VersaBlue® II Adhesive Melter

Customer Product Manual
P/N 6091912_03
- English -

Issued 05/2025

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

NORDSON ENGINEERING GMBH • LÜNEBURG • GERMANY
www.nordson.com

Note
This document applies to the series.

Order number

P/N = Order number for Nordson articles

Notice

- Translation of original document -

Trademarks

http://www.nordson.com/contact-us

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Section 1
Safety Instructions

Read this section before using the equipment. This section contains recommendations and notes on safe installation, operation and maintenance (hereafter referred to as "use") of the product described in this document (hereafter referred to as" melter"). Additional safety information is indicated in the appropriate places in this document as warnings regarding specific application steps.

WARNING! Failure to observe the safety instructions, recommendations and accident prevention measures stated in this customer product manual can cause injury, death or equipment damage.

Safety Symbols

The following safety alert symbols and signal words are used in this document to make the reader aware of personal safety hazards and to point out conditions that can lead to equipment damage or other property damage. 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.

Equipment Operator's Responsibility

Equipment owners are responsible for managing safety information. This includes ensuring that all instructions and regulatory requirements for use of the equipment are met. The equipment owner is also responsible for training all potential users.

Safety Information

- Research and assess safety information from all relevant 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 required, obtain the respective approvals from the engineering department, the safety department or another comparable department before installing the melters or starting them up 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
- Are properly trained in the operation of the specific device and tasks

  NOTE: Nordson can provide equipment-specific installation, operation, and maintenance training. Please contact your Nordson representative for information.
- Possess the skills necessary for the industry and branch as well as the experience needed for their tasks.
- Are physically capable of performing their job function and are not under the influence of any substance that impairs their mental capacity or physical capabilities.

Safety Regulations Applicable to the Industry

The following safety regulations apply to the intended use of the melter 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 Melter

- 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 the proper Nordson representative if there are any questions about material compatibility or the use of non-standard additional equipment.

Instructional and Safety Messages

- Read and follow the instructions provided in this document and other referenced documents.
- Be familiar with the position and meaning of the safety labels and warning tags affixed to the melter. Refer to *Safety - Labels and Tags* at the end of this section.
- Consult the proper Nordson representative if you are unsure of how the equipment should be used.

Installation Practices

- Install the melter by following the instructions in this document and in the documentation supplied with the auxiliary equipment.
- Ensure that the equipment is rated for the environment in which it will be used. This melter is not certified pursuant to the ATEX explosion protection directive or as non-sparking, so it should not be installed in a potentially explosive environment.
- Ensure that the processing characteristics of the material will not create a hazardous environment. Refer to the Safety Data Sheet (SDS) for the material.
- Contact your Nordson representative if the required installation configuration contradicts the installation instructions.
- 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.
- Install circuit breakers of the right type and rated current in fuse-protected 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 the respective task. Information on PPE requirements can be found in the *Equipment Safety Information* or in the manufacturer's instructions as well as in the safety data sheet.
- 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.
- Before beginning any maintenance work, disconnect the melter and all auxiliary equipment from the voltage supply.
- 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: Safety data sheets for cleaning agents sold by Nordson can be found at www.nordson.com or can be obtained from the respective 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 way in which the equipment is shut down depends on the type of equipment used and on the work to be performed. If required, shut down instructions are specified at the start of the procedure. The steps required to shut down the equipment are:

Relieving Hydraulic System Pressure

Completely relieve system hydraulic pressure before detaching any hydraulic connection or seal. Refer to the customer product manual for the respective melter for instructions on how to relieve the hydraulic system pressure.

Disconnecting System from Voltage Supply

Disconnect the system from all voltage sources before accessing unprotected high voltage conductors or supply terminals (melter, hoses, applicators and optional equipment).

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the melter from being switched on unintentionally, turn off, lock and label the disconnect switches or circuit breakers for the voltage supply to the melter and to the optional auxiliary 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 Applicators

NOTE: Adhesive dispensing applicators are referred to as "application heads" or "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. Switch off or disconnect the trigger device for the applicators (pattern controller, time controller, PLC, etc.)
2. Disconnect the input signal cable to the applicator solenoid valves.
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 warning indications for Nordson hot melt and cold glue applicators. Review the table and carefully read all of the warnings or cautions that apply to the type of equipment described in this customer product manual.

The melter types are designated as follows:

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

PC = Process control

CA = Cold adhesive (feed pumps, pressure containers and applicators)

Table 1-1: General safety instructions

Equipment type	Warning
HM	**WARNING!** Hazardous vapors! Before processing reactive polyurethane hot melt adhesive (PUR) or material containing solvent in a suitable Nordson melter, carefully read the SDS for the material and comply with it during processing. Ensure that the material processing temperature and flashpoint will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with the requirements stated in the SDS can cause injury or death.
HM	**WARNING!** Reactive material! Never clean any aluminum component or purge 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. If the hydraulic system is not depressurized, uncontrolled hot melt or cold adhesive discharge can occur, potentially causing injury.

Continued…

Equipment type	Warning
HM	**WARNING!** Melted material! When performing maintenance on melters that process melted adhesive, wear goggles or face protection, clothing that protects bare skin as well as heat-protective gloves. Hot melt adhesive can cause burns even when it is still solid. There is a significant risk of injury when proper protective equipment is not used.
HM, PC	**WARNING!** The melters start up automatically! Remote triggering devices are used to control automatic hot melt applicators. Before working on or near an applicator, deactivate the applicator trigger device and stop the compressed air supply to the solenoid valve(s). Failure to deactivate the applicator trigger device or to stop the air supply to the solenoid valves(s) can cause injury.
HM, CA, PC	**WARNING!** Risk of lethal electrical shock! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. Before performing any maintenance, switch off all auxiliary equipment and disconnect it from the voltage supply. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.
HM, CA, PC	**WARNING! Risk** of fire or explosion! Nordson adhesive processing equipment is not certified for use in potentially explosive atmospheres, and it is not certified according to the explosion protection directive or considered to be non-sparking. This melter should also not be used with solvent-based adhesives that could lead to a potentially explosive atmosphere when they are processed. Refer to the adhesive SDS for information on processing properties and restrictions. 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!** Only trained, experienced personnel should operate the equipment and perform maintenance. Allowing 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.

Continued…

Equipment type	Warning
HM	**CAUTION!** Hot surfaces! Avoid contact with the hot metal surfaces of applicators, hoses, and certain components of the melter. If touching cannot be avoided, wear heat-protective gloves and clothing when working near heated equipment. Touching hot metal surfaces can pose a risk of injury.
HM	**CAUTION!** Some Nordson melters are designed especially for processing reactive polyurethane hot melt adhesive (PUR). When an attempt is made to process PUR in equipment not designed especially for this purpose, the equipment can sustain damage and the adhesive can react prematurely. If you are not sure whether your equipment is suitable for processing PUR, please consult your Nordson representative.
HM, CA	**CAUTION!** Before using cleaning or purging fluids in or near the equipment, read the manufacturer's instructions and the SDS supplied with the fluid. Follow the instructions when operating the equipment. 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. This fluid 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 Measures

- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear, damage or leakage.
- Do not direct an assembly handgun towards yourself or other persons.
- Suspend the assembly handguns from the mounting points intended for this purpose.

First Aid

If molten hot melt comes in contact with your skin:

1. Do NOT attempt to remove the solidified adhesive from the 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 the skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Show the SDS for the hot met adhesive to medical personnel treating the patient.

Safety Instructions for this Specific Melter

EMERGENCY STOP

Nordson VersaBlue® II melters are equipped with a lockable main switch (disconnecting device). By switching off and locking the main switch, the energy supply is disrupted and unexpected startup prevented.

Stop category 0 in accordance with DIN EN 60204-1:2019-06

All drives are immediately shut down when the main switch is switched off.

Safety Feature STO

The optional safety feature STO (Safe Torque Off) has to be checked regularly. The interval is a factor of the hazard and risk analysis of the complete system. Minimum interval in accordance with IEC 61508: every year.

A yellow indicator on the motor controller means that it is capable of STO.

Electrostatic Discharge ESD

Indicates a potential hazard for components are ESD components susceptible to ESD.

Figure 1-1

Damage to Electronic Components

Electrostatic discharge (ESD) is a spark that is created by great differences in potential in an electrically insulating material. The spark causes a very short, high pulse of electrical current. Plastic tool grips can cause electrostatic potential differences, which can damage sensitive components.

A charge from frictional electricity is usually the source of the difference in potential. Frictional electricity is generated e.g. when walking on carpet, in which case a person can receive a charge of approx. 30,000 V.

Risk of Fire or Explosion

While electrostatic discharges in parts of the body pose a risk only in that they frighten a person, they can cause fires in high risk areas.

This applies to handling flammable liquids and gases as well. Dust can also ignite (e.g. mill dust explosion).

NOTE: VersaBlue II melters do not have ATEX certification.

Preventing ESD

- Do not touch plug connector contacts of connected cables
- Do not touch the contact blades on PCBs
- Anyone handling electrical assemblies and parts or devices installed in electrical assemblies has to be grounded
- Touch only the narrow sides or the front of assemblies
- Always place assemblies on suitable surfaces (ESD packaging, conductive foam, etc.) Metal is not a suitable surface!
- Avoid electrostatic discharge to the assemblies (e.g. from charged plastic).
- Maintain a distance of at least 10 cm from computer monitors or televisions.
- Measuring devices and equipment have to be grounded
- Measuring tips on potential-free measuring devices should be discharged to suitable grounded surfaces immediately before use.

Wire Colors

Green-yellow	Ground conductor
White	Neutral conductor
Black	All others

Safety Labels and Tags

The following illustration shows the location of the safety labels and tags that are affixed to the melter. The table *Safety labels and tags* provides the text of any safety instructions that appear on the labels as well as the meaning of the symbols that appear without text.

The installation kit supplied with the melter contains printed labels in many different languages. If local safety regulations require it, place a corresponding tag over the text on the labels indicated in the next illustration.

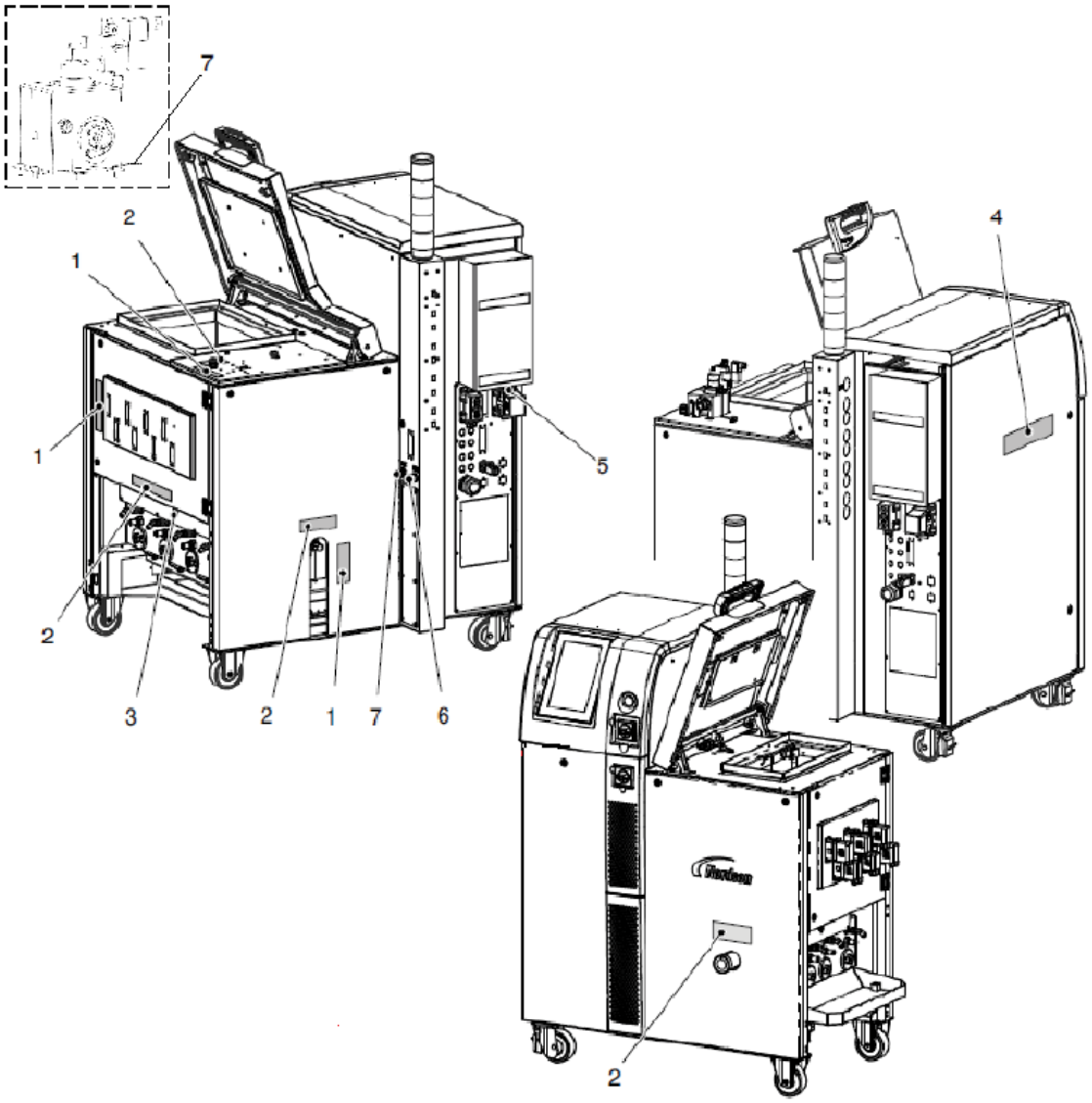
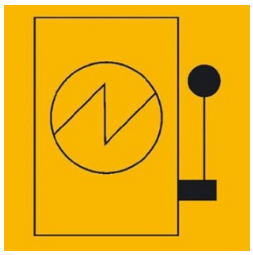
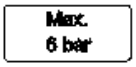


Figure 1-2 Location of safety labels and tags

Table 1-2: Safety labels and tags

Position	P/N	Description	
1.	1024720		WARNING: Risk of burns. Hot adhesive. Relieve pressure before performing any maintenance. Label in multiple languages: English, German, French, Spanish, Italian, Japanese, Simplified Chinese, Korean
2.	1025326		CAUTION: Risk of burns. Hot surface. Label in multiple languages: English, German, French, Spanish, Italian, Japanese, Simplified Chinese, Korean
3.	290083		WARNING: Risk of electrical shock. Failure to observe may result in personal injury, death, or damage to the melter and accessories.
4.	1025795		WARNING: Hazardous voltage. Completely disconnect from the voltage supply before performing any maintenance. Label in multiple languages: English, German, French, Spanish, Italian, Japanese, Simplified Chinese, Korean
5.	7104911		WARNING - Only class II circuit. Class II circuit pursuant to NEC (National Electrical Code) - North American standard
6.	7085885		Main switch
7.	729077		Maximum inlet pressure (in this case: compressed air), pressure-sensitive
8. (1.+2.+4.)	1059866		1 set of labels, multi-lingual English, Danish, Dutch, Finnish, Greek, Norwegian, Portuguese, Swedish, Traditional Chinese, Czech, Estonian, Hungarian, Slovenian, Latvian, Lithuanian, Polish, Slovak

Mandatory and Prohibition Signs in Accordance with ISO 7010:2019

Table 1-3: Mandatory and probition signs

	Wear a mask
 	Wear a face shield and wear eye protection
	Wear protective gloves
	Wear ear protection
	Wear foot protection
	Disconnect before carrying out maintenance or repair
	Disconnect mains plug from electrical outlet
	Do not expose to direct sunlight or hot surface (new)
	Not to be serviced by users (new)

Section 2
Description

Intended Use

Read the safety instructions before operating the melter VersaBlue® II and follow them when using the melter. Nordson recommends obtaining detailed information on the materials to be used (adhesives, lotions etc.). Nordson will not be liable for personal injury or property damage resulting from unintended use.

The melter is designed only:

- To melt and convey suitable materials, e.g. thermoplastic hot melt adhesives
- With compatible equipment manufactured by Nordson Corporation
- In non-explosive environments.

Foreseeable Misuse

The melter may not be used under the following conditions:

- In defective condition
- Without insulation blanket and protective panels
- With electrical cabinet door open
- With tank lid open
- In a potentially explosive atmosphere
- If the melter does not comply with the applicable specifications
- When the values stated under *Technical Data* are not complied with.

Prohibited Materials

The melter may not be used to process the following materials:

- Polyurethane hot melt adhesive (PUR)
- Explosive and flammable materials
- Erosive and corrosive materials
- Food products.

Additional Restrictions

Please also be aware of the restrictions stated in the customer product manuals for the applicator, pumps and other system components.

Electromagnetic Compatibility (EMC)

In regard to electromagnetic compatibility (EMC), the melter is intended for use in industrial applications.

When operated in residential or commercial areas, the melter may cause interference in other electrical equipment, e.g. radios.

Residual Risks

In the design of the melter, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided:

- Risk of burns from hot material.
- Risk of burns when filling the tank, from the tank lid, and from the tank lid fasteners.
- Risk of burns when conducting maintenance and repair work for which the melter must be heated up.
- Risk of burns when attaching and removing hoses.
- Risk of burns. The melter and heated components remain hot for a while after the system is switched off: coupling, pump, tank and bypass plate
- Risk of burns. Hot adhesive can escape from the tank lid if a melter that has not cooled off sufficiently and has a full tank is moved along an incline.
- Material fumes can be hazardous. Avoid inhalation.
- Risk of damage to cables/lines belonging to the customer, if they were installed such that they come into contact with hot or rotating parts, e.g. the pump powertrain.

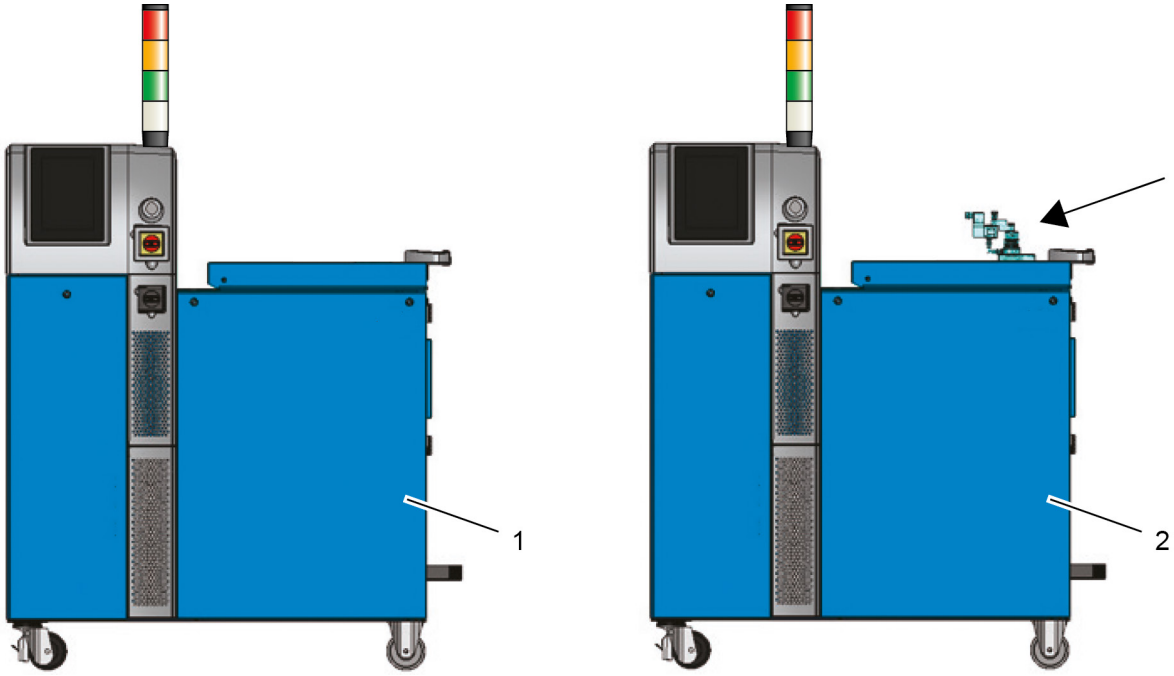
Introduction

This customer product manual describes VersaBlue® II melters.

These melters can be configured as needed, meaning that each system is assembled to include the options selected by the customer when the system is purchased. If optional hardware is not installed, then the unique functionality of the optional hardware is not available for use.

Options may be added to the melter only by Nordson, at its plant in Lüneburg.

Information on configuration of the melter using the configuration code can be found later in this section.



Examples of melter models

1 Melter

2 Melter with heated filling vale (arrow)

Definition of Terms

Hot Melt Adhesive

Or: adhesive. Also stands for e.g. wetness indicator or lotion. Included under the term *Material*.

Temperature Channel

Temperature channel (or heating zone) means either heated components or connections for the heater. These include e.g. heater cartridges, heating cuffs in segments of the tank or applicators.

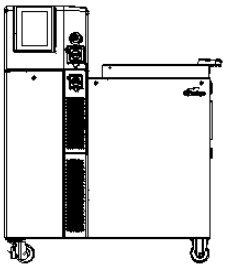


Figure 2-1 Front

Add-on

The amount of adhesive applied to the finished product.

Front

The front is the side from which the melter is operated. This term is used as a reference for indications such as left/right and behind or back (side).

HMI (Human Machine Interface)

Webserver interface between the melter and the operator.

Example: The control panel on the melter or control devices such as a tablet, notebook, laptop or desktop PC.

Master Control

The master control is the central melter interface. It brings together all of the subordinate systems, such as drives, temperature controllers, pressure sensors, etc.

System

A single melter including hardware such as hose/applicator and possibly a pump station, or in combination with one or two additional electrical cabinets VersaACM as a hardware expansion. The master control controls the hardware interaction in the system.

Even if more than one additional electrical cabinet is connected to a melter, the controller still considers this a single system.

Subsystem

Subsystems include e.g. temperature channels or the filling system. They can be switched on and off via the software configuration code.

VersaACM II

A *VersaACM II* or ACM (**A**uxiliary **C**ontrol **M**odule) is an additional electrical cabinet with its own customer product manual. Up to four ACMs can be connected to a melter.

The ACM is controlled by the master control of the melter.

It is available in two sizes: expanded and advanced. The size is a factor of the number of additional temperature channels and drives.

An ACM in the VersaBlue® II system environment is called VAC in the software configuration code.

Structure of Melter

The following illustrations show the names and locations of the most important components of the melter.

The configuration code indicates which of the components shown below are installed in the respective system; refer to *Melter Configuration Code*.

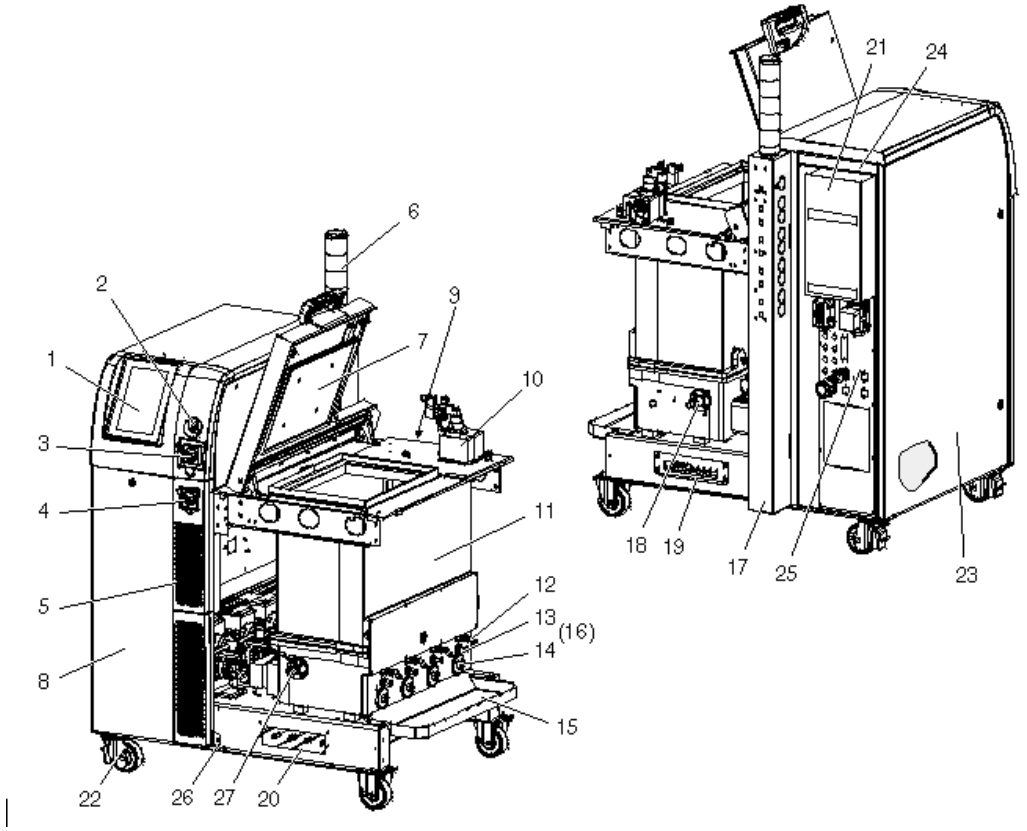


Figure 2-2 Example of melter components

1 Control panel
2 LAN interface
3 Main switch
4 Motor switch
5 Tower panel (air intake)
6 Light tower with 5 colors
7 Tank lid
8 Protective panel
9 Hose receptacles (electrical) (not visible here)
10 Filling valve
11 Tank (insulation blanket not shown)
12 Hose connection
13 Air relief valve
14 Filter cartridge
15 Drip tray
16 Pressure control valve - depending on configuration
17 Melter tower
18 Recirculation hose connection
19 1st drawer for max. 4 pressure sensors
20 2nd drawer for max. 4 pressure sensors
21 Heat exchanger
22 Casters
23 Electrical cabinet
24 ID plate
25 El. power connection / interfaces
26 Tower panel fastener
27 Tank drain valve

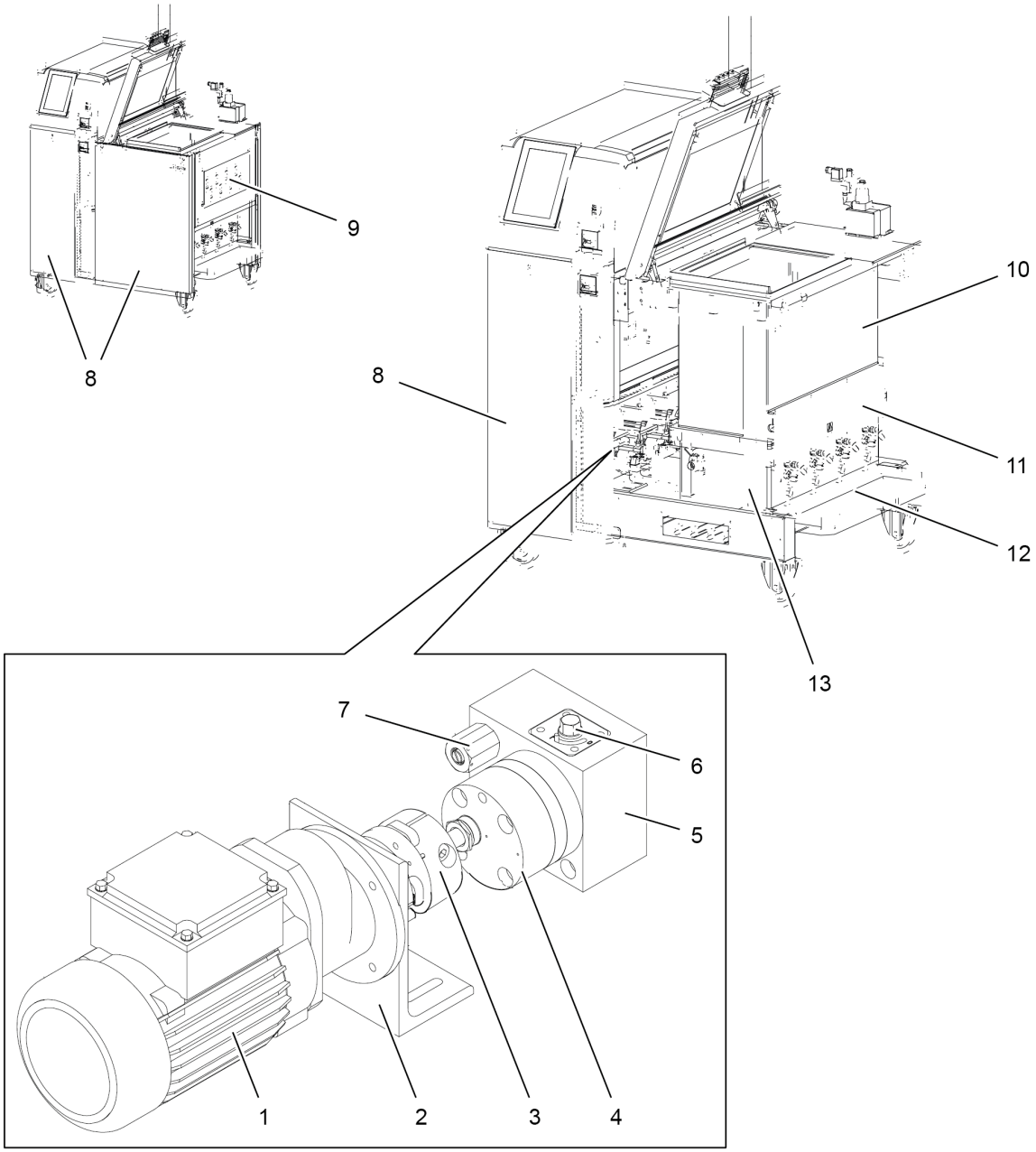


Figure 2-3 Example of melter components

1 Motor
2 Motor bracket
3 Coupling
4 Gear pump (insulation blanket not shown)
5 Bypass plate
6 Tank isolation valve
7 Bypass valve connection
8 Protective panel
9 Hose receptacles (electrical)
10 Low melt (grid)
11 Electrical equipment cover
12 Adhesive drip tray
13 High melt (reservoir)

Bypass Valve Plate

The bypass valve plate is located between the pump and the reservoir. The bypass valve plate contains the bypass valve and the tank isolation valve.

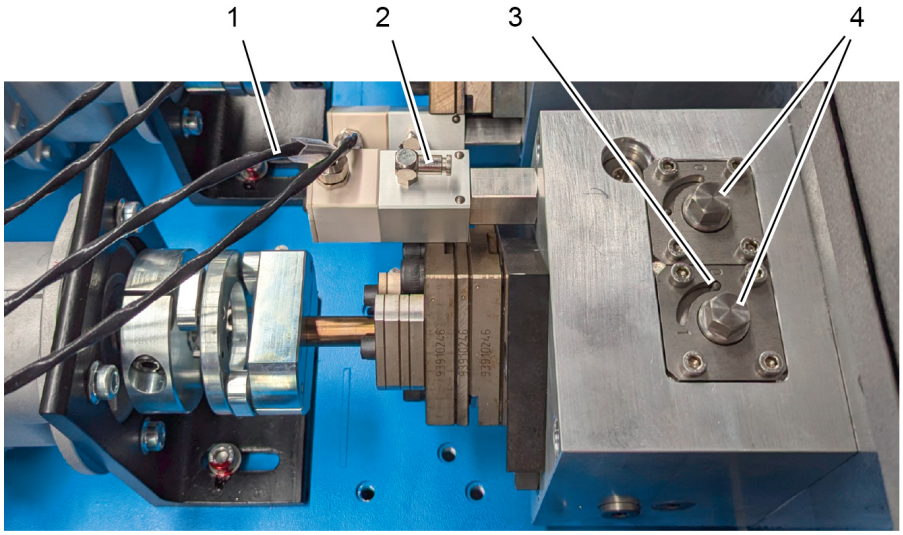


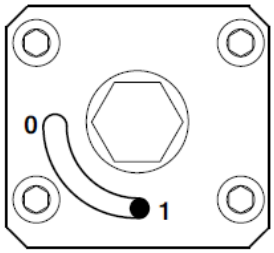
Figure 2-4 Components of bypass valve plate, example

1	Bypass valve: electronic monitoring	3	Indication of tank isolation valve setting
2	Bypass valve: Pneumatic control connection	4	Screw head to open/close the tank isolation valve

The illustration shows the powertrain of the double-stream pump on the right and the bypass valve plate on the right.

Because it is a double-stream pump, the bypass valve plate is equipped with two tank isolation valves.

Tank Isolation Valve



The tank isolation valve closes the line between the tank and the pump. When the tank isolation valve is closed, the pump can be replaced without having to empty the tank.

Indication of valve settings:

- 0 = closed
- 1 = open

To close the tank, turn the combination clockwise all the way to *0* (quarter revolution).

Bypass Valve

The bypass valve is available in three different configurations:

- Bypass valve
- Bypass valve with electronic monitoring
- Combi bypass valve.

The bypass valve / combi bypass valve is fixed at:

85 bar	8500 kPa	1235 psi

NOTE: All three configurations work as a pressure relief valve. When the pressure is exceeded, the bypass valve opens, allowing the adhesive to circulate in the bypass valve plate.

Figure 2-4 shows the configuration with combi bypass valve. The combi bypass valve is connected to a pneumatic controller.

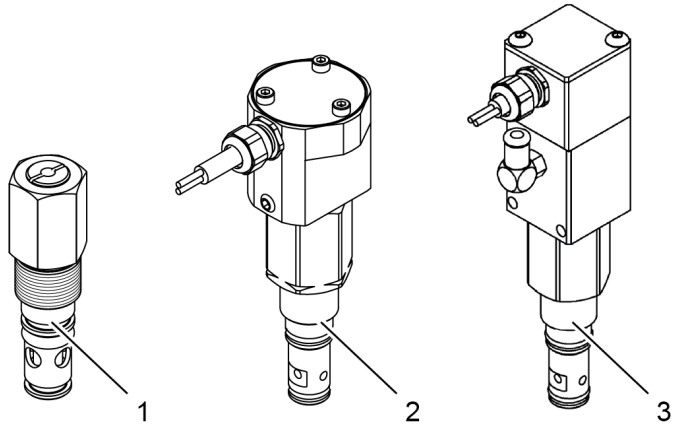


Figure 2-5 Model with bypass valve

1 Bypass valve
2 Bypass valve with electronic monitoring
3 Combi bypass valve

Air Relief Valve

The air relief valve allows the air that seeped in upon replacement to escape from the filter chamber. This is particularly important when replacing the filter cartridge.

CAUTION! Risk of splashing. When a air relief valve is installed, ensure that the air outlet hole points diagonally down.

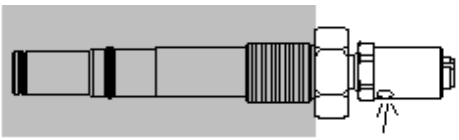


Figure 2-6 Example of installed air relief valve

Lid Detection Sensor

A proximity sensor detects whether the tank lid is closed.

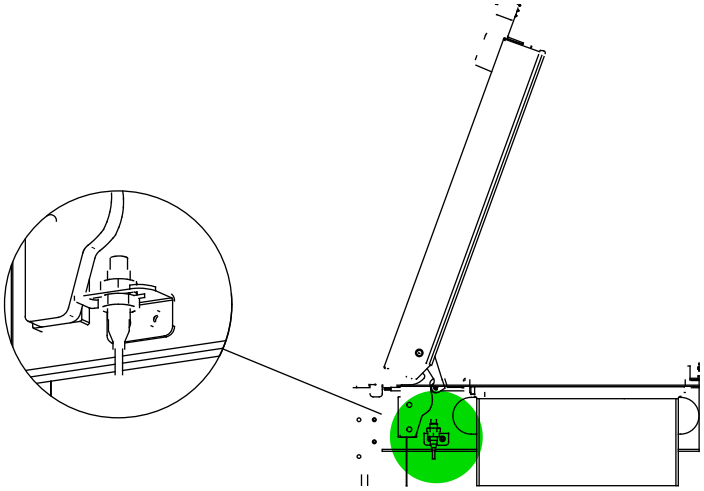


Figure 2-7 Location of sensor

Operating Elements

Figure 2-8 Operating elements on the front

1	Control panel	3	Main switch
2	LAN interface	4	Service switch

There is another interface on the back; refer to *USB Interface*.

Control Panel

The melter control panel is a capacitive touchscreen. It is used to navigate and set up the melter as well as to adjust the system settings.

Figure 2-9 Home screen on control panel

As with a smartphone, the screen can be operated with bare fingers, conductive gloves or a conductive stylus.

More information on the individual menus as well as on operation of the touch screen can be found in the section *Operation*.

Main Switch

Figure 2-10 Main switch

Switch position I/ON = Melter is switched on.

Switch position 0/OFF = Melter is switched off.

As soon as the main switch in switched on, the melter begins to heat up. Like the service switch, the main switch can be secured with padlocks; refer to page Figure 2-11.

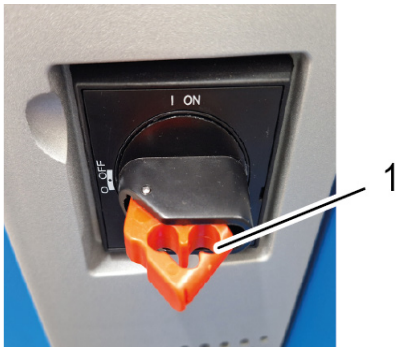


Figure 2-11 Securing service switch

Service Switch

Switch set to *0/OFF* = The motors are deenergized.

The service switch is used to deenergize the melter motors, e.g. for maintenance and repairs. This allows work to be done when the melter and heaters must remain switched on but the motors absolutely may not turn.

Padlocks can be used to protect the switch from unauthorized access. To do this, fold out the mechanism retracted into the handle.

If several people work on the melter, each person must attach his own lock (1). Up to three locks can be attached.

Figure 2-12 LAN interface

LAN Interface

RJ45

Note on degree of protection:

IP65 (when cover is closed)

IP20 (when plug is inserted)

Figure 2-13 Back of melter

USB Interface

USB 3.0 type A (1)

Note on degree of protection:

IP65 (when cover is closed)

IP20 (when plug is inserted)

Electrical Cabinet

The melters are available with two different surface areas, also referred to as platforms. The platforms are determined by the electrical cabinet configuration. Various electrical cabinet sizes are available to accommodate the respective surface area (platform).

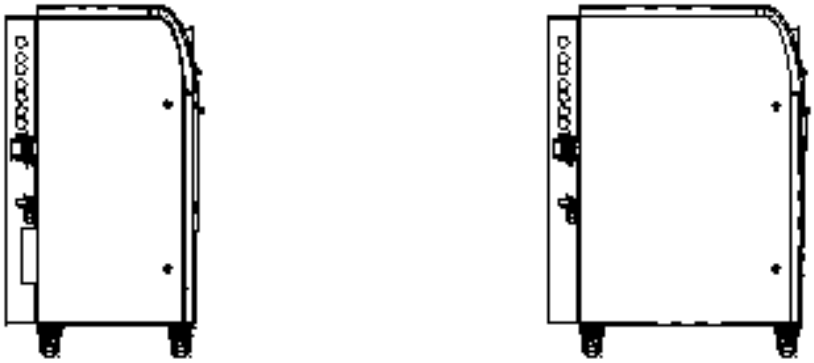


Figure 2-14 Electrical cabinet - platform 2 - platform 3

Lockable Electrical Cabinet Door

The key to the electrical cabinet is secured to the main switch with cable ties when the equipment is received.

Store the key such that it is accessible only to qualified and authorized personnel, meaning electricians or persons trained in electrical engineering.

Refer to the wiring diagram for the supplied melter to find the proper arrangement of the melter.

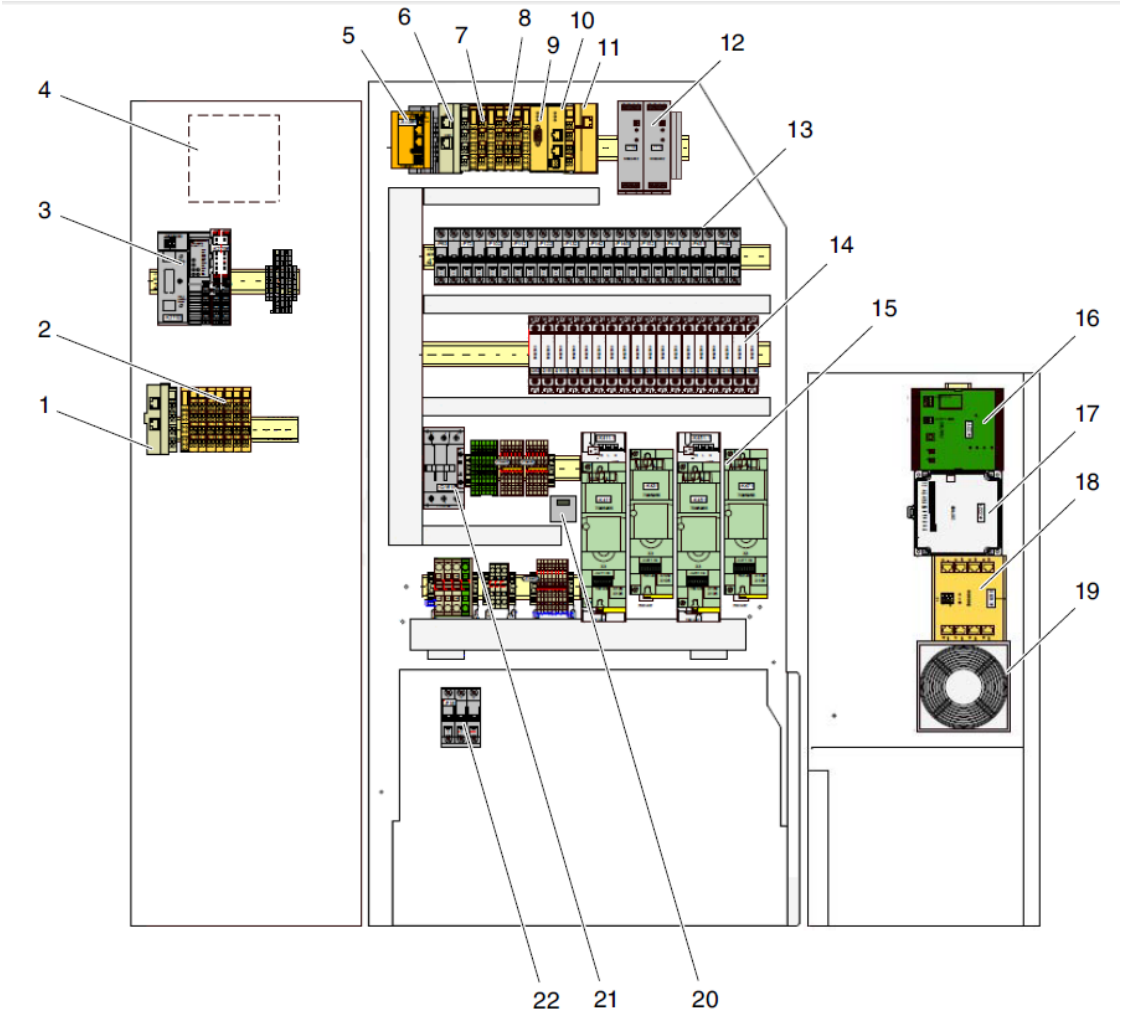


Figure 2-15 Example of melter with platform 2

1 EtherCAT extension
2 Digital module and TruFlow inputs
3 Safe Torque Off via EtherNet
4 Fan
5 CPU
6 EtherCAT extension
7 Temperature control boards 1 - 3
8 I/O board
9 CAN board
10 Field bus module
11 Expansion board
12 Switching power supplies 24 V with circuit breakers
13 Circuit breakers
14 Solid state relay
15 Motor controller (with interference filter)
16 Overflow protection evaluator
17 Level evaluator
18 Hub (to ACM)
19 Fan
20 Power switch -F11
21 Power contactor
22 Circuit breaker -F16

NOTE: The various terminal blocks are not indicated here. Refer to the wiring diagram for more information.

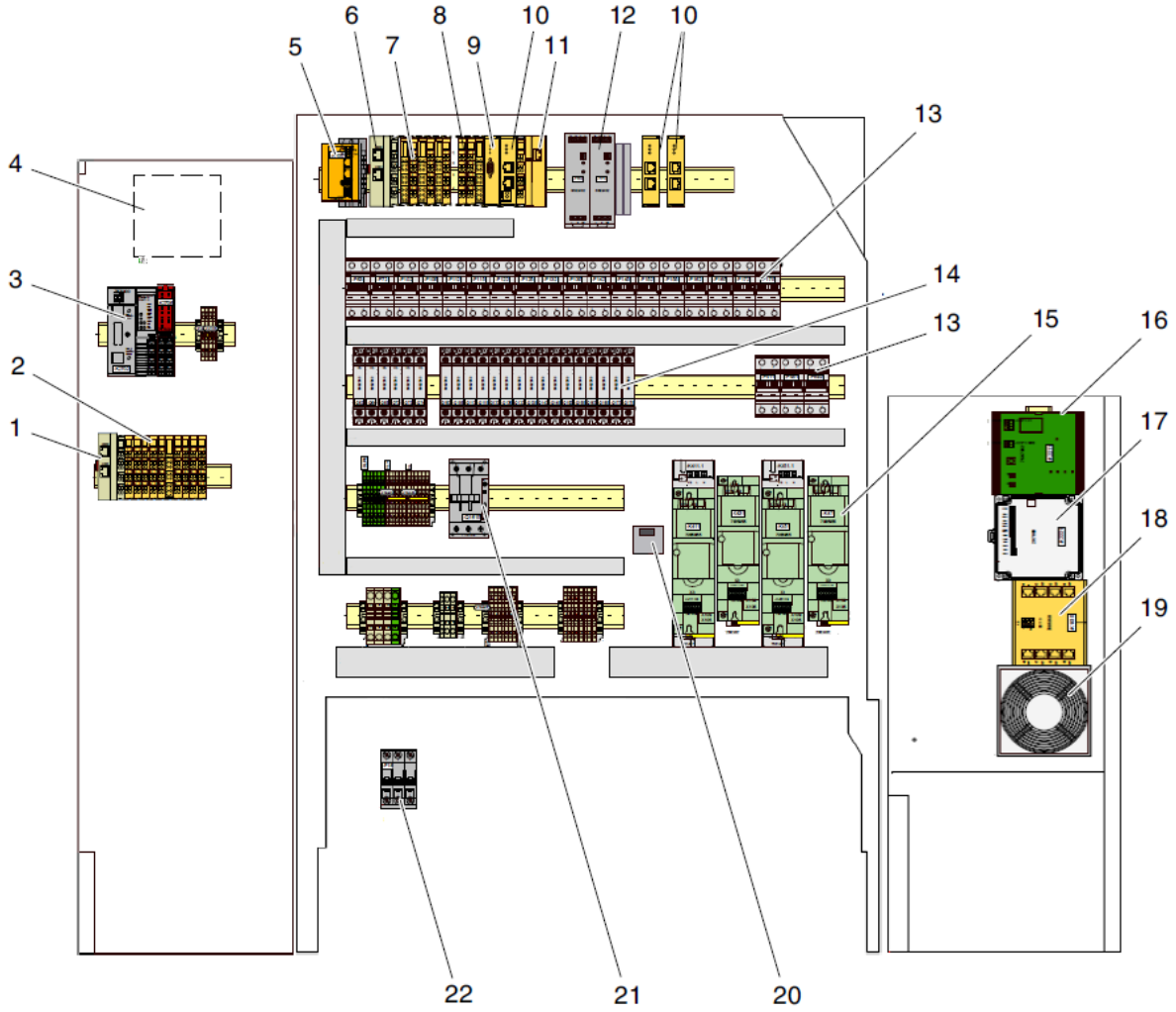


Figure 2-16 Example of melter with platform 3

1 EtherCAT extension
2 Digital module and TruFlow inputs
3 Safe Torque Off via EtherNet
4 Fan
5 CPU
6 EtherCAT extension
7 Temperature control boards 1 - 3
8 I/O board
9 CAN board
10 Field bus module
11 Expansion board
12 Switching power supplies 24 V with circuit breaker
13 Circuit breakers
14 Solid state relay
15 Motor controller (with interference filter)
16 Overflow protection evaluator
17 Level evaluator
18 Hub (to ACM)
19 Fan
20 Power switch -F11
21 Power contactor
22 Circuit breaker -F16

NOTE: The various terminal blocks are not indicated here. Refer to the wiring diagram for more information.

Hot Melt Application System

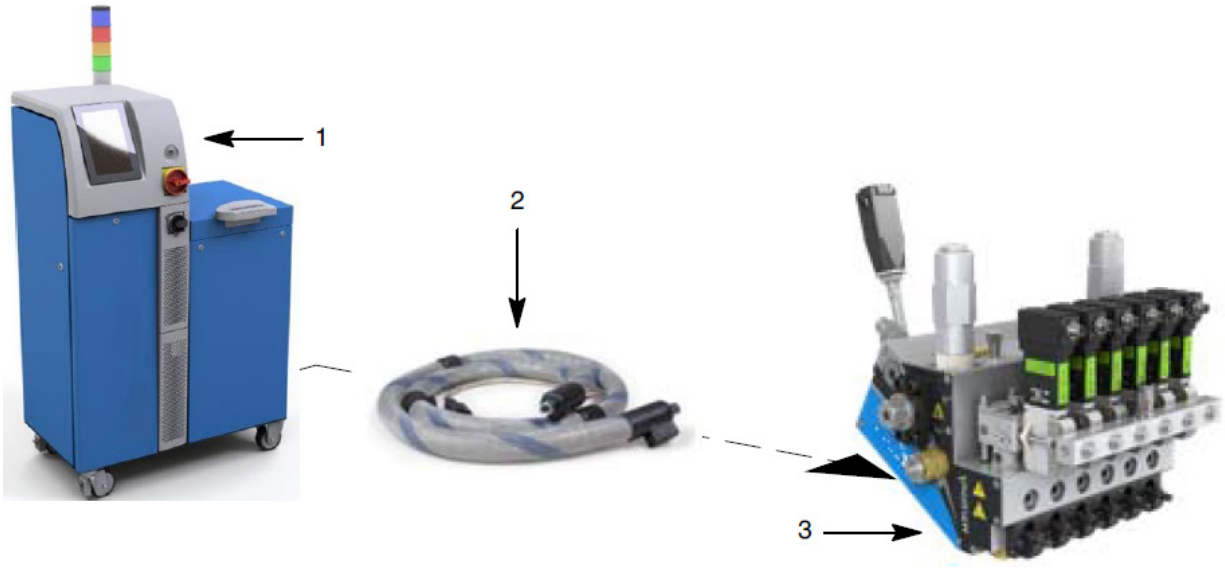


Figure 2-17 Simple example of hot melt application system

1 Melter 2 Hose 3 Applicator

The Nordson melters are used in conjunction with hoses (2) and applicators (3) to create a hot melt application system.

The melter liquefies solid-form hot melt and maintains the hot melt at the desired temperature. When the applicators are enabled, the melter pumps the melted adhesive through the hoses to the applicator nozzles, where it is then applied to the surface of a product or to a substrate.

Functioning

The following illustration provides an overview of the system and its setup.

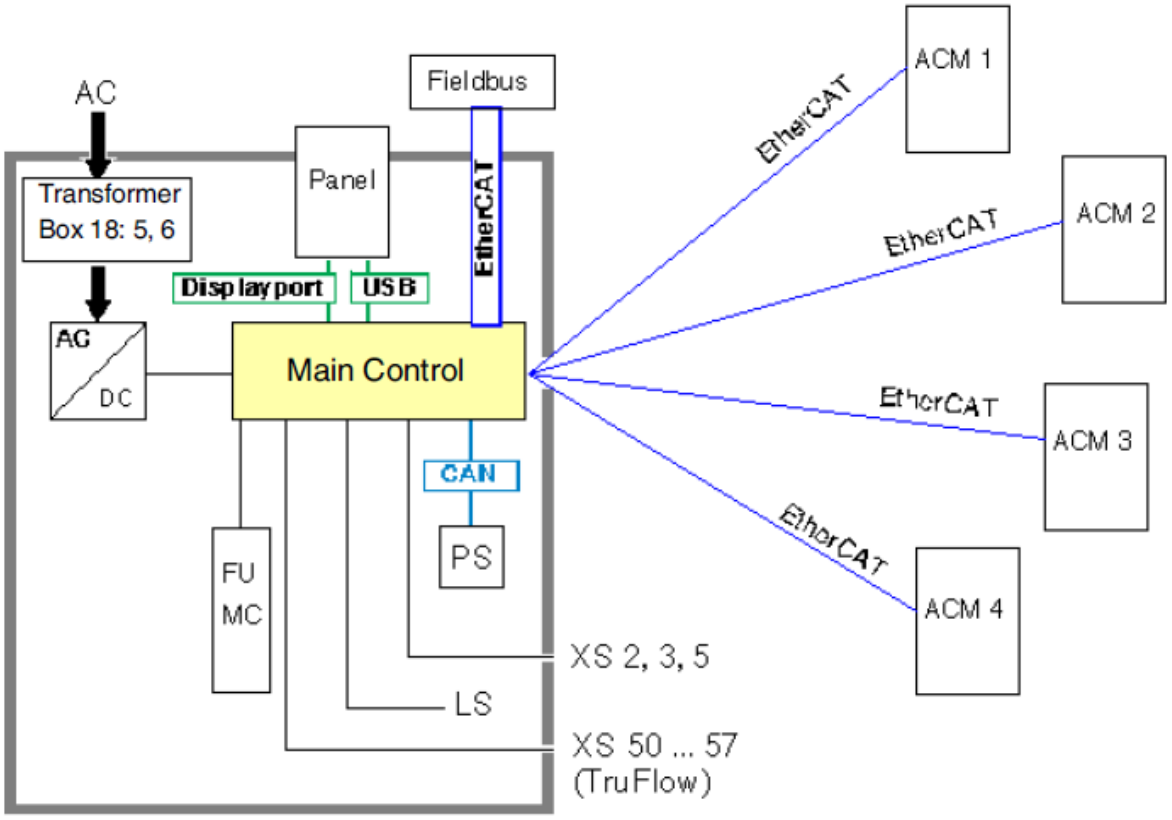


Figure 2-18 Diagram: Melter connected to electrical cabinets ACM

Legend for Illustration

AC	Input for operating voltage	**LS**	Level sensor
DisplayPort	Cable connections to control panel	**Transformer**	Transformer for 400 V or 480 V
EtherCAT	Internal and external bus connections to the (maximum of) four electrical cabinets ACM	**Panel**	Control panel
Field bus	Connection to the controller at the customer's facility via EtherNet, ControlNet	**XS...**	Interfaces enabling the melter to communicate with external components; also refer to the wiring diagram
Master control	CPU, temperature control board, I/O board, field bus components, CAN slide-in chassis	**MC**	Motor controller

Functional Blocks and Subsystems

Master Control

The master control coordinates the electronic components and processes in the entire system, such as:

- The HMI control device
- The digital input and output boards
- The EtherCAT network
- The EtherNet network
- The CAN bus network
- The field bus communication.

The master control also controls various functional blocks and/or subsystems, such as:

- Temperature
- Speed
- Pressure.

Saving data is another important task of the master control. This includes saving and loading recipes (Refer to the section *Operation, Parameter Management & Recipes*), software upgrades and generating event logs for analysis purposes.

24 V Power Supply

Depending on the configuration of the system, up to two 24 V power supply units can be installed in the melter.

The power units supply voltage to the components inside of the melter, such as: electrical cabinet fan, master control, control panel and pressure sensors.

The power supply for parts outside of the melter supplies voltage to the external pressure sensors.

Temperature Control

The analog and digital input and output boards used to control the temperature are part of the EtherCAT network. They receive commands from the master control and report back on their status. The temperature is measured with the RTD sensors, and the heaters are regulated applying a PID algorithm.

There are up to three analog and digital input and output boards for controlling the temperature of up to six heating channels. So this means that there is a total of 18 heating channels.

The first two heating channels on the first board are already assigned: For heating reservoir and grid. Applicators, hoses etc. can be connected to all of the other 16 channels. For example, eight hoses and eights applicators can be connected. If more components are to be connected, an electrical cabinet ACM is required.

User Interface

User interface for operation: The control panel on the melter is connected to the master control via a DisplayPort and a USB line.

Control devices such as a tablet, notebook, laptop or desktop PC can be connected.

I/O Communication Boards

Up to three digital input and output boards can be used. They are part of the EtherCAT network and process the internal digital inputs and outputs, e.g. for

- Main contactor
- Service switch
- Valves for pressure control options
- Light tower

As well as an analog input for the level sensor and the frequency inputs for the TruFlow units.

One I/O board is intended for the external inputs and outputs such as the interface XS2. The signals are specified by Nordson.

Motor Control

The motor controller is part of the EtherCAT network. The pump motors can be controlled by speed or pressure and – depending on the configuration – they can also run in reverse.

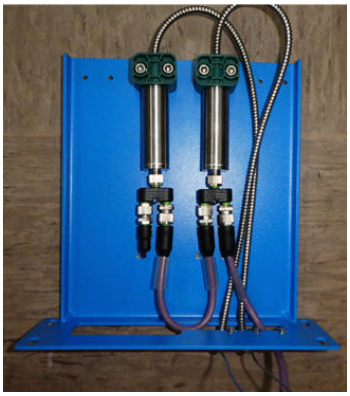


Figure 2-19 Measuring transducer

Pressure Display / Pressure Control

The pressure sensors are part of the CAN bus network.

The pressure sensor measuring transducers are located in the drawer below the melter.

Pressure Display (Option)

The melter outlet pressure is displayed and monitored. Alarms for underpressure and overpressure are displayed.

Pressure Control (Option)

One pressure sensor per pump. Double-stream pumps have one pressure sensor per pump stream. However, only one of them is used for pressure control. There is no pressure control valve.

The desired pressure is set on the control device. The sensor converts the pressure to an electrical signal, which is used for control via the CAN bus.

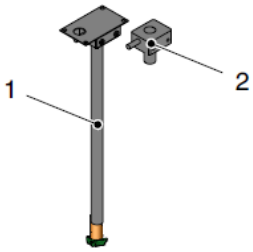


Figure 2-20 Level sensors

Level Sensor for Adhesive

The long analog level sensor (1) indicates the adhesive level in the melter tank.

The short level sensor (2) serves as separate overflow protection. It is always installed when the melter is filled via a filling valve.

Each level sensor has its own evaluator that is connected to the master control via I/O boards.

Field Bus or Interface Board

The master control is connected to the various components in the electrical cabinet and the periphery (VersaACM II) via EtherCAT. Different interface boards are used depending on the configuration. Examples:

- EtherNet/IP
- Profinet IO
- EtherCAT.

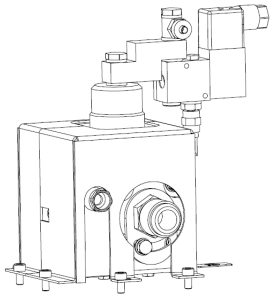


Figure 2-21 Heated filling valve

Automatic Filling Using a Filling System

A filling system can be e.g. a bulk melter. The filling system is controlled such that the melter is supplied with adhesive as needed.

The melter is filled with melted adhesive, fed through a hose and into the melter. The filling valve is on the melter.

A heating channel has to be reserved in the filling unit (e.g. bulk melter) to heat the filling valve.

Service Kit, Retrofitting Kit and Accessories

The following names and abbreviations are used in subsequent sections:

- Kit SVC (service kit)

  Spare or wearing parts that can be replaced at any time without having to change the configuration code. Example: motor, pump or seals.

- Kit UPG (retrofitting/upgrade kit)

  Parts that require changing the configuration code to add them or start them up.

- Kit ACC (accessories)

  Parts that can be added at any time without modifying the configuration code.

Melter Configuration Code

The configuration code indicates the equipment and features contained in the purchased system.

The configuration code is shown on the melter ID plate; refer to page *2-55, Melter Identification*.

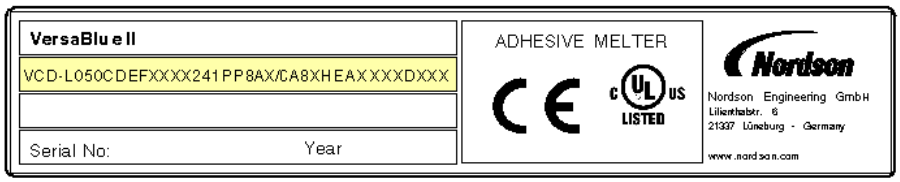


Figure 2-22 Example of configuration code (yellow) on the ID plate

If the melter is a standard melter, the software configuration code is the same as the melter configuration code. The software code can be changed only when the heater is switched off. Access to interfaces or the field bus is not possible while the code is being changed.

NOTE: This table shows all of the possible codes. Some codes are mutually exclusive.

NOTE: The color of the column alternates to make the table easier to read.

Melting concept		Melter type	Separator	Level ctrl. /autom. filling		Melter capacity		Pump	Pump	Pump	Pump	Reserved	Filter	Voltage	Main switch	Controls	Temp sensor	H/A pairs	ACM connectivity	Reserved	Separator	Ext. Pressure transducer	Int. pressure indicator	Ext. TruFlow	Reserved	Flow control	Field bus communication	Key- to-line (hard-wired)	Safe torque off (STO)	Heat exchanger	Reserved	Reserved	Drain valve	Reserved
1	2	3	4	5	6	7	8	9	10	11	12	13-16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38 - 40
V	C	B	-	L	0	1	2	A	A	A	A	X	8	3	1	P	N	2	A	X	/	C	A	2	X	F	E	K	T	E	X	X	D	X
		C	E	P	0	2	5	C	C	C	C		2	4	2		P	4	X			X	X	4		N	P	A	E	X			X	
		D		D	0	5	0	D	D	D	D			5	3			6						6		H	T		X					
		E		X	1	0	0	E	E	E	E			6	4			8						8		K	X							
					1	0	H	F	F	F	F													X		X								
								G	G	G	G																							
								H	H	H	H																							
								2	2	2	2																							
								4	4	4	4																							
								5	5	5	5																							
								6	6	6	6																							
								7	7	7	7																							
								J	J	J	J																							
								K	K	K	K																							
								L	L	L	L																							
								M	M	M	M																							
								N	N	N	N																							
								O	O	O	O																							
								P	P	P	P																							
								Q	Q	Q	Q																							
								R	R	R	R																							
								1	1	1	1																							
								S	S	S	S																							
								T	T	T	T																							
								U	U	U	U																							
								V	V	V	V																							
								W	W	W	W																							
								Y	Y	Y	Y																							
								X	X	X	X																							

The following sections use the term "Box." The term corresponds to one of the columns in the table above.

Box 1 - 2: Melter Concept

Box	Melting concept	Code
1-2	VersaBlue® II - classic heating section	VC

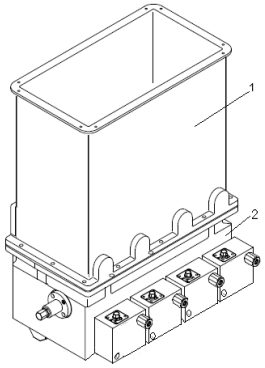


Figure 2-23 Components of the tank

VC = Classic Heating

The tank is divided into the grid (1) and the reservoir (2). An O-ring serves as a seal between the two parts.

The tank volume of a 100 l melter can be increased by adding a heated hopper.

The tank is filled either by the operator or automatically.

Box 3: Melter Type

Box	Melter type	Code
3	Max: 4-SS, 6 H/A	W
	Max: 2-SS/DS, 6 H/A	C
	Max: 4-SS, 8 H/A	D
	Max: 3/4-SS/DS, 8 H/A	E
SS: single-stream pump, DS: double-stream pump, H/A: hose/applicator pair		

The melters are available with two different surface areas, also referred to as platforms. They are defined by box 3. Depending on the surface area, different tank sizes are possible; some include a hopper (heated tank extension).

This in turn is a factor of the type and quantity of pumps as well the maximum number of hose/applicator connections that are possible.

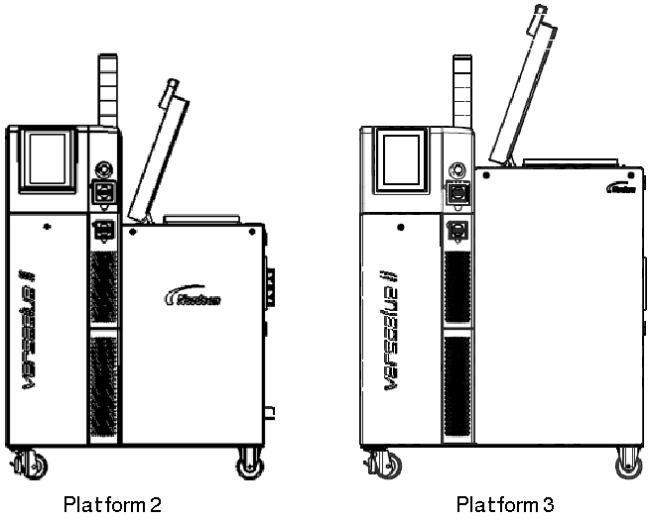


Figure 2-24 Platforms 2 and 3

Melter type	Platform
B, C	2
D, E	3

There is no platform 1 available for VersaBlue II adhesive melters.

Adhesive Flow

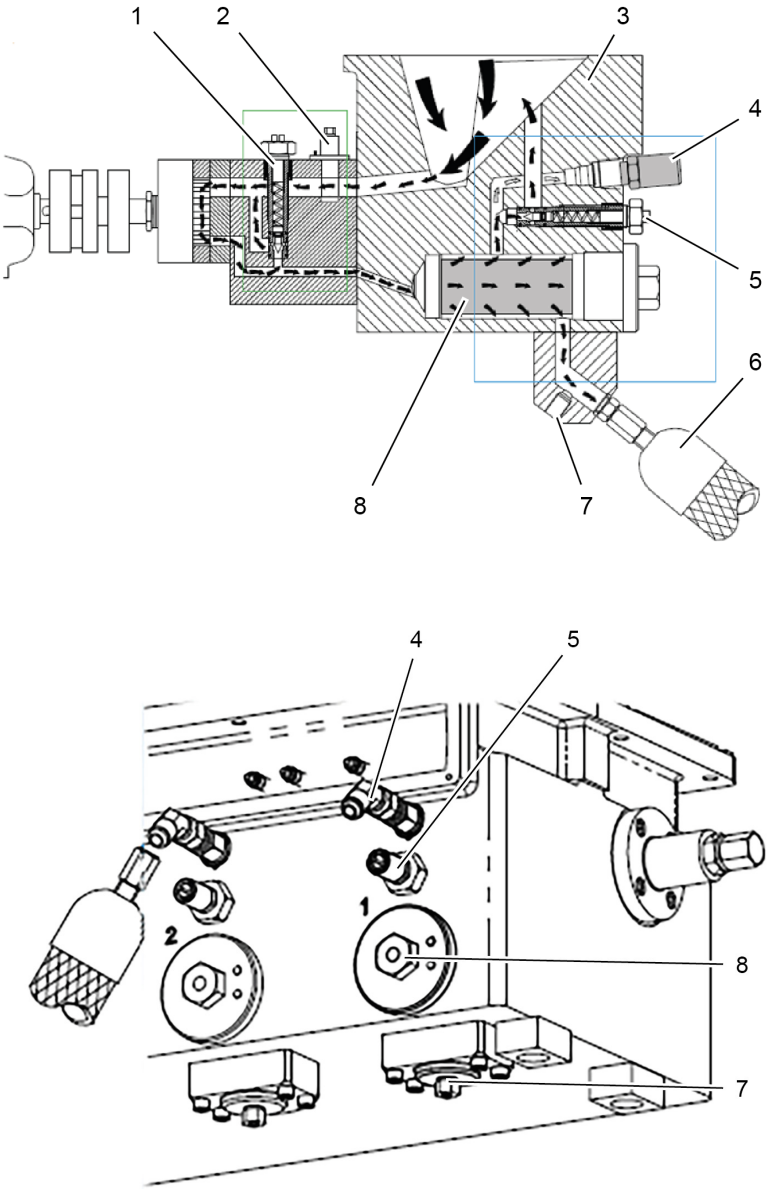


Figure 2-25 Principle drawing on the basis of D30 = D and reservoir on the basis of (Box 30 = H)

1	Bypass valve	5	Pneum. pressure control valve
2	Tank isolation valve	6	Hose
3	High melt (reservoir)	7	(Position) pressure sensor
4	Air relief valve	8	Filter cartridge

Labeling Pumps and Pump Streams

The melter supplies various adhesive streams (pump streams) that are guided through the hoses to the different gear pump metering stations or applicators.

There is one hose connection per single-stream pump and two per double-stream pump.

