

FoamMelt® FIT25 Adhesive Foam Melter

Customer Product Manual

P/N 1131512_02

- English -

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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

For CE Declaration, refer to equipment documentation.

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Table of Contents

Safety	1-1
Safety Alert Symbols	1-1
Responsibilities of the Equipment Owner	1-2
Safety Information.....	1-2
Instructions, Requirements, and Standards.....	1-2
User Qualifications	1-3
Applicable Industry Safety Practices	1-3
Intended Use of the Equipment	1-3
Instructions and Safety Messages	1-4
Installation Practices.....	1-4
Operating Practices	1-5
Maintenance and Repair Practices.....	1-5
Equipment Safety Information	1-6
Equipment Shutdown	1-6
Relieving System Hydraulic Pressure	1-6
De-energizing the System.....	1-6
Disabling the Applicators	1-7
General Safety Warnings and Cautions	1-7
Other Safety Precautions.....	1-10
First Aid	1-10
Safety Labels and Tags.....	1-11
 Description	 2-1
Introduction	2-1
Overview	2-1
Compatible Adhesives.....	2-1
Compatible Equipment	2-2
Dispense Applicators.....	2-2
Hoses	2-2
System Components	2-3
Control Components.....	2-3
Electrical Components.....	2-5
Tank and Drive Assembly	2-8
Manifold Assembly	2-9
Density Controller Block Assembly.....	2-10
Operating Modes.....	2-11
Startup Mode.....	2-11
Operating Mode.....	2-11
Standby Mode	2-11

HMI Control Assembly.....	2-12
Home Screen	2-13
Functional Tiles	2-14
Status Bar	2-16
System Operation	2-17
Display Tiles	2-18
Quick Navigation Bar	2-20
Theory of Operation.....	2-21
Melting Stage	2-21
Mixing Stage.....	2-21
Gas Modulation	2-22
Holding/Discharging Stage	2-22
System Diagram	2-23
System Diagram – Standard	2-23
Installation	3-1
Introduction	3-1
Unpacking	3-1
Inspection.....	3-1
Installation Requirements	3-2
Location.....	3-2
Wiring	3-3
Hose/Applicator Power	3-3
Hoses	3-4
Supply Hoses	3-4
Jumper Hoses Between Automatic Applicators.....	3-6
Return Hoses.....	3-6
Gas Supply Connection.....	3-7
Air Supply Connection	3-8
Electrical Connections.....	3-9
Opening the Electrical Enclosure.....	3-9
Strain Relief Installation	3-9
Main Electrical Service	3-10
Output Contact Connection (Optional).....	3-13
Connecting Standard Outputs	3-13
Configuration.....	4-1
Introduction	4-1
FM FIT25 Melters with FieldBus Communication	4-1
Control Panel Overview	4-2
Home Screen (Menu Showing).....	4-2
Pumps Screen	4-3
Pressure Screen.....	4-4
Temperature Screen.....	4-5
Gas Screen.....	4-6
Master Controls Screen.....	4-7
Alarms/Events Screen	4-8
Systems Settings Screen (Not Logged In).....	4-9

Temperature Settings Screen (Not Logged In)	4-10
Heat Scheduler Screen (Not Logged In)	4-11
Pump Settings Screen (Not Logged In)	4-12
Gas Settings Screen (Not Logged In)	4-13
Preferences Screen (Not Logged In)	4-14
Pressure Settings Screen (Not Logged In)	4-15
Engineering Log-in Screen	4-16
Systems Settings Screen (Logged In)	4-17
Temperature Settings Screen (Logged In)	4-18
System I/O Settings Screen (Logged In)	4-19
Pump Settings Screen (Logged In)	4-20
Pressure Settings Screen (Logged In)	4-21
Tank Screen (Logged In)	4-22
Tools Screen	4-23
System Settings Screen (Admin Log-in)	4-24
Settings Display – Density Control Mode	4-25
Home Screen (Standard – Automatic)	4-25
System Settings Screen (Standard – Automatic)	4-26
Operation	5-1
Introduction	5-1
Startup	5-1
Filling Tank	5-2
Manually	5-2
Level Display and Control (Options)	5-3
Automatic Tank Filling	5-3
Maximum Level	5-3
Recommended Temperature Setpoints	5-4
Temperature Controls Setup Screen	5-5
Pump Speed Adjustment	5-6
Pump and Pressure Settings	5-7
Pump RPM and Pressure Settings	5-7
Pump Speed	5-9
Viscosity	5-9
Density Reduction	5-9
Density Control Adjustment	5-10
Taking a Hot Melt Sample	5-10
Taking a Foam Sample	5-11
Density Determination and Reduction	5-12
System Preferences	5-14
Changing System Pressure	5-16
System Monitoring	5-17
Alarms/Events	5-18
Changing Adhesives	5-19
System Flush	5-21
Shutdown	5-22
Manual Shutdown	5-22
Daily Shutdown	5-22
Emergency Shutdown	5-22

Maintenance	6-1
Introduction	6-1
Preventive Maintenance Schedule	6-2
Checking the Hydraulic, Gas, and Electrical Connections	6-3
Cleaning the Fan and Air Filter	6-4
System Preparation	6-5
Relieving System Pressure	6-5
Checking and Cleaning the Filter Assembly	6-8
Replacing Filter Cartridges	6-8
Removing Filter Cartridges	6-9
Installing Filter Cartridges	6-10
Density Controller and Filter Removal	6-11
Filter Assembly Inspection	6-14
Filter Screen Cleaning and Replacement	6-15
Density Controller and Filter Installation – Standard Melter Only	6-16
Testing the Pressure Relief Valve	6-17
Flushing the System	6-18
Pumping Out Old Material	6-18
Adding New Material	6-18
Resuming Normal Operation	6-19
 Troubleshooting	 7-1
Introduction	7-1
Mechanical Troubleshooting	7-2
Pump Outlet Pressure Troubleshooting	7-4
Temperature Control Troubleshooting	7-5
Electrical Safety During Troubleshooting	7-5
Internal, Hose, or Applicator Zone Not Heating	7-6
Melter Not Powering On	7-6
Control System Indicating a Warning or Fault	7-7
Electrical Schematics	7-8
 Repair	 8-1
Introduction	8-1
Hydraulic Repair Guidelines	8-2
Preparation	8-2
Quick-Disconnect Fittings	8-2
Drive Assembly	8-3
Preparation	8-3
Removing the Motor, Gearbox, and Drive Assembly	8-4
Drive Shaft Face Seal Replacement	8-6
Alignment Plate Installation	8-8
Installing the Alignment Plate	8-8
Replacing the Pump Assembly	8-10
Pressure Control Valve	8-12
Replacing the Pressure Control Valve	8-12
Density Controller Rebuild	8-14
Rebuilding the Density Controller	8-14

Pressure Relief Valve Replacement	8-16
Drain Valve Replacement	8-17
Hose Connector O-Ring Replacement	8-18
Replacing the Hose Connector O-Ring	8-18
Gas Repair	8-20
Preparation	8-20
Gas Pressure Control Panel	8-21
Removing the Gas Pressure Control Panel.....	8-21
Installing the Gas Pressure Control Panel.....	8-22
Replacing the Gas Pressure Regulator.....	8-23
Replacing the Gas Pressure Gauge	8-24
Replacing the Gas Valve	8-24
Replacing the Gas Pressure Switch.....	8-25
Replacing the Gas Pressure Check Valve	8-26
Pressure Transducer Assembly Replacement.....	8-27
Removing the Pressure Transducer	8-27
Installing the Pressure Transducer	8-28
Parts	9-1
Using the Illustrated Parts Lists	9-1
FM FIT25 Melters	9-2
Density Controller/Filter Assembly Parts	9-4
Accessory Kits.....	9-6
Gas Installation Kits.....	9-6
Density Control Valve/Filter Assembly Kits	9-6
Melter Upgrade Kits.....	9-6
Melter Service Kits.....	9-7
Melter Service Parts	9-8
Optional Parts and Equipment.....	9-9
Applicator Installation Kit	9-9
Hose Installation Kit.....	9-9
Extension Cords	9-9
Motor Cables	9-10
Hose Fittings for 5/8 in. Hoses.....	9-10
Specifications.....	10-1
Introduction	10-1
System Specifications	10-2
Dimensions	10-4
Pump Charts	10-5
Pump Speed.....	10-6
Viscosity	10-6
Density Reduction	10-6
Circulation to Output Ratio.....	10-6
Password	A-1
Introduction	A-1

Electrical Components B-1
FoamMelt FIT25 Electrical Components B-1
 Electrical Components – Door Panel B-2
 Electrical Components – Back Panel B-4
 Electrical Components – Right Panel..... B-6

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.
- Use properly rated hearing protection when operating applicators. Noise emission levels can reach a maximum of 99 dB(A).
- 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 or by calling your Nordson representative.

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

Equipment Safety Information

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

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

Equipment Shutdown

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

Relieving System Hydraulic Pressure

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

De-energizing the System

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

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

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

Disabling the Applicators

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

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

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

General Safety Warnings and Cautions

Table 1-1 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 1-1 as follows:

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

PC = Process control

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

General Safety Warnings and Cautions *(contd)*

Table 1-1: 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 SDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with SDS requirements can cause personal injury, including death.
HM	 WARNING! Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.
HM, CA	 WARNING! System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.
HM	 WARNING! Molten material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.
HM, PC	 WARNING! Equipment starts automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an operating applicator, disable the applicator's triggering device and remove the air supply to the applicator's solenoid valve(s). Failure to disable the applicator's triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.
HM, CA, PC	 WARNING! Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.

Continued...

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

Equipment Type	Warning or Caution
HM, CA, PC	 WARNING! Risk of fire or explosion! Nordson adhesive equipment is not rated for use in explosive environments and has not been certified for the ATEX directive or as nonincendive. In addition, this equipment should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the SDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.
HM, CA, PC	 WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others and can damage to the equipment.
HM	 CAUTION! Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.
HM	CAUTION! Some Nordson melters are specifically designed to process polyurethane reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.
HM, CA	CAUTION! Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer's instructions and the SDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt or cold adhesive, resulting in damage to the equipment.
HM	CAUTION! Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains polyester adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

Other Safety Precautions

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

First Aid

If molten hot melt comes in contact with your skin:

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

Safety Labels and Tags

Figure 1-1 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.

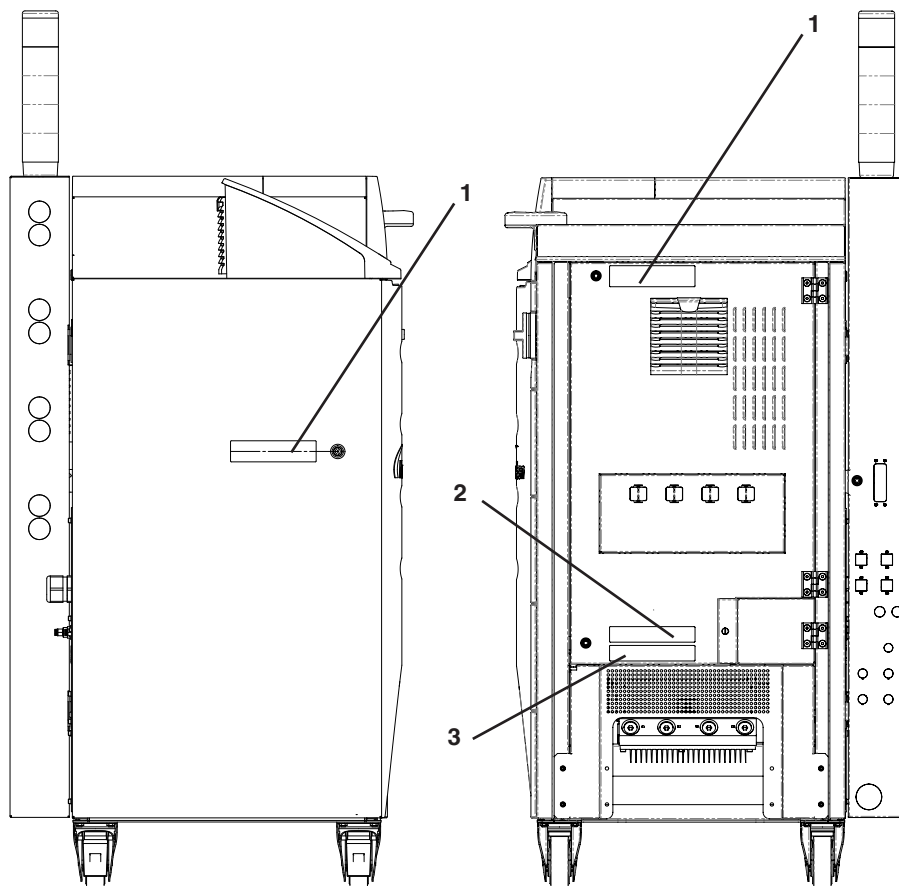


Figure 1-1: Safety labels and tags

Table 1-2: Safety Labels and Tags

Item	Description
1	TAG, WARNING, HAZARDOUS VOLTAGE
2	TAG, WARNING, HOT SURFACE
3	TAG, CAUTION, HOT ADHESIVE

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Section 2

Description

Introduction

The FoamMelt FIT25 (FM FIT25) series melter may be used only to melt, transfer, and apply hot melt materials. The FM FIT25 melter is not intended for use other than that described in this manual.

Overview

The FM FIT25 melter is an externally recirculating system that combines hot melt material with an inert gas to produce a uniformly dense foam.

Compatible Adhesives



CAUTION! Nordson Corporation makes no warranties, express or implied, that FoamMelt equipment or the FoamMelt process is compatible with any particular adhesive. It is the customer's obligation to determine the suitability of adhesives.



CAUTION! Be aware that some materials are abrasive and/or corrosive. While the FM FIT25 melter was designed to resist abrasive and corrosive effects, materials with these properties can damage or reduce the life of system components.

Many common adhesives and sealants are suitable for use with the FM FIT25 melter. Contact your material supplier for recommendations.

Compatible Equipment

Refer to your Nordson *Adhesives and Sealants Equipment Catalog* or contact your Nordson representative for complete information on all FM FIT25 system components, including applicators, hoses, and auxiliary equipment.

Dispense Applicators

The FM FIT25 melter can support up to four automatic extrusion applicators or two circulating hand-held applicators. All applicators and hoses use Resistance Temperature Detectors (RTDs) to sense temperature.

Zero-cavity and reduced-cavity hot melt applicators are used for dispensing the foamed hot melt solution. These applicators reduce the drooling and stringing caused by expanding gas.

Hoses

Nordson conventional, automatic, and water-wash hoses can be used with automatic applicators.

System Components

The system components enable programming of system operating values and provide feedback for monitored components. All system operating values are stored in non-volatile memory. Therefore, values are entered only once.

Control Components

Refer to Table 2-1 and see Figure 2-1 below and Figure 2-2 on page 2-4 for a description of the FM FIT25 melter's major control components.

Table 2-1: Control Components

Item	Component	Description
1	Electrical enclosure	Contains most of the wiring, controls, and other electrical components for the melter
2	Touch panel	Allows monitoring, programming, and control of system temperature control parameters; refer to "HMI Control Assembly" on page 2-12 for more information
		Allows control of pump speed and monitoring of pump speed and system pressure; refer to "Theory of Operation" on page 2-21 for more information
		Allows activation or deactivation of foaming process and status monitoring of gas supply; refer to "Theory of Operation" on page 2-21 for more information
3	Gas pressure panel	Allows adjustment and monitoring of gas pressure

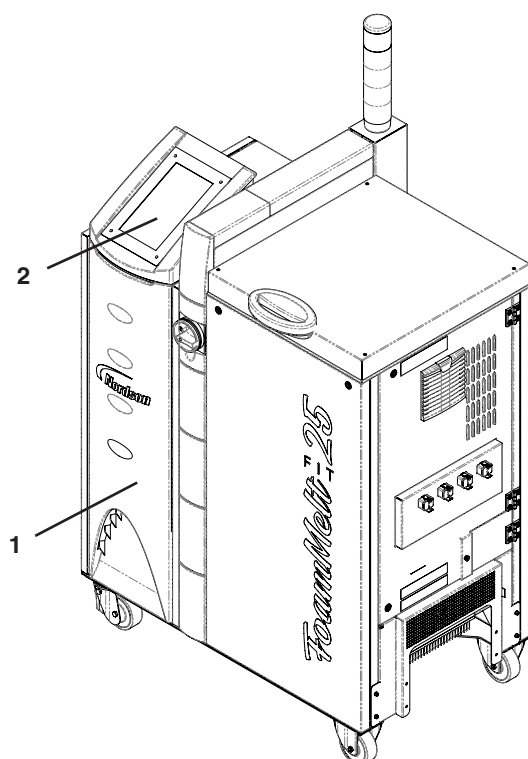


Figure 2-1: Control components

Control Components *(contd)*

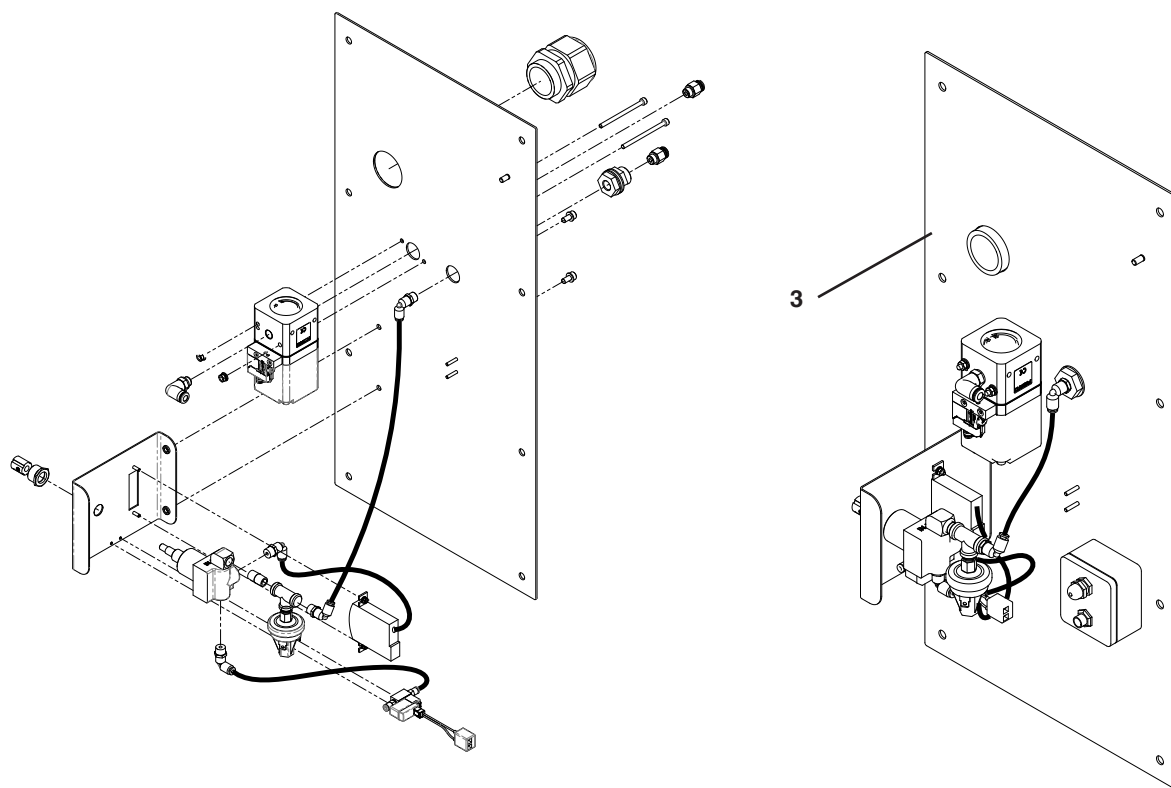


Figure 2-2: Gas pressure panel

Electrical Components

Refer to Table 2-2 and Figure 2-3 below, Figure 2-4 on page 2-6, and Figure 2-5 on page 2-7 to view a layout of the electrical panel components.

Table 2-2: Electrical Components

Item	Component	Description
Figure 2-3	Door panel	Low-voltage PLC control components
Figure 2-4	240 VAC back panel	High-voltage circuit control components
Figure 2-5	400 VAC back panel	High-voltage circuit control components

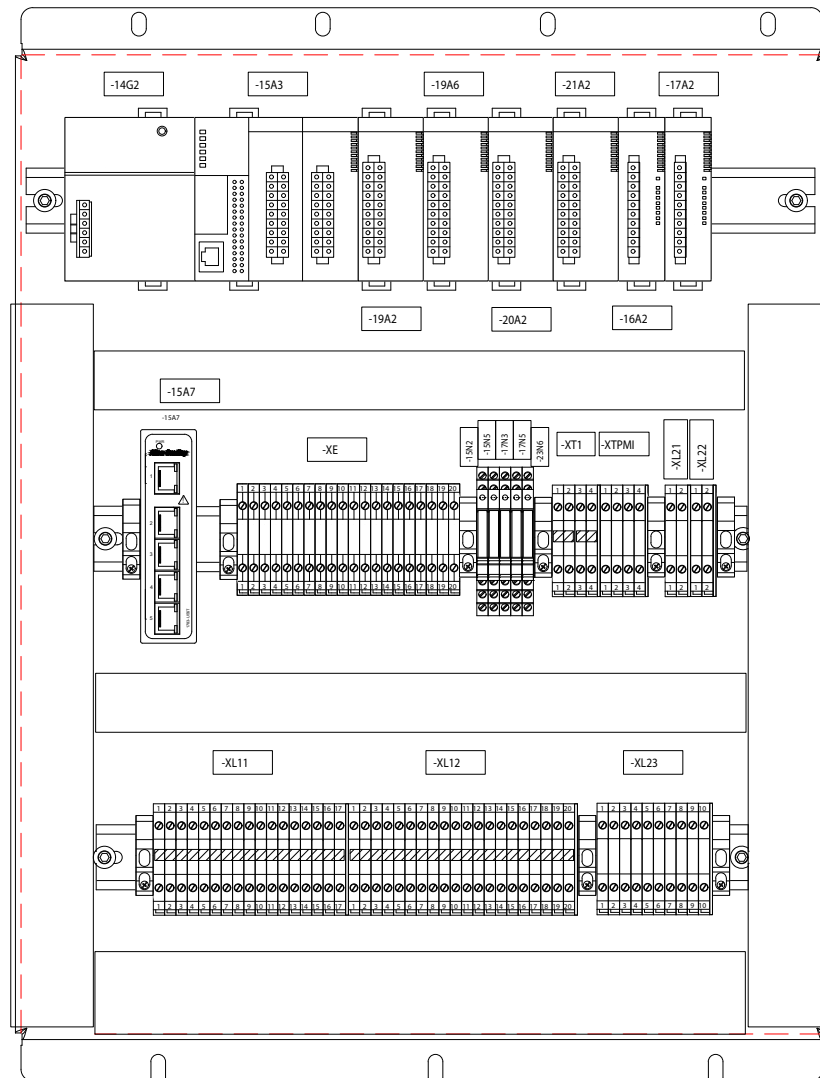


Figure 2-3: Door panel

Electrical Components *(contd)*

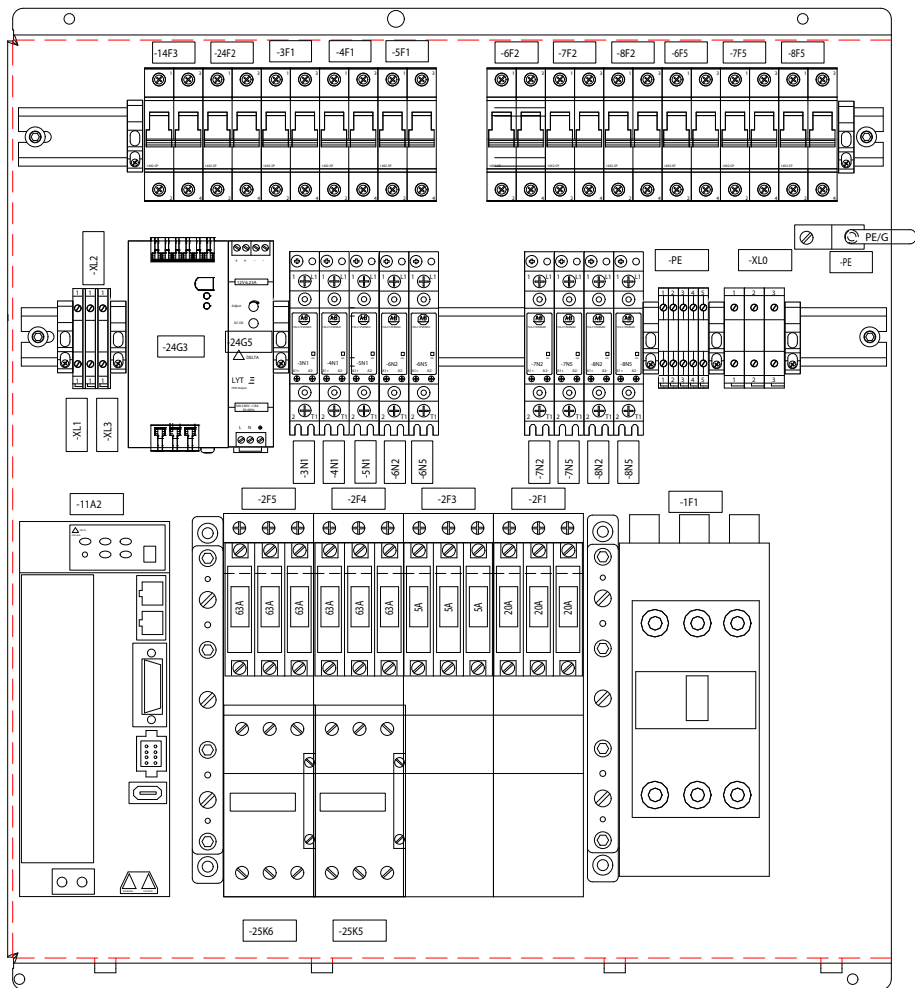


Figure 2-4: 240 VAC back panel

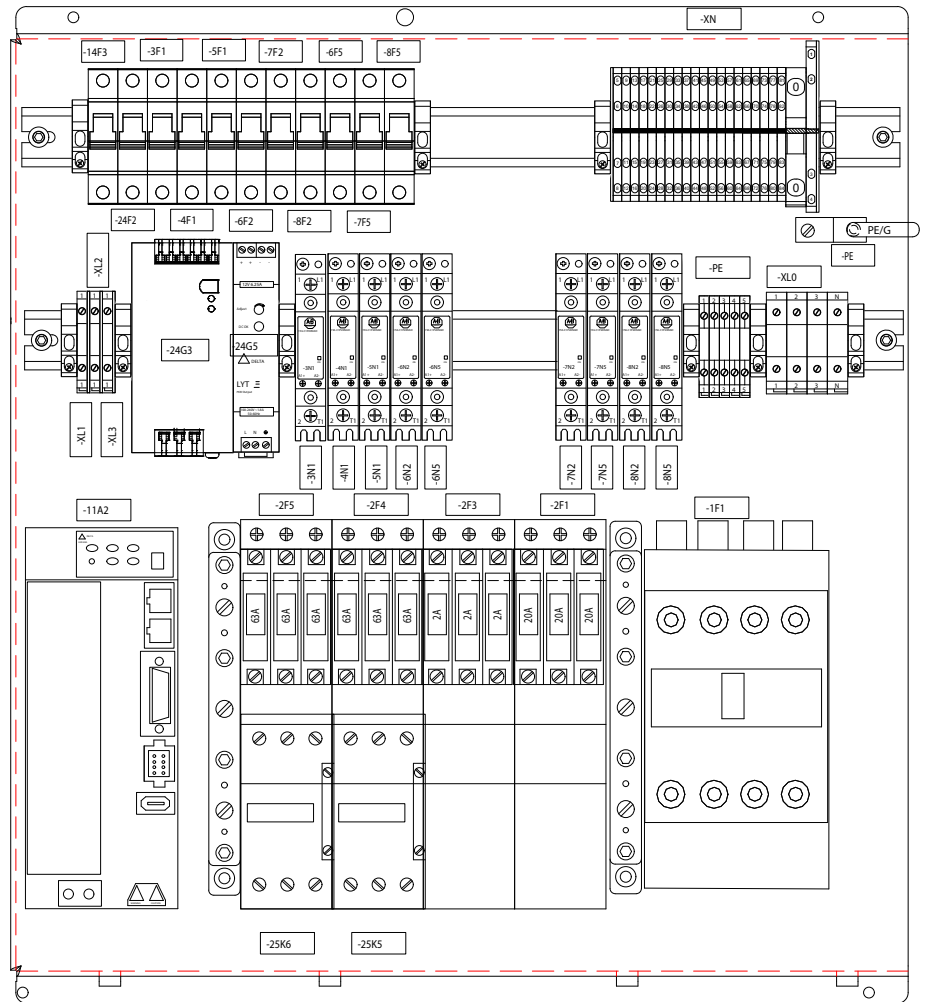


Figure 2-5: 400 VAC back panel

Tank and Drive Assembly

Refer to Table 2-3 and see Figure 2-6 for information on the major components of the tank and drive assembly.

Table 2-3: Tank and Drive Assembly

Item	Component	Description	Notes
1	Motor and Gearbox	Powers the pump assembly using a drive assembly	
2	Hose	Distributes foamed hot melt material to applicators	A
3	Manifold	Connects hoses to melter; refer to “Manifold Assembly” on page 2-9 for more information	
4	Drive assembly	Transfers power from the motor and gearbox to the pump	
5	Reservoir	Holds melted hot melt material before foam is introduced	
6	Grid	Melts hot melt material stored in the hopper, maintains the melted adhesive at application temperature, and directs it to the pump inlet	
7	Hopper	Holds hot melt material before melting	

NOTE A: Not shown

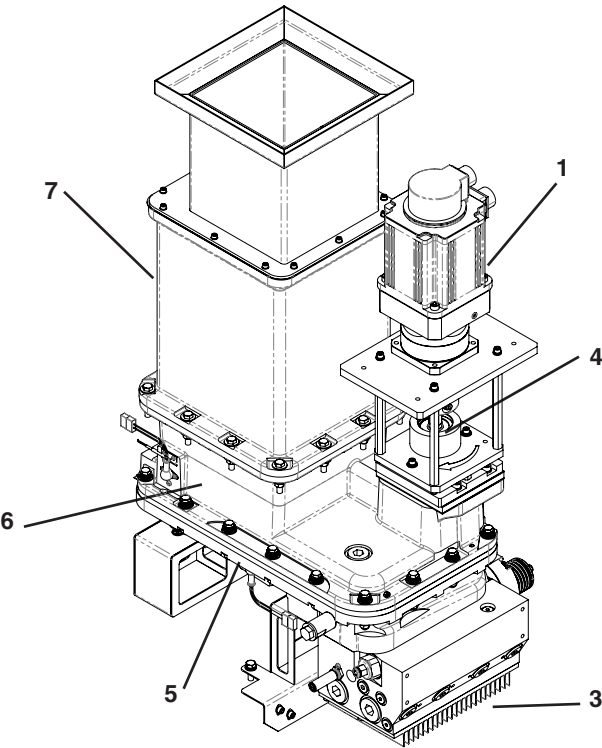


Figure 2-6: Tank and drive assembly

Manifold Assembly

Refer to Table 2-4 and see Figure 2-7 for information on the major components of the manifold assembly.

