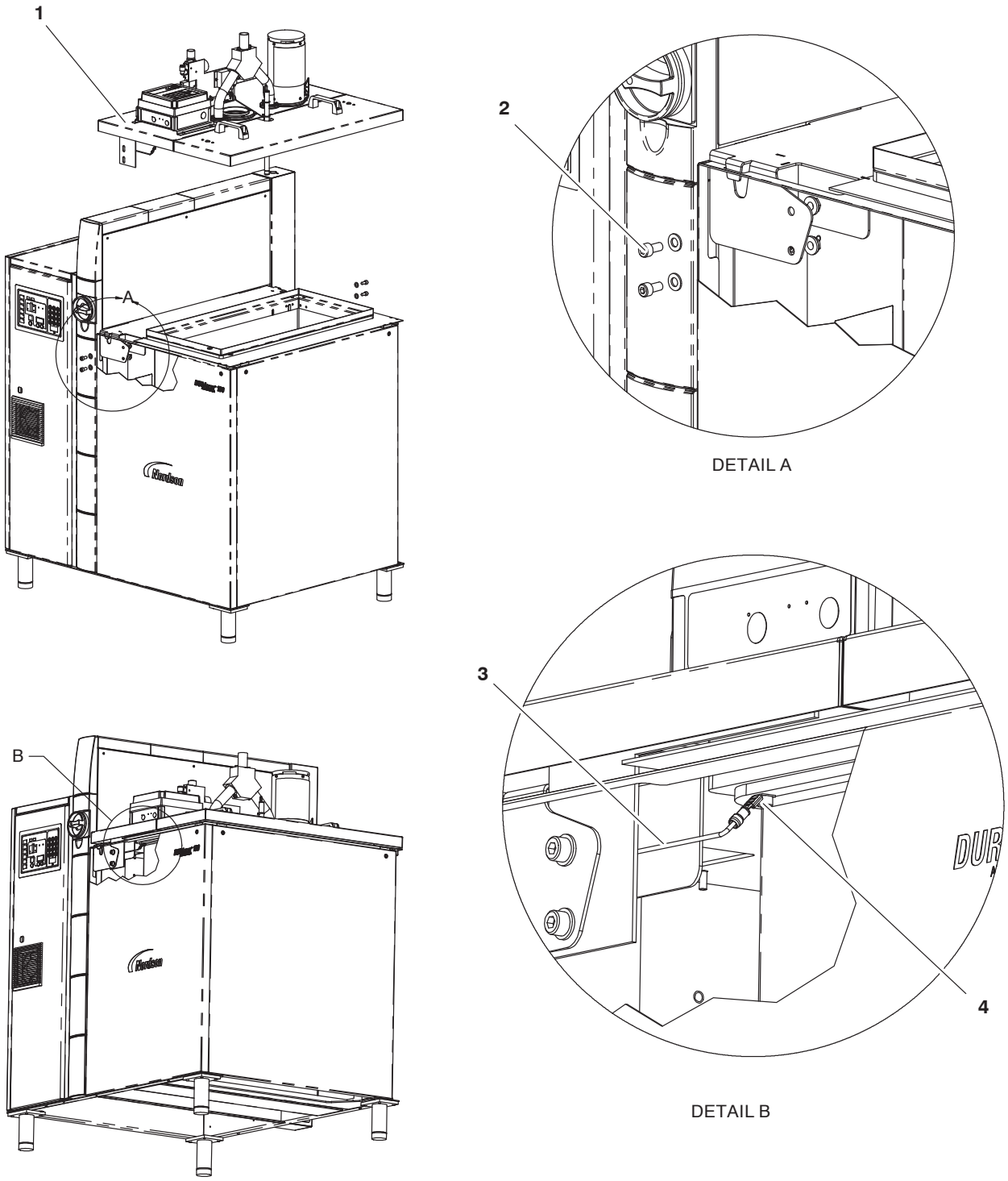

Figure 6 Installing the Fulfil cover and lid assembly

1. Fulfill lid assembly
2. Lid screws
3. Ground wire
4. Ground wire spade terminal

Make the Electrical Connections

1. See Figure 7. Thread a customer supplied 14–18 AWG power cord through the strain relief (3) into the control box.
2. Connect the wiring to the terminal blocks (1) and the ground wire connection (2) inside the control box.
3. Tighten the strain relief.

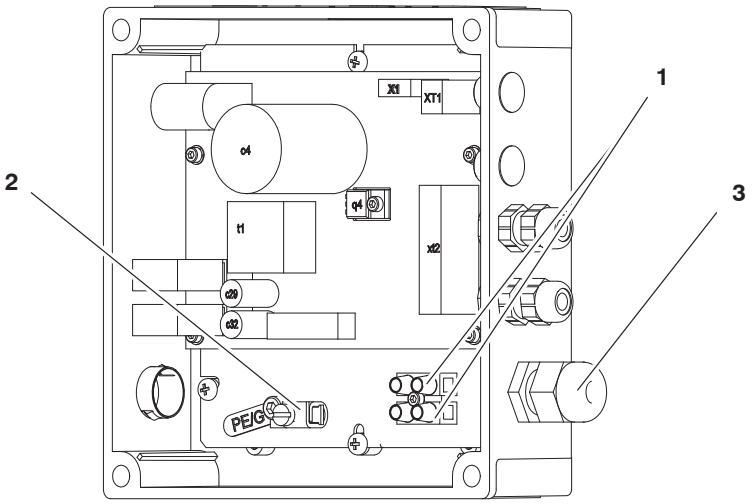

Figure 7 Connecting the customer-supplied power cord to the control box

1. L1 and L2/N wire power cord connection (interchangeable)
2. Ground wire power cord connection
3. Power cord strain relief

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Assemble the Transfer Hose, Air Line, and Suction Lance

CAUTION! Allow for 10 in. bend radius for installation/use of the adhesive transfer hose.

See Figure 8.

1. Using one hose clamp, attach the transfer hose (1) to the end of the suction lance (5).
2. Insert the suction lance into the PVC pipe inside the adhesive storage bin.
3. Use the remaining hose clamp to attach the transfer hose to the feed system inlet tube (2). The hose should be routed without sharp bends or kinks.
4. Connect the air line (4) to the suction lance air inlet (6).
5. Route the air line along the transfer hose, securing it with wire ties as you go. The hose should be routed without sharp bends or kinks.
6. Leaving enough air line to reach the outlet (3) of the air solenoid, cut the air line to length and then insert the end of the air line into the outlet.
7. Connect plant air to the regulator. For best results, run the air piping from the main header.

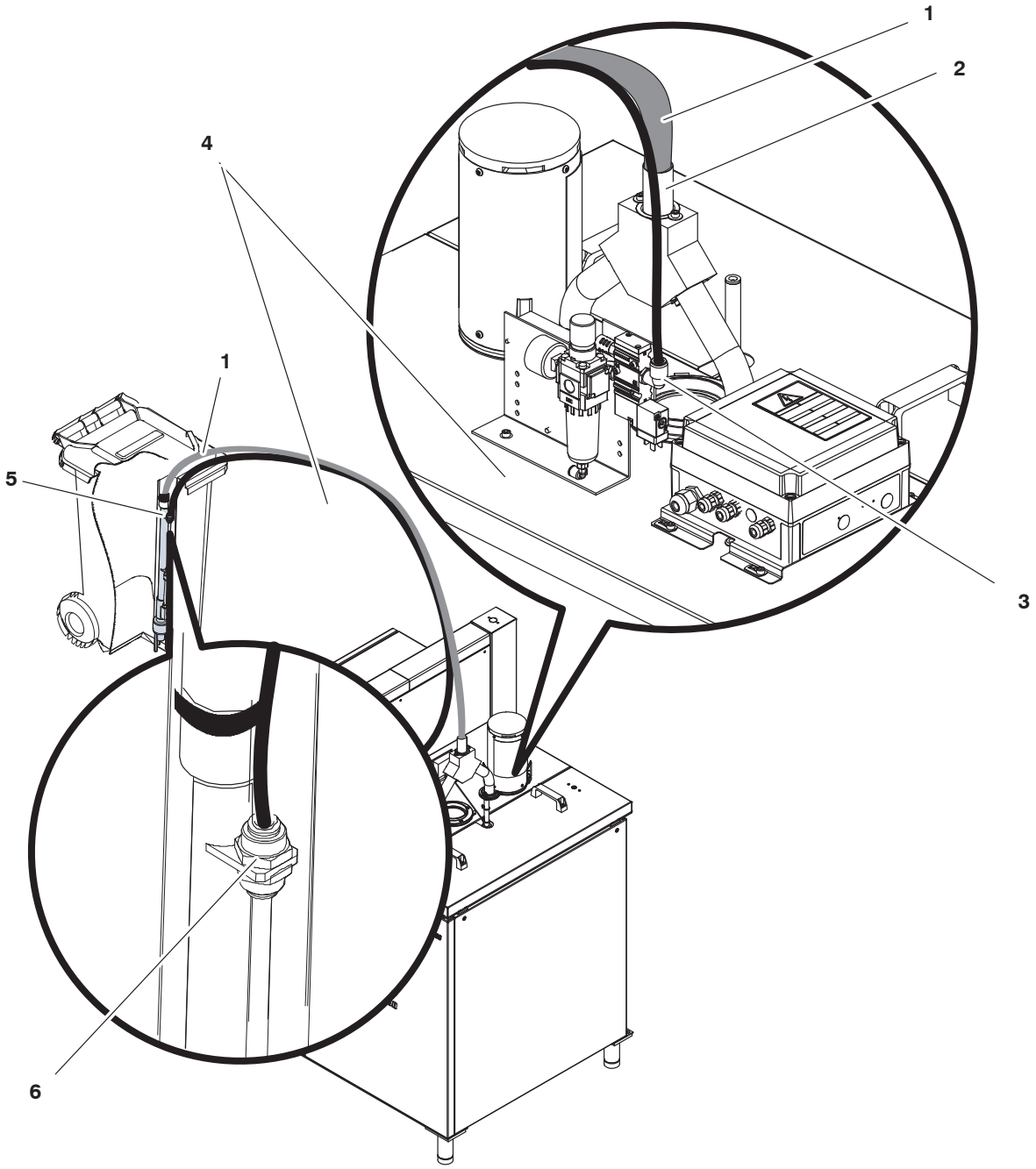

Figure 8 Assembling the transfer hose, air line, and suction lance

1. Transfer hose
2. Feed system inlet tube
3. Solenoid valve air outlet
4. Air line
5. Suction lance
6. Suction lance air inlet

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Level Sensor Adjustment and Calibration

The level sensor consists of a level probe and a control box. The level probe permanently connects to the control box by a wire. The level probe has a black line around its diameter near the tip to note the maintained adhesive level. You can raise or lower the adhesive level by adjusting the level probe height.