The allocation of the pump stream to a hose is identified by numbers. With single-stream pumps, the pumps are counted from the right, beginning with 1 for pump 1. For double-stream pumps, the pumps are also counted from the right, beginning with 1.1.

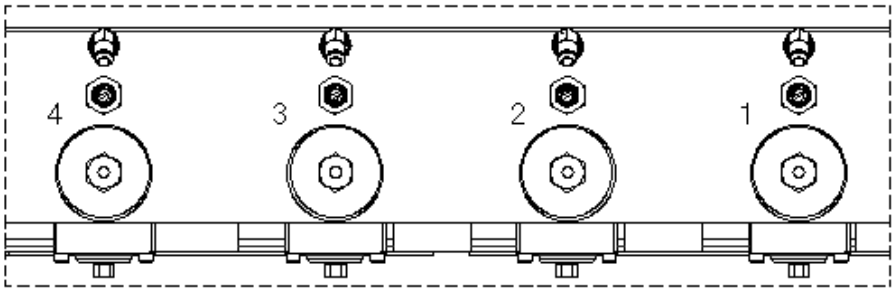


Figure 2-26 Numbering for four single-stream pumps

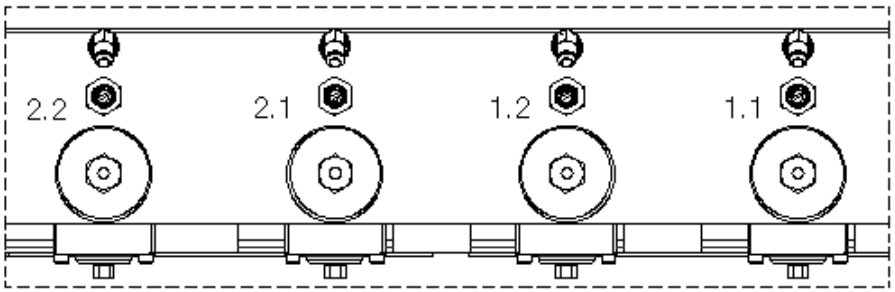


Figure 2-27 Numbering for two double-stream pumps

Box 4: Standard or Customized Design

Box	Separator	Code
4	Standard configurable unit	-
	Engineered melter	E

Special Models

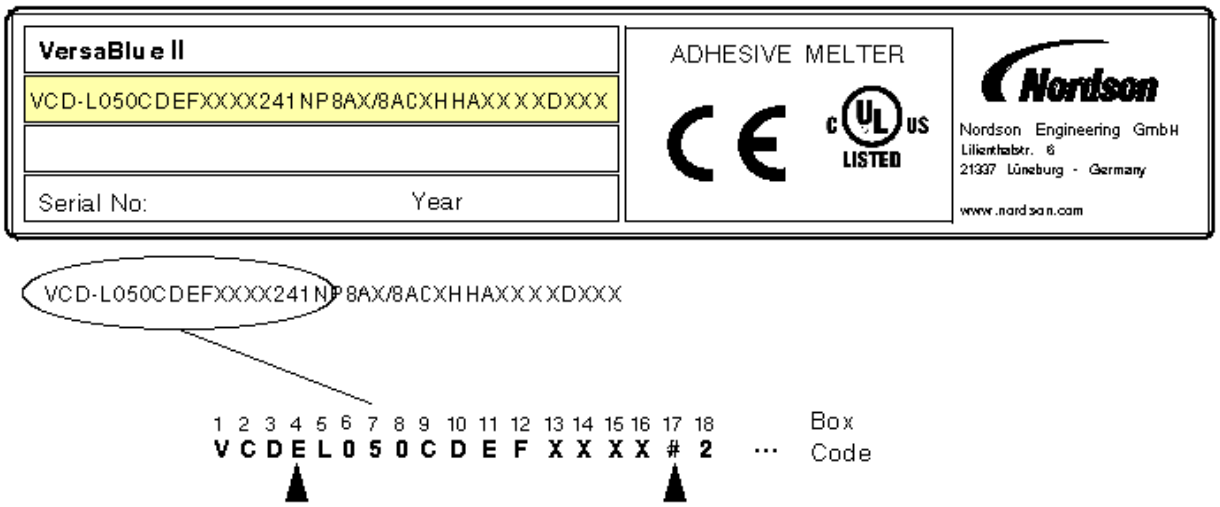


Figure 2-28 Configuration on ID plate, with "E" indicating a customized/engineered design

An "E" (engineered) instead of the "-" in box 4 of the configuration code indicates a customized model. The design deviates from what can be configured and is indicated by a hashtag "#" in the respective box.

This document may be supplemented by other documents that describe the special features.

Unlike the hardware configuration code indicated on the ID plate, the software configuration code may not contain any special characters, such as the hashtag "#".

The software configuration for the special model can be found in the separate document Table of Documents, supplied with the melter.

Box 5: Level Control / Automatic Filling

NOTE: Automatic filling is not available for 12-liter tanks.

Box	Level control / automated filling	Code
5	Level monitoring	L
	Level control w/ bulk feed lid (Ni120) + overfill protection	P
	Level control w/ bulk feed lid (Pt 100) + overfill protection	D
	None	X

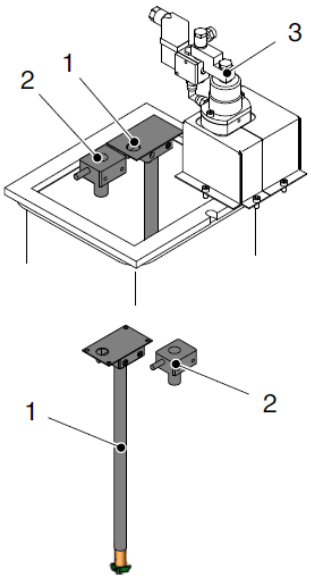


Figure 2-29 Automatic filling

The option *Level display* includes an analog level sensor (1). When the option *Level controllers*, the level sensor sends the filling signals for the filling valve (3).

The short level sensor (2) serves as separate overflow protection.

The heated filling valve (3) for automatic tank filling is located on the tank.

The filling valve control board opens when the solenoid valve is triggered. The melted adhesive is conveyed into the melter tank, e.g. by a bulk melter.

NOTE: A temperature control channel has to be reserved in the filling unit (e.g. bulk melter) for heating the filling valve.

Box 6 - 8: Melter Tank Size

NOTE: There is a retrofitting kit with a hopper for 100 l melters available. It increases the tank volume by 50%.

Box	Melter capacity	Code
6-8	12 liters (26 lb.) NOTE: Not for [D,E] in box 3 NOTE: Not for [B,P,C,D] in box 5	012
	25 liters (55 lb.)	025
	50 liters (110 lb.)	050
	100 liters (220 lb.) NOTE: Not for [B,C] in box 3	100
	100 liters (220 lb.) + hopper NOTE: Not for [B,C] in box 3	10H

Box 9 - 16: Pump

NOTE: Also available as a retrofitting kit, to the extent that the tank permits.

Box	Pump	Code
9-12	SN0030 - 1.4 kg/hr	A
	SN0062 - 2.9 kg/hr	C
	SN0093 - 4.5 kg/hr	D
	SN0186 - 8.9 kg/hr	E
	SN0371 - 17.8 kg/hr	F
	SN0773 - 37.1 kg/hr	G
	SN1710 - 82.1 kg/hr	H
	DN0030 - 1.4 kg/hr/stream	2
	DN0062 - 2.9 kg/hr/stream	4
	DN0093 - 4.5 kg/hr/stream	5
	DN0186 - 8.9 kg/hr/stream	6
	DN0279 - 13.4 kg/hr/stream	7
	SF0016 - 0.8 kg/hr	J
	SF0030 - 1.4 kg/hr	K
	SF0060 - 2.9 kg/hr	L
	SF0090 - 4.3 kg/hr	M
	SF0120 - 5.7 kg/hr	N
	SF0175 - 8.4 kg/hr	O
	SF0240 - 11.9 kg/hr	P
	SF0300 - 14.4 kg/hr	Q
	SF0450 - 21.6 kg/hr	R
	SF1000 - 48.0 kg/hr	1
	DF0016 - 0.8 kg/hr/stream	S
	DF0030 - 1.4 kg/hr/stream	T
	DF0060 - 2.9 kg/hr/stream	U
	DF0120 - 5.7 kg/hr/stream	V
	DF0175 - 8.4 kg/hr/stream	W
	DF0240 - 11.5 kg/hr/stream	Y
	None	X

Abbreviations

SN / SF: Single-stream pump Nordson / single-stream pump Feinprüf

DN / DF: Double-stream pump Nordson / double stream pump Feinprüf

Box 17: Filter Selection

Box	Filter selection	Code
17	0.8 mm filter	8
	0.2 mm filter (standard)	2

NOTE: All filters are used in conjunction with an 85 bar bypass valve.

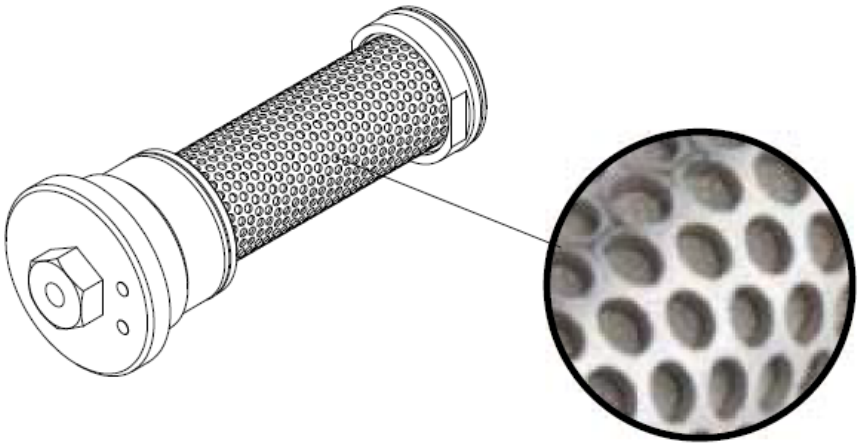


Figure 2-30 Filter cartridge

The filter cartridge filters from the inside to the outside. It has only a single, central adhesive inlet. The filter traps dirt particles and then the filtered adhesive flows along to the heated hose and applicator.

Box 18: Voltage

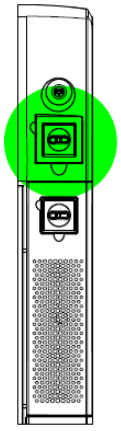
NOTE: Factor of CE/UL; sometimes available as a retrofitting kit.

Box	Voltage	Code
18	230V 3-phase delta	3
	400V 3-phase WYE	4
	400V 3-phase delta	5
	480V 3-phase delta	6

Operating voltage	Terminals				
	PE	L1	L2	L3	N
230 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	
400 VAC 3-phase with neutral conductor (WYE)	•	•	•	•	•
400 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	
480 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	

Box 19: Main Switch (= Disconnecting Device)

Box	Main switch	Code
19	Main switch red - 4-pole NOTE: Only for [4] in box 18	1
	Main switch black - 3-pole	2
	Main switch black - 4-pole NOTE: Only for [4] in box 18	3
	Main switch red - 3-pole (standard)	4



Extract from https://www.bghm.de (professional association, wood and metal): Disconnecting Devices / Main Switches

As specified by the machinery directive, power-driven devices and machines have to be equipped with a disconnecting device (main switch) to switch off the device or machine (isolation of every energy source).

The disconnecting device has to have a lock, if switching the equipment back on could pose a hazard to persons. Particularly during maintenance work, when the disconnecting device cannot be monitored from every working position, it is essential that the disconnecting device be lockable.

The main switch is located above the motor switch. It is used to switch on and off the melter:

- Position *0/OFF* = Melter is switched off
- Position *I/ON* = Melter is switched on

Padlocks can be used to protect the switch from unauthorized access. To do this, fold out the mechanism retracted into the handle.

If several people work on the melter, each person must attach his own lock. Up to three locks can be attached.

When the melters have a red and yellow main switch (red grip on yellow background), the main switch also serves as the EMERGENCY STOP switch.

Box 20: Controls

Box	Controls	Code
20	With integrated HMI/panel	P

The operating panel is integrated into the melter.

A separate control panel, linked to the main melter controller via EtherNet, is available as an accessory. This requires a Power over EtherNet injector (PoE). A 5 m connecting cable is required.

NOTE: When ordering spare parts, keep in mind that the separate control panel and the integrated control panel have different P/Ns.

Control Panel Models

A dust-protection cover that pivots over the control panel can be ordered for all melters with integrated control panel.

Box 21: Temperature Sensor

Box	Temperature sensor	Code
21	Ni 120	N
	Pt 100	P

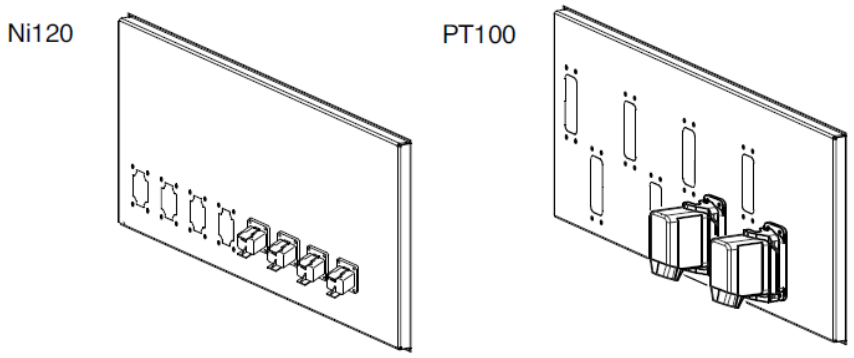


Figure 2-31 Interfaces in the right door - Ni 120 and Pt 100

Box 22: Hose/Applicator Pairs

Box	Hose/applicator pairs	Code
22	2 hose/applicator pairs	2
	4 hose/applicator pairs	4
	6 hose/applicator pairs	6
	8 hose/applicator pairs NOTE: Only for [D,E] in box 3	8

NOTE: The number of hose/applicator pairs has to be equal to or greater than the number of pump streams.

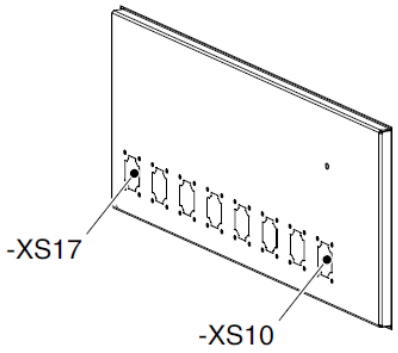


Figure 2-32 Example Ni120: Interfaces in right door

Box 23: ACM VAC

Box	ACM	Code
23	ACM connectivity NOTE: Max. four ACMs on a single VersaBlue II melter	A
	None	X

Box 26: External Pressure Sensor

Box	External pressure transducer	Code
26	External pressure transducer input/s (CAN bus)	C
	None	X

The external CAN bus pressure sensors are connected to interface XSP on the melter tower.

Unlike pressure control via internal pressure sensors selected e.g. with box 27 for outlet pressure control and impacting the melter pump motors, the external pressure sensors are not allocated to a pump motor. They are used only to display and monitor pressure.

Box 27: Internal Pressure Indication (Internal Pressure Sensor)

Box	Internal pressure indication	Code
27	Internal post-filter pressure indication per stream (IPI)	A
	None	X

Code A

The melter outlet pressure is displayed and monitored. To do this, each pump stream is equipped with a pressure sensor for the pressure display. Alarms for underpressure and overpressure are emitted.

The sensing elements for the pressure sensors (1b) for adhesive outlet pressure are located in the manifold (arrow).

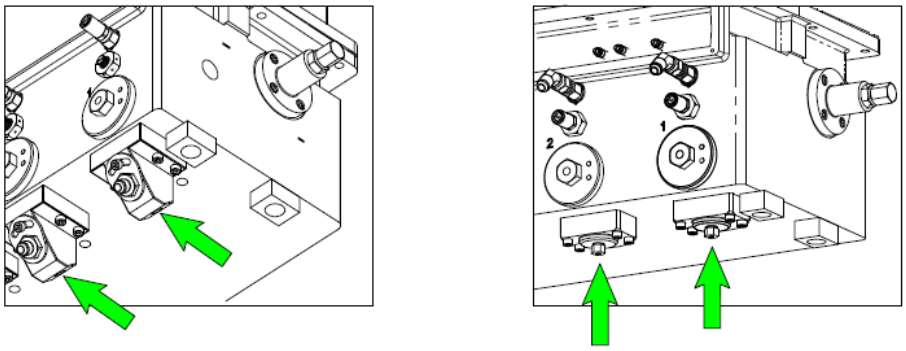


Figure 2-33 Examples: Box 30 = N (left); box 30 = H, K (right)

Box 28: External TruFlow

Box	External TruFlow	Code
28	2 TruFlow channels gear-based, external	2
	4 TruFlow channels gear-based, external	4
	6 TruFlow channels gear-based, external	6
	8 TruFlow channels gear-based, external	8
	None	X

NOTE: An ACM is required if there are more than eight TruFlow channels.

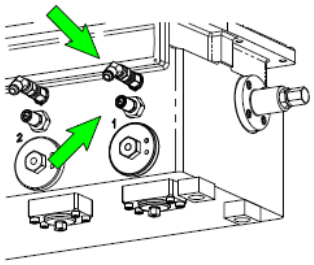


Figure 2-34 Hose connection with air relief valve

Hose Connections for Options H and K

NOTE: TruFlow always requires the option "H" or "K" in box 30*.

* The positions of the hose connection and air relief valve are different from the other options in box 30. The modified positions allow air to escape from the filter chamber and the quantity to be better regulated.

TruFlow™ Feature

In a conventional system, the amount of adhesive fed to the applicator is not measured. The pump speed is proportional to the line speed. The required line speed signal is connected to the melter.

If the adhesive quantity changes unintentionally, e.g. because the gears are worn, the pump speed is not automatically adjusted. No alarm is generated.

Also, when production is started and stopped, the required quantity (setpoint; refer to illustration) exceeds or falls below the setpoint. The worst case is that rejects are produced during this time.

The TruFlow quantity control optimizes the deviation between setpoint and actual.

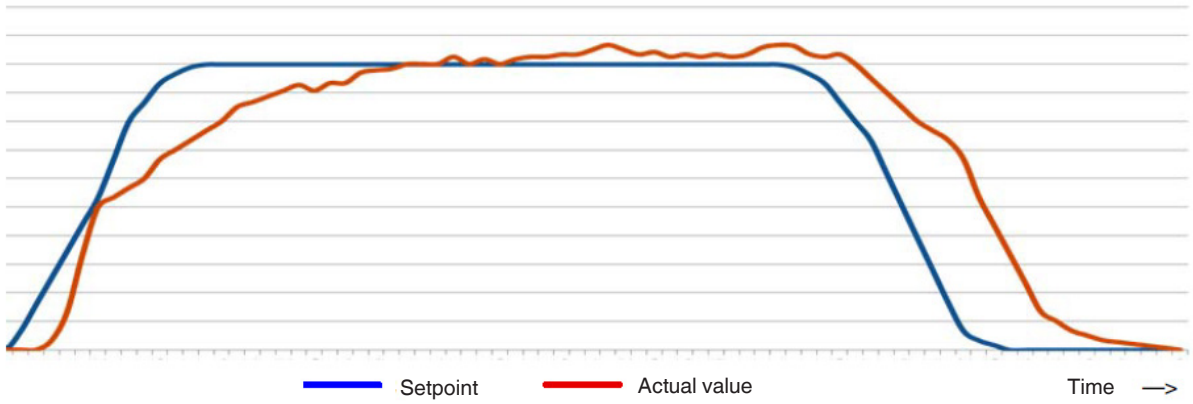


Figure 2-35 Illustration of desired and actual output quantity

Depending on the application, inner and outer pollution on the applicator can impact adhesive distribution, meaning that different adhesive quantities may be applied across the width of the web.

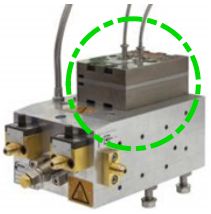
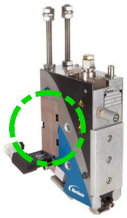
The setpoint output quantity is normally increased to achieve sufficient coverage in areas with too little adhesive. However, this means that more adhesive is applied than necessary to areas with sufficient or excessive coverage, leading to higher adhesive costs.

To keep additional adhesive costs to a minimum, a TruFlow applicator can be used.

What is Needed for the TruFlow Feature?

- TruFlow system component(s)
- Box 30 = H or K
- Flow rate of the flow meter / flow divider (as indicated on the TF ID plate)
- Encoder type (as indicated on the TF ID plate)
- Various input on the control device (Refer to the separate customer product manual for information on *Operation*)

TruFlow System Components

Metering device	Measurement transducer	Description There are separate customer product manuals available for the components
		**TruFlow meter** 1 adhesive inlet — 1 output stream Speed monitoring: encoder (mechanical) Connected to the electrical cabinet via the measurement transducer.
		**Flow meter / flow divider** Flow meter: 1 adhesive inlet — 1 output stream Flow divider: 1 adhesive inlet — 2, 3, 4, 6 or 8 equal output streams Speed monitoring: encoder (mechanical or optical) **TruFlow detection (blue box)** The optical encoder is connected to the electrical cabinet via the blue box, which converts the optical signals to digital signals. **NOTE: The mechanical encoder is connected directly to the electrical cabinet.**
		**TruFlow applicator** As with the flow meter / flow divider, the output streams can be configured. Speed monitoring: encoder (mechanical or optical). Speed monitoring occurs directly on the applicator. Connection to the electrical cabinet is as described under *Flow Meter / Flow Divider.*

Electrical cabinet	Description
VersaBlue II	Control and/or monitoring
	**Integrated** Line speed signal, encoder signal (= recirculation signal) are connected to the VersaBlue adhesive melter electrical cabinet.

Box 30: Flow Control

Box	Flow control	Code
30	Flow control bypass*	F
	Pressure buildup (airless pressure control)*	N
	Pressure buildup PBU with OPC*	H
	Pressure buildup PBU with OPC & pressure relief*	K
	None	X

NOTE: * Must have [A] in box 27 or <> [X] in box 26

If Box 30 = K is Selected

NOTE: If the melter and ACM(s) work together in the same system, the ACM has to be configured for the combi bypass.

Option	Direction of pump rotation	Bypass valve	Pneum. Pressure control valve	Pressure sensor
F	Forwards	Standard	yes	-
N	Forwards/ backwards	Microswitch	-	yes
	Forwards/ backwards			
H	Forwards/ backwards	Microswitch	-	yes
	Forwards/ backwards			
K	Forwards	Microswitch	-	yes
	Forwards/ backwards			

System Adhesive Pressure

When the melter pump forces adhesive through the hose and applicator, a certain adhesive pressure, determined by multiple factors, is generated.

- Flow rate [g/min]
- Filter mesh size
- Level of contamination of filter cartridge
- Adhesive viscosity
- Hose length and diameter
- Thickness of shim plate
- Size of nozzle opening.

Bypass Control [F]

Bypass valve: One standard bypass valve is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream.

The standard bypass valve is fixed at

85 bar	**8500 kPa**	**1235 psi.**

When a pressure of 85 bar is exceeded, the bypass valve opens, allowing the adhesive to circulate in the bypass valve plate.

Pressure control valve: One pneumatic pressure control valve is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream.

The compressed air is enabled as soon as the undertemperature interlock is released by the master control. This prevents excessive adhesive pressure from building up during the heatup phase.

During production, the pressure control valve is supplied with maximum air pressure (approx.6 bar) and closed. The adhesive is fed to the hose connection.

When the applicator closes, the pressure controller solenoid valve receives an electrical signal. The pressure control valve is supplied with regulated compressed air and begins to open. The adhesive is returned to the tank (bypass).

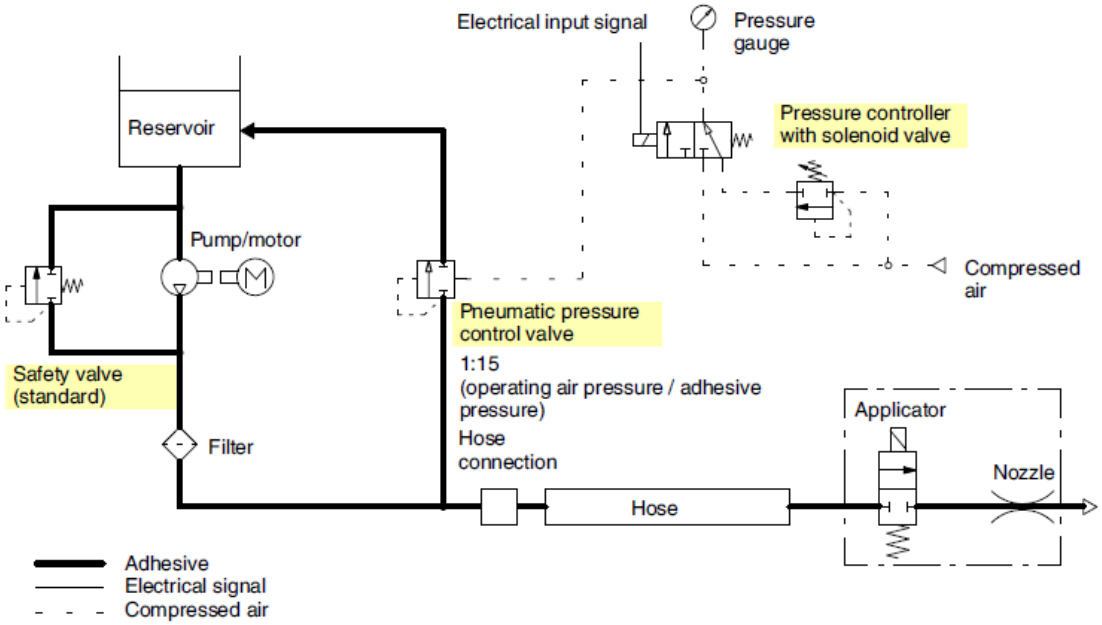


Figure 2-36 Box 30 = F

Pressure Buildup Function [N]

Bypass valve: One bypass valve with microswitch (= limit switch) is installed per pump or, in the case of double-stream pumps, one per pump stream.

The bypass valve with microswitch is fixed at

85 bar	**8500 kPa**	**1235 psi.**

When a pressure of 85 bar is exceeded, the bypass valve opens, allowing the adhesive to circulate in the bypass valve plate.

The microswitch on the bypass valve transmits an electrical signal back to the controller when the bypass valve is open. The state can be indicated as an alarm (either stop or warning).

Pressure sensor: One CAN bus pressure sensor is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream.

This option includes pressure control, pressure indication (box 27 = A) and pressure monitoring. Only one of the pressure sensors is used for pressure control with double-stream pumps.

During production the pumps are line speed controlled or speed controlled. Pressure build-up enables the adhesive pressure to be regulated to an adjustable value as soon as the parent machine stops or when the line speed signal falls below an adjustable value. The pumps can temporarily run backwards; the pressure is not monitored during this time.

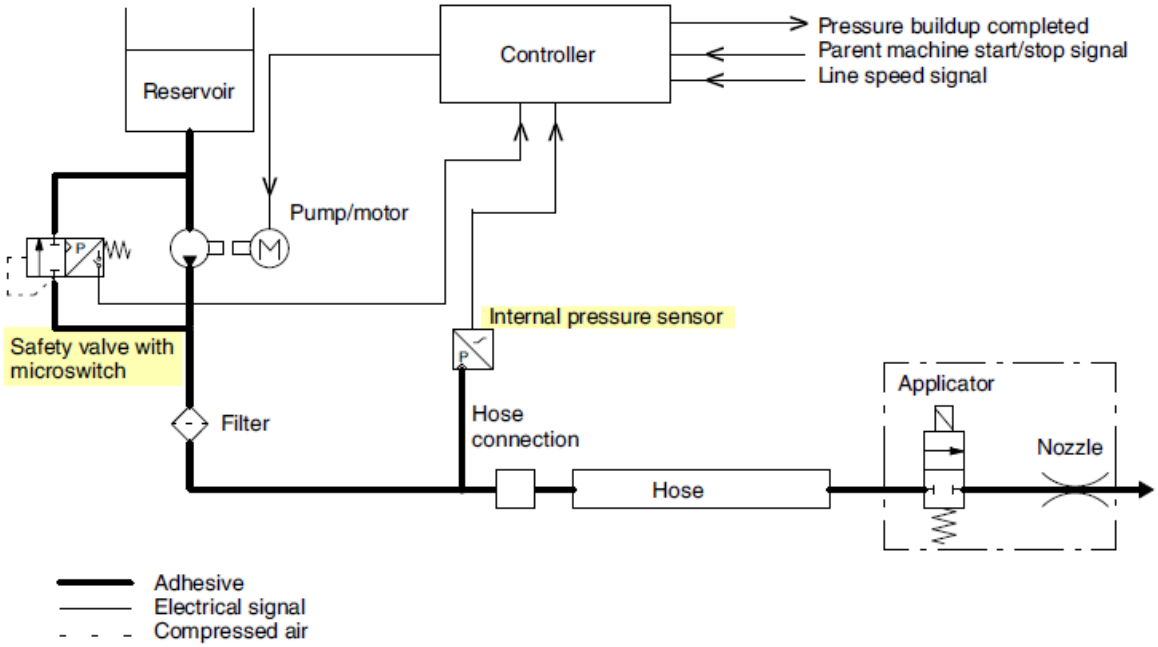


Figure 2-37 Box 30 = N

Pressure Build-up with Outlet Pressure Control [H]

Bypass valve: One bypass valve with microswitch (= limit switch) is installed per pump or, in the case of double-stream pumps, one per pump stream.

The bypass valve with microswitch is fixed at

85 bar	**8500 kPa**	**1235 psi.**

When a pressure of 85 bar is exceeded, the bypass valve opens, allowing the adhesive to circulate in the bypass valve plate.

The microswitch on the bypass valve transmits an electrical signal back to the controller when the bypass valve is open. The state can be indicated as an alarm (either stop or warning).

Pressure sensor: One CAN bus pressure sensor is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream.

The option H includes the option N. It also offers the quantity control feature (TruFlow). Quantity control is a pump mode in addition to speed control and pressure control.

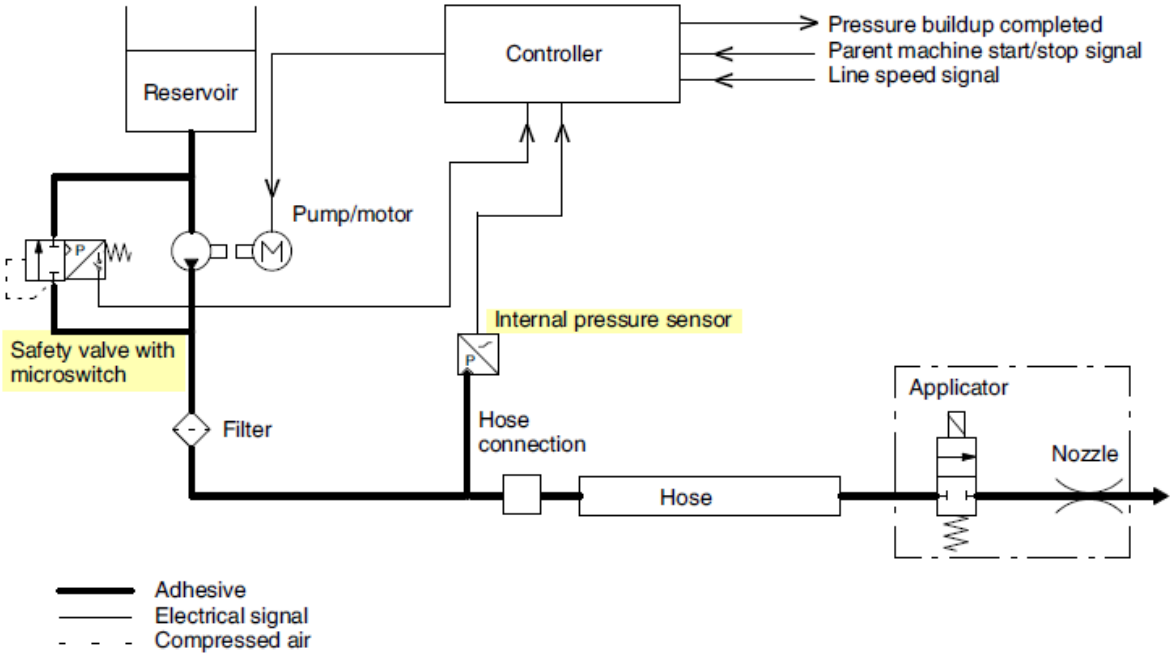


Figure 2-38 Box 30 = H

Pressure Build-up with Outlet Pressure Control and Pressure Relief Combi Bypass (K]

Combi bypass valve with pneumatic assembly: One combi bypass valve is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream. The switching state of the combi bypass valve can be scanned electrically.

The pneumatic assembly is available as a double or quad module. It is located in the melter column and supplies compressed air to the combi bypass valve.

The inlet pressure is 6 bar. The pressure reducer (1, Figure 2-39) with secondary air relief (2) keeps the outlet pressure steady at a fixed value of 4 (-0.2) bar. The pneumatic safety valve (2) is set to 4.4 bar and cannot be modified.

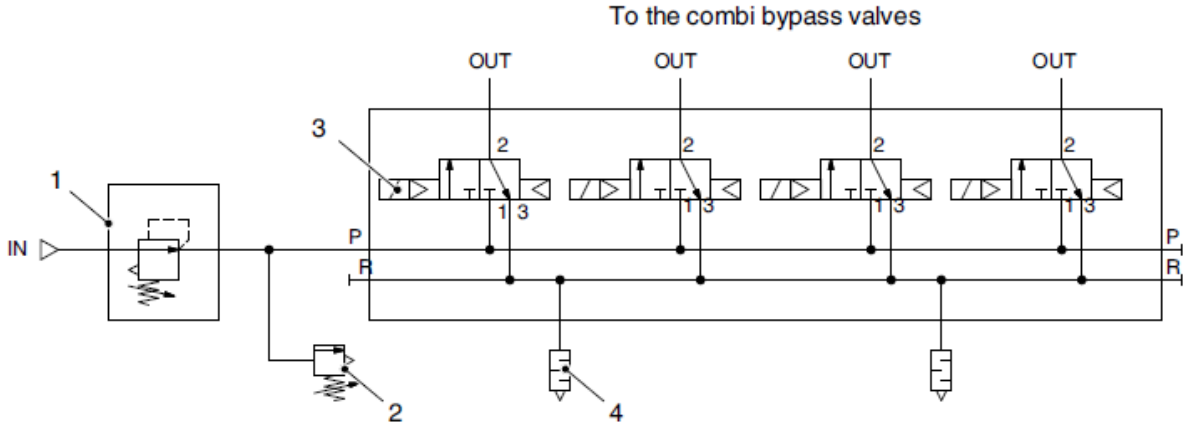


Figure 2-39 Pneumatics diagram - example P/N 7085250 (quad, without cable harness)

1 Pressure reducer
2 Safety valve
3 3/2-way solenoid valve (0.55 W each)
4 Muffler

Pressure sensor: One CAN bus pressure sensor is installed for each single-stream pump or, in the case of double-stream pumps, per pump stream.

The option K includes the option N. It also offers the features pressure relief and quantity control (TruFlow). Quantity control is a pump mode in addition to speed control and pressure control.

Nordson recommends using the pressure buildup feature and entering the pressure buildup setpoint. Otherwise it takes too long for the application pressure to build up again.

Pressure Relief

When the drive is enabled, the combi bypass valve closes; when it is disabled, the valve opens (broken wire protection) and the adhesive circulates in the bypass valve plate.

Example: When the combi bypass is integrated into the customer's system, the compressed air for the pneumatic assembly can be removed if e.g. a protective door is opened. Then pressure is relieved as well.

NOTE: The operator can select on the control device whether an open combi bypass valve generates a warning or leads to a stop.

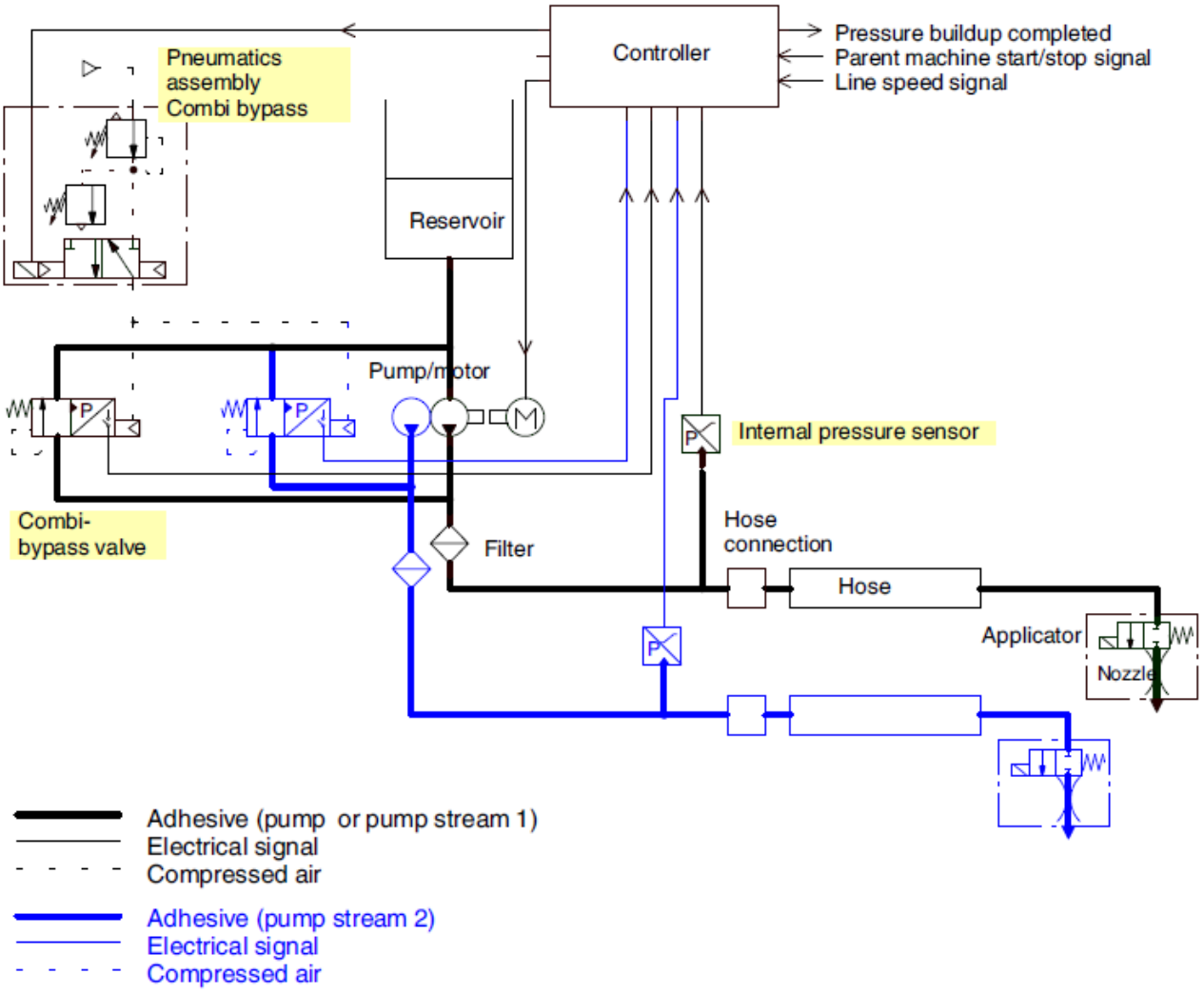


Figure 2-40 Box 30 = K

Box 31: External Communication

Box	External communications	Code
31	EtherNet/IP	E
	Profinet IO	P
	EtherCAT	T
	Hard-wired only	X

Index Protocols and Communication Data

Described in a separate customer product manual.

External Communication with VersaACM II

Up to 16 motors to be operated, 12 external plus the maximum four melter motors.

Box 32: Key-to-line (Hard-Wired)

Box	Key- to-line (hard-wired)	Code
32	Key-to-line per drive (separate connectors)	K
	Key-to-line for all drives	A

The line speed signal can be either 0 - 10 V or current (4 - 20 A).

Option	Possible interfaces
K	XS 5.1, XS 5.2, XS 5.3, XS 5.4,
A	XS 5

Box 33: Safe Torque Off (STO)

Box	Safe torque off (STO)	Code
33	Terminal block	T
	EtherNet/IP	E
	None	X

Figure 2-41 Motor controller

The motor controller (example, *Figure 2-41)* is equipped with an additional STO board. Motor controllers with the STO safety feature can be recognized by the yellow mark.

STO is triggered and revoked by an external signal. Select whether via EtherNet/IP or via terminal block.

With the feature "Safe Torque Off" (STO), EMERGENCY STOP pursuant to EN 60204-1 is not possible without additional measures.

NOTE: STO can be used when the drive has enough friction in a short enough time to stop on its own.

Box 33: Safety Torque Off (STO) *(contd.)*

Using Without EMERGENCY OFF Safety Module, Stop Category 0

STO is a personal protection feature on machines. When STO is triggered, all of the drives immediately switch to a torqueless state pursuant to EN 60204-1.

This means that, once the STO safety feature is triggered, the motor can no longer generate torque because the voltage supply to the motor is disrupted. It comes to a stop without braking.

WARNING! After triggering the safety feature, intermediate circuit (DC bus) and line voltage are still supplied to the motor controller. To stop line voltage to the drive, switch off the melter using the disconnecting device. The disconnecting device is not included in the circuit for the safety feature.

When the command for the STO safety feature is revoked, a restart interlock (motor startup protection) is active.

Connection via Terminal Block

The terminals are connected to the melter motor controllers. This is where the customer connects his EMERGENCY STOP relay.

1734-OB8S

Figure 2-42 Gateway

Connection via EtherNet/IP

The EtherNet/IP gateway 1734-AENT of the manufacturer Rockwell Automation is then used.

The safety output module 1734-OB8S manufactured by Allen-Bradley / Rockwell Automation is also used. The detailed manual "POINT Guard I/O Safety Modules Installation Instructions" can be found online at https://www.rockwellautomation.com/en-us/support/documentation/literature-library.html.

Box 34: Heat Exchanger (Electrical Cabinet)

Box	Heat exchanger	Code
34	Heat exchanger	E
	None	X

Figure 2-43 Air intake and discharge at heat exchanger

Heat Exchanger E

An air-air heat exchanger is used. The heat exchanger is switched off via the main melter switch. The inside temperature of the electrical cabinet cannot be adjusted.

NOTE: For proper operation, the temperature difference between the room and the inside temperature of the electrical cabinet should be about 10 K.

The electrical cabinet fan is not needed. A cover plate is attached in its place. Air intake and discharge occur only via the heat exchanger.

Fan X

If no heat exchanger is configured, a fan is used automatically.

Box 37: Tank Isolation Valve

Box	Tank isolation valve	Code
37	Tank isolation valve	D
	None	X

The tank isolation valve is on the front of the melter.

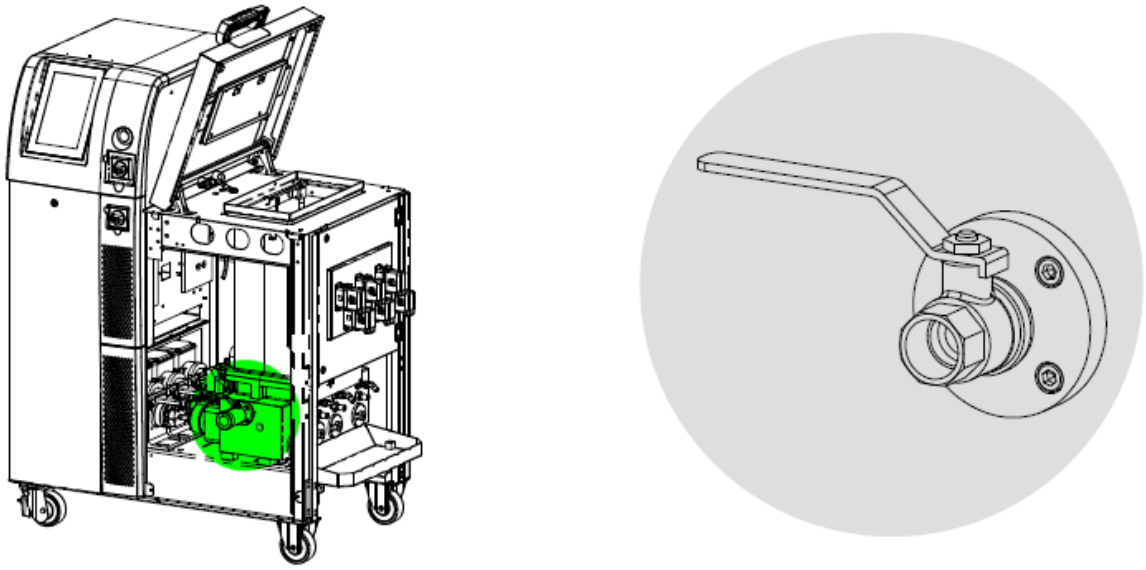


Figure 2-44 Tank isolation valve - right: without protective insulation

Melter Identification

The melter serial number and the P/N are required when submitting inquiries to customer service or ordering parts and optional equipment.

There are two ID plates. One is located on the outside of the melter, and the other is inside the electrical cabinet.

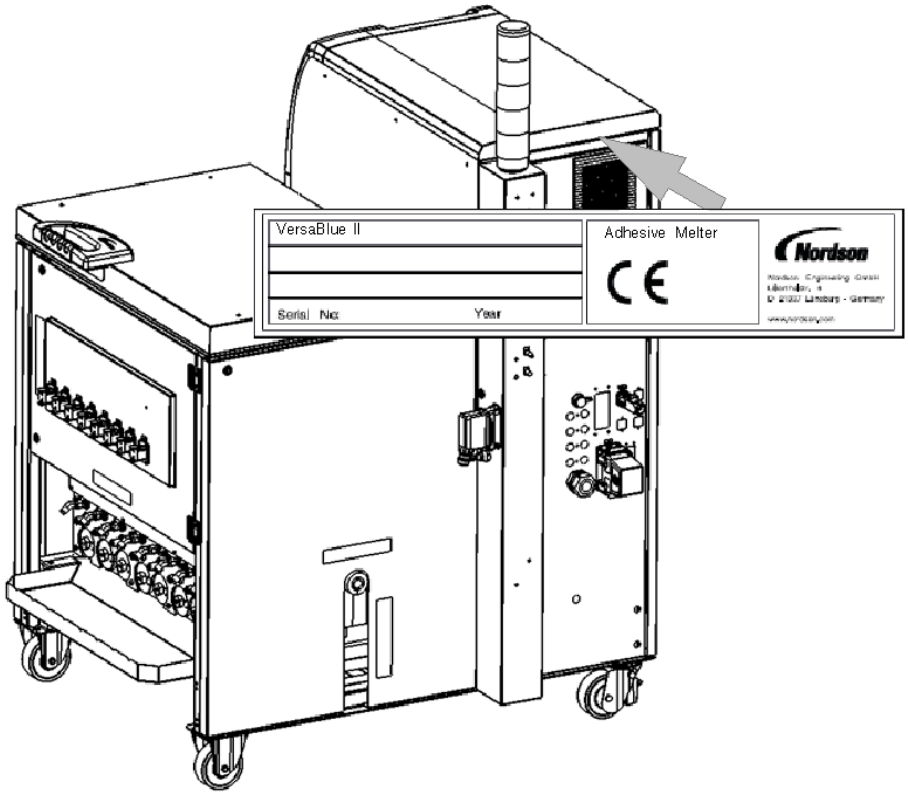


Figure 2-45 Melter ID plate

Important When Modifying Equipment

When modifications are made, the article number (P/N and ID) of the melter changes.

To prevent mixup regarding later inquiries, affix the new ID plates included in the retrofitting kit after modifying the equipment.

Use care to attach the proper labels, when there are multiple melters. Assign the kit to the proper melter based on the serial number. Retrofitting does not change the serial number.

Melter ID Plate

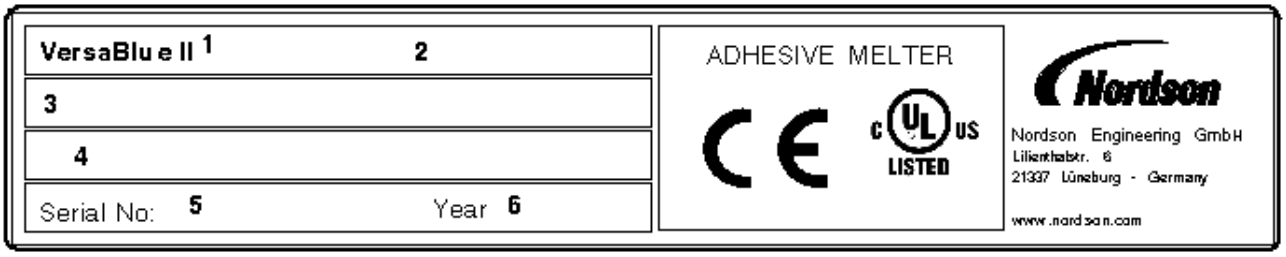
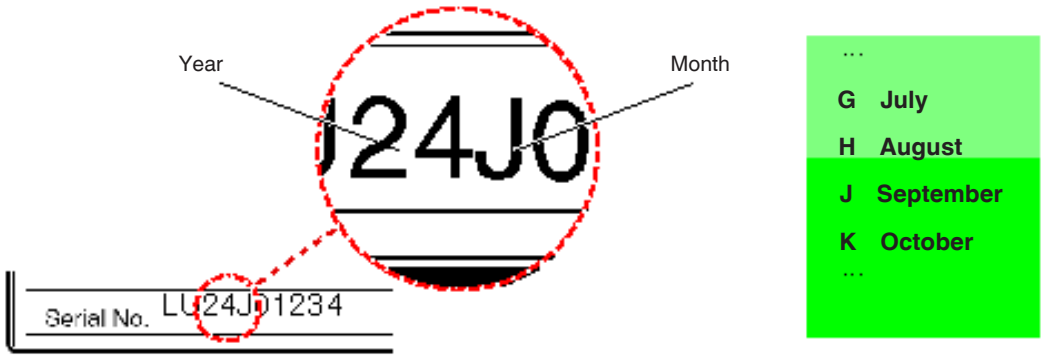


Figure 2-46 Example

1	Melter designation
2	P/N
3	Configuration code
4	Electrical connection, operating voltage, line voltage frequency, melter fuse protection, SCCR (Short Circuit Current Rating)
5	Serial number
	 NOTE: The year and month of production are indicated within the serial number.
6	Year of production

Other Sources of Information

Delivery of the melter also includes an electronic version of the customer product manual, the parts list and other documentation such as the wiring diagram.

Note on Customer Product Manual

Depending in the configuration, this customer product manual may be supplemented by additional customer product manuals.

- Pressure sensor series W/K with and without safety switch contact - English Translation (P/N 711960)

Section 3
Installation

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

Overview

VersaBlue® II adhesive melters ware configured individually to meet the customer's requirements. They have to be assembled, installed and connected properly for operation. If the melter is ordered as a complete system, the box/packaging may contain hoses and applicators as well.

The melter includes a ship-with kit, which may contain components that the customer has to attach to the melter. Also, the customer has to provide additional materials to complete the installation.

Transport

- Refer to the section *Technical Data* for weight. Use only suitable transport devices.
- If possible, use the pallet that came with the melter and use angle brackets to fasten the melter.
- Use sturdy cardboard or a box to protect from damage.
- Protect from humidity and dust.
- Avoid jolts and vibrations.

If the Melter is to be Moved

- Move the melter only when it is cool. Keep doors and tank lids closed.

Storage

CAUTION! Do not store the melter outside! Protect from humidity, dust and extreme temperature fluctuations (formation of condensation).

Unpacking Melter

Unpack carefully and check for damage caused during transport. Report any problems to your Nordson representative.

Save pallet, angle brackets and box for later use, or dispose of them properly according to local regulations.

Lifting (Unpacked Melter)

Refer to the section *Technical Data* for weight. Lift the melter only at the frame, using suitable lifting equipment or a forklift.

Contents of Ship-with Kit

The ship-with kit supplied with the melter contains the components listed here. The quantity and type of hose connections contained in the kit are a factor of the melter configuration.

- Square key (protective panels)
- Double bit key (electrical cabinet)
- Hose fitting
- Drip tray (filter change)

NOTE: With the configurations box 30 = H, and K, the drip tray plate is already in place.

The ship-with kit also contains a pack of safety labels in various languages. If dictated by local regulations, affix the appropriate language over the label in a language that is not needed. Refer to *Safety Labels and Tags* in the section *Safety Instructions* to see where the labels should be placed.

Material to be Supplied by the Customer

These additional materials are required to be able to install the melter.

- Power cable
- Residual Current Device (RSD) if required by law. Refer to Observe when Using Residual Current Devices (RCD) on page 3-11 for more information.
- If pneumatic options have been configured: Compressed air supply with tank isolation valve and air conditioning unit.
- If options with pressure sensor (CAN bus) have been configured: Torque wrench. Nordson recommends the torque wrench made by Murr Elektronik, Murr article number 7000-99102-0000000.

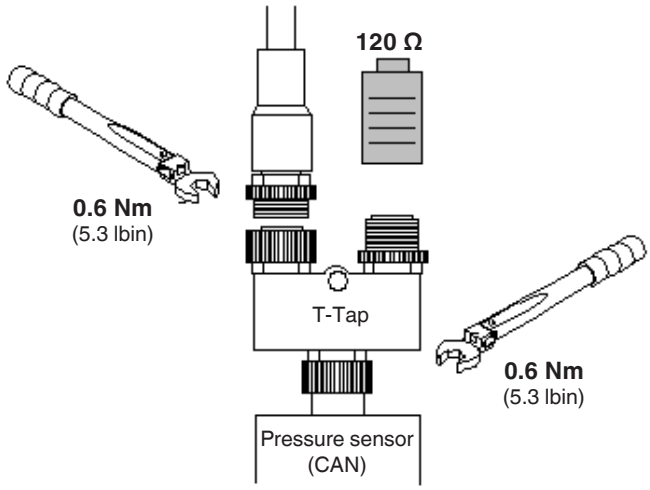


Figure 3-1 T-tap and CAN bus cable with hexagon head

Dusty or Wet Environments

Also refer to the section *Technical Data*.

Dirt and Dust

Check that the adhesive container is stored such that it is dustproof. Otherwise contamination can penetrate the tank. Paper and wood dust burns in the tank and can clog the nozzles. Always keep the tank closed.

Moisture

If the system is installed in a plant where the production lines are cleaned daily with water, the hoses and applicators have be protected from splashing.

Setting Up Melter

Experience of Installation Personnel

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

- Application methods for hot melt adhesive or similar materials
- Industrial wiring of power and control lines
- Industrial mechanical installation practices
- Fundamentals of process control and measurement technology.

Installation Practices

Follow these steps to install the melter:

1. Check that the ambient conditions and the supply systems are in place and functioning properly.
2. Unpack and inspect the melter.
3. Place the melter near the parent machine.
4. Connect electrically.
5. Connect the compressed air supply.
6. Connect hoses and applicators.
7. Set up the melter as required for the application process.
8. Set up the melter inputs and outputs.
9. Install optional equipment.

Installation Requirements

Before installing the melter, ensure that the desired installation location provides the required clearances, environmental conditions, and utilities.

Set up only in an environment that corresponds to the stated Degree of Protection (Refer to section *Technical Data*). Do not set up in a potentially explosive atmosphere! Protect from vibration.

Exhausting Adhesive Vapors

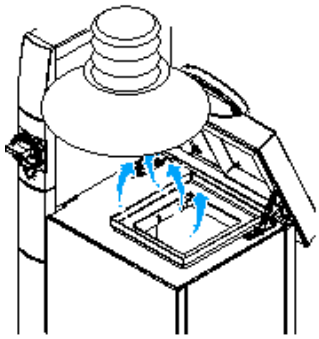


Figure 3-2 Sample melter

Ensure that adhesive fumes do not exceed the prescribed limits. Always observe the safety data sheet (MSDS) for the adhesive to be processed.

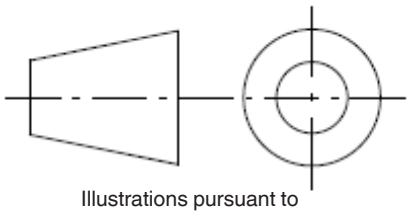
Exhaust material vapors if necessary. Ensure sufficient ventilation of the installation location when the tank lid on the heated melter is opened.

Setting Up Melters with Transformer

The transformer is located under the melter.

- Keep cables and hoses out of the space under the melter.
- Position the melter such that air can circulate sufficiently under the melter.

Melter Clearances



Illustrations pursuant to first angle projection

The following illustrations show the maximum dimensions of the melter for *operation* and *maintenance/repairs*. The dimensions take into account:

- Filling tank
- Pivoting doors and covers
- Light tower
- Filter cartridge

With platforms 2 and 3, the handle protrudes on the right side when the tank lid is closed.

Platform 2

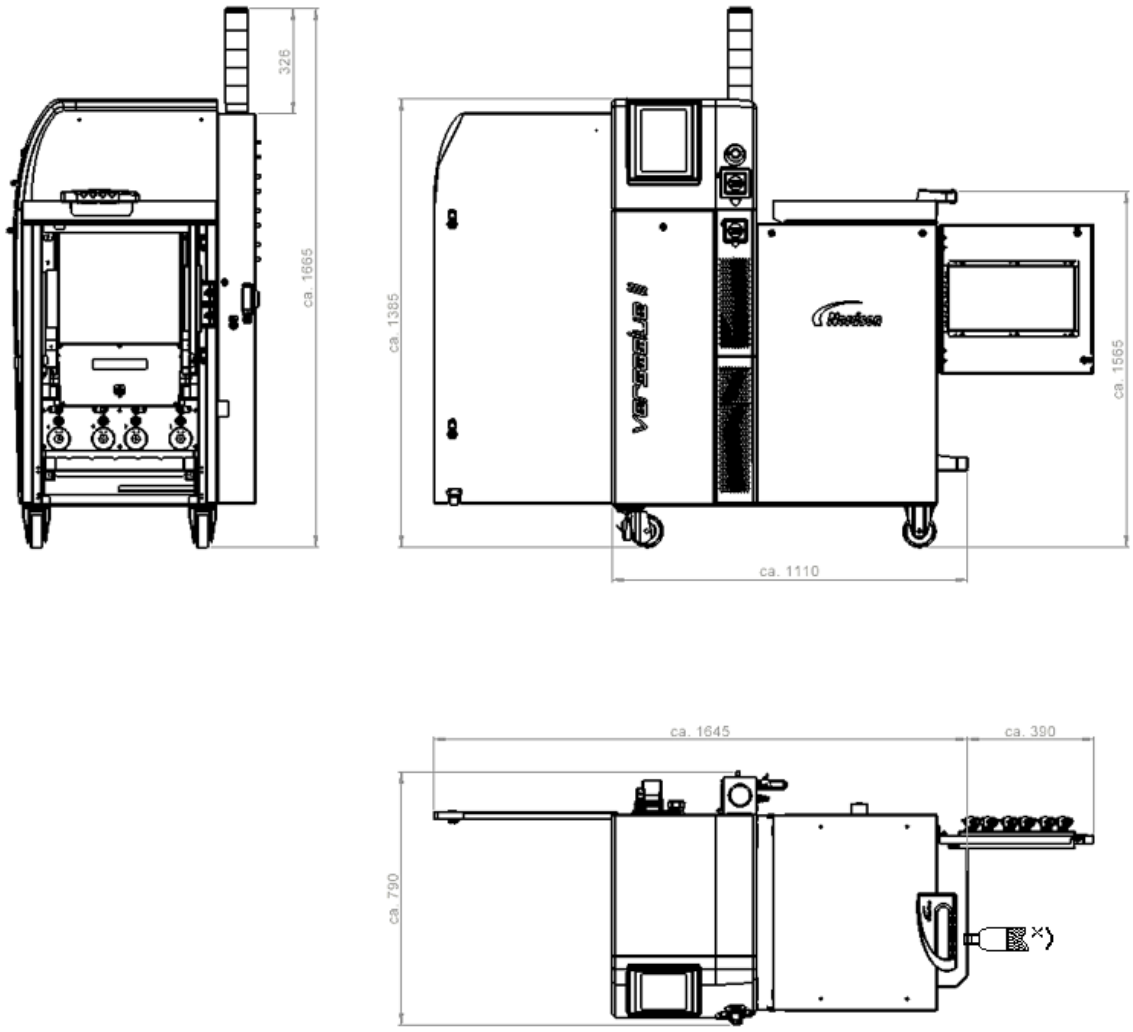


Figure 3-3 *) For the minimum bending radius, refer to the customer product manual for the hose

Platform 3

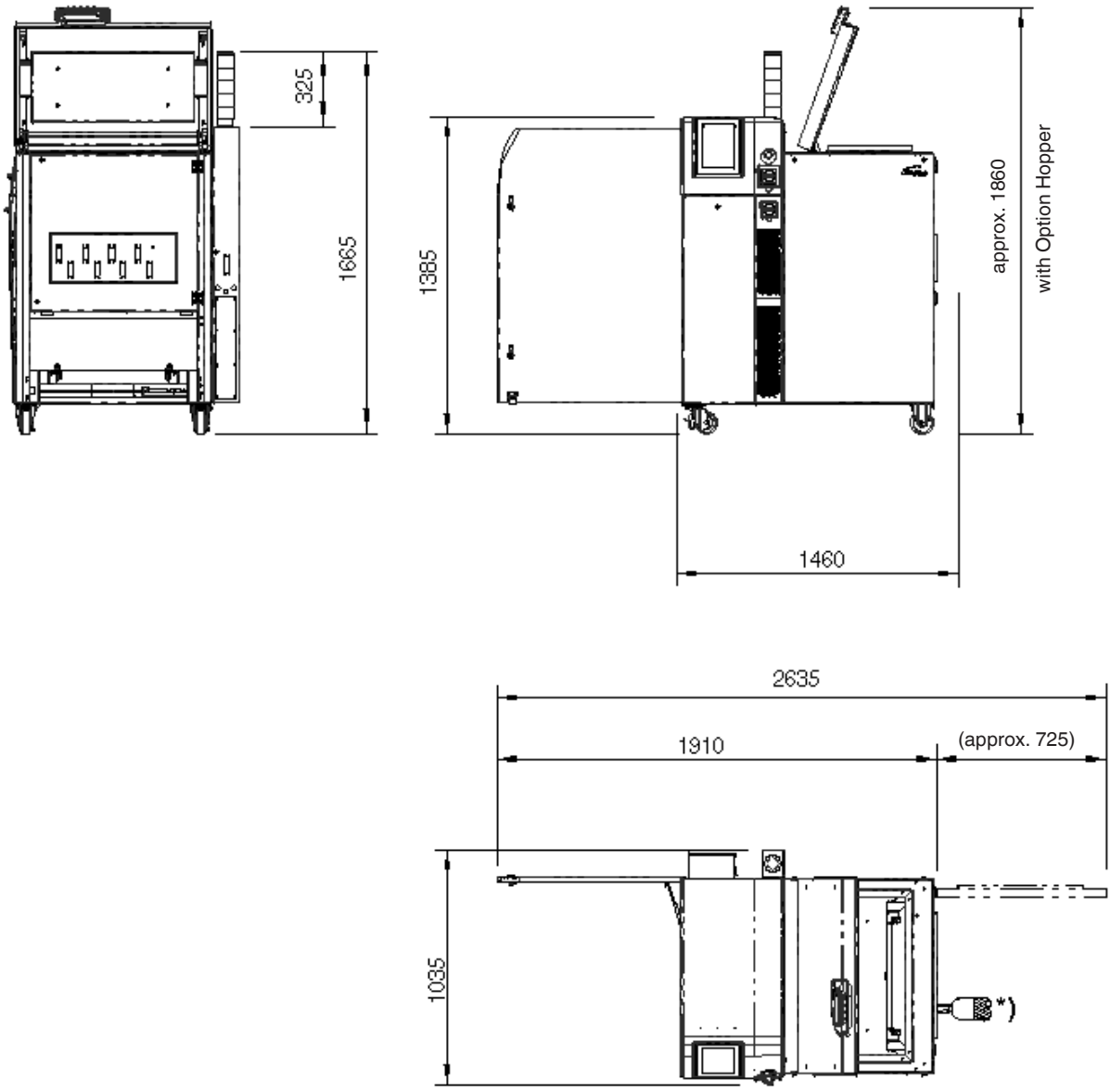


Figure 3-4 *) For the minimum bending radius, refer to the customer product manual for the hose

Electrical Cabinet Ventilation

Refer to Figure 3-5. The air is drawn in through the front panels on the tower, filtered and then discharged again through the vent at the top of the back electrical cabinet panel.

An air/air heat exchanger is configurable.

CAUTION! Do not block the air intake openings and ventilation slots.

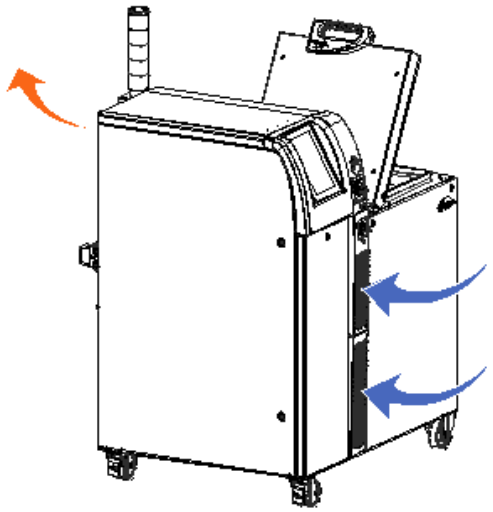


Figure 3-5

Power Supply

Before installing the melter, ensure that the melter will not be overloaded and that the plant's electrical service is rated to handle the power required by the melter and the hoses and applicators that you plan to use.

Refer to the section *Technical Data* for the loads of the various melters.

WARNING! Risk of lethal electrical shock! Before opening the electrical cabinet, disconnect the melter from the power supply with the line disconnector (main switch). Otherwise there is a risk of injury or death.

Compressed Air

The control air pressure is set to suit each application on an air conditioning unit. The air conditioning unit with pressure control valve is not included in the scope of delivery.

NOTE: The operating air pressure for the melter is 6 bar (87 psi/0.6 MPa)

Conditioning Compressed Air

The melter requires the following air quality for the pneumatic options and the heated filling valve:

- Dirt particles in the air may not exceed 30 mm in size
- Dry
- Oil-free

Conditioning Compressed Air for Applicator Control Modules

Applicator control modules require the following air quality:

- Max. particle size 1 mm
- Max. particle density 1 mg/m^3
- Max. pressure dewpoint -40 °C
- Oil-free

NOTE: To ensure safety and facilitate maintenance, Nordson recommends installing a tank isolation valve in the plant's air supply line, directly before the melter.

Considerations Regarding Installation Location

Some of the important factors that should be considered when assessing a location for potential installation of the melter:

- The maximum distance between the melter and the individual applicators is based on the maximum hose length permitted.
- Keep in mind the space needed for *operation* and *maintenance*.
- Position the melter such that it can be moved, if the installation location is not spacious enough for maintenance.
- The melter must be installed away from areas with strong drafts or where sudden temperature changes occur.
- The melter must be installed where it will be in conformance with the ventilation requirements specified in the Safety Data Sheet for the hot melt being used. Use an exhaust hood if needed.
- The operator has to be able to safety work on the equipment, such as being able to reach the control panel and fill the tank.

Assembling Melter

Attaching Light Tower

The melter is delivered with the melter tower base screwed on but with the lamps detached. Screw the lamps onto the base.

Connecting Incoming Power

Observe when Using Residual Current Devices (RCD)

NOTE: Formerly called *Residual current circuit breaker*.

Local regulations in some industrial branches require residual current devices.

Then observe the following points:

- The residual current device should be installed only between the power supply and the melter.
- Use only residual current devices (> 30 mA) sensitive to pulsating current or universal current.

Laying Cable

WARNING! Use only temperature-resistant cable in the warm section of the equipment. Ensure that cables do not touch rotating and/or hot melter components. Do not pinch cables and check regularly for damage. Replace damaged cables immediately!

CAUTION! Lay CAN bus cable with a bending radius > 60 mm (2.4 in).

Labels

When wiring the electrical components as shown in the wiring diagram, observe the cable labels.

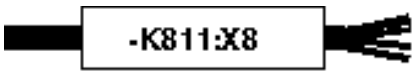


Figure 3-6 Example of cable label (in this case: temperature control board #1, terminal X8)

External Control/Signal Circuits

WARNING! Connect external control and signal circuits with suitable cable in accordance with CE and NEC, class 1. To prevent short-circuiting, lay the cables such that they do not touch printed circuits on PCBs.