Table 2-4: Manifold Assembly

Item	Component	Description	Notes
1	Pressure relief valve	Prevents system hydraulic pressure from exceeding 86 bar (1250 psi)	
2	Gas pressure check valve	Prevents hot melt material from flowing from the manifold block into the gas line	A
3	Pump assembly	Pulls hot melt material from the reservoir and mixes it with inert gas	
4	Manifold block	Directs the flow of foamed hot melt material from the pump	
5	Pressure control valve	Controls pressure of hot melt material in the circulation loop	
6	Drain valve	Allows the melter to be drained of hot melt material	

NOTE A: Not shown

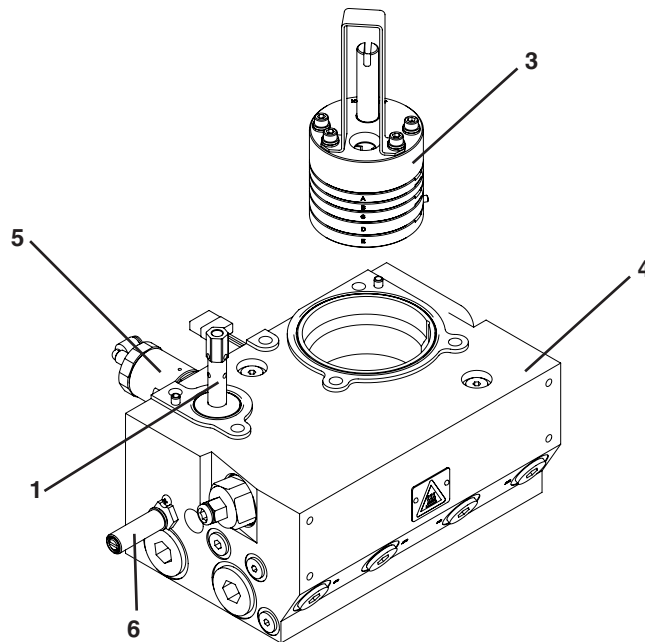


Figure 2-7: Manifold assembly

Density Controller Block Assembly

Refer to Table 2-5 and see Figure 2-8 for information on the major components of the Density controller block assembly.

Table 2-5: Density Controller Block Assembly

Item	Component	Description
1	Density controller/filter	Filters foreign material before the foamed hot melt reaches the applicator; signals the system for gas as required
2	DCV block	Directs the flow of foamed hot melt material in the circulation loop

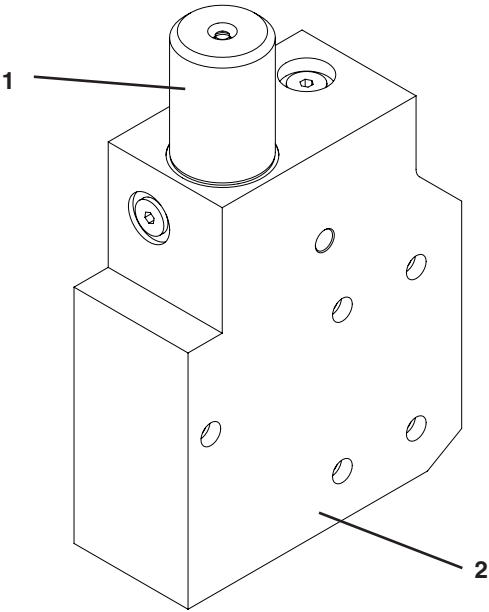


Figure 2-8: Density controller block assembly

Operating Modes

The FM FIT25 melter's three operating modes are startup, operating, and standby.

Startup Mode

During a sequential startup, when the clock timer or an operator turns the system on, the tank and hoses begin to heat first. After the temperatures of the tank and hoses are all within 19.5 °C or 35.1 °F of their setpoint temperatures, the applicators begin to heat.

When the tank, hoses, and applicators are within 3 °C or 5.4 °F of their setpoint temperatures, a time delay begins. The adjustable time delay provides additional time for the material in the tank to melt. At the end of the time delay, the green READY indicator turns on, indicating that the system is ready for operation.

You can program the system so the pump starts automatically, either when the READY indicator turns on or when the tank reaches the temperature you specified. Or you can program the system so the pump must be started manually.

The capability to heat all zones simultaneously is also available.

Operating Mode

While the system is operating, the melter uses PID power modulation to the heaters and nickel RTDs to maintain the temperature of each heated zone.

Standby Mode

When you place the melter in Standby mode, the control system disables the pump and reduces the temperature of all heating zones to the standby temperature setpoints you have selected. Use the Standby mode to keep the material warm when normal operation must be interrupted for a while. The lower temperature reduces char formation and conserves energy.

HMI Control Assembly

The HMI control assembly includes a 10" touch panel and controller that provides a single user-friendly machine interface for system status, settings, and control.

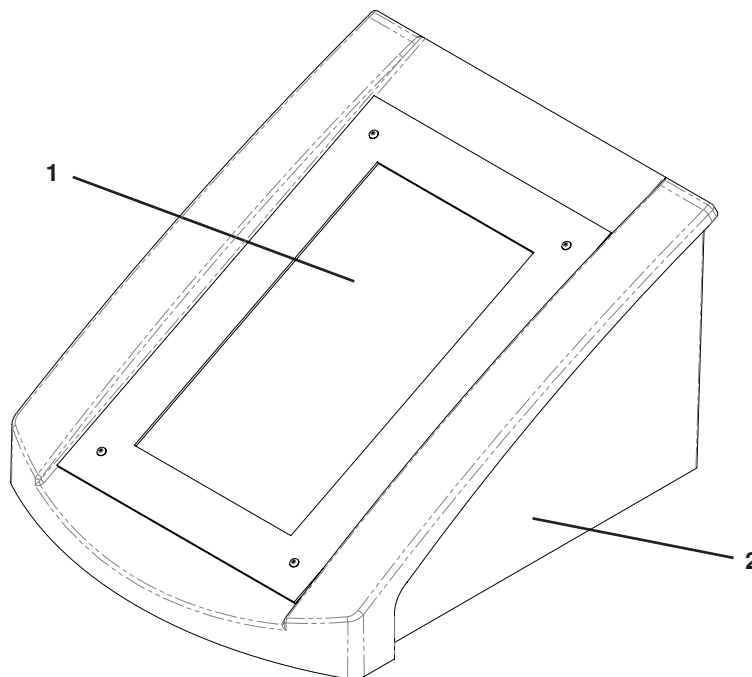


Figure 2-9: HMI control assembly

1. Touch panel

2. Console

Home Screen

The Home screen consists of three major components.

Table 2-6: Home Screen Components

Item	Component	Description
1	Status bar	Current system status information.
2	Quick Navigation bar	Quick access to all system components.
3	Settings and Information Display area	Information about current settings for various components.



Figure 2-10: Home screen

Functional Tiles

The Home screen is divided into several functional tiles.

Refer to Table 2-7 and see Figure 2-11 on page 2-15 for a description of all the tiles on the Home screen.

Table 2-7: Functional Tiles

Item	Component	Description
1	System Status area	A quick summary of the system status.
2	Quick Navigation bar	Access to all system components.
3	Pumps	Pump status and speed.
4	Tank level	Level of the adhesive currently in the tank.
5	Pressure/Flow	Pressure setpoint and actual flow rate when applicable.
6	Gas	Gas pressure status and gas valve duty cycle.
7	Temperature	Temperature of each zone.

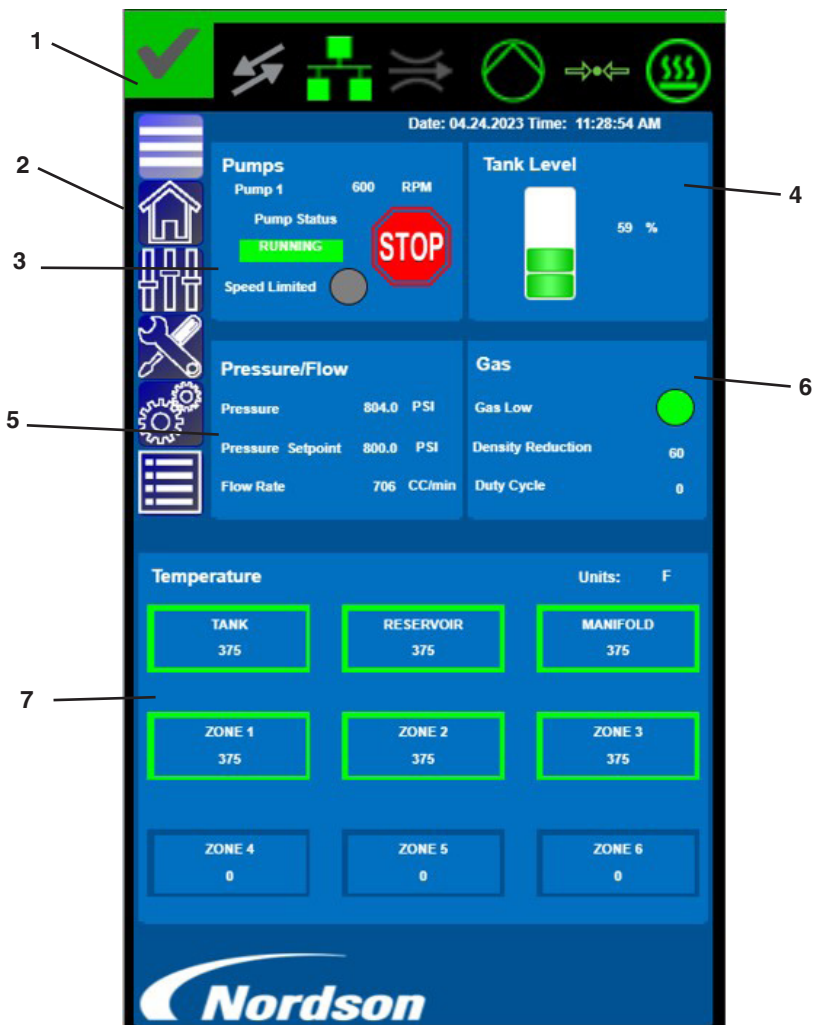


Figure 2-11: Functional tiles on the Home screen

Status Bar

The Status bar provides a quick summary of the system status.

Refer to Table 2-8 and see Figure 2-12 for information regarding the status indicators on the status bar.

Table 2-8: Status Indicators

Item	Component	Description
1	System operation	Indicates whether the system is prepared for operation. For more information, see “System Operation” on page 2-17.
2	Parent Machine communication	Indicates the status of melter-to-parent machine communication.
3	Network communication	Indicates whether all of the melter components are communicating with each other.
4	Gas	Indicates whether gas components are active.
5	Pump	Indicates the pump status.
6	Hydraulic pressure	Indicates the status of the melter system pressure.
7	Heaters	Indicates the status of the heaters.

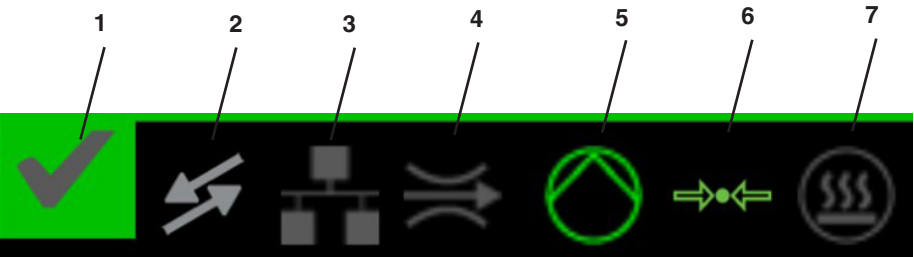


Figure 2-12: Status bar – Status Indicators

System Operation

The FAULT, READY, and DISABLED indicators indicate whether the system is prepared for operation.

FAULT

The red FAULT light turns on to indicate a fault or warning within the corresponding system component.

READY

The green READY light turns on to indicate that the corresponding system component is ready to operate and that no faults exists.

DISABLED

The gray DISABLED light indicates that the corresponding system component is disabled and not ready. The corresponding system component must be enabled or all setting requirements cannot switch to READY status.

Display Tiles

The display tiles on the Home screen provide detailed information about the system status.

- When running the system, a display tile shows the status of each temperature zone.
- When configuring the system, a display tile shows the current system settings.

Refer to Table 2-9 below and see Figure 2-13 on page 2-19 for information on all the display tiles on the Home screen.

Table 2-9: Display Tiles

Item	Component	Description	Notes
1	Pumps	Pump status and speed in revolution per minute	
2	Tank Level	Adhesive level in the tank	
3	Pressure	Pressure setpoint and actual pressure	
4	Gas	Gas pressure status and gas valve duty cycle	A
5	Temperature	Temperature of each zone	
NOTE A: Density reduction is only available with the Advanced version.			



Figure 2-13: Display tiles on the Home screen

Quick Navigation Bar

The Quick Navigation bar lets you navigate to and customize all of the system components to fit the specific needs of each application.

Refer to Table 2-10 and Figure 2-14 for information on all the components on the Quick Navigation bar.

Table 2-10: Quick Navigation Bar Components

Item	Component	Description
1	Collapse menu	Collapses and expands the Quick Navigation bar
2	Home	Returns to the Home screen
3	Master controls	Accesses component system settings
4	Tools	Displays software version and Quick Start guide
5	System settings	Accesses and sets global system settings
6	Alarm/Events	Accesses event, log history, and alarm information

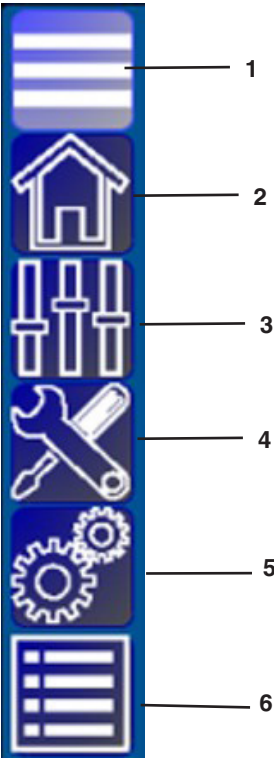


Figure 2-14: Quick Navigation bar components

Theory of Operation

The FM FIT25 melter uses a process that combines hot melt material with an inert gas to produce a foam of uniform density.

There are four stages in the FoamMelt process as shown in the table below.

Stage	What the FM FIT25 Process Does
Melting	Melts solid hot melt material
Mixing	Mixes the molten hot melt material with a metered amount of inert gas
Holding	Holds the hot melt solution under pressure
Discharging	Discharges the hot melt solution, which expands to produce foam

Melting Stage

The warm hopper, and the heated grid and reservoir, melt pellets, slats, or other forms of solid hot melt material. The heating components of the grid and reservoir are controlled independently.

Mixing Stage

After being melted, the hot melt material is fed into a constant displacement, two-stage gear pump where it is mixed with an inert gas (commonly industrial-grade carbon dioxide or nitrogen). The two-stage gear pump is similar to a pair of gear pumps that are stacked one on top of the other in a single housing.

The top portion of the pump draws a measured amount of molten hot melt material into the pump.

The larger volume bottom portion of the pump creates a vacuum that helps draw in the gas. As the gas and molten hot melt material move toward the pump discharge port, hydraulic pressure in the pump increases, forcing the gas into solution with the molten hot melt material. A series of slots cut into the plates above and below the second-stage gear teeth also help mix the gas with molten hot melt material.

Gas Modulation

The gas (carbon dioxide or nitrogen) is supplied to the unit from a user-supplied gas cylinder equipped with a regulator. The gas flows through a pressure switch that activates an LED indicator if the supply pressure falls below 2.04 bar (30 psi).

The gas passes from the pressure switch through a pressure regulator and gauge that controls the input gas pressure to the pump. An electric modulation (solenoid) valve controls the gas flow in response to system requirements. The gas then passes through a check valve located just before the manifold; this eliminates the possibility of material backflow into the gas line.

The solenoid valve is controlled by the density controller/filter. Turning the density control knob clockwise adds more gas to the solution.

Holding/Discharging Stage

As the hot melt solution leaves the pump and enters the manifold, hydraulic pressure is measured by a pressure transducer and displayed on the operator control panel.

The hot melt solution flows from the manifold through the density controller/filter assembly, into supply hoses, and out to the automatic or hand-operated extrusion applicator(s). Unused solution recirculates through the return hose(s) connected to the return port in the manifold. This prevents the hot melt solution from separating and improves its consistency.

As the hot melt solution enters the return port in the manifold, it passes through a pressure control valve.

Hydraulic overpressure protection is provided by a pressure relief valve mounted in the manifold. If hydraulic pressure reaches 85 bar, ± 7 bar (1,250 psi, ± 100 psi), the valve redirects the solution into the reservoir.

The hydraulic pressure is automatically controlled to maintain a setpoint selected by an operator using a touchscreen.

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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.

Introduction

This section describes how to install the FM FIT25 melter and its components. Refer to the manuals that came with the hoses, applicators, and encoder for installation instructions for those products.

Unpacking

Refer to the FM FIT25 instruction sheet for details on unpacking the melter. Unpack carefully and check for damage caused during transport. Save pallet, angle brackets, and box for later use, or dispose of it properly according to local regulations. All hoses and applicators are shipped in separate containers.

Inspection

Perform the following steps to inspect the melter.

1. Inspect all surfaces for dents, scratches, cracks, corrosion, and other physical damage.
2. Inspect the hoses for broken connectors, tears in the outer cover, and other damage.
3. Inspect all fasteners and mechanical connections for tightness.

Installation Requirements

Read the following before installing your melter:

- “Location”
- “Wiring” on page 3-3
- “Hose/Applicator Power” on page 3-3

Other requirements and recommendations are provided in the installation procedures.

Location

Carefully select the location for the melter and its associated applicators and hoses. Follow these guidelines when choosing a location.

NOTE: Refer to the section “Specifications” on page 10-1 for melter dimensions.

Make certain:

- there is enough room to open the tank lid, open the electrical enclosure, remove the filter assembly, remove the pump enclosure, and make electrical connections for the hoses
- an operator can access all controls
- maintenance personnel have room to service and repair the melter
- installers can route the hoses without bending them
- the mounting surface can support the weight of the melter when the melter is filled with adhesive; refer to the section “Specifications” on page 10-1
- the mounting surface is level
- the drain valve projects over the edge of the mounting surface and there is at least 15 cm (6 in.) for draining adhesive

Wiring

Follow these guidelines when installing wiring to the melter:

- Allow enough room to route your electrical service line to the melter.
- Route wires away from AC power lines, solenoid output lines, and electrical equipment such as motors, contacts, and relays.
- Make connections with the minimum length of wire needed. A long wire can act as an antenna for electrical noise.

Hose/Applicator Power

The power requirements of your hoses and applicators must be determined to make sure that you do not overload the melter. If your Nordson representative has not already checked to see that your melter can support all of the hoses and applicators you plan to install, or if you need to add new hoses, you must calculate your hose/applicator power requirements now.

If you need help with this procedure, contact your Nordson Corporation representative.

Hoses

The FM FIT25 melter requires supply and return hoses to circulate the solution from the manifold to the applicators and back to the manifold. Refer to the instructions shipped with each hose for additional information on how to install the hose properly.

NOTE: If automatic applicators that do not have two hydraulic ports are being installed with a pair of hoses, install circulation fittings to the applicators before connecting the hoses.

Supply Hoses

Perform the steps that follow to install the supply hoses.

1. See Figure 3-1 to determine the proper hose and applicator configuration for your melter. A plus (+) sign indicates a hydraulic supply port; a minus (-) sign indicates a hydraulic return port. Squares () indicate electrical connections.

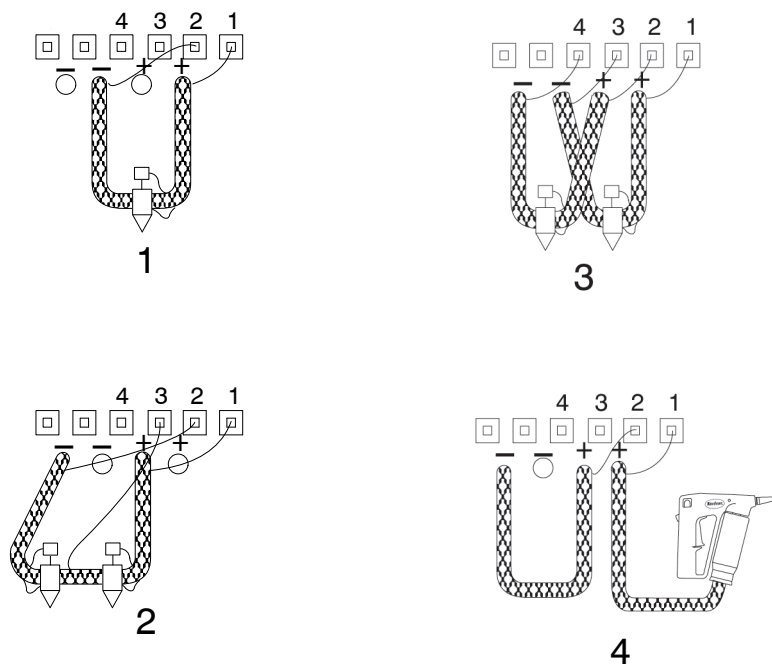


Figure 3-1: Hose and applicator configurations

- | | |
|--------------------|-------------------------|
| 1. One applicator | 3. Two applicators |
| 2. Two applicators | 4. Hand-held applicator |

See Figure 3-2.

2. Remove the plug from an appropriate supply port in the manifold.
3. Apply anti-seize lubricant to the connector threads and o-ring lubricant to the o-rings on the connector.
4. Install the connector to the supply port. Tighten the connector to 9.5–13.6 N•m to create an effective seal.
5. Connect the supply hose to the connector in the manifold.
6. Connect the hose electrical plug to one of the electrical sockets on the melter.
7. Route the hose from the manifold to the applicator if the hose is being connected to an applicator. Follow the procedures in your applicator manual for instructions on connecting hoses to applicators.
8. Repeat steps 2 through 7 if your melter requires an additional supply hose.

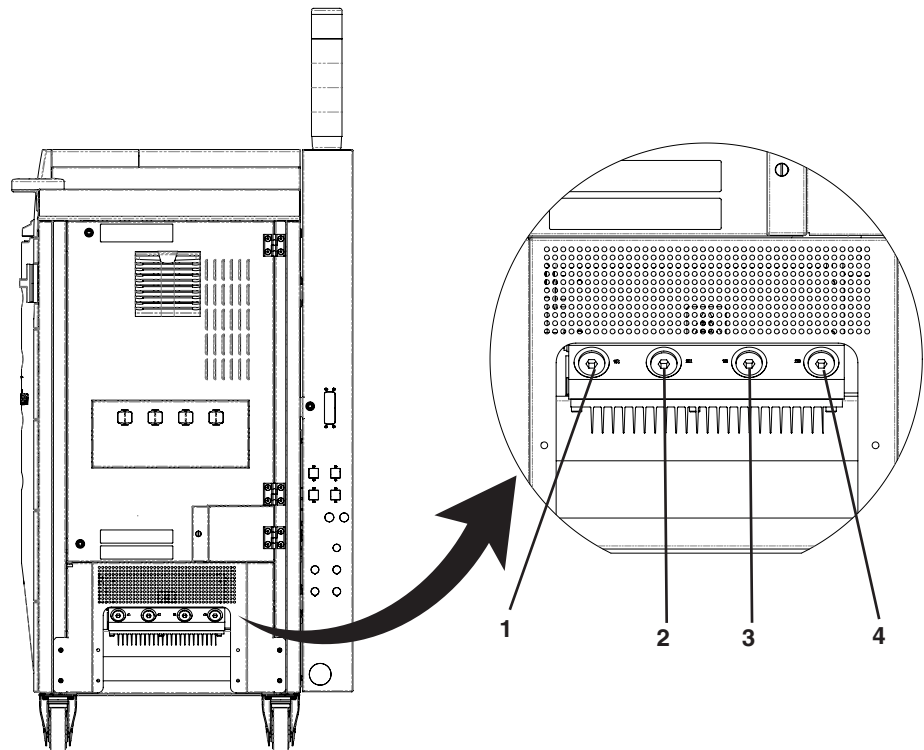


Figure 3-2: Attaching the supply hose to the melter

- | | |
|-----------------------|-----------------------|
| 1. First return port | 3. First supply port |
| 2. Second return port | 4. Second supply port |

Jumper Hoses Between Automatic Applicators

Perform the following steps to install jumper hoses between two automatic applicators.

1. Apply anti-seize lubricant to the threads of the hydraulic fitting on each applicator.
2. Follow the instructions in your applicator manual to connect the hose to the applicators.
3. Connect the hose electrical plug to one of the electrical sockets on the melter.

NOTE: If the electrical cord for the jumper hose does not reach from the applicators to the melter, use a hose extension cord. Refer to the section “Parts” on page 9-1 for more information.

4. Repeat steps 1 through 3 if your melter requires an additional jumper hose.

Return Hoses

Perform the following steps to attach return hoses to applicators.

NOTE: Do not connect the return hose to the manifold at this time. The melter must be flushed first. For more information, refer to “System Flush” on page 5-21.

1. Apply anti-seize lubricant to the hydraulic fitting threads on each applicator.
2. Follow the instructions in your applicator manual to connect the hose to the applicator.
3. Connect the applicator electrical plug to the electrical socket of the hose.
4. Connect the hose electrical plug to one of the electrical sockets on the melter.
5. Repeat steps 1 through 4 if your melter requires an additional return hose.

Gas Supply Connection

Gas cylinder installation kits are available for use with carbon dioxide and nitrogen gas. Refer to the section “Parts” on page 9-1 for kit information.

See Figure 3-3 on page 3-8.



WARNING! Cylinders of compressed gas are under high pressure. Observe all safety precautions that the vendor of the compressed gas provides with the cylinder.

The following items are needed to connect gas to the melter:

- a gas cylinder with a pressure regulator
 - a gas supply hose with a male connector
1. Install the pressure regulator, male connector, and gas hose to the gas cylinder.
 2. Connect the gas tubing to the gas connection (1) on the melter.
NOTE: Make sure that all gas connections are secure before proceeding with the following steps.
 3. Slowly open the service valve on the gas cylinder one full turn.
 4. If there is an audible leak, close the service valve, correct the leak, and re-open the service valve before proceeding.
 5. Adjust the gas cylinder regulator outlet pressure to 276 kPa (40 psig).
 6. Apply a small amount of leak detector fluid from the ship-with kit to each connection along the gas system.
 7. If bubbles form in the leak detector at any fitting, re-tighten and reinspect the fitting until no bubbles form.
 8. When the gas system is leak-free, close the service valve on the cylinder until the melter is ready for use.

Air Supply Connection

Compressed air is required for the melter to operate. The air provides a means of regulating hydraulic pressure. Ensure that the air supply is dry and clean and that there is sufficient pressure available. A 6 mm push-to-connect fitting is provided in the back of the unit for the air connection.

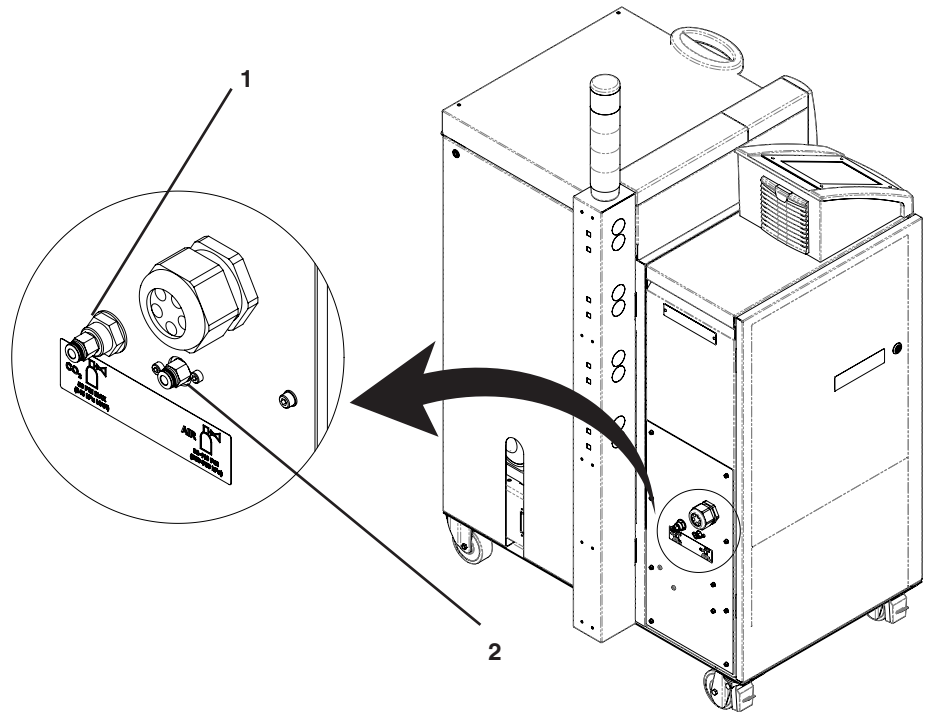


Figure 3-3: Gas and air connections

1. Gas connection

2. Air connection

Electrical Connections

The following sections provide procedures for the FM FIT25 melter electrical connections.



WARNING! Allow only qualified personnel to perform electrical connections. Observe the safety instructions.



CAUTION! If you are adding hoses and applicators to an existing system, make sure that you do not exceed the maximum power capabilities of your melter.

Opening the Electrical Enclosure

Use the following procedures to open and close the electrical enclosure for maintenance, repair, or installation of optional equipment.

See Figure 3-3 on page 3-8.



WARNING! Risk of equipment damage, personal injury, or death. Disconnect and lock out electrical power to the unit, including input/output (I/O) lines.

NOTE: Avoid direct contact with internal electrical connections, components, or wiring.

1. Place the POWER switch in the Off position, disconnect and lock out electrical power to the unit at the branch circuit disconnect switch, and disconnect and lock out electrical power supplied through any I/O wiring.

Strain Relief Installation

Use the following procedure to install strain reliefs into the knockouts.

1. Carefully remove the appropriate knockout hole plug from the light tower.
2. Install a strain relief in the hole.

Refer to Table 3-1 for the appropriate size strain relief.