NOTE: The level sensor should be recalibrated if the level probe height is changed or if the adhesive type is changed.

Adjusting the Level Probe Height

1. See Figure 9. Remove the melter tank lid by loosening the two latch screws (1) and lifting it up by its handles.
2. Loosen the hex nut (2) on the level probe holder and slide the probe up or down as desired.

CAUTION! Do not raise the fill line of the probe above 50.8 mm (2 in.) from bottom of the probe holder. Doing so will degrade the level sensor's performance.

3. When the desired probe height is obtained, tighten the probe holder hex nut and reinstall the melter lid.
4. Refer to the next procedure, *Calibrating the Level Sensor*, to calibrate the sensor.

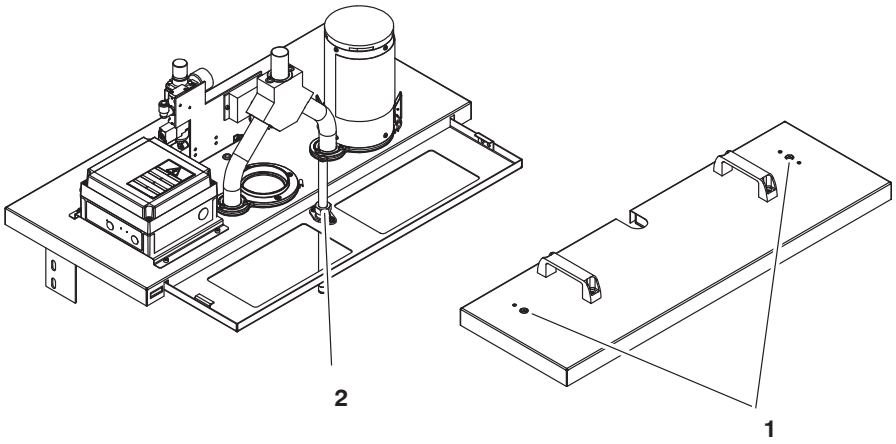

Figure 9 Adjusting the level probe height

1. Level probe holder hex nut
2. Melter tank lid latch screws

Calibrating the Level Sensor

Recalibrate the level sensor if the level probe height is changed or if the adhesive type is changed.

See Figure 10. The LED next to the adjustment potentiometer on the control box changes color from green to amber, depending on the adhesive level that the probe detects. When adhesive drops below the desired level, the LED will turn green. When adhesive reaches or exceeds the desired level, the LED will turn amber. The adjustment potentiometer sets the sensitivity of the level sensor. Different adhesives require different calibration settings. Adhesives that build up on the level probe require less sensitivity, while adhesives that do not build up on the level probe require more sensitivity.

Baseline Setting

1. Remove the threaded plug on the front face of the level sensor control box to reveal the adjustment potentiometer.
2. Fill the tank with adhesive up to the black line on the level probe. The adhesive does not have to be liquid.
3. If the LED on the control box is amber, turn the adjustment potentiometer counter-clockwise until it turns green. If the LED on the control box is green, turn the adjustment potentiometer clockwise until it just turns amber. The point at which the LED transitions from green to amber is the switching point.
4. Once the switching point is found, rotate the adjustment potentiometer $^1/_2$ turn clockwise and leave it at that position.
5. Reinstall the tank lid and tighten the latch screws.

Final Setting

1. Begin normal operation. Check the adhesive level in the tank after 30 minutes of operation.
2. If the adhesive level is satisfactory, the calibration procedure is complete. Re-install the plug over the calibration pot to discourage tampering.
3. If unmelted adhesive is piled up to the top of the tank or the system has already faulted due to overfilling, rotate the adjustment pot $^1/_2$ turn clockwise to increase the level sensor's sensitivity. Wait 10 minutes and check the adhesive level again. If the adhesive level is still too high, repeat this process until the adhesive level is satisfactory. When finished, reinstall the plug over the calibration potentiometer.
4. If unmelted adhesive has built up on the probe and the adhesive level in the tank has dropped below the black line on the probe, rotate the adjustment potentiometer $^1/_2$ turn counter-clockwise to decrease the level sensor's sensitivity. If the adhesive level is still too low, repeat this process until the adhesive level is satisfactory.

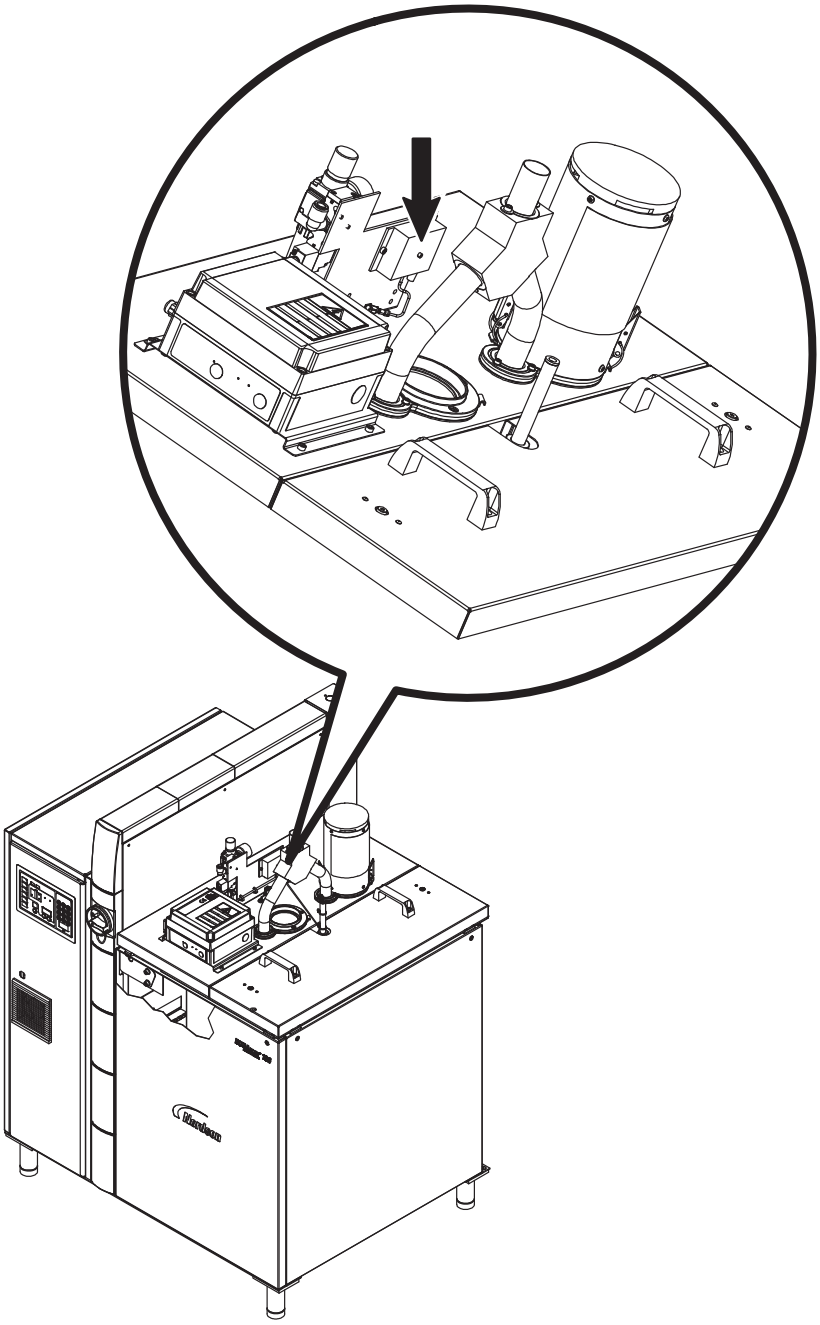

Figure 10 Location of the adjustment potentiometer

Operation

Once enabled, the fill system immediately begins operation. Maintain adhesive level in the storage bin to maintain automatic operation.

NOTE: During warm-up, the melter's ready-delay time may need to be increased for the Fulfill unit to operate properly. The proper ready-delay time depends on the tank size and shape, adhesive type, and application temperature.