Operating Voltage

WARNING! Operate only at the operating voltage shown on the ID plate.

NOTE: Permitted deviation from the line voltage is ±10%.

The data for the melter supplied can be found on the ID plate and corresponding wiring diagram.

Power Supply: Connecting Power Cable

WARNING! Risk of lethal electrical shock or short-circuit. To protect the cable from sharp edges, never pass it though the cable duct without the fitting.

- The melter must be installed securely (permanent power supply connection, no mains plug). It in then considered a permanent melter, even when it is on casters.
- The power cable cross-section must comply with the maximum power consumption.

Refer to the section *Technical Data* for the loads of the various melters.

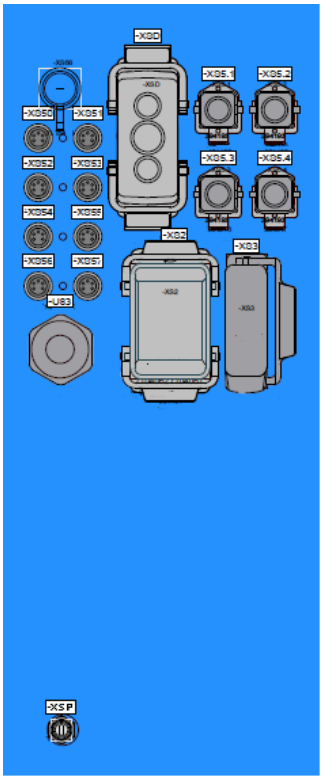


Figure 3-7 Interfaces on the back of the melter

Operating voltage	Terminals				
	PE	L1	L2	L3	N
230 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	
400 VAC 3-phase with neutral conductor (WYE)	•	•	•	•	•
400 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	
480 VAC 3 phases without neutral conductor (Delta)	•	•	•	•	

1. Select a power cable designed to accommodate the maximum power consumption. Ensure that the power cable complies with electrical regulations and applicable standards.

NOTE: Please contact your Nordson representative for any questions related to the power consumption of hoses and applicators.

2. On the back of the melter: Guide the power cable through the fitting and into the electrical cabinet.
3. Connect PE, phases and, when applicable, neutral to the mains terminals.
4. Permanently install the other end of the power cable.
5. Once the electrical connections have been installed in compliance with local regulations and applicable standards, close the electrical cabinet door.

Connecting Compressed Air Supply

Accessories for Pneumatic Connection on Site

P/N	Description
442495	Female air coupling, iR 1/4 NW7.2 L43 SW 22
408846	Quick thread-in fitting, -G-d06-G 1/4-0000
255136 252998	Air operated hose, D8.0 d6.0 PU blue or Air operated hose, D8.0 d6.0 PTFE
252978	Female air coupling d6 NW7.2 L60
255136 252998	Air operated hose, D8.0 d6.0 PU blue or Air operated hose, D8.0 d6.0 PTFE

Melter

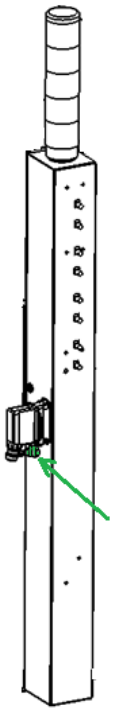


Figure 3-8 Compressed air inlet

The compressed air inlet fitting is located on the tower (green arrow in Figure 3-8).

The pneumatic safety valve behind the inlet limits the inlet pressure to:

6 bar	600 kPa	87 psi

Undertemperature Interlock

With the option *Bypass control* ((Box 30: F), the compressed air is enabled as soon as the undertemperature interlock is released by the master control.

Setting Pressure

Bypass Control

The pneumatic pressure control valve has a transmission ratio operating air pressure / adhesive pressure of 1:15.

The arrows point to the handwheels of the individual pressure controllers. They are available only with the options *Manual pneumatic pressure control* and *Bypass control*.

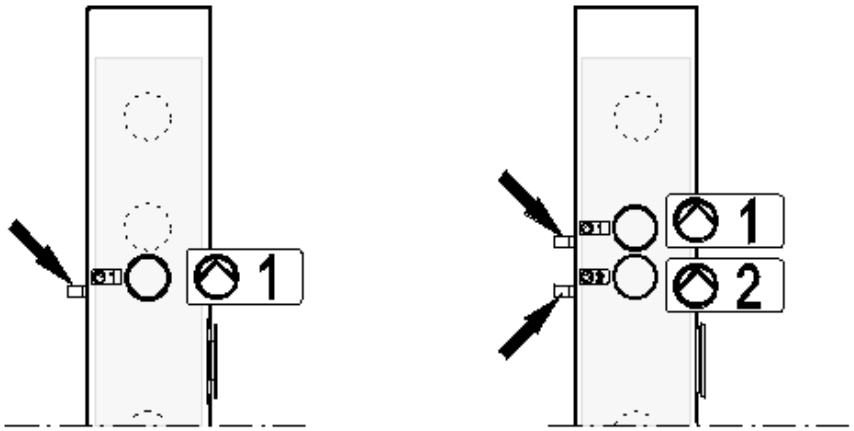


Figure 3-9 Column and labeling for even and odd number of pumps, acrylic cover

Option Filling Valve

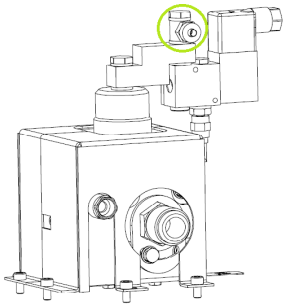


Figure 3-10 Pneumatic connection

Accessories for Pneumatic Connection on Site

P/N	Description
419926	Fitting, G 1/8 1x iG 1/8
419865	Quick thread-in fitting, -G-d06-G 1/8-0000
252998	Air operated hose, D8.0 d6.0 PTFE
403717	Air tube NW8 D10 PTFE

The air connection is located on the control module (green circle, Figure 3-10). Required inlet pressure:

4 to max. 6 bar	400 to max. 600 kPa	58 to max. 87 psi

Connecting Hoses and Applicators

VersaBlue® II adhesive melters are used along with hoses and applicators provided by Nordson. Depending on the respective configuration, up to eight hose/applicator pairs (= 16 temperature channels) can be connected to the melter.

The temperature channels have to be taken into account when ordering heated filling valves or an air heater; also, there are hoses that require two temperature channels.

The number of temperature control boards and hose receptacles installed in the melter determines how many hoses and applicators can be connected to the melter. If the permitted melter configuration has not been maximized, the number of retrofitting channels can be increased with a retrofitting kit.

WARNING! Risk of fire or equipment damage. Before connecting hoses and applicators to the melter, ensure that the maximum load indicated in the *Technical Data* is not exceeded.

CAUTION! The maximum operating temperature of the installed applicator and other heated components should be considered when setting temperatures on the melter control device.

Connecting Hoses

Comply with the following guidelines:

- Contact your Nordson representative for information on how to select the proper hose for the respective manufacturing process.
- Refer to the user guide and/or customer product manual supplied by Nordson along with each hose. They contain essential information about routing and installing the hose.
- Save the plugs removed from the manifold. If a hose is later removed, a plug has to be inserted into the manifold.
- Use suitable hose connections.

  Hose connections are supplied along with the melter. Refer to the separate parts list if e.g. other angles are needed.

Connecting Hoses *(contd.)*

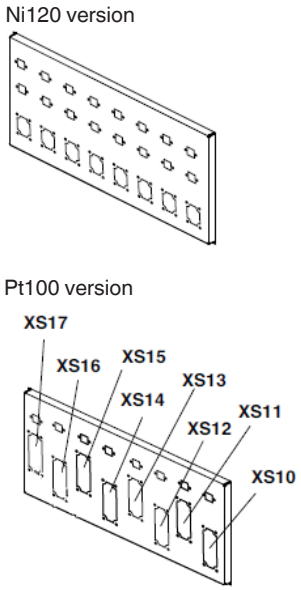


Figure 3-11 Receptacles

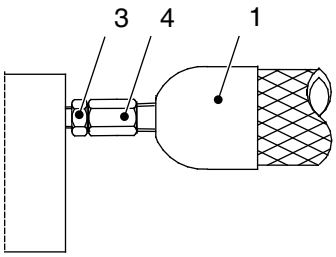


Figure 3-12 Hose connection

Procedure to Screw On

For more than one hose: Each hose connection is assigned a receptacle in the connection plate via the hose connections. Do not mistakenly exchange! Also refer to Figure 3-11.

1. First connect the hose (1, Figure 3-12) electrically to the melter. Refer to the wiring diagram for the connecting arrangement.

CAUTION! Nordson melters are generally run with test material similar to adhesive before they leave the plant. There may be some of the test material left in the hose connection.

If cold adhesive can be found in the hose connection, the components (3, 4, Figure 3-12) must be heated until the adhesive softens (approx. 70 °C/ 158 °F, depending on adhesive).

CAUTION! Hot! Risk of burns. Wear goggles and heat-resistant gloves.

2. Heat the melter and hose until the material softens.

CAUTION! For units with recirculation hoses: do not mistake recirculation hoses for feed hoses.

CAUTION! Dead spaces can cause charred adhesive to build up, which could then clog the applicator nozzles.

Connecting Hoses *(contd.)*

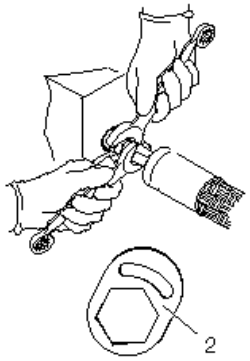


Figure 3-13 Anti-twist device

Using Second Open-end Wrench

Hose connections without anti-twist device (2, Figure 3-13): Use a second open-end wrench when connecting and disconnecting the hose. This prevents the melter's hose fitting from turning.

NOTE: Observe the torques!

Wrench size 19	max. 30 Nm	max. 265 lbin
Wrench size 22	max. 57 Nm	max. 500 lbin

Important when ordering: The anti-twist device (2, Figure 3-13) is a factor of the size (wrench size) of the hose connection.

3. Close unused hose fittings with Nordson port plugs.

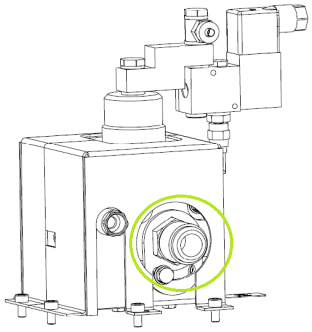


Figure 3-14 Connection for heated hose

Connecting to Filling Valve

1. Electrically/mechanically connect the hose to the filling unit.
2. Screw the hose onto the filling valve connection; refer to Figure 3-14. Use a second open-end wrench!

Heating of the filling valve is controlled via the VersaBlue® II adhesive melter or via the filling unit (e.g. bulk melter).

-XS20 (tank)	Filling valve heater / temperature sensor - Option level control "P and D"
-XS100 (tank)	Filling valve solenoid valve connection - Option level control "P and D"

Detaching Hose

WARNING! System and adhesive pressurized. Relieve system adhesive pressure before disconnecting pressurized components (e.g. hoses, pressure sensors, applicators). Failure to observe can result in serious burns.

Refer to *Releasing System Pressure (Relieving Adhesive Pressure)* in the section *Maintenance*.

Connecting Applicators

Observe the following:

- VersaBlue® II adhesive melters can be operated with Ni120 and Pt100 applicators supplied by Nordson.
- Contact your Nordson representative for information on how to select the proper Nordson applicator for the respective manufacturing process.
- The solenoid valves are not intended to be triggered via the hose. This is why the customer should handle valve control. If necessary, provide a separate signal line.
- Refer to the applicator customer product manual for information on installation.

CAUTION: The maximum operating temperature of the installed applicator and other heated components should be considered when setting temperatures on the melter operating device.

Connecting VersaACM II

Also refer to the separate electrical cabinet customer product manual.

Up to four electrical cabinets VersaACM II can be connected to the melter via EtherCAT.

The EtherCAT hub in the electrical cabinet, to which the EtherCAT lines to the VersaACM II are connected is used for this purpose. The lines are passed out of the melter tower at the bottom.

EtherCAT is a realtime bus system. It permits hot plugging, meaning plugging in and disconnecting network participants during operation, without hindering proper network functioning. Also, the equipment does not have to be restarted for the added or removed participant to function properly.

Melter Inputs and Outputs (I/O)

The inputs and outputs can be found on the back of the melter.

Designation	Connection	Refer to
-XSD -XSD1	Field bus communication (through-chassis plug) Option "T"	Figure 3-7
-XS2	Standard I/O XS2 interface	Page 3-23
-XS50 ... -XS57	External TruFlow channels (max. 8 channels)	Page 3-21
-XS5.1	Key- to-line (one line speed signal for all motors)	Page 3-27
-XS5.1 ... -XS5.4	Key- to-line per drive (one line speed signal per motor)	
-XS4	Flow Control bypass - Option Flow Control "F" (connection on the column)	Page 3-26
-XS3	Inputs/outputs - option level control "L, P, D"	Page 3-25
-XS10 ... -XS17	Hose/applicator connection; max. 8 pairs* (connection on the right door)	Figure 3-11.
-XSP	External CAN bus pressure sensors (connection on the back of the melter)	Figure 3-7

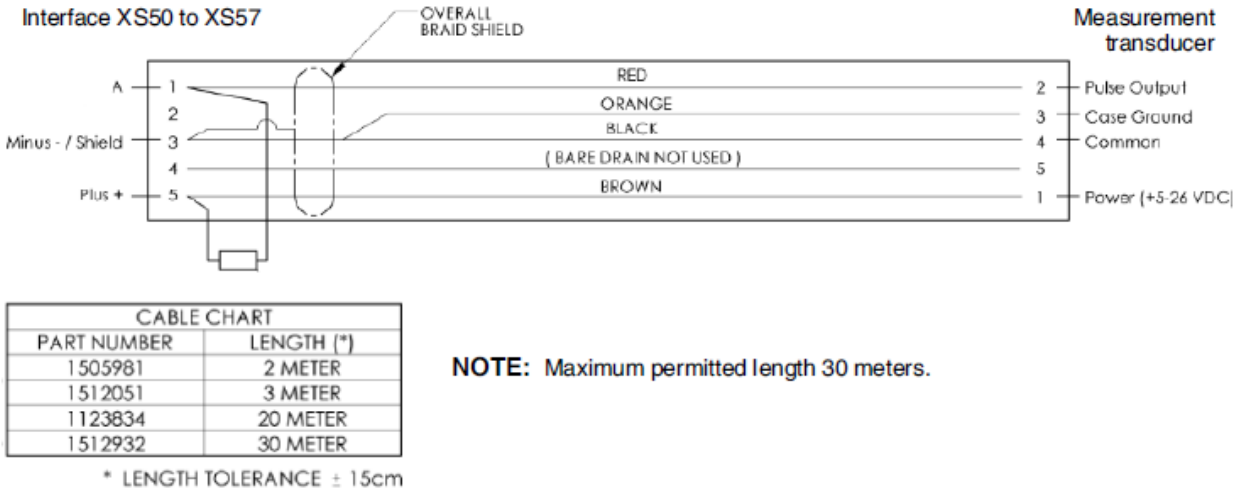
General Notes

- To conform with a European standard regarding electro-magnetic compatibility (EMC), only shielded cable may be connected. The shield must be connected to ground in compliance with the standard regarding electromagnetic compatibility.
- Inductive loads (e.g. solenoid valves) connected to the melter must be equipped with a protective device (e.g. recovery diode) that disables the inductive voltage generated when an inductive load is switched off.
- The permitted voltage deviation is 10%.
- In the field bus based control modes *Field bus* and *Dual* (option *Field bus communication*), the melter cannot be controlled via interface XS2.

Interface XS50 to XS57: TruFlow inputs

Pin	Input	System I/O board
1	Signal 0 - 100 kHz	Pin 3
2	Not assigned	-
3	GND	Pin 2
4	Not assigned	-
5	+24 VDC	Pin 1

Adapter Cable for TruFlow Meter Measurement Transducer



CABLE CHART	
PART NUMBER	LENGTH (*)
1505981	2 METER
1512051	3 METER
1123834	20 METER
1512932	30 METER

* LENGTH TOLERANCE ± 15cm

NOTE: Maximum permitted length 30 meters.

Figure 3-15 Extract from drawing no. 10013562.04

Serial Port Terminator for TruFlow Meter Measurement Transducer

NOTE: To prevent bubbles from forming and heat being transmitted into the encoder connection, ensure that the side of the encoder faces sideways or down.

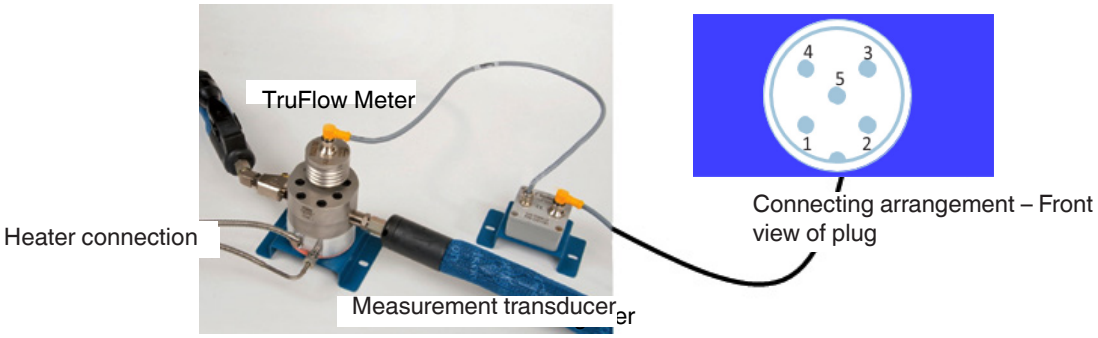
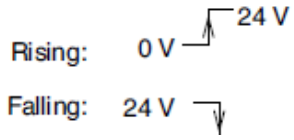


Figure 3-16 Connections

Pin	Connection	Mating cable wire color
1	DC+ (24 VDC)	Brown
4	DC- (COM)	Black
2	Phase A	White
5	Phase B - only quadrature encoder -	Gray
3	Ground (GND/PE)	Blue

Interface XS2: Observe for Edge-Controlled Signals (Example)

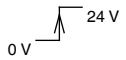
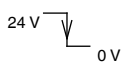
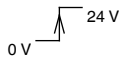
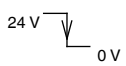
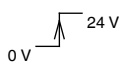
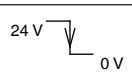


If standby is switched on via the interface (rising edge), it can be switched off with the seven-day clock or by the operator on the control device (Who-touched-me-last).

If standby is then to be switched on again via the interface, it must first be switched off (falling edge) then on again via the interface.

Interface XS2: Standard I/O

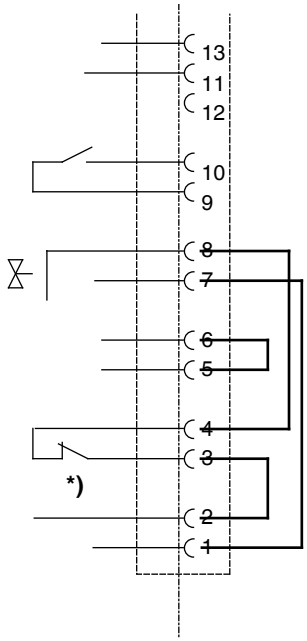
NOTE: * optional

Digital inputs		
Pin	**Input**	**Function**
1*	24 V_{DC}	Internal (melter)
2*	0 V_{DC}	External (Customer connects his reference potential here, if 24 V_{DC} is provided by the customer)
3		Rising edge: *Melter* enable (main contactor closes; heaters ON)
		Falling edge: No *Melter* enable (main contactor opens; heaters OFF)
4		24 V: All motors ON (collective enable) 0 V: All motors OFF
5		24 V: Enable *Motor 1 (pump 1)* 0 V: No enable *Motor 1*
6		24 V: Enable *Motor 2 (pump 2)* 0 V: No enable *Motor 2*
7		24 V: Enable *Motor 3 (pump 3)* 0 V: No enable *Motor 3*
8		24 V: Enable *Motor 4 (pump 4)* 0 V: No enable *Motor 4*
9		Rising edge: Enter standby
		Falling edge: Exit standby
10		Rising edge: Key-to-line mode (for all motors)
		Falling edge: Manual mode (for all motors)
15		24 V: Line started 0 V: Line stopped
Pin 11- 14, 16 not assigned		

NOTE: Contact rating max. 24 VDC/2 A

Digital outputs		
Pin	**Contact**	**Function**
17	Make contact	24 V (contact closed): Motor 1 running
18		0 V: Motor 1 not running
19	Make contact	24 V (contact closed): Motor 2 running
20		0 V: Motor 2 not running
21	Make contact	24 V (contact closed): Motor 3 running
22		0 V: Motor 3 not running
23	Make contact	24 V (contact closed): Motor 4 running
24		0 V: Motor 4 not running
25	24 VDC	External (customer's; to be connected by customer)
26	Make contact	24 V (contact closed): System ready MELTER READY FOR OPERATION
		0 V: System not ready
27	Break contact	24 V: No collective alarm - warning - NO COLLECTIVE ALERT
		0 V (contact open): Collective alarm - WARNING -
28	Break contact	24 V: No collective alarm - stop - NO COLLECTIVE STOP
		0 V (contact open): Collective alarm - STOP -
29	Make contact	24 V (contact closed): System operating SYSTEM RUN
		0 V: System not operating
30	Break contact	24 V: Pressure build-up completed PRESSURE BUILD-UP READY
		0 V (contact open): Pressure build-up not completed
31	Make contact	24 V (contact closed): System idle SYSTEM IDLE
		0 V: System not idle
32	Break contact	24 V: No collective alarm - fault - NO COLLECTIVE FAULT
		0 V (contact open): Collective alarm - FAULT -

Interface XS3: Level Control and Display



NOTE: With level indication (box 5 = L), there is only the contact Fill tank (pin 9/10).

[Check “Filling tank" > "Level low" ?]

Figure 3-17 Default bridges

Digital inputs/outputs			
Pin	**Input**	**Output**	**Function**
1	-	24 VDC	Internal voltage supply of separate overflow protection
2	-	0 VDC	
3	-	Make contact	24 V (contact closed): Fill tank - signal to filling valve
4	-	24 VDC/2 A	0 V: Do not fill tank **- Additionally with level control with overflow protection -** *) Tank is overfilled (contact open when level is exceeded)
5	-	-	**- Only with level control with overflow protection -**
6	-	-	Reset (resets signal *Tank is overfilled*)
7	+ 24 VDC	-	Voltage supply to filling valve
8	0 VDC	-	
9	-	Make contact	24 V (contact closed): Filling tank
10	-	24 VDC/2 A	0 V: Do not fill tank
11	-	24 VDC/2 A	**- Only with level control with overflow protection -**
12	-		Tank overfilled
13	-		**NOTE:** Potential-free changeover contact for evaluation by customer
Pin 14 - 16 not assigned			

Interface XS4: Bypass Control

Proportional pneumatic pressure control valves 5 to 8 are only on double-stream pumps.

Pin	Input	Function
1	24 VDC/ 4 W	Pneumatic pressure control valve 1
2		
3	24 VDC/ 4 W	Pneumatic pressure control valve 2
4		
5	24 VDC/ 4 W	Pneumatic pressure control valve 3
6		
7	24 VDC/ 4 W	Pneumatic pressure control valve 4
8		
9	24 VDC/ 4 W	Pneumatic pressure control valve 5
10		
11	24 VDC/ 4 W	Pneumatic pressure control valve 6
12		
13	24 VDC/ 4 W	Pneumatic pressure control valve 7
14		
15	24 VDC/ 4 W	Pneumatic pressure control valve 8
16		

Interfaces XS5.1 to XS5.4: Key-to-line

In the field bus-based control modes *Field bus* and *Dual* (option *Field bus communication*), the line speed signals via this interface are disabled.

XS5.1		
Pin	**Input**	**Function**
1	- (Ground)	Analog input Box 32 = A (one line speed signal for all motors): there is only interface XS5.1. Box 32 = K (separate line speed signal inputs): Motor 1: Number of interfaces as a factor of the number of pump motors.
2	0 to 10 VDC or 4 to 20 mA*)	
3	Not assigned	

XS5.2 to XS5.4		
Pin	**Input**	**Function**
1	- (Ground)	Analog input Box 32 = K (separate line speed signal inputs): Motor 2 to 4. Number of interfaces as a factor of the number of pump motors.
2	0 to 10 VDC or 4 to 20 mA*)	
3	Not assigned	

* Set the line speed voltage or line speed current on the respective I/O input/output board; refer to the wiring diagram.

Setting Up the Melter

After physically installing the melter, it must be set up to support your manufacturing process. Melter setup consists of enabling or making changes to factory-set operating parameters that affect the use and function of the melter. The operating temperature (setpoint) of the tank and of each hose and applicator is specified during melter setup.

The melter is shipped from the factory with the most commonly used operating parameters already set. The factory setup can be modified at any time to suit your manufacturing process.

Using Control Panel

Operation of the melter is described in the section *Operation*.

Melter Removal

Run the melter until empty, separate all connections from the melter, and allow the melter to cool down.

Disposal

When your Nordson product has exhausted its purpose and/or is no longer needed, facilitate recycling whenever possible. Examples:

- Electronic components, cables, batteries and rechargeable batteries
- Paper and cardboard packaging
- Plastic packaging

Please dispose of materials responsibly and comply with local regulations. This applies particularly to:

- Adhesive residue
- Solvents and cleaning agents
- Lubricants.

Section 4
Operation

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

Operator Level Tasks

The sequence of the tasks that the operator performs:

1. Fill the melter tank.
2. Start the melter for the first time.
3. Operate the melter.
4. Shut down the melter.

Before proceeding with the next tasks, ensure that the melter is properly and completely installed and that it is connected.

Fill Melter Tank

Before filling the tank, confirm that the hot melt adhesive is compatible with the melter. For information on hot melt adhesives that should not be used in VersaBlue® II melters, refer to *Intended Use* in the section *Description* (section 2).

For melters with inert gas equipment (option): Ensure that the inert gas inlet hole is not clogged with adhesive.

Automatically

Automatic tank filling is performed e.g. by a bulk melter connected with a hose to the optional filling valve. Level sensors in the tank start and stop the filling process.

Manually

WARNING! Hot! Risk of burns. Wear suitable protective equipment (safety goggles and heat-protective gloves). Tank, collar, cover plate and tank lid are hot. When filling, hot adhesive may splash out of the tank. Use caution when filling the tank with adhesive.

CAUTION! Hot! If the hot melt adhesive is in the form of pellets or slats, use a scoop to fill the tank. Never work without wearing gloves. Using your bare hands to fill the tank may result in personal injury.

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

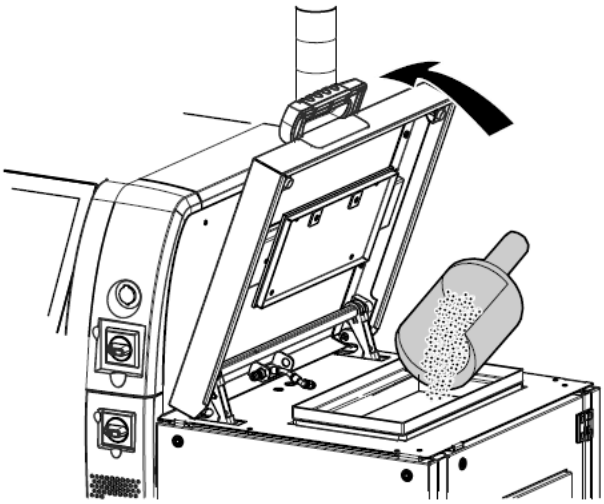


Figure 4-1

1. Open the tank lid.
2. Fill the tank with hot melt adhesive. Refer to Figure 4-2 to see the maximum level.
3. Close the tank lid again when the tank has been filled.

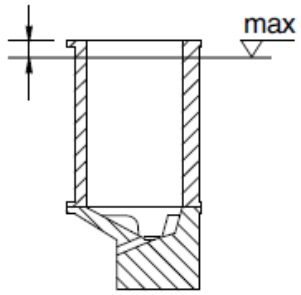


Figure 4-2 Cross-section of tank

Maximum Level

The level should not exceed 25 mm (1 inch) below the rim of the tank; this also applies to melters with the inert gas option (The inert gas is fed through two discharges in the tank lid).

Adapt the maximum level to the adhesive dispensing speed. Feed adhesives sensitive to temperature quickly to prevent loss of quality.

Start Up Melter for the First Time

Before starting up the melter for the first time, confirm that the melter is completely installed, including hoses, applicators and optional equipment.

CAUTION! Adhesive flows out of the nozzle when the solenoid valves are triggered. Risk of burns and/or splashing. Wear goggles and heat-protective gloves. Do not program while the applicators are being installed.

CAUTION! If the melter has a level sensor, Nordson has already calibrated the evaluator.

Purge Melter

The melter was subjected to extensive testing prior to shipment. In doing so, the tank was filled with a special test material. There may be some of this material left in the melter. To remove the residue, melt and feed several kilograms of adhesive before starting production.

CAUTION! Do not operate Nordson gear pumps without adhesive. Before switching on the motor, ensure that the tank is filled.

1. Fill the melter tank.
2. Set the service switch to I/ON.
3. Set the main switch to I/ON. The melter boots up and begins to heat up.

NOTE: If desired, automatically heating up the melter upon daily startup can be delayed until the respective command is given. This is set on the control device.

	Position I/ON	:	Main switch
	Position I/ON	:	Service switch

Padlocks can be used to protect the switches from unauthorized access.

4. Wait until the starting screen appears on the control device (Refer to Figure 4-3).

Only users with the respective rights can change the settings.

Languages and units can be set on the control panel.

5. Select language if necessary.
6. Set units if necessary.
7. Customize names if necessary
8. Set temperatures.
9. Switch on the heaters and wait until the system is ready for operation.
10. Enable motors.
11. Set speed.
12. Switch on the motors and feed adhesive until all of the test material has been flushed out.
13. Switch off the motors.

Switch Off the Melter

Switch off the melter when it will not be used for an extended period of time.

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

Disable applicators as described in the separate applicator customer product manual. This includes

- Stopping the air supply to the applicators.
- Switching off signals, e.g. from the parent machine, that directly trigger the solenoid valves.

After the First Day

CAUTION! In the course of daily operation, heating and cooling can cause screwed parts to become loose, leading to leakage.

After the first day, while the adhesive is still soft (approx. 70 °C/ 158 °F, depending on the adhesive), retighten the following if applicable:

- Base plate of the combination of safety and tank isolation valve
- Pressure control valve
- Pressure sensors
- Filter cartridge
- Plugs
- Hose fittings.

Then check at regular intervals and repeat as required. Refer to section *Maintenance*.

Emergency Shutdown

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

1. Set main switch (disconnecting device) to 0/OFF.
2. After standstill and before switching the melter on again, have the emergency situation remedied by qualified personnel. A U-lock can be used to secure the OFF setting of the main switch.

Control Panel Details

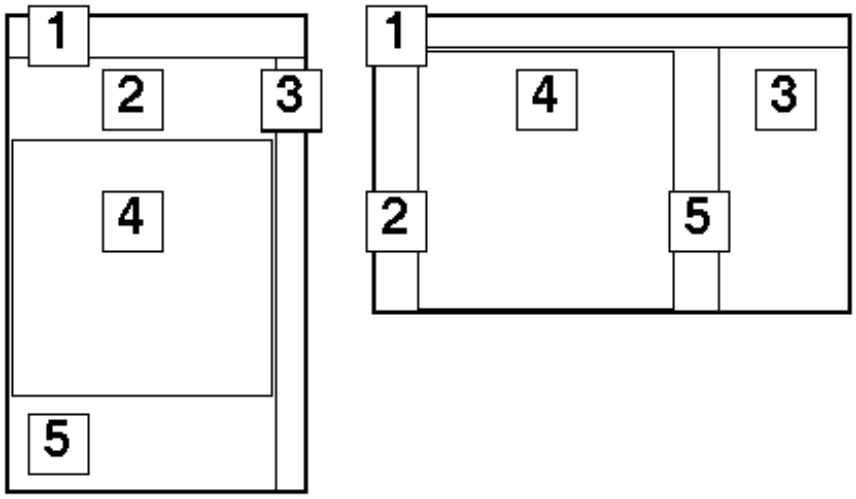
Starting Screen (Home)

Figure 4-3 0_0_Home

1 Heaters off
2 Master control
3 Temperature
4 Pumps
5 Level
6 Pressure
7 System

The control device on the melter has a capacitive touch screen. As with a smartphone, the screen can be operated with bare fingers, conductive gloves or a conductive stylus.

The browser automatically sets the orientation to landscape or portrait when an external control device, such as a laptop with access via the web browser is used.



Help text: This symbol indicates that there are help texts available for these screens. A few of the help texts contain links to web pages. These links function only when the device is connected to the internet.

Each help window contains a button that leads to a table of contents.

Some actions require a longer saving and change processes in the controller. Wait Screen Is displayed during this process.

1 System information and settings displayed in every screen.

Link to the screen *Master control*, allowing e.g. the motor to be quickly switched off at any time.

A yellow icon indicates that all external access via interface XS2, field bus or OPC UA is blocked.

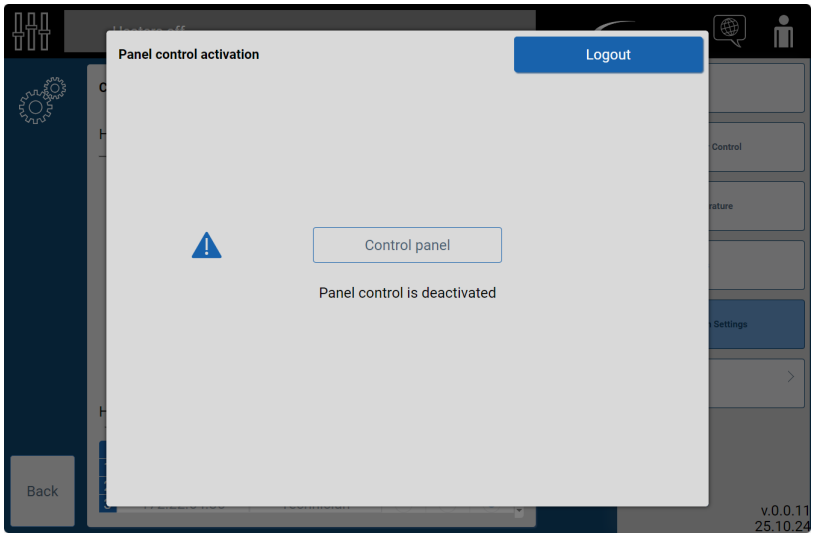
WARNING! Blocking does not serve the same function as the black service switch used to interrupt the motor circuit when working on the motor.

- Indication of system state (examples).
- Select language. Names entered by the customer are not translated.

- Access authorization and password input.
  - Control device is LOCKED. Login is possible. There is no user logged in to another control device.
  - Control device is LOCKED. Login is possible. There is a user logged in to another control device.
  - Control device is LOCKED. Login is NOT possible. A user with exclusive access rights is logged in to a different control panel.
  - Control device is not locked. A user is logged in.

For a list of enabled functions, refer to Password Level and Rights

Note on the popup window *Control panel activation*:



This button applies the setting from the chosen control mode. The user can activate the control panel when he has the respective rights (technician or higher). When activated, operation via the control panel is enabled.

2 Individual information

- The name of the melter (default: Nordson melter) is shown in the home screen. The name of the melter or system can be assigned by the customer, to be able to differentiate between the individual product lines. Move to the screen *System settings / General* to change the names.
- The submenus provide information on the respective function.

3 Icons for navigation

- Starting screen (Home)
- Additional icons appear as soon as one of the enabled tiles is touched, opening the submenu.
- The icons correspond to the symbol on the respective tile.

4 Tiles

- Maximum number of tiles: 6
- Additional status information is provided on some of the tiles. Touch the tile to open the screen for the submenu.
- An hourglass on the tile *Temperature* shows the time remaining until the melter is *Ready*. An operating delay has to be entered for this purpose.
- The tile *Level* serves only as an indicator.

  The current level as a percentage of the tank volume is shown.
  Example: 38 % with a 100-liter tank = 38 liters

  A red triangle indicates a level alarm.

  If the tank is to be emptied, deactivate the function in the *System settings* using the slide.
- If there is no tile *Level*: The option was not purchased or was installed later and has not yet been entered in the configuration code.

  The configuration code can be found in the *System settings*.

5 Additional operating elements are shown in this area.

NOTE: Touch the gear icon. This is a direct link to the corresponding settings.

Wait Screen

Figure 4-4 0_0_M0 Please wait!

The wait screen is shown during saving and changing processes for which the controller needs a longer time. The number on the bottom left describes the background process.

Processes

1. System is booting.
2. Backup is being created or loaded.
3. Temperature unit is being changed.
4. Alarm history is being deleted.
5. Nordson reset is being performed.
6. OPC UA is being activated/deactivated.
7. Field bus error log is being deleted.
8. Ethernet/IP IP address is being saved.
9. Ethernet/IP IP address II is being saved.
10. Defaults are being loaded.
11. Customer recipe is being loaded.
12. Customer recipe is being saved.
13. Pressure sensor is being assigned or deselected.
14. Software update is being performed.
15. First system initialization is being performed.
16. Initialization file is being created.
17. Change to the control panel (e.g. date & time)
18. License transaction is being performed.
19. Other tasks

Password Level and Rights

No Password Protection

-  Change language
-  Master control - Switch off heaters
-  Master control - Switch off pump collective enable
-  Master control - Switch off setback

NOTE: The melter cannot be switched off when the control panel is deactivated.

Operator

Operation for daily work.

- Switch on/off heaters
- Switch on/off pump collective enable
- Activate/deactivate setback
- Pump individual enable
- Set/copy temperature setpoint
- Pressure setpoint
- Setpoint in manual mode (speed/ pressure/ flow rate)
- Save, overwrite, activate recipe
- Start/stop, delete field bus protocol

OperatorPlus

Advanced operation for daily work. Contains enable for operator level.

- Specify *Purge bypass valves* (Y/N) alarm: If the operator would like the alarm, a popup window opens after the set time, indicating the required maintenance.
- Switch between manual mode and key-to-line
- Set, copy setback (standby) temperature
- RESET alarm *Purge bypass valves*
- Overtemperature and undertemperature alarm thresholds (limits for warning, stop)
- Activate/deactivate temperature channel
- Load, rename, delete recipes.

Technician

Trained user. Contains enable for operator and OperatorPlus level.

All functions and parameters (exception: functions that require the Nordson level).

- Activate/deactivate simulation
- Load licenses
- Perform software update

Nordson - Only for Nordson Personnel

Configuration and special functions. Contains the enables for all levels.

Master Control

Figure 4-5 0_1_MControl

1 Heaters off
2 Master control
3 Heaters
4 Pumps
5 Setback
6 No active alarm
7 Alarms
8 Alarm history

A yellow icon and the message *External melter control is deactivated!* Indicates that all write access via the interfaces such as XS2, field bus, OPC UA will be blocked. Read access is still possible.

WARNING! Blocking does **not** replace the function of the black service switch used to interrupt the motor circuit when working on the motor.

Individual functions can be enabled or activated with the slides.

- **Heaters**. Activate/deactivate via the master control.

  Deactivating the heaters stops the pump motors. The controller continues to be supplied with voltage.

  NOTE: The heaters can also be switched on or off via interface XS2 or the field bus.

- **Pumps**. Pump collective enable via master control.

  Before a pump begins to turn, the following prerequisites have to be met:

  - The black service switch (motor circuit switch) has to be set to I (ON).

    NOTE: There is no way to start the pumps when the motor circuit switch is switched off.

  - No motor start protection is active.
  - The system is ready for operation.
  - The pump collective enable is set.
  - The individual enables for the pumps are set.

    The individual pump is enabled via the slide on the control device.

  Note on individual and collective enables: Depending on the set control mode (control panel, standard, field bus, etc.), different enables may need to be set.

- **Setback**. Enable if the system is to enter standby (setback). After activation, the pump motors stop.

  Observe for edge-controlled signals - Example of setback (standby):

  If setback is switched on via the XS2 interface (rising edge 0 V --> 24 V), it can be switched off via the control panel.

  If setback is then to be switched on again via the XS2 interface, it must first be switched off- falling edge 24 V --> 0 V) and then on again via the interface.

- **Simulation.** Activate simulation of the melter is not integrated into the line, and a line speed signal is to be simulated.

  NOTE: The pump appears on the screen when the pump line speed input has been set to *Simulation*. If simulation was deactivated in the screen *Master control* but the button *Simulation* does not reset to the original setting (analog input or field bus), the system returns to the original setting after 10 minutes.

Alarms

The number of active alarms is shown in the lower section of the window.

- Active alarms can be called up via the button *Alarms*. If necessary, the alarm can be acknowledged (manual reset) here.
- Active and no longer active alarms are shown in the *Alarm history*.

System State: Display on Operating Device and Light Tower

The light tower provides information on the system state. The colored lamps light up for two seconds after booting. This allows the operator to see which lamps are not working and then replace them.

- Illuminated red: Stop or fault
  - Stop: Pumps are switched off automatically. Heaters and the optional filling system remain on.
  - Fault: The heaters and pumps are automatically switched off.
- Illuminated yellow: Warning

  Although production is not stopped, the problem should still be checked. For example
  - The tank lid has been open for at least five minutes.
- Illuminated green: Ready for operation or production
  - No current stops or faults.
  - All of the enabled temperature channels have reached their setpoint, meaning that the actual temperature is within the setpoints entered for the undertemperature and overtemperature alarm thresholds.
  - If a ready delay was set, the time has elapsed.
  - Additionally when ready for production: Pumps were enabled via the master control on the control device, via an interface signal, or via a PLC command.
    NOTE: Pressure build-up can be but does not have to be completed (with optional pressure build-up feature).

- Illuminated blue: Idle

  Action by the customer is required for *Ready for production*, or the system is waiting for automatic enable. Examples:

  - The system is still in the heating phase
  - Still in standby
  - Ready delay not yet elapsed
  - Motor startup protection active
  - The black service switch (motor circuit switch) is set to 0 (OFF).

- Flashing blue: The tank lid was opened and has not yet been closed again.

  If the tank lid is still open after five minutes, the blue stops flashing and the light tower is illuminated yellow.

- Illuminated white: Melter on and heaters off.

Control Panel Activation

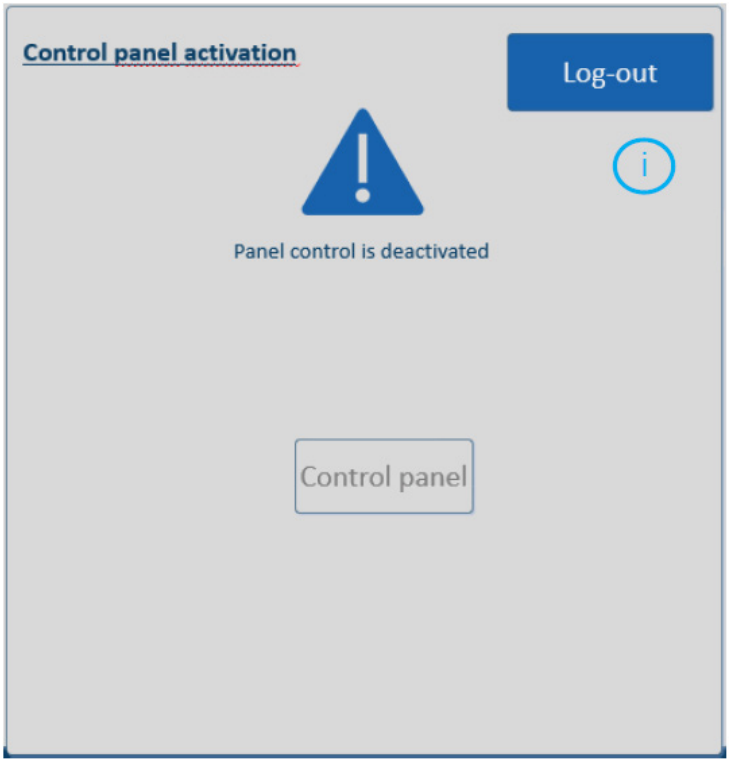


Figure 4-6 0_1_P2

1 Control panel activation
2 Logout
3 Panel control is deactivated
4 Control panel

Operation via the control panel can be deactivated (Also refer to Connections - Clients).

The user can activate/deactivate the control panel button only when he has the respective rights (technician or higher).

- When the control panel button is activated, operation via the control panel is enabled.

  NOTE: After activation, the pump enables have to be reset on the control panel.

- If operation is deactivated via the control panel, all users currently logged in are logged out.

If the user does not have the rights required to activate the control panel, touch *Logout*.

User Management

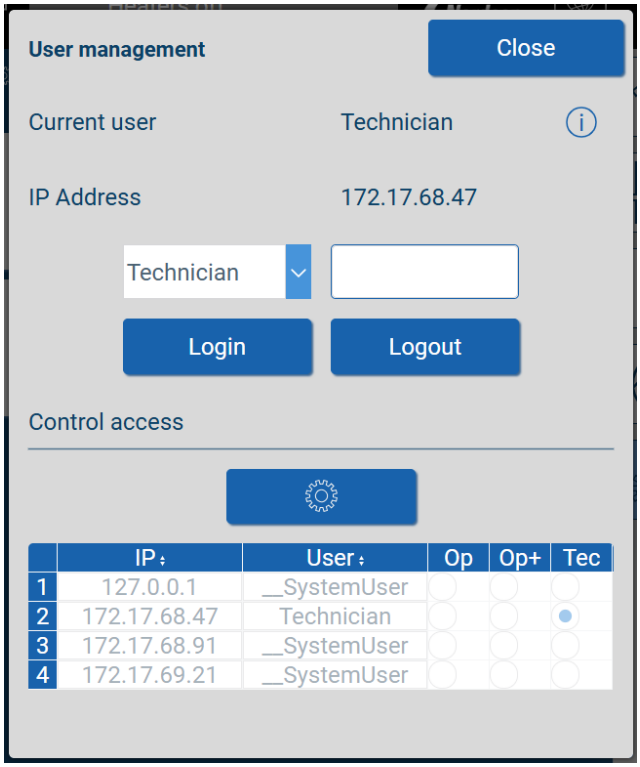


Figure 4-7 0_1_P3

1 User management
2 Current user
3 Login
4 Logout
5 Control access

Current user: Indicates which password level is active on this control device.

IP address: The IP address of the control device on which the user is logged in.

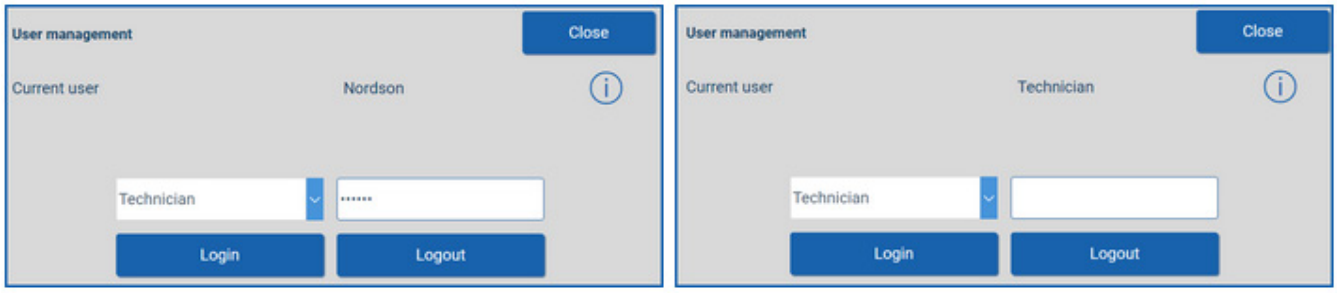


Figure 4-8 User management

Login

1. Select password level, e.g. technician.
2. Enter the password.
3. Touch *Login*. Touch *Logout* to log out.
4. Password level *Technician* or higher: An additional protection level can be set if required.

Default Passwords upon Delivery

Technician: adminTech

OperatorPlus: adminOpPlus

Operator: adminOp

For information on how to change passwords and create new users, refer to User Management II..

Protection Levels

- **Password protection** (first level)

  There are four password levels available:

  - **Nordson**

    Only for Nordson personnel.

  - **Technician [Tec]**

    Settings for trained personnel.

  - **OperatorPlus [Op+]**

    Advanced operation for daily work, e.g. changing setpoints.

  - **Operator [Op]**

    Operation for daily work, e.g. switching on and off heaters, pump collective enable.

Password Level and Rights

Control access

Additional protection levels 2 to 4; refer to Connections - Clients.

Alarms

Figure 4-9 0_2_Alarms

1 Heaters off
2 Alarms
3 No active alarms
4 Export history
5 Active
6 History

Button *Export history*. Export currently works only on a PC/laptop. A CSV file is created and is then available in the download folder.

Convert Special Characters from the Contents of the Exported CSV File

1. Open *Empty workbook* in Excel.
2. Tab *Data / From text /CSV*
3. Select *AlarmHistory.csv* and *Import*.
4. Set *Load in...*.
5. Select *Spreadsheet* as the format and then touch *OK*.

Button *Active*. All of the active alarms, each with a time stamp, are listed.

There are three alarm categories:

-  **Fault**

  Depending on the source of the alarm, the fault is either reset automatically as soon as the cause is remedied, or it has to be confirmed manually by the operator.

  Reset manually with *Confirm* in the details of the alarm.

-  **Stop**

-  **Warning**

  Depending on the source of the alarm, resetting occurs automatically in the event of stops and warnings.

  Automatic reset occurs e.g. when, after an undertemperature warning, the temperature rises to 2 °C (3.6 F) below the setpoint, without the operator having to intervene. This can happen when adding adhesive.

  Confirmation is required e.g. for the warning *Purge bypass valve. Service interval expired* is required.

Button *History*. All alarms, whether active or not, are listed. Alarms that are no longer active have a time stamp in the column *Cleared*.

NOTE: Touching the alarm line twice shows the alarm details. If the respective alarm is active, touching *Confirm* manually resets it if the active alarm requires confirmation

Alarm Details

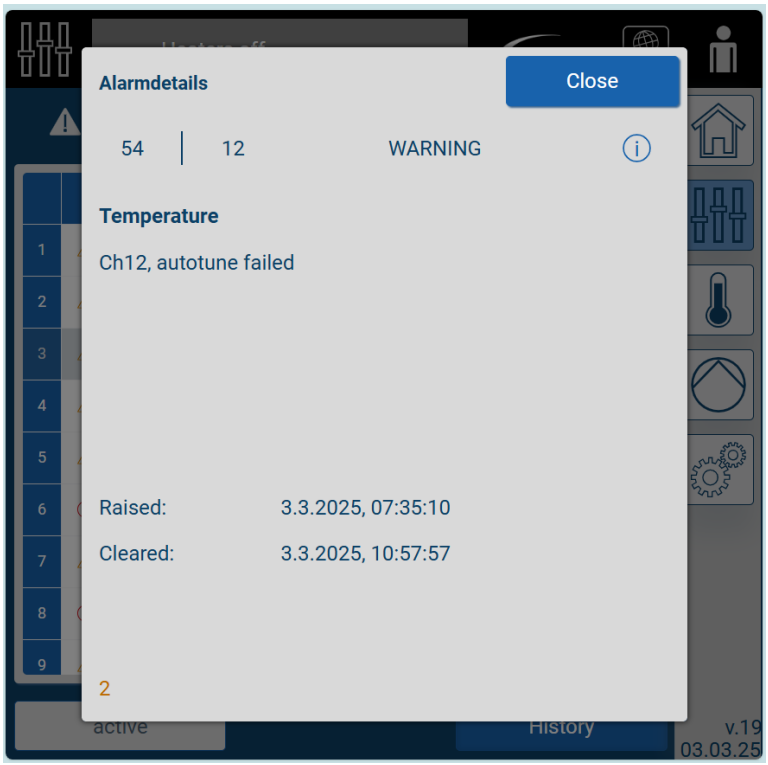


Figure 4-10 0_2_P1

1	Alarm details	3	Temperature	5	Cleared
2	Close	4	Raised		

This screen contains explanations of the occurring alarm.

When and why the alarm occurred (e.g. *WARNING Service interval is expired*), possible causes and remedies (e.g. *Purge bypass valve valve*).

Display 6 | 2 shows ID* | No.**

ID: Alarm group

**No.: Consecutive component number (hardware component or channel number)

Alarm Without Automatic Reset

Once the cause has been remedied, touch *Confirm* to confirm the alarm. The alarm is no longer active and moves to the alarm history.

Also refer to *Triggering and Resetting Alarms* as well as to other troubleshooting tables in the melter customer product manual.

Alarm List

ID: 1 FAULT

Fault

- No. 1: Main contactor
  - Main contactor defective
  - Main contactor switches incorrectly due to wrong wiring: Check wiring of main contactor and checkback contact
- No. 2: Thermostat (tank, transformer)
  - Tank temperature exceeded
  - Transformer temperature exceeded
- No. 3 - 6: ACM 1 - 4 Main contactor
  - Refer to ID 1 | No. 1: Main contactor
- No. 7: EtherCAT internal error

ID: 2 FAULT

Communication failure

- No. 0 - 2: Melter or ACM EtherCAT terminal, analog input temperature sensor
- No. 10 - 12: Melter or ACM EtherCAT terminal, digital output temperature channel
- No. 20 - 24: Melter or ACM EtherCAT terminal, digital input
- No. 30 - 33: EtherCAT terminal, relay output
- No. 40: Potential power feed terminal
- No. 41 - 44: Melter or ACM EtherCAT terminal, encoder interface, TruFlow
- No. 51 - 66: Controller 1 - 16
- No. 80 - 82: EtherNet/IP adapter (slave), PROFINET IO Controller, EtherCAT Bridge terminal (primary)
- No. 90 - 91: Melter or ACM EtherCAT coupler
- No. 92: CAN-open master for internal CAN bus
- No. 98: EtherCAT tap (hub)
- No. 99: EtherCAT extension (output coupler melter)
- No. 102 - 116: Pressure sensor A1 - A16
- No. 201 - 216: Pressure sensor B1 - B16
- No. 301 - 316: Pressure sensor C1 - C16
    - Bus not started. Check bus cables and plugs on all components
    - Check CAN terminating resistors. CAN plug with integrated 120 Ω terminating resistor (slide) and last pressure sensor
    - Contact fault in voltage supply
    - Incorrect or fluctuating operating voltage

ID: 3 STOP

No command from field bus master

- No. 1: Field bus communication in one of the control modes field bus. field bus (extended), dual or dual (extended) is interrupted
  - The transmission data block contains the illegal command = 0
  - Field bus cable broken, defective or not connected
  - Interruptions in communication, e.g. if the master is not switched on
  - The network was not set up properly
  - Sudden resets or crashes, e.g. due to electro-magnetic interference

ID: 4 STOP

Wrong type

- No. 0 - 2: Melter or ACM EtherCAT terminal, analog input, temperature sensor 1 - 18
- No. 10 - 12: Melter or ACM EtherCAT terminal, digital output, temperature channel 1 - 18
- No. 20 - 24: Melter or ACM EtherCAT terminal, digital input
- No. 30 - 33: Melter or ACM EtherCAT terminal, relay output
- No. 40: Melter or ACM potential power feed terminal
- No. 41 - 44: Melter or ACM EtherCAT terminal, encoder interface, TruFlow
- No. 51 - 66: Controller 1 - 16
- No. 80 - 82: EtherNet/IP adapter (slave), PROFINET IO Controller, EtherCAT bridge terminal (primary)
- No. 92: CAN-open master for internal CAN bus

ID: 6 WARNING

Service interval expired

- No. 1: Service interval expired
- No. 2: Service required Safety/bypass - Purge safety valve

ID: 10 STOP

Tank empty

- No. 1: Level sensor

ID: 11 WARNING

Tank level low

- No. 1: Level sensor

ID: 12 WARNING

Tank overfilled

- No. 1: Tank - Level sensor
- No. 2: Tank - Sensor to prevent overfilling (option)

ID: 14 WARNING

Incorrect license

- No. 1: OPC UA
- No. 2: HMI client
    - License file fault or missing.

NOTE: Please contact your Nordson agent for assistance. Enter the serial number and P/N of the melter, as well as an email address to which the license file should be sent.

ID: 20 FAULT

Overtemperature

- No. 1 - 66: Temperature channel 1 - 66

ID: 21 STOP

Overtemperature

- No. 1 - 66: Temperature channel 1 - 66
  - Check wiring of temperature channels
  - Check wiring of temperature sensors (Sensor connected to correct channel?)
  - Correct temperature sensor type? (Also for external components?)
  - Temperature controlled system OK?

ID: 22 WARNING

Overtemperature

- No. 1 - 66: Temperature channel 1 - 66
  Refer to ID: 21 STOP overtemperature

ID: 23 STOP

Undertemperature

- No. 1 - 66: Temperature channel 1 - 66
  - Is temperature controller working/regulating?
  - Are the solid state relays being triggered?
  - Are the solid state relays switching through the line voltage?
  - Is the line voltage too low?
  - Heater defective?
  - Check wiring of temperature channels
  - Check wiring of temperature sensors (Sensor connected to correct channel?)
  - Correct temperature sensor type? (Also for external components?)
  - Temperature controlled system OK?

ID: 24 WARNING

Undertemperature

- No. 1 - 66: Temperature channel 1 - 66
  Refer to ID = 23 STOP undertemperature

ID: 25 STOP

Temperature sensor broken or sensor input open

- No. 1 - 66: Temperature channel 1 - 66
  - Hose/applicator connected?

ID: 26 STOP

Temperature sensor short circuit

- No. 1 - 66: Temperature channel 1 - 66

ID: 31 STOP

Motor/ motor controller overtemperature

- No. 1 - 16: Drive 1 - 16
  - Motor fan cap / motor controller cooling section dirty
  - Ambient temperature too high
  - Sluggish pump
  - Check motor controller output voltage
  - Check motor controller wiring / terminal with the label T1 - T2

ID: 32 STOP

Coupling blocked

- No. 1 - 16: Pump 1 - 16 coupling

ID: 33 FAULT

Faulty parameter file

- No. 1 - 16: Controller 1 - 16

ID: 34 FAULT

No parameter file

- No. 1 - 16: Controller 1 - 16

ID: 37 WARNING

Application weight incorrect

- No. 1 - 16: Pump 1 - 16, flow sensor 1
- No. 17 - 32: Pump 1 - 16, flow sensor 2

ID: 38 WARNING

Light sensor being calibrated

- No. 1 - 40: TruFlow light sensor 1
- No. 41 - 80: TruFlow light sensor 2

ID: 39 FAULT

STO- Safe Torque OFF

- No. 1 - 16: Motor 1 - 16 STO

ID: 40 STOP

Overpressure

- No. 1 - 16: Pump 1 - 16, pressure sensor A
- No. 17 - 32: Pump 1 - 16, pressure sensor B
- No. 33 - 48: Pump 1 - 16, pressure sensor C

ID: 41 WARNING

Overpressure

- No. 1 - 16: Pump 1 - 16, pressure sensor A
- No. 17 - 32: Pump 1 - 16, pressure sensor B
- No. 33 - 48: Pump 1 - 16, pressure sensor C

ID: 42 WARNING

Underpressure

- No. 1 - 16: Pump 1 - 16, pressure sensor A
- No. 17 - 32: Pump 1 - 16, pressure sensor B
- No. 33 - 48: 1 - 16, pressure sensor C

ID: 43 WARNING

Bypass valve open

- No. 1 - 16: Pump 1 - 16, bypass valve

ID: 45 WARNING

Maximum light emission reached

- No. 1 - 40: TruFlow light sensor 1
- No. 41 - 80: TruFlow light sensor 2

ID: 46 STOP

Bypass valve open

- No. 1 - 16: Pump 1 - 16, bypass valve

ID: 47 STOP

No heating detected

- No. 1 - 66: Temperature channel 1 - 66

ID: 48 STOP

Drive protection interlock

- No. 1 - 16: Controller 1 - 16

ID: 49 STOP

Drive internal error

- No. 1 - 16: motor controller 1 - 16

ID: 50 WARNING

Incorrect pump size

- No. 1 - 16: Pump 1 - 16

ID: 52 WARNING

Tank lid not closed

- No. 1: Melter tank

ID: 53 STOP

Controller failure

- No. 1 - 66: Temperature channel 1 - 66

ID: 54 WARNING

Autotune failed

- No. 1 - 66: Temperature channel 1 - 66

Temperature Channels

Figure 4-11 1_1_Temperature_overview

1 Heaters off
2 Temperature settings
3 Grid (low melt)
4 Reservoir (high melt)
5 Setpoint
6 Hose
7 TruFlow
8 Applicator (not shown)

This overview shows all temperature channels in the system.

When there are more than 12 temperature channels, use the arrow key [>] to move to the next overview screen.

NOTE: The button *Start optimization* appears as soon as self-optimization (= Autotune) has been enabled for at least one temperature channel. Refer to *Temperature Controllers.*

The two internal temperature channels are fixed and cannot be changed:

(T1) Grid

(T2) Reservoir

(T3) First external temperature channel.

T1, T2, T3 to T_{max} are physical channel numbers.

Tile Information

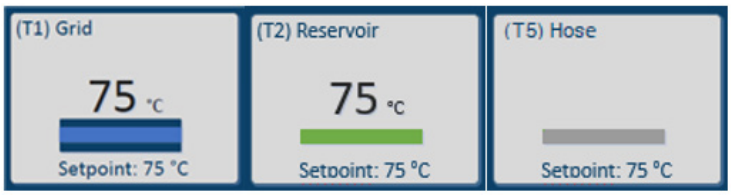
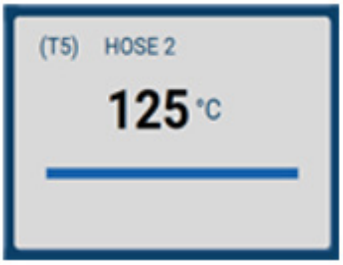


Figure 4-12 Examples

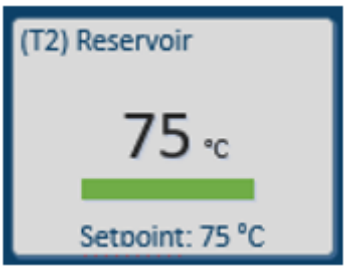
- Physical channel number, and internal channel or external temperature channel named by the customer
- Actual value in °C or °F
- Color code indicating the status of the temperature channel (bar or thermometer icon).
  - Red: Stop or fault
  - Yellow: Warning
  - Green: Ready for operation
  - Gray: Heater off or temperature channel deactivated
  - Blue: Heatup phase
  - Blue: Standby
  - Blue: Enable Autotune. It Autotune has been enabled, the temperature channel status is indicated by three bars:
    -  Temperature channel for which Autotune is not possible, e.g. because the temperature has not been reached yet.
    -  Temperature channel for which Autotune is possible; the setback (standby) temperature for self-optimization has been reached.
    -  Temperature channel to which Autotune is currently being applied. The button *Start optimization* has been pressed.

- Setpoint in °C or °F

Setpoint is displayed, but not an actual value: Temperature channel is deactivated.



The actual value is shown, but not a setpoint value: Temperature channel is activated and in display mode.



Setpoint and actual value are displayed: Temperature channel is activated and in control mode.

Touch the tile to see the details and settings of the temperature channels:

- Re-name the temperature channel
- Activate/deactivate the temperature channel
- Description of color code
- Enter setpoint
- Select *Control mode* or *Display mode*
- Enter setback temperature
- Access other settings, such as alarm thresholds, information on global heating behavior and setback, ready delay, PID control parameters.

Individual Temperature Channel

Figure 4-13 1_1_1_Temperature_channel_set

1 Heaters off
2 Temperature settings
3 Back
4 Setpoint
5 Setback
6 Mode
7 Regulation ratio

- Rename external temperature channel:

  Touch the name field to do this. Names entered by the customer are not translated when the language is changed.

- Use the slide to activate or deactivate the temperature channel.

  A deactivated (not connected) temperature channel will not be heated. Temperature control and alarm monitoring do not take place.

  There is, however, a shutdown temperature set by the software: 245 °C (475 °F).

  An active temperature channel be be operated either in *Control mode* (*Control*) or in *Display mode* (*Measurement*).

- Autotune. The Autotune color code is visible only when self-optimization has been enabled for this temperature channel:

   Temperature channel for which Autotune is not possible.

   Temperature channel for which Autotune is possible.

   Temperature channel to which Autotune is currently being applied.

  Refer to Temperature Controller. to see how to perform self-optimization (Autotune).

If Self-optimization Fails

Faulty tuning triggers a warning. Also, a popup window with the button *Alarm history* appears. The popup window closes when the button is touched.

The warning is automatically reset after approx. 3 s. The parameters set before tuning are loaded again.

The alarm history shows the channel for which self-optimization failed. Nordson recommends waiting until the next day to repeat Autotune for for this channel.

Setpoint

When setting the temperature, keep in mind the following:

- The processing temperature specified by the adhesive manufacturer.
- The maximum operating temperatures of the heated system components (hose, applicator). Refer to the customer product manuals.

The setpoint range is 40 ° to 230 °C (100 ° to 450 °F).

All of the activated temperature channels are controlled at their setpoint.

NOTE: The maximum temperature setpoint can be specified in the screen *Temperature settings*. If the temperature setpoint is later lowered, the lower value is automatically applied to the temperature channel, if its setpoint was previously above the new value.

Setback

Setback serves to protect the adhesive and to save energy during breaks in production.

- The setback is a differential value.
- The temperature of all of the enabled temperature channels is reduced by the specified setback.
- Setback temperature = setpoint minus setback

  NOTE: The minimum standby temperature is 40 °C (100 °F), even if a setback value would mathematically permit the setback temperature to be lower.
- The setback icon can appear in two different colors:
  - Gray: No setback switched on
  - Blue: Setback switched on

Control

A PID control algorithm is used in control mode. The control parameters can be changed manually or determined automatically using Autotune. They cannot be changed for grid and reservoir.

Examples of when the control parameters have to be adjusted:

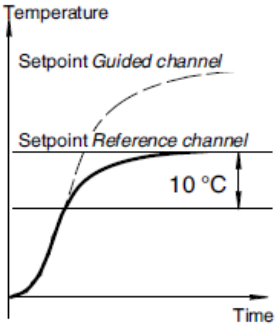
- If heating the last 5 °C (9 °F) up to the setpoint takes too long (possible with a very high temperature setpoint)
- If the temperature briefly rises above the setpoint during heatup (possible with a very low temperature setpoint).

Heatup Guided by Reference Channel

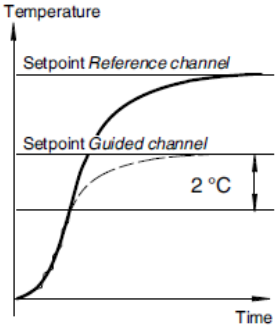
All activated channels in control mode are included in the heatup guided by reference channel, including those assigned to an activated application group.

After every switchon and after standby (setback) is exited, the melter returns to heatup. However, automatic heatup upon daily startup can be prevented. The feature *Heaters on upon startup* can be found in the screen *Global heating functions*.

Heatup guided by reference channel prevents individual temperature channels from reaching their setpoint temperature long before the slowest temperature channel (reservoir = reference channel). It prevents adhesive from charring in hoses/applicators and the build-up of adhesive expansion pressure during heatup. It also helps to save energy.



The actual reservoir temperature serves as the current temperature setpoint for the guided channels until the reservoir has reached a temperature of 10 °C (18 °F) below its setpoint temperature. Then heatup guided by reference channel ends automatically. This way all channels reach their setpoint temperatures more or less at the same time.



When the current temperature setpoint of a guided channel (= actual value of reservoir) reaches the guided channel's own setpoint minus 2 °C (3.6 °F), it is excluded from heatup guided by reference channel and then heats to its own setpoint independently.

Measurement

In automatic scan mode only the measured temperature is displayed. Temperature control and alarm monitoring do not take place.

There is, however, a shutdown temperature set by the software: 245 °C (475 °F).

NOTE: Temperature channels for the grid and reservoir as well as grouped channels cannot be switched to display mode.

Temperature channel activated and in display mode: The actual value is displayed. The setpoint is inactive and cannot be changed.

Regulation Ratio

When a technician or higher-ranking user logs in, the *Regulation ratio* of the temperature channel appears.

The regulation ratio is the switchon duration of a temperature channel stated as a percentage. If the temperature setpoint of a temperature channel is not reached despite the regulation ratio being 100 %, this could indicate a defective heater or temperature sensor.

Go to the Screen Temperature Settings

Access other settings such as

- Alarms (overtemperatures and undertemperatures)
- Heating functions (e.g. limit maximum temperature setpoint, automatic heatup)
- Standby
- Ready delay
- Temperature controller (PID parameters)
- Apply settings (copy feature for setpoint, setback and mode).