Table 3-1: Strain Relief Sizes

Knockout Hole Size	Strain Relief Size
23 mm (15/16 in.)	PG-16 or 1/2-in.-trade size
29.5 mm (15/32 in.)	PG-21
35 mm (1 3/8 in.)	1-in. trade size

Main Electrical Service

Determine the electrical service requirements as follows:

- 1. Locate the identification plate on your melter.
- 2. See Figure 3-4. Determine the voltage specification of your melter by looking at the VOLTS (ac) portion (1) of the identification plate.

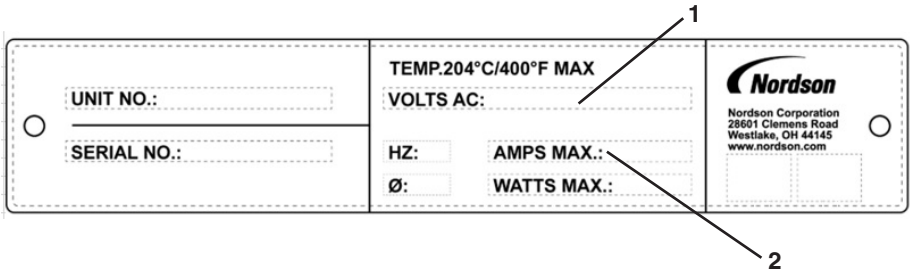


Figure 3-4: Identification plate

1. Voltage

2. Amperage



CAUTION! Operate the melter only when it is connected to the correct line voltage. Operating the melter at a different voltage can damage the melter or impair its performance.

- 3. See Table 3-2.

It shows all the voltage specifications and the types of electrical service that you can connect. Make sure that your melter has the correct voltage specification to accept the type of electrical service that you will be connecting to it.

Table 3-2: Types of Electrical Service

Voltage Specification	Voltage Code	Types of Service You Can Connect to the Unit	Note
3 ac 230V or 3/PE ac 200-240V	1	200-240 Vac 3Ø (three-wire service without a neutral)	
3/N/PE ac 400/230V	2	400/230 Vac 3Ø (four-wire service, including a neutral)	A
NOTE A: This type of service also includes voltage used primarily in the British Commonwealth: 415/240 Vac 3Ø (four-wire service, including a neutral).			

4. See Figure 3-4 on page 3-10. Size your electrical service line based on the maximum amperage shown in the AMPS (maximum) portion (2) of the identification plate. The line must also meet local electrical code requirements.



WARNING! Risk of equipment damage, personal injury or death. Install a strain relief to protect wires from being damaged by the edges of the knockout hole.

5. See Figure 3-5. Use the supplied key to open the electrical panel on the melter. Refer to “Strain Relief Installation” on page 3-9 for more information.

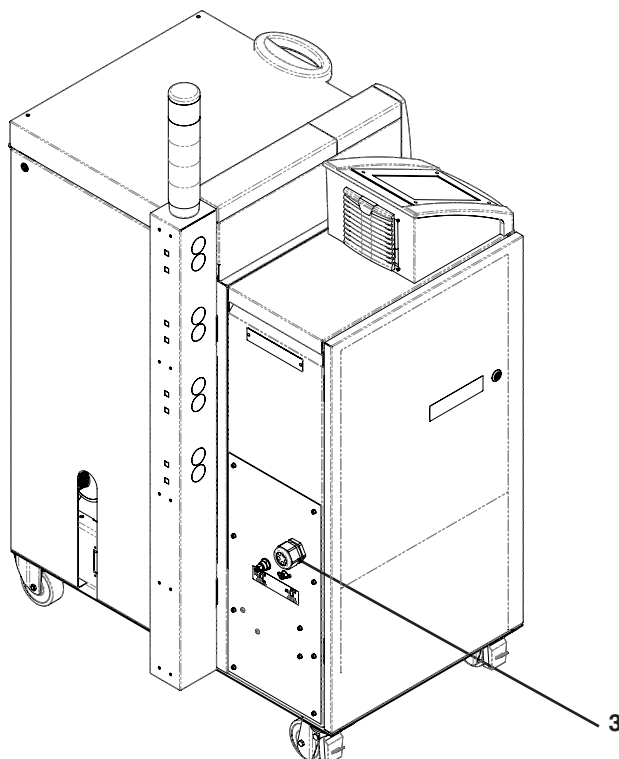


Figure 3-5: Main electrical service

3. Electrical service strain relief



WARNING! Use the proper length of cable. Inadequate wire length could result in disconnection. Excess wiring can be pinched when you close the panel, causing equipment damage, personal injury, or death.

Main Electrical Service *(contd)*

- 6. Route the electrical service line through the strain relief (3), determine the length of cable required to reach the power terminal block, and cut the cable.
- 7. Remove the required amount of cable insulation and wire insulation and then secure the electrical service line with a strain relief.
- 8. Connect the ground wire of your electrical service line to the ground terminal.
- 9. Refer to Table 3-3 and see Figure 3-6. Connect the remaining wires of the electrical service line to TB12.

Table 3-3: Main Power Connection

Item	Number of Wires in the Service Line (excluding the ground wire)	Type of Service
A	Four (including a neutral)	400/230 Vac 3Ø
B	Three (without a neutral)	200/240 Vac 3Ø

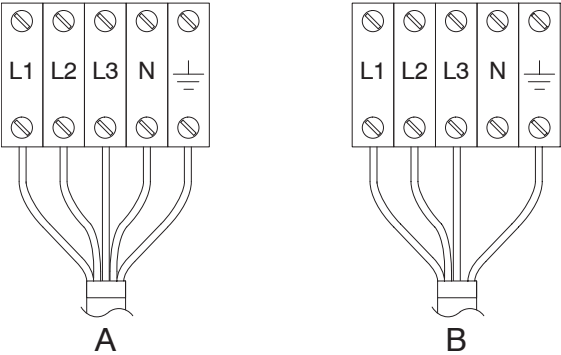


Figure 3-6: Electrical service connections at TB12 (with ground wire shown)

- 10. Tighten the strain relief and install the base electrical panel.

Output Contact Connection (Optional)

Output contacts allow you to automatically activate other equipment or to activate devices for remote monitoring of the melter's operations.

Connecting Standard Outputs

Follow this procedure to connect the standard output contacts that are provided on all melters. If you do not want to connect any outputs, skip this procedure.

Table 3-4 describes the standard output contacts. If your melter has an additional input/output (I/O) kit, there are optional I/Os that you can connect.

Table 3-4: Standard Output Contacts

Output Contact	Function
System Warning	Used to signal a device that will alert remotely located operators of a warning condition.
System Fault	Used to signal a device that will alert remotely located operators of a system fault condition. This output is typically used to turn on a light or to sound an alarm.
System Ready	Used to signal a device that will alert remotely located operators that the system is ready for operation (up to temperature) or that the melter's pump is on. This output is typically used to send a ready signal to a production line so that the line turns on only when the melter is ready to pump adhesive.

1. If you have not already done so, open the electrical enclosure. Refer to "Opening the Electrical Enclosure" on page 3-9.
2. Refer to the wiring schematic that is package with your melter for I/O connection locations.

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Section 4

Configuration



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

Introduction

Before operating your melter, follow the procedures in this section to configure it to suit your application.

FM FIT25 Melters with FieldBus Communication

When configured with Fieldbus, the FM FIT25 melter provides seamless communication with the production machine PLC. The Fieldbus communication protocols supported are Modbus TCP and Ethernet IP via starter kits.

Control Panel Overview

The sections that follow provide an overview of the options on each control panel screen.

Home Screen (Menu Showing)

Use the Home screen to access the following:

- Quick Navigation bar.
- Settings and Information display area.
- System Status LEDs. Green indicates active.



Figure 4-1: Home screen (menu showing)

Pumps Screen

Use the Pumps screen to do the following:

- Specify the pump Speed Setpoint.
- View Pump Motor Data and status.
- View status LEDs. Green indicates active.
- Enable, Start, and Stop the pump.



Figure 4-2: Pumps screen

Pressure Screen

Use the Pressure screen to do the following:

- Specify Pressure Setpoint information.
- View the Actual Pressure data.
- View the pressure status. If a fault condition is present, the tile border turns red and the overall system status displays a fault condition.

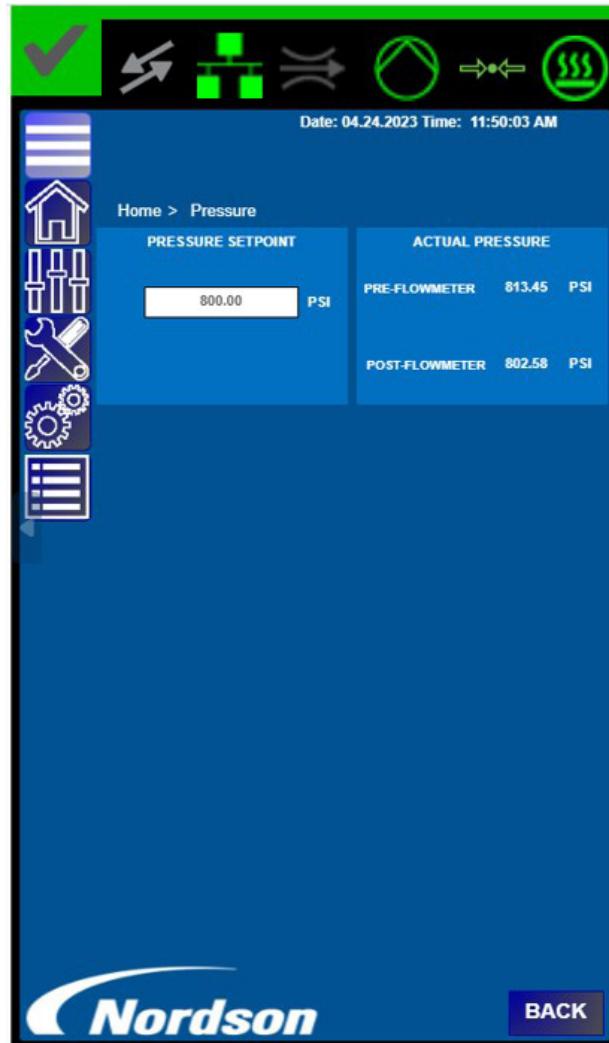


Figure 4-3: Pressure screen

Temperature Screen

Use the Temperature screen to do the following:

- Enable and disable each zone.
- Specify the temperature setpoint for each zone.
- View the actual temperature for each zone.
- View the temperature status. If a fault condition is present, the tile border turns red and the overall system status displays a fault condition.



Figure 4-4: Temperature screen

Gas Screen

Use the Gas screen to do the following:

- View the LED indicator for the gas pressure status.
- View the LED indicator for the gas valve duty cycle.

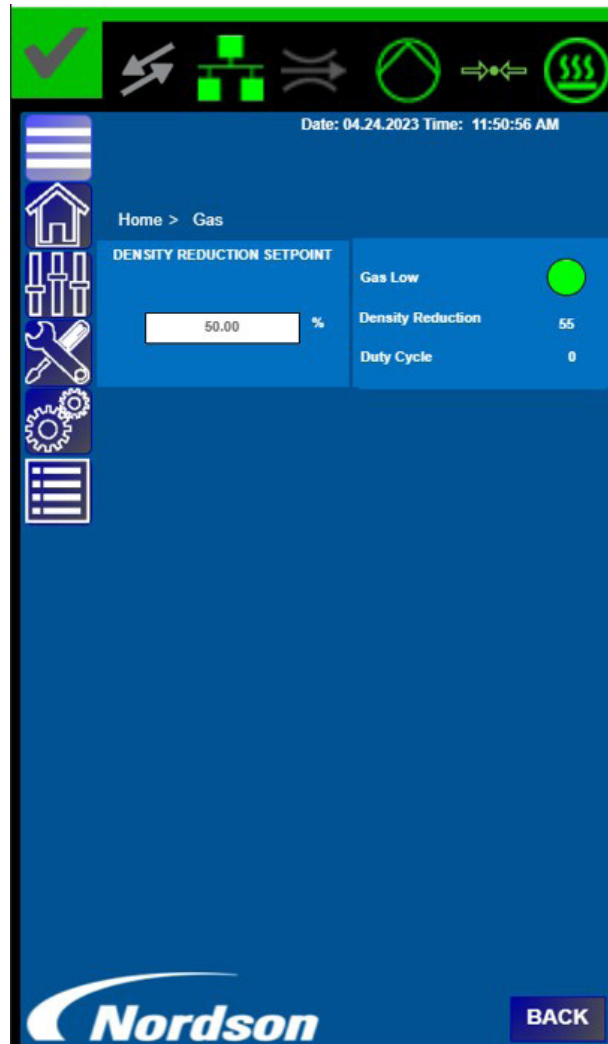


Figure 4-5: Gas screen

Master Controls Screen

Use the Master Controls screen to do the following:

- Enable the Global Heater setpoint.
- Change the Global Heater Setpoint temperature.
- Enable the heater Setback.
- Start, Stop, and Enable the pump.
- Specify the Pump Speed.



Figure 4-6: Master Controls screen

Alarms/Events Screen

Use the Alarms/Events screen to do the following:

- View all active alarms.
- Acknowledge all faults.
- View history.
- Clear history.
- Clear all faults.



Figure 4-7: Alarms/Events screen

Systems Settings Screen (Not Logged In)

Select one of the tiles on the Systems Settings screen (Not logged in) to access any of the following corresponding functional screens:

- Temperature
- Pump
- System I/O
- Gas
- Preferences
- Pressure

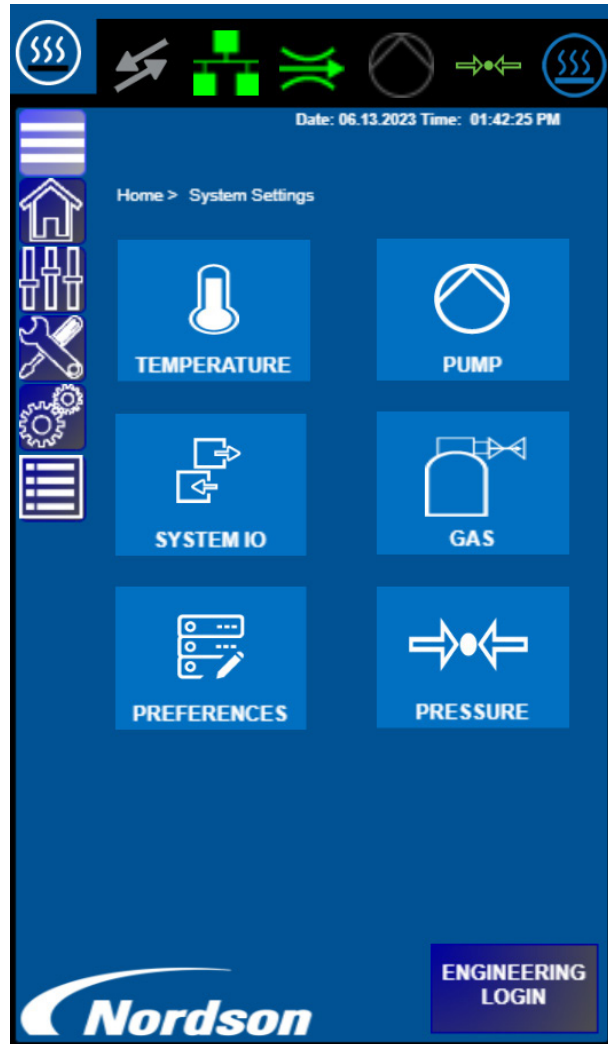


Figure 4-8: Systems Settings screen (Not logged in)

Temperature Settings Screen (Not Logged In)

Use the Temperature Settings screen (Not logged in) to do the following:

- Enable the Auto Setback and specify the Auto Setback delay.
- Enable the Manual Setback Auto Exit and specify the Manual Setback Auto Exit time.
- Enable the Heat on Startup and specify the Setback Delta.
- Specify the Ready Delay Delta and Ready Delay Time.
- Specify the Global Hose Temperature and the Global Applicator Temperature.
- Specify the Heat Schedule and seven-day setback.

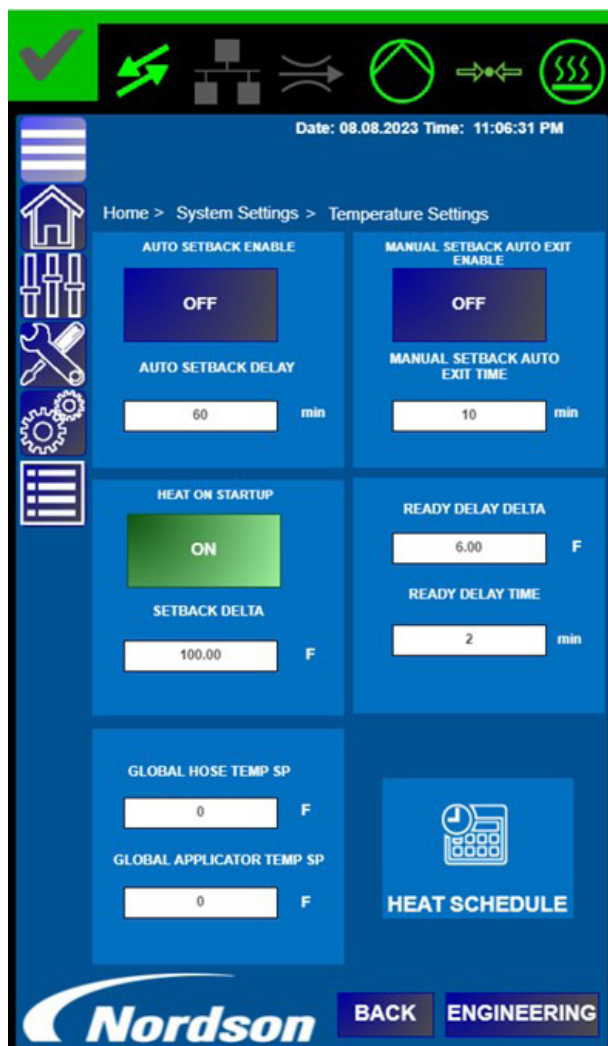


Figure 4-9: Temperature Settings screen (Not logged in)

Heat Scheduler Screen (Not Logged In)

Use the Heat Scheduler screen (Not logged in) to do the following:

- Select the day of the week.
- Select the Heat Event.
- Start or Stop the heat event.
- Specify the Hour and Minute for the heat event time in a 24-hour time format for each day.

Date: 08.08.2023 Time: 11:02:34 PM

Home > System Settings > Temp Settings > Heat Scheduler

SUNDAY

Heat Event	Start	Stop	Hour	Minute
HEATERS	☒	☐	6	0
SETBACK	☒	☐	8	0
SETBACK	☐	☒	9	0
HEATERS	☐	☒	22	0
NONE	☐	☐	0	0
NONE	☐	☐	0	0

Nordson BACK

Figure 4-10: Heat Scheduler screen (Not Logged in)

Pump Settings Screen (Not Logged In)

Use the Pump Settings screen (Not logged in) to do the following:

- Specify the pump Acceleration Time and the Deceleration Time.
- Specify the Pump Stage Start Time.
- Specify the Pump Ramp Delta.
- Specify the Maximum Purge Time.
- Enable Empty Stop.

The screenshot displays the Pump Settings screen with a blue background and a green top bar. The top bar contains a green checkmark icon and several system status icons. The date and time are shown as "Date: 04.24.2023 Time: 00:13:19 PM". The breadcrumb navigation is "Home > System Settings > Pump Settings". The settings are organized into a grid:

ACCELERATION TIME	PUMP STAGE START TIME
2000 ms	10 s
DECELERATION TIME	
2000 ms	
PUMP RAMP DELTA	MAX PURGE TIME
20 RPM	10 min
EMPTY STOP	
ENABLED	

At the bottom, there is a "Nordson" logo and two buttons: "BACK" and "ENGINEERING".

Figure 4-11: Pump Settings screen (Not logged in)

Gas Settings Screen (Not Logged In)

Use the Gas Settings screen (Not logged in) to do the following:

- Enable or disable the Density Valve.
- Specify the Density Reductions Setpoint.
- View the Foam Calibration Factor.

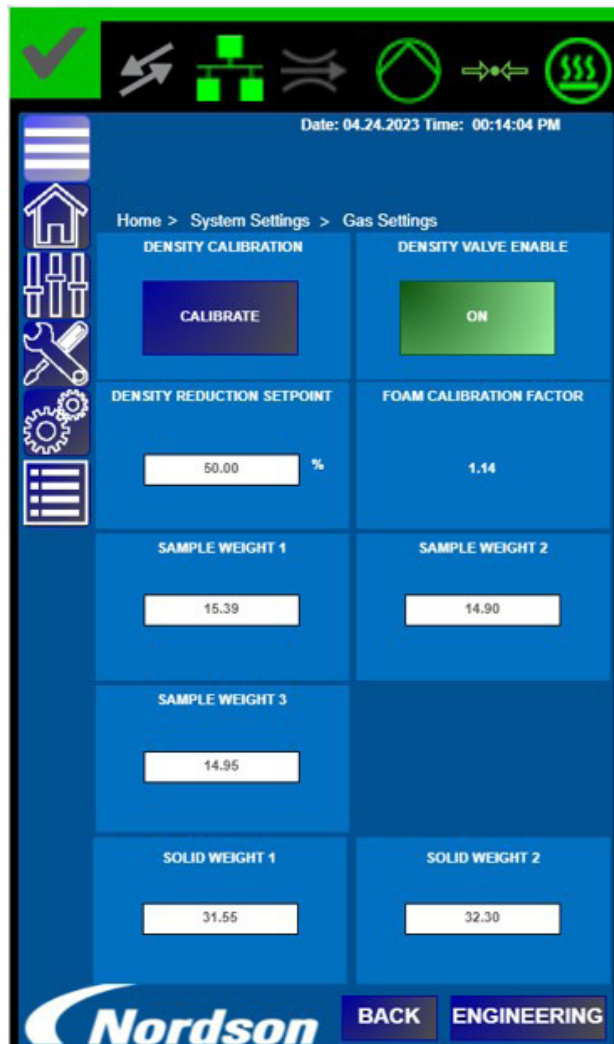


Figure 4-12: Gas Settings screen (Not logged in)

Preferences Screen (Not Logged In)

Use the Preferences screen (Not logged in) to do the following:

- Select the Temperature scale.
- Select the Pressure display units.
- Select the Date Format.
- Change the Temperature Zone Name.
- Reset all values to the factory default.
- Select the preferred Language.

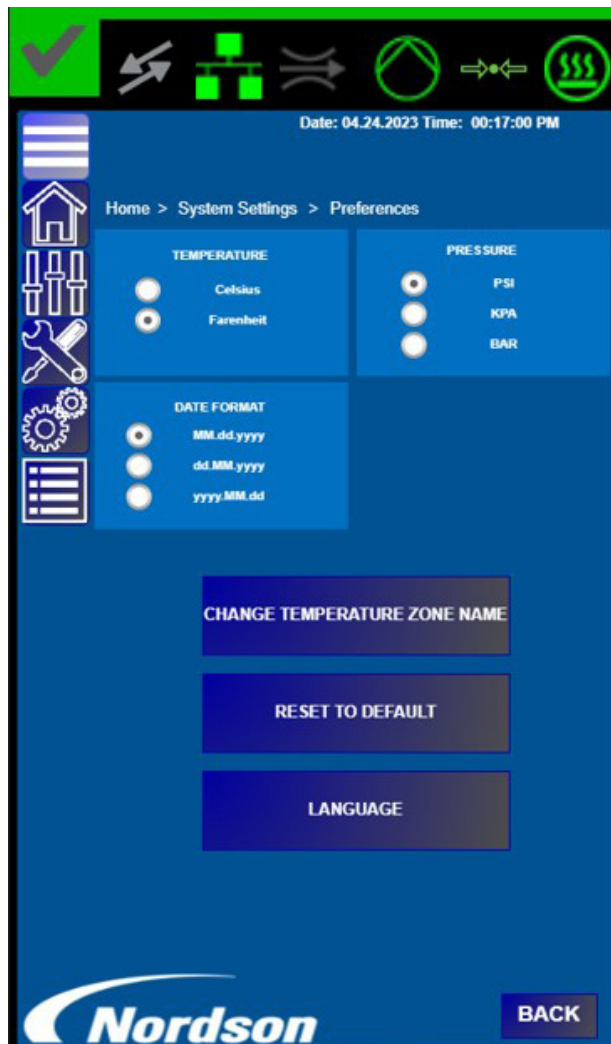


Figure 4-13: Preferences screen (Not logged in)

Pressure Settings Screen (Not Logged In)

Use the Pressure Settings screen (Not logged in) to do the following:

- Specify the Pressure Setpoint.
- View the Pre-Density Valve and Post-Density Valve pressure data.



Figure 4-14: Pressure Settings screen (Not logged in)

Engineering Log-in Screen

Use the Engineering Log-in screen to do the following:

- Enter the four-digit log-in passcode.
- Access engineering level controls for functional screens.

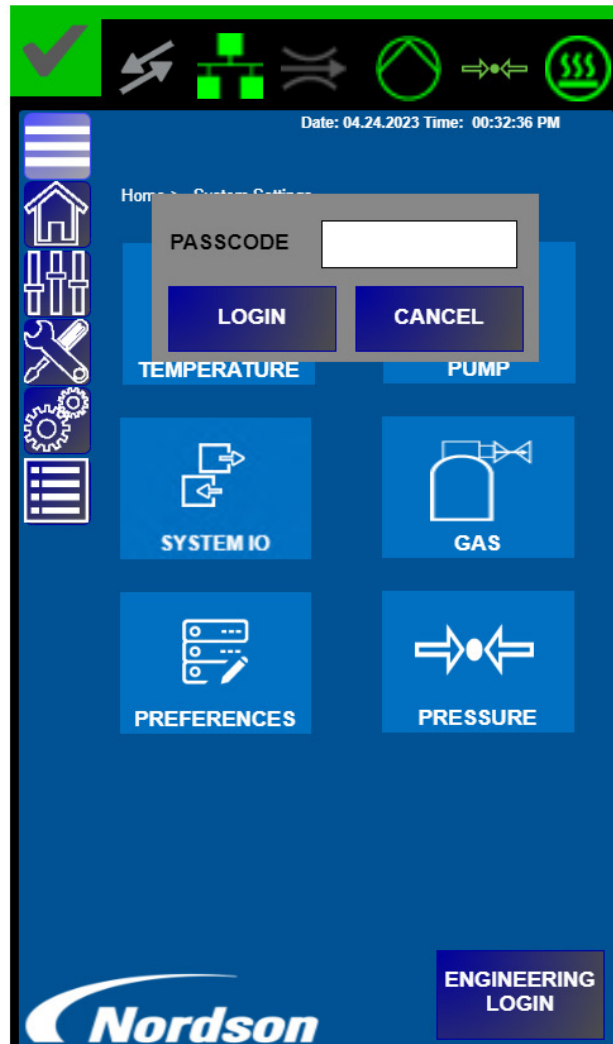


Figure 4-15: Engineering Log-in screen

Systems Settings Screen (Logged In)

Select any of the following tiles on the Systems Settings screen (Logged in) to access the specific functional screen:

- Temperature
- Pump
- System I/O
- Gas
- Preferences
- Pressure

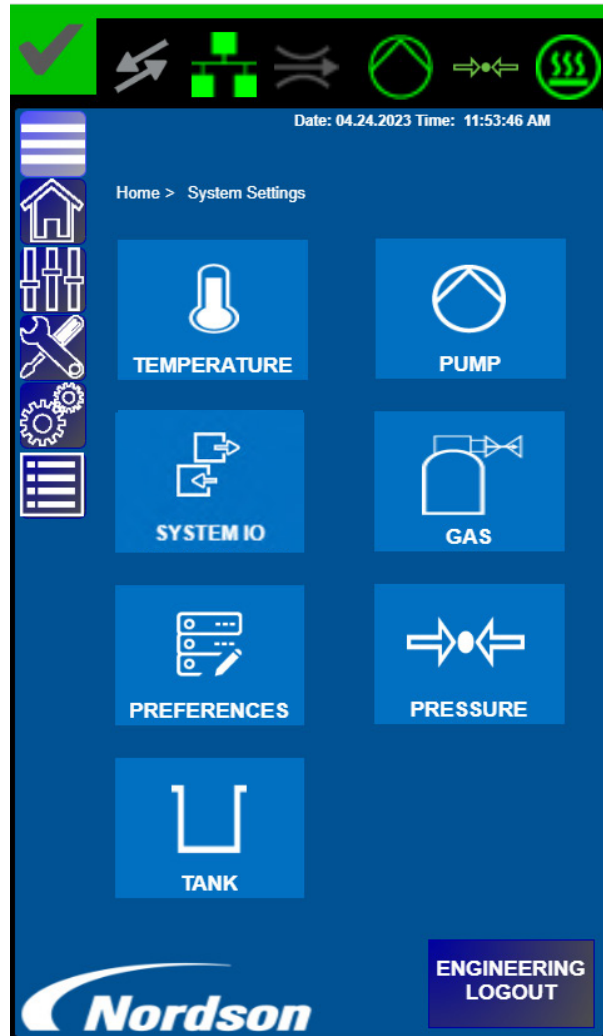


Figure 4-16: Systems Settings screen (Logged in)

Temperature Settings Screen (Logged In)

Use the Temperature Settings screen (Logged in) to do the following:

- Specify the Tank PID temperature.
- View the Runaway Delta, which displays the maximum over-temperature.
- Change the Under-temperature and Over-temperature ranges.
- Specify the Tank Heat Up Maximum Time.
- Specify the Manifold Heat Up Maximum Time.
- Specify the Reservoir Heat Up Maximum Time.
- Specify the hose/applicator HG Heat Up Maximum Time.
- Set the RTD Type by Zone.

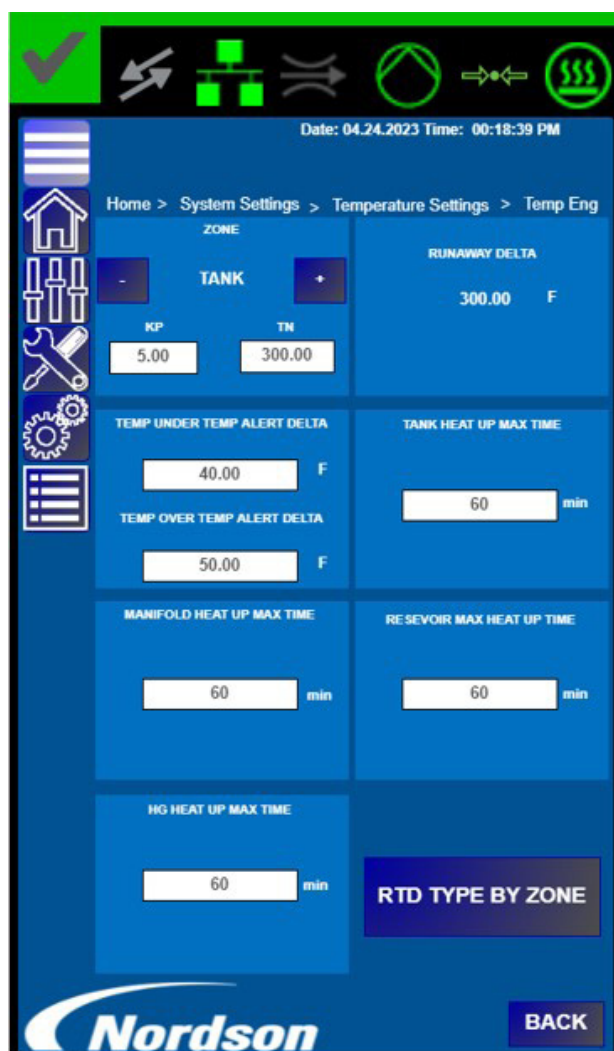


Figure 4-17: Temperature Settings screen (Logged In)

System I/O Settings Screen (Logged In)

Use the System I/O Settings screen (Logged in) to do the following:

- View selected digital inputs and outputs.
- Select the digital input type.
- Select the digital output type.