Time Settings

See Figure 11. There are three timers found on the refill board located inside the control box:

- Fault (overfill timer)—This timer is used to limit the amount of filling time in case of level sensor failure. It is only for overflow protection. The fault limit time is preset from the factory at 60 seconds, but can be adjusted from 5 to 115 seconds. The factory sets the potentiometer at the 12 o'clock position, which is sufficient for the majority of applications. For reference, the 9 o'clock position is 22 seconds and the 3 o'clock position is 98 seconds.
- Delay—This timer is used to set the number of seconds that should elapse between the time the level sensor calls for more adhesive and the time the fill system activates. The delay time prevents the system from frequently turning on and off. The delay time is preset from the factory at 60 seconds, but can be adjusted from 0 to 119 seconds. The factory sets the potentiometer at the 12 o'clock position, which is sufficient for the majority of applications. For reference, the 9 o'clock position is 20 seconds and the 3 o'clock position is 100 seconds.
- Air—This timer is used only with the optional storage bin vibrator kit. When installed, the vibrator will actuate for up to 20 seconds before the fill system activates and will stay on until the level sensor is satisfied. The air timer range is 0 to 20 seconds.

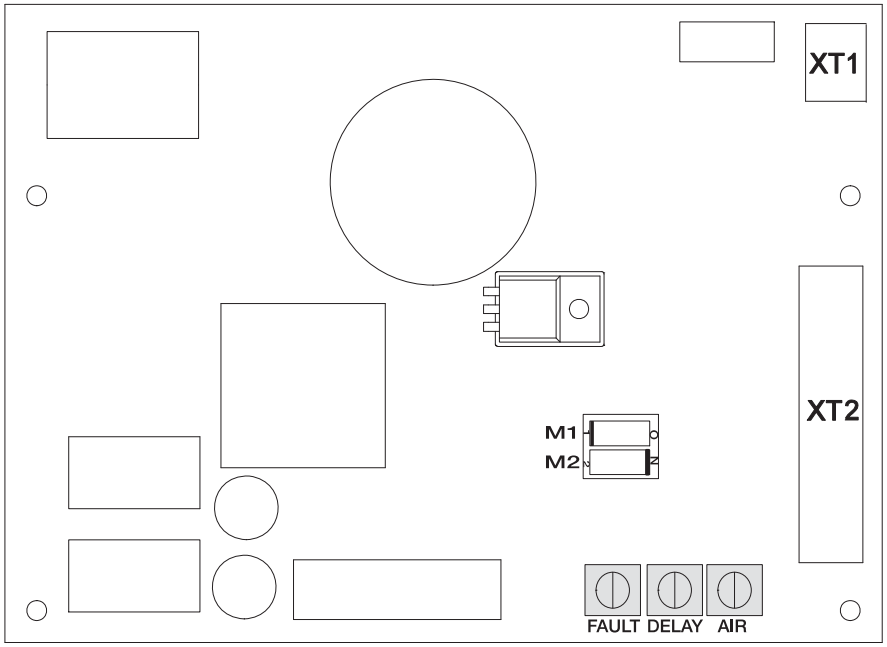

Figure 11 Refill board timer settings (located inside the control box)

Use a flat head screwdriver to turn the timers clockwise to increase the time settings, counterclockwise to decrease the time settings.

Monitoring Refill Operation

See Figure 12.

Under normal conditions, the operator need not monitor or intervene in the operation of the fill system.

However, if the fill system is unable to satisfy the tank sensor in the time limit set for the Fill Time, the Fault LED will illuminate. Refer to *Troubleshooting* for a list of possible fault causes and solutions.

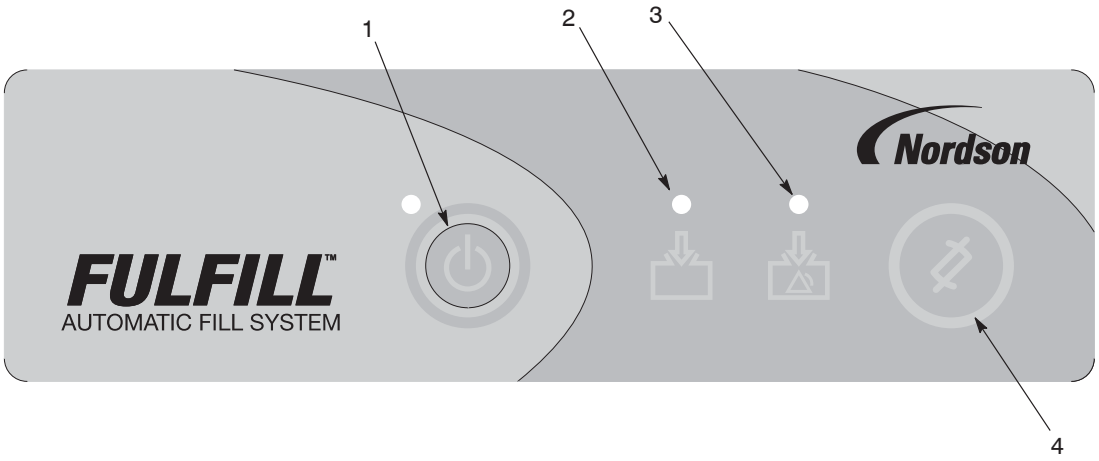

Figure 12 Fulfill system controls and indicators

1. Enable On/Off key and LED (green)
2. Adhesive transfer LED (blue)
3. Fault LED (red)
4. Clear Fault key

Maintenance

Inspect the system daily to ensure that hose fittings are secure and that the unit is free from dirt and debris. Inspect the filter sock weekly to ensure that it's not clogged; replace as needed.

Troubleshooting

If the fill system fails and the condition cannot be corrected, to continue operating the melter (and filling it manually), disable the fill system (ensure that the fill system Enable On/Off LED is not illuminated).

Troubleshooting Table

Problem	Possible Cause	Corrective Action
1. System overfilled	Solenoid stuck open	Clean or replace.
	Sensor ground wire not connected	Connect.
	Refill board not working	Replace if defective. Refer to *Refill Board Troubleshooting* in this section.
	Sensor not calibrated properly	Calibrate the sensor. Refer to *Level Sensor Adjustment and Calibration* under *Installation*.
2. System underfilled	No adhesive	Add adhesive.
	No power	Ensure that power is available to the system.
	Adhesive bridging	Dislodge adhesive. Add optional vibrator kit if problem persists.
	Clogged wand/hose/lid	Inspect the parts for improper connections, clogs, or kinks. Replace as needed.
	Clogged filter sock	Replace if needed.
	No/low air pressure	Verify that sufficient air pressure and flow rate are supplied to the Fulfill unit from the factory. Static pressure should be 4.5 bar (65 psi) minimum; operating pressure should be 3.1 bar (45 psi) minimum. Replace the regulator if defective.
	No power to the level sensor	Verify that power is being supplied to the level sensor (LED not lit = no power) and that the power cord is installed properly.

Continued...

Troubleshooting Table *(contd)*

Problem	Possible Cause	Corrective Action
2. System underfilled	Deflector bent	Repair or replace.
	No power to refill board	Verify power to the control box and at the refill board. Replace if needed.
	Solenoid failure	Verify the connections to the solenoid. Replace if defective.
	Bad refill board	Replace. See *Refill Board Troubleshooting* later in this section.
	Overfill timer too short	Adjust the timer.
	Sensor not calibrated properly	Calibrate the sensor. Refer to *Level Sensor Adjustment and Calibration* under *Installation*.
3. Frequent overfill alarms with no cause	Timers not properly set	Adjust the timer settings. Refer to *Time Settings* under *Operation*.

Refill Board Troubleshooting

Perform the following steps, in order, to either isolate the problem within the refill board or to eliminate the refill board as a cause. These tests should only be performed by personnel qualified to work on high voltage circuits.

1. Verify input power is reaching the refill board. Measure the line voltage across the input side (side of the fuse closest to the input connectors J1 and J2) of fuses F1 and F2. The input voltage should be between 100–240 VAC. If input voltage not present, correct input power.
2. Verify that the 24 VDC power supply on the refill board is working by measuring the voltage between XT1 pin “24V” and XT1 pin “COM.” It should be 24 VDC (+/_ 5%). If it is not 24 VDC, verify that the fuses are not blown. If fuses have been blown, replace the fuses. If any fuses blow again, replace the refill board. If the fuses are okay but 24 VDC is not present, replace the refill board.
3. Ensure that the DIP switch settings have not been changed. SW1 DIP switch settings: M1 should be OFF; M2 should be ON.
4. Make sure the timer potentiometers are set as expected:
   - FAULT potentiometer adjustment range: 5 to 115 seconds (60 seconds at 12:00 position),
   - DELAY potentiometer adjustment range: 1 to 119 seconds (60 seconds at 12:00 position),
   - AIR (optional pre-vibrator) potentiometer adjustment range: 0 to 20 seconds (10 seconds at 12:00 position).
5. Make sure the refill board is enabled by verifying that the “ENA” LED close to the membrane panel connector (X1) is illuminated. If not, press the Enable On/Off key on the membrane panel to enable the refill board. If the “ENA” LED does not turn on with the membrane panel, the membrane panel or refill board may be bad. With a piece of wire, briefly touch X1 pin 1 to X1 pin 2 (the membrane tail will need to be unplugged to perform this test). If the “ENA” LED illuminates after this test, replace the membrane panel. If not, then replace the refill board.
6. To ensure that the level sensor signal is getting to the refill board with the level sensor calling for adhesive, verify that there is 24 VDC (+/_ 5%) between XT1 pin “SIG” and XT1 pin “COM.” If not, repair the level sensor cable, recalibrate the level sensor, or replace the level sensor.
7. To ensure that the refill board fill output is working correctly with the level sensor calling for adhesive and after waiting the DELAY time duration, verify that 24 VDC (+/_5%) is applied to the fill control output (XT2 pin “FILL” measured to any “COM” pin). Verify with the level sensor is NOT calling for adhesive that the fill control output is 0 to 0.5V.

If the problem has not be isolated at this point, replace the refill board and/or membrane panel.

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Parts

This section provides information about parts that are associated with the fill system. Refer to the melter manual for information about all other melter components.

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.