Change Temperature Channel

Touch the number field. A number pad opens in which the desired channel number can be directly selected.

Alarm Overview

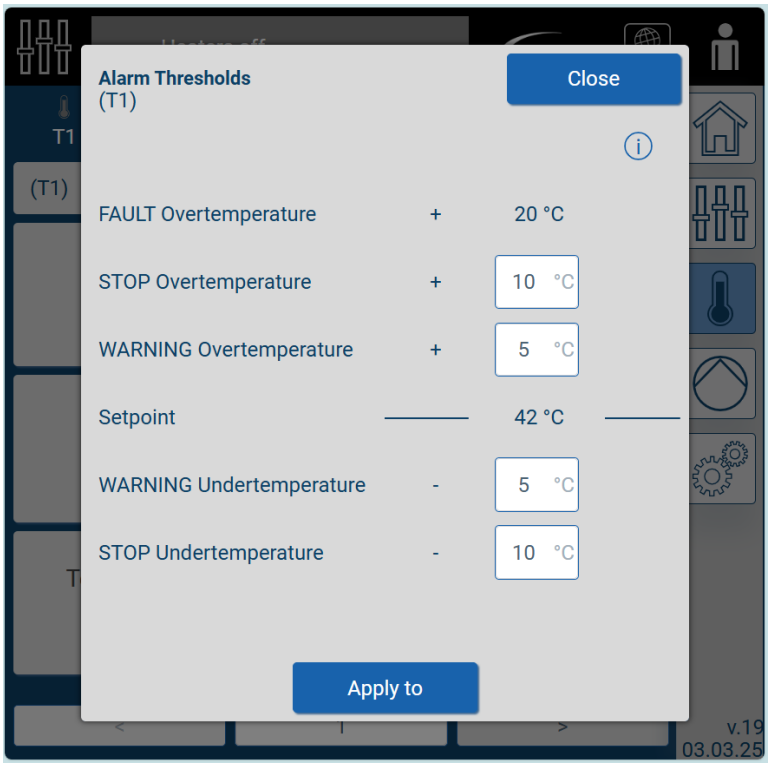
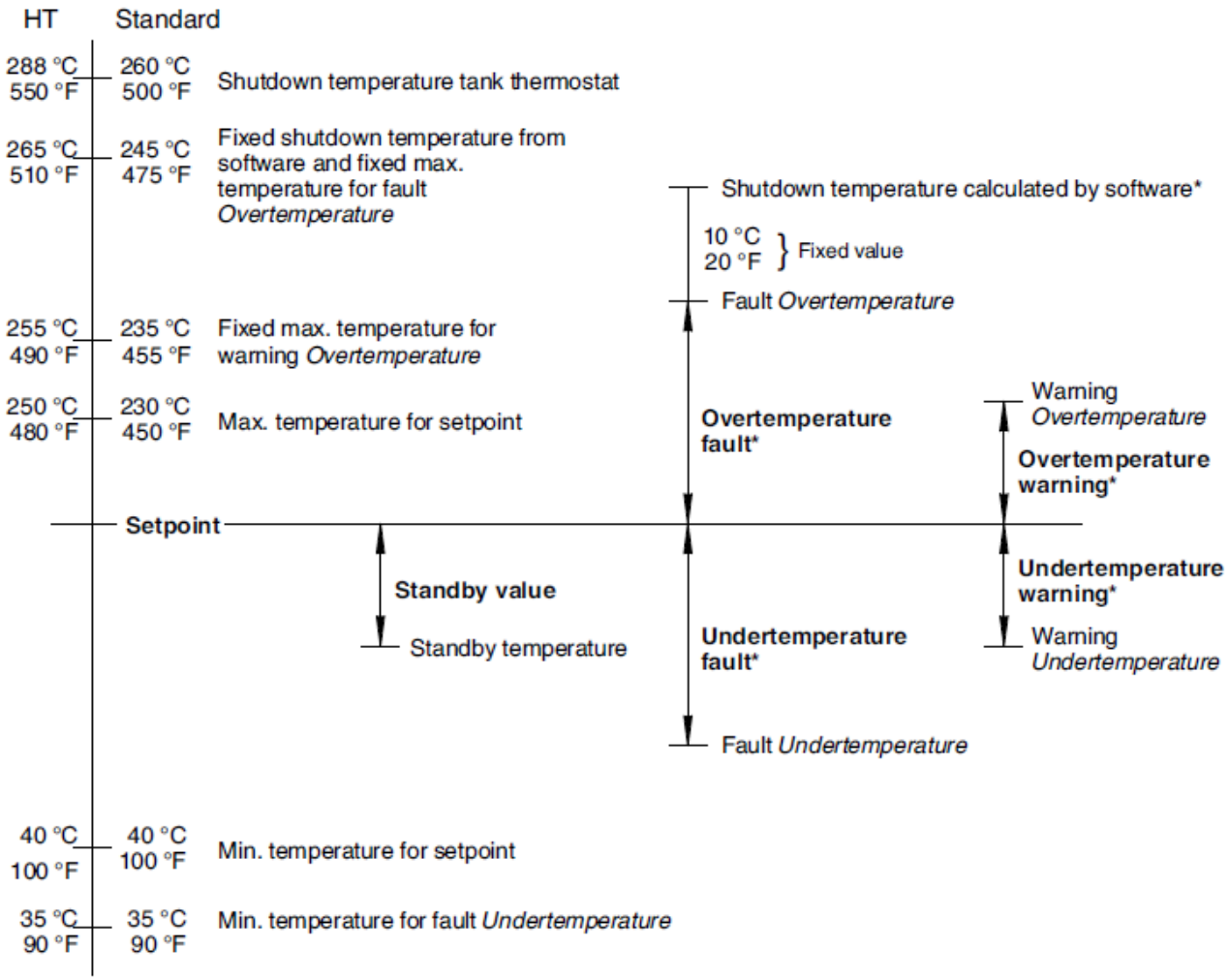


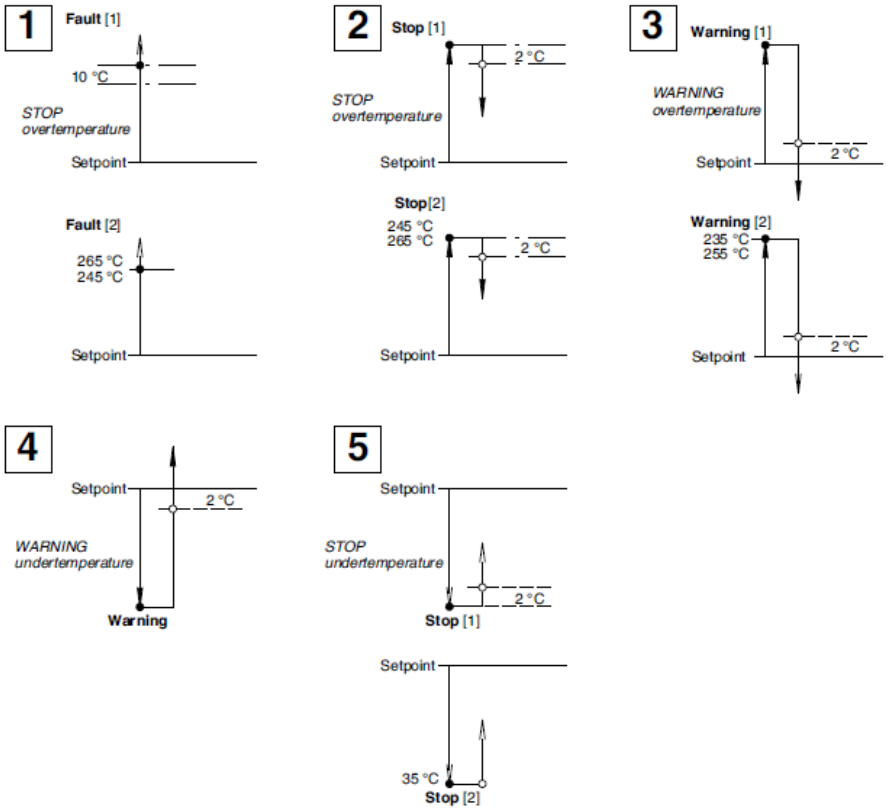
Figure 4-14 1_1_P1_Temperature_set

1	Alarm thresholds	4	STOP Overtemperature	7	WARNING Undertemperature
2	Close	5	WARNING Overtemperature	8	STOP Undertemperature
3	FAULT Overtemperature	6	Setpoint	9	Apply to

Alarm Overview



Limits



1 *FAULT Overtemperature*

The temperature at which a fault is indicated is a calculated value, which means that it cannot be changed.

- Actual value (°C), (°F)
- Overtemperature fault triggers:

  The temperature exceeded the setpoint by more than the differential value *STOP Undertemperature* plus 10 °C (20 °F) for longer than five seconds.

  OR - depending on the configuration

  245 °C (475 °F) was exceeded for longer than five seconds.

  265 °C (510 °F) was exceeded for longer than five seconds.

  NOTE: Temperature channels in display mode trigger a fault only when they have reached the maximum of 245 °C (475 °F) or 265 °C (510 °F).
- Reset: Reset the fault on the control panel.

2 *STOP Overtemperature*

- Differential value (°C), (°F)
- Overtemperature stop triggered:

  The temperature exceeded the setpoint by more than the differential value *STOP Overtemperature* for longer than five seconds.

  OR - depending on the configuration

  245 °C (475 °F) was exceeded for longer than five seconds.

  265 °C (510 °F) was exceeded for longer than five seconds.
- Automatic reset:

  The temperature falls below the setpoint plus differential *STOP Overtemperature* by 2 °C (3.6 °F).

  OR - depending on the configuration

  The temperature falls below 243 °C (471 °F).

  The temperature falls below 263 °C (506 °F).

NOTE: The warning value is a factor of the magnitude of the stop value (and vice versa) in that the values for the warning may not be higher than the corresponding values for stop. When appropriate, first increase the stop value.

3 *WARNING Overtemperature*

- Differential value (°C), (°F)
- Overtemperature warning triggered:

  The temperature exceeded the setpoint by more than the differential value *WARNING Overtemperature* for longer than five seconds.

  OR - depending on the configuration

  235 °C (455 °F) was exceeded for longer than five seconds.

  255 °C (490 °F) was exceeded for longer than five seconds.
- Automatic reset:

  The temperature falls to 2 °C (3.6 °F) above the setpoint.

4 *WARNING Undertemperature*

- Differential value (°C), (°F)
- Undertemperature warning triggered:

  The temperature was below the setpoint by more than the differential value *WARNING Undertemperature* for longer than five seconds.
- Automatic reset:

  The temperature has increased to 2 °C (3.6 °F) below the setpoint.

5 *STOP Undertemperature*

- Differential value (°C), (°F)
- Undertemperature stop triggered:

  The temperature was below the setpoint by more than the differential value *STOP Undertemperature* for longer than five seconds.

  OR

  The temperature reaches or falls below 35 °C (90 °F) for longer than five seconds.
- Automatic reset:

  The temperature falls below the setpoint minus differential *STOP Undertemperature* by 2 °C (3.6 °F)

  OR

  The temperature exceeds 35 °C (90 °F).

Apply Alarm Thresholds to Other Temperature Channels

Alarm thresholds do not have to be entered for each temperature channel when the values are identical.

To do this, touch *Apply to*. A window opens in which all selected temperature channels or single temperature channels can be marked/selected.

Confirm the values by touching *Apply*.

Monitor Heatup and Cooling

The undertemperature alarm values are not a factor of the setpoint during the heatup phases of the individual temperature channels. They are based on an internally calculated actual value. This causes an alarm to be triggered when the heatup phase is longer than anticipated.

The same applies to the overtemperature alarm values during the cooling phases.

This has the advantage that

- Setpoints can be changed
- Cold temperature channels or application groups can be added
- Cold or heated temperature channels can be connected to the hose receptacles

are possible during operation, without triggering stops, which would cause interruptions in production.

CAUTION! Before starting up the components, wait for them to be heated to operating temperature as well. This ensures that cold components are not damaged.

Example: A new pump is installed in the melter or a gear pump metering station is integrated into the application system. The melter indicates *Ready,* even though the pump or the gear pump metering station is still cold. When the corresponding motor is started, the pump turns against cold adhesive and can be damaged (e.g. the pump shaft can break).

Global Heating Functions

Figure 4-15 1_1_P2_Heat_func

1 Global heating functions
2 Close
3 Limitation max. temperature setpoint
4 Heaters ON upon startup
5 Heaters ON upon manual setback
6 Delay
7 Remaining time

[Heaters ON Upon Startup]

[Heaters ON Upon Manual Setback]

Global: Settings apply to the whole system, not just to individual temperature channels.

Limitation Max. Temperature Setpoint

Depending on the configuration, the maximum temperature setpoint is 230 °C (450 °F) or 250 °C (480 °F).

This input can reduce the maximum temperature setpoint, thus allowing the maximum adhesive processing temperature permitted to be adjusted.

Heaters ON Upon Startup

Activated: The heaters switch on as soon as the main switch is set to I/ON.

Deactivated: Deselecting the function with the slide means that, the next time the melter is switched on with the main switch, heating does not begin until the respective command is given.

The heating command can be given by the user or via the field bus.

Heaters ON Upon Manual Setback

Activate when setback is to be switched on by the operator (or interface signal or field bus), but should end automatically.

Automatic ending is determined by the *Delay*.

Delay

The delay begins when the system enters standby (setback). Standby (setback) is exited after the set time has expired. The system then goes to heatup mode.

Remaining Time

Remaining time until the system returns to heatup mode.

Global Setback Functions

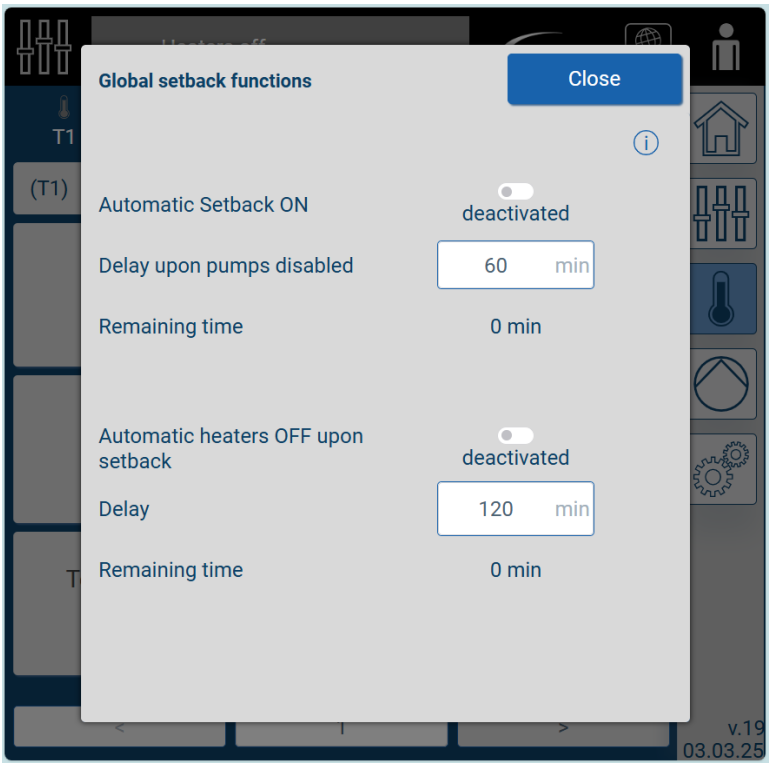


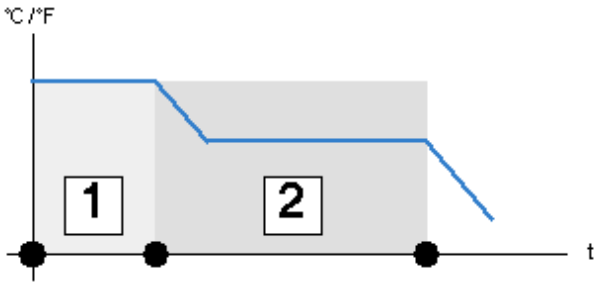
Figure 4-16 1_1_P3_Setback_func

1 Global setback functions
2 Close
3 Automatic setback ON
4 Delay upon pumps disabled
5 Remaining time
6 Heaters OFF upon setback
7 Delay
8 Remaining time

Automatic Setback Function

Automatic Heaters OFF upon Setback

Global: Settings apply to the whole system, not just to individual temperature channels.



Automatic Setback Function

Activated: The system enters standby (setback) when all of the pump motors have been deactivated for the set time.

Deactivated: When the pumps are deactivated, the displayed values are irrelevant.

1 Delay upon Pumps Disabled

The delay begins after the last pump has been deactivated.

Standby (setback) begins as soon as the delay has expired.

Remaining Time

Remaining time until the system enters standby (setback).

Automatic Heaters OFF upon Setback

Activated: Once the *Delay upon pumps deactivated* has expired, another delay begins. When this time has expired, the heaters are automatically switched off.

Deactivated: The system remains in standby (setback) as long as no other command is given.

2 Delay

The delay begins after the *Delay upon pumps deactivated* has expired.

When the delay has expired, the heaters are automatically switched off.

Remaining Time

Remaining time until the heaters are switched off.

Ready Delay

Figure 4-17 1_1_P4_Ready_delay

1 Ready delay 2 Close 3 Delay

The indicated time remaining until *Ready* is shown next to the hourglass.

The time appears repeatedly, including on the temperature tile in the home screen.

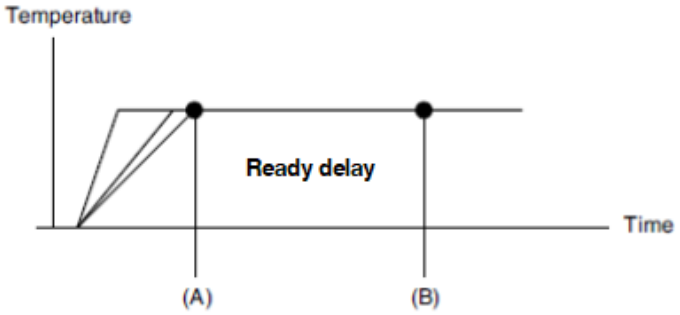
NOTE: The hourglass is visible only as long as the delay is running.

Delay

The ready delay is activated with a delay greater than 0.

When it is activated, the delay begins after every initial* heatup (*not after heatup if standby (setback) is exited).

This additional time is intended to enable the adhesive to reach a thermally homogeneous state in the tank. The bigger the tank and the higher the dispensing speed, the longer the delay has to be set.



The delay begins after all components have reached the setpoint temperature (A).

Ready is not indicated and the undertemperature interlock is not released until the delay (B) has expired.

Temperature Controller

Figure 4-18 1_1_P6

1 Temperature control settings
2 Control type
3 Close
4 Presets
5 Customer defined
6 Tuned
7 Reset to presets parameter
8 Reset to customized parameter

Select Heating Control Type

The PID control algorithm is used for the selected controlled system heating rate, e.g. *Preset: normal*, in control mode.

- **Presets**. PID control parameters are only displayed.

  One of these fixed parameter sets can be selected for the temperature channel:

- **Slow**

  For temperature channels that heat slowly. Adjust if heating the last 5 °C (9 °F) up to the setpoint takes too long (possible with a very high temperature setpoint).

- **Normal**

  The setting *Normal* generally does not need to be changed. It cannot be changed for grid and reservoir.

- **Fast**

  For fast temperature channels. To be set if the temperature swings above the setpoint during heatup (possible with a very low temperature setpoint).

- **Very fast**

  For air heaters.

Use the arrow keys to move to other temperature channels to be set.

- **Customized**. The PID control parameters can be changed.

  CAUTION: Should be adjusted only by personnel with experience in metrology and control technology.

  TLK Energy provides information on its website about *Setting PID controllers in practical applications* in German and in English.

  NOTE: The I-part can be deactivated with the value 0 (zero).

  Reset to preset parameters can be used to set the parameters to one of the fixed parameter sets and changed.

  Select one of the fixed parameter sets for the temperature channel. Touch *Apply* to apply the parameters shown next to the fields and adjust them, or *Abort* (Cancel).

  Use *Reset to tuned parameters* to replace the parameters with Autotune parameters. Touching the button opens the screen in which Autotune can be enabled. Refer to **Optimized**.

- **Optimized**. Display only with the PID parameters determined by self-optimization (Autotune).

  If self-optimization is to be performed:

1. Whenever possible, self-optimization should be performed when the melter is cooled off. Cooling down to the required setback as calculated by the controller usually takes a long time.
2. Enable optimization using the slide. This causes the button *Start optimization* to appear in the temperature screens.
3. If multiple temperature channels are to optimized: Use the arrows to move to these temperature channels and enable each one for self-optimization.

   NOTE: The temperature channels also have to have been activated with their slide.
4. Move to the individual temperature control screen and set a setpoint greater than 100 °C / 212 °F.

   NOTE: Do not change the value *Setback*. It is not relevant for self-optimization. The displayed value *Setback for self-optimization* is dependent of the setpoint temperature of the channel and is calculated by the controller.

   The setpoint can also be copied for multiple temperature channels. In the individual temperature channel screens, touch  and select *Copy settings*.
5. Activate the heaters and setback in the screen *Master control*.
6. Wait until the temperature channels to be Autotuned are ready: This can be recognized by the Autotune color code  . The message *Tune possible* appears. The setback temperature for self-optimization has now been reached.

   *Setpoint minus calculated value *Setpoint for self-optimization*.
7. Touch *Start optimization*.

   NOTE: This button is not activated until the setback temperature has been reached.

   Optimization can also be started from the home screen, when multiple temperature channels are to optimized at the same time.

Reset to preset parameters can be used to set the parameters to one of the fixed parameter sets and changed.

Select one of the fixed parameter sets for the temperature channel. Touch *Apply* to apply the values shown next to the fields and adjust them, or *Cancel*.

Or touch *Reset to customized parameters* and then *Apply* to apply the values shown next to the fields.

P (Kp) - Controller amplification (proportional value, P-part of the PID controller)

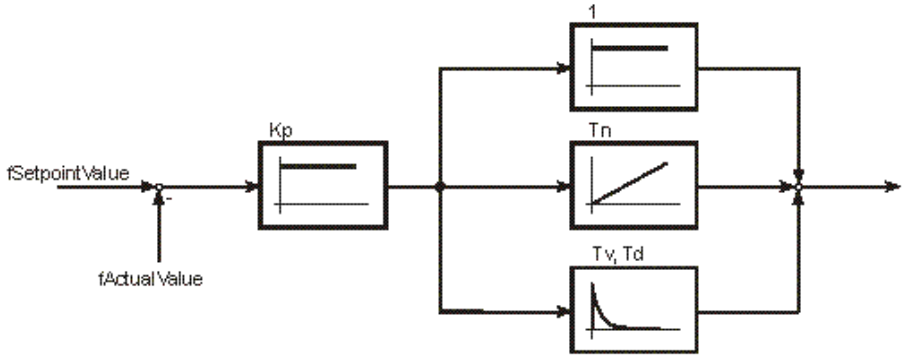
When the P-part is too large, the control circuit can become instable. The smaller the P-part, the weaker the controller's effect on the control procedure and the more damped the control procedure.

I (Tn) - Integral action time (I-part of the PID controller)

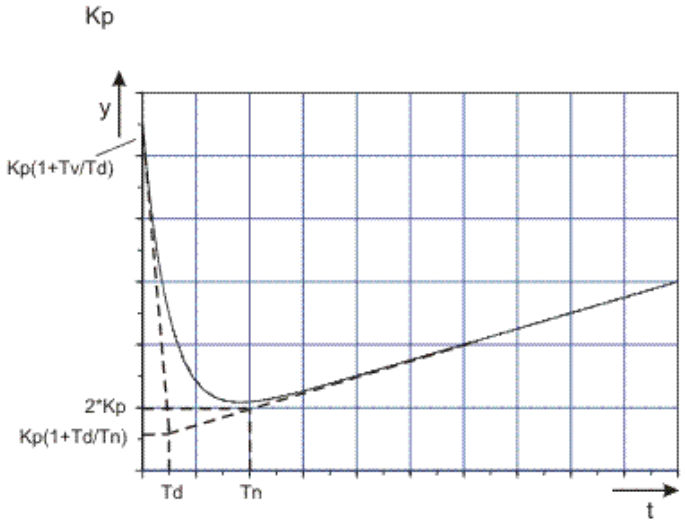
The larger the I-part, the slower the controller.

D (Tv) - Derivative action time (D-part of the PID controller)

Dtime (Td) - Differential time



Step response:



PID controller with step response - extract from infosys.beckhoff.com

If after a step response the actual value

- approaches the setpoint too slowly: Increase the proportional component. If this leads to improvement, then decrease the integration time. Repeat until a satisfactory controller result is achieved.
- Approaches the setpoint too slowly, with slight fluctuations: Increase the proportional component. If this leads to improvement, then decrease the derivative action time (differential time). Repeat until a satisfactory controller result is achieved.
- Approaches the setpoint without significant overshoot: Optimum controller behavior for processes that do not allow overshoot.
- Approaches the setpoint with slightly damped overshoot. Optimum controller behavior for actual value to quickly reach the setpoint and to compensate for disturbances.

  NOTE: The first overshoot should not exceed 10% of the setpoint jump.
- Approaches the setpoint quickly but overshoots significantly. Vibrations are muted and thus still stable (barely): Decrease proportional portion. If this leads to improvement, then increase the integration time. Repeat until a satisfactory controller result is achieved.

Copy Settings

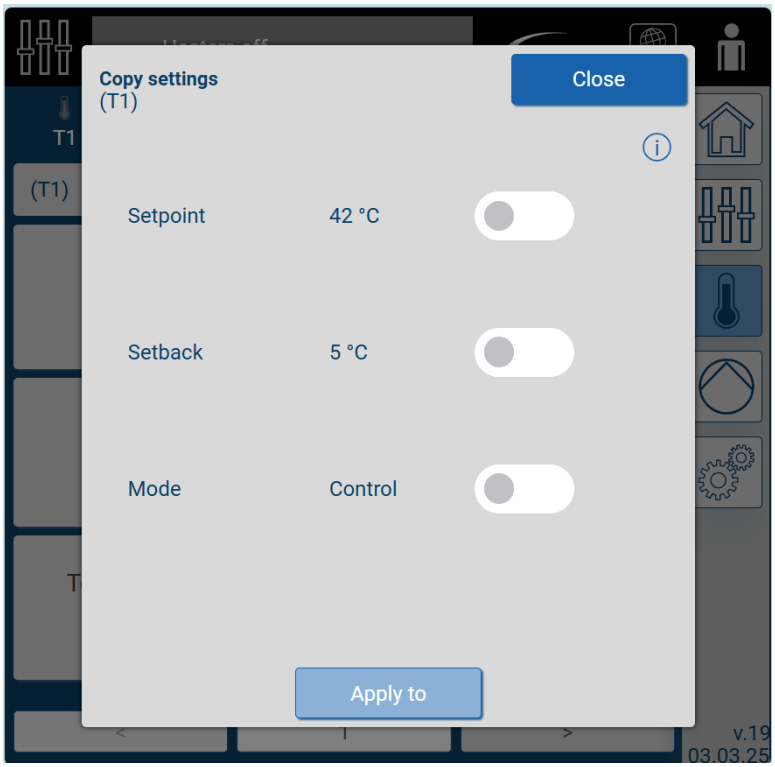


Figure 4-19 1_1_P7

1	Copy settings	3	Setpoint	5	Mode
2	Close	4	Setback	6	Apply to

The setpoint, setback value and mode (display or control) can be copied from one to multiple temperature channels.

The parameter can be enabled to allow it to be copied using the slide. *Apply to* is activated only when at least one parameter has been enabled to allow it to be copied.

NOTE: The password levels for enabling are the same as those required to set the respective parameter. Copying is not possible via field bus.

Pumps

Figure 4-20 1_2_Pump

1	Heaters off	3	OFF/ON	5	Actual
2	Pump settings	4	Pump 1	6	Display all

This overview shows all pumps in the system.

Tile screen 1 shows up to the four melter pumps allowed. If pump motors have bee configured by an additional electrical cabinet *ACM*, move to the next screen with [>] or touch *Display all* to open the complete overview.

Slide to enable all pumps (collective enable).

Switch On/off a Pump

Conditions for being able to switch on:

- No motor start protection
- Service switch (motor circuit switch) on
- Single and collective enables set*
- System ready for operation

*The set control mode has an impact on switching on the pump. Examples of control modes are *Control panel*, *Standard*, *Field bus*, *Dual*. Refer to Control Modes for details.

NOTE: To be able to switch between the different control modes, the heaters have to be off.

Tile Information

- Slide to enable individual pumps.
  The color code of the slide indicates the pump state.
  - Blue: Pump enabled or undertemperature interlock or STO active
  - Green: Motor running or pressure build-up in progress or pressure build-up completed
  - Gray: Pump not enabled
- The LED color code indicates the alarm state of the pump:
  - Gray: No alarm
  - Yellow: Warning
  - Red: Stop or fault
- Actual value. The unit is a factor of the set pump mode
- Depending on the configuration, additional information on the flow rate and pressure is available.

Touch the tile to access the details and settings for the pump:

- Rename the pump
- Slide to enable the pump.
- Actual and setpoint as a factor of the pump mode
- Select pump mode
- Select pump operation
- To access other settings, such as *Scale line speed, Start and stop thresholds, Shutdown delay, Global input (e.g. adhesive density), Flow control settings, Pressure build-up*.

Motor Startup Protection

Startup protection prevents the motors from starting up on their own after heatup or after a stop. The melter does not enter startup protection unless at least one motor has started up before heatup or before stop occurs.

Acknowledge Startup Protection

- On the control panel

  Set the pump collective enable (slide). Startup protection is now acknowledged and all enabled pumps run again.

- Via XS2 interface

  Switch *All motors on/off* from OFF to ON. Then all enabled pumps run again.

- Via field bus

  Set *All motors ON/OFF (collective enable).*

  Rising edge; refer to *Melter control:* If bit 1 = 0, then set to 1. If bit 1 = 1, set to 0 and then back to 1. All enabled pumps start running again.

  OR

  Switch off the pumps via the pump individual enables (slide) on the control panel; acknowledge startup protection. Then switch on the pumps via the pump individual enables (slide); the respective pump starts running again.

  The same applies to acknowledgment via interface XS2 or field bus with the signal *Enable motor* for the individual pump.

Undertemperature Interlock

The undertemperature interlock prevents the melter motors from being switched on as long as the material is too cold and thus too thick. This could damage the pumps.

The undertemperature interlock is active during every heatup phase and after every setback. The undertemperature interlock is determined by the threshold value for the undertemperature stop.

If the ready delay is activated, this time must also have expired before the interlock is disabled.

Individual Pump

Figure 4-21 1_2_1_Pump

1	Heaters off	4	Enabled / OFF	7	Pump mode
2	Pump settings	5	Actual	8	Operating mode
3	Back	6	Setpoint	9	PBU function

Tile Information

- Rename the pump

  Touch the name field to do this. Names entered by the customer are not translated when the language is changed.
- Slide to enable the pump (individual enable). Additional information shown under the slide, such as *Pressure build-up completed*.
- Actual value. The unit is a factor of the set pump mode.
- Speed display (regardless of the set pump mode).

  NOTE: Appears in addition to the actual value, only when logged in as a technician or higher.

- Setpoint as a factor of the set pump mode
- Select pump mode
- Select mode
- Additional information, such as *Enable pressure build-up*.

Pump Mode

 Manual

In manual mode, the operator specifies the setpoint, e.g. the speed. The pump then operates at the set speed.

 Key-to-line

The setpoint is calculated automatically and is a factor of the line speed signal. The line speed signal can be received via the interface XS5, or it can be transmitted via the field bus.

IMPORTANT: Before beginning production for the first time, compare the incoming line speed signal to the line speed, and then scale the line speed accordingly.

Mode

 Speed mode - speed control

Pressure display and monitoring are possible when a pressure sensor is configured. The flow rate can be measured with the flow meter.

 Pressure control - control (closed-loop) with pressure sensor.

The flow rate can be measured with the flow meter.

 Flow control - control (closed-loop) with flow meter TruFlow™

Refer to Flow Rate Measurement / Flow Control (Closed-loop) for details.

Pressure display and monitoring are possible when a pressure sensor is configured.

Other Buttons

 To flow control analysis

The setpoint button leads directly to the screen *Scale line speed*.

 To status overview of pump enable. The overview provides information on your system and on what operation of the pump(s) prevents in regard to the control, e.g. lack of enables.

 Access other settings such as:

- Line Speed Scaling.
- Set Analog Input
- Pump Start/Stop ThresholdPump functions, such as threshold values and shutdown delay
- Global Heating Functions,, such as adhesive density, application weight (add-on) type, etc.
- Flow Control Settings, Flow control e.g. set ramp detection sensitivity
- Pressure buildup PBU
- Pressure Control Settings, e.g. set *Pressure control at sensor position B* and PID parameters

Depending on the configuration and the pump mode, additional information on the flow rate and pressure can be found by:

Touch the small gear icon. This is a direct link to the corresponding settings, e.g. pressure alarms at pressure sensor.

NOTE: Observe the color of the gear icon. A blue gear symbol indicates that this sensor is used control. For example, pressure sensor B in the illustration.

Change Pump Side

Touch *Go to* to select the desired pump directly.

Set Analog Input

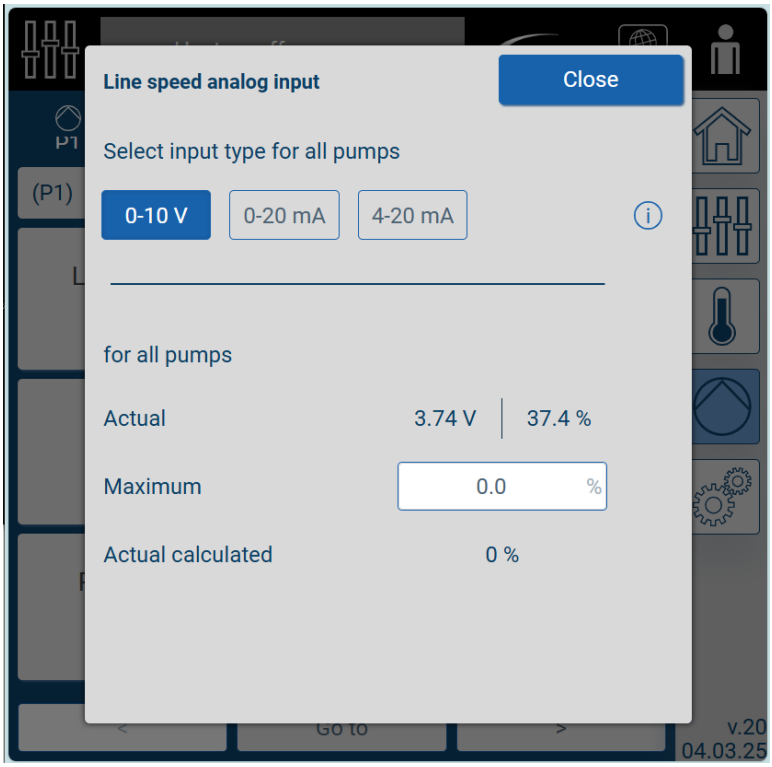
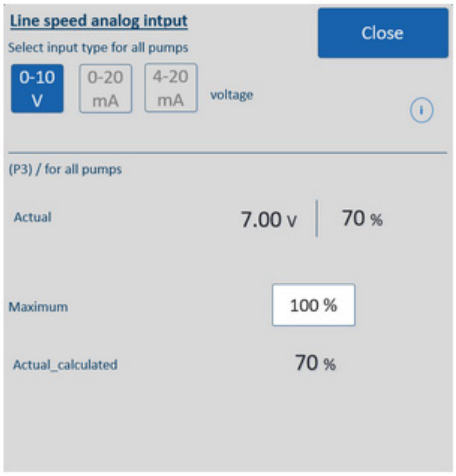


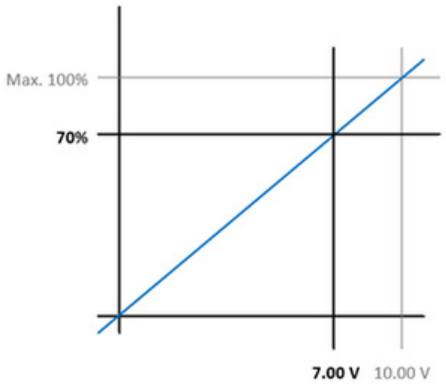
Figure 4-22 1_2_P1

1 Line speed analog input
2 Close
3 Select input types for all pumps
4 For all pumps
5 Actual
6 Maximum
7 Actual calculated

Calibrate Incoming Line Speed Signal to Line Speed - Example of Calibration -

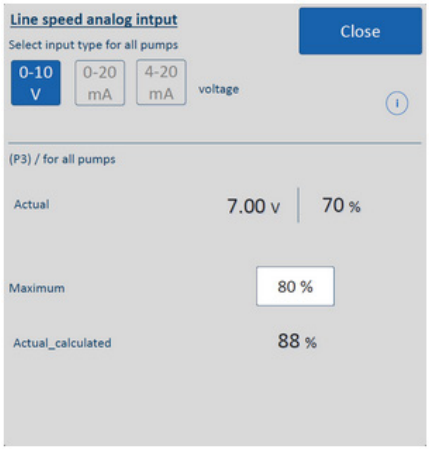
1. Select the type of line speed signal:
   Voltage 0 - 10 V
   or
   current 0 - 20 mA
   or
   current 4 - 20 mA
2. Allow the line to run at a consistent speed.

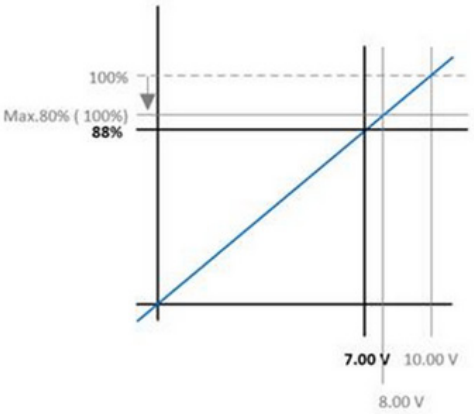




Actual: At the current line speed, which is lower than the maximum speed in the example, 7 V is received at the XS5 interface.
The value 7 V is within the selected range of 0 - 10 V.

3. **Maximum**: Enter 80 %, since this will be the maximum speed for the line in the example. The entered value now corresponds to 100 %.





4. **Actual calculated**: 88 %. Value calculated by the controller, which is the result of the current input signal reduced to max. 88 %.

Line Speed Scaling

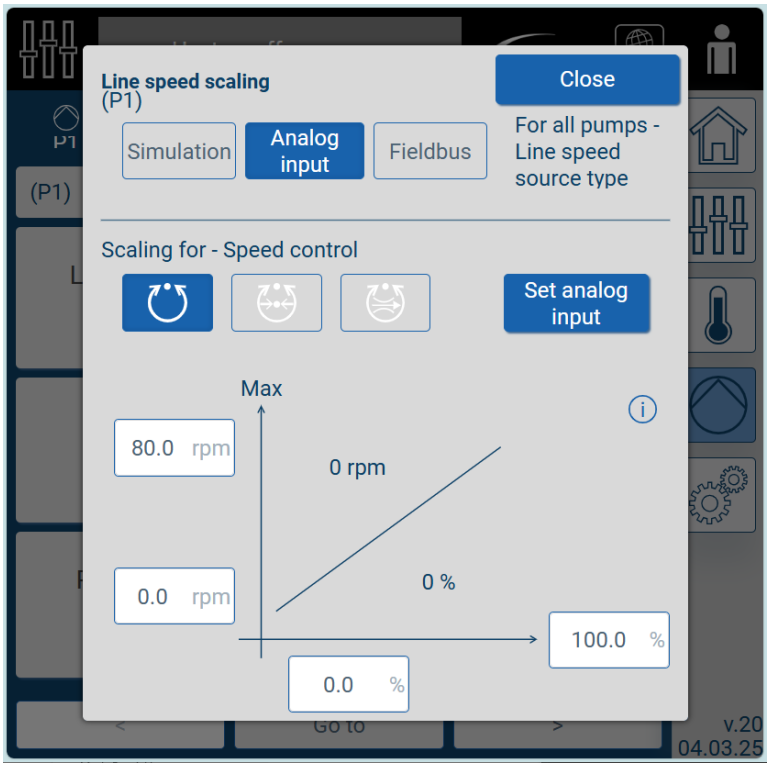


Figure 4-23 1_2_P2

1 Line speed scaling
2 Close
3 Simulation
4 Analog input
5 Field bus
6 For all pumps - Line speed source type
7 Scale for speed control
8 Set analog input

Depending on the configuration:

Select Pump Line Speed

Field bus: This key is visible/operable only when a field bus option has been purchased and configured. A control mode with field bus has to be set, e.g. *Dual*.

Analog input: The line speed is received via the interface XS5. Scale the line speed signal and set the *Analog input*.

Simulation:

1. Scale.
2. Set *Simulate line speed* under *System settings/ Advanced functions*.
3. Activate simulation in the screen *Master control*.
4. Deactivate simulation in the screen *Master control*.
5. Select pump line speed signal for production.

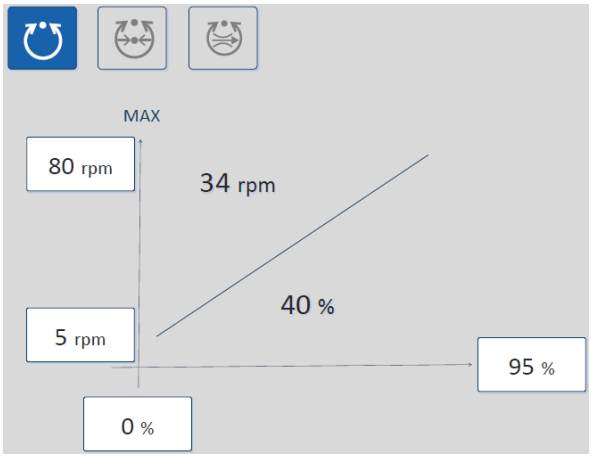
Scaling - Speed Mode/ Pressure Control/ Flow Control

NOTE: The selection [Speed], [Pressure], [Flow] does not change the pump mode selected in the pump screen.

Speed mode: Use *Speed mode* as the pump mode. Scaling consists of two pairs of parameters.

- Line speed for the minimum pump speed: Line speed signal value in %, below which the pumps begin to rotate at the set minimum speed.

  Minimum pump speed: Setpoint of the pumps when the incoming line speed signal is below the set value.



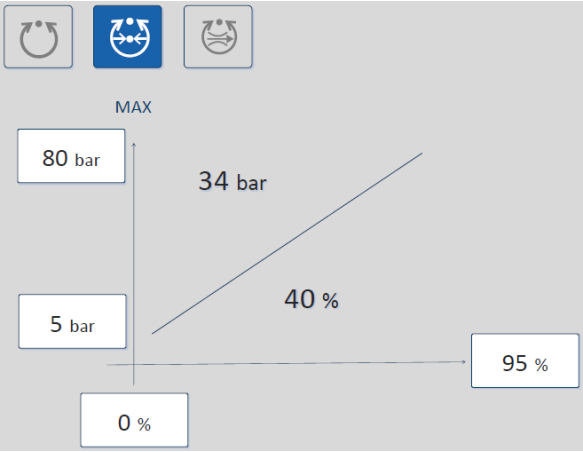
- Line speed for the maximum pump speed: Line speed signal value in %, at which the pumps begin to rotate at the set maximum speed.

  Maximum pump speed: Setpoint speed of the pumps when the incoming line speed signal exceeds the set value.

Pressure control: Use *Pressure control* as the pump mode. Scaling consists of two pairs of parameters.

- Line speed for the minimum pressure: Line speed signal value in %, below which the pumps begin to generate the set pressure.

  Minimum pressure: Setpoint pressure when the incoming line speed signal is below the set value.



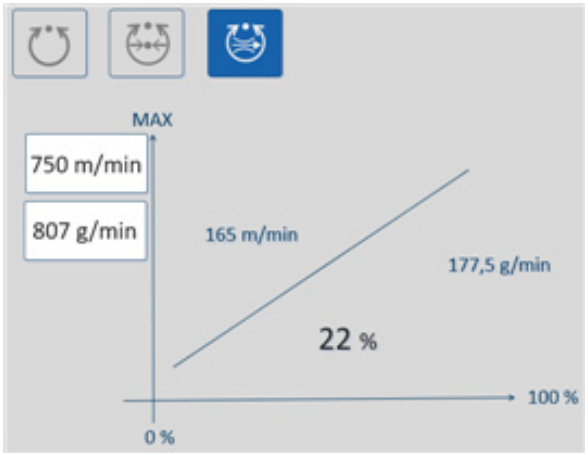
- Line speed for the maximum pressure: Line speed signal value in %, above which the pumps begin to generate the set pressure.

  Maximum pressure: Setpoint pressure when the incoming line speed signal exceeds the set value.

  NOTE: The maximum pressure is based on the measuring range limit of the pressure sensor used (80 bar with a 100 bar sensor).

Flow control: Use *Flow control* for pump operating mode. Depending on production, one of three application weights (add-on types) can be selected. The selection applies to the entire system. The application weight (add-on) type selected determines how to scale each pump:

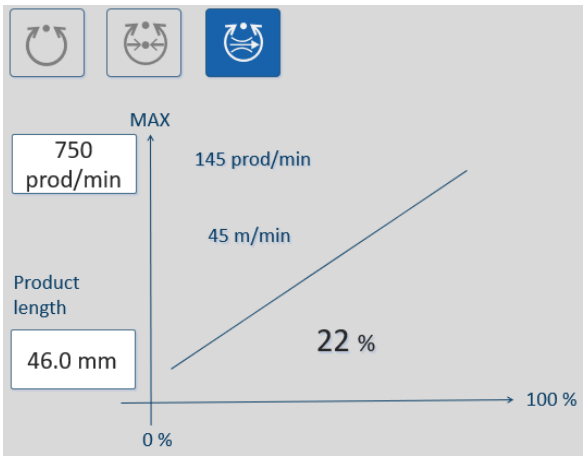
- Application weight (add-on) type a [g/min]



The maximum line speed [m/min] and the application weight (add-on) in [g/min] are needed for scaling.

Refer to screen *Individual pump*: The controller calculates the application weight (add-on) in [g/min] and the pump speed required for each web speed.

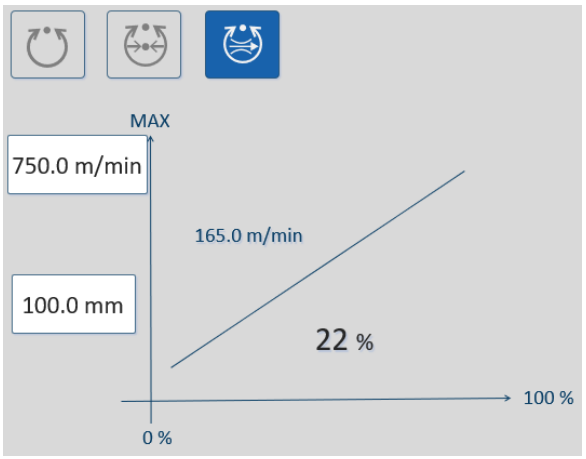
- Application weight (add-on) type b [g/product]:



The number of products per minute [prod./min] and the product length [mm] to be coated at the maximum line speed are needed for scaling.

Refer to screen *Individual pmp*: The controller uses the setpoints [g/product] and product length [mm] to calculate the application weight (add-on) in [g/min] and the required pump speed for each web speed.

- Application weight (add-on) type c [g/m^2]:



The maximum line speed in [m/min] and the application width in [mm] are needed for scaling.

Refer to screen *Individual pmp*: The controller uses the setpoints [g/m^2] and the application width [mm] to calculate the application weight (add-on) in [g/min] and the required pump speed for each web speed.

Pump Start/Stop Threshold

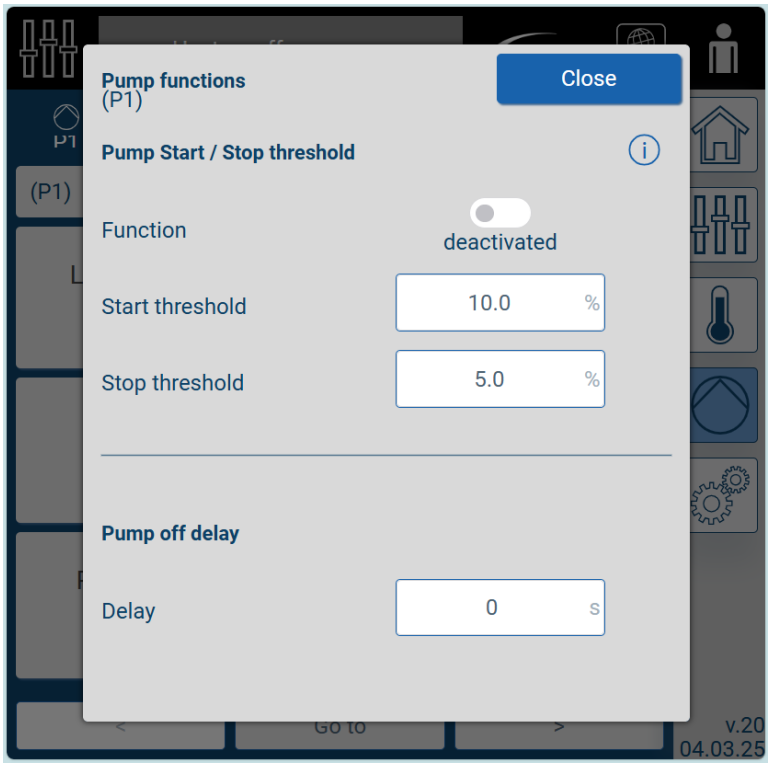
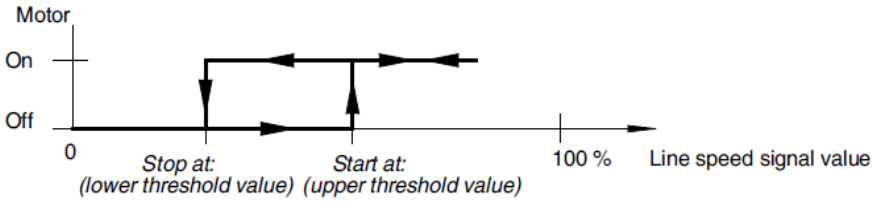


Figure 4-24 1_2_P3

1	Pump functions	4	Function	7	Stop threshold
2	Close	5	Deactivated/activated	8	Pump off delay
3	Pump start/stop threshold	6	Customer defined	9	Delay

The pump motors are started and stopped by the line speed signal in threshold switch mode.

NOTE: The threshold switch is automatically deactivated as long as the pressure build-up feature is activated.

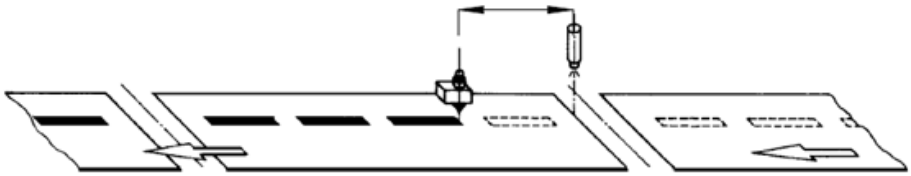


Start threshold: The pump motor starts when the upper threshold is exceeded.

Stop threshold: The pump motor stops when the value falls below the lower threshold.

Pump Off Delay

Delay: The pump off delay supports overtravel when identifying the product, if the sensor distance to the applicator needs to be considered.



If the delay = 0 s, the pump motor stops as soon as it is switched off.

If the delay > 0 s, the pump motor continues to run for the set time after it has been switched off via the interface XS2 / the field bus.

NOTE: If the pump motor is switched on via the interface XS2 / the field bus during the off delay, the pump is switched on again and the pump off delay ends immediately.

Pump Global Settings

Figure 4-25 1_2_P4_Global

1 Line speed scaling
2 Close
3 Simulation
4 Analog input
5 Field bus
6 For all pumps - Line speed source type
7 Scale for speed control
8 Set analog input

All of the settings in this screen apply to the entire system, not just to single pumps.

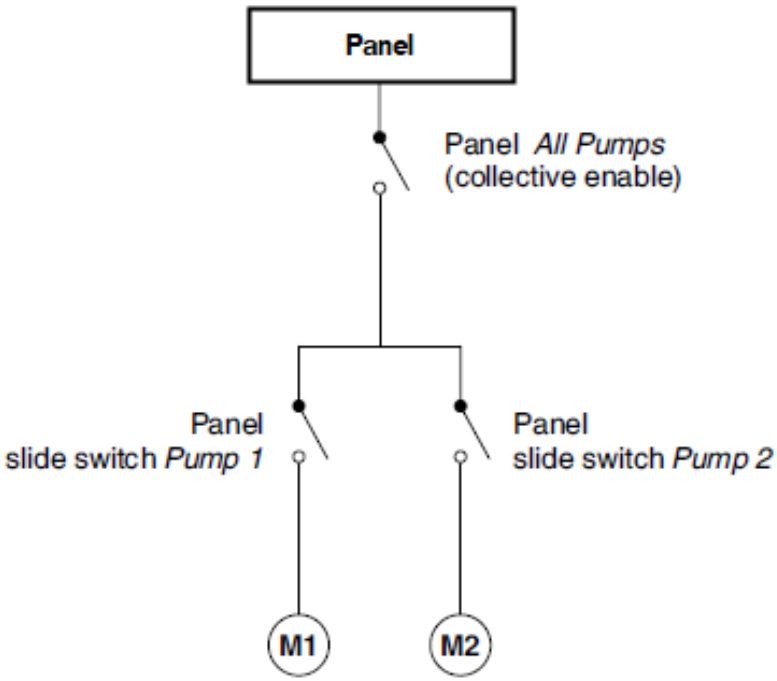
Pumps

NOTE: With the option *Field bus*, other enables may be required, depending on the control mode selected. For information on the control modes when using the option *Field bus*, refer to Connections.

Enable via

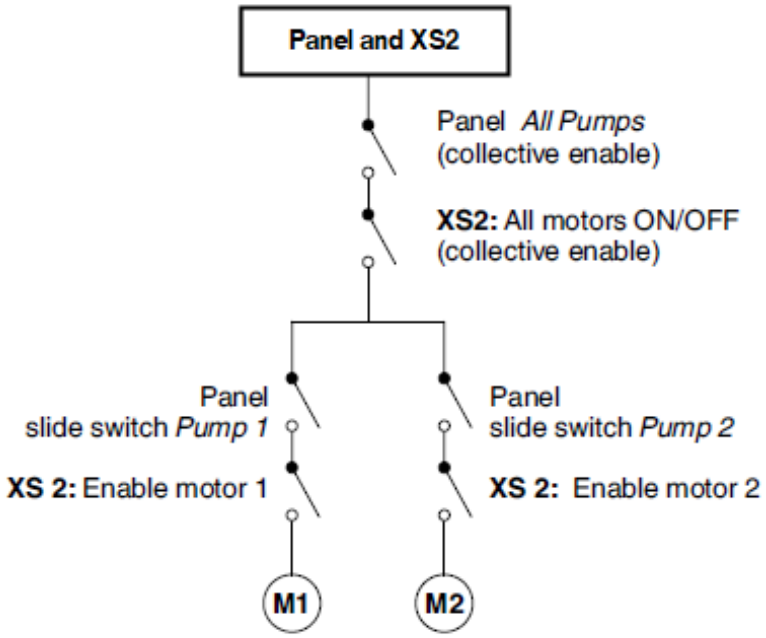
- **Panel**

  Pump collective enable and individual enables are effective only on the control panel. The corresponding signals at interface XS2 are deactivated. In this case, the melter can function even without an XS2 connection to the parent machine, e.g. if it is to be purged for maintenance purposes.



- **Panel and XS2**

  To be able to start the pumps, the pump collective enable and the individual enables have to be set on the control panel **AND** at interface XS2.



Bypass Valve Open Reaction

When using bypass valves with microswitch, the operator can select whether opening the bypass valve to stop or to issue a warning.

Adhesive Density

Refer to the *technical data sheet* of the adhesive manufacturer.

Add-on Type

Select only for the pump mode *Flow*.

NOTE: The buttons are visible if the option *TruFlow* was purchased and configured.

Flow Control Settings

1_2_P5_DE (V03)

Figure 4-26 1_2_P5

1	Flow control settings	5	Deactivated/activated	9	P - speed phase
2	Close	6	Ramp detection sensitivity	10	I - ramp and speed phase
3	Pump size with correction	7	Insensitive / normal / sensitive	11	Go to global add-on type selection
4	Flow control to sensor position B	8	P - ramp phase	12	Apply to

Add-on Range

Depending on whether [g/...] or [mg/...] is set, all of the input fields on the control device and all calculations based on the flow, as well as all other displays adapt accordingly.

Pump Size with Correction

The pump size, meaning the theoretical output volume, can be derived from the name of the pump.

Example of single-stream pump *SN* and double-stream pump *DN*

SN0186 corresponds to 186 cm^3 per revolution

DN0030 corresponds to 30 cm^3 per revolution (per pump stream)

The exact output quantity can be measured.

Conditions for calculating the correction factor

- Key-to-line, and line speed is greater than 30 %

OR

- Key-to-line, and line speed is between 10 - 30 % for three minutes.

OR

- Manual mode and current encoder speed greater than 5 rpm.

AND

- Motor running

AND

- Stable application weight

AND

- Correction rate < 99.5 and> 100.5 (means that the newly calculated correction factor deviates slightly from the current value)

AND

- The last calculation was 60 seconds ago

Determine Add-on for ACM

NOTE: For internal pumps, the output quantity is shown based on the set configuration code and cannot be changed.

Volume calibration is a simple way to check the setpoint. This is done by weighing the amount of adhesive that flows out in one minute. At least three samples should be taken to obtain a good average.

Flow Control to Sensor Position B

Enable when the flow is to be controlled via the B flow meter. If there are two flow meters assigned to the pump, the A flow meter is now used only to measure the flow rate.

Ramp Detection Sensitivity

The difference between ramp up/down and speed is apparent by the line speed (rising or falling = ramp, stable = speed).

In manual mode, there is no differentiation between the ramp and speed phase, because a fixed (stable) setpoint is applied. In the controller in the background, only the speed phase is used.

During startup and shutdown of the production line, the pump accelerates or decelerates to quickly adapt to the required flow quantity. As soon as the production speed is reached, this is no longer necessary. Adjustment can be done more slowly, since only slight fluctuations have to be compensated.

Possible selections:

- Insensitive
- Normal
- Sensitive

The controlled system heating rate for the speed and ramp phases also has to be selected for the pump motor.

P ramp phase

Possible selections:

- Slow - 0.750 %
- Normal - 1.000 %
- Fast - 3.000 %
- User-defined

P speed phase

Possible selections:

- Slow - 0.100 %
- Normal - 0.200 %
- Fast - 0.400 %
- User-defined

I ramp and speed phase

Possible selections:

- Slow - 12 s
- Normal - 5 s
- Fast - 2 s
- User-defined

Button *Go to global add-on type - selection*

Pump Global Settings

Button Apply to

The control parameters do not have to be entered for each pump motor when the values are identical.

To do this, touch *Apply to*. A window opens in which all selected pumps or single pumps can be marked/selected.

Confirm the values by touching *Apply*.

Pressure Buildup PBU

Figure 4-27 1_2_P6

1	Pressure build-up	4	Deactivated/activated	7	Select PBU activation for all pumps
2	Close	5	PBU line speed dependent	8	Line speed
3	Function	6	Fixed setpoint	9	Start/stop signal

- The pressure build-up function can be obtained separately (Box 30: N).
- The pressure build-up function is part of other options (Box 30: H, K) and cannot be used in conjunction with pressure control.

  Nordson recommends using the pressure buildup feature and entering the pressure buildup setpoint. Otherwise it takes too long for the application pressure to build up again.

Description of Function

During production, the pumps are line speed controlled or speed controlled.

Pressure build-up enables the adhesive pressure to be regulated to a fixed value (versions 1 and 2) or a flexible value (versions 3 and 4) as soon as the parent machine stops or when the line speed signal falls below an adjustable value.

The pumps can temporarily turn backwards to do this.

- The pressure sensors A (or B, if *Pressure control to sensor position B* is enabled) are responsible for pressure control during pressure build-up.
- When pumps are in the process of building up pressure, there is no pressure alarm monitoring (sensors A and B).
- There is no pressure alarm monitoring for pressure sensors C as soon as pressure is being built up for at least one pump.
- The output *Motor running* at interface XS2 is switched off as long as the corresponding pump is building up pressure.
- Threshold switch mode is automatically deactivated as long as the pressure build-up feature is activated.

If pressure build-up is completed for all pumps for which the pressure is being built up, meaning that the setpoint pressures have been reached, the signal *Pressure build-up completed* is switched via the interface XS2 or the field bus.

The signal *Pressure build-up completed* is revoked when

- The actual pressure values are not equal to the setpoints

or - depending on the version

- The signal *Parent machine started* has been set
- The line speed signal *Line speed for activation* is exceeded.

  NOTE: Before beginning production for the first time, compare the incoming line speed signal to the line speed, and then scale the line speed accordingly.

  Refer to Line Speed Scaling.

NOTE: The button *Start/stop signal* or *Line speed signal* applies to all pumps.

Model 1

Pressure build-up: activated

PBU line speed dependent: deactivated

Start/stop signal selected

These settings allow the adhesive pressure to be regulated to a fixed setpoint as soon as the parent machine or the application stops.

Select the condition at which the pressure build-up is to be started (here: start/stop signal):

The motors are speed-controlled during production. If the signal *Parent machine stopped* is switched via interface XS2 or the field bus, the motors are regulated to a fixed setpoint. As soon as the signal *Parent machine started* is switched, the melter returns to speed-controlled mode.

Model 2

Pressure build-up: activated

PBU line speed dependent: deactivated

Line speed selected

These settings allow the adhesive pressure to be regulated to a fixed setpoint as soon as the line speed signal falls below the value *Line speed for activation*.

Select the condition at which pressure build-up is to be started (here: line speed):

The motors are speed-controlled during production. If the line speed signal falls below the *Line speed for activation**, the motors are regulated to a fixed setpoint pressure.

Analog input (XS5) set: As soon as the line speed signal exceeds the value* plus 5 %, the melter returns to speed-controlled mode.

Field bus set: As soon as the line speed signal exceeds the value* plus 1 %, the melter returns to speed-controlled mode.

Model 3

Pressure build-up: activated

PBU line speed dependent: activated

Start/stop signal selected

Example - *Line speed scaling* set:

Maximum line speed: 75%

Maximum pressure: 60 bar

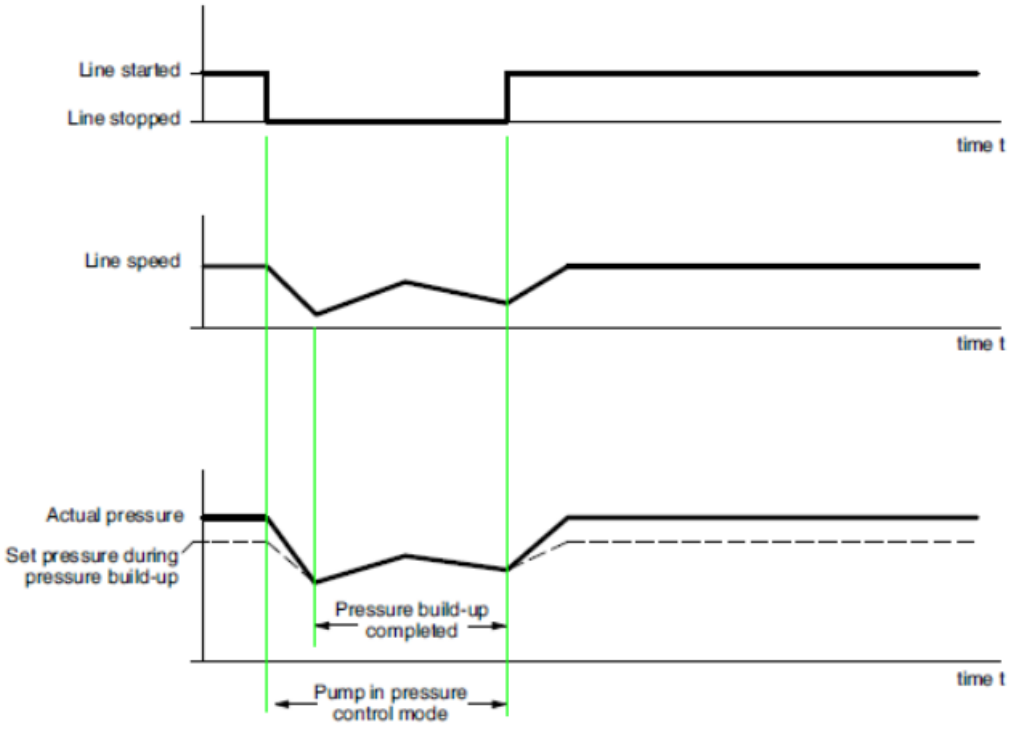
Minimum line speed: 15%

Minimum pressure: 10 bar

The motors are speed-controlled during production. If the signal *Parent machine stopped* is switched via interface XS2 or the field bus, pressure build-up is activated. The motors are then regulated to a flexible setpoint. The setpoint during pressure build-up is automatically adapted to the current line speed and lies within the scaling *Maximum pressure* and *Minimum pressure*.

For the example above, this means: The applicator was closed, and as long as the line speed is at least 75 % of the maximum speed, pressure of 60 bar is maintained. If the line speed decreases, the pressure decreases accordingly. However, it never falls below 10 bar, even if the line comes to a standstill. If the actual pressure reaches the setpoint, the message *Pressure build-up completed* appears (Refer to the illustration).

As soon as the signal *Parent machine started* is switched, the melter returns to speed-controlled mode.



Model 4

Pressure build-up: activated

PBU line speed dependent: activated

Line speed selected

Example - *Line speed scaling* set:

Maximum line speed: 75%

Maximum pressure: 60 bar

Minimum line speed: 15%

Minimum pressure: 10 bar

and

Line speed for activation: 5%

The motors are speed-controlled during production. If the line speed signal falls below the value *Line speed for activation*, pressure build-up is activated. The motors are then regulated to a flexible setpoint. The setpoint during pressure build-up is automatically adapted to the current line speed and lies within the scaling *Maximum pressure* and *Minimum pressure*.

For the example above, this means: The applicator was closed, and as long as the line speed is at least 75 % of the maximum speed, pressure of 60 bar is maintained. If the line speed decreases, the pressure decreases accordingly. However, it never falls below 10 bar, even if the line comes to a standstill. If the actual pressure reaches the setpoint, the message *Pressure build-up completed* appears (Refer to the illustration).

Analog input (XS5) set: As soon as the line speed signal exceeds the value plus 5% (10% in the example), the melter returns to speed-controlled mode.

Field bus set: As soon as the line speed signal exceeds the value plus 1% (6% in the example), the melter returns to speed-controlled mode.

Pump Enable State Overview

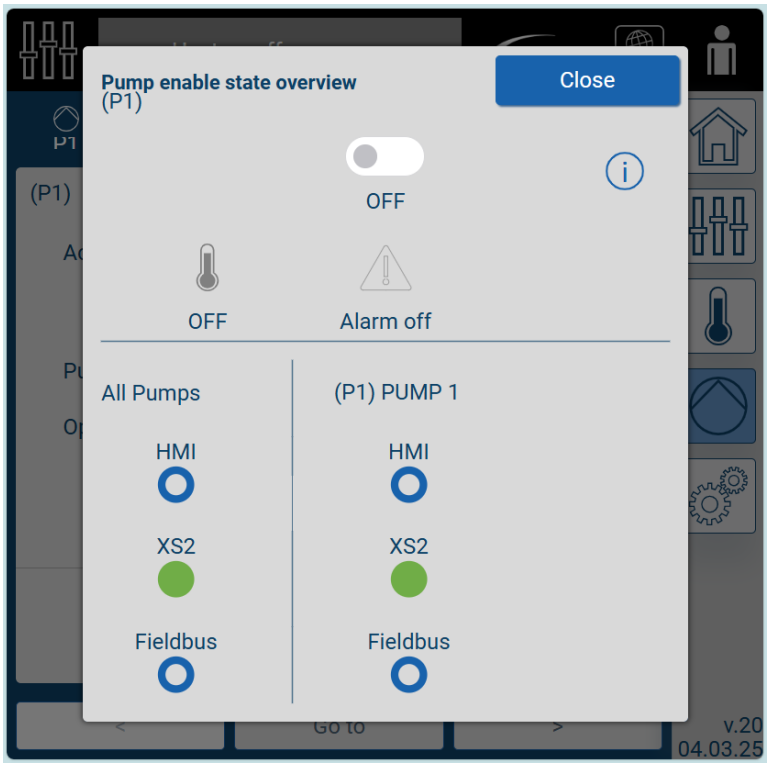


Figure 4-28 1_2_P8_DE - (V03) Pump enable state overview

1 Pump enable state overview
2 Close
3 Off / on
4 All pumps
5 Pump 1
6 HMI
7 Field bus

This screen provides information on your system and on what hinders operation of the pump as seen by the controller.