Figure 4-18: System I/O Settings screen (Logged in)

Pump Settings Screen (Logged In)

Use the Pump Settings screen (Logged in) to do the following:

- View the Actual Speed of the pump.
- View the Pump Displacement information.
- Specify the Pump Speed Reduction Rate.
- Specify the Minimum and Maximum pump speeds.
- Enable the Pump Direction Change.

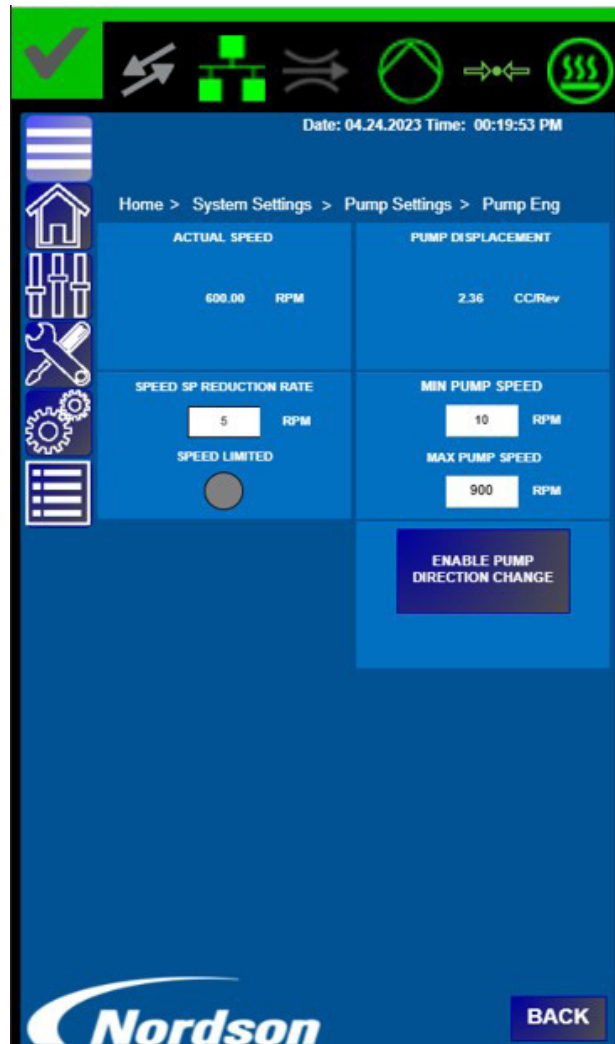


Figure 4-19: Pump Settings screen (Logged in)

Pressure Settings Screen (Logged In)

Use the Pressure Settings screen (Logged in) to do the following:

- View the maximum allowed pressure.
- Specify the Pressure High Alert Threshold Delta data.
- Specify the Pressure High Fault Threshold Delta data.
- View the Pressure Delta Across Flowmeter (pressure drop) information.



Figure 4-20: Pressure Settings screen (Logged in)

Tank Screen (Logged In)

Use the Tank screen (Logged in) to do the following:

- Specify the Tank Low Level Threshold.
- Specify the Tank Level Empty Threshold.
- Enable auto fill.
- Enable Manual Fill.
- Specify the Target Fill Level.
- Specify the Maximum Fill Time.

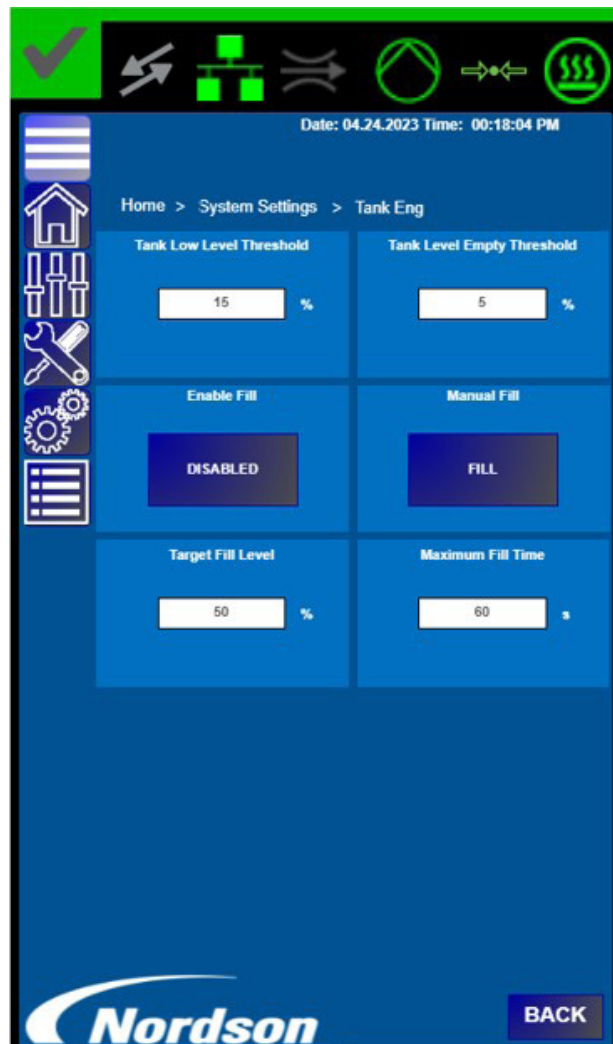


Figure 4-21: Tank screen (Logged in)

Tools Screen

Use the Tools screen to do the following:

- View the Software Version.
- Access the Quickstart Guide.



Figure 4-22: Tools screen

System Settings Screen (Admin Log-in)

The System Settings screen (Admin Log-in) requires a special log-in passcode to access the specific functional screen:

- Temperature
- Pump
- System I/O
- Gas
- Preferences
- Pressure

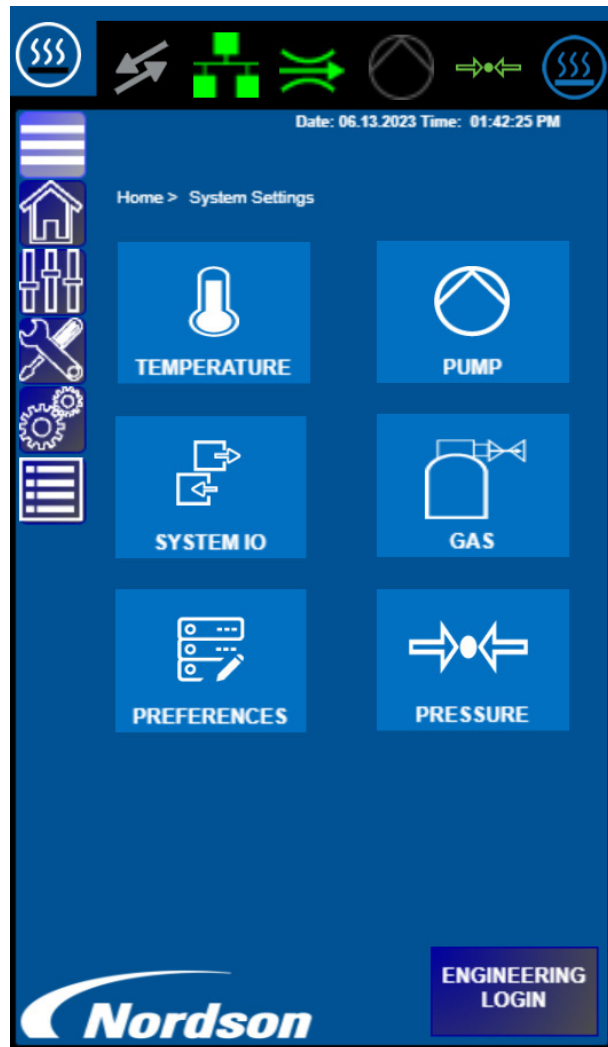


Figure 4-23: System Settings screen (Admin log-in)

Settings Display – Density Control Mode

The sections that follow provide an overview of the various density Control mode display screens.

Home Screen (Standard – Automatic)

Use the Home Screen (Standard – Automatic) to access the following:

- System Status LEDs. Green indicates active.
- Quick Navigation bar.
- Settings and information display area.



Figure 4-24: Home screen (Standard – Automatic)

System Settings Screen (Standard – Automatic)

Use the System Settings screen (Standard – Automatic) to do the following:

- Access the Quick Navigation bar.
- View the settings and information display area.
- View the System Status LEDs. Green indicates active.

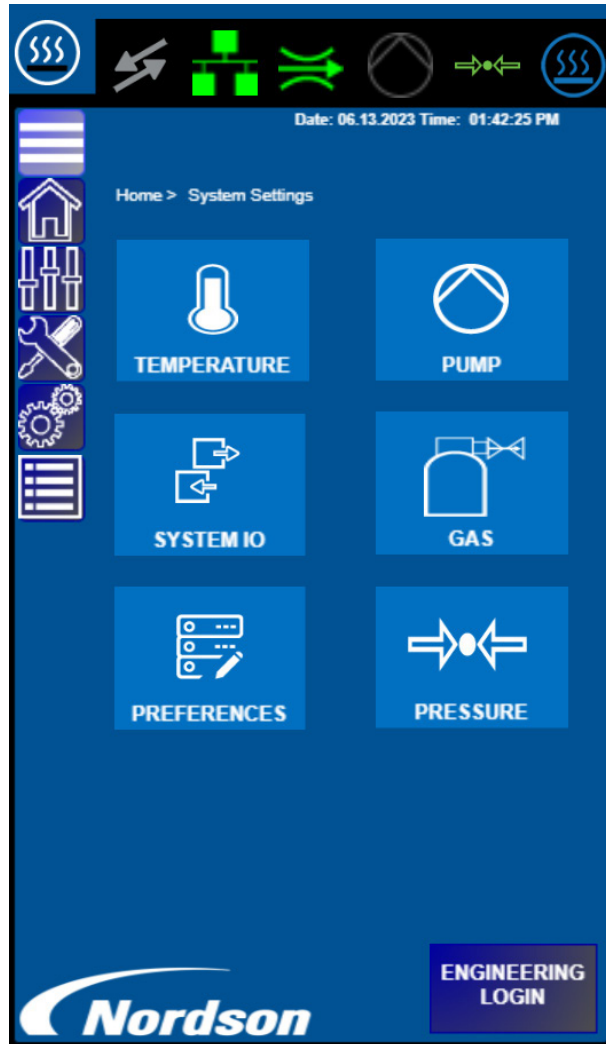


Figure 4-25: System Settings screen (Standard – Automatic)

Section 5

Operation



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

Introduction

This section describes how to operate your melter and monitor your system. Before you operate your melter, you must first program it and prepare it for the first operation. Refer to the section "Configuration" on page 4-1.

Startup



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

The following paragraphs explain how to start up the melter either automatically or manually.

NOTE: Check the adhesive level regularly before and during operation. If the level is below 50%, add adhesive to the tank. The tank consists of the reservoir, grid, and hopper. Fill the tank to 10 cm (4 in.) below the top of the grid. Do not fill adhesive above the green-coated grid area or into the black-coated hopper area. Close the lid immediately to prevent adhesive contamination.

Filling Tank



CAUTION! Cease operation before the tank is completely empty. If there is too little material in the tank, the material can overheat. Overheated material can char, collect on surfaces, and cause malfunctioning.

For melters with inert gas equipment (option), ensure that the inert gas inlet hole is not blocked with material.

Manually



WARNING: Hot! Risk of burns. Wear appropriate protective clothing/equipment. Tank and tank lid are hot. When filling, hot material may splash out of the tank. Use caution when filling tank with material.



CAUTION! Before filling the tank, ensure that the tank and material are clean and free of foreign material. Foreign substances can hinder functioning or even cause damage to the melter or accessories.

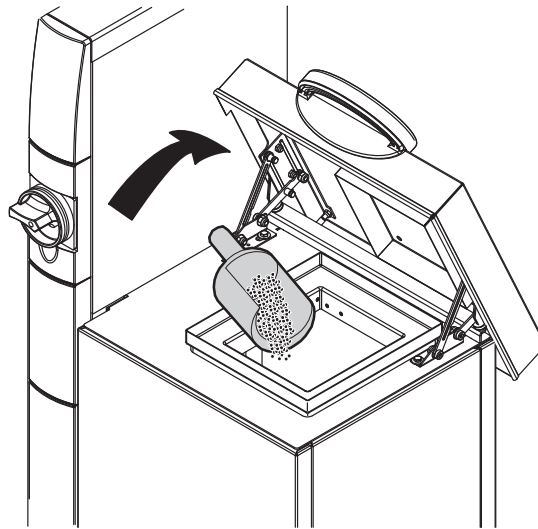
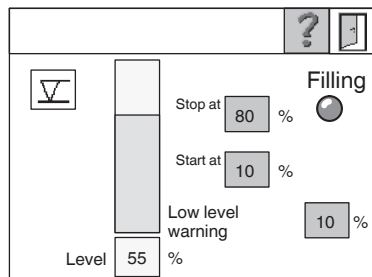


Figure 5-1: Manually filling the tank

Level Display and Control (Options)



As soon as the material is changed, the level parameters must be adapted to the new material on the control panel.

Figure 5-2: Level display and control (Options)

Automatic Tank Filling

Automatic tank filling is performed, for example, by a bulk melter connected to the optional filling valve with a hose. A level sensor in the tank starts and stops the filling process.

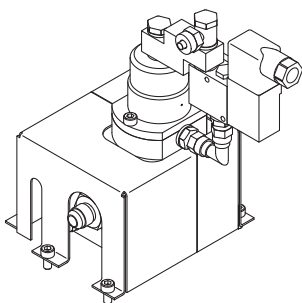
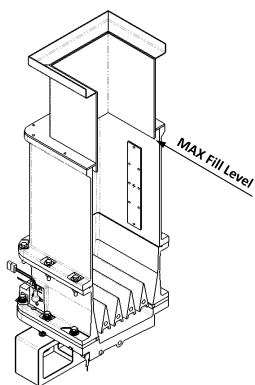


Figure 5-3: Filling valve

Maximum Level



When adding adhesive, the adhesive level should never exceed the upper edge of the hopper as indicated in Figure 5-4. Filling above the indicated line creates the potential for adhesive bridging, which could affect melter performance and hinder the ability to add additional material.

Figure 5-4: Cross-section of tank

Recommended Temperature Setpoints

The temperature setting is determined, among other things, by the processing temperature prescribed by the material supplier.

CAUTION! Nordson will grant no warranty and assume no liability for damage resulting from incorrect temperature settings.

Grid	Up to 20 °C or 36 °F below prescribed processing temperature	
Reservoir	Prescribed processing temperature Material quantity used < 50 g/min: 0 to 10 °C or 18 °F below prescribed processing temperature	
Undertemperature value (warning)	10 °C or 18 °F below set processing temperature Air heater: approximately 10 °C or 50 °F below set processing temperature	
Undertemperature value (fault)	15 °C or 27 °F below set processing temperature Air heater: approximately 20 °C or 36 °F below set processing temperature	
Overtemperature value (warning)	10 °C or 18 °F above set processing temperature Air heater: approximately 10 °C or 18 °F above set processing temperature	
Overtemperature value (fault)	15 °C or 27 °F above set processing temperature Air heater: approximately 20 °C or 36 °F above set processing temperature	
Filling valve (option)	Prescribed processing temperature	A
Applicator (accessory)	Prescribed processing temperature	A
Hose (accessory)	Prescribed processing temperature	A
NOTE A: The maximum operating temperature of the installed applicator and the other heated components should be considered when setting temperatures on the melter control panel. Refer to "Control Panel Overview" on page 4-2.		

Temperature Controls Setup Screen

Figure 5-5 shows the temperature setpoint, actual temperature, and duty cycle of all individual zones.



Figure 5-5: Temperature controls setup screen

To use the Temperature controls setup screen

1. Touch the Temperature tile on the Home screen to display the Temperature screen.
2. Enable the appropriate zones by entering the desired settings.

Pump Speed Adjustment

Figure 5-6 contains options for adjusting the pump speed.



Figure 5-6: Pump Settings screen

To use the Pump Settings screen

1. Touch the Pump tile on the Home screen to display the Pump Settings screen.
2. Enable the pump by entering the desired settings.

NOTE: The pump speed is correct when a 2:1 or 3:1 circulation-to-output ratio is reached. Refer to "Pump and Pressure Settings" on page 5-7.

After you change the pump speed, you must re-adjust the density control. For more information, refer to "Density Determination and Reduction" on page 5-12.

Pump and Pressure Settings

Figure 5-7 on page 5-8 shows the maximum system output at various pump speeds and density reduction ratios. System output is determined by pump speed, viscosity, and density reduction. Each of these factors, as they relate to the charts, are described in the sections that follow.

Pump RPM and Pressure Settings

Pump RPM determines foam quality and stability of pressure and density control. Higher output rates and greater density reduction require higher pump RPM to maintain good control stability. However, higher pump RPM increases shear and temperature in the adhesive, so it is desirable to use the minimum RPM required to create good, stable foam quality and consistent shot weight. Experience has shown that 600-800 RPM is best for many applications. RPM below 300 is not recommended.

Pressure setpoint determines actual shot weight. A 600-900 psi (~40-60 bar) has been shown to be best for foam quality. If pressures outside this range are required, a different size nozzle should be considered.

Best foam quality and stable control are obtained when some material is recirculating even when the applicators are on. Details for further optimization from these basic ranges follow:

- **Standard** – Manual Density Control (DCV) systems require 50% adhesive recirculation when applicators are on, or what was referred to as a 2:1 circulation-to-output ratio. The circulation flow can be estimated based on 2.36 cc/rev of the pump, and the reduced efficiency from gas compression. This results in minimum recommended RPM as shown below:

$$\text{Minimum RPM} = \frac{\text{Instantaneous Output} \left(\frac{g}{min} \right) * 2}{2.36 * (1 - (\% \text{Density Reduction} / 100))}$$

Pump RPM and Pressure Settings *(contd)*

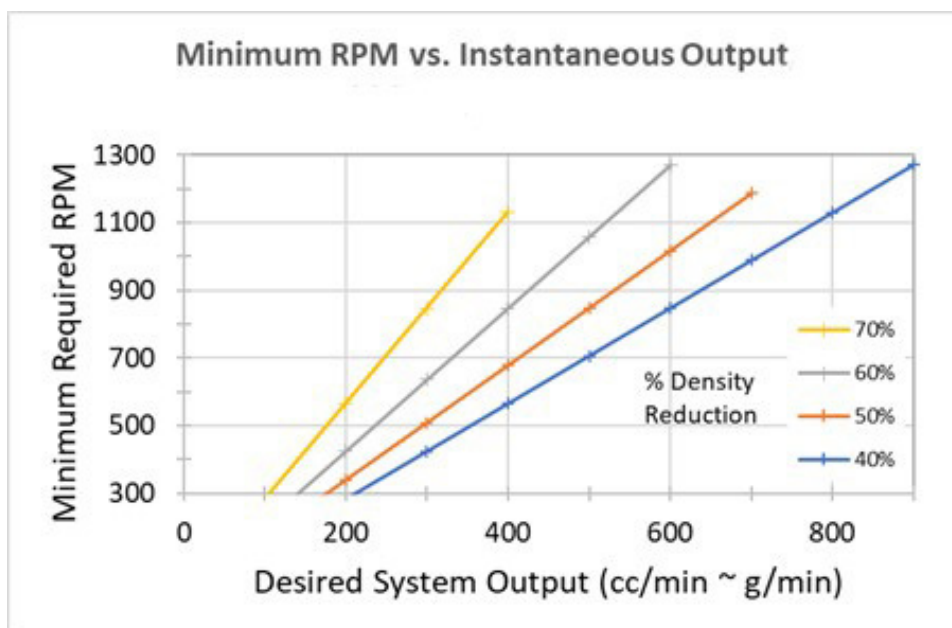


Figure 5-7: Automatic Controller chart – Standard

Pump Speed

The motor controller is programmed for a maximum pump speed of 1300 rpm. The minimum recommended pump speed is 300 rpm.

Viscosity

The amount of material flowing into the pump inlet and the amount of output generated by the pump is restricted by high viscosity. Additional data, not shown in the charts, indicates that material with a high viscosity has a fixed maximum system output regardless of pump speed. Examples of this data are given in the following table.

Material with a viscosity of . . .	Allows a maximum system output of . . .
55,000 cps	35 lb/hr
40,000 cps	50 lb/hr

Density Reduction

Reduced density (increased gas content) reduces the total system circulation, thereby reducing the amount of material that is available for system output.

Density Control Adjustment

Adjusting the density control changes the ratio of hot melt material to gas in the foam. You may need to adjust the density control after the following circumstances:

- initial setup
- changing from one type of hot melt material to another
- changing the motor speed
- changing the operating temperature setpoint

During this procedure, you must get both a hot melt and a foam sample to weigh. Be sure to use identical containers for collecting samples. The weights of the samples are used to calculate the density reduction. The density reduction refers to the amount of hot melt material being replaced by gas to produce foam.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Taking a Hot Melt Sample

1. Make sure that the system is on and the temperature of each zone is at its operating setpoint.
2. Open the density controller cover by loosening the thumb screw.



CAUTION! Do not adjust the density control knob when the system is cold. Failure to observe may result in equipment damage.

3. Touch the Gas On/Off button to turn off the gas. Make sure that the Gas On/Off indicator is off.
4. Touch the Pump button to start the pump.
5. Allow the melter to operate at 100 rpm and with the pressure at a very low setting for approximately 1 hour. This allows any gas to dissipate from the hot melt material.
6. Manually trigger an applicator to obtain a measured sample of hot melt material in a small heat-proof container. Make sure that the material does not have any bubbles in it.
7. Weigh the hot melt sample.
8. Touch the Pump button again to stop the pump.

Taking a Foam Sample

1. Open the valve on the gas cylinder one full turn. The Low Gas indicator turns off.
2. Set the outlet pressure regulator on the gas cylinder to 3–6 bar (40–50 psi).
3. Touch the Pump button. The pump turns on.
4. Adjust the pump speed to suit your application needs. Refer to "Pump and Pressure Settings" on page 5-7 for more information.
5. Set the system hydraulic pressure to 40–65 bar (600–1000 psi).
6. See Figure 5-6 on page 5-6. Touch the Gas On/Off button. Make sure that the Gas On/Off indicator is on.
7. Set the gas pressure regulator on the melter to 21 kPa (3 psi). The pressure regulator is located below the Gas Control panel near the bottom of the melter.
8. Turn the density control knob clockwise until the Gas Flow indicator turns on, and then turn the knob another full turn.

NOTE: To achieve the best foam density control, use the lowest possible gas pressure. The recommended gas pressure is 0.2 bar (3 psi) or less.

9. Wait 10–15 minutes for the system to stabilize.
10. Manually trigger an applicator to obtain a measured sample of foam in a shallow heat-proof container.

NOTE: Make sure that the hot melt and foam samples fill the containers to the same level.

11. Weigh the foam sample.

Density Determination and Reduction

Refer to Table 5-1 for a description of the density reduction range available on the FM FIT25 melter.

Table 5-1: Density Reduction and Operation

% Density Reduction	Operation
50%	Typical
40–60%	Normal range
30–70%	Full range

Use this procedure to determine and adjust the density reduction.

1. Perform the following calculation:

$$\% \text{ Density Reduction} = 1 - \frac{\text{Foam Weight}}{\text{Hot Melt Weight}} \times 100$$

2. Refer to Table 5-2. Compare the density reduction to your application needs.

Table 5-2: Density Reduction

Density Reduction	Action
Correct	Proceed to step 8 on page 5-13.
Too low	• Turn the density control knob clockwise to increase the amount of gas and proceed to step 4 on page 5-13. • If you cannot turn the density control knob, proceed to step 3 on page 5-13.
Too high	• Turn the density control knob counterclockwise to decrease the amount of gas and proceed to step 4 on page 5-13. • If you cannot turn the density control knob, proceed to step 3 on page 5-13.

NOTE: Turn the density control knob a maximum of two turns at a time to adjust the density reduction gradually. This practice may prevent you from over-adjusting at a given time.

3. Refer to Table 5-3. Check the density control knob for the listed conditions.

NOTE: Refer to "Pump and Pressure Settings" on page 5-7 for recommended output levels.

Table 5-3: Density Control Knob Settings

Density Control Knob Position	Action
Turned completely clockwise	Replace the existing density controller with a low viscosity density controller. Refer to "Accessory Kits" on page 9-6 for service kit information.
Turned completely counter-clockwise	Replace the existing density controller with a high viscosity density controller. Refer to "Accessory Kits" on page 9-6 for service kit information.

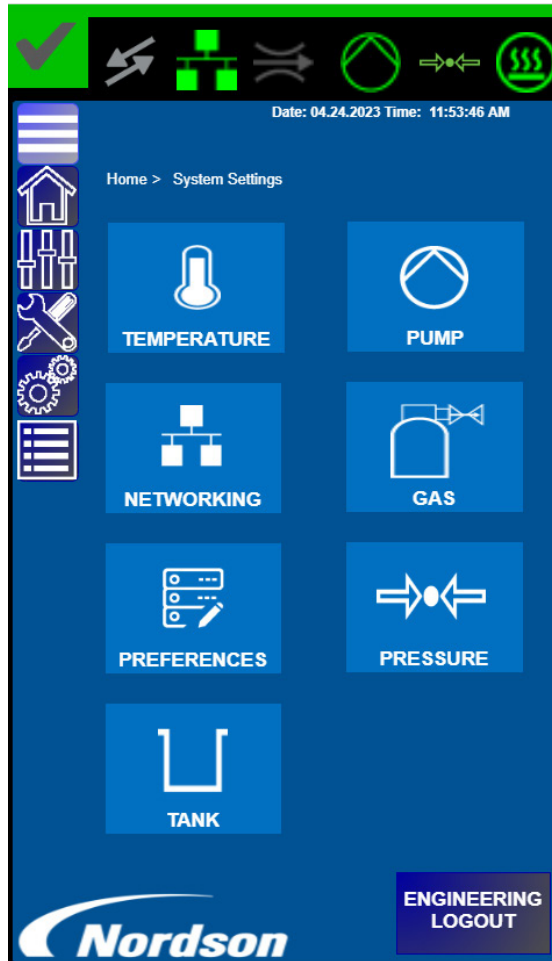
4. Wait 10–15 minutes for the system to stabilize.
5. Manually trigger an applicator to obtain a measured sample of foam in a small heat-proof container.
6. Weigh the sample of foam.
7. Repeat steps 1–6 until you obtain the density reduction required by your application.
8. Make sure the melter is running at its normal output for your application needs.
9. Adjust the gas pressure setting until the Gas Flow indicator turns on and off intermittently.

System Preferences

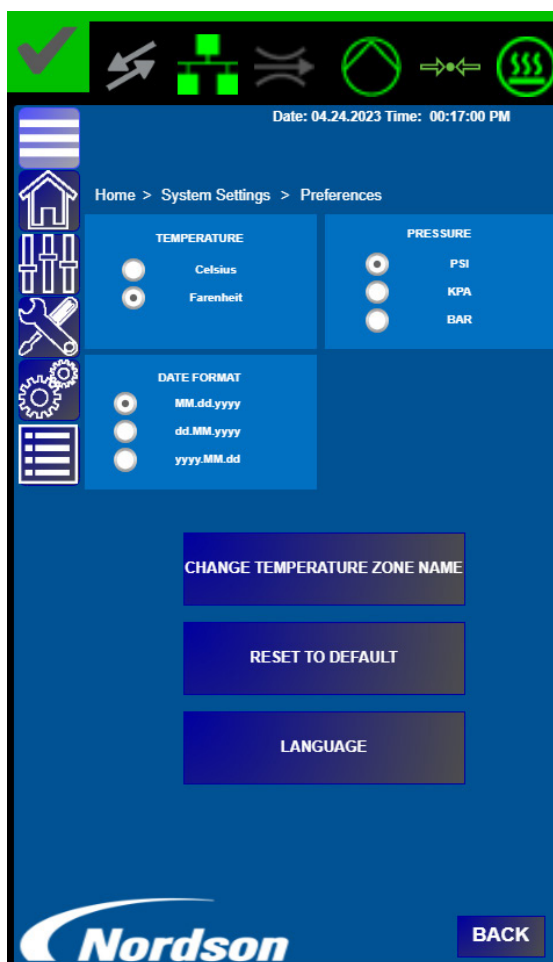
You can set global settings such as display units, date formats, and languages using the Preferences tile.

To set system preferences:

1. Touch the Preferences tile on the System Settings screen.



2. Make any necessary changes on the Preferences screen.



Changing System Pressure

Set the system pressure by touching the Pressure/Flow tile on the Home screen. Best results are usually achieved between 41 bar (600 psi) and 68 bar (1000 psi).

NOTE: Nozzle size affects system output. If the correct output cannot be achieved in the 41–68 bar (600–1000 psi) range, it may be necessary to change to a different sized nozzle.

Take a timed weight sample to determine the actual output rate. Make sure that the circulation to deposit ratio is at least 2:1. Refer to "Pump and Pressure Settings" on page 5-7 or "Pump Speed Adjustment" on page 5-6.

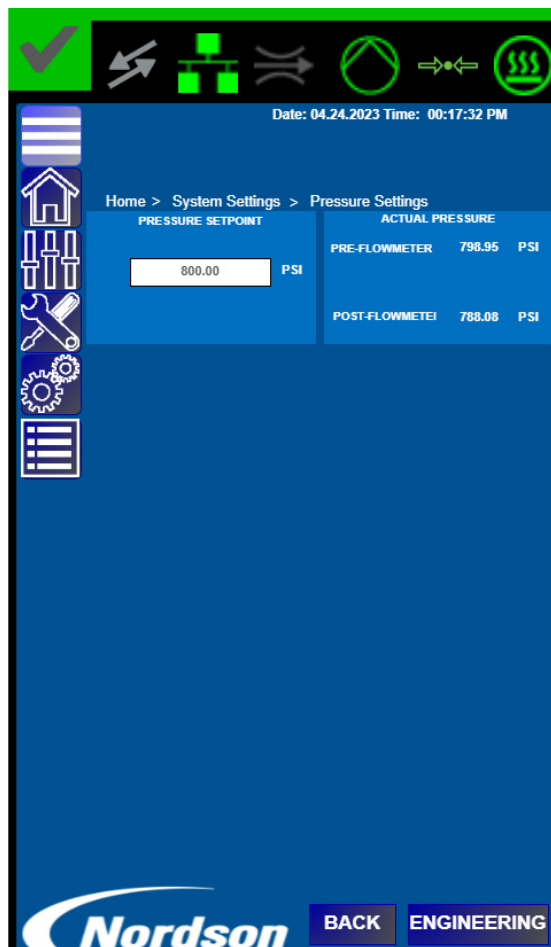


Figure 5-8: Pressure Settings screen

System Monitoring

The Home screen lets you enable real-time monitoring of system status, settings, and operation.