The number in the Item column corresponds to the circled item number in the parts list illustration. A dash in this column indicates that the item is an assembly.

The number in the Part column is the Nordson part number you can use to order the part. A series of dashes indicates that the part is not saleable. In this case, you must order either the assembly in which the part is used or a service kit that includes the part.

The Description column describes the part and sometimes includes dimensions or specifications.

The Note column contains letters that refer to notes at the bottom of the parts list. These notes provide important information about the part.

The Quantity column tells you how many of the part is used to manufacture the assembly shown in the parts list illustration. A dash or AR in this column indicates that the amount of the item required in the assembly is not quantifiable.

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

Fulfill Retrofit Kit Parts

See Figure 13.

Item	Part	Description	Quantity	Note
—	1105150	KIT, FULFILL RETROFIT, VERSA/DURA 100		
1	1105416	• COVER & LID ASSY, FULFILL RETRO, DURA 100	1	A
—	1105947	• KIT,SHIP WITH, VERSA/DURA 100 FULFILL	1	
2	982035	• • SCR,SKT,M8X16,BL	4	
3	983013	• • WASHER,FLT,M,REG,8,STL,ZN	4	
4	1091006	• • NUT, HEX, FLANGED, SERRATED, M8	4	
5	1023299	• • LUG,45,SINGLE,M5 X .032	1	
NS	1101362	• KIT,SHIP W/,MISC.PTS,FULFILL,RETROFIT	1	
NS	1079193	• • ADAPTER,1/4 BSPP FEMALE X 1/4 NPT MALE	1	
NS	939955	• • FUSE,TIME-LAG,2A,5X20MM,CERAM	2	
NS	1088282	• • FILTER,SOCK,200 MICRON,FULFILL	1	
NS	1097984	• KIT, CONTAINER, WAND, HOSE ASSY, FULFILL	1	

NOTE A: Refer to *Cover and Lid Assembly Parts* later in this section.

AR: As Required

NS: Not Shown

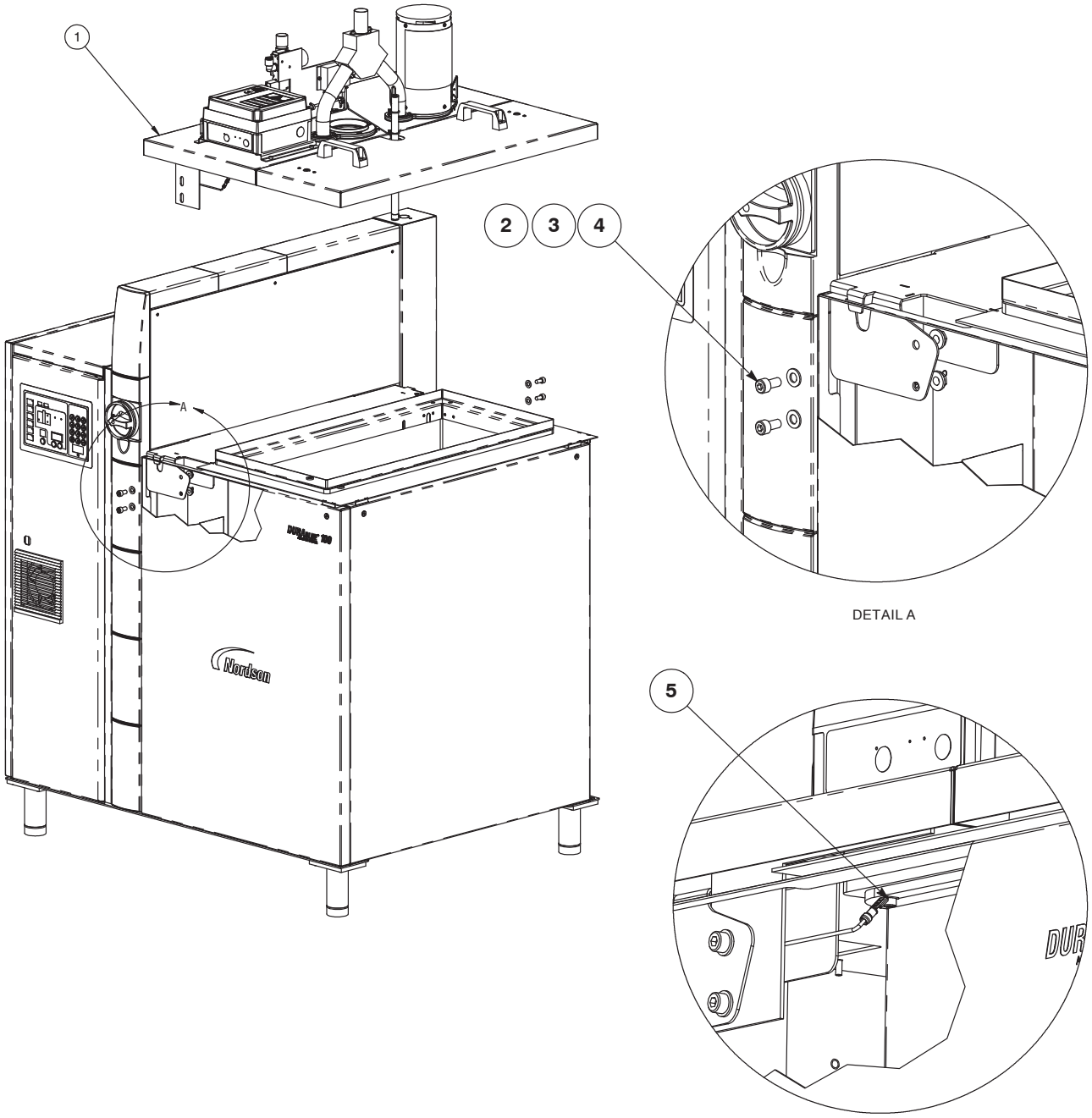

Figure 13 Fulfill retrofit kit parts

Cover and Lid Assembly Parts

See Figures 14–16.

Item	Part	Description	Quantity	Note
—	1105416	COVER & LID ASSY,FULFILL RETRO,DURA 100	—	
1	1095342	• ENCLOSURE ASSY,FILTER,LID,FULFILL	1	
2	1088282	• FILTER,SOCK,200 MICRON,FULFILL	1	
3	1101514	• TUBE ASSY, INLET, P30 FULFILL RETROFIT	1	
4	982349	• SCR,SKT,M4X16,ZN	6	
5	983163	• WASHER,FLT,M,OVERSIZED,M4,ZN	6	
6	982374	• SCR,SKT,M5X40,BL	8	
7	1096978	• COLLAR,LID,FULFILL	2	
8	1097866	• RETAINER,FILTER HOUSING,FULFILL,3000	2	
9	1097018	• TUBE,EXHAUST,FULFULL,PROBLUE	1	
10	1105396	• COVER,OUTER,FULFILL RETRO, VERSA/DURA 100	1	
11	1104883	• CNTRL.BOX ASSY,FULFILL RETROFIT	1	A
12	1101305	• CLIP,CABLETIE,M5 MOUNTING,ALUMINUM	2	
13	1103793	• BRACKET,CONTROL BOX, FULFILL RETROFIT	1	
14	1094058	• GROMMET,.312 ID X .625 OD,RUBBER	2	
15	816380	• SCR,SKT,M5 X 0.8 X 8MM	12	
16	982680	• SCR,HEX,WASHHD,TF,M5X12,BLK	4	
17	1097663	• SPACER,LID,FULFULL RETROFIT	2	
18	1105399	• INSULATION,COVER,FULFILL RETRO, DURA 100	1	
19	1105417	• INSULATOR,LID & COVER, FULFILL RETROFIT	8	
20	1105414	• BRACKET,REAR,FULFILL RETROFIT, DURA 100	1	
21	1105398	• BRACKET,FRONT,FULFILL RETRO, DURA 100	1	
22	225337	• TERMINAL BLOCK,380V	1	
23	1054073	• SCR,SKT,HD,M3x20MM LG,STEEL,ZN	1	
24	983418	• WASHER,FLT,M,OVERSIZED,5,STL,Z	4	
25	1052143	• NUT,HEX,W/EXT TOOTH WASHER,M5, STL, ZN	10	
26	1099250	• HOLDER ASSY,LEVEL PROBE,16 mm, PROBLUE	1	
27	1105397	• COVER,INNER,FULFILL RETRO, VERSA/DURA 100	1	
28	1105415	• LID ASSY,FULFILL RETROFIT, DURA/VERSA 100	1	B
29	1046998	• CONNECTOR,STRAIN-RELIEF,PG7,NYLON	1	
30	1104517	• HARNESS,SWITCH,LID, VERSA/DURA FULFILL	1	
31	939110	• CABLETIE,3.9 IN,185F/85C, NYLON, NATURAL	8	
32	1098913	• HARNESS,SOLENOID,FULFILL RETROFIT	1	
33	1103794	• BRACKET,PNEUMATIC & LEVEL CONTROLS	1	
34	1103694	• SENSOR,LEVEL, CAPACITIVE, w/300mm PROBE	1	

Item	Part	Description	Quantity	Note
35	982059	• SCR,SKT,M4X8,BL	2	
36	271221	• LUG,45,DOUBLE,.250,.438	1	
37	1104880	• WIRE,GND 2,FULFILL RETRO, ENCLOSURE, 3860	1	
38	1003634	• CONN,MALE,ELBOW,6MM T X M5	1	C
39	1095728	• CONTROL UNIT,PNEUMATIC,FULFULL	1	
40	1101359	• TAG,NAMEPLATE W/LOGO,FULFILL	1	
41	1087952	• TAG,WARNING,HOT ADH POWER,FULFILL	1	
42	1097738	• BAFFLE,EXHAUST,FULFILL RETROFIT, PROBLUE	1	
43	1097739	• DEFLECTOR,FULFILL RETROFIT,PROBLUE	1	
44	1095129	• DEFLECTOR,INLET,LID,FILL SYSTEM	1	
45	1036625	• MACHSCRM,PAN,REC,M3X8,SEMS	2	
46	1105395	• SWITCH ASSEMBLY,MAGNETIC (safety interlock switch)	1	

NOTE A: Refer to *Control Box Assembly Parts* later in this section.