Slide (Pump State)

To set or revoke the pump collective enable. The switch color and text provide information on the status:

- Blue: Pump enabled
- Green: Motor running
- Blue: Interlock
- Gray: Off
- Green: Pressure build-up completed
- Green: Pressure build-up in progress
- Blue: *STO* (Safe torque off)

Ready for Operation (Temperature)

- Blue: Heatup phase
- Green: Ready for operation
- Yellow: Warning
- Red: Stop
- Red: Error
- Blue: Standby
- Gray: Off

Alarm (System)

- Green: No alarm active
- Yellow: Warning
- Red: Stop
- Red: Error

Line Speed

Appears when the threshold switch function is enabled.

- Green line: Production line started
- Blue ring: Production line stopped. Line speed signal is below the threshold value.

This section provides help determining which signals are missing for the relevant configuration before the pump can run. The message that appears depends on the configuration.

All Pumps AND Pump 1... to Pump X

Control panel (HMI)

- Green: enabled
- Blue ring: Collective enable (all pumps) or individual enables (pump *X*) missing from control device.

XS2

- Green: enabled
- Blue ring: All motors ON/OFF or Enable motor *X* Signals not set at XS2.

Field bus

- Green: enabled
- Blue ring: *Melter control* All motors ON/OFF or *Melter control* Enable motor *X* missing.

Pressure Control Settings

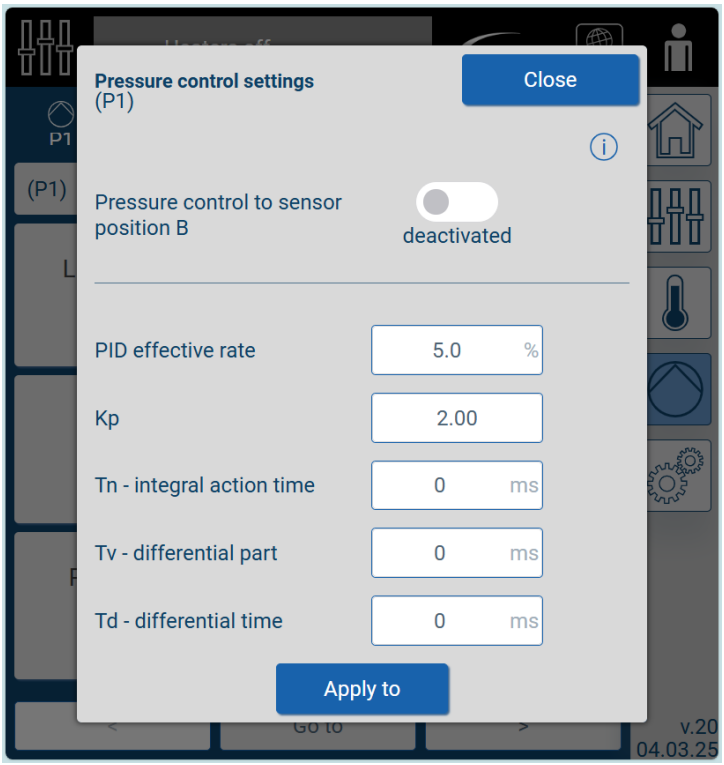


Figure 4-29 1_2-P10

1 Pressure control settings
2 Close
3 Pressures control to sensor position B
4 Activated/deactivated
5 PID effective rate
6 Kp
7 Tn - integral action time
8 Tv - differential part
9 Td - differential time
10 Apply to

Pressure Control to Sensor Position B

Enable when the pressure is to be controlled via the B sensor. If there are two pressure sensors assigned to the pump, the A sensor is now used only to display and monitor the pressure,

NOTE: The slide is enabled only when the pump motor is not enabled.

PID Pressure Control Parameters

CAUTION: Should be adjusted only by personnel with experience in metrology and control technology.

NOTE: TLK Energy provides information on its website about *Setting PID controllers in practical applications* in German and in English

PID Effective Rate

If the following parameters produce satisfactory control, Nordson recommends leaving this value at 100 %. The regulation ratio can be limited with this value.

Kp - Controller amplification (proportional value, P-part of the PID controller)

When the P-component is too large, the control circuit can become instable. The smaller the P-part, the weaker the controller effect on the control procedure and the more damped the control procedure.

Tn - Integral action time.
The larger the I-part, the slower the controller.

Tv - Differential action time; D-part of PID controller

Td - Differential time

Default PID Sets

When reset to the default, the PID parameters are reset to these values.

	Pressure control	Pressure build-up (PBU)
Kp	0.8	1.2
Tn	600 ms	0 ms
Tv	0 ms	0 ms
Td	0 ms	0 ms

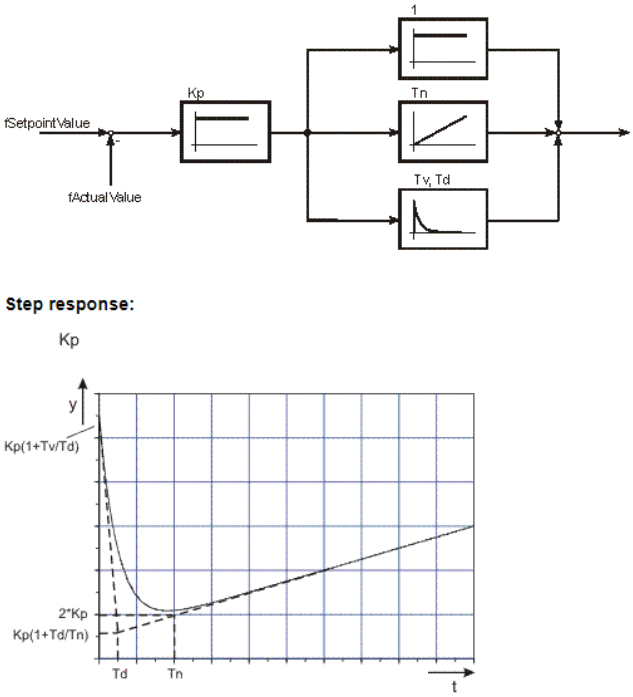


Figure 4-30 PID controller with step response - extract from infosys.beckhoff.com

If after a step response the actual value

- approaches the setpoint too slowly: Increase the proportional component. If this leads to improvement, then decrease the integration time. Repeat until a satisfactory controller result is achieved.
- Approaches the setpoint too slowly, with slight fluctuations: Increase the proportional component. If this leads to improvement, then decrease the derivative action time (differential time). Repeat until a satisfactory controller result is achieved.
- Approaches the setpoint without significant overshoot: Optimum controller behavior for processes that do not allow overshoot.
- Approaches the setpoint with slightly damped overshoot. Optimum controller behavior for actual value to quickly reach the setpoint and to compensate for disturbances.

  NOTE: The first overshoot should not exceed 10% of the setpoint jump.
- Approaches the setpoint quickly but overshoots significantly. Vibrations are muted and thus still stable (barely): Decrease proportional portion. If this leads to improvement, then increase the integration time. Repeat until a satisfactory controller result is achieved.

Apply Pressure Control Parameters for Other Pumps

The PID parameters do not have to be entered for each pump motor when the values are identical.

To do this, touch *Apply to*. A window opens in which all selected pumps or single pumps can be marked/selected.

Confirm the values by touching *Apply*.

Pressure Sensors

Figure 4-31 1_3_Pressure

1 Heaters off

2 Pressure sensor settings

3 Display all

Three overviews show all pressure sensors in the system. The positions of the tiles do not change:

- Screen 1: A and B sensors for pumps 1 to 8.
- Screen 2: A and B sensors for pumps 9 to 16
- Screen 3: C sensors for pumps 1 to 16

If, for example, only sensor 9A is assigned, only blank tiles are visible when, from the home screen, the first overview screen is opened. Move to the next screen with [>] or touch *Display all* to open the complete overview.

Tile Information

- 1A, 1B, 2A, 2B, ..., 16A, 16B, C1, C2, ... C16

  A, B and C pressure sensors are differentiated from one another. C sensors are not assigned to any motor and thus cannot be used for control pressure.

  Example 1A: Pump 1, A pressure sensor

- The color code indicates the status:
  - Gray: No alarm
  - Yellow: Overpressure warning or underpressure warning
  - Red: Overpressure stop
- Actual pressure

Touching the tile leads to the alarm settings, such as *Activate pressure alarm monitoring* and *Alarm thresholds*.

Internal Pressure Display (Box 27)

NOTE: To calibrate the sensor, the melter must be heated to processing temperature and be depressurized.

1. Set up the pressure sensor.

   If so far Box 27: X, it has to be changed to Box 27: A in the system settings after updating the configuration code.

2. Specify the pump and whether the pressure sensor should work as the A sensor or the B sensor. Assign pressure sensor.

   Go to Assign Pressure Sensor.

3. Calibrate the pressure sensor (nullification).

   Go to Calibrate Pressure Sensor (Nullification)

4. Set alarm threshold.

   Go to Pressure Alarm Monitoring (for All Pumps). A or B* Sensors: Set Pressure Setpoint.

   *If *Pressure control via B sensor* has been enabled.

5. If necessary, set pressure-dependent functions, e.g. pressure build-up.

External Pressure Sensor (Box 26)

NOTE: To calibrate the sensor, the melter must be heated to processing temperature and be depressurized.

1. Configure the external pressure sensor inputs.

   Do this by setting Box 26: C in the configuration code. This configuration normally supports up to eight pressure sensor inputs.

2. Assign pressure sensor.

   Go to Assign Pressure Sensor.

3. Calibrate the pressure sensor (nullification).

   Go to Calibrate Pressure Sensor (Nullification).

4. Set alarm threshold.

   Go to Pressure Alarm Monitoring (All Pumps). A or B* Sensors: Set Pressure Setpoint.

Pressure Alarm Monitoring (for All Pumps)

Figure 4-32 1_3_1_Pressure sensor limits

1 Heaters off
2 Pressure sensor settings
3 Back
4 Pressure alarm monitoring (for all pumps)
5 Activated/deactivated
6 STOP Overpressure
7 WARNING Overpressure
8 Actual
9 WARNING Underpressure
10 Apply to
11 Go to

The name of the pressure sensor can be changed in this screen. Touch the name field to do this.

Activate Pressure Alarm Monitoring

Pressure alarm monitoring is available with the options *Pressure display* and *Pressure control.*

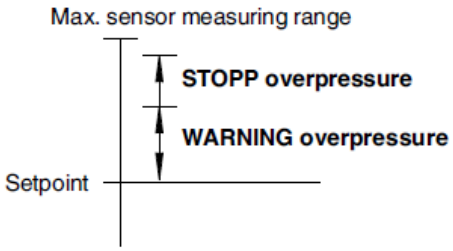
If pressure alarm monitoring is switched on, underpressure and overpressure are monitored. Alarms are triggered depending on the set threshold values.

Limits

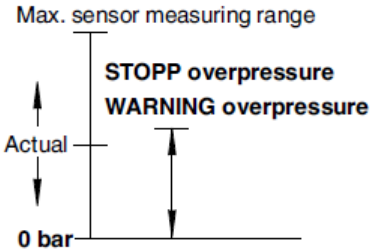
Threshold value (bar/psi)

Depending on the setting, indicated as a differential (relative to the setpoint) or as an absolute value (based on 0 bar).

Example



or



STOP Overpressure Triggers an Overpressure Stop

Pressure Control: Pressure Sensors A and B

The setpoint exceeds the delay time (e.g. STOP delay: 60 s) set by the customer by more than the differential *STOP overpressure*. Stop and its consequences occur even if the system is not yet ready.

Automatic Reset

The pressure falls below the setpoint plus the differential *STOP overpressure*.

Pressure Control: Pressure Sensors C
Speed Mode (Pressure Display): Pressure Sensors A, B and C

The setpoint exceeds the absolute value *STOP overpressure* for longer than the delay time (e.g. STOP delay: 60 s) set by the customer. Stop and its consequences occur even if the system is not yet ready.

Automatic Reset

The pressure falls below the absolute value *STOP overpressure*.

WARNING Overpressure Triggers an Overpressure Warning

The pressure values for warnings and stops are absolute values in *Speed mode* with the option *Pressure display*.

With the option *Pressure control*, the values are differentials for sensors A and B, and absolute values for the sensors C.

Pressure Control: Pressure Sensors A and B

The setpoint exceeds the delay time (e.g. WARN delay: 20 s) set by the customer by more than the differential *WARNING overpressure*. This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure falls below the setpoint plus differential *WARNING overpressure*.

Pressure Control: Pressure Sensors C
Speed Mode (Pressure Display): Pressure Sensors A, B and C

The pressure exceeds the absolute value *WARNING overpressure* for longer than the delay time (e.g. WARN delay: 20 s) set by the customer. This warning is indicated even if the system is not yet ready.

Automatic Reset

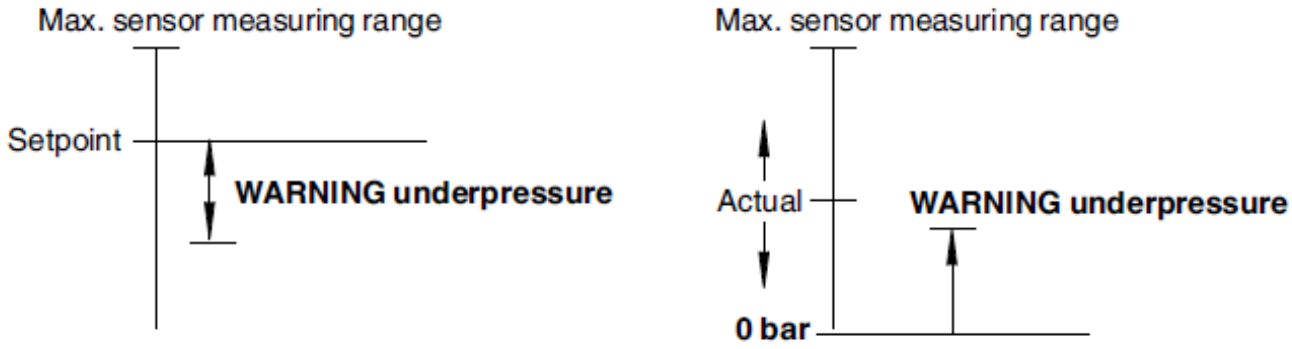
The pressure falls below the absolute value *WARNING overpressure*.

Warning Underpressure

Triggers an Underpressure Warning

The pressure values for warnings are absolute values in *Speed mode* with the option *Pressure display*.

With the option *Pressure control*, the values are differentials for sensors A and B (illustration on left). and absolute values for the sensors C (illustration on right).



Pressure Sensors A and B

The pressure falls below the alarm value for longer than the set delay (e.g. WARN delay: 20 s). The motor assigned to the pressure sensor has received all enables needed to run. However, the system must be ready for operation.

Pressure Sensors C

The pressure falls below the alarm value for longer than the set delay (e.g. WARN delay: 20 s). This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure exceeds the alarm value.

Apply Settings to Other Pressure Sensors

Alarm thresholds and delays do not have to be entered for each pressure sensor when the settings are to be identical.
To do this, touch *Apply to*. A window opens in which all selected pressure sensors or single pressure sensors can be marked/selected.

The colors signify:

- Black: The settings from this pressure sensor are applied.
- Blue: Pressure sensor selected. Settings are applied to this sensor.
- Gray: Pressure sensor not selected. Settings are not applied.

Confirm the settings by touching *Apply*.

Go to *Pressure Settings*

- Access other settings such as
- Pressure alarm delays
- Pressure functions.

Change Pressure Sensor Channel

Touch *Go to* to select the desired pressure sensor directly.

Pressure Alarm Delay

Figure 4-33 1_3_P3

1 Pressure alarm delays
2 Close
3 Stop alarm delay
4 Warning alarm delay

Delay times can be entered for alarms based on WARNING and STOP. Use e.g.

- When speed mode is regulated in key-to-line mode, an underpressure warning may be displayed during parent machine startup until the melter speed setpoint is reached.

STOP Delay

The limit for overpressure stop was exceeded for longer than the set delay.

WARNING Delay

The limit for the overpressure warning was exceeded for longer than the set delay.

The value fell below the limit for underpressure warning for longer than the set delay.

Directly select a desired pressure sensor with *Go to*.

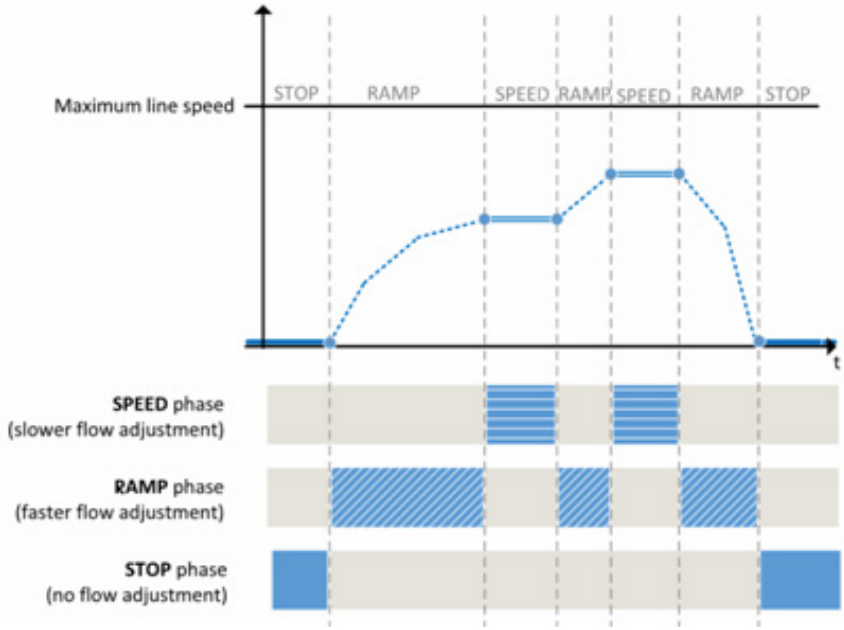
Flow WARNING Alarm Monitoring (for all Pumps)

Figure 4-34 1_4_1_Flowsensor

1 Heaters off
2 Pump flow sensor settings
3 Back
4 Flow warning alarm monitoring (for all pumps)
5 Activated/deactivated
6 Upper limit
7 Actual
8 Lower limit
9 Go to

Activated (applies to all pumps): Warnings based on the set limits should be issued. Separate limits are specified for each pump.

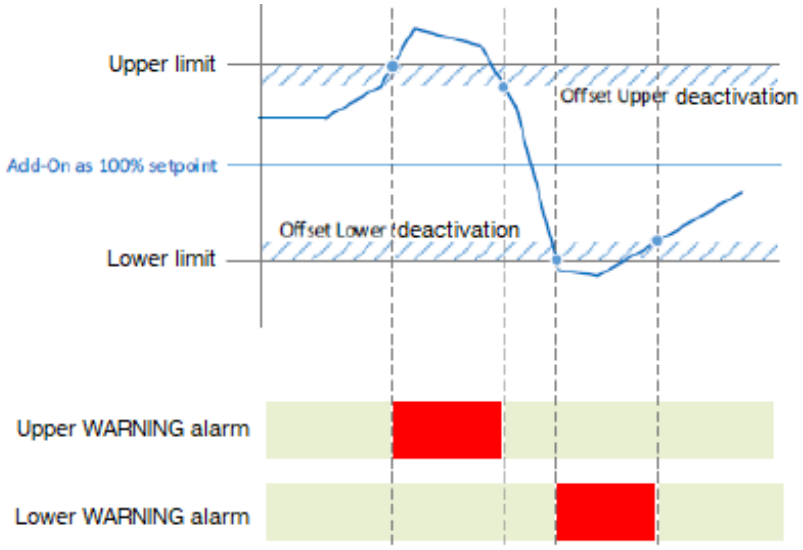
The difference between ramp up/down and speed is apparent by the speed characteristics (rising or falling = ramp, stable = speed). During startup and shutdown of the production line, the pump accelerates or decelerates to quickly adapt to the required flow quantity.



Warning Thresholds for Ramps and Speed Phases

In the pump mode *Flow control* (Closed-loop), the warning thresholds are relative values. The relative values are all near the setpoint, meaning around the application weight (add-on) set by the operator. Te setpoint is always 100 %. The alarm thresholds are also indicated as percentages.

Actual value 100 % means: Actual value = setpoint



If a value exceeds or falls below an alarm threshold, the respective alarm is generated. If a value exceeds or falls below the alarm threshold again, the alarm is not revoked until an internally calculated offset in crossed.

- RAMP phase upper limit
- SPEED phase upper limit
- SPEED phase lower limit
- RAMP phase lower limit

NOTE: The warning values for *Measure alarm* are absolute, so they appear as g/min instead of as a percentage.

Flow Alarms

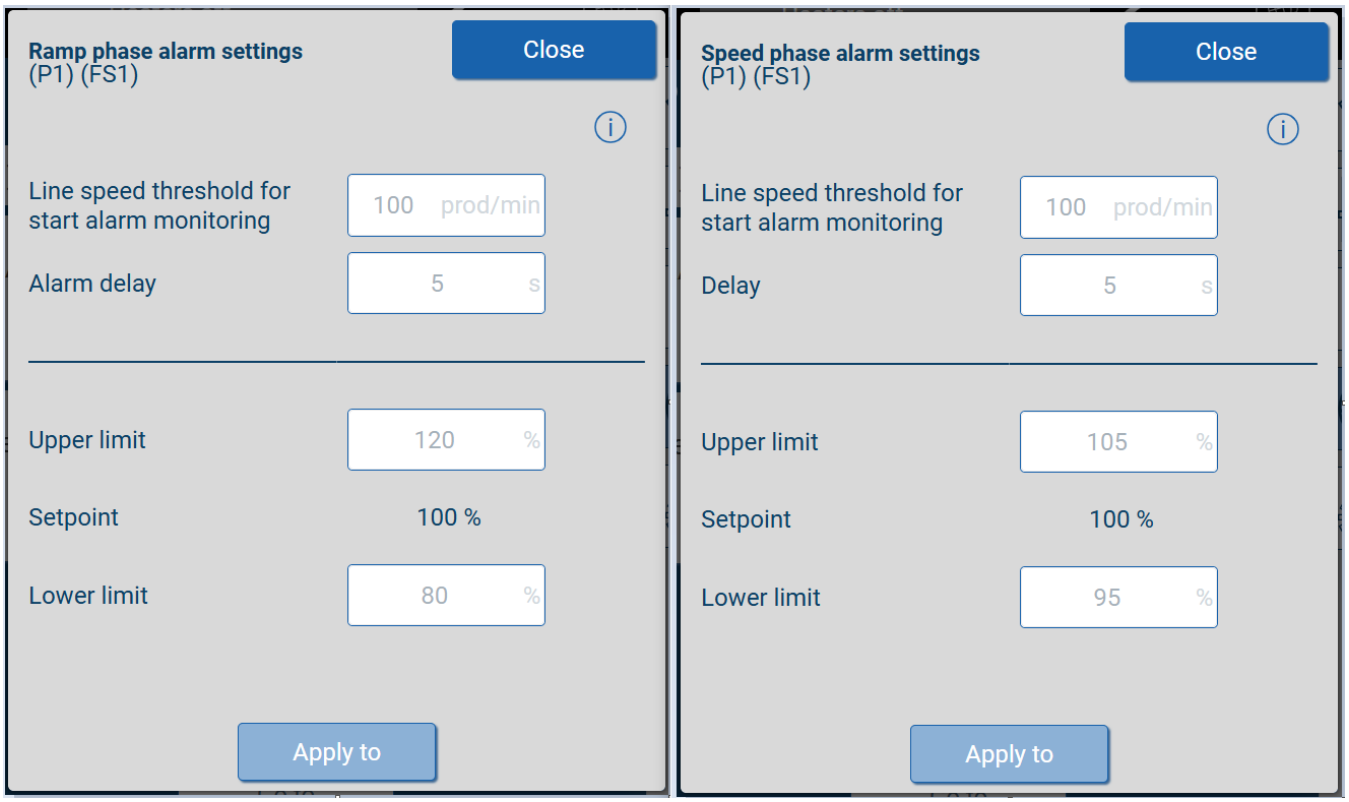


Figure 4-35 1_4_P1P2

1 Ramp phase alarm settings
2 Speed phase alarm settings
3 Close
4 Line speed threshold for start alarm monitoring
5 Alarm delay
6 Upper limit
7 Setpoint
8 Lower limit
9 Apply to

RAMP/SPEED Phase Alarms

Speed phase: constant web speed with only slight fluctuations.

Line speed threshold for start alarm monitoring

Alarm monitoring for the ramp and speed phases is not enabled until this web speed is reached. *Stated as m/min or products/min, depending on line speed scaling.

Alarm delay

An alarm delay can be set to prevent an alarm from being triggered when the speed briefly exceeds or falls below an alarm threshold. An alarm is not triggered unless the measured value has not returned to the proper range when the time expires.

Upper limit in %

Setpoint in %

Depending on the application weight (add-on) type set, the value can refer to g/min, g/product or g/m^2.

The setpoint is set on the pump side as a factor of the selected pump mode.

Lower limit as %

Measure Alarm

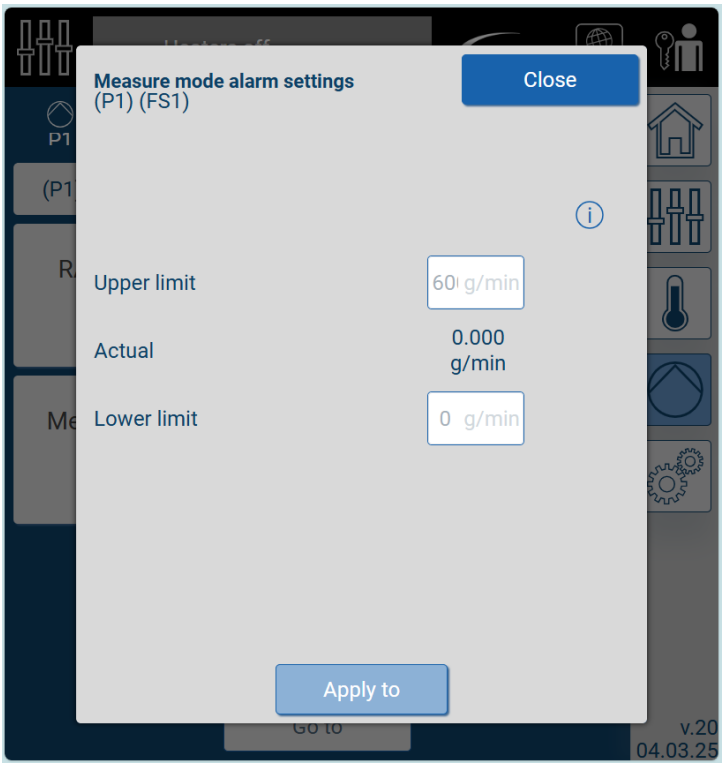


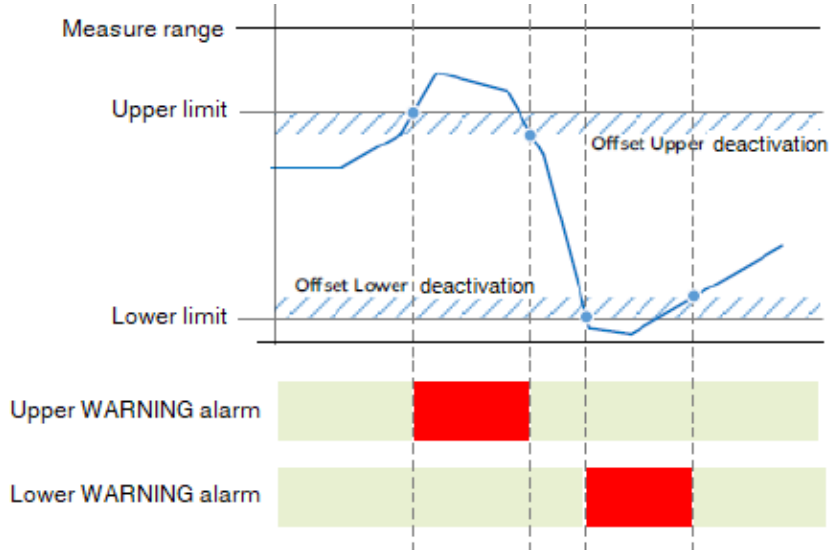
Figure 4-36 1_4_P3

1	Measure mode alarm settings	3	Upper limit	5	Lower limit
2	Close	4	Actual	6	Apply

Flow Measurement Alarm Settings

When the pump is in *Speed mode* or *Pressure control*, the warning thresholds are absolute values. There in no warning threshold upon which the application weight setpoint could be based. All of the values are entered and displayed in g/min.

NOTE: The lower alarm threshold can be deactivated by entering zero (0).



Upper limit in g/min

Actual in g/min

Lower limit in g/min

Flow Measure Correction

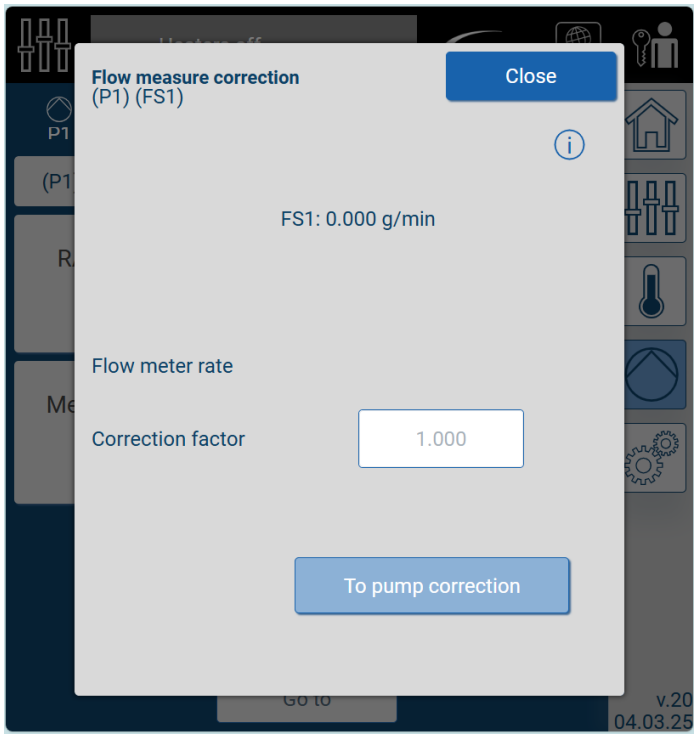


Figure 4-37 1_4_P5

1	Flow measure correction	3	Simulation	5	Correction factor
2	Close	4	Flow meter rate	6	To pump correction

Actual application weight in g/min or mg/min: Mass flow rate, calculated by controller.

From the help text on introduction*: *After assignment, the values measured by the flow meter on the pump side are displayed. The controller uses the current flow meter speed, the encoder resolution and the flow rate to calculate the adhesive volume flow. Depending on the adhesive density entered, this value is converted to mass flow rate and displayed in g/min or mg/min.*

Flow meter rate in cm^3/revolution

Correction factor: The metering unit ID plate normally shows the theoretical flow rate. This value can be adjusted applying the correction factor.

Button *To pump correction*: Refer to Flow Control Settings.

* Refer to Flow Alarms.

General - Overview

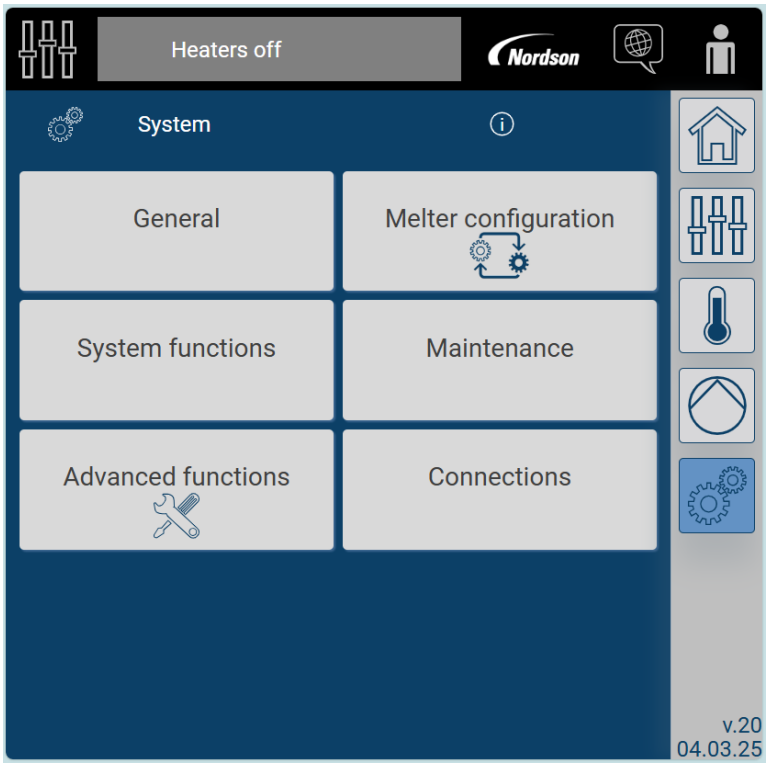


Figure 4-38 2_0_SysSettings

1 Heaters off
2 General
3 Melter configuration
4 System functions
5 Maintenance
6 Advanced functions
7 Connections

These general settings always affect the entire system.

- **Melter name**

  Change default melter name
- **Date & time**

  Enter the current date and time.
- **Units**

  Select temperature unit °C/°F and pressure unit bar/psi.

Configuration

- **Melter configuration**

  View and change the configuration code of melter and ACM(s).

  NOTE: The configuration code screen in which changes can be made can only be accessed on the melter control panel.

- **Version info**
  - Display of software version and customer recipe
  - Perform software update
  - Archive and restore the configuration code and production settings (recipe).
  - Import and export the archive.
- **Recipes**: Save, delete, load production parameters, and reset parameters to the Nordson default.
- Reset to the defaults with the button 
- **Sensor assignment**
  - Assign the pressure sensor(s) to a pump. Introduce the pressure sensors to the system and calibrate them.
  - Assign the flow meter to a pump. Set flow meter specifications, e.g. resolution, flow rate.

System Functions

- **Lid detection**
- **Level** - OPTION

  Activate the level detection function, and set parameters for *Start filling, Stop filling*, *Warning*

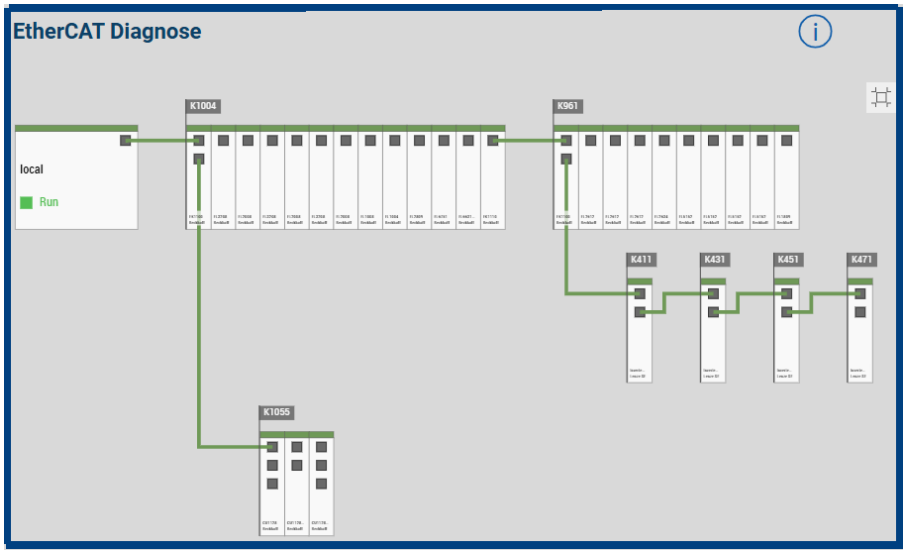
Maintenance

- Specify maintenance intervals for specific tasks, e.g. changing filter cartridge. A warning is indicated when the time defined by the customer has elapsed.
- Operating hours counter

Advanced Functions

- **EtherCAT diagnosis**

  Illustration of EtherCAT network, incl. possible error locations, missing connections, etc.



- **Flow control analyzing** - depending on pump

- **Line speed simulation**

  If the melter is not integrated into the line, a line speed signal can be simulated.

  Whether the line speed signal is received via the interface XS5 (analog input) or via the field bus is relevant.

- **Controller diagnosis** - for field test.

  Displays CPU temperature, CPU usage, image number, mainboard temperature, switchon counter, IP address, CPU frequency, PLC status

Connections

- **IP setup**
  - Activate DHCP
  - IP address
  - Subnet screen
  - Gateway address
- **Clients**
  - Display of own control device address
  - Exclusive control
  - Deactivate/activate remote access for external control devices
  - Display of all logged in users, with their IP address and their password level
- **Host communication**

  Interfaces (control panel, standard, field bus) to control the melter.

  Control modes, with the option *Field bus* and in field bus mode; log field bus data.

- **OPC UA** (Open Platform Communications Unified Architecture)

  Secure way to communicate with the melter, regardless of the platform or manufacturer. The interface is standardized and documented by the OPC Foundation.

  NOTE: Field bus communication and data exchange via OPC are not mutually exclusive.

Nordson

The button appears after logging in as the user *Nordson*.

General

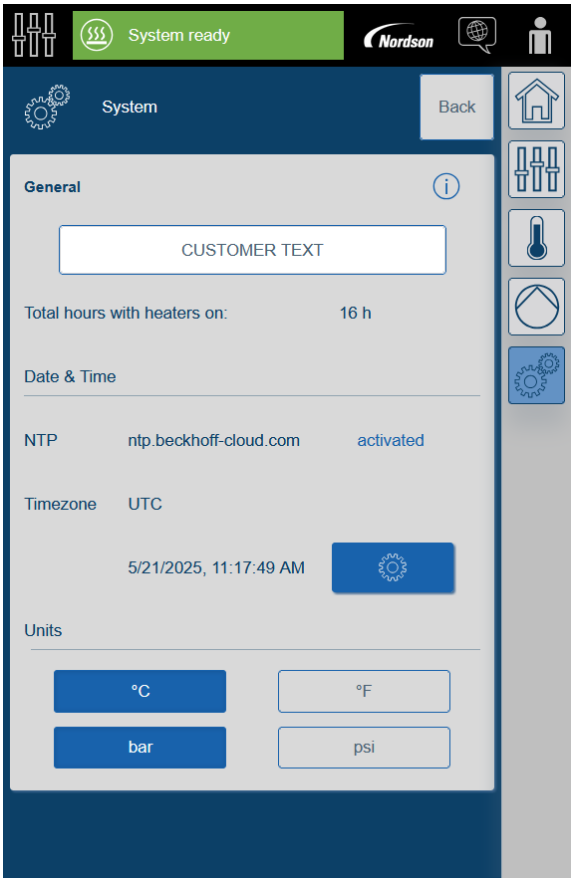


Figure 4-39 2_1_General

1	Heaters off	3	General	5	Save
2	Back	4	Date & time	6	Units

The settings in this screen always apply to the entire system.

Melter Name

Default: CUSTOMER TEXT

The melter or system name can be changed here and is then modified in the home screen, below the illustration of the melter.

Total hours with heaters, display in seconds.

Date & Time

When the NTP server (time server) is activated, the date and time are automatically updated for the respective time zone as soon as the melter is connected to the internet.

The date and time are shown in different formats, depending on the language.

Touch the gear icon to access *Settings*.

NOTE: Heaters have be switched off and *Exclusive control* has to be activated.

Units

Select °C or °F as the temperature unit.

Select bar or psi as the pressure unit.

Date & Time

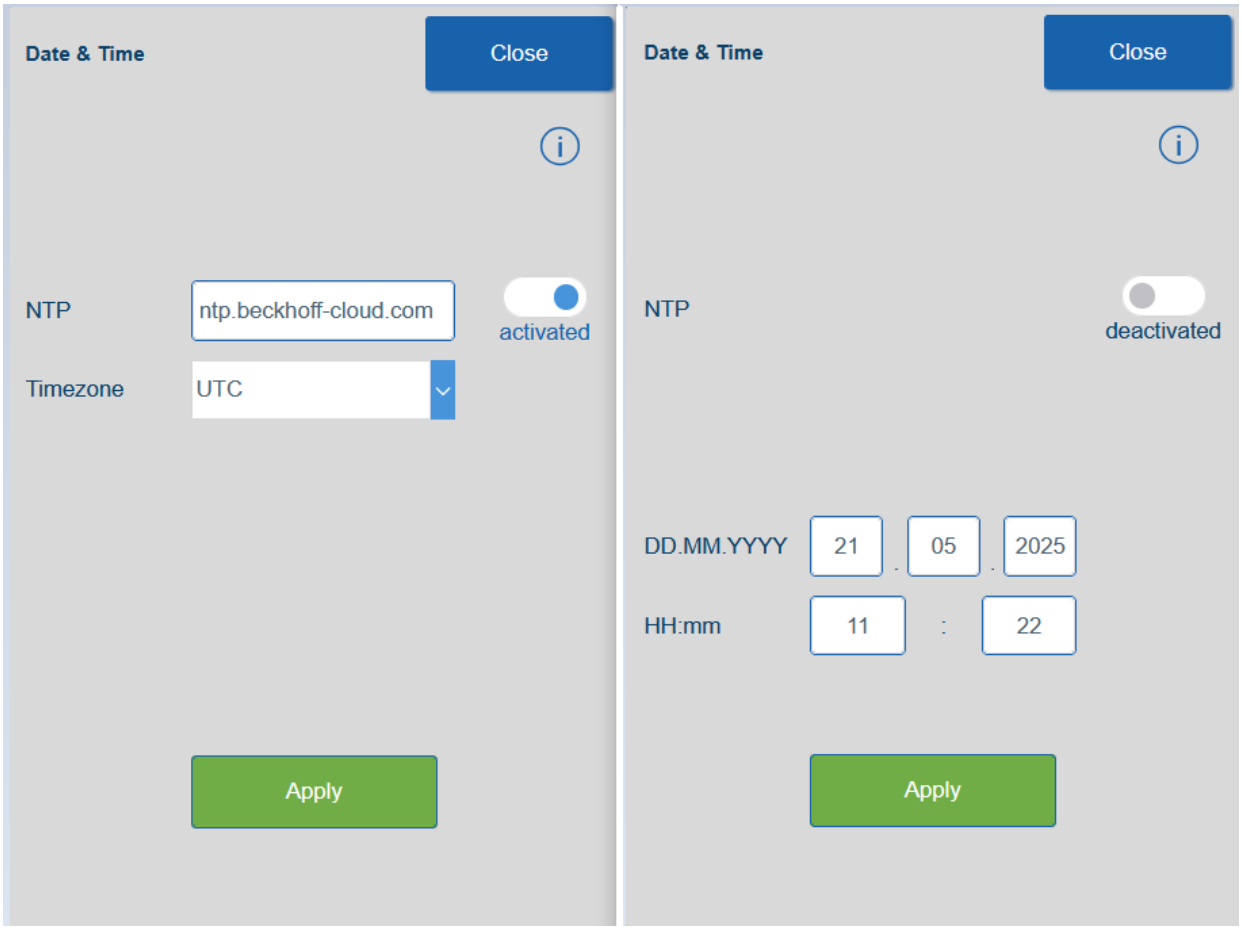


Figure 4-40 2_2_1_Configcode

1	Date & time	4	Activated	7	DD.MM.YYYY
2	Close	5	Activated	8	HH:min (hours:minutes)
3	NTP (time server)	6	Time zone	9	Apply

For automatic setting, activate the NTP server (time server) and select the time zone. A time server synchronizes melters and systems within a network.

To set the date and time manually, deactivate the NTP server.

To *Apply* the settings, restart the system. *Confirm* the restart. The system is restarted automatically. Switching off via the main switch is not necessary.

Configuration Code

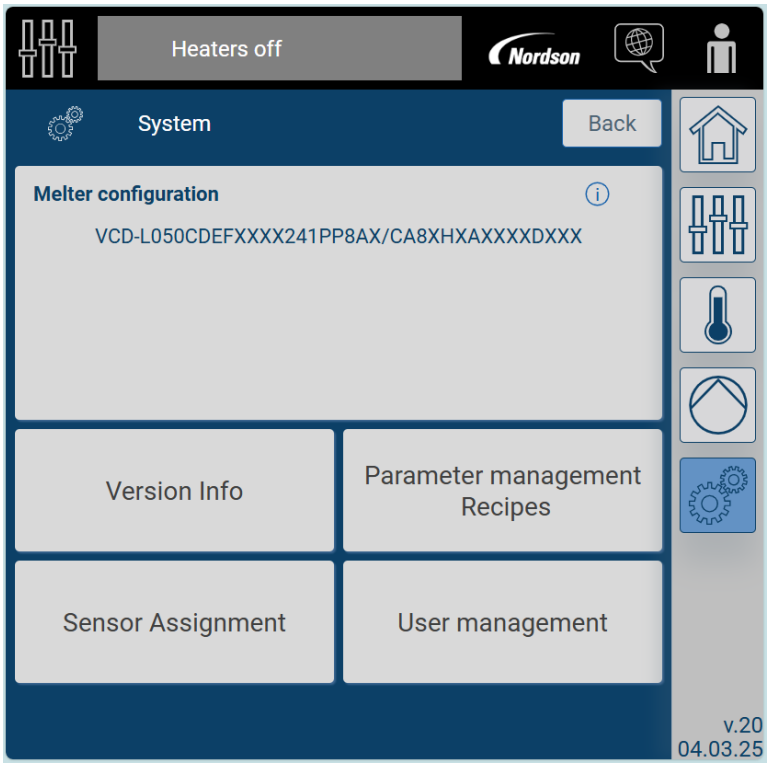


Figure 4-41 2_2_1_Configcode

1 Heaters on
2 Back
3 Melter configuration
4 Version info
5 Parameter management, recipes
6 Sensor assignment
7 User management

The current configuration codes for the VersaBlue II melter and up to four ACMs are shown.


Touch the gear icon, if the configuration code is to be changed:

The configuration code screen can only be accessed on the melter control panel. On other control devices, the button is faded out.

CAUTION:

- Turn heaters off before changing the configuration.

  The heaters can be switched off in the screen *Master control* or via one of the interfaces.

- To continue, deactivate all external control devices.
  - When logging in or in the screen *Connections* (only technician or higher): Touch *Disable remote access*.

    OR

  - With systems that have the option *Field bus*, select the control mode *Control panel* by switching off the other two buttons.

    OR

  - With systems without the option *Field bus*, set *Control panel AND standard I/O* to *Control panel*.
- Incorrect configuration can cause the melter to malfunction.

Other messages continue to indicate missing actions, until the modified configuration can be applied.

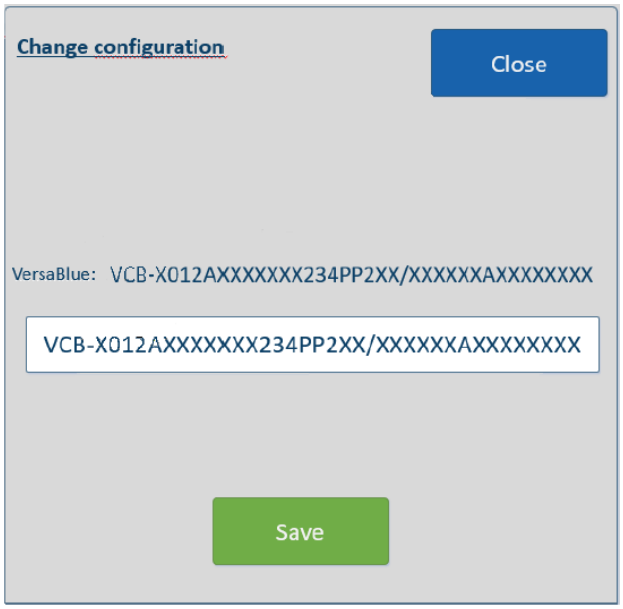
- Configuration code input incomplete!

  Use the configuration code tables (see below) to check the box and code.

  NOTE: It will soon be possible to archive configuration and production settings and to restore them independently of one another.

Change Configuration

The button *Configuration* opens an input field, where the configuration code has to be entered once. The input field shows the old configuration code, which still applies.



Apply the input with *Save*. It takes a moment for the new configuration code to be saved. To apply the new configuration code in the controller, the device has to be switched off and then on again (reset) with the main switch.

Possible Configurations ACM - Overview

Possible Configurations of Melter - Overview

Boxes 1 to 40 show the melter features and functions. Refer to the customer product manual for the melter, section *Description*.

Configure Pumps

In the melter configuration code, the pumps and their output quantities are specified in cm^3 per revolution. In addition to the pump, the powertrain also includes a coupling, motor and motor controller, some of which require their own settings.

When adding later: Unlike the previous melter that used a CAN bus, when EtherCAT is added, the new motor controller is recognized by the system and assigned by the plug sequence.

Box	Code	Information - 1/30/2025
1+2		**Melting concept**
	VC	VB II - conventional / classic
3		**Melter Type**
	B	Max: 4-SS, 6H/A, (PF 2)
	C	Max: 2-SS/DS, 6 H/A, (PF 2)
	D	Max: 4-SS, 8 H/A, (PF 3)
	E	Max: 3/4-SS/DS, 8 H/A, (PF 3)
4	-	Standard melter
5		**Level**
	L	Level Monitoring
	P	Level Control (Ni120) + Overfill Protection
	D	Level Control (PT100) + Overfill Protection
6-8		**Melter Capacity**
	012	12 liter (26 lb)
	025	25 liter (55 lb)
	050	50 liter (110 lb)
	100	100 liter (220 lb)
	10H	100 liter (220 lb) + Hopper
9-12		**Pump**
	A	SN0030 - 1.4 kg/h
	C	SN0062 - 2.9 kg/h
	D	SN0093 - 4.5 kg/h
	E	SN0186 - 8.9 kg/h
	F	SN0371 - 17.8 kg/h
	G	SN0773 - 37.1 kg/h
	H	SN1710 - 82.1 kg/h
	2	DN0030 - 1.4 kg/h per stream
	4	DN0062 - 2.9 kg/h per stream
	5	DN0093 - 4.5 kg/h per stream
	6	DN0186 - 8.9 kg/h per stream
	7	DN0279 - 13.4 kg/h per stream
	J	SF0016 - 0.8 kg/h
	K	SF0030 - 1.4 kg/h
	L	SF0060 - 2.9 kg/h
	M	SF0090 - 4.3 kg/h
	N	SF0120 - 5.7 kg/h
	O	SF0175 - 8.4 kg/h
	P	SF0240 - ll.9 kg/h
	Q	SF0300 - 14.4 kg/h
	R	SF0450 - 21.6 kg/h
	1	SF1000 - 48.0 kg/h
	S	DF0016 - 0.8 kg/h per stream
	T	DF0030 - 1.4 kg/h per stream
	U	DF0060 - 2.9 kg/h per stream
	V	DF0120 - 5.7 kg/h per stream
	W	DF0175 - 8.4 kg/h per stream
	Y	DF0240 - 11.5 kg/h per stream
	X	No pump (Box 10-12 only)

Continuation of configuration code

13-16	X	reserved
17		**Filter - always with 85 bar safety valve**
	8	0.8 mm filter
	2	0.2 mm filter (Standard)
18		**Voltage**
	3	230V 3 Phase Delta
	4	400V 3 Phase WYE
	5	400V 3 Phase Delta
	6	480V 3 Phase Delta
19		**Main Switch**
	1	Main Switch Red - 4 Pole
	2	Main Switch Black - 3 Pole
	3	Main Switch Black - 4 Pole
	4	Main Switch Red - 3 Pole (Standard)
20		**Controls**
	P	Integrated HMI/Panel
21		**Temperature Sensor**
	N	Ni120
	P	PT100
22		**Hose/Applicator Pairs**
	2	2 Hose/Applicator Pairs
	4	4 Hose/Applicator Pairs
	6	6 Hose/Applicator Pairs
	8	8 Hose/Applicator Pairs
23		**ACM connectivity**
	A	ACM connectivity
24	X	reserved
25	/	Separator
26		**External Pressure Transducer**
	C	External pressure transducer input/s (CAN bus)
27		**Internal Pressure Indication**
	A	Internal Post filter Pressure Indication per stream (IPI)
28		**External TruFlow**
	2	2 TruFlow Channels Gear Based, External
	4	4 TruFlow Channels Gear Based, External
	6	6 TruFlow Channels Gear Based, External
	8	8 TruFlow Channels Gear Based, External
29	X	reserved

Continuation of configuration code

30		**Flow Control**
	F	Flow Control Bypass
	N	Pressure build up (Airless pressure control)
	H	Pressure build up PBU with OPC
	K	Pressure build up PBU with OPC & Pressure Relief
	X	Plug
31		**Fieldbus Communication**
	E	Ethernet/IP
	P	Profinet IO
	T	EtherCat
32		**Key-to-Line (hard-wired)**
	K	Key-to-Line per Drive (separate connectors)
	A	Key-to-line for all drives
33		**Safe Torque Off**
	T	Terminal Block
	E	Ethernet/IP
34		**Heat Exchanger**
	E	Heat Exchanger
35-36	X	reserved
37		**Drain Valve**
	D	Drain Valve
38-40	X	reserved

Possible Configurations ACM - Overview

Boxes 1 to 40 show the melter features and functions. Refer to the ACM customer product manuals for details.

Box	Code	Information - 1/30/2025
1-3	VAC	VersaACM II
4	-	Standard configurable unit
5	 E A	**ACM Type** Expanded 2x Drives, 6x H/A, 4x TF Advanced 4x Drives, 12x H/A, 8x TF
6-9	 Y L B	**Drive Types** AC for 450 W AC for 660 W Servo for GP STD.
10-17	X	reserved
18	 3 4	**Voltage** 230 V_{AC} 3Ph Delta 50/60 Hz 400 V_{AC} WYE (3Ph/N/PE) 50/60 Hz
19	 2 3	**Main Switch** Main Switch Black - 3 Pole Main Switch Black - 4 Pole
20	X	reserved
21	 N P X	**Temperature Sensor** Ni120 PT100 No temperature
22+23	 02 04 06 08 10 12 XX	**Hose/Applicator Pairs** 2 Hose/Applicator Pairs (4-Ch) 4 Hose/Applicator Pairs (8-Ch) 6 Hose/Applicator Pairs (12-Ch) 8 Hose/Applicator Pairs (16-Ch) 10 Hose/Applicator Pairs (20-Ch) 12 Hose/Applicator Pairs (24-Ch) No temperature channels
24	X	reserved
25	/	Separator

Continuation of configuration code

26+27	X	reserved
28		**External TruFlow**
	2	2 TruFlow Channels Gear Based, External
	4	4 TruFlow Channels Gear Based, External
	6	6 TruFlow Channels Gear Based, External
	8	8 TruFlow Channels Gear Based, External
29	X	reserved
30		**Safety-/ Bypass Valves**
	S	Safety valves
	K	Bypass valves for VB IC Net flow control option K
31+32	X	reserved
33		**Safe Torque Off**
	T	Terminal Block
	E	Ethernet/IP
34		**Heat Exchanger**
	E	Heat Exchanger
35-40	X	reserved

Version Info

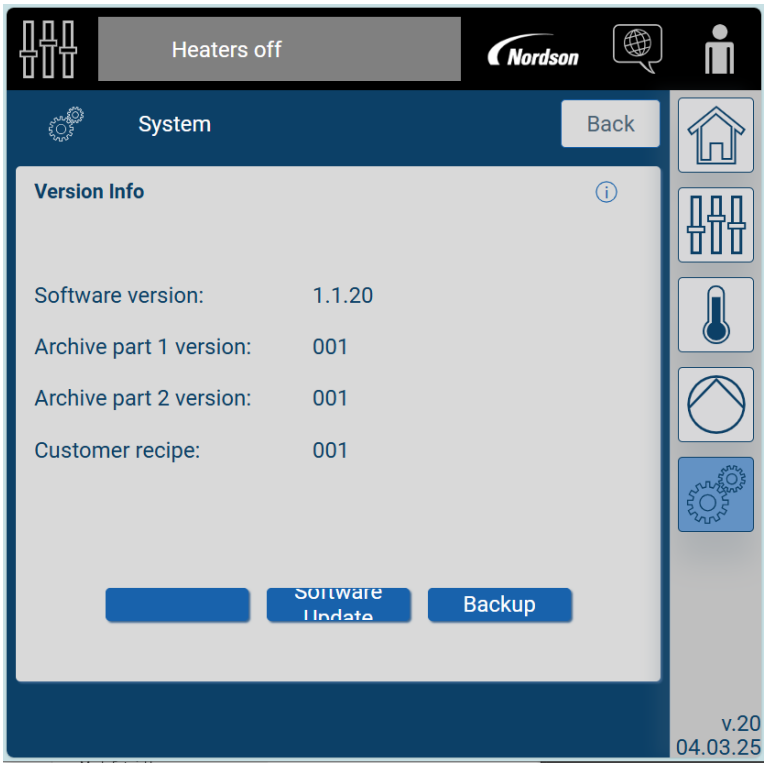


Figure 4-42 2_2_2_Version

1 Heaters off
2 Back
3 Version info
4 Software version
5 Archive part 1 version
6 Archive part 2 version
7 Customer recipe
8 Software update
9 Backup

Display of Versions

Details on the software version can be seen via a QR code or in a list. When needed, the version information can also be sent as an email. Enter an email address for this purpose.

The archive versions and the customer recipe version define the precise constellation of the melter parameters specific to the software version.

For example, the version information is verified when a customer recipe is loaded. The user is notified if there is a discrepancy. Loading can resume after confirmation.

Button Software Licenses

The U-lock is faded out if no additional licenses are needed.

Additional licenses are required for melter functions such as OPC UA or an expanded number of clients for the webserver.

NOTE: However, the melter can be used despite missing licenses.

 A U-lock indicates that additional licenses are already installed on the melter.

 A yellow U-lock indicates that a license is missing. Touch the button to go to the license screen in which the missing licenses are shown.

The license can be loaded either with a USB stick on the melter or via an internal memory from PC/laptop.

Missing licenses can be ordered from your Nordson representative. When placing the order, enter the serial number and P/N of the melter, as well as an email address to which the license file should be sent.

Button Software Update

Nordson offers software updates.

NOTE: *Exclusive control* has to be activated.

Touch *Software update* to move to a screen in which the update can be started. To prevent having to restore all of the settings after the software update, touching the button automatically creates a backup named *SysUpdate.nx*.

NOTE: The automatic update contains the same information as a backup creates by touching the button *Backup*.

Button Backup

NOTE: *Exclusive control* has to be activated.

Backing up data consists of three information blocks:

- Software configuration code of the melter and any ACMs
- Other settings, such as sensor assignments and parameters
- Customer recipe and production settings

A backup copy of the data backup can be created. To do this, select *File name.nx* and touch *Save as archive*. The backup copy is stored in the internal memory. The selected file can also be downloaded into the download folder instead.

Restore Archived Settings

Touch the key *Activate*: Use the two slides to select whether only the configuration, only the production settings or both should be loaded.

Touch *Apply* to load the entire backup or only parts, which overwrite the current data(s) - depending on the position of the slide.

NOTE regarding all other product types: In the future, only data backups that correspond to the respective product, e.g. the melter or bulk melter, will be able to be loaded.

Software Update

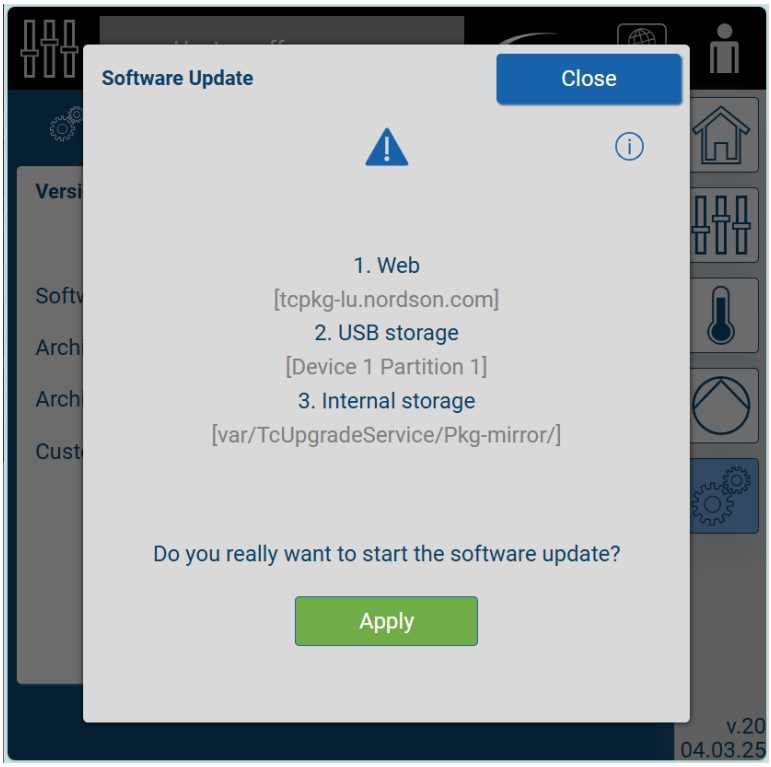


Figure 4-43 2_2_2_P1

1 Software update
2 Close
3 Web
4 USB storage
5 Internal storage
6 Do you really want to start the software update?

Touch *Apply* to start the software update, or touch *Close* to exit the screen.

Perform Software Update

After pressing the button *Apply:*

1. The software update starts. The search for an update follows this sequence:
   a. Internet (web)
   b. USB storage
   c. Internal storage.

2. The first update storage location that is not empty is used.
3. The system shuts down and then restarts several times. This can take some time.

To restore the previous settings after a successful software update, the backup created automatically can be loaded by touching *Backup* under *System / Melter configuration / Version info*

NOTE: After a software update, only the software configuration code of the melter and any ACMs is restored automatically.

Software Backup

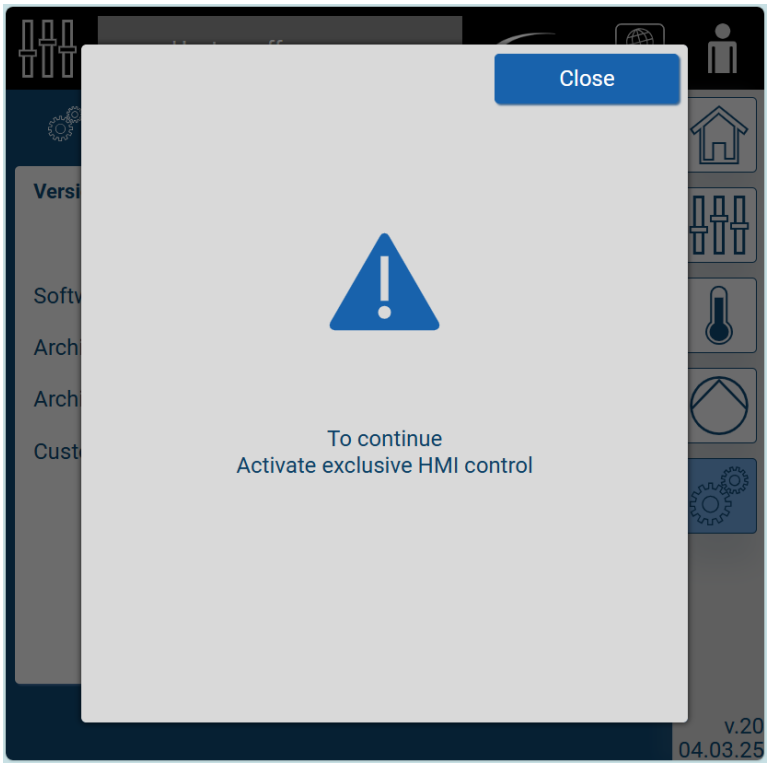


Figure 4-44 2_2_2_1_Backup

1 Close 2 To continue Activate exclusive HMI control

Configuration and production settings of the melter can be saved (backup) and then exported and imported from the controller.

Backed up data can be reactivated. This causes the melter settings to be overwritten. Upon activation, the data to be included can be specified by selecting it separately (configuration settings and/or production settings.

Activate Archive

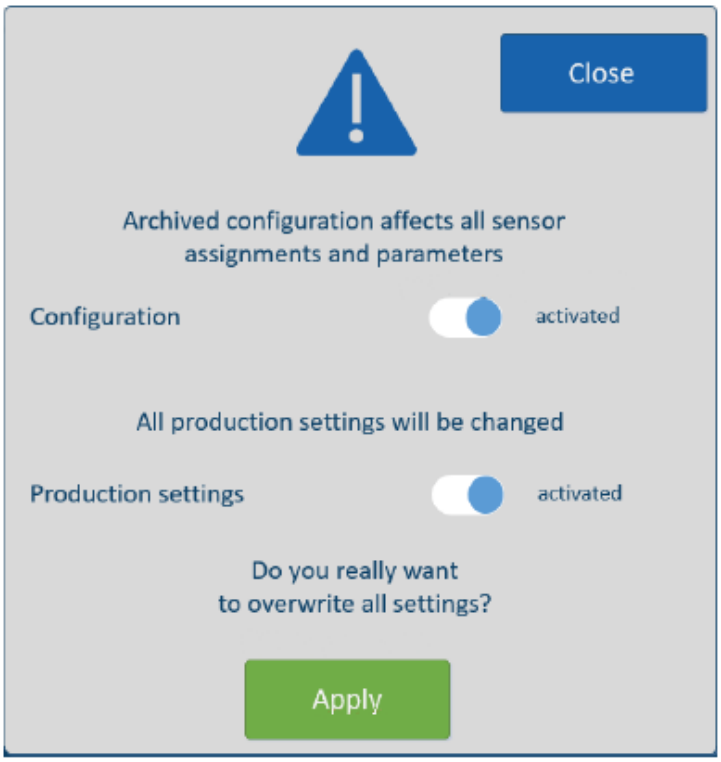


Figure 4-45 2_2_2_1_P1

1 Archived configuration affects all sensor assignments and parameters
2 Configuration
3 All production settings will be changed
4 Production settings
5 Do you really want to overwrite all settings?
6 Apply

Current settings can be overwritten with archived settings.

- Configuration

  Activate with the slide, if the button *Apply* should be used to overwrite the configuration settings (incl. all sensor assignments and parameters).

  List (TBD)

- Production settings

  Activate with the slide, if the button *Apply* should be used to overwrite the production settings.

  List (TBD)

Touch *Apply*, if the configuration and/or production settings should be overwritten.

Licenses

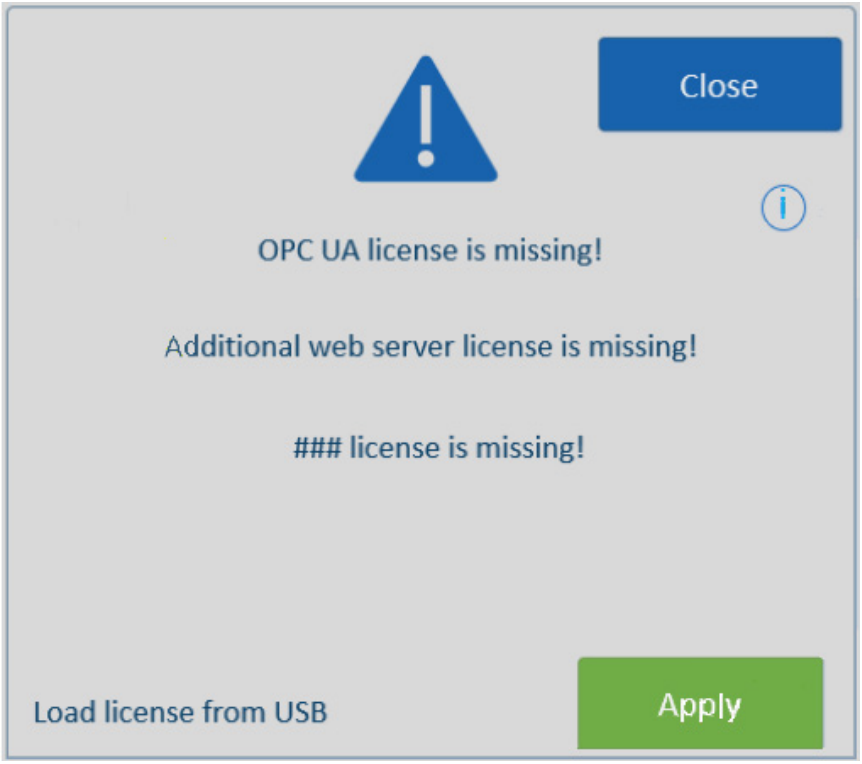


Figure 4-46 2_2_2_P2

1	Close	3	Additional web server license is missing!	5	Load license from USB
2	OPC UA license is missing!	4	### license is missing!	6	Apply

Missing licenses are displayed in this window. Such as for

- OPC UA
- Webserver (HMI client)

Missing licenses can be ordered from your Nordson representative.