Figure 5-9: Home screen

Alarms/Events

Touch the Alarms/Events button on the Quick Navigation bar on the Home screen to view the system history log.



Figure 5-10: Alarms/Events screen

Changing Adhesives



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Contact your material supplier about the compatibility of the old and new materials. If the old and new adhesives are compatible, add the new adhesive to the tank. If the new adhesive is not compatible with the old one, ask your supplier for an acceptable flushing material to thoroughly clean the system.



CAUTION! To prevent adhesive cross-linking or contamination, installing a new filter and density controller (standard only) is recommended with each adhesive change.

Use this procedure to clean the system before changing to an adhesive that is incompatible with the old one.

1. Make sure that the melter is at operating temperature.



WARNING! System or material pressurized. Relieve system pressure. Failure to observe may result in serious burns.

2. Relieve system pressure. Refer to "Relieving System Pressure" on page 6-5.
3. Refer to Table 5-4 on page 5-20. Drain the melter by pumping as much adhesive from the tank as possible using one of the described methods.
4. Clean each applicator as needed. Refer to the applicator manual for information on applicator disassembly, cleaning, and rebuilding.

Changing Adhesives *(contd)*

5. Flush the system with the flushing material recommended by your adhesive supplier. Drain the system.

Table 5-4: Draining Methods

Method of Draining	Procedure
Applicator	1. Place a suitable container under each applicator nozzle. 2. Remove each nozzle. 3. Touch the Pump tile. 4. Set the pump speed to 100 rpm to pump the adhesive out through the applicator.
Manifold	Pump the adhesive out through the manifold. Refer to the filter flushing procedure for your filter in the section "Maintenance" on page 6-1.
Hoses	1. Disconnect a hose from a manifold return port. 2. Position the hose over a suitable waste container and secure it. 3. Touch the Pump tile. 4. Set the pump speed to 100 rpm to pump the adhesive out through the hose.

6. Check the Safety Data Sheet (SDS) for the recommended operating temperature of the new adhesive. If the temperature is different from the old adhesive, adjust your melter's temperature settings.
7. Add the new adhesive to the tank. Fill the tank to at least 3 in. above the grid line. Close the lid immediately to prevent adhesive contamination.
8. Flush a small quantity of the new material through, and then drain the system.
9. Tighten any loose nozzles.
10. Tighten any loose hoses and close all drain valves.

The melter is ready for routine operation. Refer to "Pump Speed Adjustment" on page 5-6.

System Flush



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Use this procedure to remove air from the hydraulic system of the melter.

1. Disconnect the return hoses from the manifold.
2. Secure the return hoses over a suitable waste container.
3. Fill the hopper with clean hot melt material to a maximum of 2.5 cm (1 in.) below the top of the hopper.
4. Navigate to the Master Controls screen and enable all heaters.
5. Wait for the System Ready indicator to turn on.
6. Navigate to the Gas screen and touch the On/Off button to turn off the gas. The Gas On/Off LED should turn off.
 - The gas flow is disabled.
 - Hot melt material forces the air from the hydraulic system of the melter.
7. Navigate to the Pumps screen and touch the Enable Pump button and set the pump speed to the minimum setting and then touch the Start Pump button.

NOTE: As you increase the pump speed, it may be necessary to increase the pressure to prevent pump cavitation.

8. Gradually increase the pump speed to approximately 100 rpm.
9. Allow approximately half of the material in the hopper to flow through the system and into the waste container.
10. Touch the Stop Pump button on the Pumps screen to stop the pump.
11. Connect the return hoses to the manifold ports.
12. Return to system operation.

Shutdown

The section that follows explains how to shut down the melter.

Manual Shutdown

Use this procedure to shut down the melter manually at any time.

1. Touch the Master Control button on the Quick Navigation bar.
2. Touch the Stop Pump button, and then the Off button for the global heater.
3. Place a container under all applicators and trigger the applicators to relieve system pressure.
4. Shut down all applicators as follows:
 - **Air-operated applicators** – Turn off the operating air.
 - **Electric applicators** – Turn off the applicator driver.
 - **Hand-operated applicators** – Lock the trigger.

Daily Shutdown

1. Switch off the motor(s).
2. Set the main switch to 0/Off.
3. Secure the main switch with padlocks against unauthorized access, if necessary.

Emergency Shutdown



CAUTION! Switch off the melter immediately in any emergency situation.

1. Set the main switch to 0/Off.
2. After standstill and before switching the melter on again, have the emergency situation remedied by qualified personnel.

Section 6

Maintenance



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

Introduction



WARNING! Hot! Risk of burns. Hot melter parts and splashed hot melt material can cause severe burns. Wear long-sleeved, heat-protective clothing, safety goggles, and heat-protective gloves.

This section describes maintenance procedures that help maintain the overall performance of your melter. For information on automatic applicator or hand-held applicator maintenance, refer to the automatic applicator or hand-held applicator manual.

Preventive Maintenance Schedule

Every machine that is a major component of a manufacturing process requires preventive maintenance to ensure safe, reliable performance. Every application has different factors that affect maintenance requirements.

The schedule in Table 6-1 is based on moderate-to-severe operating conditions. Your application may require the maintenance procedures more or less frequently. Keep a maintenance schedule and adjust the schedule as you define your application requirements.

Some of the FM FIT25 melter's components are wear items. Other components are prone to degradation in performance because of material buildup. In cases where component degradation affects the safety or performance of the melter, and quick troubleshooting may be difficult, Nordson Corporation recommends replacing components as preventive maintenance.

Table 6-1: Recommended Maintenance Schedule

Maintenance Interval	Maintenance Procedure	Refer To
Daily (or after 8 hours)	Check the operating parameters.	
Weekly (or after 40 hours)	Check the hydraulic, gas, and electrical connections.	"Checking and Cleaning the Filter Assembly" on page 6-8
	Inspect and clean or replace the filter element.	"Checking and Cleaning the Filter Assembly" on page 6-8
	Clean all exterior surfaces.	"Checking and Cleaning the Filter Assembly" on page 6-8
	Check fan and air filter.	"Cleaning the Fan and Air Filter" on page 6-4
	Test the pressure relief valve for proper operation.	"Testing the Pressure Relief Valve" on page 6-17
Annually (or after 2000 hours)	Replace the pressure relief valve.	"Pressure Relief Valve Replacement" on page 8-16
	Rebuild or replace the pressure control valve.	"Pressure Control Valve" on page 8-12
	Rebuild or replace the density control assembly.	"Density Controller Rebuild" on page 8-14
As Needed (or when changing the type or grade of hot melt)	Replace the manifold filter.	"Flushing the System" on page 6-18
	Replace the pump and manifold o-rings.	"Replacing the Pump Assembly" on page 8-10
	Tighten the grid, reservoir, and hopper flange bolts to the proper torque specifications.	"Replacing the Pump Assembly" on page 8-10

Checking the Hydraulic, Gas, and Electrical Connections

Use the following procedure to check the hydraulic, gas, and electrical connections.

1. Check the following hydraulic connections for leaks and damage:
 - all hose connections and fittings at the manifold
 - all fittings between hoses and applicators
2. Check all hoses for cuts, kinks, and fraying.
3. Check all gas tubes for bends, kinks, or other damage.
4. Check all electrical connections to the hoses for fraying, broken wires, and damaged connectors.
5. Refer to the section “Parts” on page 9-1 to replace any damaged equipment.

Cleaning the Fan and Air Filter

Depending on dust accumulation, the filters (1 and 3) for the air inlet and outlet (4 and 5) must be cleaned (knocked out) or replaced.

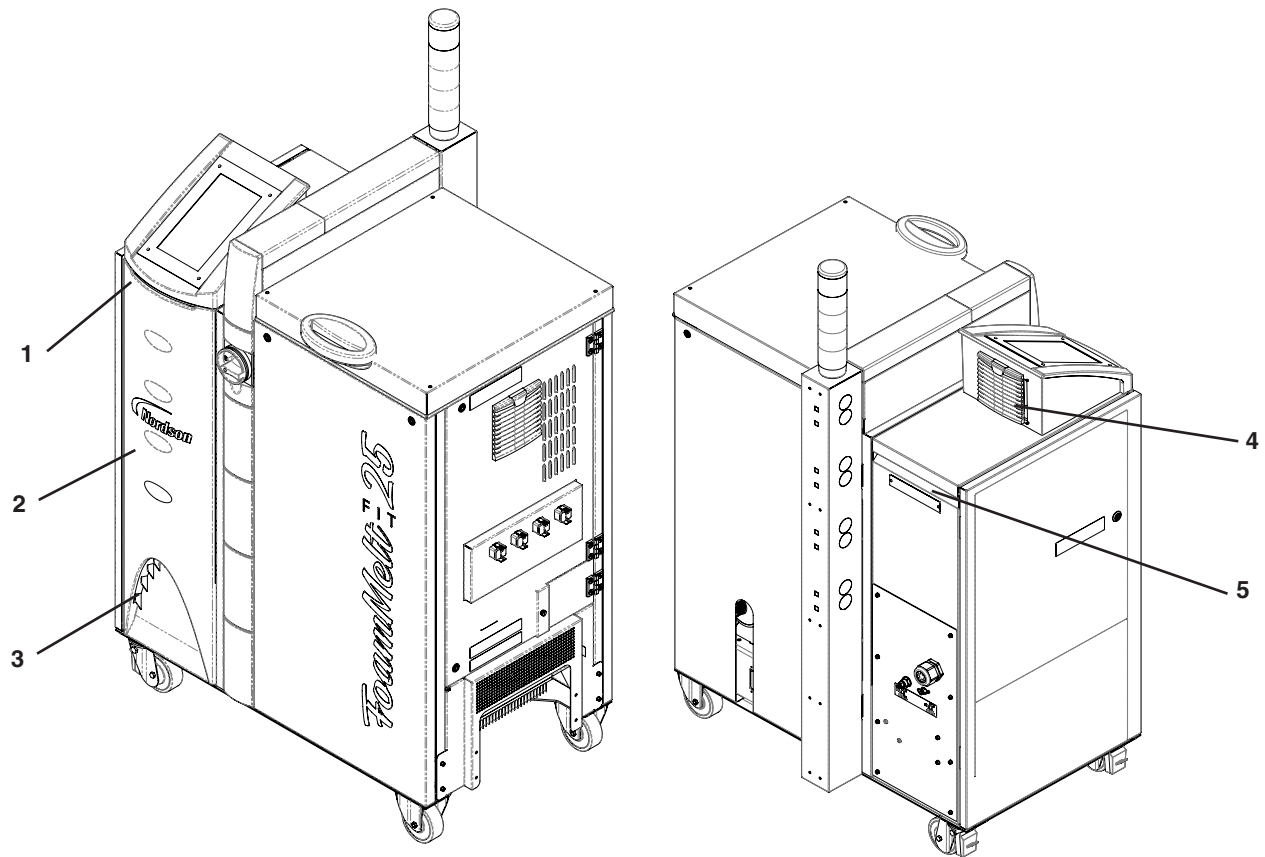


Figure 6-1: Fan and air filter locations

- 1. Air filter, top air inlet
- 2. Fan

- 3. Air filter, bottom air inlet
- 4. Fan and filter

- 5. Air filter, air outlet

System Preparation

The following procedures describe how to prepare the system for maintenance and for normal operation after maintenance.

Relieving System Pressure

Perform the following steps to relieve system hydraulic pressure.

1. If the pump is on, touch the Pump tile on the Main screen to stop the pump.



WARNING! System or material pressurized. Relieve pressure. Failure to observe may result in serious burns.

2. Touch the Pressure tile on the Home screen to access the Pressure screen.



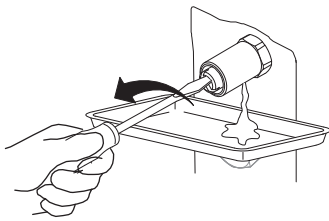
Relieving System Pressure *(contd)*

3. Enter 0 (zero) in the Pressure Setpoint field to set the system pressure to zero.
4. Touch the Gas On/Off button on the Gas tile.
5. Touch the Pumps tile and then touch Start Pump. Next, set the pump speed to 100 rpm.
6. Allow the system to circulate at a low pressure. The gas in the system will dissipate and the pump outlet pressure will drop and stabilize.
7. Touch the Pump tile to access the Pumps screen. Touch the Stop button to turn off the pump.



WARNING! Hot! Risk of burns. Hot melter parts and splashed hot melt material can cause severe burns. Wear long-sleeved, heat-protective clothing, safety goggles, and heat-protective gloves.

8. Remove the applicator nozzle(s).
9. Trigger the applicator(s) into a waste container to relieve system hydraulic pressure.
10. Place a waste container under the drain valve.



11. See Figure 6-2. Use a flat-blade screwdriver to open the drain valve as a final safety check before breaking any hydraulic connection. Make sure that the System Pressure display reads 0 (zero).

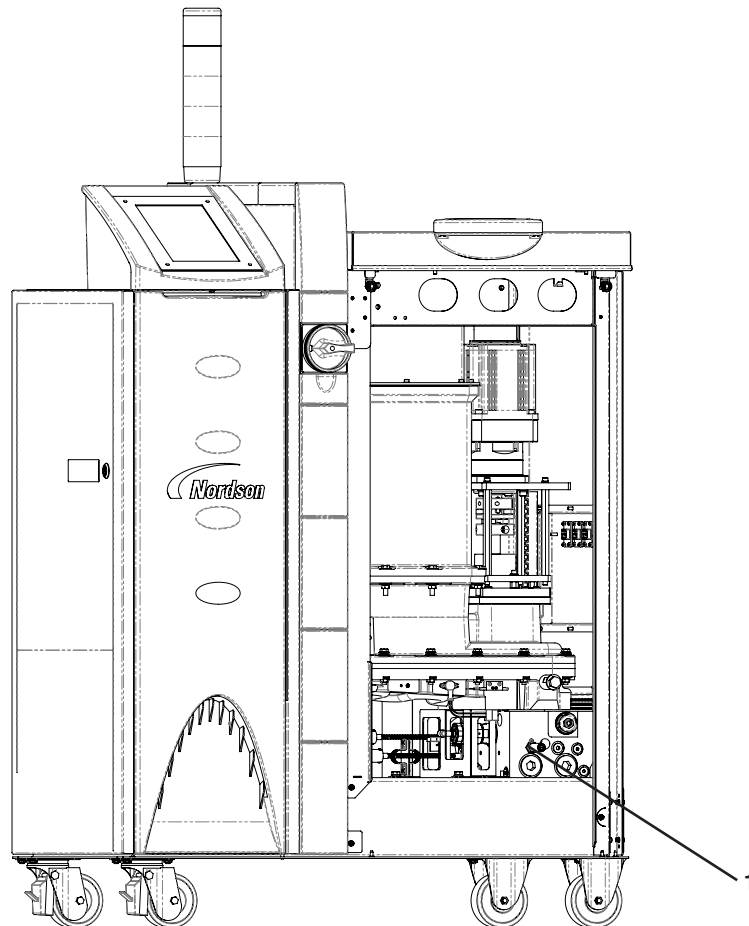


Figure 6-2: Locating the drain valve

1. Drain valve

Checking and Cleaning the Filter Assembly

Make sure the melter is at operating temperature before beginning this procedure. Use the following procedures to check and clean the filter assembly.

Replacing Filter Cartridges



WARNING! Hot! Risk of burns. Wear appropriate protective clothing/equipment.



WARNING! System and material pressurized. Relieve system pressure. Failure to observe can result in serious burns.

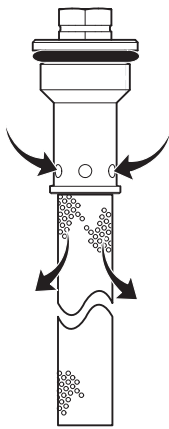


Figure 6-3: Hot Melt flow path

FoamMelt FIT25 melters are equipped with a 100-mesh (.15 mm) disposable hot melt filter. The filter removes debris and char from the hot melt as it flows from the tank. Hot melt flows from the inside to the outside of the filter, trapping contaminants inside the filter. There is no need to back-flush or clean the filter.

When the filter reaches the end of its service life, it should be replaced. The factors that determine the service life of the filter are:

- the type, grade, and purity of the solid-form hot melt
- the set point temperature of the tank
- the period of time that the hot melt remains in the tank

The filter should also be replaced when making the change to a different type or grade of hot melt.

To determine the optimal service life for the filter, monitor and compare the total number of hours that the heaters are on with observations of:

- the purity of the dispensed hot melt
- increases in operating pressure
- the frequency of applicator nozzle replacement or cleaning

If the Tank is Not Empty



WARNING! Hot! Risk of burns. Wear heat-protective gloves.

1. Allow the unit to cool until the adhesive is somewhat viscous.
2. Use pliers, or a similar tool, to extract the filter cartridge.
3. Use a bowl to collect any adhesive that may escape.
4. Quickly screw in a replacement filter cartridge or a plug.
5. Clean the filter cartridge.

Removing Filter Cartridges

Nordson recommends keeping a supply of filter cartridges on hand to prevent disruptions in production.

NOTE: Remove the filter cartridge when the melter is hot and not under pressure.

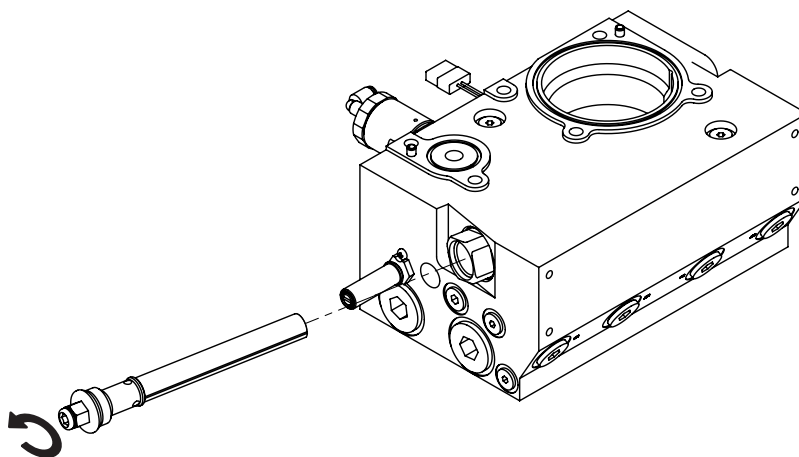


Figure 6-4: Removing filter cartridges

CAUTION! Stop turning as soon as the thread is free; otherwise, part of the filter cartridge could remain in the bore.

1. Relieve the system pressure. Refer to “Relieving System Pressure” on page 6-5 for more information.
2. Use a 8 mm hex wrench or an adjustable wrench to loosen (counterclockwise) and then remove the filter.
3. Use pliers, or a similar tool, to extract the filter cartridge.
4. Properly dispose of the old filter.
5. Confirm that the o-ring on the new filter is in good condition.

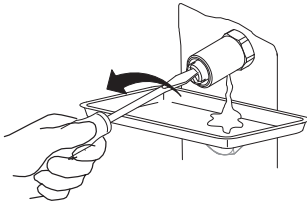
Installing Filter Cartridges

NOTE: Install the filter cartridge only when the melter is hot.

1. Apply high temperature grease to all threads and o-rings.
2. Slide the filter cartridge into the filter bore and tighten slightly.

Torque = 4.5 N•m / 40 in.-lb

NOTE: The dragged in air must now be removed.



3. Place a container under the respective drain valve.
4. Use a screwdriver to turn the drain valve screw counterclockwise and open the valve.
5. Allow the pump to run and feed material until it comes out free of bubbles.

NOTE: For information on locating the drain valve, see Figure 6-2 on page 6-7.

6. Use a screwdriver to turn the drain valve screw clockwise and close the valve.
7. Properly dispose of material according to local regulations.
8. Resume normal operations.

Density Controller and Filter Removal



WARNING! System or material pressurized. Relieve pressure. Failure to observe may result in serious burns.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves.

1. Relieve system hydraulic pressure as described in “Relieving System Pressure” on page 6-5.
2. With the system at operating temperature, turn the melter off.



CAUTION! Apply torque to the inner portion of the density controller and filter assembly only. Failure to observe may result in equipment damage.

3. Locate the density controller filter assembly (1) in the melter.

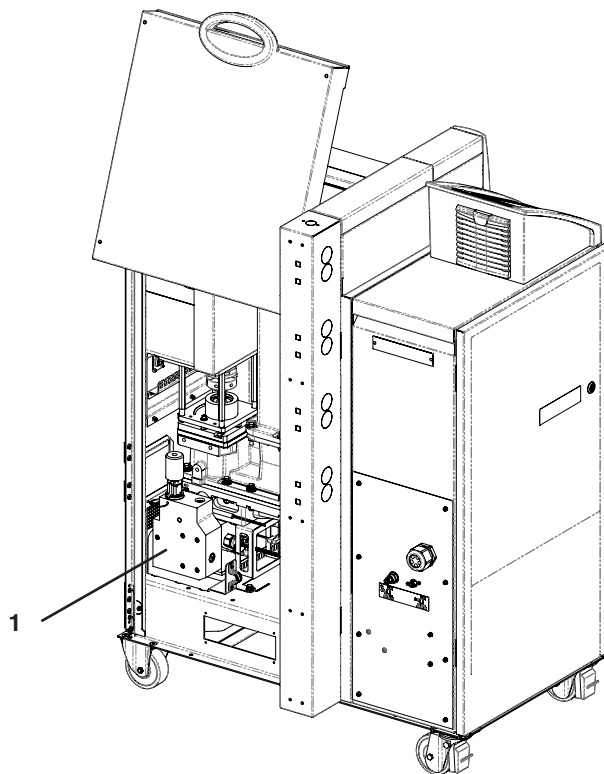


Figure 6-5: Locating the density controller filter assembly

1. Density controller filter assembly

Density Controller and Filter Removal *(contd)*

4. Disconnect the ground wire (4) from the density controller.

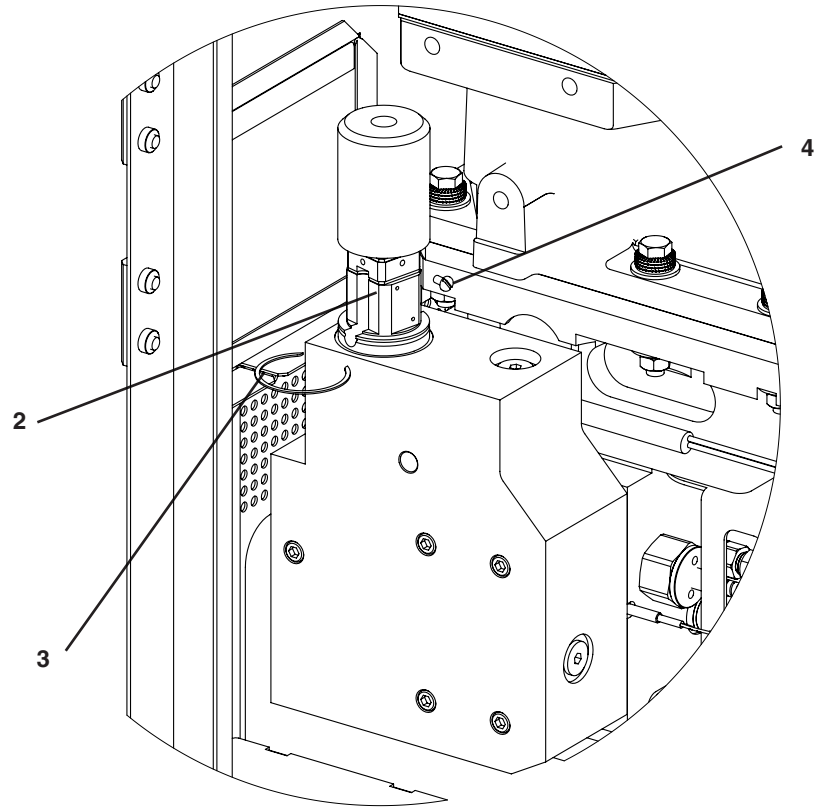


Figure 6-6: Disconnecting the wire from the density controller

2. Screw
3. Wire retainer clip

4. Ground wire

5. See Figure 6-7. Use a wrench to turn the density controller and filter assembly counterclockwise to remove it from the manifold.



CAUTION: Apply torque to the inner portion of the density controller and filter assembly only. Failure to observe may result in equipment damage.

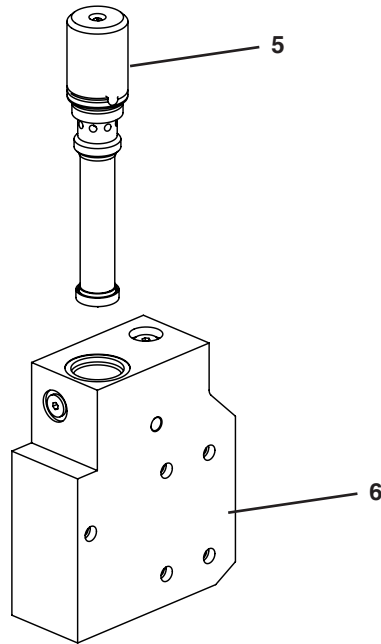


Figure 6-7: Removing the density controller and filter assembly

5. Density controller

6. Density controller block

Filter Assembly Inspection

- 1. If it has been 6 months since the filter assembly was changed, proceed with “Density Controller and Filter Installation – Standard Melter Only” on page 6-16 and replace the existing assembly with a new one.
- 2. See Figure 6-8 and refer to Table 6-2. Inspect the o-ring (1) and filter screen (2).

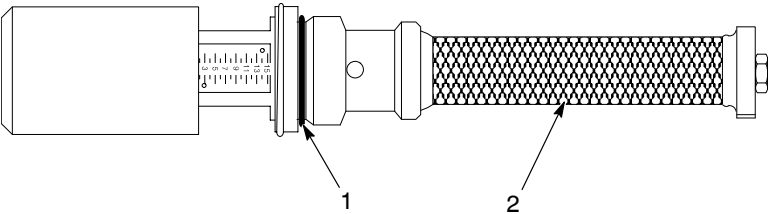


Figure 6-8: Inspecting the o-ring and filter screen

- 1. O-ring
- 2. Filter screen

Table 6-2: O-ring Inspection

Problem	Action
O-ring is damaged	1. Remove the damaged o-ring from the filter assembly. 2. Place a new o-ring onto the filter assembly.
Filter screen is clogged or damaged	Refer to “Filter Screen Cleaning and Replacement” on page 6-15.
Filter screen is clean and undamaged	Refer to “Installing Filter Cartridges” on page 6-10.

Filter Screen Cleaning and Replacement

See Figure 6-9.

1. Remove the bolt (1) from the end of the filter assembly.
2. Remove the support (2) from the end of the filter assembly.

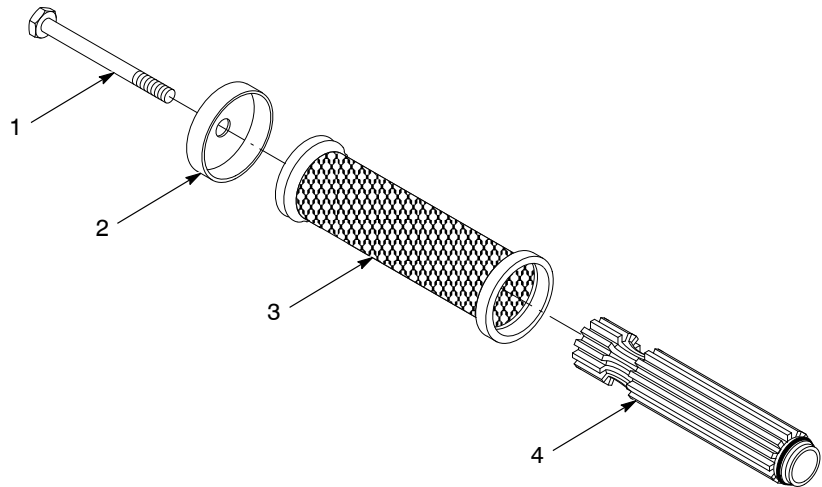


Figure 6-9: Disassembling the filter assembly

- | | |
|------------|----------------|
| 1. Bolt | 3. Screen |
| 2. Support | 4. Filter core |

3. Slide the filter screen (3) off the filter core (4), and then either clean or replace the filter screen.



CAUTION! Do not use a metal bristle brush to clean the filter screen. Failure to observe may result in equipment damage.

4. Slide the new or cleaned filter screen onto the filter core.
5. Place the support on the end of the filter assembly.
6. Replace and tighten the bolt into the end of the filter assembly.

Density Controller and Filter Installation – Standard Melter Only

1. Turn the unit and the heaters on. Wait until the Normal indicator on the Temperature status panel lights up for Zone 4 (the manifold).
2. Wipe off any material on the filter o-ring seat and outer threads. Excess material on these areas can damage the o-ring during density controller installation.
3. Finger-tighten the density controller and filter assembly into the manifold.

NOTE: If you cleaned the filter screen, allow the filter assembly to heat enough to melt any hardened material clinging to it.



CAUTION! Apply torque to the inner portion of the density controller and filter assembly only. Failure to observe may result in equipment damage.

4. Use a wrench to tighten the filter until it seats. Do not overtighten.
5. Close the drain valve and remove the waste container from under the drain valve.

NOTE: If you installed a new filter assembly, proceed with “Flushing the System” on page 6-18 before resuming normal operation.

6. Resume normal operation as described in “Resuming Normal Operation” on page 6-19.
7. Check for leaks at the filter assembly o-ring and drain valve.

Testing the Pressure Relief Valve

The pressure relief valve is designed to relieve hydraulic pressure at approximately 86 bar (1250 psi). Proper operation is important to safe melter operation.

Melter safety can be impaired by the buildup of charred material. Periodically testing the pressure relief valve ensures that material will be flushed out and the relief valve will function properly.



WARNING! Wear safety glasses, heat-protective clothing and heat-protective gloves while performing this procedure. Failure to observe this warning may result in personal injury or death.

1. Touch the Gas On/Off button to turn off the gas.
2. While the system is ready for normal operation, start the pump and set the pump speed to 200 rpm.