B: Refer to *Lid Assembly Parts* later in this section.

C: Refer to *Pneumatic Control Unit Assembly Parts* later in this section.

AR: As Required

NS: Not Shown

Cover and Lid Assembly Parts (contd)

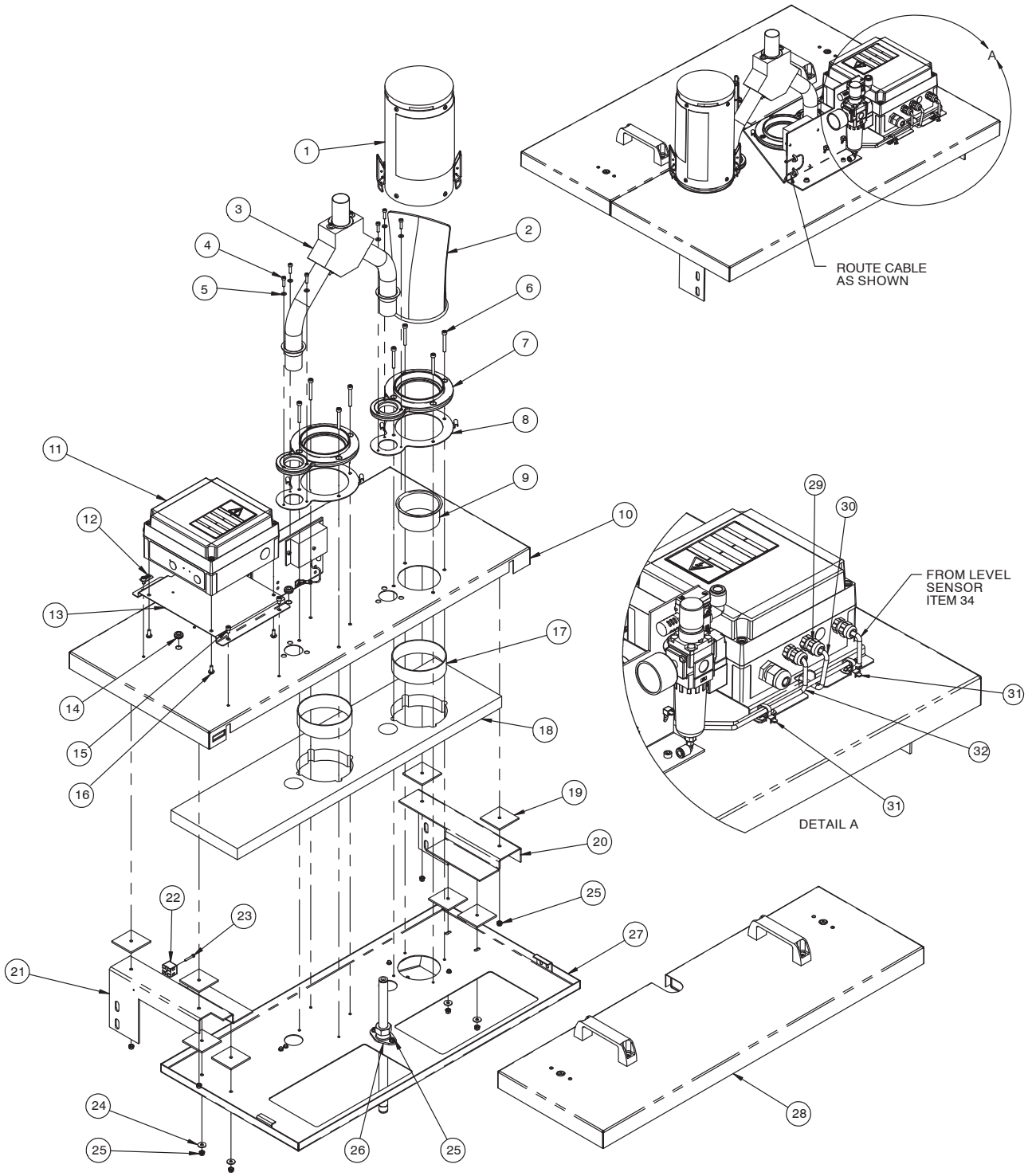

Figure 14 Cover/lid assembly parts (1 of 3)

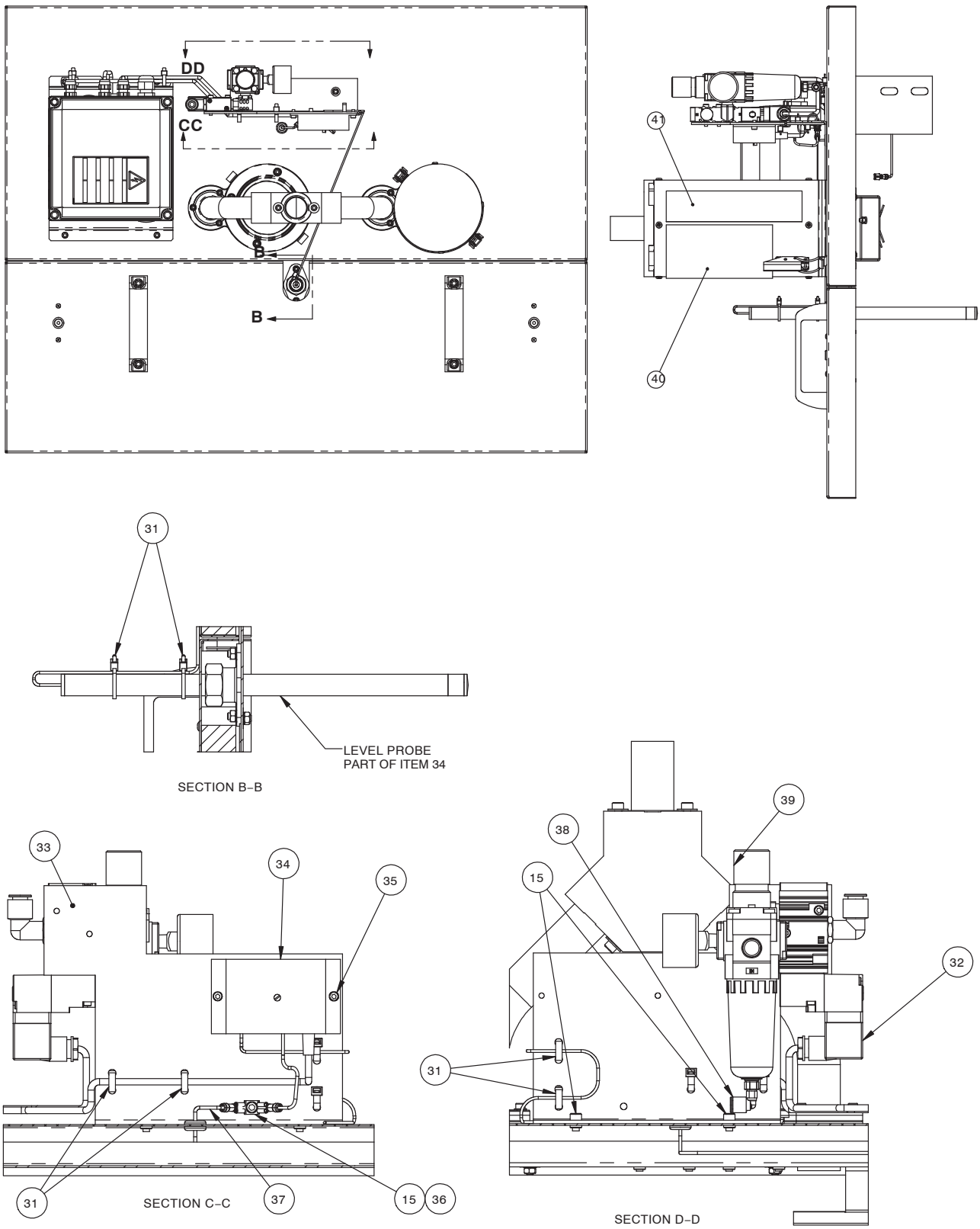

Figure 15 Cover/lid assembly parts (2 of 3)

Cover and Lid Assembly Parts (contd)