When placing the order, enter the serial number and P/N of the melter, as well as an email address to which the license file should be sent.

The license can be loaded either with a USB stick on the melter or via an internal memory from PC/laptop.

Parameter Management & Recipes

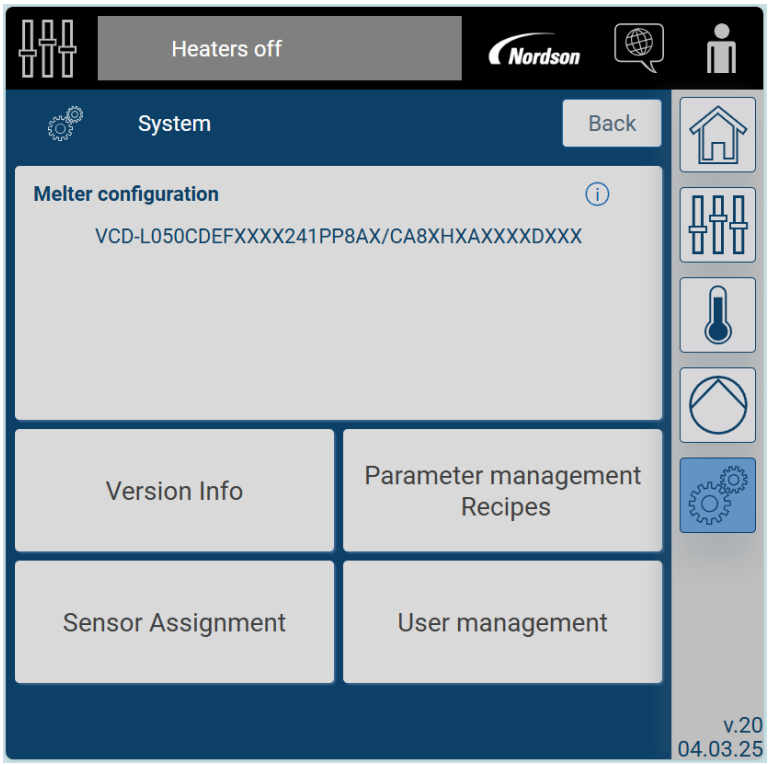


Figure 4-47 2_2_3

1 Heaters on
2 Back
3 Melter configuration
4 Version info
5 Parameter management, recipes
6 Sensor assignment
7 User management

To proceed, switch off the heaters and activate *Exclusive control*.

Default

- Touch  to reset to the Nordson defaults.

Not reset:

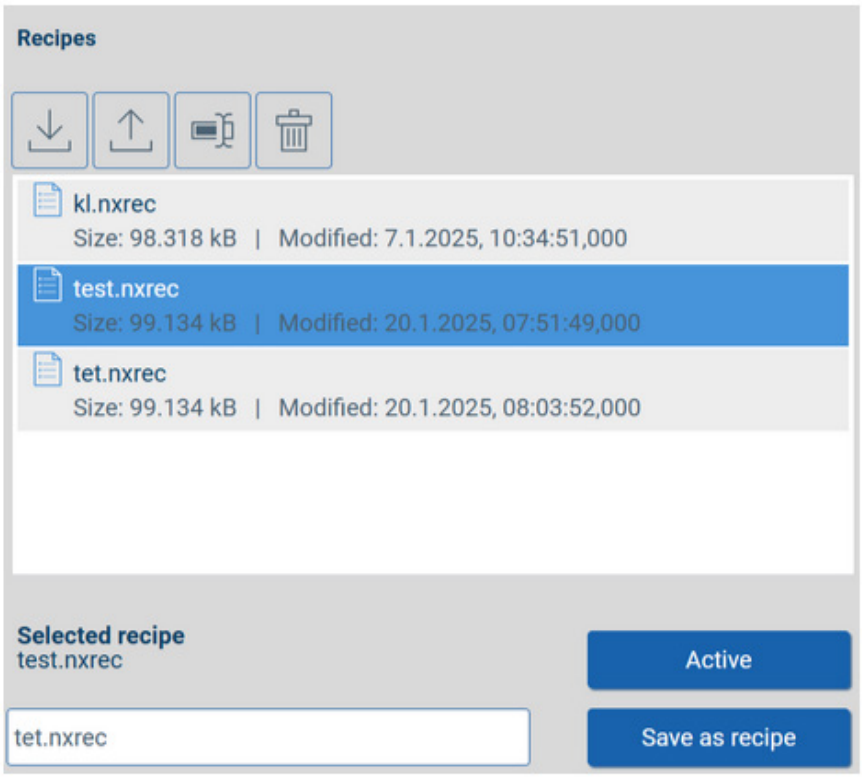
- Date / time
- Local language
- IP address and subnet screen
- Gateway address
- Passwords
- Selected line speed signal and all values based on the line speed signal
- Free text, such as names of temperature channels, etc.
- Alarm history
- Operating hours counter
- Flowmeter: Customer-defined resolution and flow rate
- Maintenance intervals
- Settings in the screen *Melter configuration*.

User Recipes

A recipe is a collection of melter settings and parameters, such as speeds and temperatures needed for an application or a product.

Exceptions:

- Date / time
- Local language
- IPC IP address and subnet screen
- Gateway address
- Passwords
- Selected line speed signal and all values based on the line speed signal.



- *Download selected files*:

  Export currently works only on a PC/laptop. The files are then available in the download folder on the PC/laptop.

  IN THE FUTURE Data transfer to an external storage medium. A USB port can be found on the plug plate on the back of the melter.

- *Upload files into the current folder*:

  Copies a saved recipe from the PC/laptop into the internal memory. Once it has been loaded onto the PC/laptop, the recipe is available to be selected on the control panel. However, the recipe data is not yet activated (= loaded).

- *Rename*: A keyboard and a popup window in which the recipe can be renamed appear.

  NOTE: Do not change or delete the file extension. This can have an impact on processing, e.g. the button *Activate* for the recipe is not enabled.

- *Delete*: A recipe that is currently loaded cannot be deleted.

Save Recipe

1. Set the production parameters.
2. Switch off the heaters.
3. Activate *Exclusive control*.
4. Open *System settings/ Melter configuration/ Recipes*.
5. Enter recipe name. The button *Save as recipe* is enabled.
6. Once it is saved, the recipe appears in the list.
7. Deactivate *Exclusive control again*, or first perform other tasks, such as *Activate recipe*.

Load and Activate Recipe

NOTE: If during loading of the recipe to the controller (approx. 4 s) the melter is switched off (e.g. power failure), the controller will no longer function properly. The desired recipe must then be loaded again.

1. Touch *Upload files into the current folder*.
2. Select the desired file(s). If a file with the same name already exists, a query appears, offering the options *Skip, Replace, Keep both*.

   Then the recipe is available on the control panel.
3. Activate *Exclusive control*.
4. Select the desired recipe and then touch *Activate*.

   A query appears, asking whether the settings should be overwritten.

   NOTE: Touching *Activate* causes all of the parameters in the master control to be overwritten with the values from the selected recipe.
5. Deactivate *Exclusive control* again.

Assign Pressure Sensor

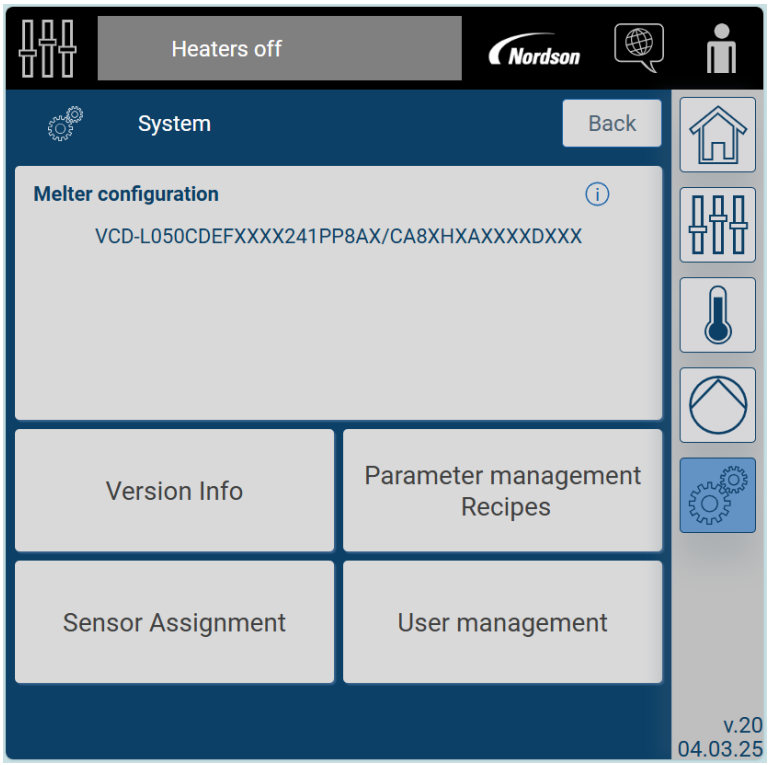


Figure 4-48 2_2_4_Sensor_asign

1 Heaters on
2 Back
3 Melter configuration
4 Version info
5 Parameter management, recipes
6 Sensor assignment
7 User management

The button *Assignment overview* opens an overview of all pressure sensors. In this screen, the alarm thresholds for each pressure sensor can be set and then pressure alarm monitoring for all pumps can be enabled.

Touch the gear icon to assign or calibrate pressure sensors, or to apply them to the bus.

NOTE: The assignment screen can only be accessed on the melter control panel. On other control devices, the button is faded out.

Assign Flow Meter

The button *Assignment overview* opens an overview of all pumps. If one or two flow meters have been assigned to a pump, the flow meters are also shown.

Touch the gear icon to assign, configure (encoder resolution) and set (flow rate) flow meters.

NOTE: The assignment screen can only be accessed on the melter control panel. On other control devices, the button is faded out.

Pressure Sensors

Figure 4-49 2_2_4_P1

1 Assignment
2 Close
3 New sensor
4 Other sensors

Assign and Calibrate Pressure Sensors

Box 26 is configured to be able to connect external CAN bus pressure sensors. The actual pressure sensors have to be purchased separately.

The internal pressure sensors, already installed before delivery, are configured with box 27. The quantity of pressure sensors needed is a factor of the number of single-stream and double-stream pumps in the melter.

CAN bus sensors can be A, B or C sensors.

Also refer to A and B Sensors or C Sensor.

NOTE: If the button *Other sensors* is active, first start with the screen *Other sensors*. The assignments of the displayed pressure sensors are invalid in this screen. These pressure sensors have to be assigned anew. Nullification is not possible if the assignments are not valid.

Please note: Invalid assignments do not trigger an alarm.

Also refer to Button *Other sensors* (Change invalid assignments).

Color of Buttons

- Gray: No pressure is assigned to the position.
- Blue: Pressure sensor position assigned. A CAN pressure sensor was assigned.
- Light brown: Invalid assignment. Pressure sensor position does not correspond to the pump configuration, or the ACM was switched off later.

Color Code of Indication Lamp *New Sensor*:

- Gray: No new pressure sensor found.
- Green: New pressure sensor found.

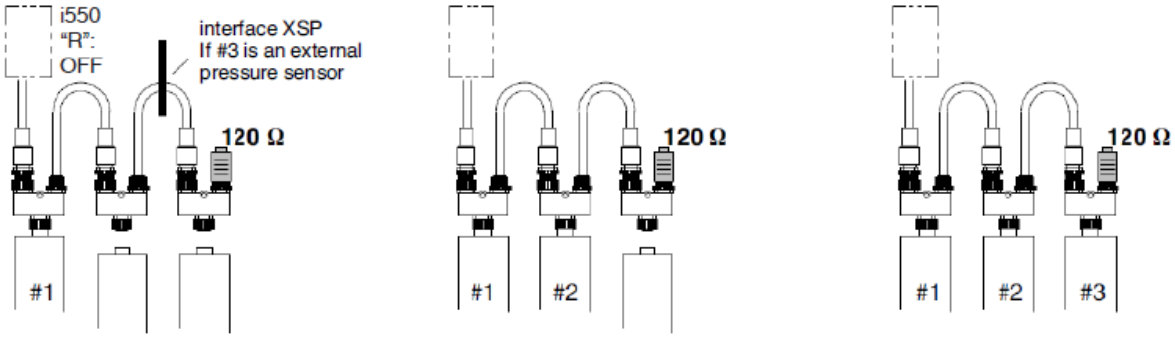
Attach pressure sensor to bus: Only one (1) pressure sensor can be assigned. Multiple new sensors, e.g. after retrofitting, have to be connected to the bus, one after the other. Refer to *Example with Three Pressure Sensors*.

Detach pressure sensor from bus: When removing a sensor, check that the assignment of the respective pressure sensor has been revoked. If the pressure sensor is removed without performing this step, its internal address remains, which causes problems for continued use.

Example with Three Pressure Sensors

NOTE: For calibration (nullification), the system has to be ready, meaning that it has to be at processing temperature but depressurized.

1. Switch off the melter and wait at least three minutes, if any work is to be performed on the motor controller.
2. Check/ensure that the system is deenergized (if necessary, by using a personal U-lock on the main switch).
3. Connect the CAN bus for sensor #1, taking into consideration the bus terminating resistor.



4. Switch on the melter and open the pressure sensor access screen:

Assign Pressure Sensor

NOTE: The motors have to be off when assigning the pressure sensor.

5. Wait until the indication lamp turns green, indicating that the new, not yet assigned pressure sensor #1 has been found.
6. Touch one of the gray keys to select the desired position, e.g. [1A], if the pressure sensor is intended to work as the A sensor on the first pump.
7. Wait until assignment is completed and the position button turns blue.

   CAUTION: Do not switch off the melter during this time. This would interrupt the internal parameterization process, and the pressure sensor would not be detected later.
8. Connect the CAN bus for sensor #2.
9. Wait until the indication lamp turns green, indicating that the new, not yet assigned pressure sensor #2 has been found.
10. Touch one of the gray keys to select the desired position, e.g. if the pressure sensor [1B] is intended to work as the B sensor on the first pump, which double-stream pump.
11. Wait until assignment is completed and the position button turns blue.
12. Connect the CAN bus for sensor #3.
13. Wait until the indication lamp turns green, indicating that the new, not yet assigned pressure sensor #3 has been found.
14. Touch one of the gray keys to select the desired position, e.g. [2C], if the pressure sensor is intended to work as the C sensor on the second pump.
15. Wait until assignment is completed and the position button turns blue.
16. Touch the blue position button for the pressure sensor that is to be calibrated.

    Another window in which the assignment can be revoked opens.

Calibrate Pressure Sensor (Nullification)

17. Touch *Calibrate actual to 0* to calibrate the pressure sensor.

    The measured value is defined as 0 bar when calibrating. Nullification should be performed even if 0 bar is displayed, since internal calibration is more precise.

18. Calibrate pressure sensors that have been added later.

    NOTE: To revoke the assignment, touch the position button in this window. The pressure sensor is removed from the previously assigned position and is available as a *New sensor* after a short time; the position button turns gray. The pressure sensor can now be removed or assigned to a different position.

If it has not been done yet, adjust the software configuration code to accommodate the pressure sensors/functions added. Then set pressure alarm thresholds, pressure setpoints and, if necessary, other parameters.

Button Other Sensors (Change Invalid Assignments)

Prerequisite: At the start, no *New sensor* may be shown.

If a new sensor is shown, first assign it or, during the following steps, delete its CAN bus connection again (Illustration above).

1. Touch the light brown position button in the window *Other sensors*. The invalid assignment is revoked.
2. Wait until the sensor is shown as a *New sensor*; the indication lamp turns green. The color of the position button turns gray.
3. Close the window to return to the overview.
4. The window cannot be assigned again in the overview screen. Continue as described above. Assign Pressure Sensor.

Return to top

A and B Sensors

- Whether the pressure sensor should work as the A sensor or the B sensor is specified on the control panel.

  These pressure sensors allow the pressure to be controlled, displayed and monitored.
- A and B sensors measure the pressure behind the filter cartridge, either in the hose connection piece at the melter inlet (by internal pressure sensors) or directly preceding the system component requiring a certain preliminary pressure (by external pressure sensor).
- Up to two pressure sensors can be assigned (1 x A and 1 x B) for a double-stream pump.
- The A sensor or B* sensor has an impact on its pump motor when controlling the pressure.

  *If *Pressure control via B sensor* has been enabled.
- With double-stream pumps and *Pressure control*, one of the pressure sensors is used for pressure control, display and monitoring, while the other is used only to display and monitor its stream.
- When setting the threshold values, the following applies to the pump mode
  - pressure control or pressure build up (PBU): Differential, meaning relative to the setpoint

    Refer to the Illustration Delta/differential values.
  - Speed mode with the option *Pressure display*: Absolute value
  - Flow control with the option *Pressure display*: Absolute value.

    Refer to the Illustration Absolute values.

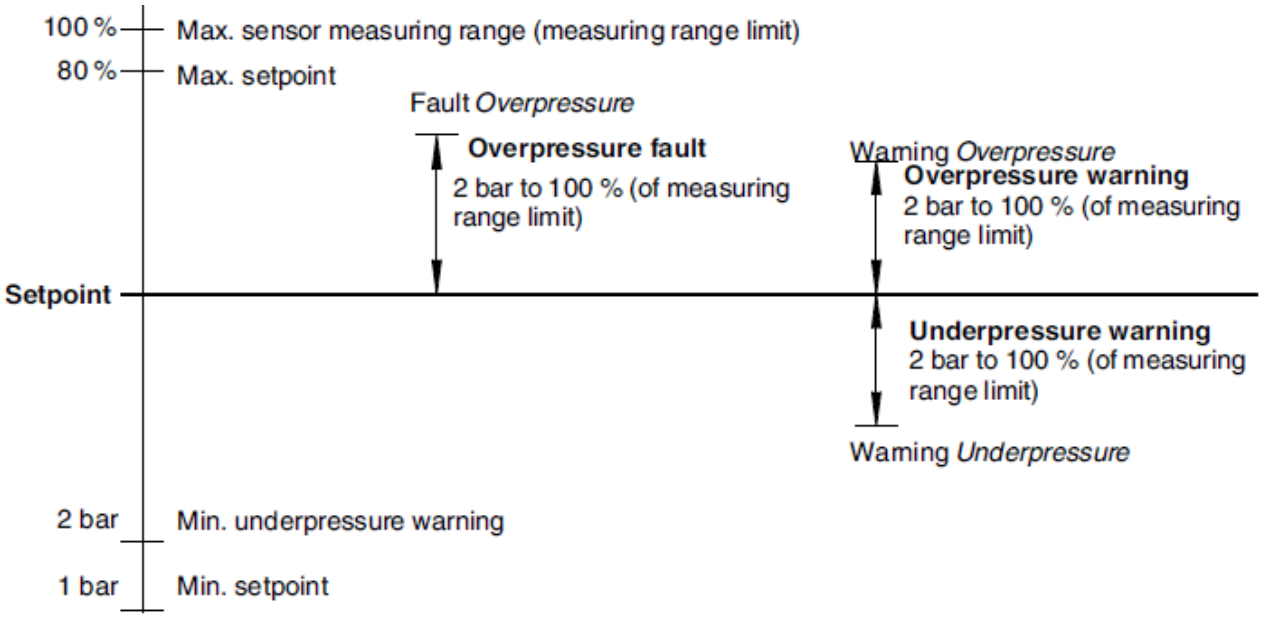
C Sensor

- Whether the pressure sensor should work as the C sensor is specified on the control panel.

  C sensors can be used only for pressure display and monitoring - not for pressure control.
- A C sensor is not assigned to a pump motor.
- When setting the threshold values, the following applies to the pump mode
  - Pressure control: Absolute value
  - Speed mode with the option *Pressure display*: Absolute value
  - Flow control with the option *Pressure display*: Absolute value.

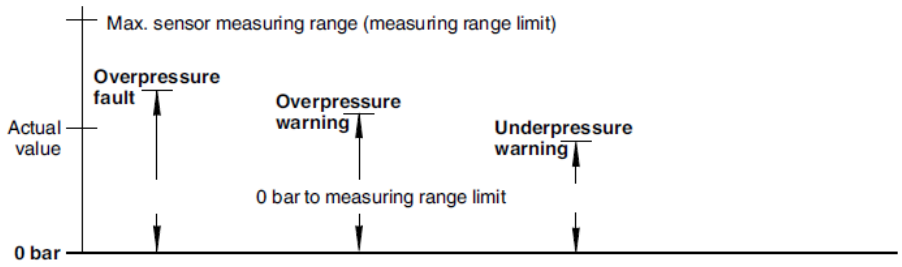
  Refer to the Illustration Absolute values.

Illustration Differentials



- *WARNING Overpressure* cannot be greater than *STOP overpressure*.
- The standard measuring range limit is 100 bar with the CAN bus pressure sensors used.

Illustration Absolute Values



- *WARNING overpressure* cannot be greater than *STOP overpressure*.
- WARNING Overpressure and STOP overpressure cannot be lower that the WARNING Underpressure
- The standard measuring range limit is 100 bar with the CAN bus pressure sensors used.

Return to top

Flow Meter

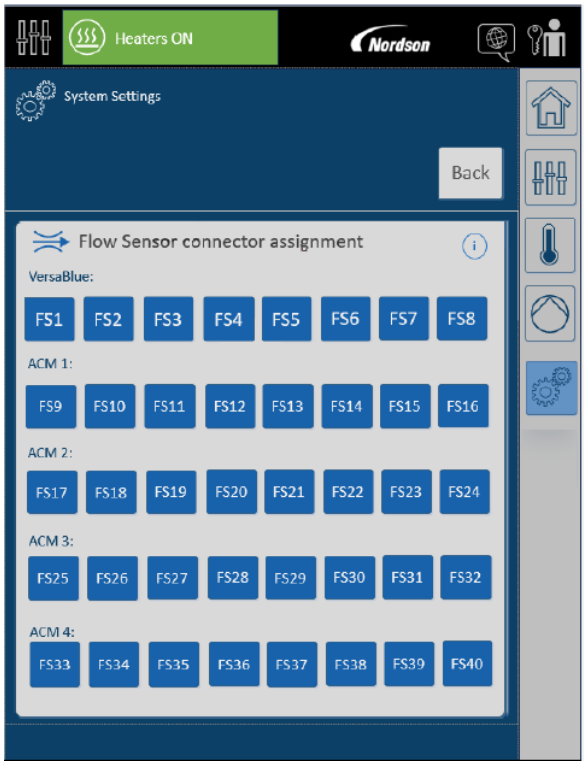
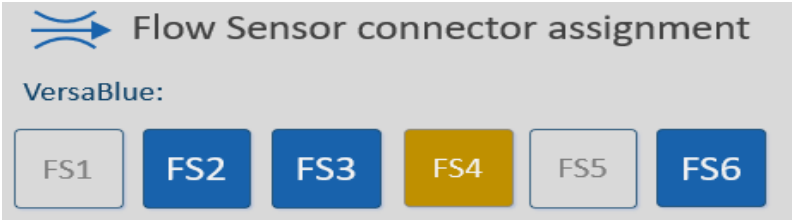


Figure 4-50 2_2_4_1_FSensor_assign

1 Heaters on
2 Back
3 System settings
4 Flow sensor connector assignment

Color Code of Buttons in Home Screen



- Gray: The flow meter has not been assigned to a pump

OR

The TruFlow channel is not assigned or not needed, e.g. when a double-stream pump has been replaced with a single-stream pump and the number of configured TruFlow channels has not been changed.

- Blue: The flow meter has been assigned to a pump.
- Light brown: Invalid assignment, e.g, when the configuration code has been changed later in the system settings and the pump is no longer available.

  NOTE: An invalid assignment can be revoked (but does not have to be) with *Unassign*. Invalid assignments do not trigger an alarm.

Assign Flow Meter

Flow meters can be assigned to a pump. Assigned pumps allow the flow to be controlled or measured for each pump.

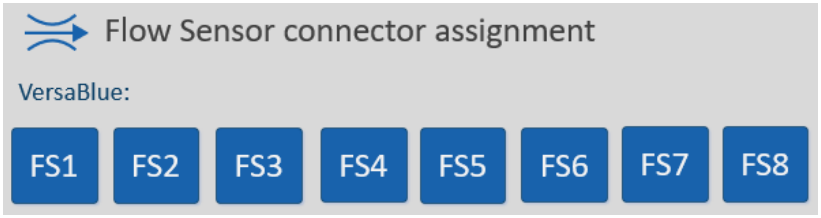
Also refer to Introduction (Flow)

In the example, FS18 is to be assigned to pump 5. FS18 is the second flow meter of ACM 2. For example, pump 5 is part of a metering station that is controlled via this ACM.

1. Touch the gear icon in the control panel screen *System settings/ Configuration/ Flow sensor assignment*.

   An overview of all flow meters appears. The flow meters are numbered consecutively.

   Example of a melter:

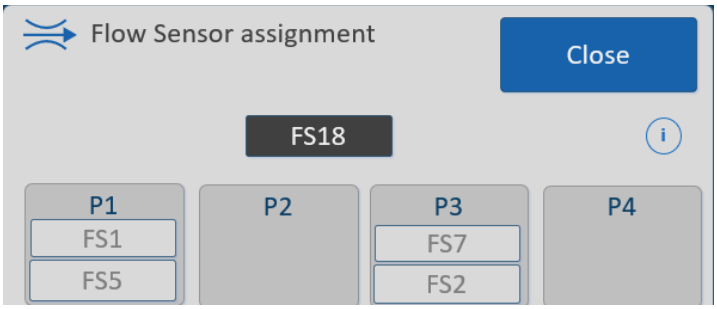
   

   Up to four pumps can be configured for the melter. No more than two flow meters can be assigned to a pump. The number of buttons that are visible depends on th number of TruFlow channels that are configured.

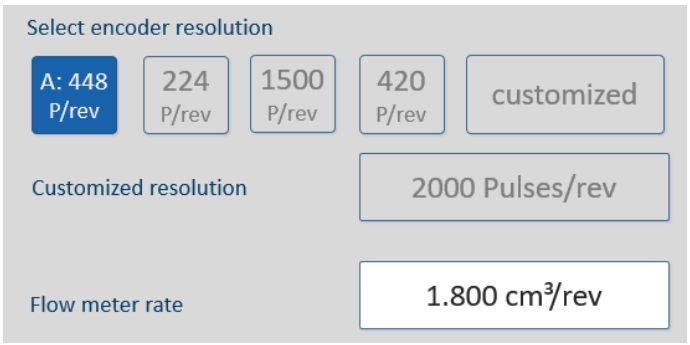
2. Touch the button for the flow meter to be assigned or for which the assignment is to be changed. Here: FS18.

An overview of all pumps appears. If one or two flow meters have already been assigned to a pump, its flow meters are also shown.



3. Touch the button for pump 5 (example of assignment):



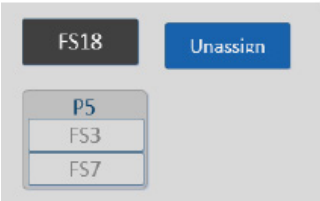
Set the encoder resolution and flow rate for FS18. The flow rate is shown on the ID plate on the Nordson flow meter.

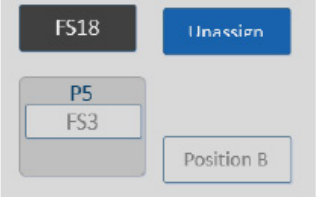
NOTE: Once they have been changed, *Customer-defined resolution* and *Flow rate* are not changed back to the initial values when the loading the defaults.

- Customized resolution = 224 pulses/rev
- Flow rate = 1.8 cm^3/rev

When using flow meters not purchased by Nordson and when the encoder resolution differs, select *Customized* and enter the pulses per revolution.

4. Depending on the system, different displays are possible.





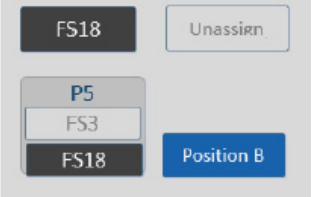


Illustration on left: Pump 5 has already been assigned two flow meters, FS3 and FS7.

Since both positions are occupied, one of the two positions has to be cleared. To do this

1. Return to the flow sensor overview.
2. Touch *FS7* and then *Pump 5* again.
3. Touch *Unassign* to revoke the assignment of FS7. Since FS7 is now assigned to the B position, the button *Position B* appears (second illustration from the left).

   If required, return to the flow sensor overview and repeat with FS3 (third screen). Since FS3 was assigned to the A position, the button *Position A* is now visible.
4. Return to the flow sensor overview. Touch *FS18* and then pump 5 again.
5. Touch *Position B*. FS18 is then set to the B position (fourth screen).

   If the A position is free, touching *Position A* is an option. FS18 is then set to the A position.

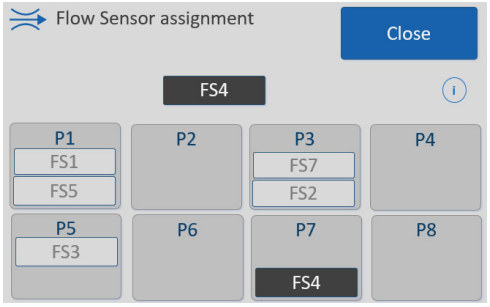
   Assignment of FS18 can be revoked again by touching *Unassign*.

   NOTE: If FS18 is to be used for flow control, select position A (default).

   If the flow is to be controlled via position B, enable the function in the screen *Flow*.

Change Pump of a Flow Meter that has Already been Assigned, if the New Place is not Occupied

Example of FS4, from P7 to P8:



If the place is not occupied on the new pump, touch *P8* and assign the new position.

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User Management II

Figure 4-51 2_2_5

1 Heaters off
2 Back
3 User management
4 User overview
5 Change password
6 Add user
7 Remove user
8 Change user level

User management allows passwords to be changed and new users with different rights to be created, depending on the password level assigned.

Overview of users: Standard users are

- Technician
- OperatorPlus
- Operator

RECOMMENDATION: When starting up the equipment for the first time, change the standard passwords (default) defined by Nordson for the levels 1 to 3.

- [Change password]: Select the user for which the password is to be changed. Enter the new password and confirm. Touch *Apply* to confirm the new password.

  NOTE: Every user has the right to change his password, regardless of the assigned level. To do this, he has to be logged in under his user name. He is prompted to enter the current password before a new password can be assigned.

- [Add user]: Additional users can be created. To do this, enter a personal password and assign the new user an existing level with the respective rights (Technician, OperatorPlus or Operator). Once *Apply* is touched, the new user appears in the overview.

- [Remove user]: Select the user to be removed. Standard users cannot be removed.

- [Change user level]: Select the user for which the password level is to be changed. Assign the user an existing level with the respective rights (Technician, OperatorPlus or Operator).

Level

Figure 4-52 2_3_3_Fill

1	Heaters off	4	Level	7	Stop at
2	System	5	Function	8	Start at
3	Back	6	Filling inactive/active	9	Low level warning

Function activated: Level control (with filling valve), display and monitoring (level sensor with/without filling valve). A filling valve can be used for automatic filling.

If the melter is heated up and there are no undertemperature stops or sensor alarms (short-circuit / sensor break), the command to fill is given as soon as the level reaches or falls below the value *Start at*.

Filling continues until the level has reached or exceeded *Stop at*. All values are shown as a percentage of tank volume.

The status diode *Filling active* is illuminated during filling.

Filling, the warning *Tank level low* and the stop *Tank empty* can only be triggered when the heaters are switched on. Filling stops when sensor alarms occur, the main contactor switches off or the level control function is switched off.

Function deactivated: Level display and monitoring no longer occur. Filling, the alarms *Tank level low* and *Tank empty* are no longer triggered. Now the tank can be emptied for maintenance or repair without the alarm *Tank empty* triggering.

Possible Level Alarms

- Warning *Overflow protection* - 2-point sensor

  Overflow protection triggered.

  Automatic reset: Exceeded for longer than five seconds

- Warning *Tank overfilled* - fixed internal value

  The warning is triggered as soon as the level has reached or exceeded 98% for longer than five seconds.

  Automatic reset: When the level falls below 90 %.

- Warning *Tank level is low*

  As soon as the level has fallen below the set value for longer than five seconds, the warning is triggered.

  Automatic reset: When the set value is exceeded.

- Stop *Tank is empty* - fixed internal value

  The stop is triggered as soon as the level reaches or falls below 2 % for longer than five seconds.

  Automatic reset: When the level exceeds 5 %.

Maintenance

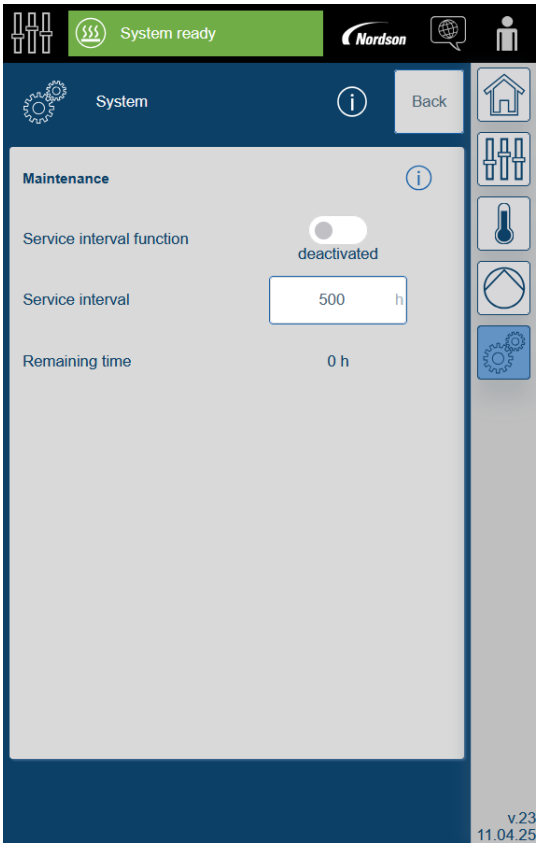


Figure 4-53 2_4_Maintenance

1 Heaters on
2 System
3 Back
4 Service interval function
5 Deactivated/activated
6 Service interval
7 Remaining time

Activate the function with the slide.

The interval at which a warning should be issued to indicate that maintenance is required must be specified.

For recommended intervals refer to section *Maintenance*. The intervals may need to be adapted to the operating conditions.

When the *Maintenance interval* defined by the customer has expired, a warning appears.

Reset: Acknowledging the alarm resets the maintenance interval.

EtherCAT Diagnosis

The overview shows the controller and the configured IO module:

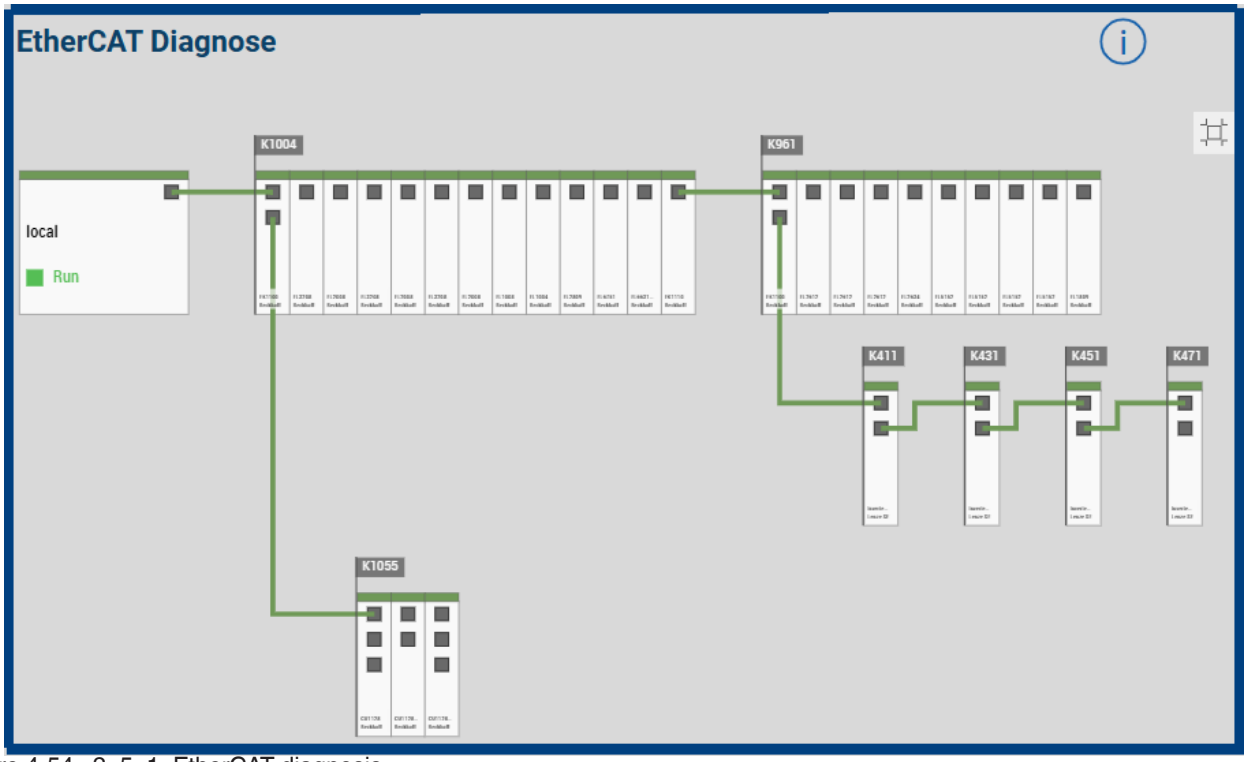
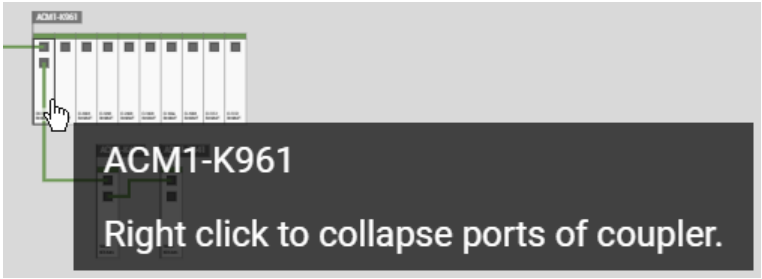


Figure 4-54 2_5_1_EtherCAT diagnosis

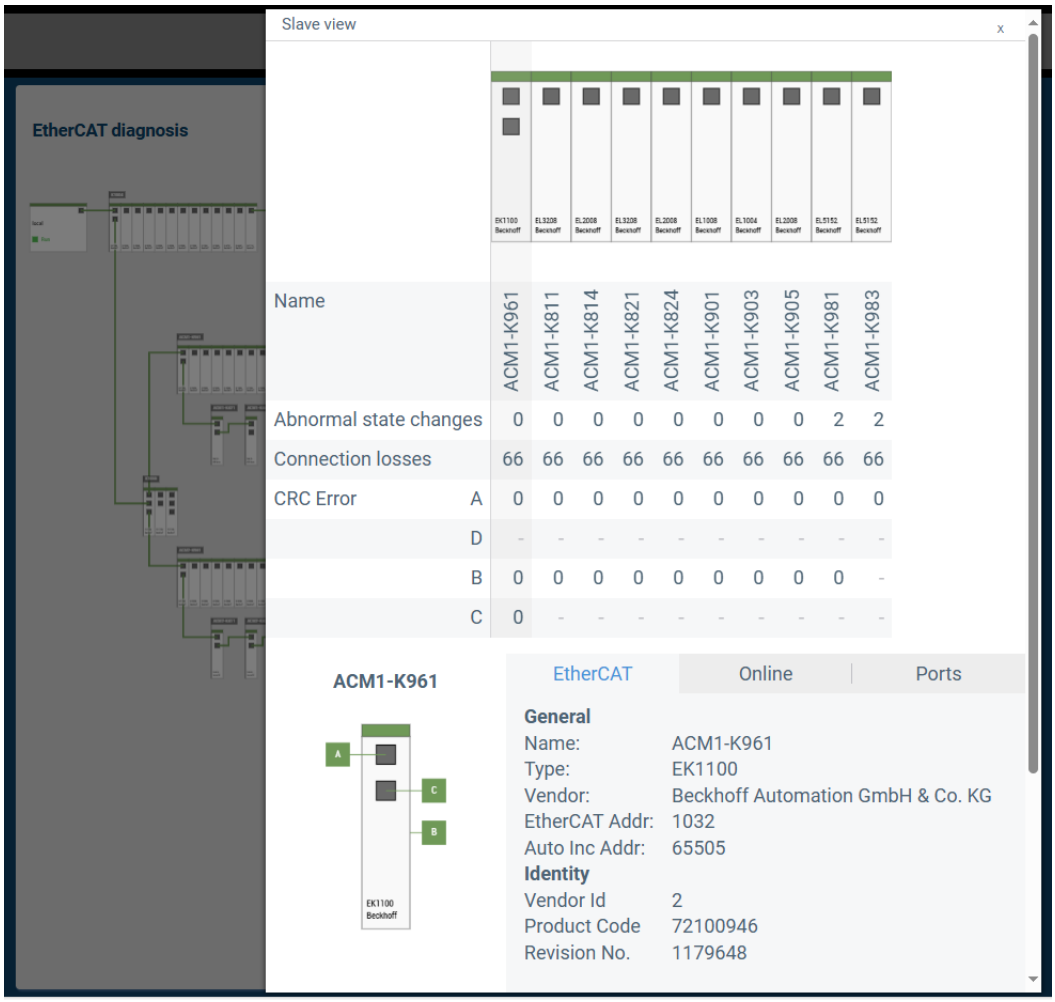
The status color at the top of the element indicates its state. For example, green: *Operational* or, in the case of connections *Connected*.

A tool tip about the IO modules shows additional information on the elements:



-K961 is e.g. the corresponding component designation and refers to wiring diagram page 96, column 1.

Double click on the screen or click the mouse for more information on the respective element. Values for terminals can be set and online values read here.



Flow Control Analysis - per Pump

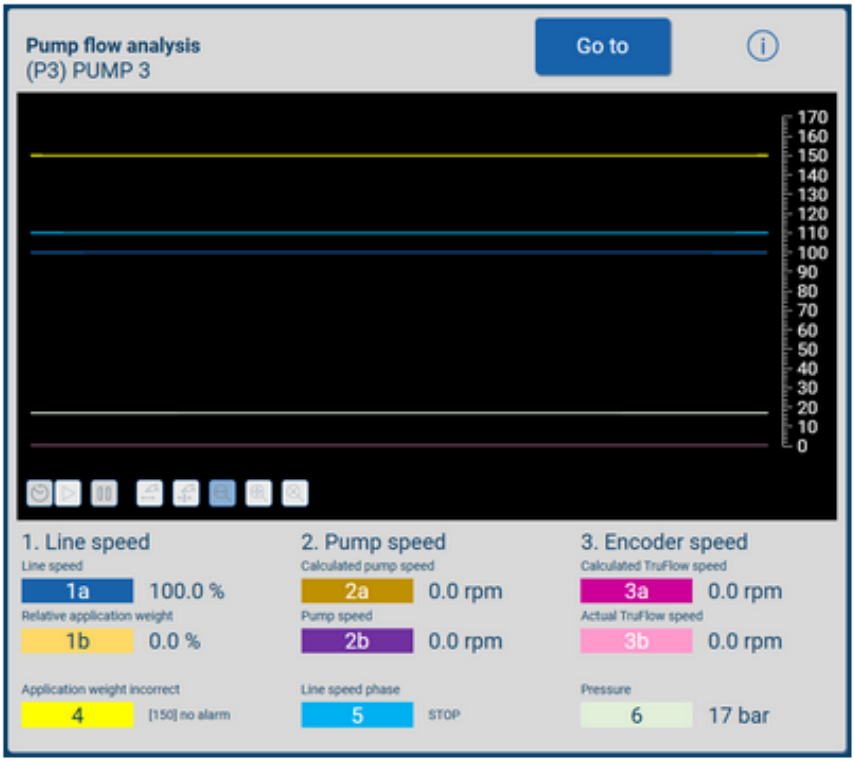


Figure 4-55 2_5_2_Flow

1 Pump flow analysis
2 Go to
3 (P3) Pump 3
4 Line speed
5 Relative application wight
6 Application weight incorrect
7 No alarm
8 Pump speed
9 Calculated pump speed
10 Pump speed
11 Line speed phase
12 Encoder speed
13 Calculated TruFlow speed
14 Actual TruFlow speed
15 Pressure

Introduction

Flow meter is the general term for all optical encoders, TruFlow metering units and other flow meters.

NOTE: Nordson offers flow meters with different resolutions. Type A:448; type B:224; type C:1500; type D:420 pulses/revolution.

If a different flow meter is to be used, a different resolution can be specified with additional input.

Their flow rate is normally indicated on the metering unit ID plate. The flow rate should be adjusted accordingly on the control device.

Flow Rate Measurement

- Connected flow meters have to be assigned to a pump. Pump assignment can be done at position A or position B.
- After assignment, the values measured by the flow meter on the pump side are displayed. The controller uses the current flow meter speed, the encoder resolution and the flow rate to calculate the adhesive volume flow. Depending on the adhesive density entered, this value is converted to mass flow rate and displayed in g/min or mg/min.

Flow Control (Closed-loop)

If the pump mode *Flow control* is set, the values measured by the flow meter are used for control. An additional setting for each separate pump specifies the position at which the flow meter will be controlled.

The measured adhesive volume is compared to the the calculated pump output volume. If there are any deviations, the first step is to adjust the pump speed accordingly.

When the deviations are prolonged, a correction factor of the pump output volume is calculated and then shown in the screen *Flow control settings*.

It is then no longer necessary for the customer to repeatedly adjust the parameters. Even when the production speed or the adhesive processing temperature is changed - both of which impact the adhesive density and viscosity - a consistent adhesive quantity is ensured.

Flow control can be set in manual mode or in key-to-line.

- As with speed or pressure control, the adhesive quantity is regulated to a fixed setpoint in manual mode.
- In key-to-line, the setpoint is calculated based on the line speed signal.

  Changes to the web speed are detected as well. Changing the speed also changes the control behavior, thus ensuring that the correct adhesive quantity can be applied.

The two illustrations show how flow control significantly improves production:

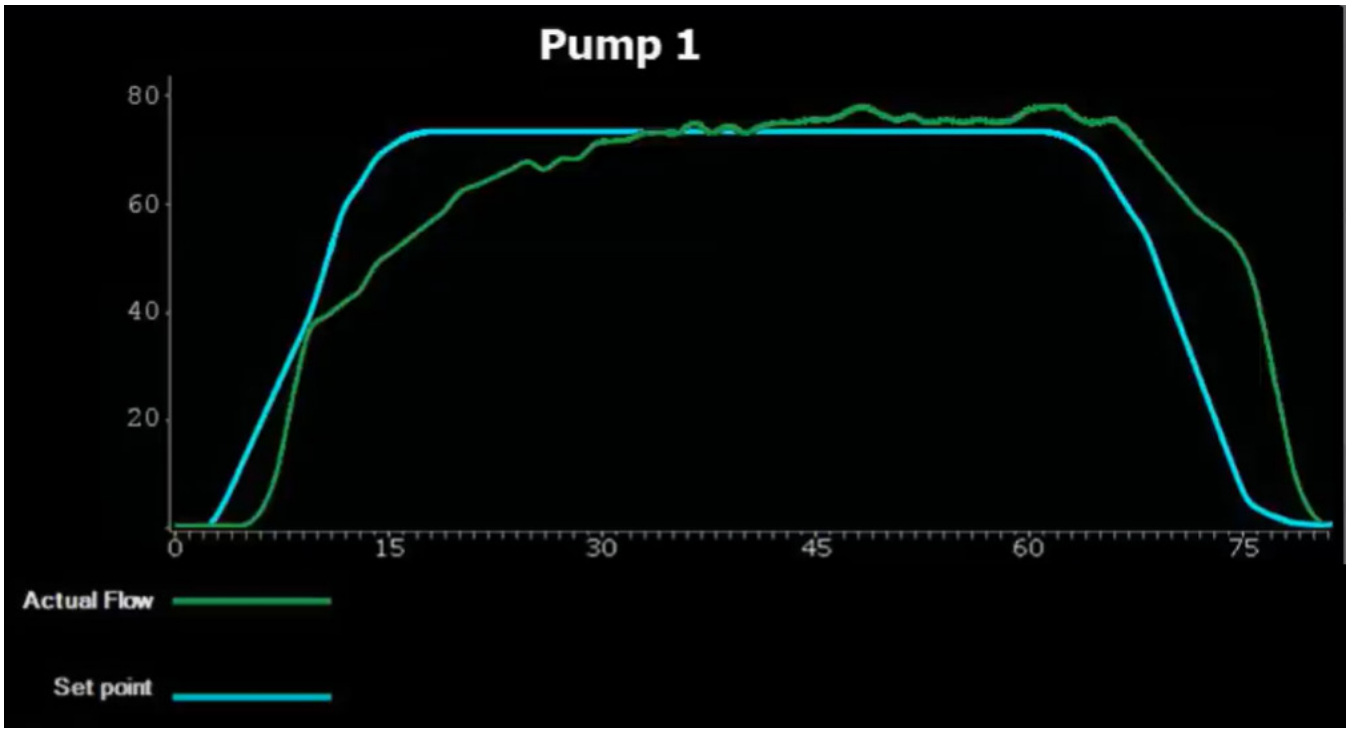


Figure 4-56 Example: Without closed loop control

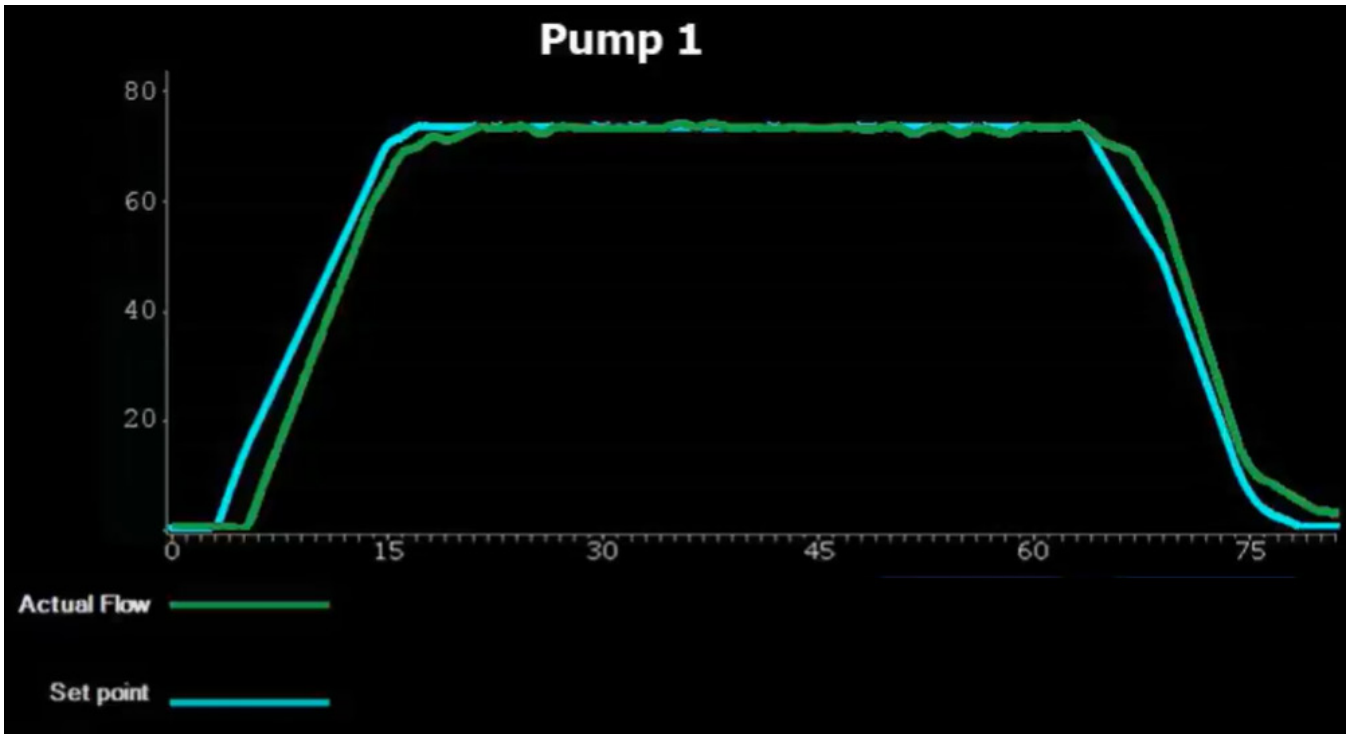


Figure 4-57 Example: With closed loop control

Flow Alarms

Monitoring can be activated and alarm thresholds set to ensure high product quality:

- Alarm limits can be defined for the upper flow value and, optionally, for the lower flow value. Measure alarm. Refer to Measure Alarm
- Two alarm sets are used for flow control: one for constant production speed and one for fluctuating* production speed. Refer to Flow Alarms.

  The limits are based on the current setpoint and are defined as a percentage deviation of 100 %.

***NOTE:** Select a higher limit for fluctuating production speed (ramp up/down phase).

The web speed at which alarm speed should begin is defined based on a line speed threshold. An alarm delay time can also be specified.

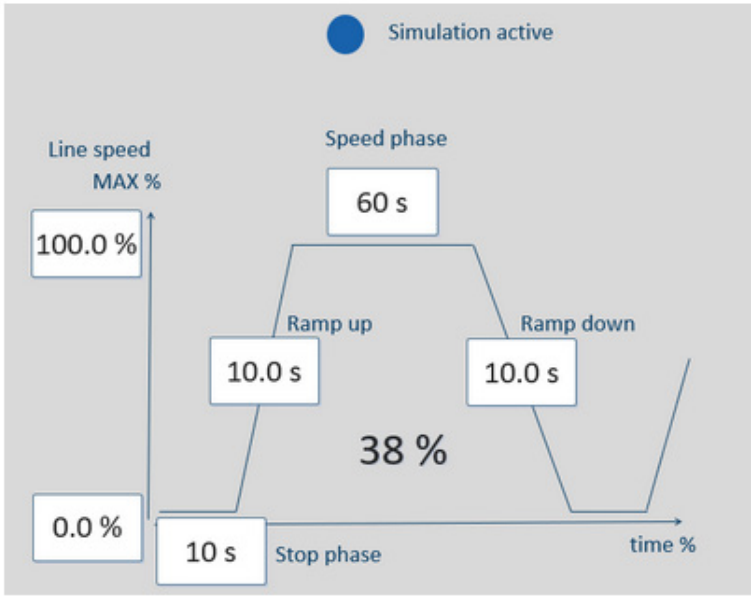
Line Speed Simulation

Figure 4-58 2_5_3_Simulation

1 Heaters off
2 System
3 Back
4 Line speed simulation
5 Simulation stopped
6 Line speed max %
7 Speed phase
8 Ramp up
9 Ramp down
10 Stop phase
11 Time

If the melter is not integrated into the line, a line speed signal can be simulated.

Whether the line speed signal is received via the interface XS5 (analog input) or via the field bus is relevant.



NOTE: Scale the line speed before simulation.

Refer to Line Speed Scaling. The button *Simulation*, which is used to select simulation, can be found in this screen. Simulation is activated in the screen *Master control*. Then the status LED *Simulation active* light up green.

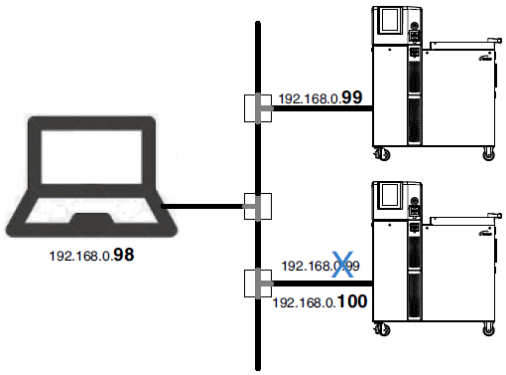
NOTE: If simulation was deactivated in the screen *Master control* but the button *Simulation* does not reset to the original setting (analog input or field bus), the system returns to the original setting after 10 min.

IP Setup

Figure 4-59 2_6_1_IPsetup

1 Heaters off
2 System
3 Back
4 Connections
5 Connections
6 IP setup
7 DCHP
8 IP address
9 Subnet mask
10 Gateway address
11 Save

IP addresses must be clearly defined within an EtherNet network.



NOTE: An LAN port is located on the front of the melter, above the main switch.

Activate/Deactivate DHCP

If activated with the slide *DHCP* (Dynamic Host Configuration Protocol)

The master control requests an IP address from the DCHP server. The assigned IP address, the Subnet mask and the gateway address of the intranet are displayed, but they cannot be changed.

Set IP Addresses in a Network

IP Address
Subnet Mask

All Nordson melters are delivered with the same IP address. 192.168.0.99

To be able to work together in a network, every device, including a PC/laptop, must be assigned its own IP address.

NOTE: All IP addresses ending with 1 to 254 are possible. IP addresses ending with 0 or 255 are not permitted.

Gateway Address - not a required field

When a gateway address has been assigned, whether manually or via DHCP, 0.0.0.0 must be entered to delete the gateway address again. If DHCP is activated, first deactivate this function. The field is empty again after booting.

Touch *Save* to save the settings.

Webserver Connection

Via the network IP address, a connection to the melter webserver can be established, and the control panel can be opened on a browser-enabled device (e.g. PC) as an additional client-server connection.

Up to two additional client/server connections are possible. An extended license can be ordered from your Nordson representative. When placing the order, enter the serial number and P/N of the melter, as well as an email address to which the license file should be sent.

Connecting

1. Connect the LAN cable to the melter.
2. Set up the IP address of the HMI according to the settings of the network in which the melter is located.

   NOTE: If you encounter any problems when setting up the address, please consult your IT system administrator.
3. Open the web browser (e.g. Microsoft Edge) and enter **https://**, followed by the melter IP address and a port extension.

   Example with default address:

   https://192.168.0.99:2020
4. When connecting for the first time, a warning indicating a potential safety risk appears.

   The internal web server in the melter is not a public server. This is why the warning appears when connecting for the first time. Extended settings and confirmation open the HMI.
5. The browser automatically sets the orientation to landscape or portrait. This is why the window size should not be be continuously changed during operation. If there are problems with the display when changing the browser window, update the page.

Connection Cannot Be Established.

- Check the LAN connection in the melter and add it if necessary.
- On the melter control panel, check whether the setting for remote access is blocked.

  For more on remote access, refer to System settings / Clients (Refer to Connections - Clients).

Connections - Clients

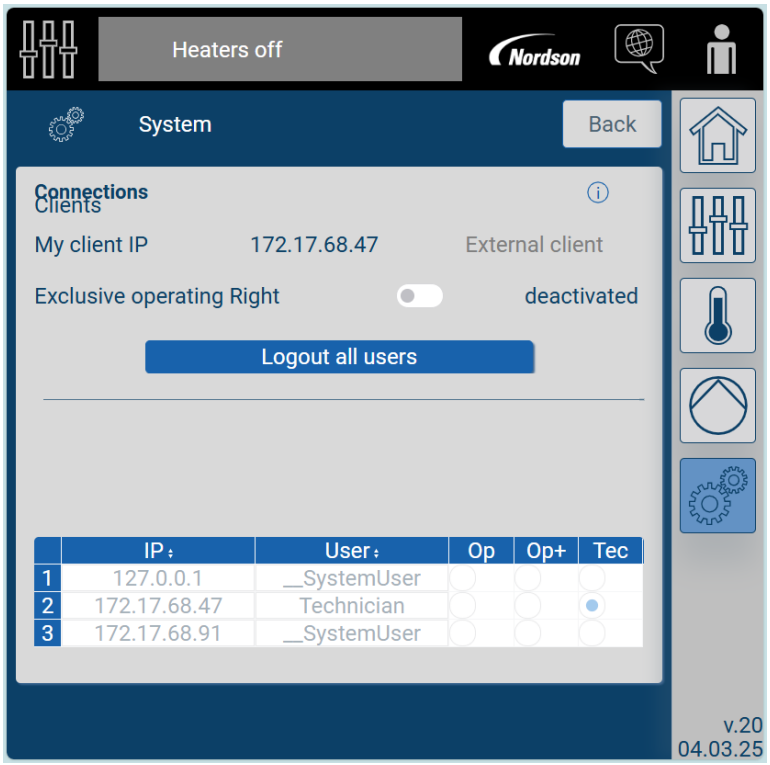


Figure 4-60 2_6_2_HMIClients

1 Heaters off
2 System
3 Back
4 Connections
5 Clients
6 My client IP
7 Exclusive operating right
8 Log out all users

My client IP: IP address of my control device xxx.xx.xx.xx

Display *External client*, when the user is working on his own control device.

Protection Levels

- **Password protection** (first level)

  Refer to User Management.

- **Exclusive control** (second level)

  Exclusive control can prevent multiple logins.

  Touch *Log out all users*. Then activate with the slide *Exclusive control*. All users remain logged out, and login is blocked. Only actions that do not require password protection, such as switching OFF heaters, are possible using other control devices.

Deactivate exclusive control when work is completed. Exclusive control can also be ended with the main switch on the melter (ON > OFF).

- **Block remote access for external clients** (third level)

  NOTE: The slide is visible only when you are logged into the melter control device. Login as *Technician* is required for operation.

  Select this level if, for example, service to the melter is planned. Operation is then possible only with the melter control device. To do this:

  Set the slide *Block remote access for external control devices* to active. The connection to all other control devices is interrupted ("Connection failed" appears).

  The external control devices (clients) that can access the melter are listed below the slide.

  Remote access is established via a webserver connection. Refer to Webserver Connection) Connecting.

- **Block remote melter control** (fourth level)

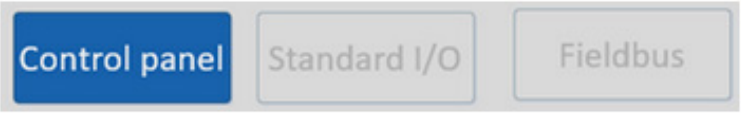
  NOTE: The slide is visible only when you are logged into the melter control device. Login as *Technician* is required for operation.

  WARNING! Blocking the controller with the slide does not serve the same function as the black service switch used to interrupt the motor circuit when working on the motor.

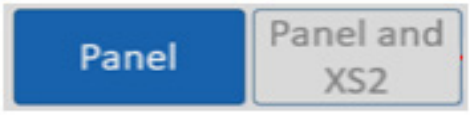
  Set slide *Block remote melter control* to activated. All external/write access via the interfaces XS2, field bus, OPC UA are blocked. Read access is still possible.

  Activation does not affect the status display and control panel user access.

  Regardless of login, these buttons cannot be operated as long as the function is active.



In addition, pump enable via XS2 is blocked in the *Pump global settings*.

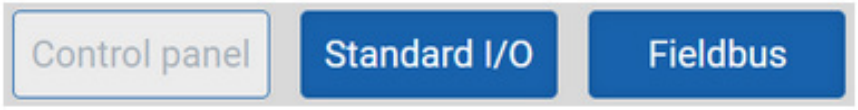


NOTE: Deactivate the function when work is completed. The control mode set originally and the pump enable via XS2 are automatically set again.

- **No operation on control devices possible** (fifth level) - with and without the option *Field bus*.

The control panel can be switched off under *System settings / Panel control* or *Host communication* with the button *Control panel*. Then the user is automatically logged out on his control device.

WITH field bus: Control access and display of the parameters on the control panel is possible only by the master or via the interface XS2.



WITHOUT field bus: After switchoff, the melter is operated only via the interface XS2 (+XS5).

To switch back on, log in as *Technician* (or higher) and then touch *Control panel* in the pop-up window.

Connections - Interfaces to Control the Melter

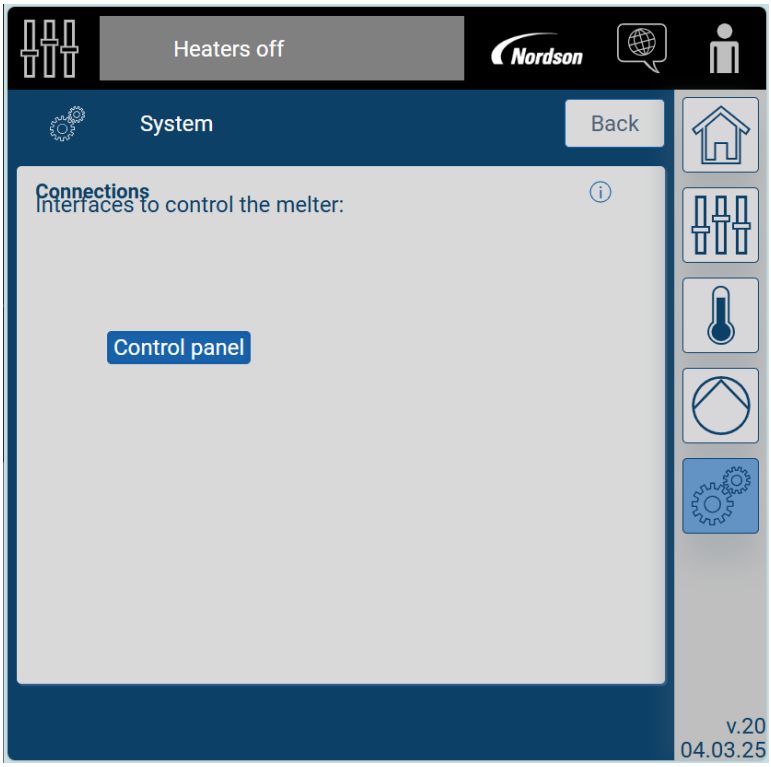


Figure 4-61 2_6_3_HostComm

1	Heaters off	3	Back	5	Interfaces to control the melter
2	System	4	Connections	6	Control panel

Field Bus IP Settings

Enter and save only with the field bus option **Ethernet/IP** IP address and subnet screen.

Go to screen *Details* in which transmitted field bus data can be checked.

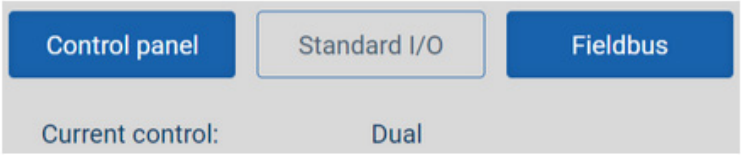
Observe for Edge-controlled Signals.

Option *Field Bus*

Nordson has made available the unit master files for the technical description of the field bus interfaces. The files can be downloaded at

https://nordson.info/VBII_fieldbus_files

If the option *Field bus* was configured, the control mode for the system is specified in this screen:



Each button can be activated and deactivated separately. When a button is deactivated, the respective interface is deactivated as well. In this case, only read access is permitted.

The selection is relevant to pump enable, because the enable for all of the activated interfaces is essential (Refer to the illustrations for the individual modes):

Control Modes

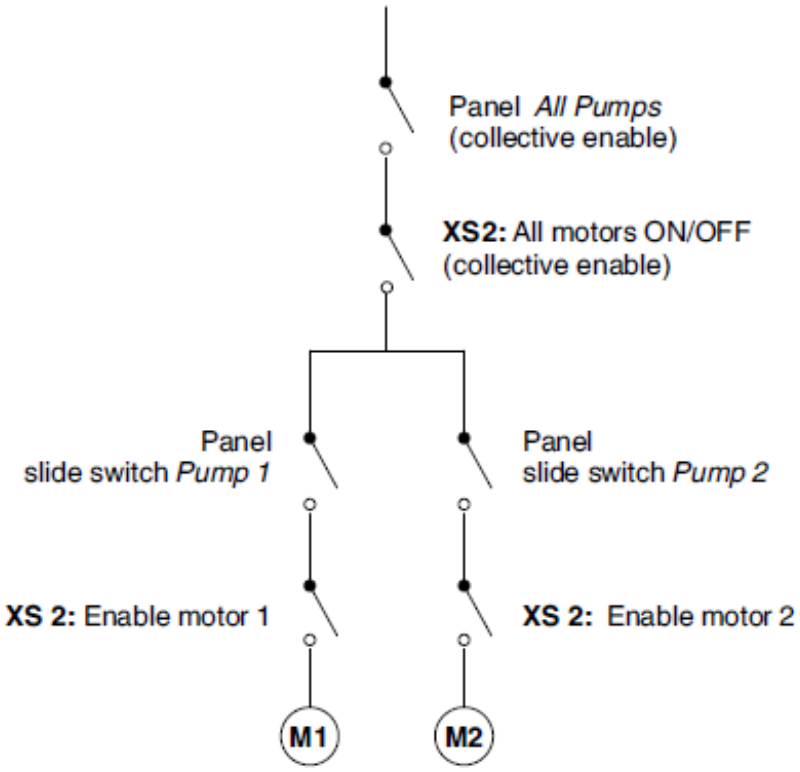
NOTE: The master is the customer's higher-ranking controller-

To be able to switch between the different control modes, the heaters have to be off.