WARNING! Do not increase pressure past 107 bar (1500 psi). If the pressure increases above 93 bar (1350 psi), shut down the melter and do not operate it until the relief valve has been replaced. Failure to observe this warning may result in equipment damage or personal injury.

3. While monitoring the System Pressure display, slowly turn the pressure control valve (on the manifold) clockwise at 1/4 turn intervals.
4. The pressure relief valve should relieve system pressure at or before approximately 90 bar (1300 psi), causing the number on the System Pressure display to decrease.
5. If the test has been completed successfully, and the pressure relief valve is functioning properly, turn the pressure control valve counterclockwise until you cannot feel any spring tension on the adjuster.
6. Reset all system parameters to production settings and resume normal operation.

Flushing the System

Perform the following steps to flush the system.

Pumping Out Old Material



WARNING! System or material pressurized. Relieve pressure. Failure to observe may result in serious burns.

1. Relieve system hydraulic pressure as described in “Preventive Maintenance Schedule” on page 6-2.
2. Disconnect the return hose(s) from the manifold.
3. Place the disconnected end(s) of the hose(s) into a waste container.
4. Ensure the gas control is off.
5. Touch the Pump button and set the pump speed to the minimum setting.
6. Increase the pump speed to 100 rpm.
7. Set the pressure setting to 0 (zero).
8. Pump hot melt material into the waste container until the top of the grid is visible.
9. Touch the Pump button to turn the motor off.

Adding New Material

1. Cover the grid with fresh hot melt material.
2. Wait for the material to melt.
3. Ensure the gas control is off.
4. Touch the Pump button. The motor turns on and increases to a set speed.
5. Pump hot melt material into the waste container until new hot melt material begins to flow from the hose.
6. Touch the Pump button. The motor turns off.
7. Reconnect the return hose(s) to the manifold.
8. Fill the hopper with fresh hot melt material.
9. Wait for the material to melt.
10. Resume normal operation as described in “Resuming Normal Operation” on page 6-19.

Resuming Normal Operation

Perform the following steps to resume normal operation after relieving system hydraulic pressure and performing maintenance.

1. Close the drain valve.
2. Install the applicator nozzle(s).
3. Touch the Master Controls button on the Home screen, and then touch the Global Heater button to turn on all of the heaters.
4. Ensure all symbols in the status area are green in color, which indicates that the system is ready.
5. Touch the Master Controls button and then touch the Pump button. The pump turns on. Adjust pump speed to suit your application needs. Refer to Figure 5-7 on page 5-8.
6. Touch the Gas On/Off button to turn on the gas.
7. Touch the Pressure tile and then enter the desired pressure for the application.
8. Allow the system to stabilize 3-5 minutes before resuming normal operation.

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Section 7

Troubleshooting



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

Introduction

This section contains troubleshooting tables. These tables 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. When necessary, the tables refer to more detailed troubleshooting procedures.

Mechanical Troubleshooting

The following table provides general troubleshooting information for mechanical problems. You may need to refer to maintenance and disassembly procedures for additional troubleshooting information.

Problem	Possible Cause	Corrective Action
1. System pressure is unstable	Circulation to deposit ratio is incorrect	Reset the pump speed to the correct setting. Refer to "Pump Charts" on page 10-5.
	Faulty pressure transducer	1. Turn up the system pressure as much as the relief valve will allow. Do not exceed 86 bar (1250 psi). 2. If the indicated system pressure is 0 (zero), replace the pressure transducer. Refer to "Pressure Transducer Assembly Replacement" on page 8-27.
	Faulty pressure control valve	If the pressure control valve has not been rebuilt or replaced in the last 2000 hours, and does not operate smoothly with steady changes in pressure as it is turned, replace the pressure control valve. Refer to "Pressure Control Valve" on page 8-12.
	Faulty relief valve	Set the pump speed to 100 rpm. If it is not possible to reach 75 bar (1100 psi), replace the relief valve.
	Worn or damaged pump	If the other components are known to be in good condition, replace the pump.
<i>Continued...</i>		

Problem	Possible Cause	Corrective Action
2. Density reduction is variable	Circulation to deposit ratio is incorrect	Reset the pump speed to the correct setting. Refer to "Pump Charts" on page 10-5.
	Gas pressure is too high	If the gas level increases after one or two dispense cycles, and the gas pressure is greater than 0.2 bar (3 psi), reduce the gas pressure setting.
	Gas pressure is too low	If the gas level declines, the Gas Flow indicator stays lit after one or two dispense cycles, and the gas pressure is greater than 0.2 bar (3 psi), reduce the gas pressure setting.
	Faulty relief valve	Set the pump speed to 100 rpm. If it is not possible to reach 75 bar (1100 psi), replace the relief valve.
	Faulty density controller	Replace the density controller if the following conditions are not met: • density controller was rebuilt in the last 2000 hours of operation • moderate increase in pump speed causes the Gas Flow indicator to light • moderate decrease in pump speed causes the Gas Flow indicator to go out

Pump Outlet Pressure Troubleshooting

Use the following table to troubleshoot the pump outlet pressure monitor.

Problem	Possible Cause	Corrective Action
1. Pump will not start	Melter not ready	Allow time for the melter to warm up.
	Material level is empty (on level-controlled melters only)	Add material.
	Open level control relay contact or jumper plug	Replace the level control board if equipped or repair the jumper plug (terminals 7 and 8).
	Faulty motor	Replace the motor.
	Faulty motor drive	Replace the motor drive.
	Driveshaft coupling worn or damaged	Replace the drive shaft coupling. Refer to "Drive Assembly" on page 8-3.
2. Pump not operating (driveshaft turning)	Driveshaft coupling worn or damaged	Replace the drive shaft coupling. Refer to "Drive Assembly" on page 8-3.
3. Pressure displayed does not match actual pressure	Pressure transducer is disconnected	Check and connect the transducer.
	Faulty transducer	Replace the transducer.
4. Pressure display value is fixed and does not vary	Pressure transducer is disconnected	Check and connect the transducer.
	Faulty transducer	Replace the transducer.

Temperature Control Troubleshooting

The FM FIT25 melter was designed and tested for resistance to EMI that is typically present in heavy industrial applications. To protect the FM FIT25 melter from EMI, it is important that all enclosures are in good condition and properly installed and grounded. Failure to take these precautions may result in random faults and melter shutdown.

Electrical Safety During Troubleshooting

Before performing troubleshooting activities inside the electrical enclosure, exhaust all methods of troubleshooting the problem with the electrical enclosure closed or with the power off. In general, perform troubleshooting activities as follows:

- Check the displays and lights for warnings, faults, and other status information.
- Check for continuity and grounding between system components (unit, applicators, hoses, and other equipment).
- Make sure the branch circuit disconnect switch is properly installed.
- Make sure the power supply is supplying the proper voltage.
- Prioritize troubleshooting activities to limit exposure to live power. Perform troubleshooting activities involving live power last.
- Understand the system electrically and mechanically before opening the electrical enclosure. Pay special attention to system power distribution and to I/O interfaces with other equipment.
- Identify and eliminate potential electrical shock hazards in the environment surrounding the melter.

Internal, Hose, or Applicator Zone Not Heating

If a tank, grid, hose, or applicator will not heat, use this troubleshooting table.

Problem	Possible Cause	Corrective Action
1. Internal, hose, or applicator zone not heating	Zone setpoint temperature below 38 °C (100 °F)	Check the setpoint temperature for the zone. The setpoint temperature must be 38 °C (100 °F) or above for the zone to heat. Refer to “Temperature Settings Screen (Logged In)” on page 4-18 to program setpoint temperatures.

Melter Not Powering On

If the melter will not power on, use this troubleshooting table.



WARNING! Risk of equipment damage, personal injury, or death. Some troubleshooting procedures require you to perform work inside the electrical enclosure with the power on. Follow electrical safety procedures and observe all high-voltage indicators. Refer to “Electrical Safety During Troubleshooting” on page 7-5 before performing any troubleshooting procedure.

Problem	Possible Cause	Corrective Action
1. Displays do not illuminate	No input power	Ensure the power is turned on at your branch circuit disconnect switch and that your power supply is supplying the proper voltage to the melter. Check the voltage at TB1 on the power board. If necessary, check the electrical connections at TB1. Refer to “Electrical Connections” on page 3-9.

Control System Indicating a Warning or Fault

When a warning condition occurs, the melter continues to function normally.
When a fault occurs, the red FAULT light turns on and the melter shuts down.

Navigate to the Alarms/Events screen to review an alarm or fault.



Figure 7-1: Alarms/Events screen

Electrical Schematics

Refer to the electrical schematics provided with the melter.

Section 8

Repair



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

Introduction

This section contains instructions for repairing the FM FIT25 melter. Hoses are not field-repairable. Applicator procedures are covered in their own service manuals.

Hydraulic Repair Guidelines



WARNING! Risk of explosion or fire. Fire, open flames, and smoking prohibited.



WARNING! Disconnect and lock out main electrical service before servicing equipment. Failure to observe this warning may result in personal injury or death.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Preparation

If the pump is operable, flush the system before disassembly. If the pump is not operable but the heating system is functional, bring the unit to operating temperature to facilitate disassembly. Otherwise, use a heat gun or other flameless heating device to melt solidified hot melt material on system components.

Quick-Disconnect Fittings

To disconnect a flexible air line from a quick-disconnect fitting, simply compress the metal or plastic retaining collar against the fitting, and then pull the flexible tubing away.

Installation is the reverse: compress the retaining collar against the fitting and press the flexible tubing into place. Pull the tubing firmly to ensure that it is locked in place by the retaining collar.

NOTE: The ends of the tubing should be cut cleanly and squarely to ensure a leak-free connection.

Drive Assembly

Servicing the drive assembly includes replacing o-rings, replacing seals, or installing a new drive assembly.

Preparation



WARNING! System or material pressurized. Pressure must be relieved. Failure to observe can result in serious burns.



WARNING! Risk of electrical shock. Failure to disconnect and lock out power may result in personal injury, death, or equipment damage.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

1. Relieve system hydraulic pressure. Refer to “Relieving System Pressure” on page 6-5.
2. Disconnect and lock out input power from the unit.
3. Drain the tank. If the pump is not operational use the gravity drain.

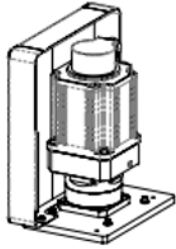
Removing the Motor, Gearbox, and Drive Assembly



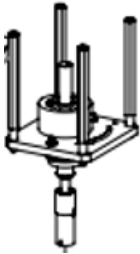
WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

NOTE: Make sure the system is at the correct temperature, and the tank is sufficiently drained before proceeding.

See Figure 8-1 on page 8-5.



Motor/Gearbox Assembly



Drive Shaft Assembly

1. Remove the cover over the front and back hydraulic section and then open the side door.
2. Remove the motor/gearbox cover (1) and disconnect the cables from the motor (2).
3. Loosen the coupling (4) from both shafts and slide it down until the motor/gearbox shaft is free.
4. Remove the four bolts that hold the motor/gearbox plate (3) to the four hex rods (5) and pull the assembly away.
5. Remove the coupling (4). Ensure it is held intact for later re-assembly. Use masking (or similar) tape to hold the pieces together.
6. Loosen the two screws that hold the drive shaft assembly that is attached to the pump alignment plate (6) and pull the drive shaft assembly up.

NOTE: To overcome the force of the sealing o-ring, grab hold of opposite hex rods with both hands and wiggle left-right while exerting upward force. Handle with care as the drive shaft may drip molten adhesive. Lay it aside on a clean surface or release paper to prevent contamination and/or sticking.

7. Follow these steps in reverse order for re-installation.

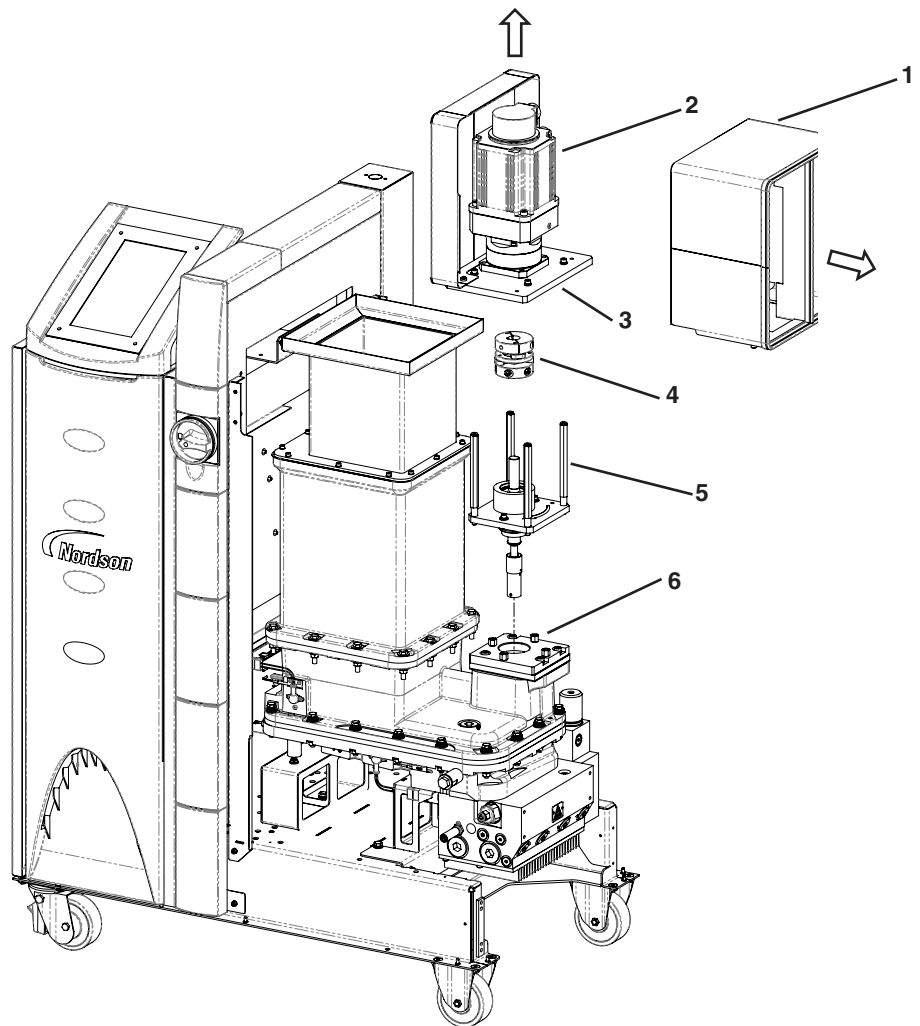


Figure 8-1: Removing the motor, gearbox, and drive assembly

- | | |
|------------------------|-------------------------|
| 1. Motor/Gearbox cover | 4. Coupling |
| 2. Motor | 5. Hex rods |
| 3. Motor/Gearbox plate | 6. Pump alignment plate |

Drive Shaft Face Seal Replacement

Use the following procedure to replace the drive shaft seals.

NOTE: Remove the drive assembly before you complete this procedure. Please refer to “Removing the Motor, Gearbox, and Drive Assembly” on page 8-4 for more information.

See Figure 8-2.

1. With the drive assembly out of the processor, remove the pan head screw (2) that secures the retaining sleeve (3) to the drive coupling (1). Remove the retaining sleeve.
2. Push the exposed dowel pin out of the coupling and remove the coupling.
3. Remove the external retaining ring (5) and flat washer (6) from the drive assembly.
4. Remove the face seal (4) components from the drive shaft and make sure the ceramic rings are not chipped or broken and that all face seal components are oriented properly.

NOTE: The face seal is composed of the parts shown in Figure 8-3 on page 8-7.

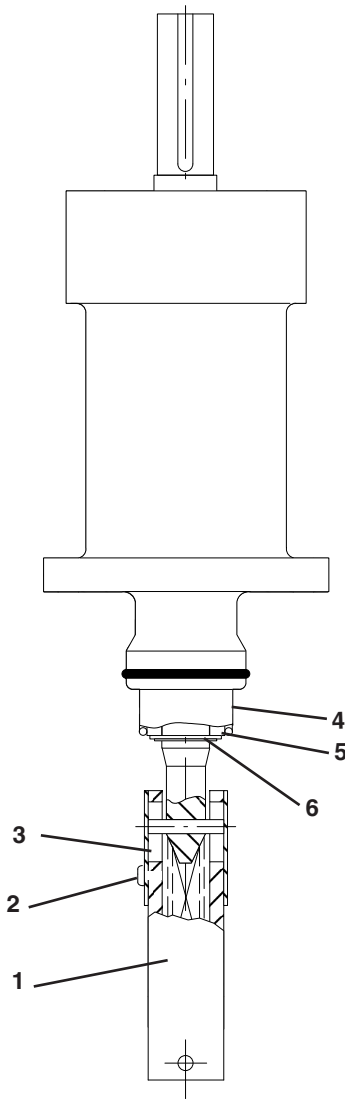
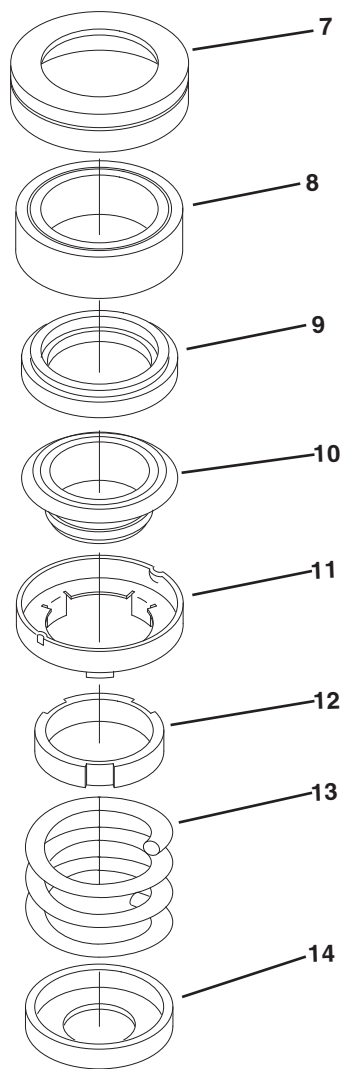


Figure 8-2: Replacing the drive shaft seals

- | | |
|---------------------|----------------------------|
| 1. Drive coupling | 4. Face seal |
| 2. Pan screw | 5. External retaining ring |
| 3. Retaining sleeve | 6. Flat washer |



5. Assemble the face seal components in reverse order of disassembly. Use an o-ring lubricant or Never-Seez to lubricate the Viton components for installation.

NOTE: See Figure 8-2 on page 8-6. Use blue thread locking adhesive on the pan head screw (2) to secure it to the retaining sleeve (3).

6. Install the face seal; the coupling and its dowel pin; the retaining sleeve; and the pan screw that secures the retaining sleeve. Then, install the alignment plate. Refer to "Alignment Plate Installation" on page 8-8.

Figure 8-3: Installing the drive shaft seals

- | | |
|--|-------------------------|
| 7. Viton housing seal | 11. Shaft seal housing |
| 8. Face seal seat (orient groove as shown) | 12. Shaft seal retainer |
| 9. Ceramic face seal ring | 13. Compression spring |
| 10. Viton shaft seal | 14. Spring retainer |

Alignment Plate Installation

Use the following procedure to install the alignment plate.

Installing the Alignment Plate

If you removed the alignment plate, install it using the following steps:

See Figure 8-4 on page 8-9.

1. Place the gasket (5), insulator (4), gasket (3), and alignment plate (2) onto the grid (6).
2. Insert the alignment tool (1) through the alignment plate. Fit the end of the alignment tool over the pump drive shaft (7).

NOTE: Do not tighten the bolts in the following step.

3. Loosely install the bolts, lock washers, and flat washers (8) into the four unthreaded holes in the alignment plate.
4. Make sure that the alignment tool rotates freely in the alignment plate.
5. Tighten the bolts.
6. Make sure that the alignment tool rotates freely in the alignment plate. If the tool is difficult to rotate, loosen the bolts and tighten them again.

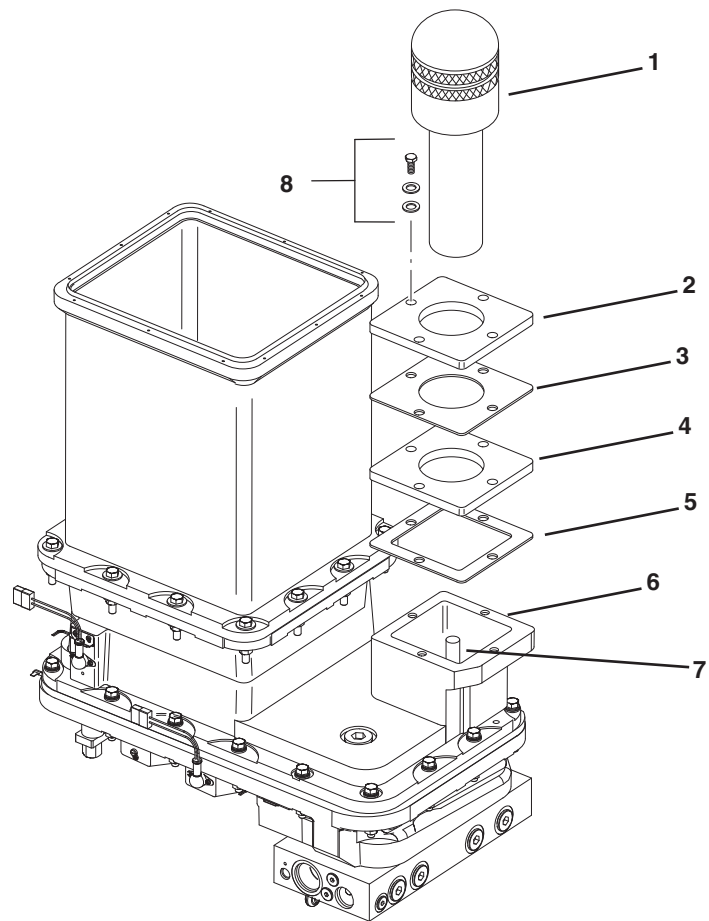


Figure 8-4: Installing the alignment plate

- | | |
|--------------------|--|
| 1. Alignment tool | 5. Gasket |
| 2. Alignment plate | 6. Grid |
| 3. Gasket | 7. Pump drive shaft |
| 4. Insulator | 8. Bolts, lock washers, and flat washers |

Replacing the Pump Assembly

Complete this procedure to remove the pump assembly. See Figure 8-6 on page 8-11.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

NOTE: Make sure system is at temperature and the tank is sufficiently drained before proceeding.

NOTE: The motor/gearbox assembly and drive shaft assembly must be removed prior to removing the pump assembly. Refer to “Removing the Motor, Gearbox, and Drive Assembly” on page 8-4 for more information about removing the motor, gearbox and drive assembly.

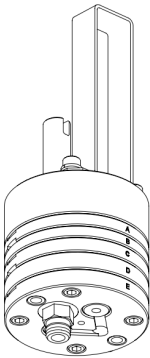


Figure 8-5: Pump assembly

1. Use a 5 mm Allen wrench with long handle to reach into the reservoir and loosen the two screws (1) that attached the pump to the manifold. Leave the screws in place. They will come out with the pump assembly.
2. Reach inside the reservoir cavity and retrieve the pump assembly by pulling up on the pump handle (2). Make sure to use heat-protected gloves when handling the pump.
3. Handle with care as the pump may drip molten adhesive. Lay it aside.
4. Check for presence of the discharge fitting o-ring (3) on the replacement pump and add o-ring lube.
5. Add the new mounting screws and washers from the kit to the replacement pump.
6. Insert the replacement pump into the reservoir cavity and make sure it is firmly engaged with the manifold.
7. Tighten the two screws with a 5 mm Allen wrench to 10.8–13.6 N•m (8–10 ft-lb).

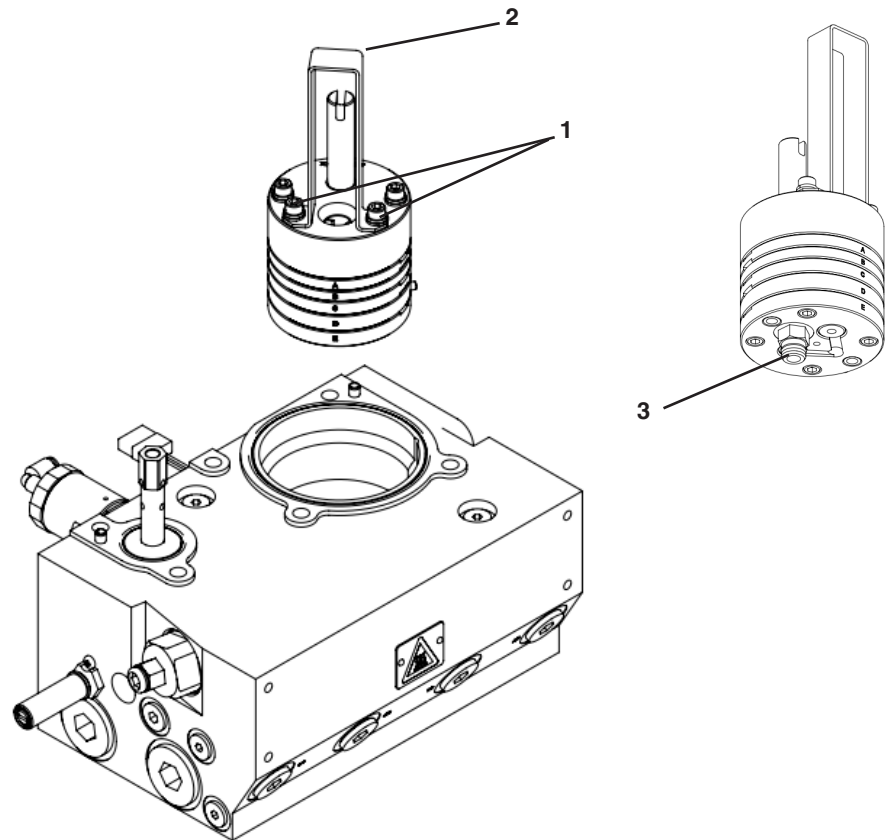


Figure 8-6: Replacing the pump assembly

- 1. Pump screws
- 2. Pump handle
- 3. Fitting o-ring

Pressure Control Valve

Use the following procedures to replace or rebuild the pressure control valve.

Replacing the Pressure Control Valve

Solidified hot melt material on the valve surface or inside the manifold block may make it difficult to install the valve. To ease installation and avoid damage to the o-rings, bring the melter to operating temperature before attempting to replace the valve.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.



WARNING! System or material pressurized. Pressure must be relieved. Failure to observe can result in serious burns.

1. Relieve system hydraulic pressure. Refer to “Relieving System Pressure” on page 6-5.
2. Disconnect and lock out input power.
3. Remove the back and side panels with the supplied keys.
4. Disconnect the air line from the pressure control valve.
5. Unscrew the pressure control valve (1) out of the manifold (2).

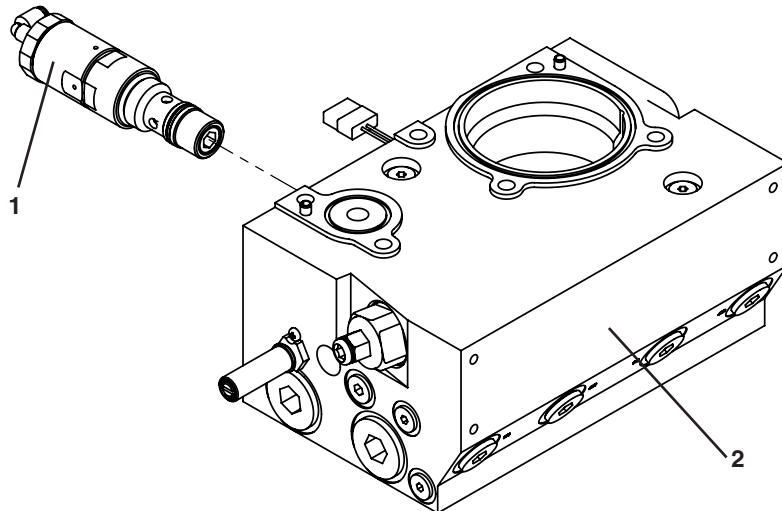


Figure 8-7: Replacing the pressure control valve

1. Pressure control valve

2. Manifold

6. Lubricate the new valve's threads with Never Seez and the o-rings with o-ring lubricant.
7. Reconnect the air line to the new pressure control valve.
8. Install the new valve in the manifold and tighten firmly. Do not overtighten.
9. Reconnect power and restore the unit to normal operation. Refer to the section "Operation" on page 5-1.

Density Controller Rebuild



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

The procedure that follows tells you how to disassemble the density controller to inspect and replace serviceable components. To service only the filter screen, perform the procedure “Checking and Cleaning the Filter Assembly” on page 6-8.

Rebuilding the Density Controller

See Figure 8-8.

1. Remove the density controller assembly. Refer to “Density Controller and Filter Installation – Standard Melter Only” on page 6-16.
2. Screw the filter core (4) out of the bung (1).
3. Remove the slug (2) and spring (3) from the core.

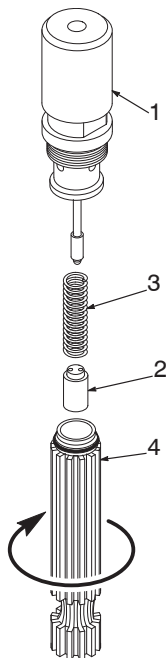


Figure 8-8: Disassembling the density controller

- | | |
|---------|-----------|
| 1. Bung | 3. Spring |
| 2. Slug | 4. Core |

4. Carefully inspect all components for damage or wear. Replace any damaged components.

NOTE: The spring free-length is 62.5–64.5 mm (2.47–2.54 in.). If the spring is outside this range, replace the spring.

5. Install the spring and the slug into the core. Screw the core into the bung and tighten to 14–16 N•m (10–12 ft-lb).
6. Slide the filter screen over the core and install the support and its bolt on the end of the core. Refer to “Replacing the Pump Assembly” on page 8-10 as needed.
7. Install the density controller assembly. Refer to “Density Controller and Filter Installation – Standard Melter Only” on page 6-16.

NOTE: Check the density reduction. Refer to “Density Determination and Reduction” on page 5-12 for instructions.

Pressure Relief Valve Replacement



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Use this procedure to replace the pressure relief valve. The pressure relief valve is located in the manifold.

See Figure 8-9.

1. Drain as much adhesive from the tank as possible. Refer to “Flushing the System” on page 6-18 for different ways to drain the tank.
2. Remove the access plug (1) from the grid.
3. Use a socket wrench to loosen the pressure relief valve (2); then carefully unscrew the valve and remove it.
4. Screw the new valve into the tank until it is finger-tight.

NOTE: Heat the melter to application temperature and tighten the valve. Then let the melter cool to room temperature and tighten the valve again.