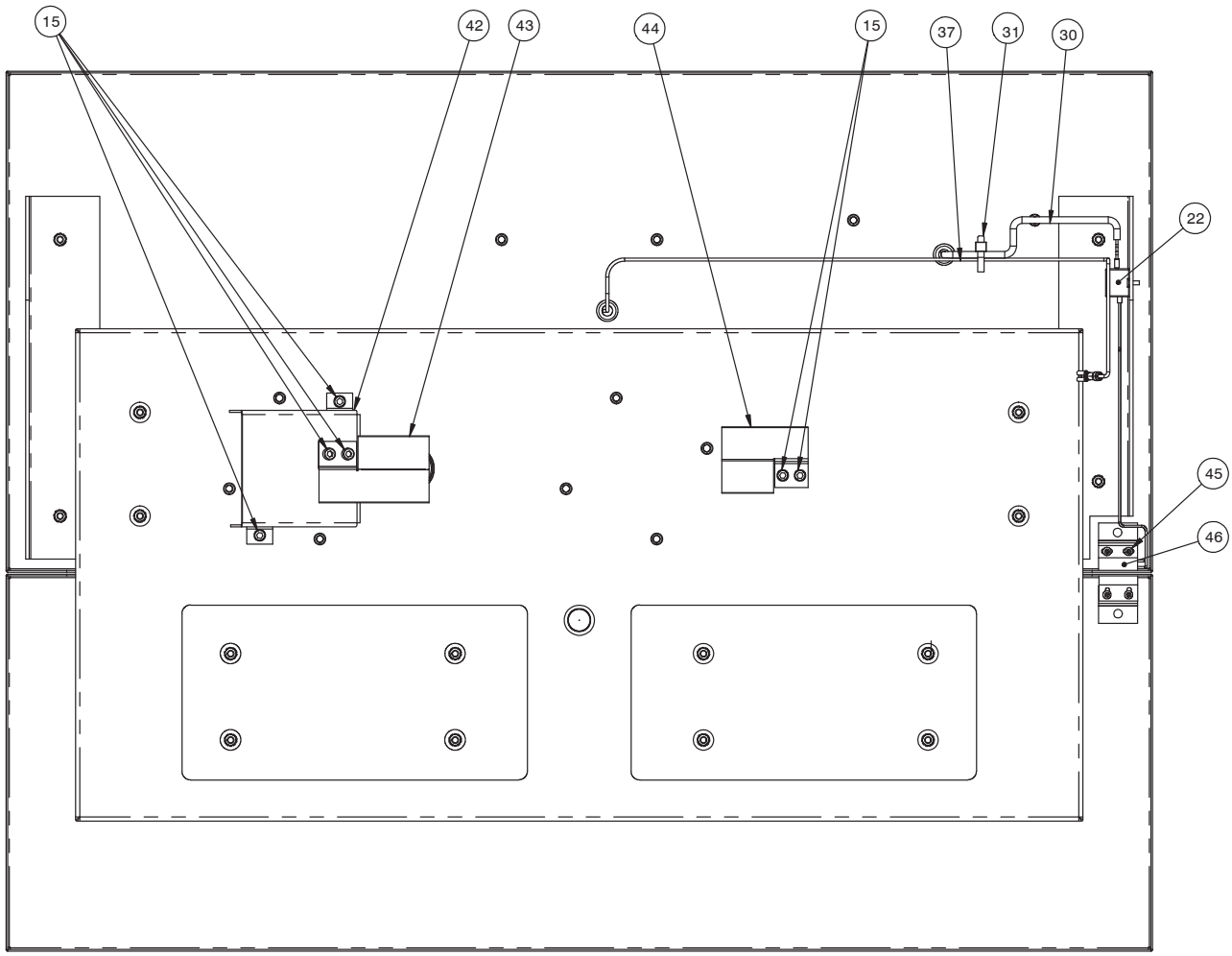

Figure 16 Cover/lid assembly parts (3 of 3)

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Control Box Assembly Parts

See Figure 17.

Item	Part	Description	Quantity	Note
—	1104883	CNTRL.BOX ASSY,FULFILL RETROFIT	—	
1	1098483	• DOMEPLUG,.500”D,.250”PNL.THK.,NYLON, BLAC	2	
2	- - - - - -	• MEMBRANE PANEL,FULFILL RETROFIT KIT	1	A
3	- - - - - -	• PCA, REFILL CONTROLLER, UL, PROBLUE	1	B
4	1098484	• DOMEPLUG,.750”D,.250”PNL.THK.,NYLON, BLAC	1	
5	1046998	• CONNECTOR,STRAIN-RELIEF,PG7,NYLON	2	
6	933607	• CONNECTOR,STRAIN RELIEF,PG-11	1	

NOTE A: To replace this item, order kit part 1099525.

B: To replace this item, order kit part 1096221.

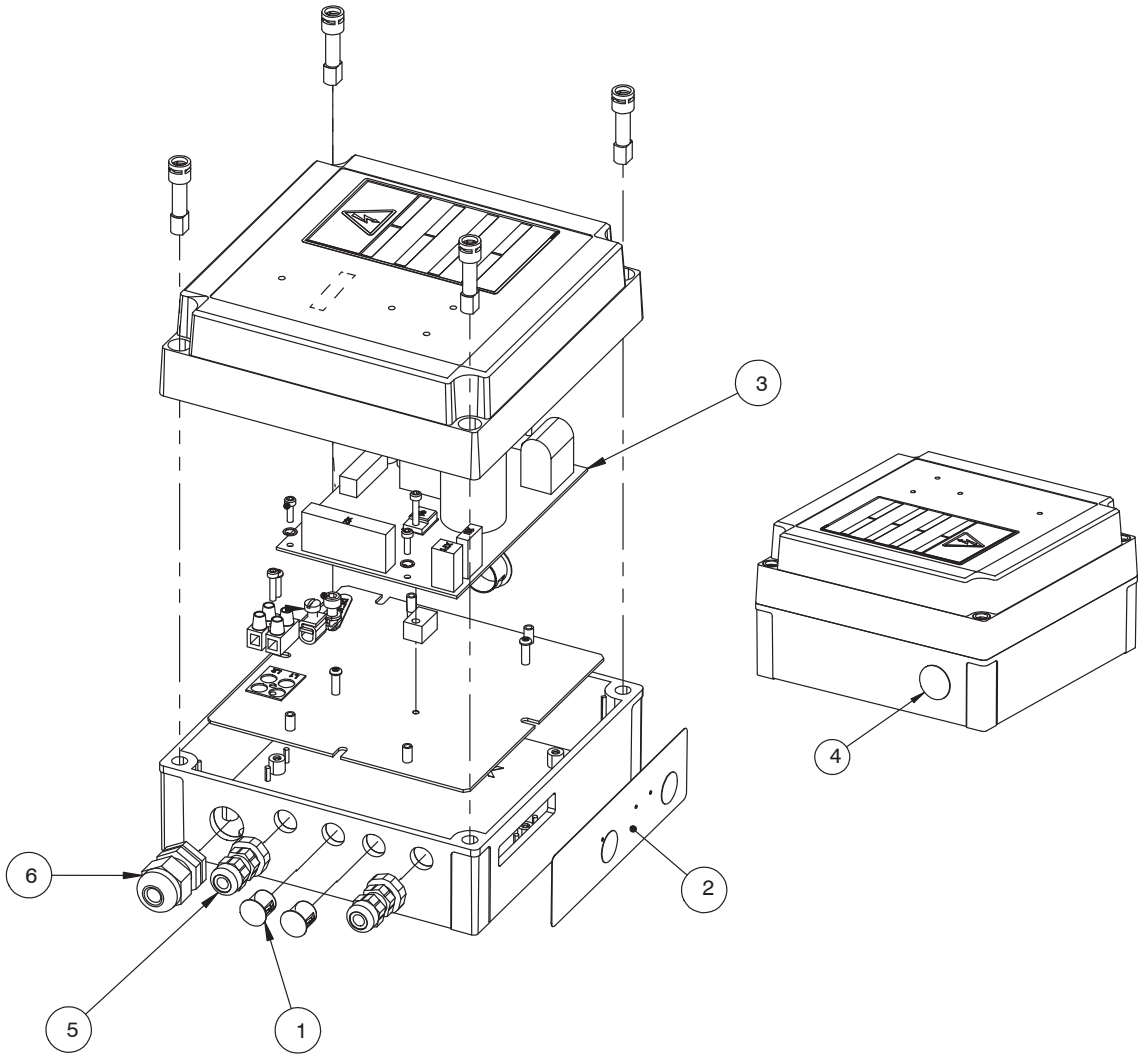


Figure 17 Control box assembly parts

Lid Assembly Parts

See Figure 18.

Item	Part	Description	Quantity	Note
—	1105415	LID ASSY,FULFILL RETROFIT,DURA/VERSA 100	—	
1	1052143	• NUT, HEX, W/EXT TOOTH WASHER, M5, STL, ZN	16	
2	983418	• WASHER,FLT,M,OVERSIZED,5,STL,Z	8	
3	1105411	• LID, INNER, FULFILL RETRO, VERSA/DURA 100	1	
4	1105417	• INSULATOR, LID & COVER, FULFILL RETROFIT	16	
5	1105413	• BRACKET, LID, FULFILL RETRO, VERSA/DURA 100	2	
6	1105412	• INSULATION, LID, FULFILL RETROFIT, DURA 100	1	
7	208498	• LATCH, SPRING, MED, 4MM HEX HD	2	
8	1105410	• LID, OUTER, FULFILL RETRO, VERSA/DURA 100	1	
9	1068757	• RIVET,POP, 1/8X.250 CARBON STL	4	
10	1050403	• HANDLE,LID,PB II	2	
11	982176	• SCR,SKT,M6X16,BL	4	
12	1036625	• MACHSCRM,PAN,REC,M3X8,SEMS	2	
13	1093724	• ACTUATOR,SWITCH,MAGNETIC	1	