The set control mode has an impact on switching on the pump. Refer to the following illustrations:

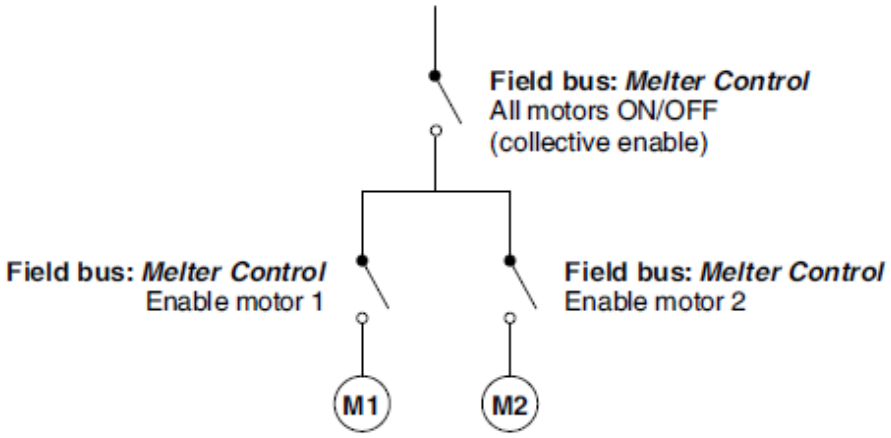
- **Standard**: Control panel + standard I/O
  - Control access via control panel and from external control signals via the interfaces
  - Parameter input only via the control panel
  - Line speed input via interface XS5.x

  AND link to switch on the pump motors - example with two pumps:



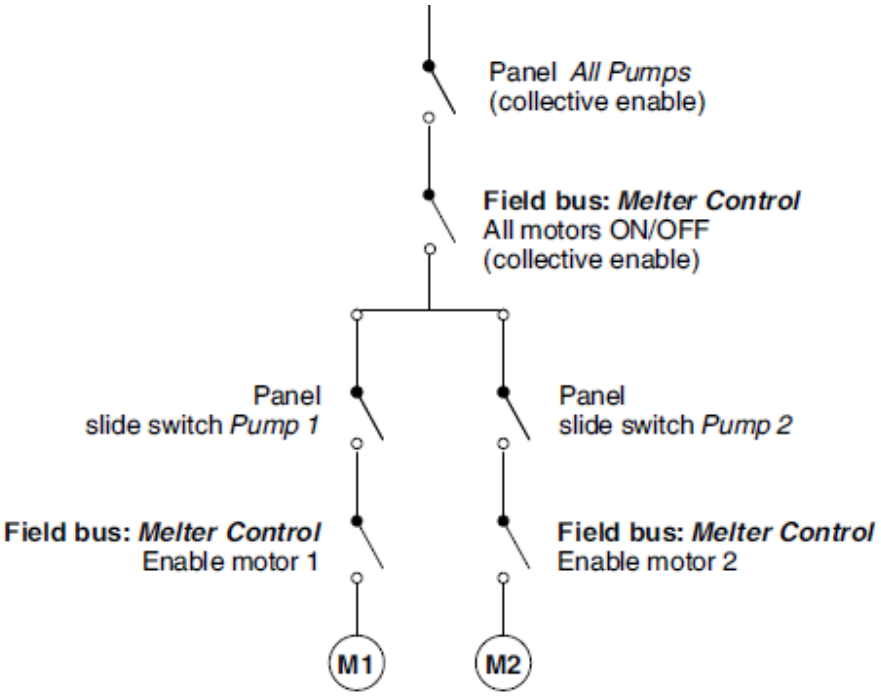
- **Field bus**: Field bus
  - Control access only from the master.
  - Control via control panel and interface XS2 is not possible.
  - Parameter input only from master
  - With only a few exceptions, such as switching the control mode, parameters can only be displayed on the control panel.
  - Line speed input via interface XS5.x or field bus

  AND link to switch on the pump motors - example with two pumps:



- **Dual**: Control panel + field bus
- Control access from the master and via control panel
- Control via interface XS2 is not possible
- Parameter input via control panel and from the master
- Line speed input via interface XS5.x or field bus

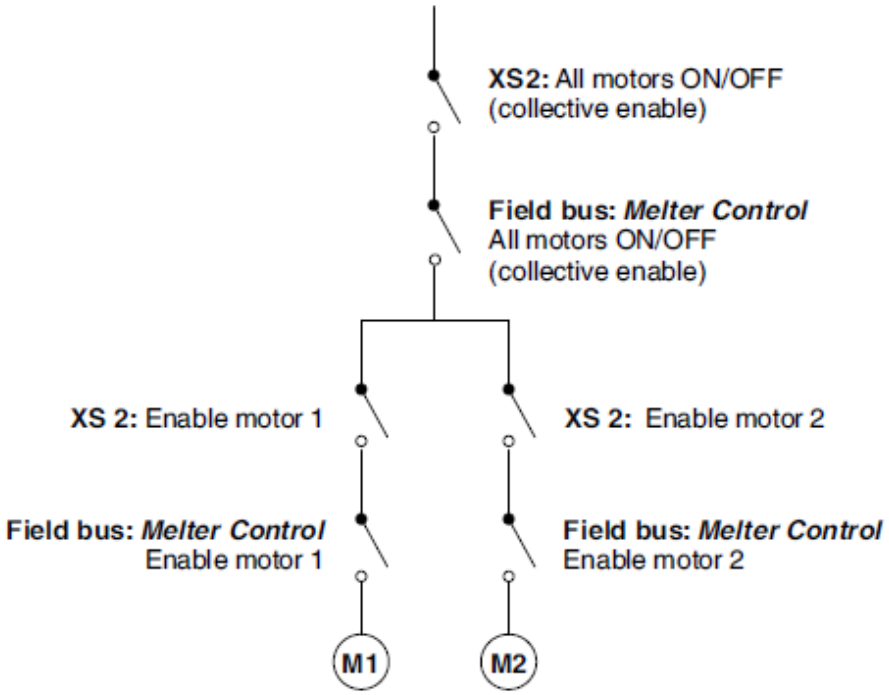
AND link to switch on the pump motors - example with two pumps



- **Field bus extended**: Standard I/O + field bus
  - Control access from the master and via interface XS2
  - Parameter input only from master.

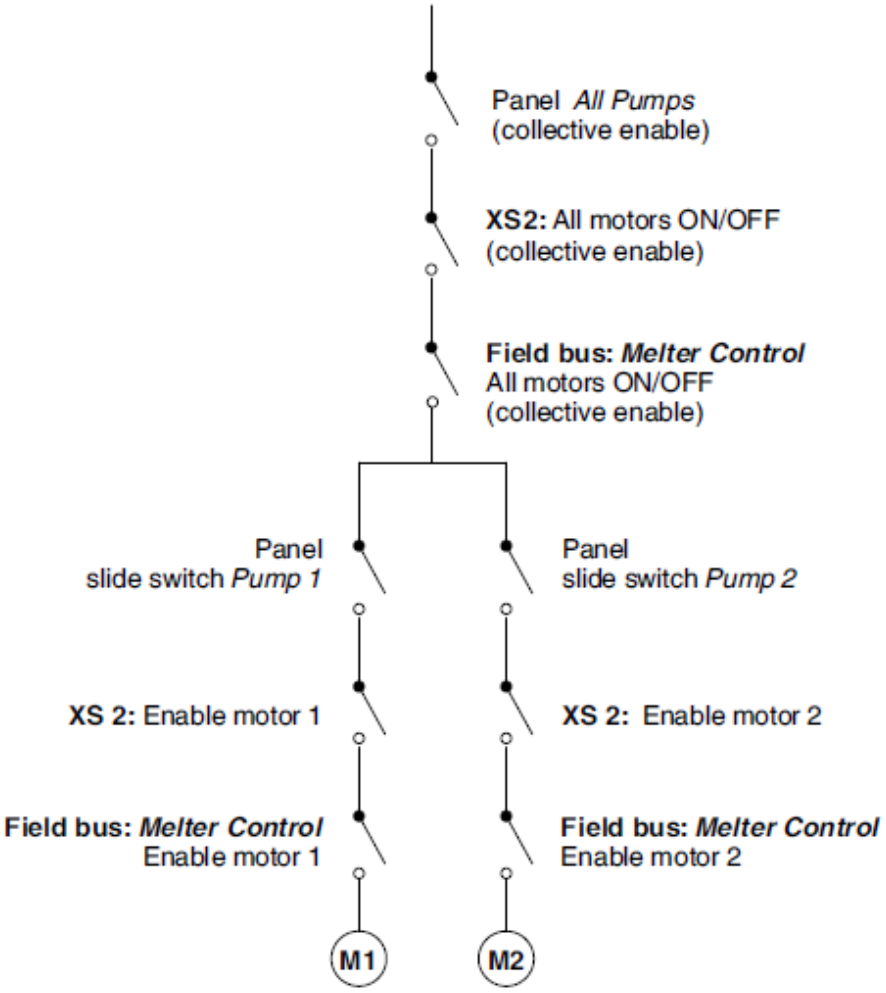
    With only a few exceptions, such as switching the control mode, parameters can only be displayed on the control panel.
  - Line speed input via interface XS5.x or field bus

    AND link to switch on the pump motors - example with two pumps



- **Dual extended**: Control panel + standard I/O + field bus
  - Control access from the master, via interface XS2 and control panel
  - Parameter input from the master, via interface XS2 and control panel
  - Line speed input via interface XS5.x or field bus

  AND link to switch on the pump motors - example with two pumps:



Observe for Edge-controlled Signals

If setback is switched on via the XS2 interface (rising edge 0 V > 24 V), it can be switched off via the control panel.

If standby is then to be switched on again via the XS2 interface, it must first be switched off (falling edge 24 V > 0 V) and then on again via the interface.

Edge-controlled signals are:

- Heaters ON. The main contactor closes.

  (Heaters ON for power control)
- All motors ON/OFF- collective enable
- Enter/exit standby (setback)
- Enable motor
- Set motor to manual mode / key-to-line mode
- Change operating mode

Details

Swap Byte

Nordson transmits the data in Intel format, i.e. the low byte of a word is placed on the lowest address and the high byte on the highest address.

Swap bytes if the formats of the master and the Nordson melter are not the same.

Swap byte activated: MOTOROLA format

Check Transmitted Field Bus Data

NOTE: Communication *Send/receive* is always seen from the master's point of view.

Field Bus Data Protocol

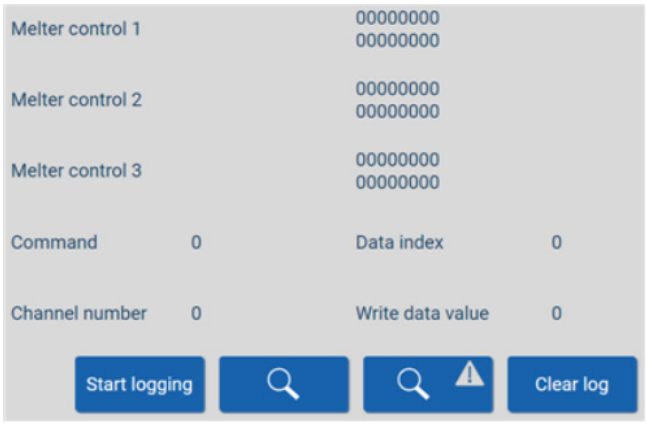
The following field bus data is displayed in binary form:

- Melter control 1
- Melter control 2
- Melter control 3

The following field bus data is displayed in decimal form:

- Command*
- Data index*
- Channel number*
- Write data value*

* Input required for index protocol



This data forms a data set. After starting, all changes are recorded in the data set as long as logging is activated.

Use the buttons to display the entire field bus log or the errors that have occurred.

Delete the protocol with *Clear log*.

NOTE: In exceptional cases, logging may not be able to keep up with the speed of the data changes. Logging ends automatically as soon as there would be a gap in the log. The most recently recorded changes in the data set can be displayed.

OPC UA

Figure 4-62 2_6_8_OPC

1	Heaters off	3	Back	5	OPC UA
2	System	4	Connections	6	OPC UA license is missing

Activate the function with the slide.

Missing licenses can be ordered from your Nordson representative.

When placing the order, enter the serial number and P/N of the melter, as well as an email address to which the license file should be sent.

The license can be loaded either with a USB stick on the melter or via an internal memory from PC/laptop.

OPC UA integration

The OPC UA server can be accessed via the external IP address of the VersaBlue II melter and the OPC UA standard port.

Login on the server with the user Client and the keyword *Client*.

Via the OPC UA interface, the parameters for the following sections can be read and, with certain parameters, written:

- Pumps
- Temperature sensors
- Pressure sensors
- Flow sensors

Status information and evaluations for the following sections are shown:

- Melter
- Pumps
- Temperature channels
- Pressure sensors
- Lid switch
- Temperature sensors
- Level (option)
- Bypass valve with microswitch

Calculate Adhesive Quantity

Continuous Application

		Example of adhesive quantity
Substrate speed	[v]	v = 500 m/min
Application weight	[m]	m = 20 g/m^2
Application width per adhesive track	[b]	b = 10 mm = 0.01 m
Adhesive quantity	[M]	M = m × b × v
		M = 20 g/m^2 × 0.01 m × 500 m/min = 100.0 g/min

		Example of pump speed for calculated adhesive quantity
Output capacity of pump	[D]	D = 2.4 g/rev
Pump speed	[n]	n = M ÷ D
		n = 100.0 g/min ÷ 2.4 g/rev ≈ 42 rpm

Intermittent Application

		Example
Substrate speed	[v]	v = 500 m/min
Application weight	[m]	m = 20 g/m^2
Product length	[L]	L = 500 mm = 0.5 m
Glued length	[l]	l = 200 mm = 0.2 m
Application width per adhesive track	[b]	b = 10 mm = 0.01 m
Number of products	[P]	P = v ÷ L = 500 m/min ÷ 0.5 m = 1000 products/min
Adhesive quantity	[M]	M = m × b × l × P
		M = 20 g/m^2 × 0.01 m × 0.2 m × 1000/min = 40 g/min

Parameters that Affect Coating

Example: Contact Application in Nonwoven

- Adhesive quantity/temperature/pressure/viscosity
- Nozzle position:
  a. Setting angle to substrate

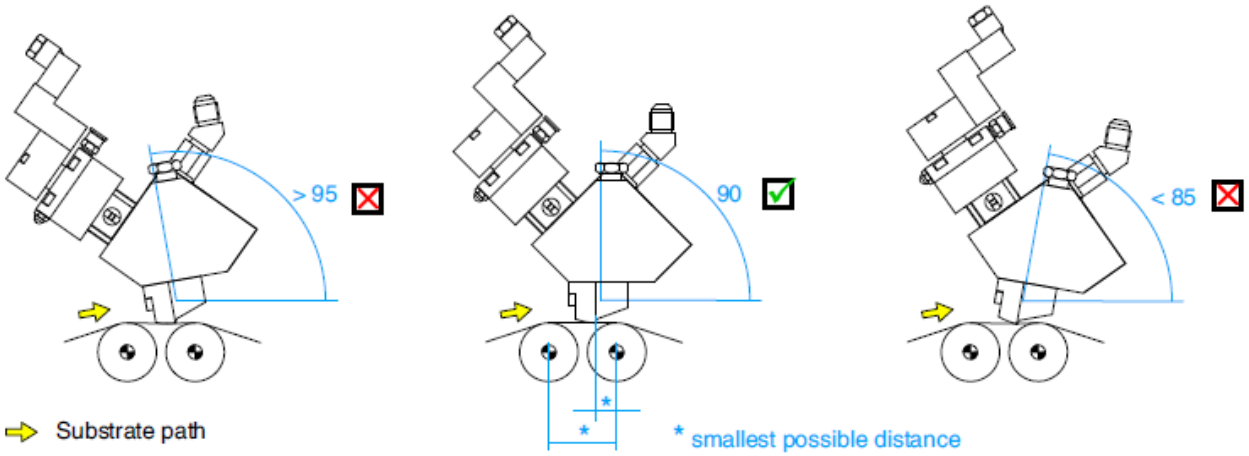


Figure 4-63 Setting angle

b. Depth of submersion into substrate

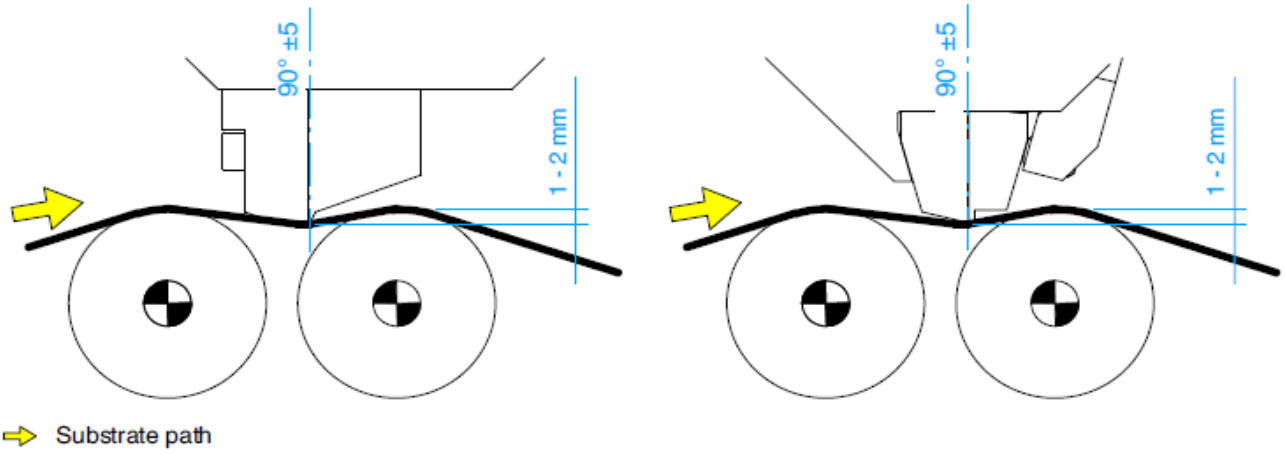


Figure 4-64 Submersion depth

- Web tension of substrate - Substrate best supported by rolls as close together as possible
- Type and state of substrate (open-pored or closed-pored; cold, warm, moist) as well as web speed
- Type of adhesive
- Static preliminary adhesive pressure upon start (pressure buildup feature)
- Ambient temperature

Section 5
Maintenance

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

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

Some maintenance work can only be done when the melter is heated up.

Preparations

The following maintenance tasks are essential for safety reasons:

- Disable remote access
- Switch off the motors
- Before opening hydraulic connections or ports. Relieve system (adhesive) pressure

Disable Remote Access

WARNING! Before performing any maintenance, deactivate external inputs as well as field bus communication with the melter. If the external inputs and/or field bus communication are not disabled, unexpected melter controller processes can cause injury during maintenance.

1. Open the popup menu *User management* via the control panel.
2. Touch *Disable remote access* to disable remote access.

Switch Motors and Secure to Prevent Them From Being Switched On Again

WARNING! Before beginning any maintenance work, use the motor switch to deenergize the motor controllers and the motors.

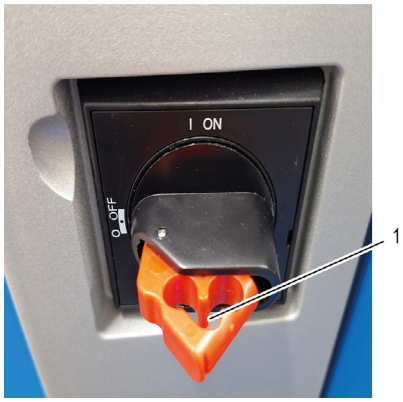


Figure 5-1 Securing motor switch

1. Set the motor switch to *0/OFF*.
2. Use a lock to prevent the motor switch from being turned on again. There are holes (1) on the switch grip for the lock.

Relieve System (Adhesive) Pressure

WARNING! The system and material are pressurized. Relieve system adhesive pressure before disconnecting pressurized components (e.g. hoses, pressure sensors, applicators). Failure to observe can result in serious burns.

Before disconnecting a hydraulic fitting or opening a pressurized connection, always perform the following steps to ensure safe relief of any adhesive pressure that may still be applied in the melter, hoses and applicators.

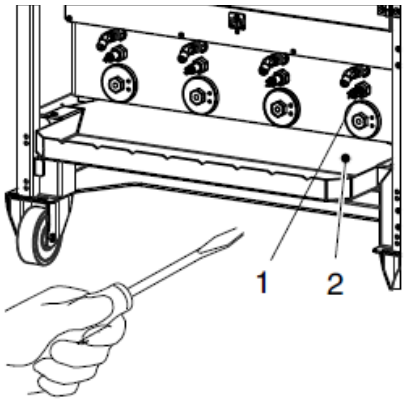


Figure 5-2 Part of the melter

3. Switch off the motor(s).
4. Attach the drip tray (2) under the air relief valve (1) again, if necessary.
5. Use a screwdriver to turn the air relief valve (1) screws counterclockwise and open the valves.
6. Adhesive flows out of the air relief holes, and the melter is relieved of pressure.
7. Use a screwdriver to turn the air relief valve screws clockwise and close the valves.
8. Place a container under the nozzle(s) of the applicator / assembly handgun.
9. Trigger the solenoid valve(s) electrically or manually, or pull the trigger of the assembly handgun. Repeat this procedure until no more adhesive flows out.
10. Properly dispose of the collected adhesive according to local regulations.

Observe During Maintenance

Use Cleaning Agent

- Never use halogenated hydrocarbon solutions to clean components made of aluminum or to purge Nordson equipment. The strong chemical reaction can cause injury or death. Also refer to the section *Safety Instructions*.
- Use only a cleaning agent recommended by the material manufacturer. Observe the Material Safety Data Sheet for the cleaning agent.
- Cleaning agent residue can be flushed out of the melter with new material before production begins again.
- Properly dispose of the cleaning agent according to local regulations.

Use Processing Materials

CAUTION! Always consult the safety data sheet (SDS) issued by the respective manufacturer. The Nordson SDS for the *CLEANER C Odorless* can be found at http://emanuals.nordson.com/MSDS/default.htm

Manufacturer / designation		Use
Elkalub GLS 595/N2	Please obtain from the material manufacturer	High temperature grease to be applied to O-rings, threads and sealing surfaces. NOTE: The grease should not be mixed with other lubricants. Oily/greasy parts must be cleaned before application.
Weicon WEICONLOCK® AN 302-41	Please obtain from the material manufacturer	Screw securing compound
Weicon WEICONLOCK® AN 305-72		Pipe and surface sealant
NTE Electronics® NTE303	Please obtain from the material manufacturer	Silicone heat transfer compound to be applied to temperature sensors to enhance heat transfer
Henkel LOCTITE® 572 Nordson P/N 262371	Please obtain from the material manufacturer	Slow-hardening medium strength thread locking compound

Replace Used Parts

If any connections are detached during maintenance, the following parts must always be replaced:

- Fastening materials
  - Do not re-use fastening materials that hold together components where leakage may occur.
    Especially screws with a property class of 10.9 to 12.9.
  - Self-locking materials, such as screw securing compound, etc., may only be used once.

- O-rings
  - Always remove used (outer) O-rings when removing equipment.
  - If there are no new O-rings available, the part with the old O- rings must be heated with a hot air fan until the adhesive softens before it can be screwed into place again.

Handling Torque Wrench

Figure 5-3 Torque wrench

Torque wrenches may not be lengthened. They are designed only to tighten screw connections, not loosen them.

After using the torque wrench, turn it back to the lowest torque (zero position) to relieve the strain. If the torque wrench remains tensed over an extended period of time, the torque will be displayed incorrectly.

Remove Outer Panel

To allow maintenance to the interior components, parts of the outer panel on the melter have to be removed.

The panels can be removed or pivoted out. They can be opened using the included 6 mm square key.

Preventive Maintenance Tasks

WARNING! The following table shows tasks required to ensure the melter works within the specified limits and that melter malfunctioning is prevented.

NOTE: Maintenance is an important preventive measure for maintaining operating safety and extending the service life of the melter. It should never be neglected.

The service intervals are general guidelines based on experience. Depending on the operating environment, production conditions and melter hours of operation, other scheduled maintenance tasks may prove necessary.

NOTE: The coupling and motor controller are maintenance-free.

Preventive Maintenance Tasks

Melter part	Task	Interval	Refer to
Complete melter	Clean outside of melter	Daily	Page 5-9
	Visually inspect for external damage	Daily	Page 5-8
	Purge melter with cleaning agent	When changing adhesive type	Page 5-22
Displays and lamps	Safety and function tests	Daily	Page 5-9
Fan and Air filter	Check filter, clean or replace if necessary Clean fan screen	Depending on dust accumulation; daily if necessary	Page 5-11
Power cable	Visually inspect for damage	Every time the melter is serviced	–
Air hoses	Inspect for damage	Every time the melter is serviced	–
Gear pump	Check for leakage	Dependent on hours of operation, pump speed and pump temperature. Recommendation: monthly	Page 5-12
	Retighten fixing screws	Every 500 hours of operation	Page 5-12
Motor / gear box	Clean fan cover	Depending on dust accumulation; daily if necessary	–
	Change lubricant (*When the lubricant temperature is approx. 80 °C)	Every 15 000 hours of operation* or at least every 2 to 3 years	Page 5-16

Melter part	Task	Interval	Refer to
Pressure sensor	Calibrate	Once a year, more often when conditions dictate	Section *Operation*
	Check separating membrane for damage	Every time pressure sensor is removed, more frequently if necessary	–
	Check whether hardened or charred material is stuck to the membrane; clean separating membrane if necessary	Every time pressure sensor is removed, more frequently if necessary	Page 5-32
	Check installation torque	On 2nd and 3rd day after startup; after that, at the latest when leakage occurs	Page 5-33
Pressure control valve	Replace outer O-rings	When the pressure control valve is detached, at the latest when leakage occurs	Page 5-26 ff
	Disassemble and clean	Every six months	Page 5-26
Air relief valve	Replace O-ring	When the air relief valve is detached, at the latest when leakage occurs	Page 5-29
	Seal	When the two valve parts were separated	
Filter cartridge	Replace filter cartridge	Depending on degree of adhesive pollution When changing adhesive type	Page 5-18
	Disassemble and clean filter cartridge	Recommendation: Every 1000 hours of operation	Page 5-20
Tank	Clean tank (by hand and/or with cleaning agent)	Clean by hand to remove material residue	Page 5-23
		When changing adhesive type If excessive charring occurs	
Bypass plate	Replace O-rings	When the bypass plate is detached, at the latest when leakage occurs	Page 5-29
Filling valve	Check control module detection hole; replace complete control module if necessary	When excess material seeps out of detection hole (inside of seals is worn)	Page 5-35

Melter part	Task	Interval	Refer to
Level and overflow protection evaluators	Calibrate	When evaluator or level sensor is replaced When the material is changed or the processing temperature changes by more than 30 °C (54 °F)	Section *Repair*
Safety valve for pneumatics	Performance check; clean or replace if necessary	Every six months	Page 5-33
Heat exchanger	Clean Performance check Replace fan	Depending on dust accumulation; daily if necessary Daily Every 40 000 hours	Page 5-36
Tank lid sensor	Tighten nut Check power cable Dust off	Every six months Every six months. Depending on dust accumulation; more frequently if necessary	Page 5-17
	Set switching distance		Page 5-17

Visual Inspection for External Damage

WARNING! When damaged parts pose a risk to the operational safety of the melter and/or safety of personnel, switch off the melter and have the damaged parts replaced by qualified personnel. Use only original Nordson spare parts.

Safety and Function Tests

During power up of the melter, the lights in the light tower are all switched on briefly as a test. The operator should check whether all lights function properly. Replace defective lamps.

Clean Melter

Regularly removing adhesive from the exterior of the melter, hoses and applicators prevents the components from overheating caused by heat buildup or lack of ventilation.

Observe the melter's degree of protection when cleaning (Refer to section *Technical Data*):

WARNING! Risk of fire and lethal shock! Never use water jets or steam to clean the melter. To clean the melter, use only water or a suitable, non-flammable cleaning agent, applying it with a clean cloth. Cleaning the melter with water jets or with a flammable cleaning agent can cause property damage, injuries or even death.

Clean Melter Exterior

- Remove dust, flakes etc. with a vacuum cleaner or a soft cloth.
- Remove adhesive residue only with a cleaning agent recommended by the adhesive manufacturer. Heat with an air heater if necessary.
- Cleaning agent recommended by Nordson:

P/N	Designation
7334087	Nordson CLEANER C ODORLESS, 12-PCK 0.5L, NON-HZD
7334088	Nordson CLEANER C ODORLESS, 4-PCK 0.5L, NON-HZD

- Apply cleaning agent with a soft cloth.
- Never use pointed or sharp objects to clean the exterior surfaces.

CAUTION! Do not damage or remove warning labels. Damaged or removed warning labels must be replaced by new ones

Clean Air Filter

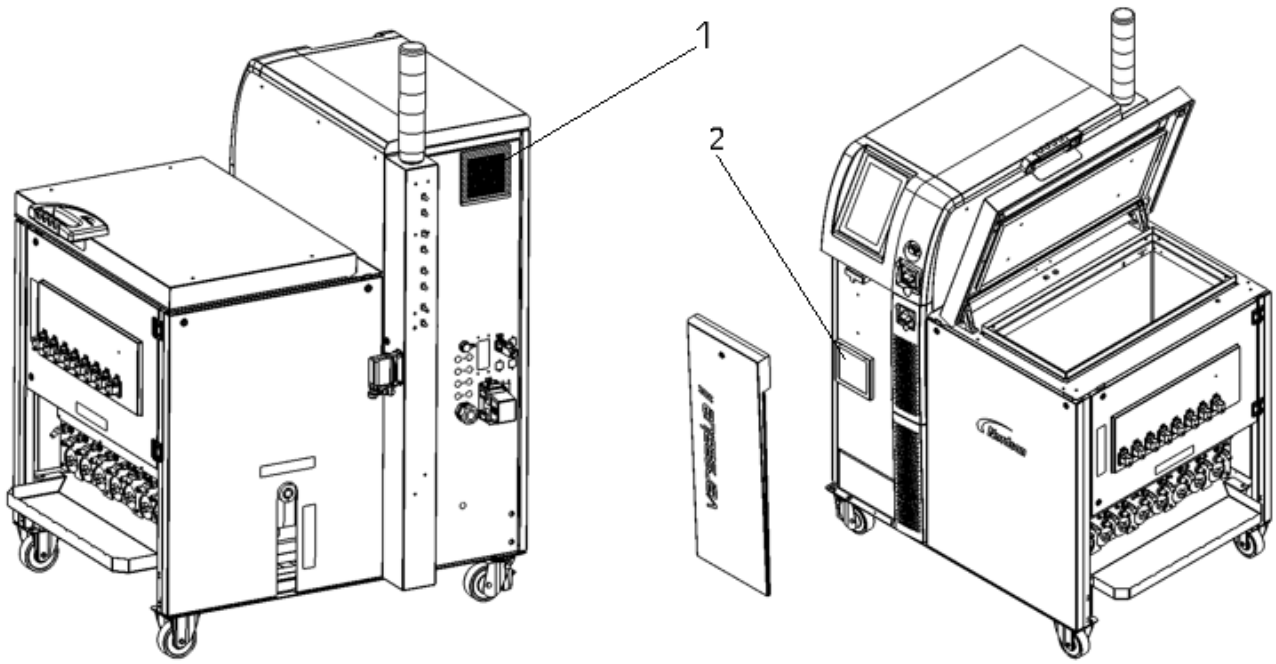


Figure 5-4 Box 34: X

1 Air filter (air inlet, front)

2 Fan, air filter (air outlet, back)

Depending on dust accumulation, the filters for the air inlet (1) and outlet (2) must be cleaned (knocked) or replaced.

Work to Pump

Retighten Fixing Screws

Thermodynamic tension (heating and cooling) can cause the fixing screws to loosen.

NOTE: Retighten fixing screws only using a torque wrench. Retighten crosswise and only when the melter is cold:

Pump type		Sealing surface	Torque
SN / DN	Variseal®	Use high-temperature grease	25 Nm / 220 lbin
SF / DF	Tandem seal (Sealing rings greased with Molykote111 compound)	Metallic seal	35 - 40 Nm / 310 - 350 lbin

Check for Leakage

The gear pump is equipped with a shaft seal. Adhesive may seep out along the shaft at irregular intervals. When this happens

- Replace the *Variseal* pump shaft seal on *Variseal*® pumps
- Replace the tandem seals on Feinprüf pumps.

Special assembly tools are needed, depending on the type of pump.

CAUTION: When the pump shaft seal needs to be replaced, Nordson recommends replacing the pump and sending the old one in to be repaired. Only trained personnel using special assembly tools can replace the pump seal properly.

NOTE: Nordson can assume no guarantee for a pump shaft seal that the customer replaces himself.

Replace Tandem Seal

Feinprüf pumps have tandem seals. The instruction sheet P/N7169626 *Service Kit Tandem Seals*, available in multiple languages, describes how to replace the seals.

Grease filling Molykote 111 compound.

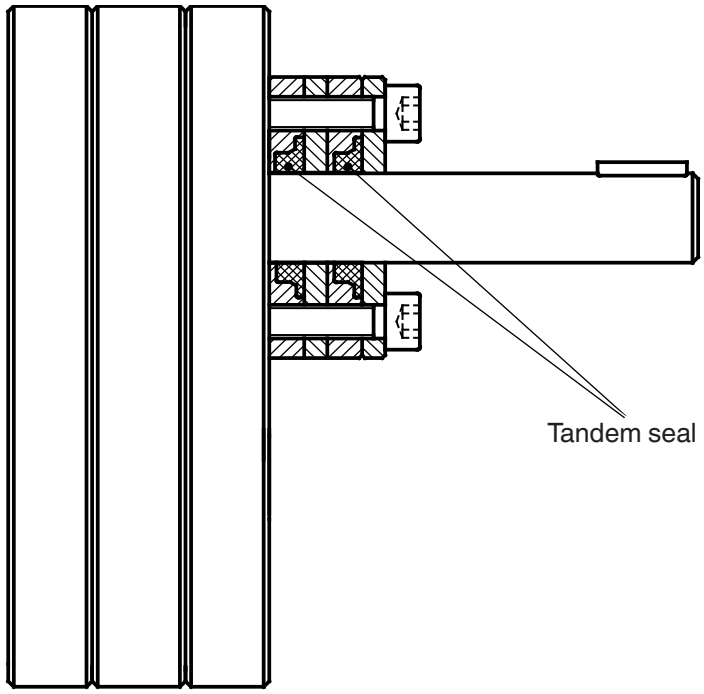


Figure 5-5 Extract from the instruction sheet

Replace Variseal Pump Shaft Seal

Figure 5-6 Prying out receptacle

1. Remove the gear pump from the melter but do not disassemble it!

   Refer to *Replace Gear Pump* in the section *Repair*.
2. Have a new seal and a suitable assembly tool* ready.

   *Refer to the instruction sheet *Assembly Tools for Sealing Kits with Variseal Seals* (P/N 7146229 DE/EN)
3. If applicable, remove the pulley key.
4. Detach the flange.
5. Insert a screwdriver into the recess to pry out the receptacle with the seal (photo).

   Follow the instructions *Assembly Tools for Sealing Kits with Variseal Seals* to proceed.
6. Put the gear pump back into place.

   Refer to *Replace Gear Pump* in the section *Repair*.

Assembly Tool for Variseal Seals

The assembly tool is used to slide new seals over the shaft journal and the pump shaft pulley key groove without damaging the seals.

CAUTION! The seal must be put into place using the tool; otherwise the seal will be destroyed.

Use the tool only for shafts with the diameter engraved on the assembly tool. After replacing the seal, slide the transport protection back into the assembly tool.

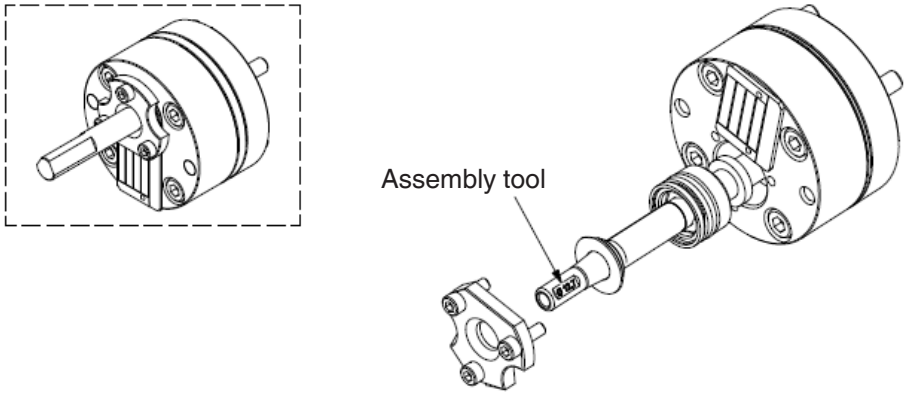


Figure 5-7 Replacing Variseal

Work on Motor and Gear Box

The only motor maintenance required is cleaning the fan cap.

Select Lubricant

The following information is an extract from the manufacturer's instructions *Assembly and Operating Instruction BA 200 EN - Issued 07/20* by *Bauer Gear Motor*.

NOTE: Use only the lubricant stated in the table or one that has proven to be equivalent. Using any other lubricant can result in premature wear and/or damage to the gear box.

Lubricant manufacturer	Mineral oil CLP 220
AGIP	BLASIA 220
CASTROL	ALPHA EP 220
KLÜBER	KLÜBEROIL GEM 1-220 N
MOBIL	MOBILGEAR 600 XP 220
SHELL	OMALA S2 GX220

Lubricant Changing Interval

The interval *Every 15 000 hours of operation* is based on a lubricant temperature of 80 °C under normal operating conditions. When the temperature is higher, the interval has to be reduced by half for every 10 K increase of the lubricant temperature.

The hours of operation are irrelevant to the interval *At least every 2 to 3 years*

Capacity

The lubricant quantity is indicated on the motor ID plate. Ensure that the upper gears and rolling bearings are properly lubricated.

NOTE: Never mix different types of lubricants.

Change Lubricant

WARNING! Disconnect the melter from the line voltage.

NOTE: Drain lubricant when warm.

Remove the gear box from the motor to change lubricant:

1. Stand the motor on edge such that the gear box faces down. Brace the gear box on the flange for stability.
2. Remove the screws connecting the gear box to the motor.
3. Use a sharp chisel to separate the motor from the gear box.

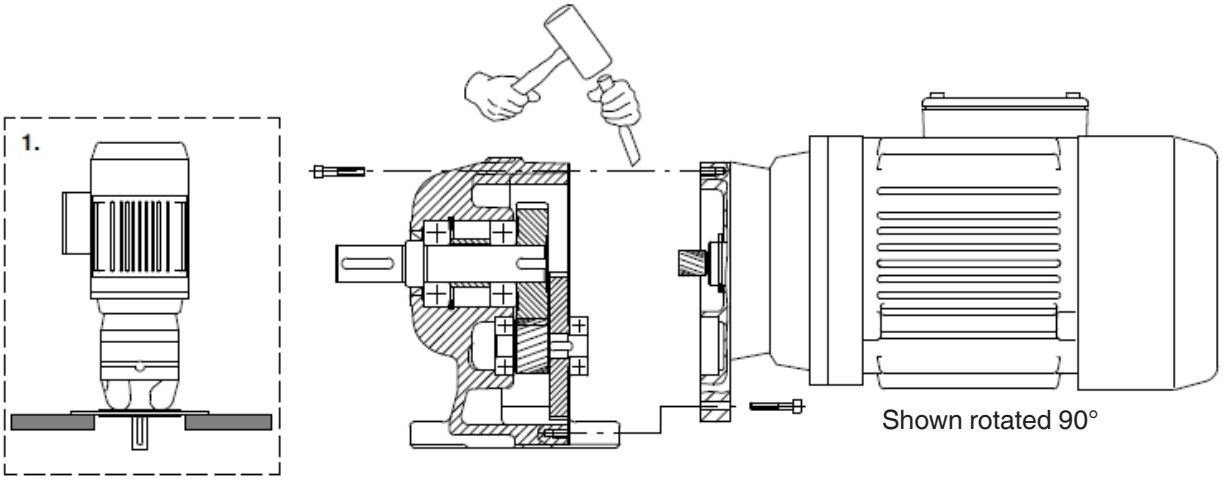


Figure 5-8 Disconnecting gear box from motor, example

4. Detach the motor from the gear box.
5. Drain the lubricant.

NOTE: Properly dispose of the old lubricant according to local regulations.

6. Wash out casing with suitable cleaning agent and remove lubricant residue.
7. Clean the mounting surfaces.
8. Measure the correct amount of the right lubricant and pour it into the gear box. The lubricant quantity is indicated on the motor ID plate. Do not overfill!
9. Apply a continuous sealing bead of Teroson MS939 (or similar lubricant) to the gear box sealing surface. Also encircle the connecting screws and centering pins with lubricant.
10. Align the bevels and aligning pins and allow the motor to glide onto the gear box. Insert all connecting screws and tighten crosswise.
11. Remove excess lubricant.

Tank Lid Sensor

- Check that securing nuts are tight and seated properly.

  If necessary, tighten the M12 nuts with max. 30 Nm.

  Maintain/set the switching distance.
- Check that the power cable is secure.
- Remove any dust.

Technical Data of Inductive Sensor

Contact	Make contact, PNP
Thread	M12
Installation	Not flush
Nominal switching distance	10 mm / 0.394 inch
Switching output display	yellow
Manufacturer	Omron

Check Sensor spacing Setting

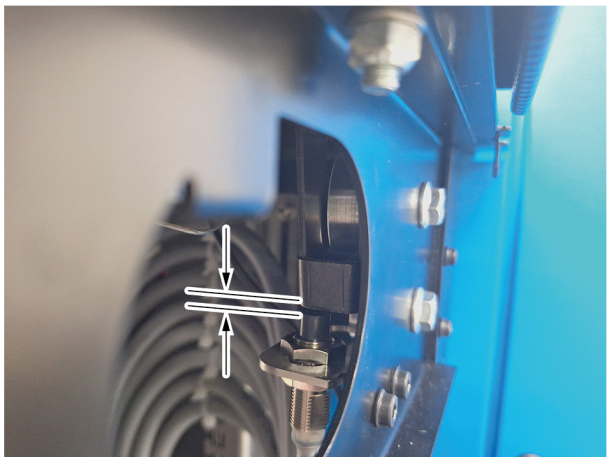


Figure 5-9 Setting distance between sensor and roll holder

While the tank lid is closed, adjust the distance between the sensor and the roll holder.

Once the distance has been set, proper functioning of the sensor has to be checked: The LED should not light up until the tank lid is securely closed. The LED goes off when the tank lid is open.

Replace Filter Cartridge

Nordson recommends keeping a supply of filter cartridges on hand to prevent extended interruption of production.

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

WARNING! The system and material are pressurized. Relieve system of adhesive pressure. Failure to observe can result in serious burns.

NOTE: Relieve adhesive pressure. Refer to *Relieve System Pressure* at the beginning of this section.

Remove Filter Cartridge

1. If the tank is not empty, allow the melter to cool until the adhesive is somewhat viscous. Otherwise remove the filter cartridge when hot.

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

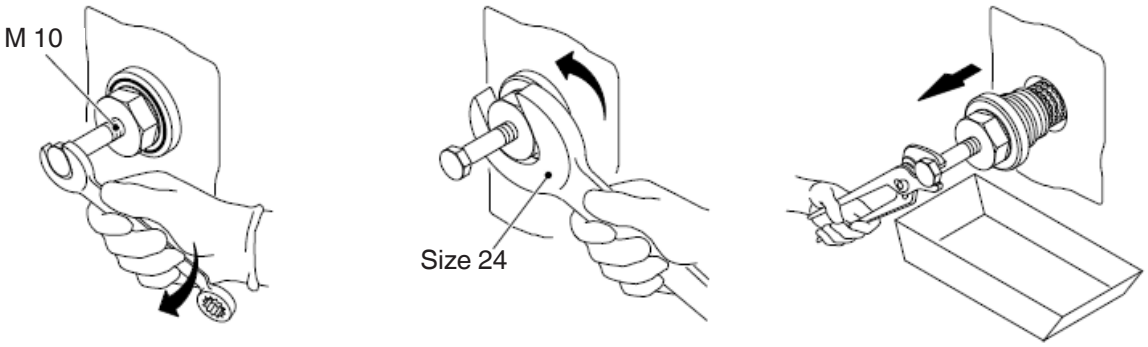


Figure 5-10 Detaching filter cartridge

2. Collect any adhesive that may escape (bowl).
3. Use e.g. a pliers to extract the filter cartridge.
4. If the tank is not empty, insert a new filter cartridge or plug as quickly as possible.
5. Disassemble and clean the filter cartridge (Refer to *Disassemble and Clean Filter Cartridge*).

Install Filter Cartridge

Figure 5-11 Tightening by hand

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

1. Apply high temperature grease to all threads and O-rings.
2. Insert filter cartridge and and tighten somewhat (hand-tight) (approx. 1 Nm / 8.85 lbin).
3. Feed material by allowing the pump to run until the material comes out of the hose port or applicator free of bubbles, or relieve air through the air relief valve if there is one.
4. Properly dispose of material according to local regulations.

Deaerate Filter Bore with Air Relief Valve

1. Place a container under the air relief valve.
2. Close the applicator.

CAUTION! Ensure that the air outlet hole points diagonally down. Open and close the air relief valve only when the adhesive is soft.

3. Use a Phillips screwdriver to open the air relief valve.

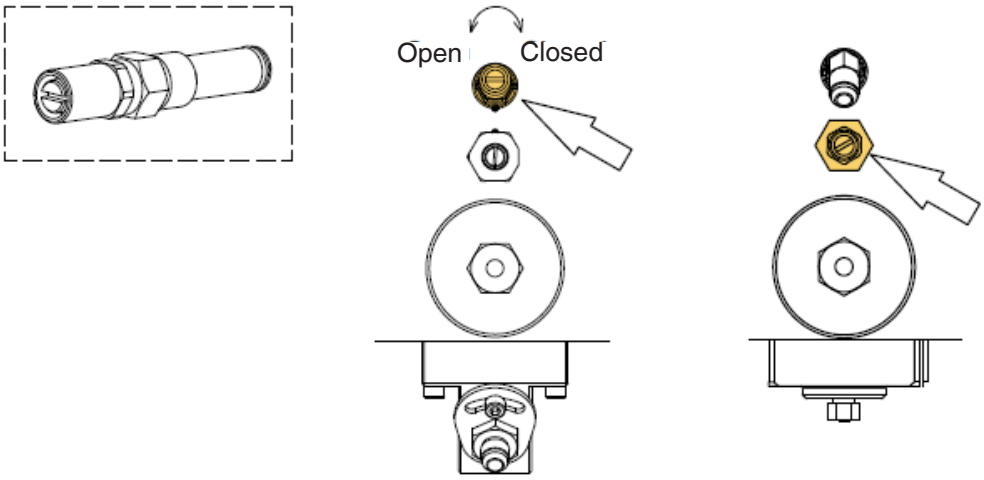


Figure 5-12 Left: removed air relief valve / center: model without pressure build-up / right; position with pressure applied

4. Allow the motor to run slowly until adhesive flows out free of bubbles.
5. Close the air relief valve all the way.
6. Properly dispose of the collected adhesive according to local regulations.

Disassemble and Clean Filter Cartridge

1. Disassemble the filter cartridge.
2. Use a cleaning agent to remove any adhesive residue that cannot be removed mechanically.
3. Always follow the manufacturer's instructions when using cleaning agents!

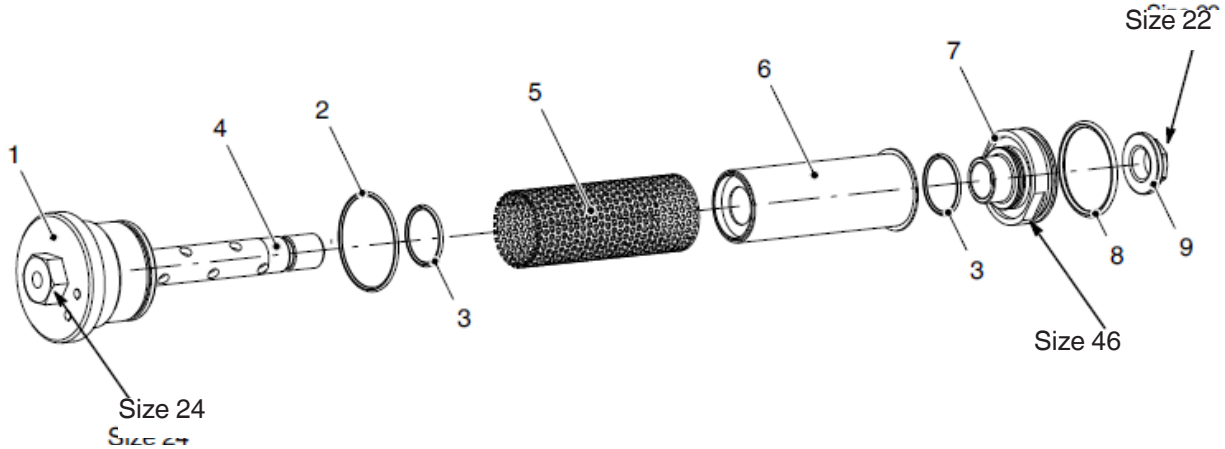


Figure 5-13 Exploded view of filter cartridge

1	Filter screw	4	Filter shaft	7	Filter nut
2	O-ring 48 × 2	5	Filter sheath	8	O-ring 44 × 3
3	O-ring 28 × 2	6	Filter screen	9	Locknut (filter cartridge)

Assemble Filter Cartridge

1. Clamp the filter screw vertically in a vice.
2. Carefully inspect the O-rings and replace if necessary.
3. Put together the individual pieces (Figure 5-13).
4. Screw the filter nut (7) onto the filter shaft thread (4) by hand. Use caution to prevent the filter screen (6) from jamming.
5. Tighten with a torque wrench (size 46).
6. Torque 14 Nm / 124 lbin.
7. Screw on the locknut (9) and tighten with a torque wrench (size 22).

   Torque 24 Nm / 212 lbin.

NOTE: Nordson recommends using a second wrench to brace the filter nut and prevent it from turning.

Install Service Kit

Each kit contains O-rings, filter sheath, filter screen and high-temperature grease. The kit P/N depends on the model and the filter mesh size.

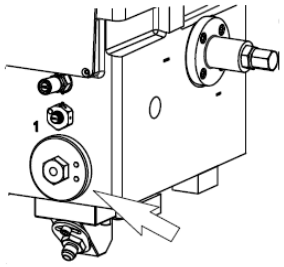


Figure 5-14 Position of a filter cartridge on the melter

Required Tools

- M10 screw with suitable wrench
- Open-end wrench, size 24
- Pliers
- Torque wrench size 46 / size 22

Follow the same procedures as described under *Replace Filter Cartridge* and *Disassemble and Clean Filter Cartridge*.

Change Type of Adhesive

1. Run the melter until empty.
2. Before changing the type of adhesive, determine whether the old and new adhesive may be mixed.
   - May be mixed: Remaining old adhesive can be flushed out using the new adhesive.
   - May not be mixed: Thoroughly purge the unit with a cleaning agent recommended by the adhesive supplier.
3. Properly dispose of the old adhesive / cleaning agent according to local regulations.

Observe Adhesive Flash Point

Depending on the switching temperature of the installed thermostat, use only adhesives with a flash point at least 10 °C (18 °F) above the thermostat switching temperature.

The flash point can be found in the respective adhesive data sheet, or the adhesive manufacturer can be asked.

Note on Hoses

The hose has to be replaced when the type of adhesive is changed, if:

- The new adhesive has a substantially higher viscosity at the same processing temperature
- The two types are known to be incompatible
- Completely different types of adhesive are used, potentially at vastly different temperatures.

If the types are expected to be compatible and/or their physical properties are comparable at similar processing temperatures, purge sufficiently to ensure that the adhesive is completely replaced. In this case the hose does not necessarily have to be replaced.

Empty Tank

CAUTION! Do not feed charred material through the applicator. Particles can block the gun. Instead unscrew the hose (Refer to the section *Installation*).

Drain the adhesive by pumping it out of the melter or through the optional tank drain valve. The remaining adhesive stays in the reservoir, below the tank drain valve.

With Tank Drain Valve (Option)

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

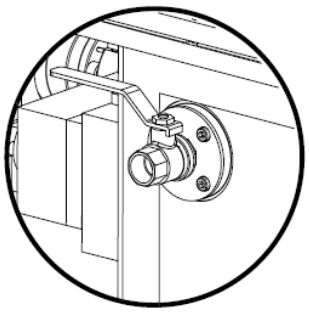


Figure 5-15 Drain valve shown closed here

Prerequisite: The tank is heated to operating temperature.

1. Remove the front panel from the melter.
2. Take into consideration the tank size and level, and place a suitable container under the valve to collect the material flowing out of the tank.
3. Open the drain valve.
4. Close the valve again when the tank is completely drained.
5. Properly dispose of the collected adhesive according to local regulations.

Clean Tank

The tank is cleaned to prevent problems caused by mixing different types of hot melt adhesive or by charred material in the tank. Always clean the tank if:

- The adhesive type is changed and it is unclear whether the adhesives may be mixed.

  If they can be mixed, the remaining old adhesive can be flushed out with the new adhesive.
- There is excessive charring in the tank.

Manually

CAUTION! The inside of the tank is release coated. Do not use metallic tools to clean. Do not use wire brushes! This could damage the release coating.

Cold adhesive can usually be peeled off the sides of the tank. If necessary, first heat the tank to the adhesive softening temperature (approx. 70 °C / 158 °F, depending on the adhesive).

With Cleaning Agent

NOTE: The tank cleaning process described here requires a suitable cleaning agent to soften or dissolve the remaining adhesive. When in doubt about which type of cleaning agent to use, contact the supplier of the hot melt adhesive used.

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

1. Mechanically disconnect the hose from the melter.
2. Empty the tank.
3. Keep the tank at operating temperature, wear appropriate protective clothing/equipment and wipe out the tank to remove material residue and charring.

   No sharp objects should be used to scrape out the tank. This could damage the release coating.
4. Pour cleaning agent for hot melt adhesives into the tank and then clean the tank as described in the cleaning agent manufacturer's instructions.
5. Pump the cleaning agent out of the hose connection.
6. If necessary, clean the inside of the tank again.
7. Replace the filter cartridge with a new one.
8. Heat the hose and applicator to operating temperature, if required.
9. Screw the hose onto the melter and unscrew it from the applicator.
10. First pump cleaning agent through the hose, then pump it through the hose and applicator.
11. Properly dispose of the cleaning agent according to local regulations.
12. Before starting production again, thoroughly flush out cleaning agent residue using the new adhesive.
13. Resume normal system operation.

Replace Tank O-rings

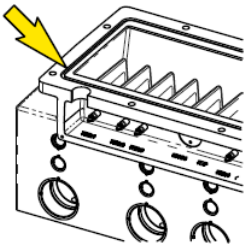


Figure 5-16 O-ring on the melter

NOTE: When releasing the the tank fixing screws, note the position of the washer and the spring washers in relation to one another and restore when reassembling.

The O-ring is located between the grid and reservoir. If the melter has a hopper, there is also an O-ring between the grid and the hopper.

After Replacing

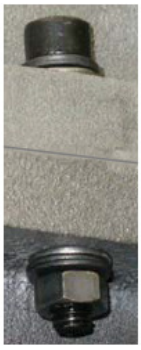


Figure 5-17 Tank fixing screw

Prerequisite: The fixing screws were tightened when the tank was cold, applying the specified torque and tightening crosswise:

Connection	Thread	Torque
Grid / reservoir	M8	20 Nm / 177 lbin
Hopper / grid	M5	5 Nm / 44 lbin

1. At the end of the first day, meaning the first time the melter is heated up, allow the melter to cool off.
2. Since the new O-ring takes time to settle, tighten the fixing screws again, applying the specified torque and tightening crosswise.

Service and Set Pressure Control Valve

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

WARNING! The system and material are pressurized. Relieve system of adhesive pressure. Failure to observe can result in serious burns.

NOTE: Screw in/out only when valve is warm and the material is soft (approx. 70 °C/ 158 °F, depending on material).

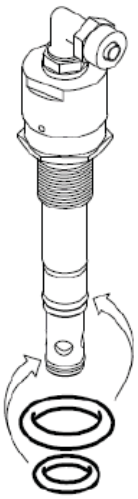


Figure 5-18 Pneumatic pressure control valve

1. Heat the melter to operating temperature.
2. Relieve system pressure: Relieve melter of adhesive pressure.
3. Close the compressed air supply.
4. If the tank is not empty: Have a bowl ready to collect any adhesive that may escape.
5. Unscrew the pressure control valve with an open-end wrench, then extract with a pliers.
6. Quickly screw in a replacement pressure control valve or a plug, then perform maintenance work.

NOTE: Disassemble the pressure control valve only when warm.

7. Remove the old O-rings, and disassemble and clean the pressure control valve. Refer to Figure 5-18 for a detailed drawing of the valve.
8. Install new O-rings. Apply grease to all threads and O-rings.
9. Guide the pressure control valve into the hole when the melter is warm and tighten with torque wrench.

   Torque: 15 Nm (133 lbin)

10. Mechanical pressure control valve: Refer to *Adjusting Setting Screw*.

OR

11. Pneumatic pressure control valve: Screw on the air hose.
12. Pneumatic pressure control valve: Open compressed air supply again.

Disassemble and Clean Pressure Control Valve

1. Perform steps 1 to 7 as described in the previous section *Install Service Kit*.
2. Remove the old outer O- rings.

NOTE: Disassemble the pressure control valve only when warm.

3. Install new O-rings. Apply grease to all threads and O-rings.

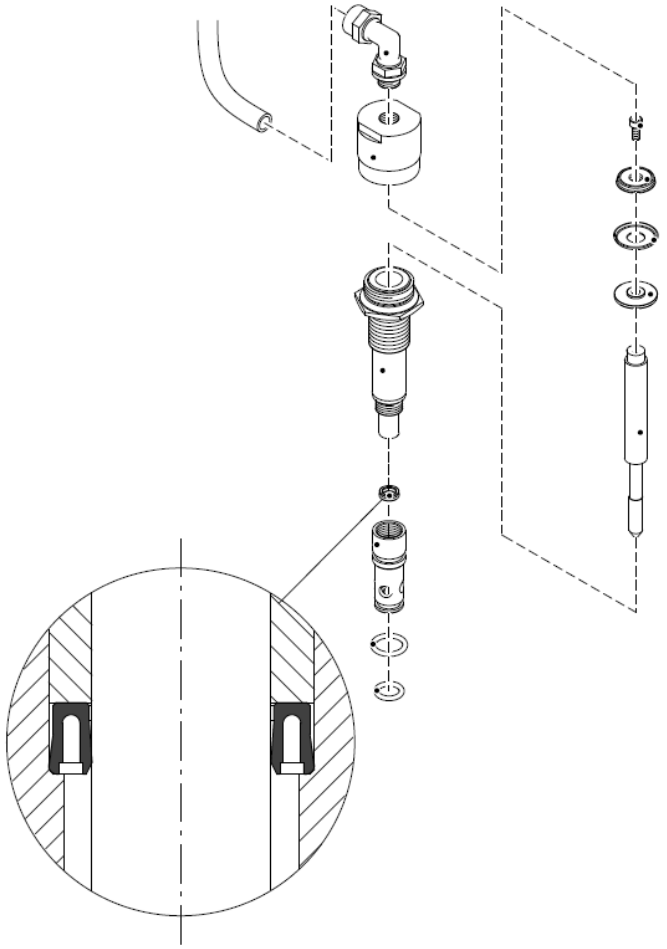


Figure 5-19 Disassembled pneumatic pressure control valve

4. After assembly, proceed with step 9 under *Service and Set Pressure Control Valve.*

Service Deaeration Valve

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

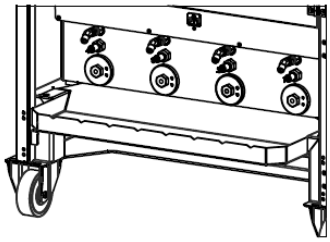


Figure 5-20 Position on melter

Required tools:

- Open-end wrench, size 17

1. Heat the melter to operating temperature.
2. Relieve system pressure: Relieve melter of adhesive pressure.

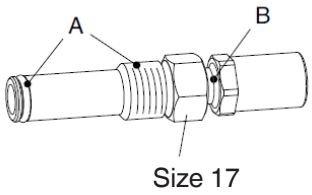


Figure 5-21 Air relief valve

3. Unscrew with open-end wrench, size 17.
4. Apply high-temperature grease to the O-ring and thread (A) of the air relief valve and screw in.
5. Apply Loctite® 572 or a comparable thread sealant to the thread (B) to seal it, then tighten. Ensure that the air outlet hole points down diagonally after installation.

CAUTION! Risk of splashing. Ensure that the air outlet hole points diagonally down.

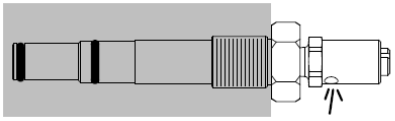


Figure 5-22 Installed deaeration valve

Service Bypass Plate

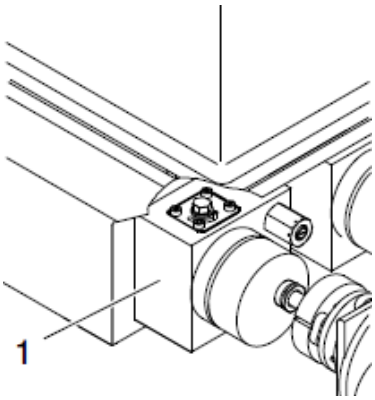


Figure 5-23 Bypass plate on melter

Required tools:

- Allen key, size 6
- Torque wrench

1. Heat the melter to operating temperature.
2. Empty the tank.

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

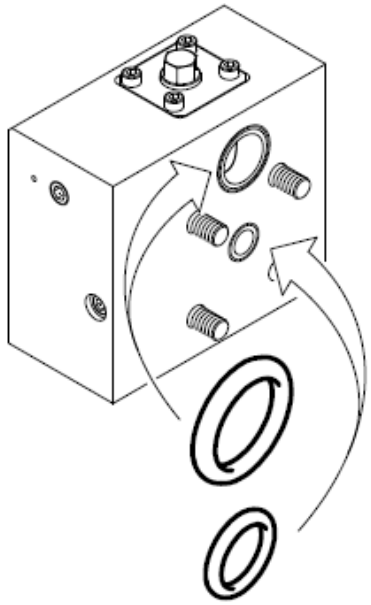


Figure 5-24 O-rings in bypass plate

3. Detach the pump (Refer to section *Repair*).
4. Release the four fixing screws M8 from the bypass plate and then remove the bypass plate.
5. Remove the old O-rings.
6. Clean sealing surfaces on the tank, bypass plate and pump.
7. Apply high temperature grease to the O-rings and sealing surfaces. Insert the O-rings.
8. Screw on the bypass plate. Tighten the fixing screws crosswise using a torque wrench.

   Torque: 25 Nm / 220 lbin.
9. Attach the pump (Refer to section *Repair*).
10. Fill the tank.

Replace Tank Isolation Valve

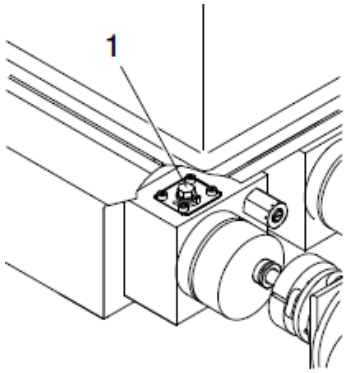


Figure 5-25 Tank isolation valve on bypass plate

Required Tools

- Allen key, size 4
- Pliers
- Open-end wrench size 13 to operate the tank isolation valve

NOTE: These tasks can be performed only when the melter is warm and the adhesive is still soft.

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

1. Heat the melter to operating temperature.
2. Empty the tank.
3. Release the four Allen screws M5 and lift off plate. Use a pliers to extract the tank isolation valve from the bypass plate.
4. Remove the old O-ring and clean the tank isolation valve.

5. Apply high temperature grease to the O-ring, then install it again with the tank isolation valve.

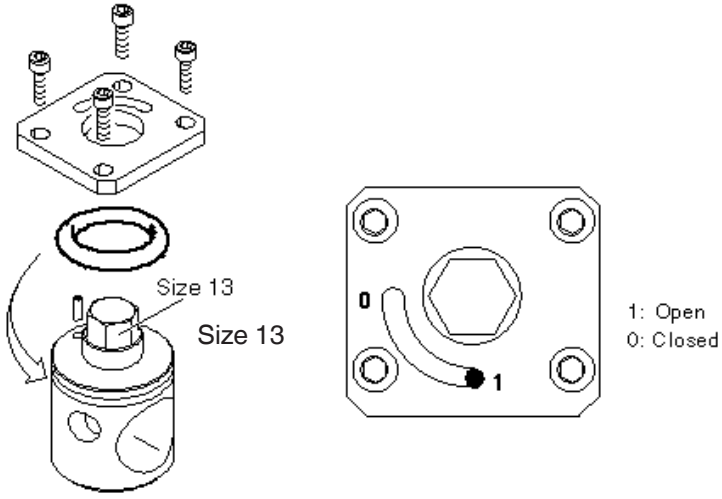


Figure 5-26 Tank isolation valve; left: exploded view, right: top view

- Position 1 = open
- Position 0 = closed

Service Pressure Sensor

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

Clean Adhesive Bore

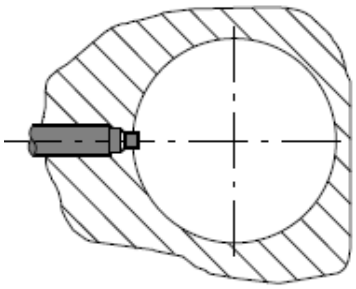


Figure 5-27 Pressure sensor at installation position, principle drawing

CAUTION! If the adhesive bore is to be cleaned with a sharp object, first remove the pressure sensor to prevent damage to the separating membrane.

Clean Separating Membrane

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

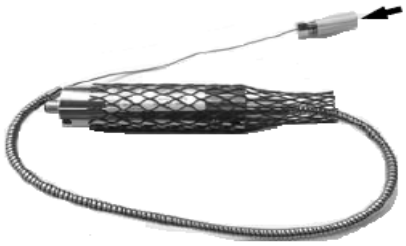


Figure 5-28 Pressure sensor with measuring head

CAUTION! Use extreme caution when cleaning the separating membrane (arrow in the illustration to the left). Never use hard tools.

Whenever possible, remove material residue only with a cleaning agent recommended by the material supplier. Thermoplastic substances such as hot melt adhesive may need to be heated with a hot air fan and then carefully wiped off with a soft cloth.

Screw in Pressure Sensor

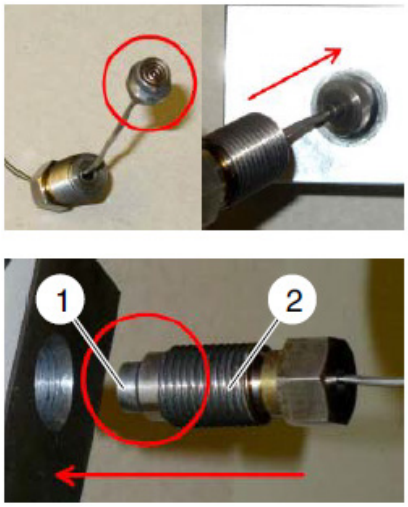


Figure 5-29 Screwing in pressure sensor

The melter part and the pressure sensor should be at room temperature or at nearly the same temperature before the pressure sensor is screwed in firmly.