5. Use a socket wrench to tighten the valve.
6. Install the access plug into the grid.

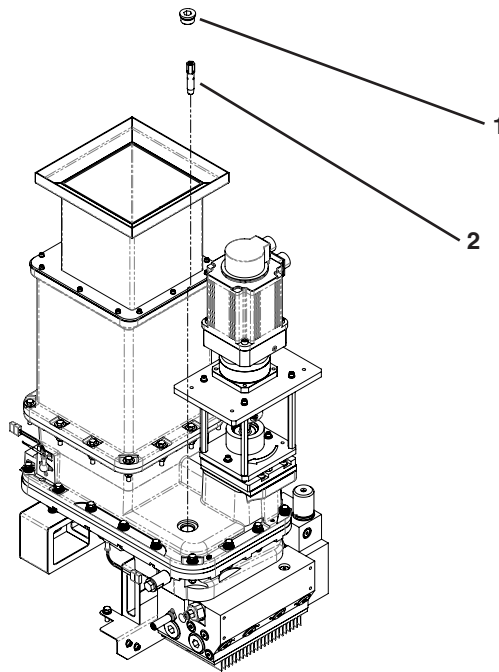


Figure 8-9: Replacing the pressure relief valve

1. Access plug

2. Pressure relief valve

Drain Valve Replacement



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.

Use this procedure to replace the drain valve. The drain valve is located in the manifold.

1. Make sure the unit is at operating temperature.



WARNING! System or material pressurized. Relieve pressure. Failure to observe this warning may result in serious burns.

2. Relieve system pressure. Refer to “Relieving System Pressure” on page 6-5.
3. See Figure 8-10.

Remove the drain valve alignment screw (1), and then remove the valve (2) from the unit. Some adhesive will flow from the valve.

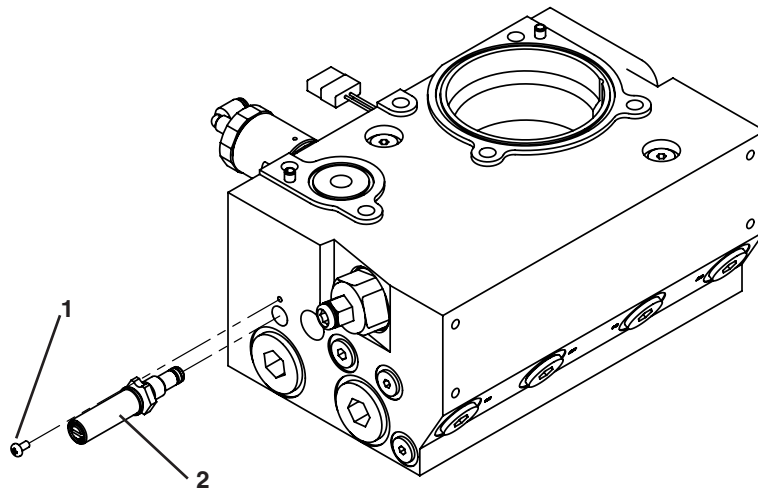


Figure 8-10: Replacing the drain valve

1. Valve alignment screw

2. Valve

4. Screw the new drain valve into the manifold until it is secure. Then, adjust it as necessary to install and tighten the alignment screw and washer.
5. Resume operation.

Hose Connector O-Ring Replacement

Replace hose connector and pipe plug o-rings whenever there is evidence of leakage or whenever these fittings are removed from an applicator or manifold. For more information, refer to “Replacing the Hose Connector O-Ring”.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles, and heat-protective gloves. Failure to observe this warning may result in personal injury.



WARNING! System or material pressurized. Pressure must be relieved. Failure to observe can result in serious burns.

Replacing the Hose Connector O-Ring

See Figure 8-11 on page 8-19.

1. Relieve system hydraulic pressure. Refer to “Relieving System Pressure” on page 6-5.
2. Disconnect the hose electrical plug (2) from the electrical socket (1).
3. Remove the pipe plug or the hose connector (4) from the applicator or manifold port (5).
4. Replace the o-ring on the connector or plug.

NOTE: Use only Nordson o-rings. Using other o-rings may result in leakage.

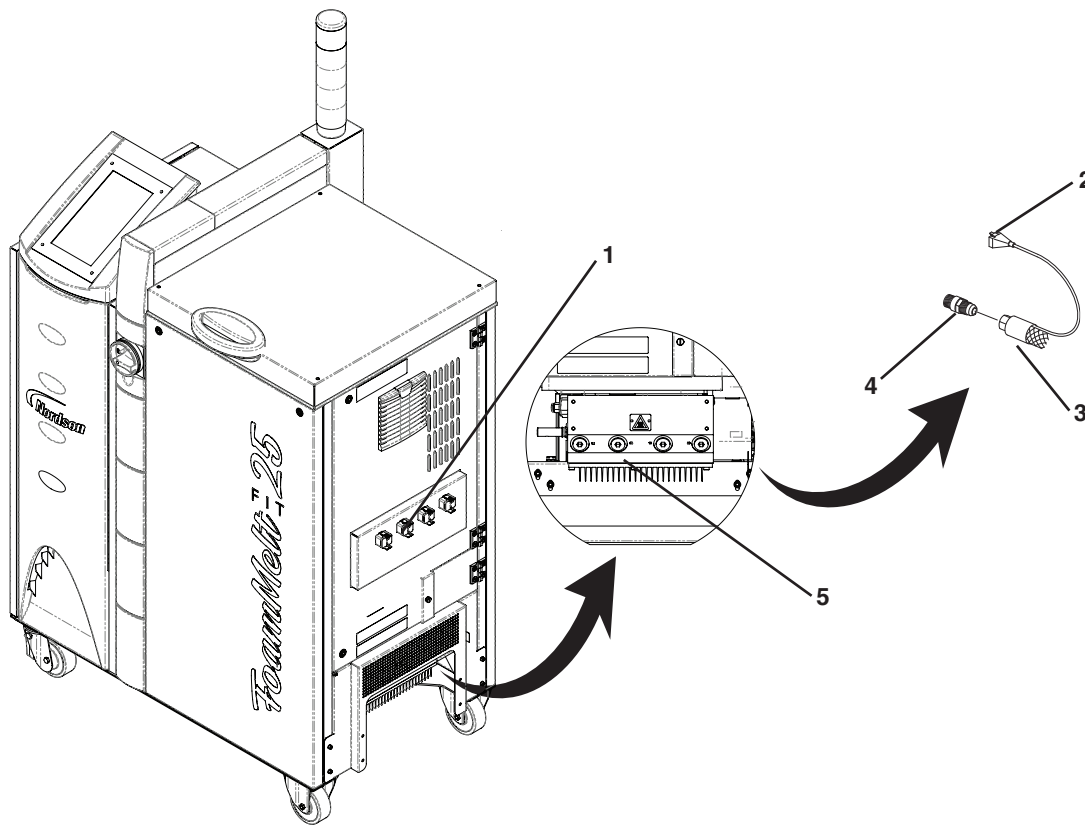


Figure 8-11: Hose connector o-ring replacement

- 1. Electrical socket
- 2. Hose electrical plug

- 3. Hose
- 4. Hose connector

- 5. Manifold port

5. Make sure that the new o-ring and its groove are free of debris, and then lubricate the o-ring with Never Seez.
6. Stretch the o-ring only so it can be carefully rolled over the threads and into the hose connector or pipe plug groove. Do not stretch the o-ring any more than necessary.
7. Hand-thread the fitting into the manifold or applicator.
8. Tighten the fitting only enough to seat it, stopping when the body of the metal fitting contacts the manifold surface. Between 9.5 and 13.6 N•m (7 and 10 ft-lb) of torque is enough force to create an effective seal.
9. Restore the unit to normal operation. Refer to the section "Operation" on page 5-1.

Gas Repair

Use the following procedures to make repairs to the components located in the gas control panel.

Preparation

Follow these procedures to prepare for gas/pneumatic repairs.

NOTE: After servicing any component in the gas circuit, make sure that:

- there are no gas leaks
- there are no air leaks
- pressure can be achieved



WARNING! Cylinders of compressed gas are under high pressure and can present significant safety hazards if handled improperly. Follow all safety precautions that apply to the use, handling and storage of compressed gases.

1. Shut off the gas supply at the gas cylinder and turn the cylinder's gas regulator to 0 (zero).
2. Disconnect the gas supply from the FM FIT25 melter.



WARNING! Risk of electrical shock. Failure to disconnect and lock out power can result in personal injury, death, or equipment damage.

3. Disconnect and lock out input power from the unit.

Gas Pressure Control Panel

Use the following procedures to remove and install the gas pressure control panel.

Removing the Gas Pressure Control Panel

See Figure 8-12 on page 8-22.

1. Perform the procedure “Gas Repair”—“Preparation” on page 8-20.
2. Loosen the four pan head screws that secure the gas pressure control assembly to the cabinet. Pull the control assembly forward.
3. Disconnect the gas supply tubes from the bulkhead fittings by pressing the red connector towards the fitting.

NOTE: The barb fittings on the gas valve are brittle. Be careful not to damage the fittings when disconnecting the gas line. To avoid damage, do not remove the line from the gas valve unless the valve itself will be replaced.

4. Disconnect the gas valve (6) gas line from the bulkhead fitting in the base.
5. Disconnect the two wires from the gas valve.

NOTE: The wires are not polarized.

6. Disconnect the two non-polarized wires from the pressure switch.
7. Pull the assembly out of the cabinet and place it on a work surface.

Installing the Gas Pressure Control Panel

See Figure 8-12.

1. Connect the two wires to the gas valve (6).

NOTE: The wires are not polarized.

2. Connect the pressure switch wires.
3. Connect the gas lines to the manifold and to the gas valve outlet or from the gas valve to the bulkhead fitting.
4. Connect the gas supply tube to the bulkhead fittings.
5. Carefully push the gas pressure control panel assembly into the base of the cabinet and tighten the four pan head screws.

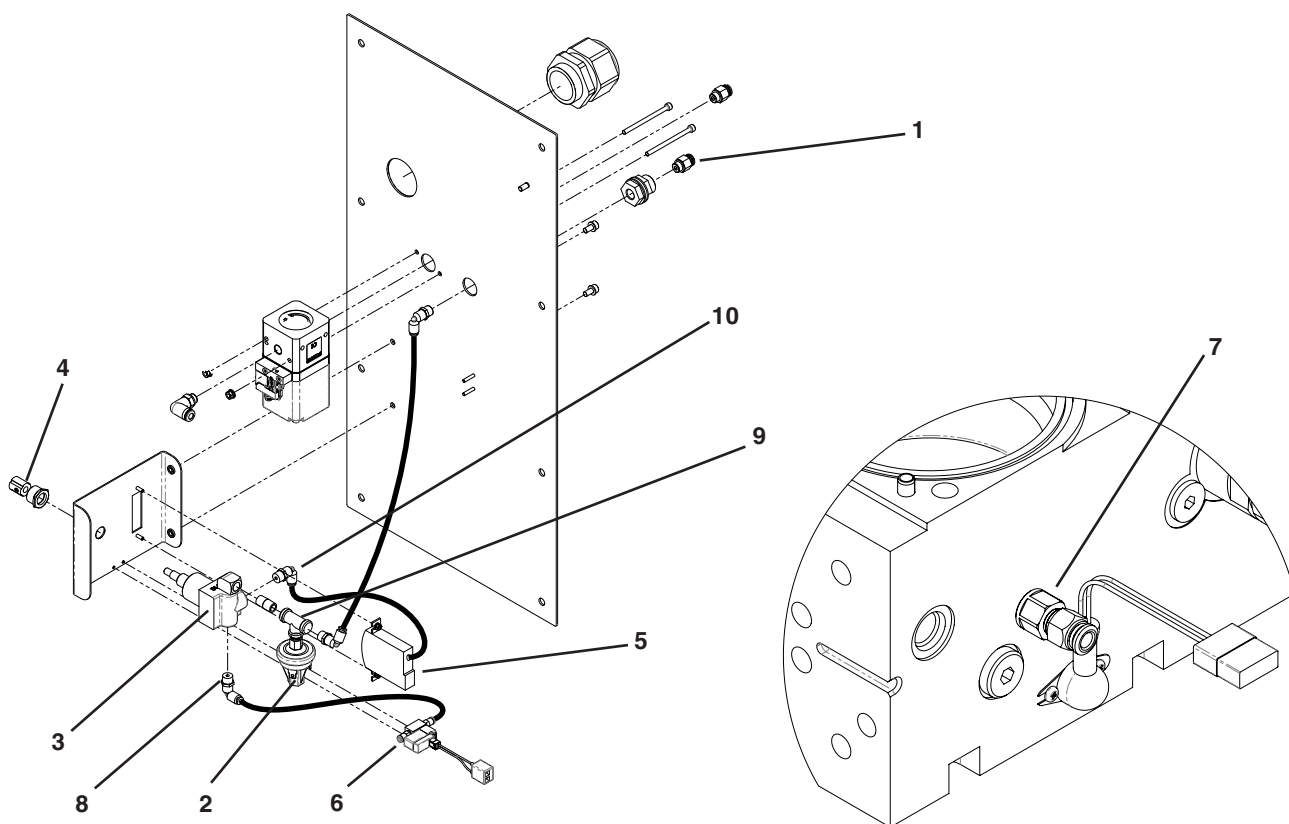


Figure 8-12: Gas control panel repair

- | | | |
|---------------------------------------|-------------------|-------------|
| 1. Incoming inert gas connection | 5. Pressure gauge | 9. Tee |
| 2. Pressure switch | 6. Gas valve | 10. Fitting |
| 3. Pressure regulator | 7. Check valve | |
| 4. Pressure regulator adjustment knob | 8. Elbow | |

Replacing the Gas Pressure Regulator

Use the following procedure to replace the gas pressure regulator.

See Figure 8-12 on page 8-22.

1. Perform the procedure “Gas Repair”—“Preparation” on page 8-20.
2. Remove the gas control panel. Refer to “Removing the Gas Pressure Control Panel” on page 8-21 for instructions.
3. Disconnect the tubing from the regulator (3) at the elbow (8) and tee (9).
4. Loosen the set screw in the pressure regulator knob (4), and then remove the knob.
5. Remove the knurled trim nut and the locknut that secure the regulator, and then remove the regulator from the rear of the panel assembly.
6. Remove the elbows from the old regulator and discard the regulator.
7. Install the elbow and tee onto the new regulator.
8. Position the new pressure regulator on the assembly and install the locknut and knurled trim nut.
9. Install the knob and tighten the set screw.
10. Connect the tubing at the quick-disconnect fittings.
11. Install the gas control panel. Refer to “Installing the Gas Pressure Control Panel” on page 8-22 for instructions.

Replacing the Gas Pressure Gauge

Use the following procedure to replace the gas pressure gauge.

See Figure 8-12 on page 8-22.

1. Perform the procedure “Gas Repair”—“Preparation” on page 8-20.
2. Remove the gas control panel. Refer to “Removing the Gas Pressure Control Panel” on page 8-21 for instructions.
3. Pull the tubing out of its fitting (10) on the gas pressure gauge (5).
4. Remove the pair of hex nuts that secure the gas pressure gauge to the control panel assembly. Then remove the gauge from the back of the panel assembly.
5. Place the new gauge on the assembly and insert and tighten the hex nuts to secure the gauge in place.
6. Reconnect the tubing to the fitting on the back of the gauge.
7. Install the gas control panel. Refer to “Installing the Gas Pressure Control Panel” on page 8-22 for instructions.

Replacing the Gas Valve

Use the following procedure to replace the gas valve.

See Figure 8-12 on page 8-22.

1. Perform the procedure “Gas Repair”—“Preparation” on page 8-20.
2. Remove the gas control panel. Refer to “Removing the Gas Pressure Control Panel” on page 8-21 for instructions.
3. Carefully remove the tubes from each end of the gas valve (6).
4. Remove the two screws that secure the gas valve to the control panel assembly and remove the valve.
5. Place the new valve on the assembly and insert and tighten the screws to secure the valve in place.
NOTE: The barb fittings on the gas valve are brittle. Be careful not to damage the fittings when connecting the gas lines.
6. Reconnect the gas tubes to each end of the gas valve (6).
7. Install the gas control panel. Refer to “Installing the Gas Pressure Control Panel” on page 8-22 for instructions.

Replacing the Gas Pressure Switch

Replace the switch if the gas pressure gauge in the gas pressure control panel is below 30 and the Low Gas indicator does not indicate low gas.

See Figure 8-12 on page 8-22.

1. Remove the gas control panel. Refer to “Gas Repair”—“Preparation” on page 8-20.
2. Disconnect the pressure switch wires (2).
3. Unscrew the pressure switch (2) from the tee (9).
4. Screw the new switch into the tee fitting and connect the wire leads to the new switch.

NOTE: Coat the threads of the new pressure switch with PTFE paste before installation.

5. Replace the gas control panel assembly.
6. Reconnect gas lines and restore power. Be sure to check for leaks on pressurized gas lines. Refer to “Gas Supply Connection” on page 3-7 for details.

Replacing the Gas Pressure Check Valve

The gas pressure check valve is located on the back of the manifold. The valve ensures that no adhesive flows into the gas line.

Replace the check valve if adhesive clogs it and prevents gas flow.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles and heat-protective gloves.



WARNING! System or material pressurized. Pressure must be relieved. Failure to observe can result in serious burns.

1. Relieve system pressure. Refer to “Relieving System Pressure” on page 6-5 for instructions.
2. Perform the procedure “Gas Repair”—“Preparation” on page 8-20.
3. Remove the base end panel below the manifold.
4. See Figure 8-12 on page 8-22. Reach behind the manifold to loosen the hex nut securing the gas line tubing to the check valve (7).
5. Unscrew the valve assembly and remove it from the manifold.
6. Remove the adapter fittings from the valve.
7. Installation is the reverse of disassembly.

NOTE: Be sure to install the new check valve so the arrow on the valve body points toward the manifold.

NOTE: Coat the pipe threads with PTFE paste before installation.

NOTE: Lubricate all o-rings with o-ring lubricant before installation.

8. Install all covers and enclosures and restore the unit to normal operation. Refer to the section “Operation” on page 5-1.

Pressure Transducer Assembly Replacement

The pressure transducer is composed of a diaphragm isolator and a transmitter separated by a metal conduit. One diaphragm is located on the reservoir near the thermostat. The transducer assembly converts hydraulic pressure into electrical signals that display the pump outlet pressure on the SYSTEM PRESSURE display.

Replace the pressure transducer assembly when the digital display on the SYSTEM PRESSURE display is obviously inaccurate.

NOTE: Solidified hot melt material on the valve surface or inside the reservoir block may make it difficult to install the valve. To ease installation and avoid damage to the o-rings, bring the melter to operating temperature at zero pressure before attempting to install the transducer.

Removing the Pressure Transducer

See Figure 8-13 on page 8-28.



WARNING! Hot! Risk of burns. Wear heat-protective clothing, safety goggles and heat-protective gloves.



WARNING! System or material pressurized. Pressure must be relieved. Failure to observe can result in serious burns.

1. Relieve system hydraulic pressure. Refer to “Relieving System Pressure” on page 6-5.



WARNING! Risk of electrical shock. Failure to disconnect and lock out power may result in personal injury, death, or equipment damage.

2. Disconnect and lock out input power.
3. Remove the back and side panels with the supplied 4 mm Allen key.
4. Loosen the screw on the clamp that holds the transducer valve to the center frame and remove the valve.
5. Disconnect the transducer wires inside the electrical panel. For location, refer to the schematics shipped with the melter.
6. Unthread the transducer from the manifold.
7. Remove both ends of the transducer valve assembly from the unit.

Removing the Pressure Transducer (contd)

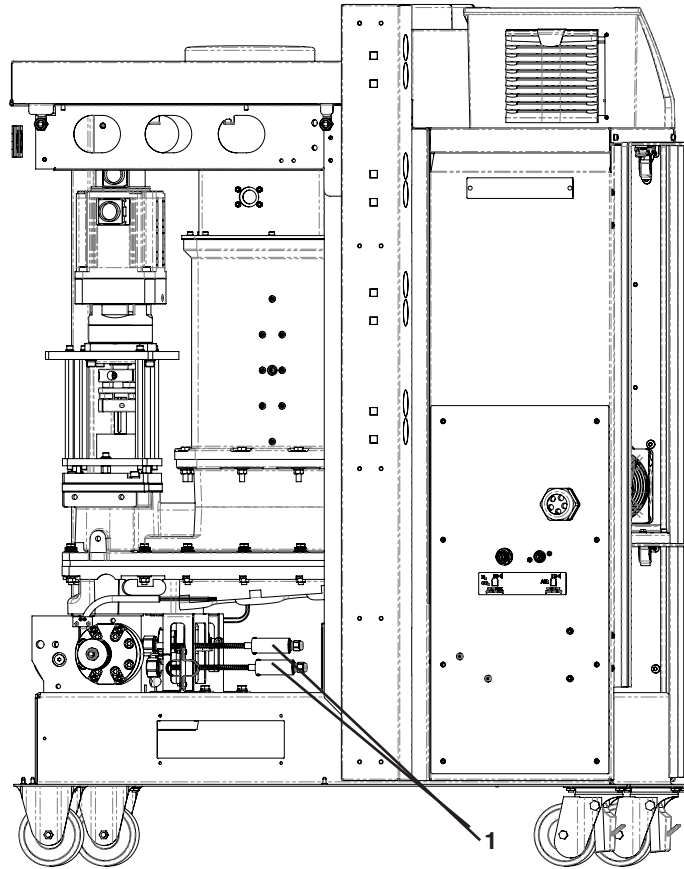


Figure 8-13: Pressure transducer locations

1. Pressure transducers

Installing the Pressure Transducer

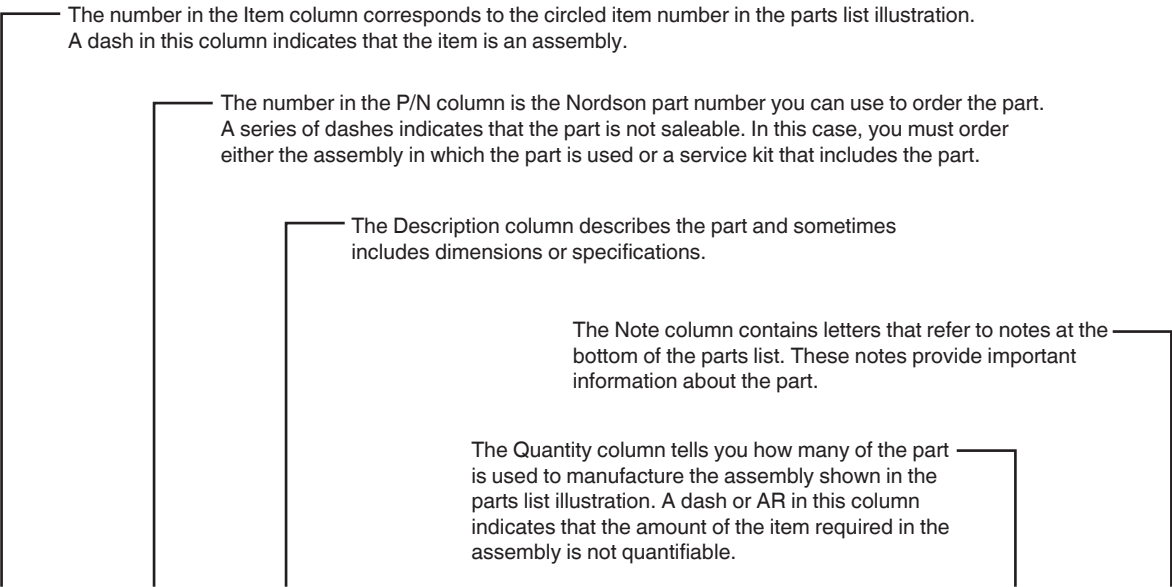
1. Lubricate the new valve's threads with Never Seez and the o-rings with o-ring lubricant.
2. Thread the new transducer assembly into the manifold.
3. Secure the transducer's electrical transmitter housing to the support block with the mounting clamp.
4. Reconnect the transducer wires inside the electrical panel. Refer to the schematics shipped with the melter.
5. Install all panels, reconnect power, and restore the unit to normal operation. Refer to the section "Operation" on page 5-1.

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	P/N	Description	Quantity	Note
—	0000000	Assembly A	—	A
1	0000000	• Part of Assembly A	2	
2	- - - - -	• • Part of item 1	1	
3	0000000	• • • Part of item 2	AR	
NS	0000000	• • • • Part of item 3	2	

NOTE A: Important information about item 1.
NS: Not Shown
AR: As Required

FM FIT25 Melters

Use the following table to determine the part number of your melter.

P/N	Description	Voltage	Pump	Density Control
1131856	MELTER, FM FIT25, STANDARD	200/240 VAC, 3-PHASE, 60 HZ	HIGH OUTPUT	Automatic
1131857	MELTER, FM FIT25, STANDARD	400/230 VAC, 3-PHASE, 50 HZ	HIGH OUTPUT	Automatic

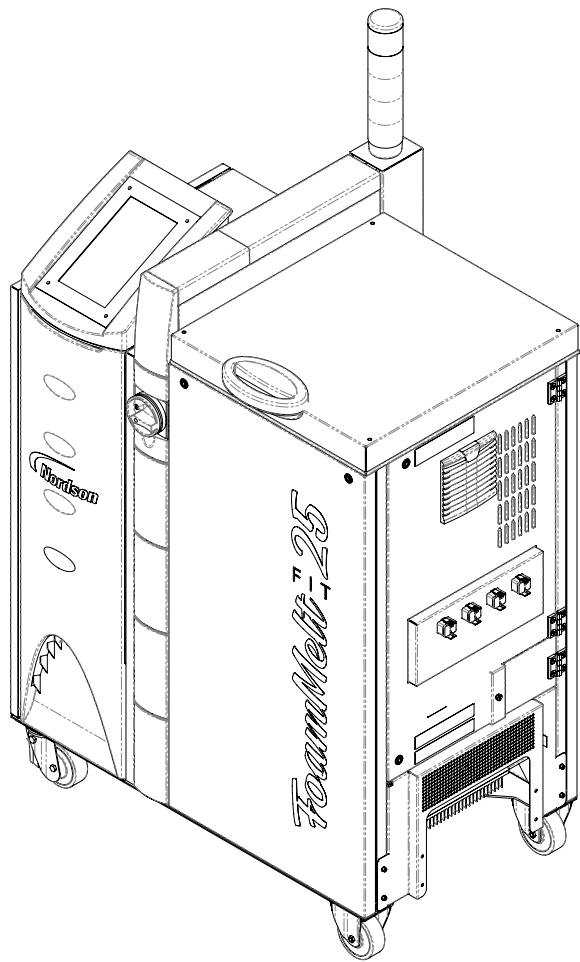


Figure 9-1: Typical FM FIT25 melter

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Density Controller/Filter Assembly Parts

See Figure 9-2 on page 9-5.

Item	P/N	Description	Quantity	Note
—	-----	VALVE, DENSITY CONTROLLER/FILTER, STANDARD	1	A
1	-----	• SCREW, FILLISTER, SLOTTED, 6-32 X 0.375 IN.	1	
2	-----	• WASHER, FLAT, E, 0.156 X 0.438 X 0.040 IN.	1	
3	-----	• KNOB, ADJUSTMENT	1	
4	-----	• SCREW, PAN-HEAD, SLOTTED, 6-32 X 0.250 IN.	2	
5	-----	• O-RING, VITON, 1.250 X 1.438 X 0.063 IN.	1	
6	-----	• CORE, DENSITY CONTROLLER/FILTER	1	
7	-----	• STOP SCREW ASSEMBLY	1	
8	-----	• SUPPORT, FILTER	1	
9	-----	• SLUG, 2-HOLE	1	
9	-----	• SLUG, 4 HOLE, HIGH VISCOSITY	1	
9	-----	• SLUG, 1 HOLE, LOW VISCOSITY	1	
10	-----	• SPRING, COMPRESSION, 2.535 X 0.488 IN.OD X 0.051 IN.	1	
11	-----	• TIP, WITH BALL ASSEMBLY	1	
12	-----	• SCREEN, REINFORCED, 0.006 IN.	1	
13	-----	• ROD, ADJUSTMENT	1	
14	-----	• BUNG WITH INDEX PLATE, CONTROLLER, DENSITY	1	
15	-----	• CLIP, WIRE RETAINING	1	
16	-----	• INSULATOR, SHAFT, WITH O-RINGS	1	
17	-----	• PLATE, INSULATOR	2	
18	-----	• TUBE, INSULATOR	4	
19	-----	• CONTACTOR, ROD	1	
20	-----	• WASHER, LOCK, E, SPLIT, #8, STEEL	4	
21	-----	• SCREW, SOCKET, 8-32 X 1.000	4	
22	-----	• WASHER, LOCK, E, SPLIT, #6, STEEL	1	
23	-----	• SCREW, SOCKET SET, 6-32 X 0.50, CUP, BLACK	2	

NOTE A: Order service kit 142522 to replace this assembly.