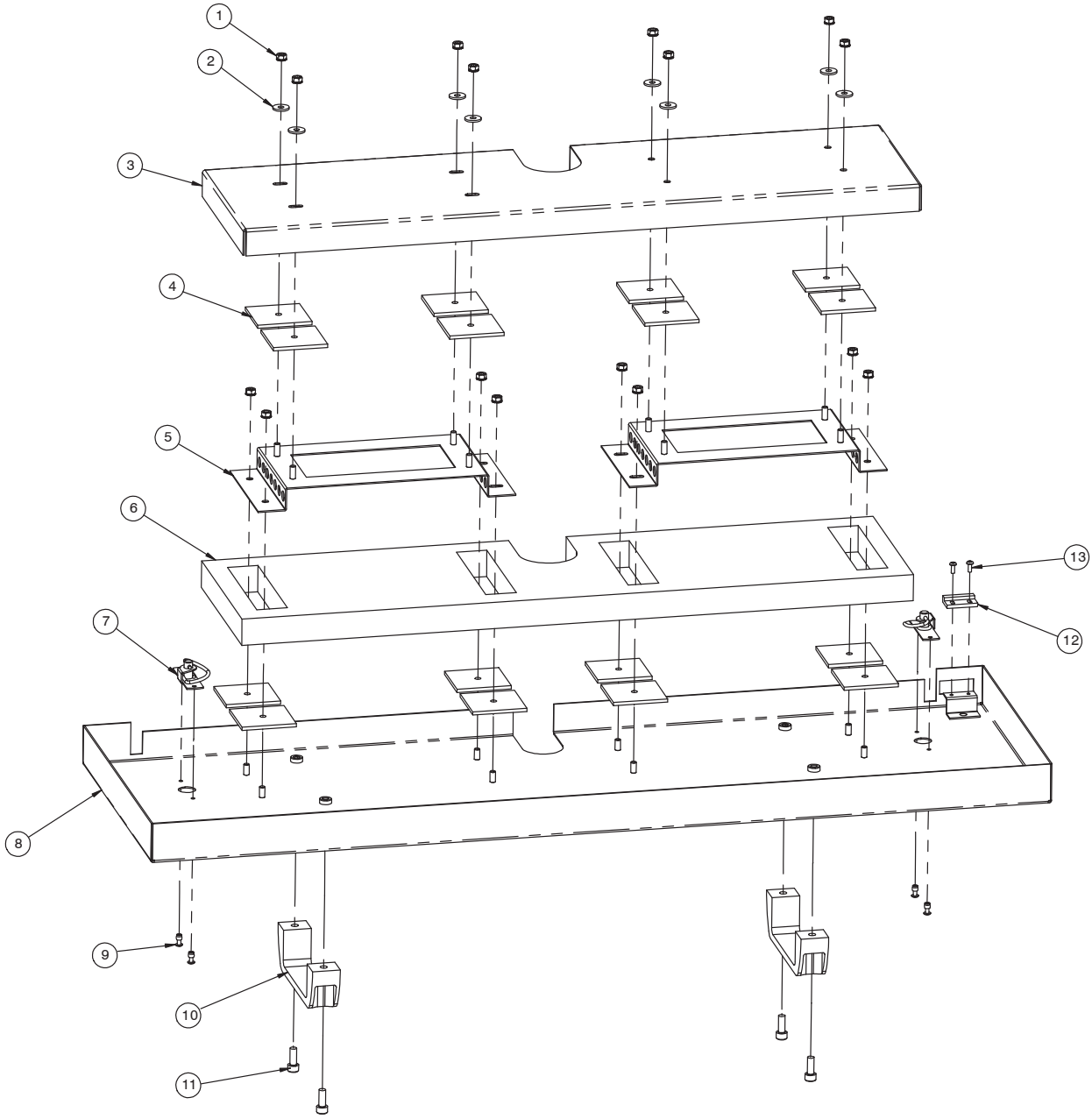


Figure 18 Lid assembly parts

Pneumatic Control Unit Assembly Parts

See Figure 19.

Item	Part	Description	Quantity	Note
—	1095728	CONTROL UNIT, PNEUMATIC, FULFULL	—	
1	1093650	• VALVE,SOLENOID,3-WAY,24V,1/4 NPT	1	
2	233785	• ELBOW,MALE,1/4 NPT	1	
3	1096668	• REGULATOR/FILTER,40 MIC,1/4 NPT, 65 PSIG	1	
4	1058059	• MUFFLER POLYETHYLENE 1/4” NPT, SATURN	1	
5	972125	• CONN,MALE,ELBOW,10MM T X 1/4UNI	1	
6	982026	• SCR,SKT,M4X25,BL	2	

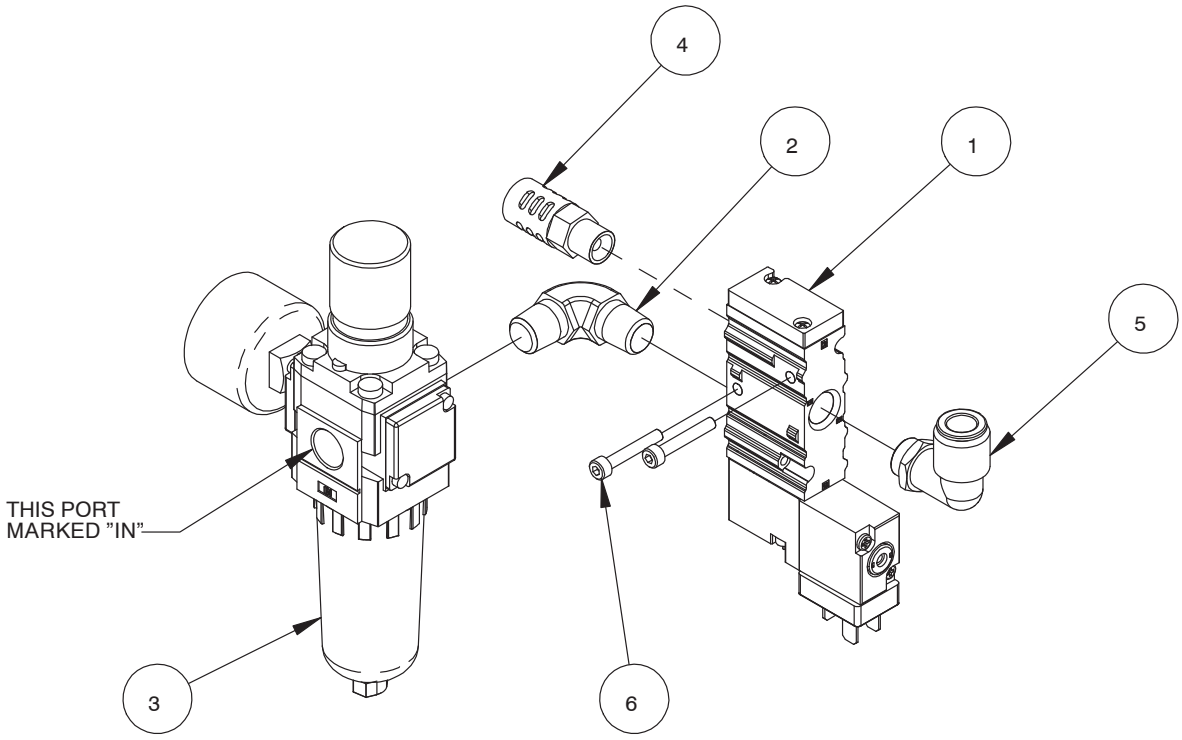


Figure 19 Pneumatic control unit assembly parts

Service Kits

Part	Description
1099525	KIT, MEMBRANE PANEL, FULFILL RETROFIT
1104650	KIT, SERVICE, 300 MM LG, LEV. SENSOR, FULFILL
1096221	SERVICE KIT,REFILL CONT.,PROBLUE
1082942	KIT,SERVICE,SOCK FILTER,5 PCS,FULFILL

Accessories

Part	Description
1098962	KIT, VIBRATOR, CONTAINER, FULFILL RETROFIT
1099057	KIT, LIGHT TOWER, FULFILL RETROFIT

Service Parts

Part	Description
1096668	REGULATOR/FILTER, 40 MIC, $^1/_4$ NPT, 65 PSIG
1093639	FILTER/REGULATOR W/GAuGE, 1/4 NPT (40 mic, 5–100 psig)
1093650	VALVE, SOLENOID, 3-WAY, 24V, $^1/_4$ NPT
1097983	CONTAINER ASSEMBLY,120L,BLUE, FULFILL
1099544	GASKET, NEOPRENE RUBBER, ADH. CONTAINER
7408012	SUCTION WAND, W/BOX, FULFILL
7408022	Vibrator, suction wand (VIBRATOR, BALL, K8, FILLEASY)
1095962	HOSE, TRANSFER, FULFILL (15 FT)
1095965	TUBING,10MM X 8MM, NYLON,15 FT.
1095983	CABLE TIE, 14.5, NYLON 6.6, 4.0 BUNDLE
231362	CLAMP, HOSE,WORM DR, 1.06–2”. SS
939955	FUSE, TIME-LAG, 2A, 5X20 MM, CERAM

Technical Data

Specifications

Parameter	Specification
Adhesive forms (maximum size)	Pellets, pastilles, mini-slats • Pastilles: 12 mm (0.472 in.) diameter • Mini-slats: 12 mm X 12 mm (0.472 in. X 0.472 in.) in length
Input voltage	100–240/1-phase VAC, 1 A
Power cord	Customer supplied, 14–18 AWG
Adhesive transfer maximum rate	227 kg/hr (500 lb/hr) depending on adhesive type
Transfer hose length	4 m (13 ft)
Operating air	Minimum: 4.5 bar (0.45 MPa or 65 psi) Maximum: 8.6 bar (0.86 MPa or 125 psi)
Total air consumption	679 l/min (24 SCFM) when feeding
Conditioning	Dry, non-lubricated
Inlet air connection	$^1/_4$ in. NPT female $^1/_4$ BSPP female G1/4 female
Pump type	Venturi
Noise emission	76 dBA
Suction lance dimensions	(L) 615 mm x maximum (W) 105 mm (24.21 in. x maximum 4.14 in.)
Storage bin capacity	60 kg (132 lb)
Enclosure rating	IP54

Dimensions

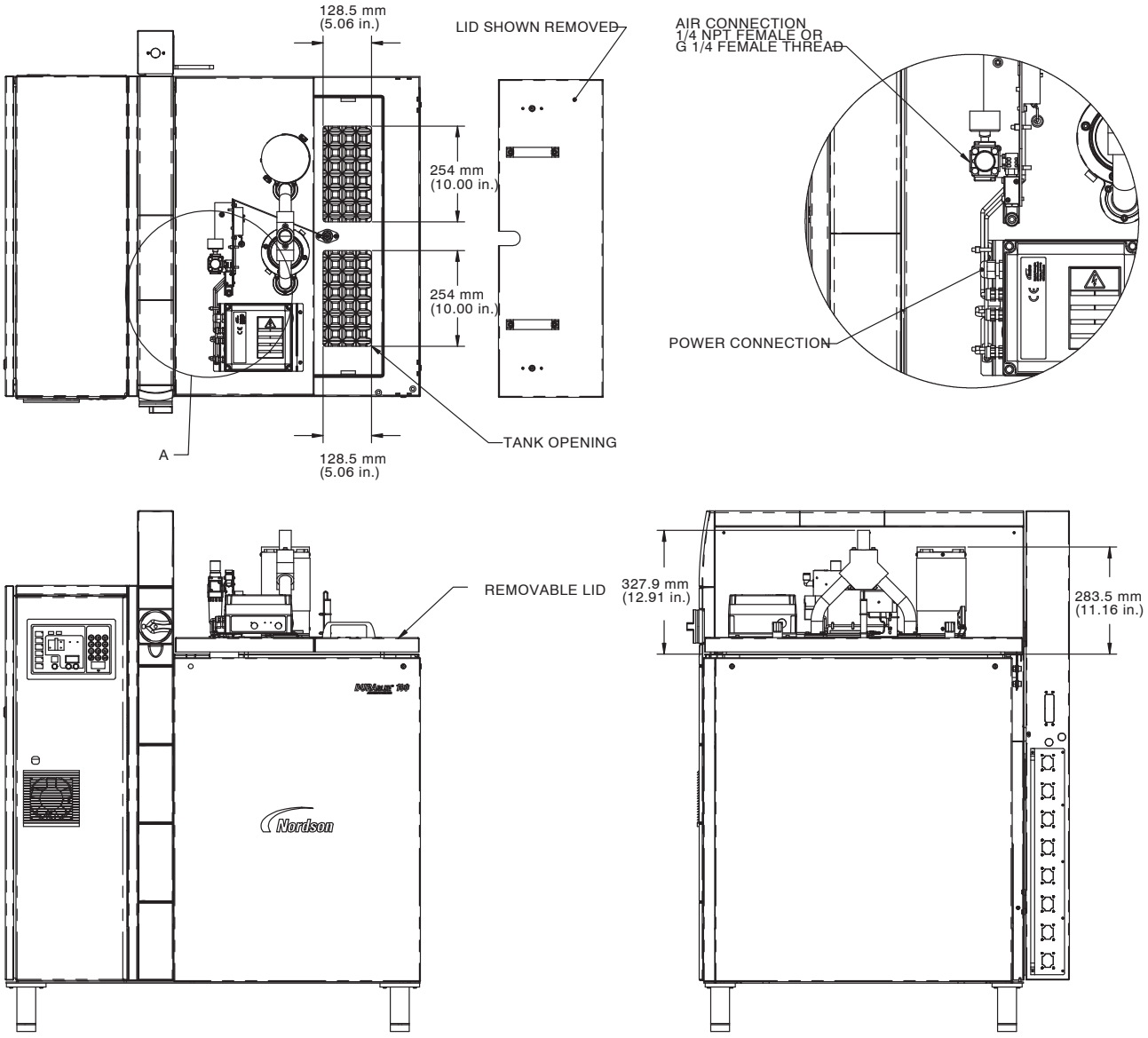
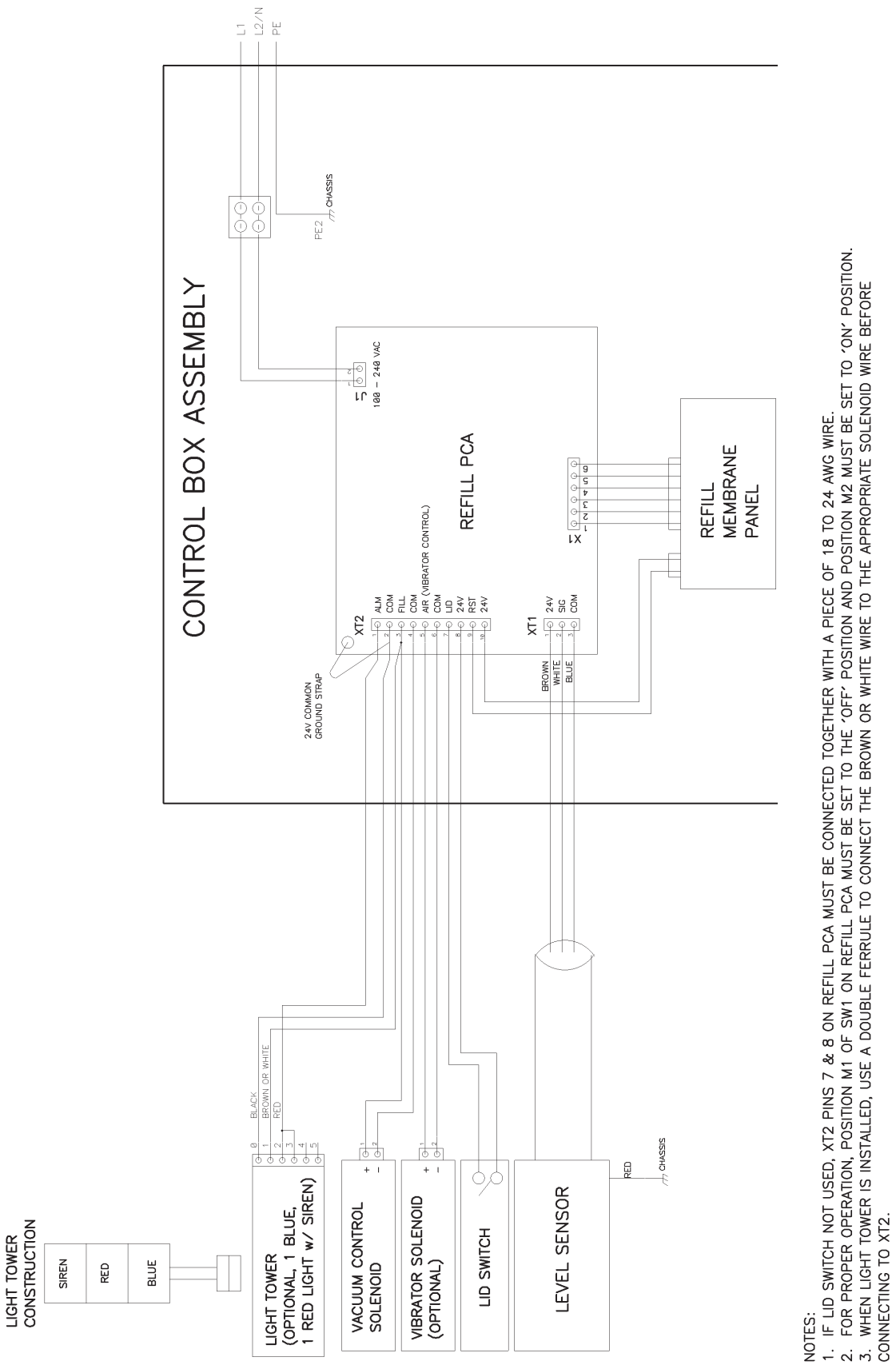


Figure 20 Fulfill retrofit kit dimensions

Wiring Diagram

The wiring diagram on the next page is provided for your reference as needed.



NOTES:
1. IF LID SWITCH NOT USED, XT2 PINS 7 & 8 ON REFILL PCA MUST BE CONNECTED TOGETHER WITH A PIECE OF 18 TO 24 AWG WIRE.
2. FOR PROPER OPERATION, POSITION M1 OF SW1 ON REFILL PCA MUST BE SET TO THE 'OFF' POSITION AND POSITION M2 MUST BE SET TO 'ON' POSITION.
3. WHEN LIGHT TOWER IS INSTALLED, USE A DOUBLE FERRULE TO CONNECT THE BROWN OR WHITE WIRE TO THE APPROPRIATE SOLENOID WIRE BEFORE CONNECTING TO XT2.

EC Declaration of Conformity

for Adhesive and Sealant Application Equipment
conforming to European Council Directives

CE

PRODUCTS:

AltaBlue™ Melters, Models 15, 30, 50, 100
AltaBlue™ TT Melters, Models A4, A10, A16
Cobalt™ GR Series Bulk Material Unloaders
DuraBlue® Melters
FoamMelt® FM-200 Melter
Fulfill® Retrofit Kit
Mesa™ Melters
MiniPUR™ Melters
ProBlue® Melters, Models P4, P7, P10, P15, P30 and P50
ProBlue® Fulfill®, Models P4F, P7F, P10F
PURBlue™ Melters
Series 3000V Melters
SureFoam™ Foam Dispensing System

Model Number_____

Serial Number_____

APPLICABLE DIRECTIVES:

Machinery Directive: 2006/42/EC
Electromagnetic Compatibility Directive: 2004/108/EC

STANDARDS USED TO VERIFY COMPLIANCE:

EN ISO 12100 EN 60204-1
EN ISO 13732-1 EN 61000-6-2
EN 55011 *(Class A, Group 2 for industrial environments. Use in other environments may pose potential difficulty ensuring electromagnetic compatibility due to conducted as well as radiated disturbances.)*

PRINCIPLES:

This product has been manufactured according to good engineering practice.

The product specified conforms to the directives and standards described above.

Peter Lambert, Senior Vice President
Adhesives Dispensing Systems

Date: 14 December 2012

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