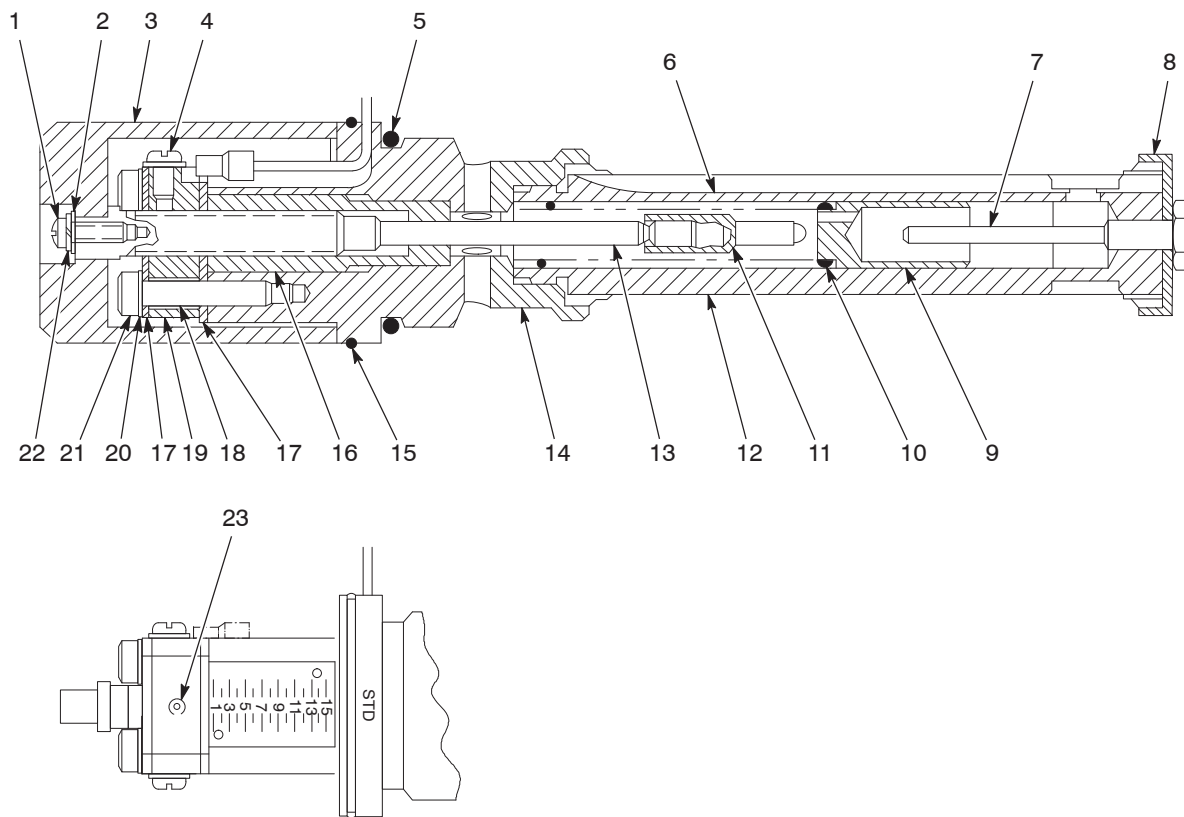


Figure 9-2: Density controller/filter assembly parts

Accessory Kits

Gas Installation Kits

P/N	Gas Installation Kits (fits only non-European size gas containers)
273170	NITROGEN GAS CYLINDER INSTALLATION KIT

Density Control Valve/Filter Assembly Kits

P/N	Density Control/Filter Assemblies
142523	DENSITY CONTROL VALVE WITH STANDARD TWO-HOLE SLUG
142522	DENSITY CONTROL VALVE WITH TWO-HOLE SLUG FOR MEDIUM VISCOSITY MATERIALS (SHIPPED WITH UNIT)
142517	DENSITY CONTROL VALVE WITH FOUR-HOLE SLUG FOR HIGH VISCOSITY MATERIALS
P/N	Hydraulic Filter Screens (optional applicator filter screens)
161104	0.004 IN. (0.10 MM) MESH
161106	0.006 IN. (0.15 MM) MESH
161109	0.009 IN. (0.23 MM) MESH
161112	0.012 IN. (0.30 MM) MESH
161115	0.015 IN. (0.38 MM) MESH
161120	0.020 IN. (0.51 MM) MESH

Melter Upgrade Kits

Use the following list to order melter upgrade kits.

P/N	Description
1131991	KIT, BULK FEED, FIT25
1131992	KIT, FULFILL, FIT25
1131996	KIT, MANIFOLD FAN, FIT25
1131995	KIT, PMI, ETHERNET IP, FIT25
1131946	KIT, PMI, MODBUS TCP, FIT25
1519043	KIT, UPG,DIGITAL I/O,FM FIT25

Melter Service Kits

Use the following list to order service kits for general melter maintenance.

P/N	Description
108907	KIT, SERVICE, RTD
120324	KIT, SERVICE, VALVE, RELIEF VLV, 1600 PSI
249800	KIT, SERVICE, THERMOSTAT
1005759	KIT, SERVICE, VALVE, PRESSURE RELIEF, 1250
1028305	KIT, SERVICE, FILTER, SATURN, MELTER, 100 MESH
1100174	KIT, SERVICE, LID SWITCH, PROXIMITY
1130890	KIT, SERVICE, MOTOR, FIT25
1130891	KIT, SERVICE, GEARBOX, FIT25
1130892	KIT, SERVICE, PUMP, H O, FIT25
1130893	KIT, SERVICE, COUPLING, FIT25
1131993	KIT, SERVICE, TRANSDUCER, 1450PSI, 0-10V
1130895	KIT, SERVICE, PRESSURE CONTROL VALVE, FIT25
1131978	KIT, SERVICE, DRIVE SHAFT ASSY, FIT25
1131979	KIT, SERVICE, SEAL, DRIVE SHAFT, FIT25
1131980	KIT, SERVICE, GAS CHECK VALVE, FIT25
1131981	KIT, SERVICE, MANIFOLD HEATER, FIT25
1131982	KIT, SERVICE, LEVEL SENSOR, FIT25
1131983	KIT, SERVICE, LIGHTTOWER, FIT25
1131985	KIT, SERVICE, HMI ASSY, FIT25
1131986	KIT, SERVICE, JACKET, TANK, FIT25
1131987	KIT, SERVICE, JACKET, DCV, FIT25
1131989	KIT, SERVICE, DRAIN CHUTE, FIT25
1131990	KIT, SERVICE, GAS CONTROL, FIT25
1131994	KIT, SERVICE, SERVO DRIVE, 240V, FIT25
1131914	KIT, SERVICE, SERVO DRIVE, 400V, FIT25
1132676	KIT, SERVICE, SEALS, FIT25
1520509	KIT, SERVICE, SERVICE, CPU, DELTA, FIT25
1520510	KIT, SERVICE, SERVICE, RTD, DELTA, FIT25
156273	KIT, SERVICE, TANK RTD
1106418	KIT, RUN UP CONTROL VALVE, 1100 PSI, PA
1132828	KIT, SERVICE, MANIFOLD, FIT25

Melter Service Parts

The following table lists service parts that can be ordered for general melter maintenance.

P/N	Description
275224	VALVE ASSY, DRAIN, TANK
341163	VALVE ASSY, DRAIN, 3.37 LG
310124	SLUG, 2 HOLE
310136	SLUG, 4 HOLE
1132328	SLUG, 6 HOLE
901131	VALVE, CHECK, 1/8, 7PSI
939561	SWITCH, PRESS., NC/NO, 30PSI

Optional Parts and Equipment

The sections that follow detail optional parts and equipment that may be required for system integration.

Applicator Installation Kit

These kits connect hoses to non-circulating applicators.

An installation kit is required for each H20 or multi-module H-200 applicator listed. Kits can be ordered using the following part numbers:

P/N	Description
310197	H20 APPLICATOR KIT
310198	H200 APPLICATOR KIT

NOTE: These kits are not designed for use with waterwash hoses.

Hose Installation Kit

These kits connect hoses to the manifold.

P/N	Standard Hose
310790	90°
310791	45°
310792	Straight

Extension Cords

For some installations, electrical extension cords will be required. The following extension cords are available for connecting jumper hoses to the unit.

P/N	Description
115577	CORD, EXTENSION, 6-FT
115578	CORD, EXTENSION, 12-FT
115579	CORD, EXTENSION, 18-FT

Motor Cables

These cables connect the servo motor to the motor drive.

P/N	Description
1519045	CABLE, ENCODER
1519044	CABLE, POWER

Hose Fittings for 5/8 in. Hoses

Special fittings are required to connect 5/8 in. automatic hoses to units and applicators.

P/N	Description	Quantity
719042	5/8 IN. AUTOMATIC HOSE INSTALLATION KIT	1
719023	5/8 IN. HOSE-TO-MANIFOLD FITTING	1
719024	5/8 IN. HOSE-TO-APPLICATOR FITTING (STRAIGHT)	1
719047	5/8 IN. HOSE-TO-APPLICATOR FITTING (45° VERSION)	1

Section 10

Specifications



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

Introduction

The tables and charts in the sections that follow contain technical data for the FM FIT25 melter.

System Specifications

Refer to the following table for system specifications.

Item	Specification
Type of system	Circulating gear pump
Heating elements	Hopper: Warm, no heater Grid: One cast-in Reservoir: One cast-in Manifold: Heater element
Holding capacity	31 kg (71 lb)/25L
Temperature range	Operating: 38–204 °C (100–400 °F) Ambient: 0–40 °C (32–104 °F)
Temperature stability	±0.5 °C (±1 °F)
Temperature band warning	±3–28 °C (±5–50 °F)
Maximum continuous delivery rate at 50% density reduction	High-output pump: 34 kg/hr (75 lb/hr)
Melt rate	Material dependent
Viscosity range	1,000–40,000 cps

Item	Specification
Hose capacity	4 hydraulic ports (2 input, 2 output)
Temperature control method	PID
Exterior dimensions	Height: 138 cm (54 in.) Depth: 78 cm (31 in.) Width: 102 cm (40 in.)
Weight	270 kg (595 lb) when empty
Electrical requirements	220/240 VAC (+5%, -10%): 3-phase without neutral, 50/60 Hz, 70 A, 17,787 W 400/230 VAC ($\pm 10\%$): 3-phase with neutral, 50 Hz, 78 A, 16,923 W
Gas supply requirements	Pressure: 2.1–3.5 bar (30–50 psi) Type: Industrial-grade carbon dioxide or nitrogen Filter: 100 mesh; optional sizes available
Air supply requirements	Pressure: 80 psi - 110 psi Type: Filtered dry compressed air Filter: 40 microns (suggested)
Controller	Type: Integrated PLC Temperature control algorithm: PID Temperature sensor: Nickel RTD (120 ohm) Temperature control channels: 6
Enclosures	IP32
Display	Digital temperature, pressure, and pump speed readout Keyed lockout of temperature setpoints
Operator interface	10" touch panel

Dimensions

Please see Figure 10-1 for dimensions of the FM FIT25 melter.

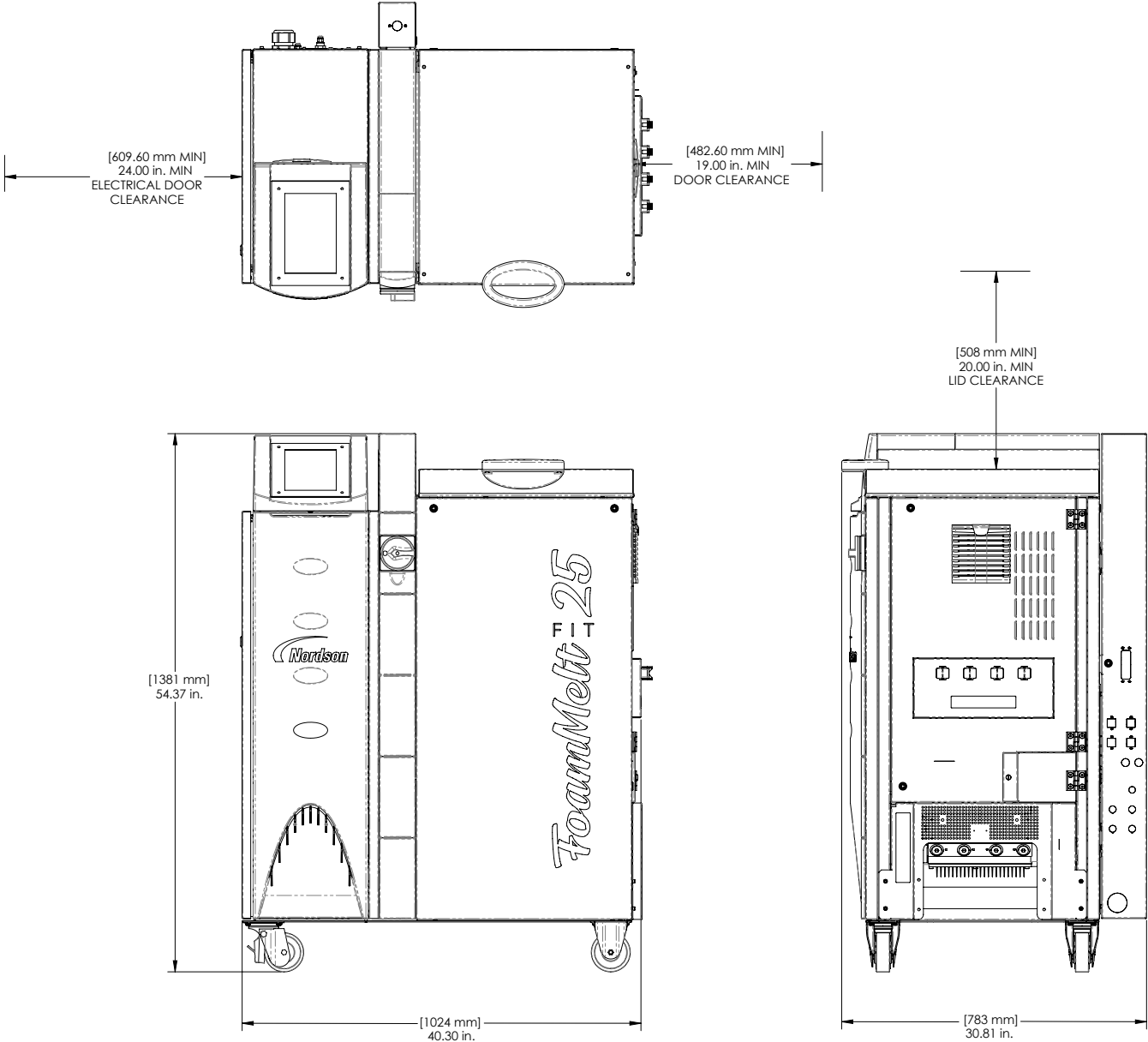


Figure 10-1: FM FIT25 dimensions

Pump Charts

The figure below shows the maximum system output at various pump speeds and density reduction ratios. System output is determined by pump speed, viscosity, and density reduction. Each of these factors, as they relate to the charts, are described in the sections that follow.

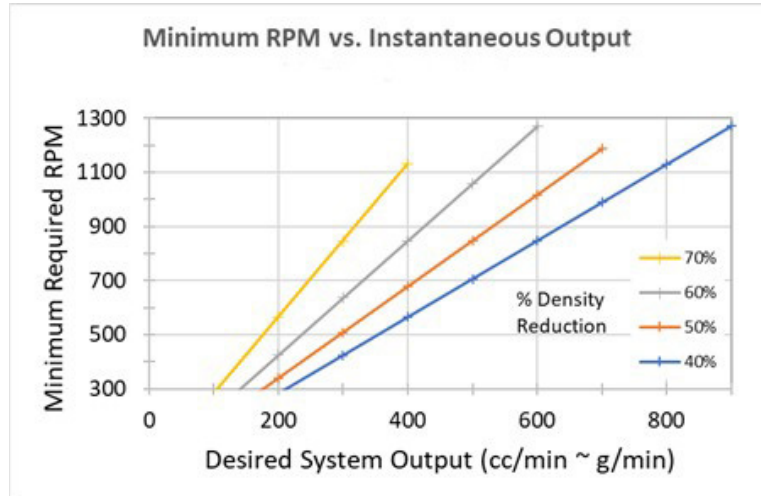


Figure 10-2: Automatic controller

Pump Speed

The motor controller is programmed for a maximum pump speed of 1300 RPM. The minimum recommended pump speed is 300 RPM.

Viscosity

The amount of material flowing into the pump inlet and the amount of output generated by the pump is restricted by high viscosity. Additional data, not shown in the charts, indicates that material with a high viscosity has a fixed maximum system output regardless of pump speed. Examples of this data are given in the following table.

Material with a viscosity of . . .	Allows a maximum system output of . . .
55,000 cps	35 lb/hr
40,000 cps	50 lb/hr

Density Reduction

Reduced density (increased gas content) reduces the total system circulation, thereby reducing the amount of material that is available for system output.

Circulation to Output Ratio

The circulation to output ratio indicates the amount of material circulating through the system in relation to the amount of material being dispensed.

Example: At a 3:1 circulation to output ratio, the amount of material flowing through the system with the applicators closed is three times the amount being dispensed.

Nordson Corporation recommends a ratio of 3:1 to maintain optimum pressure and density control. Reduction of the ratio to below 2:1 will result in erratic pressure and density control.

Appendix A

Password

Introduction

NOTE: The customer's password is valid for Level 1 engineering settings.

Level	Functions Enabled
No password protection Operation Normal operation for all operations Parameters Settings for trained personnel	Switch on/off heaters
	Switch on/off collective motor enable
	Switch on/off seven-day clock
	Enter/exit standby
	Change language
	Brightness/contrast
	Change date/time
	Temperature setpoints
	Switch application groups on/off
	Individual motor enable
	Pressure setpoint
	Speed setpoint
	Maximum pump speed/pressure (in key-to-line mode)
	Undertemperature/overtemperature warning and undertemperature/overtemperature fault
	Standby value
	Automatic enter standby
	Manual standby duration
	Temperature channel activated/deactivated
	Switch between manual mode/key-to-line
Continued...	

Level 1 Engineering settings	Application names (temperature channels)
	Controlled system heating rate temperature
	Switch between °C/°F
	Temperature channel: Display mode, control mode
	Maximum temperature setpoint
	Assign standard I/O inputs for application groups
	Switch between bar, psi, kPa
	Pressure alarm monitoring on/off
	Overpressure and underpressure alarms
	Pressure PID parameters
	Motor enables from control panel/control panel AND standard I/O
	Motor speed control/pressure control
	Line speed for minimum/maximum pump speed and system pressure
	Restore default settings
	Control modes (standard, Fieldbus/Fieldbus (extended), dual, dual (extended))
	Setup System ready
	Password setup
	Pressure sensor setup
	Profibus setup
	EtherNet/IP setup
	ProfiNet I/O setup
	Automatic heatup upon melter start/automatic heatup upon melter start blocked
Level Admin Only for Nordson personnel	NORDSON setup

If appropriate, remove this page and store in a safe location.

Customer Password

For Nordson FoamMelt FIT25 Adhesive Melters

1234

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Appendix B

Electrical Components

FoamMelt FIT25 Electrical Components

This appendix describes all of the electrical components on the FM FIT25 melter, as follows:

- Front panel
- Back panel
- Right panel

Please refer to the sections that follow for detailed information.

Electrical Components – Door Panel

See Figure B-1 and refer to Table B-1 on page B-3 for information regarding all of the electrical components on the door panel of the melter.

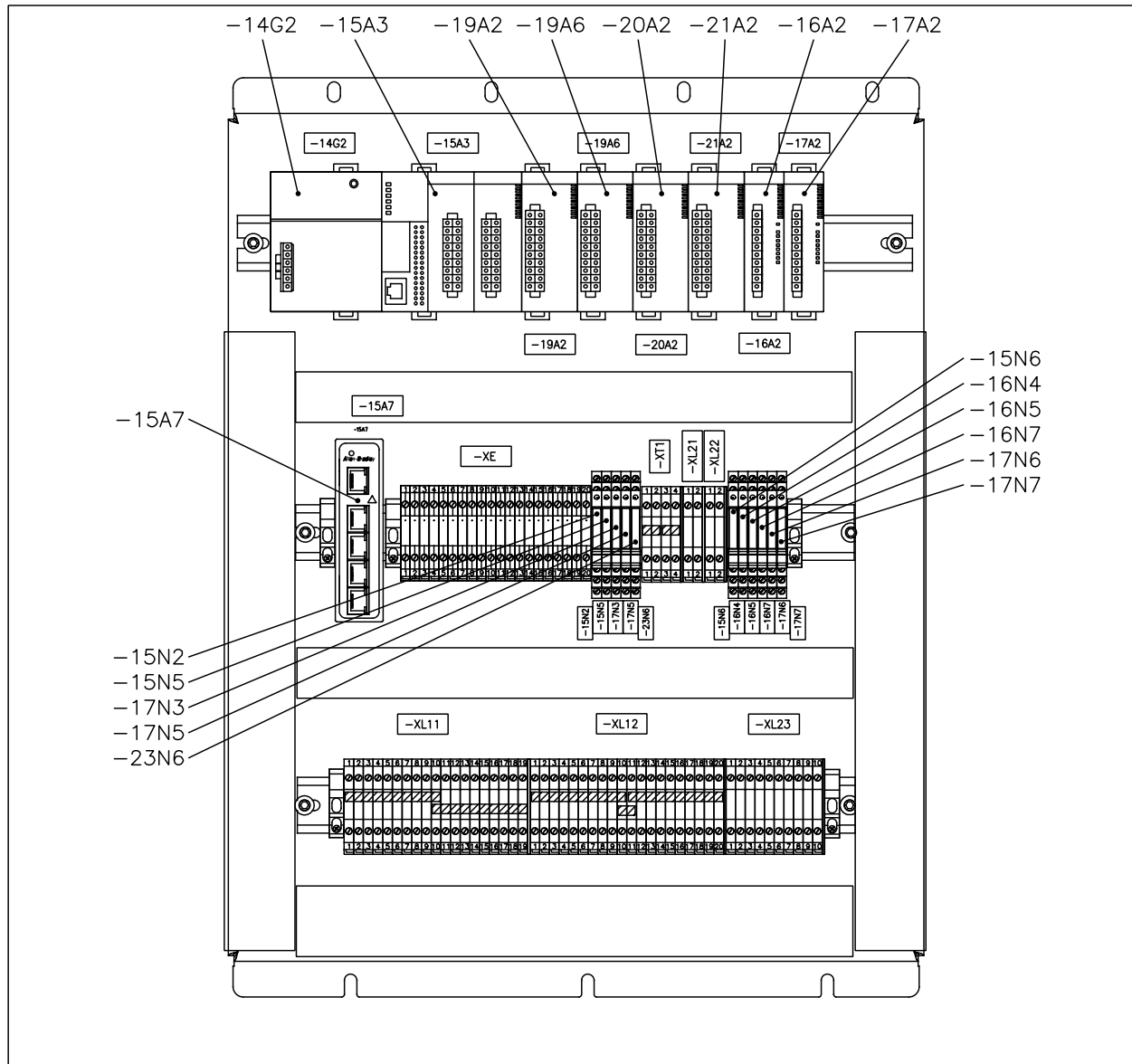


Figure B-1: Electrical components – Door panel

Table B-1: Door Panel Electrical Components

Item	Component Description	Quantity	Manufacturer	Model Number
-15A3	MODULE,CPU,AS SERIES,I/O,DELTA PLC	1	Delta Electronics	AS218PX-A
-16A2	MODULE,DIGITAL OUTPUT,8DO,DELTA PLC	2	Delta Electronics	AS08AN01P-A
-17A2				
14G2	POWER SUPPLY,100-240VAC,24VDC,DELTA PLC	1	Delta Electronics	AS-PS02A
-19A2	MODULE,PROG,RTD INPUT,4CH,PT/NI,DELTA	3	Delta Electronics	
-19A6				
-20A2				
-21A2	MODULE,ANALOG INPUT,4AI,DELTA PLC	1	Delta Electronics	AS04AD-A
-15A7	SWITCH,ENET5-PORT,UNMANAGED	1	Phoenix Contact	1085039
-15N2	RELAY,SOLID STATE,3A,3-33VDC OUT,24VIN	11	Phoenix Contact	2966676
-15N5				
-15N6				
-16N4				
-16N5				
-16N7				
-17N3				
-17N5				
-17N6				
-17N7				
-23N6				

Electrical Components – Back Panel

See Figure B-2 and refer to Table B-2 on page B-5 for information regarding all of the electrical components on the back panel of the melter.

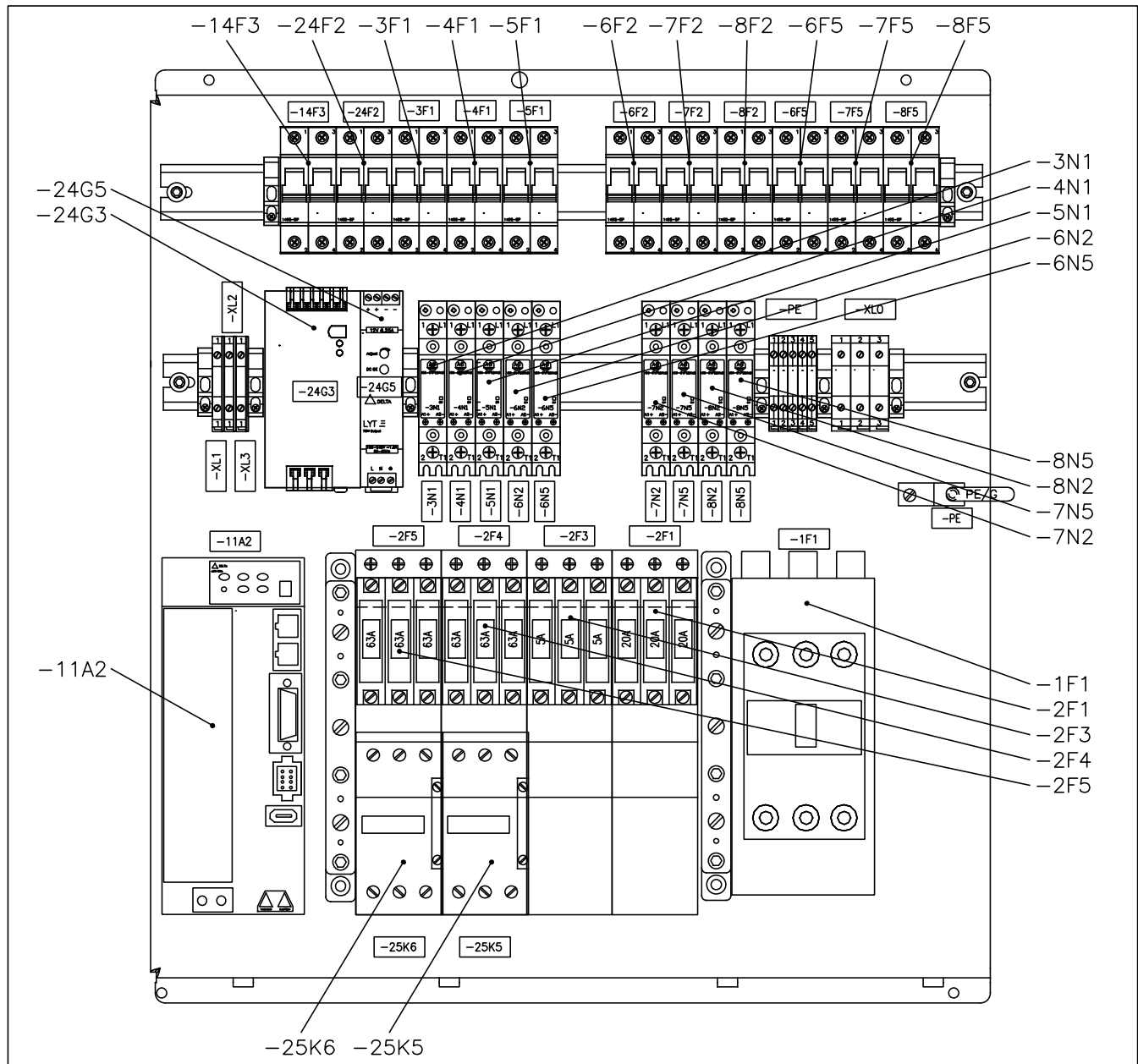


Figure B-2: Electrical components – Back panel

Table B-2: Back Panel Electrical Components

Item	Component Description	Quantity	Manufacturer	Model Number
-11A2	DRIVE,SERVO,2kW,3PH,240VAC,E-CAT,DELTA	1	Delta Electronics	ASD-B3A-2023-E
-2F3	CIRCUIT BREAKER,3P,480V,5A	1	Phoenix Contact	1020086
-5F1 -6F2 -6F5 -7F2 -7F5 -8F2 -8F5	CIRCUIT BREAKER,2P,480V,10A	7	Phoenix Contact	1019938
-2F1	CIRCUIT BREAKER,3P,480V,20A	1	Phoenix Contact	1019964
-1F1	CIRCUIT BREAKER,3P,600V,70A	1	Schneider Electric	HJL36070
-2F4 -2F5	CIRCUIT BREAKER,3P,480V,63A	2	Phoenix Contact	1019971
-3F1	CIRCUIT BREAKER,2P,480V,32A	1	Phoenix Contact	1019946
-4F1	CIRCUIT BREAKER,2P,480V,16A	1	Phoenix Contact	1019942
-14F3 -24F2	CIRCUIT BREAKER,2P,480V,3A,D CURVE	2	Phoenix Contact	1020062
-5N1 -6N2 -6N5 -7N2 -7N5 -8N2 -8N5	RELAY,SOLID STATE,20A,240VAC,1-PH,0CROSS	7	Phoenix Contact	1032919
-25K5 -25K6	CONTACTOR,3P,24VDC,65A,AC-1	2	Schneider Electric	LC1D38BL
-3N1 -4N1	RELAY,SOLID STATE,30A,240VAC,1-PH,0CROSS	2	Phoenix Contact	1032921
-24G3	POWER SUPPLY,240VACIN,24VDCOUT,240W	1	Delta Electronics	DRL-24V240W1ENA
-24G5	POWER SUPPLY,100-240VAC,12VDC,6.25A,DIN	1	Delta Electronics	DRL-12V75W1AZ

Electrical Components – Right Panel

See Figure B-3 and refer to Table B-3 for information regarding all of the electrical components on the right panel of the melter.

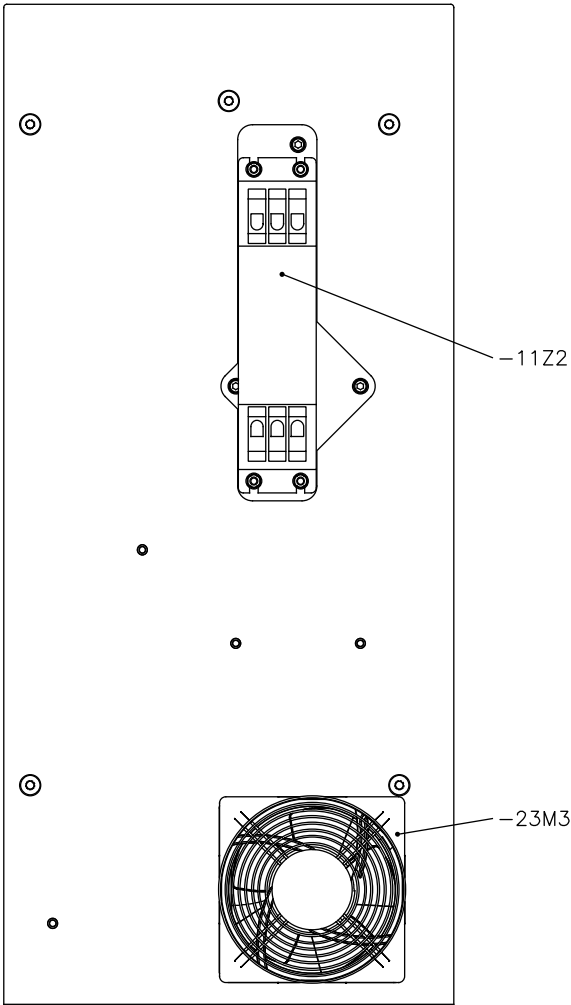


Figure B-3: Electrical components – Right Panel

Table B-3: Right Panel Electrical Components

Item	Component Description	Quantity	Manufacturer	Model Number
-23M3	FAN TYPE:4414M U=18-28V 4,1W UL CABLE	1	ebm-papst	4414M
-11Z2	FILTER,EMI,MOTOR DRIVE,40A,3PH	1	Schaffner EMC	FN3287-40-33-C26-R65