1. Apply high temperature grease to the thread (Refer to *Processing Materials*).
2. Check that the bore for the pressure sensor is completely clean.
3. Screw in the pressure sensor. Do not jam when screwing in (Strong resistance should not be felt).
   - Refer to to the illustration at left: top illustration wrong; bottom correct. The screw plug (2) is used as a guide for the separating membrane (1).
   - Installation torque: 30 Nm / 265 lbin

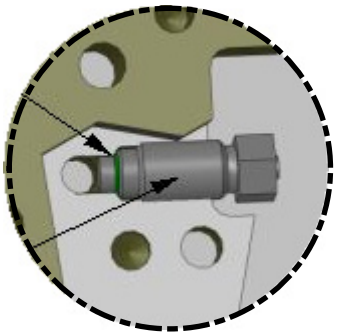


Figure 5-30 Inserting with brass washer

Insert/Extract with Brass Washer

The brass washer is used as a gasket here. Refer to the separate parts list to later order a brass washer.

In addition to the instructions under *Screwing In*, observe the following:

- The brass washer seals by deforming. Before extracting the pressure sensor, ensure that the old brass washer has been removed from the bore.
- Use a new brass washer when inserting the pressure sensor. Insert the brass washer as shown in the illustration

Check Pneumatic Safety Valve

The safety valves, preset at the factory and lead sealed, prevent higher pressurization than permitted of the subsequent pneumatic components. When the factory settings are exceeded, compressed air audibly escapes.

NOTE: The safety valves for the pneumatic options are located in the melter tower.

Perform heck

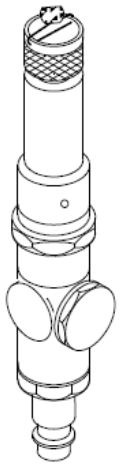


Figure 5-31 Pneumatic safety valve

The performance of the safety valve should be checked approx. every six months. Do this by turning the knurled screw counterclockwise until the compressed air is audibly released.

After the performance check, turn the knurled screw all the way back again.

If the safety valve does not function properly, it should be cleaned. If it still does not function, it must be replaced.

NOTE: A defective safety valve may be replaced only with an original spare part. Only the manufacturer may perform repairs to the safety valve!

Replace Control Module on Filling Valve (Option)

If material seeps out of the detection hole, the control module must be replaced. Nordson recommends keeping a supply of control modules on hand to prevent extensive disruptions in production.

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

NOTE: Replace only when the control module is warm and the material is soft (approx. 70 °C / 158 °F, depending on material).

1. Disconnect the air supply and electrical connection.
2. Release screws M5 and extract the control module from the warm filling valve.
3. Put the new control module in place and tighten the screws crosswise.
4. Re-connect the air supply and electrical connection.

NOTE: Observe the voltage stated on the ID plate of the solenoid valve.

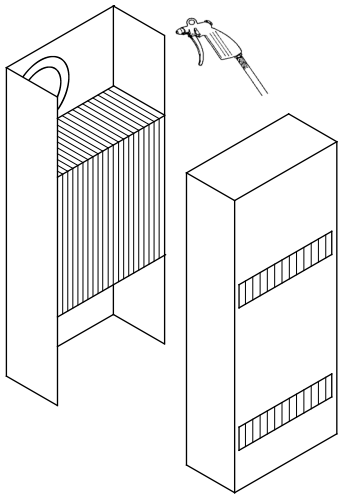
Figure 5-32 Filling Valve

Electrical Cabinet Heat Exchanger (Option)

The melter can also be equipped with a heat exchanger for the electrical cabinet. The frequency of cleaning is a factor of the actual situation (dust and dirt accumulation).

WARNING! Disconnect the melter from the line voltage.

Cleaning



1. Loosen the cover screws.
2. Remove the cover.
3. Clean the heat exchanger blades:
   a. Blow out the dry dust in the opposite direction of air flow during operation.
   b. Rinse out grease and oil residue with soapy water (max. 75 °C / 167 °F).

CAUTION! The detergent must be suitable for cleaning PVC, PE and silicone. Do not use acids! Ensure that the electrical connections are not exposed to the soapy water.

4. Dry well.
5. Put the cover back into place and screw on.

Performance Check

NOTE: The heat exchanger can cool the electrical cabinet properly only when the fans work. Two simple ways to check the performance of the fans are:

1. Listen to hear if the fans are running
2. Feel if air is flowing into the electrical cabinet.

NOTE: Defective heat exchangers must be replaced.

Replace Fan

Nordson recommends replacing the fans in the heat exchanger after every 40 000 hours of operation.

Section 6
Troubleshooting

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

This troubleshooting section covers only the most common problems you may encounter. If you cannot resolve the problem using the information provided in this section, contact your Nordson representative for technical assistance.

Safety Instructions

WARNING! Troubleshooting activities may sometimes have to be carried out when the melter is energized. Observe all safety instructions and regulations concerning energized melter components (active parts). Failure to observe may result in an electric shock.

- Risk of electrical shock! Never disconnect cables from, or reconnect cables to, the power distribution board while the melter is energized.
- With motor controllers: Connect or disconnect lines only when the melter is deenergized. The motor controller is still energized even after it is off. Wait at least three minutes before beginning any work!
- Risk of burns from hot adhesive! Always relieve system pressure before detaching hydraulic connections. Refer to *Maintenance - Relieve System Pressure (Adhesive Pressure)*).
- Wear a wrist strap grounding device to protect the electronic components from electrostatic discharges when installing/removing.

Safety Instructions *(contd.)*

- Risk of burns from hot surfaces! Some melter components can only be installed or removed when the melter is heated up. Wear appropriate protective clothing/equipment.
- Comply with the safety instructions supplied with optional additional equipment.
- If any ground conductors and/or functional earth were detached, reconnect them when work is completed.
- When work is completed, put any protective devices that may have been removed back into place.
- If any components relevant to safety are replaced, they must be checked for proper functioning.

Five Safety Rules in Accordance with DIN VDE 0105

1. Disconnect from the mains

For example, by switching off main switches, circuit breakers, residual current devices; by removing fuses or detaching plug connections.

2. Secure against reconnection

For example, by locking the main switch and storing the removed fuses in a safe place

3. Verify that the system is dead

Before and, if possible, after using the voltage tester, check it for proper functioning at a source that is definitely energized.

The lack of voltage shall be confirmed only by a qualified electrician or person trained in electrical technology.

4. Carry out grounding and short-circuiting (only when using systems with nominal voltage greater than 1000 V)

5. Provide protection from adjacent live parts

Use e.g. drapes or ropes.

Troubleshooting Checklist

Before starting systematic troubleshooting, check the following:

- Is the seven-day clock set correctly?
- Are all parameters set correctly?
- Is the interface wired correctly?
- In key-to-line mode: Is there a line speed signal provided?
- Do all plug connections have sufficient contact?
- Have circuit breakers been tripped?
- Could the fault have been caused by an external PLC?
- Are external, inductive loads (e.g. solenoid valves) equipped with recovery diodes?
- Are the terminating resistors correct?

Also check the hoses and applicators if no adhesive or too little adhesive is being fed.

For example, check

- Temperature channel settings
- Is the filter on the applicator clogged?
- Is the system properly deaerated? With low grammage, check the hose length and pump size as well as the time required for purging.
- Is the correct voltage (usually 24 VDC) being supplied to the solenoid valve?
- Is the compressed air indicated in the customer product manual available and is it reaching the solenoid valve?
- Are one or more control modules connected or clogged?

Terminating Resistors in CAN Bus

In each CAN bus system used, terminating resistors are needed at the last pressure sensor to function properly. When replacing parts, check the setting on the old part and set it the same on the new part.

When retrofitting, the terminating resistor on the previously last node may have to be switched off or removed, to then switch it on or plug it in on the new last node.

The last pressure sensor along the bus is equipped with a terminating resistor. Refer to Figure 6-1.

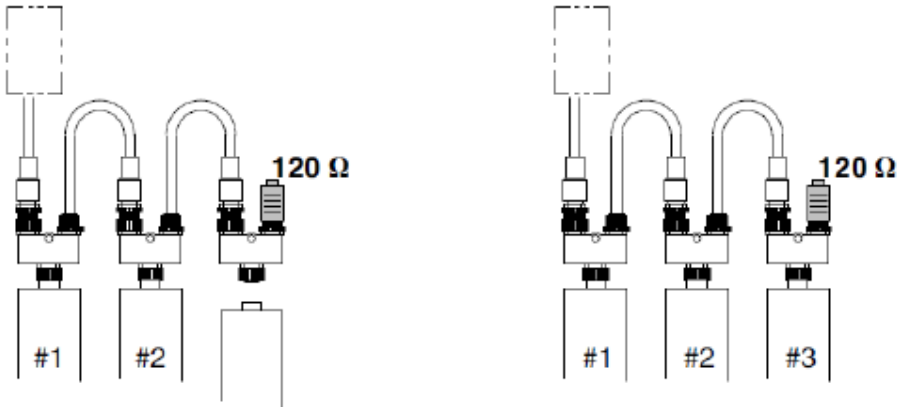
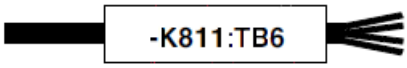


Figure 6-1 Pressure sensors with terminating resistor

The Baud and CAN address settings are made automatically by the control unit.

Component Designations

The lines can be checked with the aid of the labels and connected again properly. If a cable has multiple labels, the cable is used in different devices. In this case consult the melter wiring diagram.



-K811 Component designation

TB6 Terminal

Figure 6-2 Example of label

The electrical components are labeled according to ICE 81346. The component designations can be found on or near the electrical components.

Adhesive Coking

The state of the hot melt adhesive can help with troubleshooting. Thermally damaged adhesive is apparent by:

- Dark color

Figure 6-3 Aging/coking of hot melt adhesives when heated too long

- Black particles in tank
- Gelling
- Higher viscosity.

Coking can be minimized by:

- Keeping the tank full and closed
- Regularly purging and cleaning the tank, hose and applicators
- Maintaining good adhesive flow
- Entering standby during breaks
- Selecting a temperature-resistant adhesive when relevant.

Temperature Alarms

Undertemperature Warning Triggered

The temperature has fallen below the setpoint by more than the differential value (Δ) for longer than five seconds.

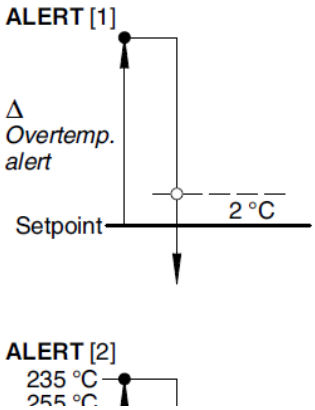


Figure 6-4

Automatic Reset

The temperature has increased to 2 °C (3.6 °F) below the setpoint.

Overtemperature Warning Triggered

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature warning delta* for longer than five seconds.

or

[2] 235 °C (455 °F) was exceeded for longer than 5 seconds.

Automatic Reset

The temperature falls to 2 °C (3.6 °F) above the setpoint.

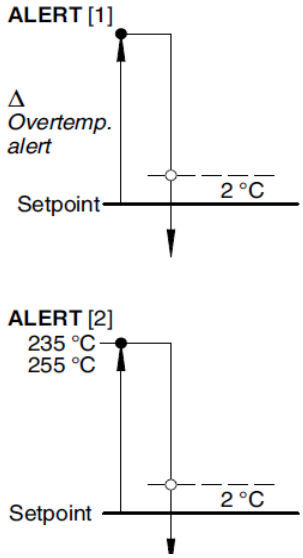


Figure 6-5

Trigger Stop Caused by Undertemperature

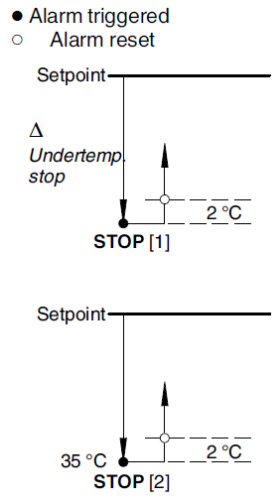


Figure 6-6

[1] The temperature falls below the setpoint by more than the differential value(Δ) *Undertemperature stop* for longer than five seconds.

or

[2] The temperature has reached or fallen below 35 °C (90 °F) for longer than five seconds.

Automatic Reset

[1] The temperature exceeds the setpoint minus differential (Δ) *Undertemperature stop* by 2 °C (3.6 °F).

or

[2] The temperature exceeds 35 °C (90 °F).

Trigger Stop Caused by Overtemperature

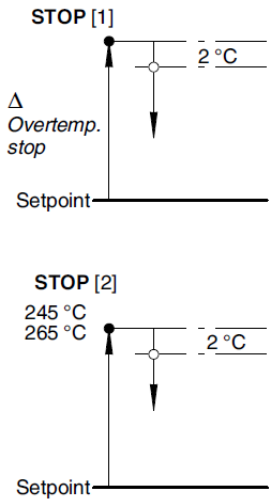


Figure 6-7

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature stop* for longer than five seconds.

or

[2] 245 °C (475 °F) was exceeded for longer than 5 seconds.

Automatic Reset

[1] The temperature falls the setpoint plus differential (Δ) *Overtemperature stop* by 2 °C (3.6 °F).

or

[2] The temperature falls below 243 °C (471 °F).

Temperature Alarms *(contd.)*

Trigger Fault Caused by Overtemperature

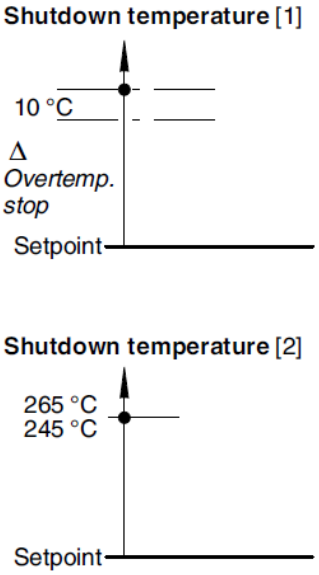


Figure 6-8

By the Software

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature shutdown* (= Δ Overtemperature stop plus 10 °C (20 °F)) for longer than five seconds.

or

[2] Box 21= N, P: 245 °C (475 °F) was exceeded for longer than five seconds.

NOTE: Channels in display mode trigger shutdown only when they have reached the maximum of 245 °C (475 °F) for standard melters.

Reset

Switch the melter off/on with the main switch.

Trigger Fault Caused by Overtemperature

By a Tank Thermostat

The thermostats are located behind the electrical equipment cover of the tank.

The shutdown value depends on the thermostats installed.

Grid/reservoir 260 °C (500 °F)

By the Transformer Thermostat

For all melters with transformer: The melter is switched off when the transformer temperature reaches 155 ± 5 °C / 311 ± 9 °F.

Reset

Switch the melter off/on with the main switch.

By the Filling Valve Thermostat

Manual reset with reset pin

The thermostat is located behind the electrical equipment cover on the heated filling valve P/N 7085724. The shutdown value depends on the thermostats installed (P/N 7085793: 250 °C ± 10 K).

NOTE: Triggering is not shown on the operating device.

Reset

Insert a pin into the hole in the filling valve. Press the reset pin all the way down, such that it snaps into place.

Pressure Alarms

The delay times are set by the customer and apply globally.

Underpressure Warning Triggered

NOTE: The values for warnings are absolute values in speed-controlled mode with the option *Pressure display* [2], lower illustration.

With the option *Pressure control,* the values are differential values for sensors A and B [1] and for absolute values for the sensors C [2].

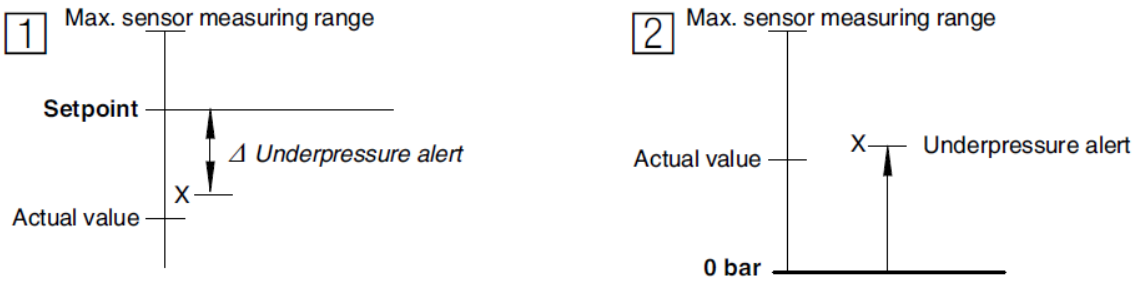


Figure 6-9 X = Alarm value

Pressure Sensors A and B

The pressure has fallen below the alarm value for longer than the set delay time (e.g. alert delay: 20 s). The motor assigned to the pressure sensor has received all enables needed to run. However, the system must be ready for operation.

Automatic Reset

The pressure exceeds the alarm value.

Pressure Sensors C

The pressure has fallen below the alarm value for longer than the set delay time (e.g. alert delay: 20 s). This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure exceeds the alarm value.

Trigger Overpressure Warning

NOTE: The values for warnings and stops are absolute values in speed-control mode with the option *Pressure display*. With the option *Pressure control*, the values are differential values for sensors A and B and absolute values for the sensors C.

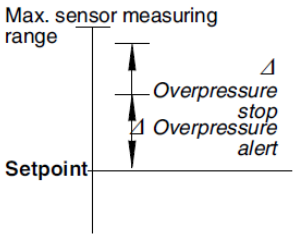


Figure 6-10

Pressure Control: Pressure Sensors A and B

The setpoint has exceeded the delay time set by the customer (e.g. alert delay: 20 s) by more than the differential value (Δ). This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure falls below the setpoint plus differential value (Δ) *Overpressure warning*.

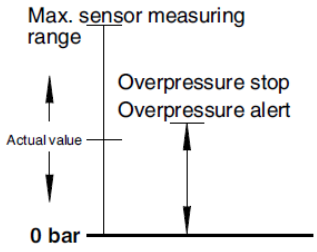


Figure 6-11

Pressure Control: Pressure Sensors C
Speed Control (Pressure Display): Pressure Sensors A, B and C

The pressure has exceeded the absolute value *Overpressure warning* for longer that the delay time set by the customer (e.g. alert delay: 20 s). This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure falls below the absolute value *Overpressure warning*.

Trigger Stop Caused by Overpressure

Pressure Control: Pressure Sensors A and B

The setpoint has been exceeded by more than the differential value (Δ) *Overpressure fault* for longer than the delay time set by the customer (e.g. stop delay: 60 s). Stop and its consequences occur even if the system is not yet ready.

Automatic Reset

The pressure falls below the setpoint plus differential value (Δ) *Overpressure stop*.

Trigger Stop Caused by Overpressure *(contd.)*

Pressure Control: Pressure Sensors C
Speed Control (Pressure Display): Pressure Sensors A, B and C

The pressure has exceeded the absolute value *Overpressure stop* for longer than the delay time set by the customer (e.g. stop delay: 60 s). Stop and its consequences occur even if the system is not yet ready.

Automatic Reset

The pressure falls below the absolute value *Overpressure fault.*

Temperature Sensor Alarms

Every temperature sensor is monitored.

Triggering a Warning that a Melter is not Connected

No temperature sensor / heater current is detected for a temperature channel.

Check that the plug is inserted and undamaged. Disable any temperature channels that are not needed.

Trigger Stop Caused by Short Circuit

The temperature is lower than - 10 °C (14 °F) for longer than five seconds.

The heater for the faulty temperature channel is switched off.

Trigger Stop Due to Broken Sensor or Open Sensor Input

The temperature is higher than 305 °C (581 °F) for longer than five seconds.

The heater for the faulty temperature channel is switched off.

Automatic Reset

After the respective internal value has been exceeded or fallen below for longer than five seconds or after a defective sensor has been replaced.

Level Alarms

Level sensor with variable measuring points

Trigger a "Tank Overfilled" Warning

The warning is triggered as soon as the level has reached or exceeded 98% for longer than five seconds. This is a fixed internal value.

Automatic Reset

When the level falls below 90 %.

Trigger a "Tank Level is Low" Warning

As soon as the level has fallen below the set value for longer than five seconds, the warning is triggered. The value for this warning is set on the operating device.

Automatic Reset

When the set value is exceeded.

Triggering a Stop due to Empty Tank

The fault *Tank is empty* is triggered as soon as the level reaches or falls below 2 % for longer than five seconds. This is a fixed internal value.

Automatic Reset

When the level exceeds 5 %.

LED of Proportional Valve

LED	Operating mode
Red	Operating voltage present
Green	Pressure achieved

Troubleshooting Melter

Troubleshooting Table

Problem	Possible cause	Corrective action
Melter not functioning	No line voltage	Connect line voltage
	Main switch not switched on	Switch on Also check the setting of the service switch.
	Main switch defective	Replace
	Main circuit breaker tripped	Switch on main circuit breaker If tripped again, check for short circuit in melter or accessories.
	24 V_{DC} - power supply defective	Replace
	IP address was assigned twice in the network	Check the IP addresses and set a unique IP address for each node.
One channel does not heat	Channel is disabled	Move the slide on the operating device to enable the temperature channel (also possible with the optional field bus)
	Channel is in display mode (**Monitoring** is enabled on the operating device)	Switch to control mode. Choose display (monitoring) by moving the slide.
	Channel is assigned to a group, and the group is disabled or in standby	Switch off the group via the operating device
	Circuit breaker tripped	Check the fault indications on the operating device. After remedying the fault, switch on the circuit breaker.
	Solid state relay defective	Replace
No line speed signal	Parent machine not operating	Start up parent machine
	Polarity of line speed voltage input is reversed	Reverse polarity
	Encoder defective	Replace

Problem	Possible cause	Corrective action
No adhesive (motor not turning)	System not yet ready for operation (heatup phase)	Wait until the melter has heated up and when appropriate until ready delay time has expired.
	Melter has lost system ready status (undertemperature during operation)	Adhesive was refilled. Wait until the melter is heated.
	Motor not switched on	Switch on the motor. Several enables are required for the motor to run. Refer to the section *Operation / Additional Information on Control Mode* in the separate customer product manual on operation.
	Motor startup protection enabled After triggering a stop Standby entered Undertemperature during operation	Switch on the motor(s) again
	Speed (rpm) not set	The maximum pump speed in key-to-line is on 1 rpm
	Key-to-line operation selected, however melter should be in manual mode	Switch the pump mode on the operating device or at the interface XS2
	No external motor enable via interface XS2	Select a control mode that allows control access via interface XS2. Switch the corresponding contacts of the interface.
	Key-to-line operation selected but no line speed signal present	Provide line speed signal Check whether the type of input signal is the same as that selected on the operating device (analog/frequency)
	Threshold switch not properly set	Check and set the start and stop values on the operating device
	Setback (standby) entered	Exit or wait until standby period has expired

Problem	Possible cause	Corrective action
No adhesive (motor does not rotate) *contd.*	Motor overheated	Decrease ambient temperature by cooling or airing out Clean fan cover Replace the pump if it is too sluggish or blocked by foreign material Check temperature settings; the adhesive may be cold (Refer to the adhesive manufacturer's data sheet)
	Motor defective	Replace
	Motor not supplied with voltage	Technical inspection
	Motor controller fault	Switch melter off and on again with main switch If caused by an overheated motor, see above If the motor controller is overheated, decrease ambient temperature by cooling or airing out If short-circuit occurs, check the motor output If overload occurs, check if the pumps is sluggish
	Motor controller defective	Replace. Motor controllers are assigned to their motors/pumps on the operating device.

Problem	Possible cause	Corrective action
No adhesive (motor turning)	Tank isolation valve closed	Open
	Tank empty	Fill tank
	Filter cartridge clogged	Clean or replace filter screen
	Adhesive supply hole to pump or pump suction hole clogged	If foreign material is blocking the pump, detach it and clean the holes If adhesive does not melt properly, adjust or increase the ready delay
	Hose or applicator is cold	Check that the hose/applicator is connected electrically and insert plug into the corresponding receptacle (Refer to wiring diagram for assignment) Check whether the corresponding temperature channel is enabled on the operating device If the heater is defective, replace the hose. If the applicator is defective, replace the heater cartridge(s).
	After retrofitting or adding features to the pump: Coupling is loose	Align the coupling as shown in the customer product manual and secure it on both sides.
	Pump defective	Replace
	Bypass not (completely) closed	
Too little adhesive or irregular feeding	Supply hole to pump or pump suction hole partially clogged	Detach the pump and clean the holes
	Pump block of the gear pump worn	Replace pump
	Tank isolation valve not completely open	Open
	Filter cartridge partly clogged	Clean or replace filter screen
	Pressure control valve not working	Clean or replace
	Processing temperature set too low	Correct temperature setting (Refer to adhesive data sheet)
	Large tank and high adhesive consumption	If the adhesive is not completely melted, set or increase the ready delay
	Small tank and high adhesive consumption	Select a greater tank volume
	Pump defective	Replace
	Bypass not (completely) closed	

Problem	Possible cause	Corrective action
Adhesive pressure too high (with optional pressure control valve)	Pressure control valve dirty and thus clogged	Disassemble and clean or replace
	Bypass valve or pressure control valve defective	Replace the bypass valve in the bypass plate. Refer to section *Repair*. Replace pressure control valve
	Pressure control valve set incorrectly	Depending on the option, set the mechanical pressure control valve; when pneumatic pressure control valves are used, check the settings that affect the compressed air.
Adhesive pressure low (with optional pressure control valve)	Gear pump is worn	Replace pump
	Bypass valve no longer closes	Replace
	Pressure control valve dirty and thus clogged	Disassemble and clean or replace
	Pressure control valve defective	Replace
	Pressure control valve set incorrectly	Depending on the option, set the mechanical pressure control valve; when pneumatic pressure control valves are used, check the settings that affect the compressed air.
Adhesive Residue in Tank	Tank setpoint temperature set too high	Check the temperature settings to accommodate the adhesive used
	Poor adhesive quality or adhesive not suitable for application (poor temperature resistance)	Seek advice from adhesive manufacturer
Leakage at applicator during heatup phase	Bypass valve does not open (expansion pressure)	Replace the bypass valve
	Compressed air for applicator control modules missing or too low	Refer to separate applicator customer product manual for compressed air required
Leakage around pressure sensor	Brass washer missing	A pack of 10 washers is available as P/N 7157515
Leakage at pump shaft seal	Pump shaft seal is worn	Replace pump shaft seal (Variseal®)
Melter always switches to Fault	CAN bus terminating resistors not connected properly	Terminate CAN bus on both ends *(Temperature Control - Pressure Sensor*) as shown in the wiring diagram.
Master control does not find CAN bus pressure sensor	The pressure sensor in question was already used in a different place and was not removed properly from the CAN bus.	Switch off sensor on the operating device so that the master control can assign the new, correct CAN address.

Troubleshooting Electrical Cabinet Heat Exchanger

Problem	Possible cause	Corrective action
Does not cool	Fans not running. No voltage supplied to the heat exchanger.	Check voltage supply and verify that switches and circuit breakers are switched on.
Insufficient cooling	Only one fan is running.	Replace defective fan or its defective condenser (if applicable).
	No heat exchange occurs, even though the fans are running.	Clean the heat exchanger package.

Troubleshooting Level Problems

Problem	Possible cause	Corrective action
Overflow protection (option) is triggered, although level has fallen below sensor	Alarm caused by adhesive residue stuck to sensor	If overflow protection is triggered, the fault must be acknowledged. As soon as the level has fallen below the sensor, it must be cleaned to prevent adhesive residue from immediately triggering another alarm.

LED of Overflow Protection Evaluator

LED		Fault
Red (LED *Full*)	Flashing	Broken sensor Sensor plug disconnected Operational ground not connected (Refer to section *Repair* for correct connection)
For additional LEDs and LEDs for level evaluator, refer to section Repair.		

Heated Filling Valve

Problem	Possible cause	Corrective action
No adhesive	No compressed air to control module or compressed air set too low	Connect compressed air and set to correct value
	Control module defective	Replace control module
	The filling melter is not working	Use the separate customer product manual for the filling melter for troubleshooting
Filling valve does not heat	Temperature not set	Set on melter operating device or on filling unit
	Power plug not connected	Controlling via melter Connect to corresponding hose receptacle **Regulating via filling unit** Connect to hose receptacle
	Temperature sensor(s) defective	Replace
	Filling valve thermostat triggered	Allow the filling valve to cool somewhat. Then press reset using the reset pin on the filling valve thermostat.
Filling valve does not reach set temperature	Heater cartridge(s) defective	Replace
Solenoid valve does not switch	Solenoid valve is not triggered or is defective	Trigger via customer's PLC or replace solenoid valve
Thermostat cannot be reset	Filling valve is still too hot	Allow to cool to below the triggering temperature Trigger temperature: 250 °C ±10 K

Troubleshooting "External Communication"

Check Transmitted Field Bus Data

Refer to the help texts on the control panel or in the section *Operation.*

Light Tower Colors

The light tower provides information on the system state. The colored lamps light up for two seconds after booting. This allows the operator to see which lamps are not working and then replace them.

Also refer to the help texts on the control panel or in the section *Operation.*

Color	State	Description
Red	Stop	Pumps are switched off automatically. Heaters and the optional filling system remain on.
	Fault	The heaters and pumps are automatically switched off.
Yellow	Warning	Begin troubleshooting, even though production is not stopped. Example: The tank lid has been open for at least five minutes.
Green	Ready for operation/ production	No current stops or faults.
		All of the enabled temperature channels have reached their setpoint, meaning that the actual temperature is within the thresholds entered for the undertemperature and overtemperature alarms.
		If a ready delay was set, the time has elapsed.
	Additionally when ready for production:	Pumps were enabled via the master control on the control device, via an interface signal, or via a PLC command. **NOTE:** Pressure build-up can be, but does not have to be, completed (with optional pressure build-up feature).
Blue	Idle	Action by the customer is required for *Ready for production*, or the system is waiting for automatic enable. Examples:
		The system is still in the heating phase
		Setback (standby) active
		Ready delay not yet elapsed
		Motor startup protection is still active
		The black service switch is set to 0 (OFF).
Flashing blue	Idle	The tank lid was opened and has not yet been closed again.
		NOTE: If the tank lid is still open after five minutes, the blue stops flashing and the light tower is illuminated yellow.
White		Melter is switched on.and heaters are off.

Control Components in Electrical Cabinet

Figure 2-15 and Figure 2-16 in the section *Description* show the components in the melter electrical cabinet.

The various analog and digital input and output boards of the controller have LEDs that can be used for diagnosis purposes.

These LEDs are describe here.

NOTE: All of the following illustrations and table have been taken from the customer product manuals provided by the respective manufacturer (*Beckhoff, Lenze* and *KEB-Automation*).

EtherCAT Coupler

The EtherCAT coupler connects the electrical cabinet control components to the higher-order melter; refer to Figure 2-18 *Diagram: Melter connected to electrical cabinets ACM.*

The LEDs on the EtherCAT coupler are used for diagnosis purposes.

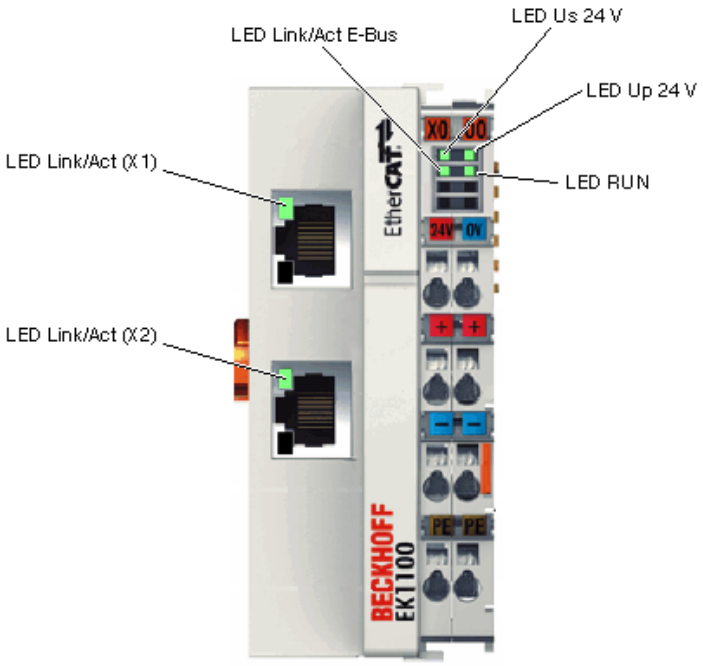


Figure 6-12 LEDs on the EtherCAT coupler

LEDs for Diagnostics of Voltage Supply

LED		Display	State	Description
Us	Green	Off	-	No operating voltage at bus coupler
		On	-	24 V_{DC} operating voltage at bus coupler
Up	Green	Off	-	No voltage supply at power contacts
		On	-	No voltage supply 24 V_{DC} at power contacts

LEDs for Diagnostics of EtherCAT State Machine / PLC

LED		Display	State	Description
RUN	Green	Off	Init	Bus coupler in initialization state
		Flashing	Pre-operational	Bus coupler in state *Pre-operational*
		Single flash	Safe-operational	Bus coupler in state *Safe-operational*
		On	Operational	Bus coupler in state *Operational*
		Flickering	Bootstrap	Firmware is being loaded

LEDs for Field Bus Diagnostics

LED		Display	State	Description
LINK / ACT (X1 IN)	Green	Off	-	No connection on the incoming EtherCAT line
		On	Linked	Previous EtherCAT node connected
		Flashing	Active	Communication with previous EtherCAT node
LINK / ACT (X2 OUT)	Green	Off	-	No connection on the continuing EtherCAT line
		On	Linked	Subsequent EtherCAT node connected
		Flashing	Active	Communication with subsequent EtherCAT node
LINK / ACT E-bus	Green	Off	-	No connection internal bus
		On	Linked	Connection internal bus
		Flashing	Active	Connection/communication internal bus

Temperature Board (Analog Input)

This analog input board processes the signals from the temperature sensors in the connected hoses, applicators or gear pump metering stations (Refer to wiring diagram).

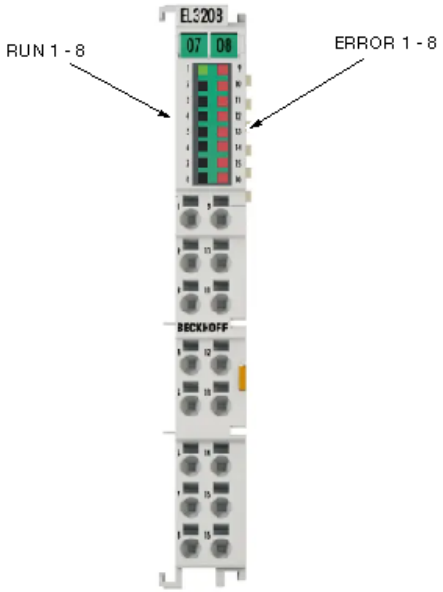


Figure 6-13 LEDs on the analog temperature board (8 channels)

LED	Color	Description	
RUN	Green	The LED indicates the operating mode of the terminal:	
		Off	Status of EtherCAT state machine: INIT = Initialization of terminal or BOOTSTRAP = Function for firmware updates to terminal
		Flashing	Status of EtherCAT state machine: PREOP = Function for mailbox communication and deviating standard settings
		Single flash	Status of EtherCAT state machine: SAFEOP = Checking of channels of sync manager and of distributed clocks Outputs remain in the safe state
		On	Status of EtherCAT state machine: OP = Normal state; mailbox and process data communication possible
Error 1 - 8	Red	There is a short circuit or wire break The resistance value is in the invalid range of the curve	

Temperature Board (Digital Output)

This digital output board processes the signals from the respective heating zones (Refer to wiring diagram).

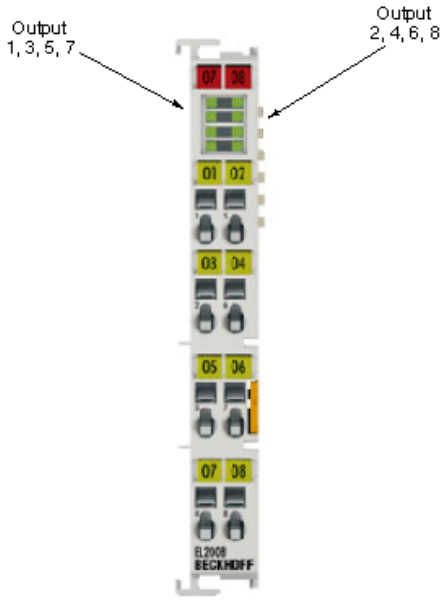


Figure 6-14 LEDs on the digital temperature board (8 channels)

LED	Color	Description	
OUTPUT 1 - 8	Green	Off	No output signal
		On	Output signal 24 V_{DC} at respective output

I/O Board (Digital Output)

This digital output board processes the motor enable, the signals from the main contactor and other signals (Refer to wiring diagram).

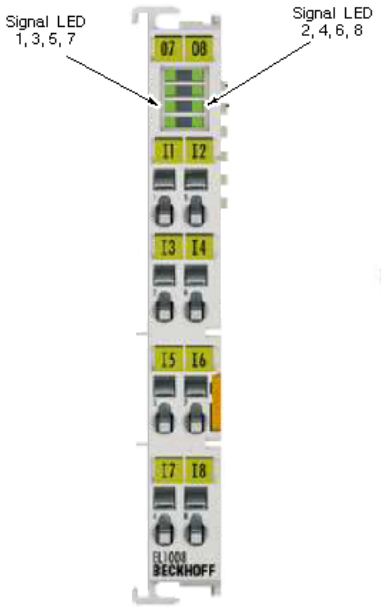


Figure 6-15 LEDs on the I/O board (digital output, 8 channels)

LED	Color	Description	
INPUT 1 - 8	Green	Off	Signal voltage "0" (-3 V ... 5 V)
		On	Signal voltage "1" (11 V ... 30 V)

I/O Board (Digital Input)

This digital input board processes signals from the bypass valves with electrical switch contact (Refer to wiring diagram).

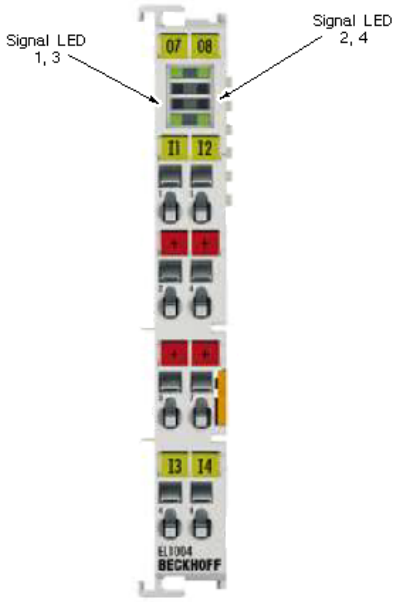


Figure 6-16 LEDs on the I/O board (digital input, 4 channels)

LED	Color	Description	
INPUT 1 - 4	Green	Off	Signal voltage "0" (-3 V ... 5 V)
		On	Signal voltage "1" (11 V ... 30 V)

I/O Board (Digital Output)

This digital output board processes signals from the main contactor and the bypass valves with electrical switch contact (Refer to wiring diagram).

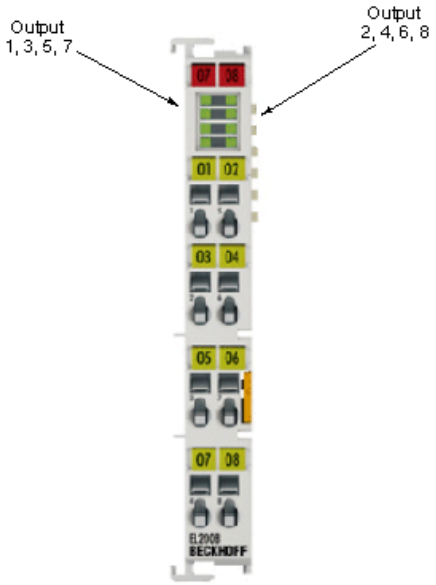


Figure 6-17 LEDs on the I/O board (digital output, 8 channels)

LED	Color	Description	
OUTPUT 1 - 8	Green	Off	No output signal
		On	Output signal 24 V_{DC} at respective output

I/O Board (Digital Input)

This digital input board processes signals from the bypass valves with electrical switch contact (Refer to wiring diagram).

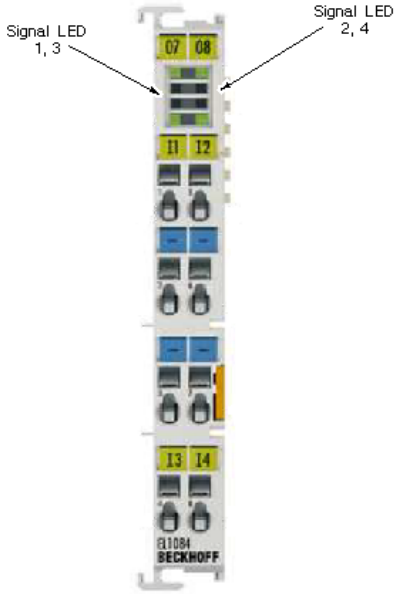


Figure 6-18 LEDs on the I/O board (digital input, 4 channels)

LED	Color	Description	
INPUT 1 - 4	Green	Off	Signal voltage "0" (18 V ... 30 V)
		On	Signal voltage "1" (0 V ... 7 V)

TruFlow (Analog Input)

This analog input board processes signals from the connected TruFlow applicators or TruFlow flow divider (Refer to wiring diagram).

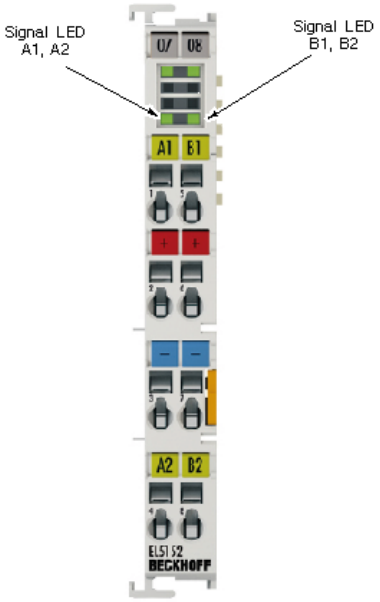


Figure 6-19 LEDs on analog input TruFlow

LED	Color	Description
A1, A2, B1, B2	Green	Flashing when pulses at inputs

Motor/Servo Controller

LEDs on Motor Controller i550

The LEDs are located on the front of the motor controller. The LEDs on the motor controller are used for diagnosis purposes.

Refer to the manufacturer's manual for more detailed information.

Figure 6-20 LEDs on i550

Green LED Run	Red LED ERR	Description
Off	Off	MC not active on CAN bus
Off	On	State “Bus OFF"
Flickering	Flickering	Automatic detection of transmission rate enabled
Flashing (5 Hz)		Not yet ready
On		Ready for operation
Flashing 1x/1s		Stopped
	On	No bus
	Flashes 1x, then 1 s off	Warning limit reached
	Flashes 2x, then 1 s off	Heartbeat event
On	Flashes 3x, then 1 s off	Sync message error

Blue LED RDY	Red LED ERR	Description of MC status
Off	Off	No supply voltage
Flashing (2 Hz)	Off	Motor controller blocked
	Flashes briefly every 1.5 s	Motor controller blocked, no intermediate circuit voltage
	Flashes fast	Motor controller blocked, warning active
	On	Motor controller blocked, fault active
On	On	Motor controller being started (initialization) or quick stop enabled.
	Off	Motor controller enabled. The drive turns at the specified setpoint.
	Flashes quickly (4 Hz)	Motor controller enabled. Warning active. The drive turns at the specified setpoint.
	Flashing (1 Hz)	Motor controller enabled, quick stop active as reaction to an error.

LEDs on Motor Controller KEB-S6K

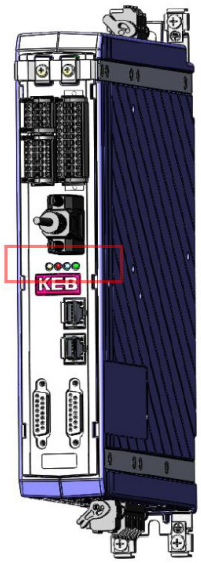


Figure 6-21 LEDs on KEB-S6K

The LEDs are located on the front of the motor controller.

From left to right, these are:

- 24 V_{DC} operating voltage
- EtherCAT status / CAN status
- Control status
- Reserved

The LEDs on the motor controller are used for diagnosis purposes.

LED	Color	Description
24 V_{DC}	green	Voltage is supplied
EtherCAT status / CAN status	yellow	If the FPGA has been properly booted, the control status LED and the EtherCAT status LED turn yellow after about six seconds
Control status	yellow	
EtherCAT status / CAN status	green/red	After another three seconds, the S6K is ready for operation and the status LEDs change to their actual function.
Control status	red	
Control status	red	There is an exception, ru01 !=0
	yellow	No error, intermediate circuit [capacitor] not charged
	Green	No fault, ready for operation

Refer to the manufacturer's manual for more detailed information.

Section 7
Repair

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

WARNING! This section on repairing your equipment deals only with the repairs that the customer can perform himself. If a repair cannot be made with the aid of the information in this section or other repairs prove necessary, please contact your partner at Nordson.

Safety Instructions

- Never disconnect cables from, or reconnect cables to, the power distribution board while the melter is energized.
- With motor controllers: Connect or disconnect lines only when the melter is deenergized. The motor controller is still energized even after it is off. Wait at least three minutes before beginning any work!
- Always relieve system pressure before detaching hydraulic connections. Refer to the section *Maintenance, Relieve System (Adhesive) Pressure on page 5-3*.
- Wear a wrist strap grounding device to protect the electronic components from electrostatic discharges when installing/removing.
- Some melter components can only be detached when the melter is heated up. Wear appropriate protective clothing/equipment to prevent burns.
- Comply with the safety instructions supplied with optional additional equipment.
- If any ground conductors and/or functional earth were detached, reconnect them when work is completed.
- When work is completed, put any protective devices that may have been removed back into place.
- If any components relevant to safety are replaced, they must be checked for proper functioning.

Five Safety Rules in Accordance with DIN VDE 0105

1. Disconnect from the mains

   For example, by switching off main switches, circuit breakers, residual current devices; by removing fuses or detaching plug connections.

2. Secure against reconnection

   For example, by locking the main switch and storing the removed fuses in a safe place

3. Verify that the system is dead

   Before and, if possible, after using the voltage tester, check it for proper functioning at a source that is definitely energized.

   The lack of voltage shall be confirmed only by a qualified electrician or person trained in electrical technology.

4. Carry out grounding and short-circuiting (only when using systems with nominal voltage greater than 1000 V)

5. Provide protection from adjacent live parts

   Use e.g. drapes or ropes.

Connecting Ground Conductors Again

For ground conductor connections with ring cable lugs:

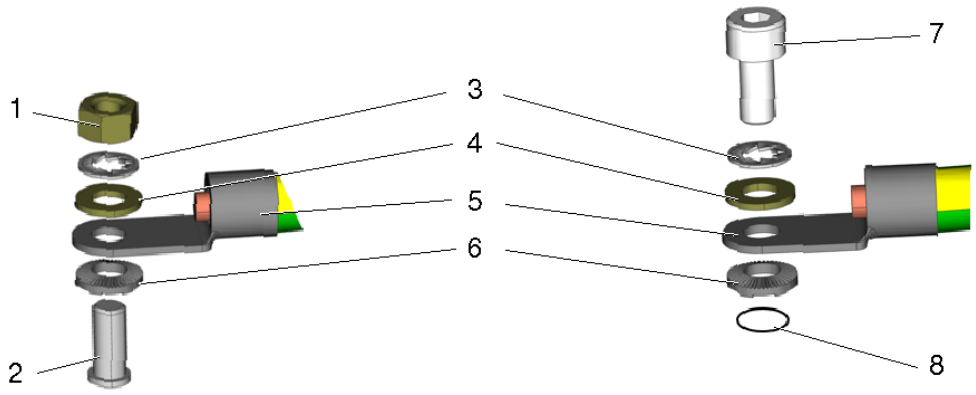


Figure 7-1

1. Nut
2. Threaded bolt
3. Serrated lock washer
4. Washer
5. Ground conductor with ring cable lug
6. Contact disk
7. Screw
8. Thread (in the holder)

Replace Motor Controller

WARNING! Connect or disconnect lines only when the melter is deenergized. The motor controller is still energized after switching off. Wait at least three minutes before beginning any work!

NOTE: No more than two motor controllers can share a mains filter. The mains filter is located under the first and third motor controller.

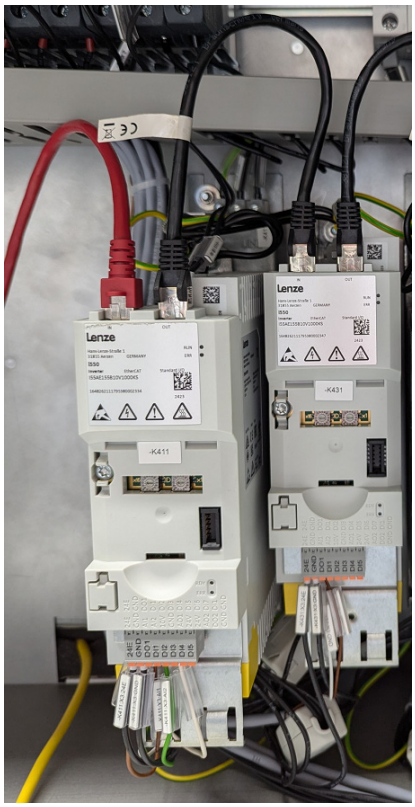


Figure 7-2 Motor controller i550 - for motors inside of the melter

Allocate Replaced Motor Controllers to their Motors

If more than one motor controller is replaced, a screen opens on the control panel and indicates how to proceed. Also refer to the separate customer product manual on operation.

Replace Pressure Sensor

Refer to page *7-12* for information on how to insert and remove the pressure sensor.

Information on T-tap and CAN Bus Cables with Hexagon Head

Refer to Figure 7-3: Tighten the hexagonal head with torque of 0.6 Nm. Nordson recommends the torque wrench made by Murr Elektronik, Murr article number 7000-99102-0000000.

The last pressure sensor along the bus must be equipped with a terminating resistor (120 W).

CAN Bus Terminating Resistor

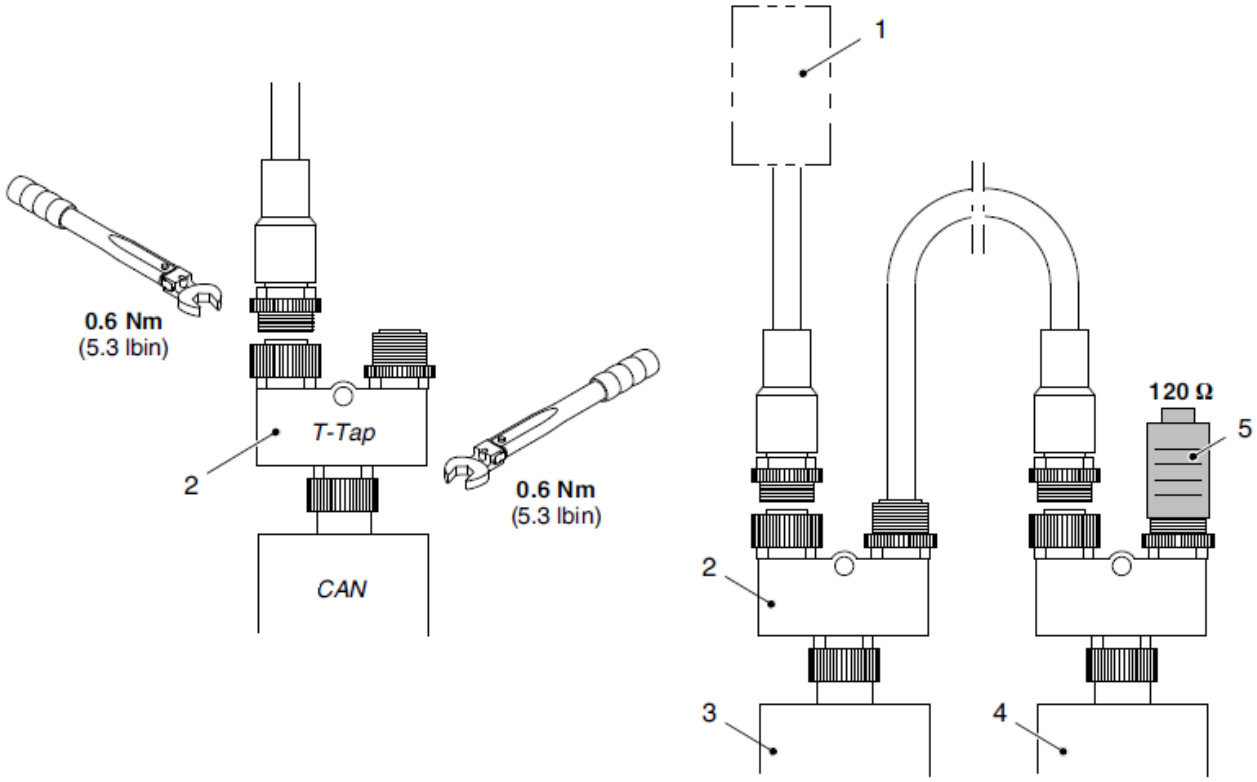


Figure 7-3 Example with two pressure sensors and information on T-tap and CAN bus cables with hexagon nut

1. CAN module in electrical cabinet
2. Manifold (*T-tap*)
3. First pressure sensor (*CAN*)
4. Last pressure sensor
5. Terminating resistor

Procedure

1. On the control panel, switch off the CAN bus pressure sensor.
2. Disconnect the pressure sensor from the CAN bus.
3. Connect the CAN bus cable to the new pressure sensor.
4. Refer to Figure 7-3 for information on torque for T-tap and CAN bus cables with hexagon nut.
5. Configure the new pressure sensor on the control panel.

NOTE: If during work on the CAN bus errors occur that have no readily apparent cause or the unit shuts down, switch the melter off then on again with the main switch.

CAN Bus Terminating Resistor

There should be a terminating resistor on both sides of the CAN bus. One of the two terminating resistors is on the main controller and has to be switched on with the slide.

If there are one or more pressure sensors installed in the system, the second terminating resistor (120 Ω) must be attached to the last pressure sensor. Refer to Figure 7-3.

NOTE: The two CAN bus terminating resistors are connected in parallel via the bus. Thus, when they are installed, resistance measuring indicates a value of 60 W.

Replace Gear Pump

Nordson recommends replacing leaking pumps and sending the old ones in to be repaired.

CAUTION! Hot! Risk of burns. Wear appropriate personal protective equipment (goggles, heat-protective gloves).

Detach Gear Pump

NOTE: Open or close the tank isolation valve only when the melter has reached operating temperature.

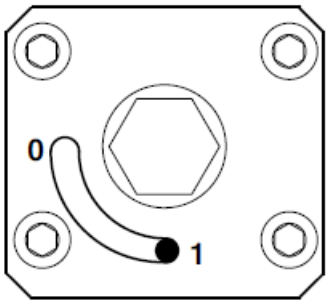


Figure 7-4 Tank isolation valve: 0 - closed 1 - open

1. Close the tank isolation valve.
2. Refer to *Important Regarding Coupling*.

CAUTION: The coupling is held together by a long securing screw (Figure 7-5). The screw has to be removed before detaching the coupling and then be put back into place later.

3. Turn the coupling until the screws of the coupling disk are accessible.
4. Release the screws of the coupling disk on the pump side.
5. Carefully remove the coupling part on the pump side and then install it in this position again later. If helpful, take a photo before dismantling.
6. Place a container under the pump to collect any adhesive left.

NOTE: Detach the gear pump only when the adhesive is soft (approx. 70°C / 158°F, depending on the material).

7. Unscrew the pump.
8. Clean the sealing surface on the connection plate (depending on the configuration, either safety valve plate or adapter plate). If necessary, heat adhesive residue with a hot air fan, then remove.

Attach Gear Pump

The sealing surfaces on the connection plate and the pump must be clean. Always replace all O- rings.

1. Before attaching the pump, check the position of the suction and pressure bores. Also
   - Remove any protective caps from the bores in the new pump.
   - Use a pliers to extract the pump shaft pulley keys. It is not needed for this type of coupling.
2. Apply high temperature grease (Refer to section *Maintenance, Processing Materials*) to the O- rings and tank sides of the new SN/DN pump.

CAUTION: Pump types SF and DF seal metallically. Do not use high-temperature grease!

All stated torques apply to a melter cooled to ambient temperature.

3. Apply high temperature grease to the fixing screws of the pump, then tighten screws crosswise using a torque wrench; the * tank must be cold when screws are tightened.

   Torque for SN/DN: 25 Nm / 220 lbin

   Torque for SF/ DF: 35 - 40 Nm / 310 - 350 lbin

   * Either allow the melter to cool to room temperature and screw the pump on when the melter is cold

   OR:

   a. Tighten the fixing screws by hand such that the pump and the connection plate have thermal contact.
   b. Wait until the pump and connection plate are at the same temperature.
   c. Tighten the fixing screws crosswise and then tighten them again as described under 3. the next time the pump cools off.
4. Align the motor (Refer to *Align Motor*).
5. Refer to *Important Regarding Coupling*.

6. Center the coupling disks (2, 4, 5, Figure 7-5) to one another and allow the coupling link (3, Figure 7-5) to hang vertically. Turn the coupling half on the motor shaft to its position by hand.
7. Tighten the coupling screws (5, Figure 7-5).

   Torque: 36 Nm / 320 lbin.
8. Heat melter to operating temperature and open the tank isolation valve again.
9. Check if the drive and output shafts are aligned at low speed (5 rpm). If necessary, go back to *Align Motor*.

The rotating parts are greased to prevent the parts from running dry when a new pump is started up and adhesive has not yet lubricated the parts. So always rinse out the grease with adhesive before beginning production.

Important Regarding Coupling

NOTE: The coupling can be turned only as long as the adhesive in the pump is sufficiently soft.

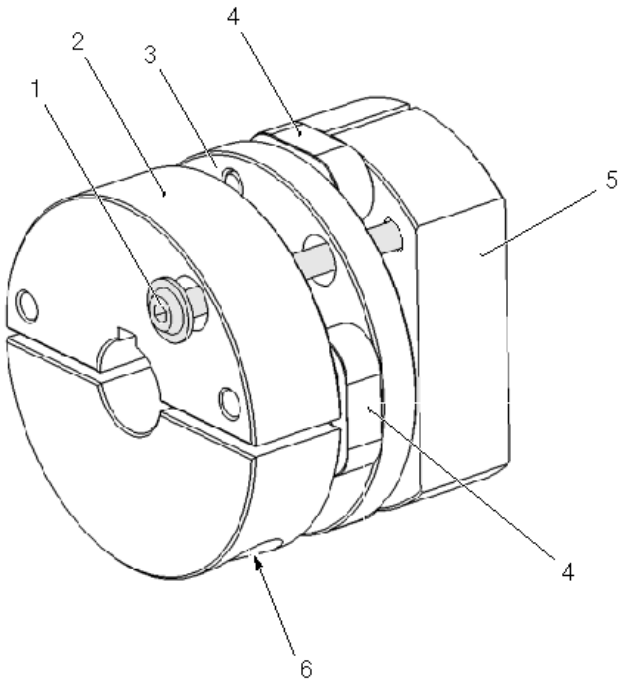


Figure 7-5 Individual components of the coupling

1. Securing screw
2. Coupling disk (motor side)
3. Intermediate disk
4. Coupling link
5. Coupling disk (pump side)
6. Coupling screw

- The coupling is flattened on the pump side (Figure 7-5).
- The axial offset, meaning the sum of the four gaps between the coupling disks and the coupling links, must result in at least 2 mm (0.08 in) of air to accommodate heat expansion during operation.

  Permitted radial offset: 1 mm (0.04 in)

  Permitted angular offset: 1°
- The motor shaft is inserted far enough into the coupling that the inner end is flush with the first coupling disk or protrudes no more than 1 to 2 mm (0.04 - 0.08 in).

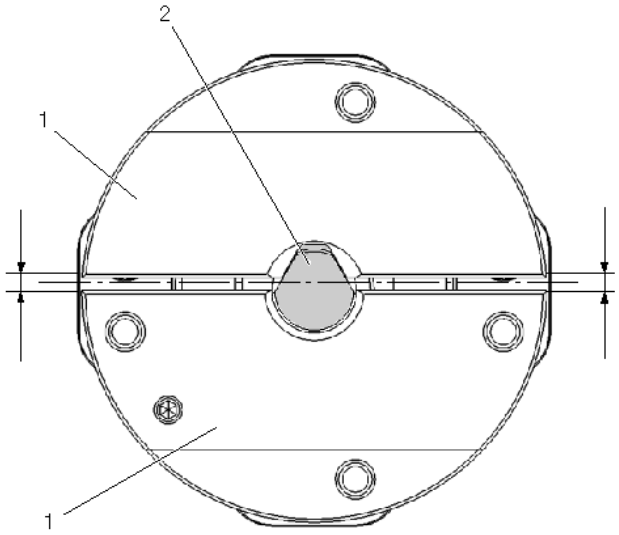


Figure 7-6 Pump side

- The halves (1, Figure 7-6) of the coupling disks are turned such that the diagonal surfaces of the pump shaft (2, Figure 7-6) and those on the coupling disk rest against one another.
- The halves of the coupling disks are tightened such that the gaps are the same size.
- Torque for coupling screws (6, Figure 7-5):
  20 - 25 Nm / 180 - 220 lbin.

Extract from Manufacturer's Installation and Operating Instructions

- The drive shaft and output shaft should be parallel* to one another. If the axes lean towards one another, excess load is applied to the edges of the bearings, causing premature wear.
- The coupling may not be twisted axially. The intermediate disk should move freely.
- The coupling should not be disassembled. Interchanging of coupling links and disks, damaged sealing rings, polluted bearings, etc. can cause premature malfunctioning.
- All three coupling disks must be aligned to the dimension** of the shaft offset. If the intermediate disk is extremely off-center - meaning that the coupling links are no longer parallel - the coupling may be destroyed upon startup.

  * = axially aligned

  ** = within the permitted shaft offset

Replace Motor

NOTE: Perform the following steps only when the adhesive is soft (approx. 70 °C / 158 °F, depending on adhesive); otherwise the coupling cannot be turned.

1. Disconnect the motor power cable in the electrical cabinet.
2. Detach the plug connector from the motor controller.
3. Refer to *Important Regarding Coupling.*

CAUTION: The coupling is held together by a long securing screw (Figure 7-5). The screw has to be removed before detaching the coupling and then be put back into place later.

4. Turn the coupling until the screws of the coupling disk are accessible.
5. Release the screws of the coupling disk on the motor side.
6. Carefully remove the coupling part on the motor side.

CAUTION! The bracket should not be slid back in the slot or unscrewed. If this is unavoidable, refer to Align Motor.

7. Unscrew the motor from the bracket.
8. Remove any protective varnish from the shaft of the new motor.
9. Attach the coupling to the shaft without using force (no jolts or pounding). If necessary, sand pulley keys and shaft with emery cloth. Lubricate pulley keys and shaft if needed.
10. Install the new motor in the bracket. Tighten the fixing screws crosswise using a torque wrench.

    Torque: 20 Nm / 177 lbin.
11. Attach the coupling. Refer to *Important Regarding Coupling*.
12. Tighten the coupling screws (3, Figure 7-5).

    Torque: 25 Nm / 220 lbin.

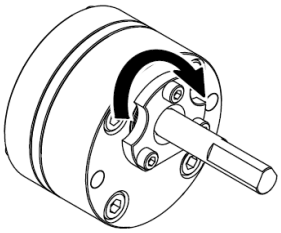


Figure 7-7 Direction of rotation to feed towards the hose connection

Reconnect motor electrically.

13. Secure the power cable with strain relief. Ensure that the cable shield and the clamp have contact.
14. Verify that the connection effects the desired direction of rotation (see arrow).
15. Check if the drive and output shafts are aligned at low speed (5 rpm). If necessary, refer to page *7-12*.

Align Motor

CAUTION! The motor bracket must be aligned precisely to prevent damage to the coupling and the pump.

For this reason, after assembly first check alignment at low speed (5 rpm).

1. Line up the shafts of the motor and the pump and check whether the two shafts are aligned vertically and horizontally. If necessary, loosen the pump, adjust it, then tighten it crosswise with 25 Nm (220 lbin) torque.
2. Attach the coupling to the pump shaft. Also refer to page *Important Regarding Coupling*.
3. Tighten the coupling screws (3, Figure 7-5).

   Torque: 25 Nm (220 lbin).
4. Attach the coupling to the motor shaft. Refer to *Important Regarding Coupling.* Do not jolt or strike when attaching.
5. Tighten the coupling screws (3, Figure 7-5).

   Torque: 25 Nm (220 lbin).
6. Attach the motor bracket with the aid of an angle on the melter chassis.
7. Tighten the motor bracket screws.

   Torque: 20 Nm (177 lbin).

Replace Filter Cartridge

Proceed as described in the section *Maintenance* to replace the filter cartridge.

Perform Work behind Electrical Equipment Cover on Tank

WARNING! When all work is completed, properly reattach all connections and put the electrical equipment cover back into place.

Replace Thermostat

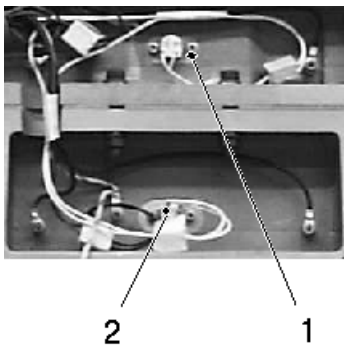


Figure 7-8

1. Release fixing screws and (1, 2, Figure 7-8) remove the old thermostat.
2. If necessary, clean the fastening point with a lint-free cloth.
3. Attach connecting wires to the new thermostat.
4. Apply heat transfer compound to the bottom of the thermostat (Refer to the section *Maintenance, Processing Materials*), then fasten it to the tank again.

CAUTION! Ensure that the flat receptacles (2, Figure 7-12) do not touch the side of the tank.

Replace Heater Connection Insulation

WARNING! The melter may not be operated without properly insulated heater connections. Use only Nordson spare parts for insulation.

The heater connection insulation may be damaged when maintenance and repair work is performed.

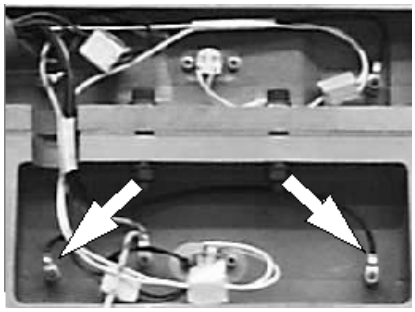


Figure 7-9 Example of tank

1. Remove nut (4), washers (3 and 5) and insulating cylinder (2).
2. Remove all of the ceramic powder from the heater connection.
3. Guide new insulating cylinder (1) into the heater connection.
4. Attach new insulating cylinder (2), washer (3) and nut (4). Carefully tighten the nut applying 1.5 Nm (13 lbin).
5. Attach the heater cable, serrated lock washer (5) and nut (4). Use a second tool to brace the nut, preventing the insulating cylinder from being damaged, and tighten the second nut applying 2 Nm (18 lbin)

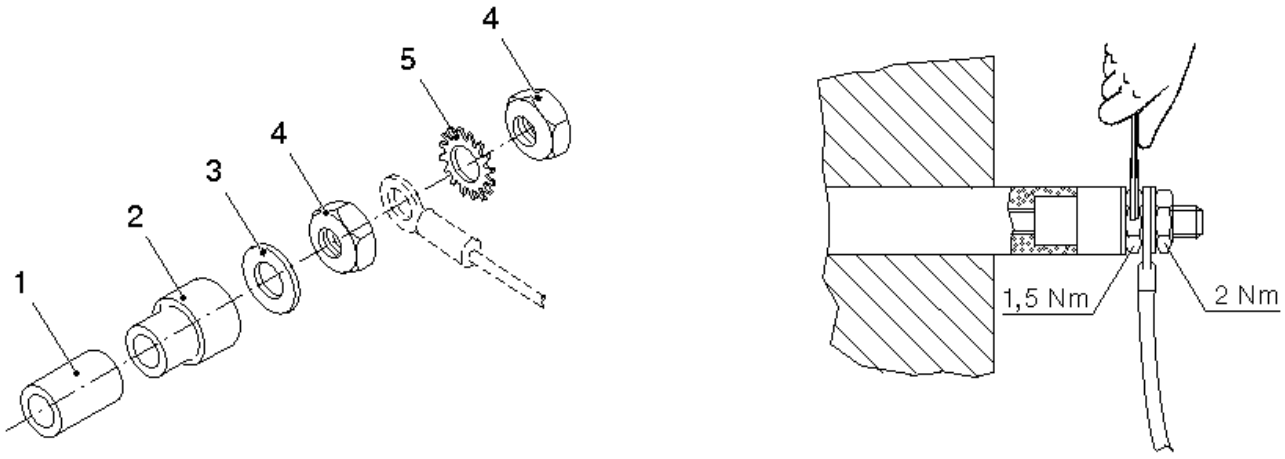


Figure 7-10

1. Insulating cylinder, small
2. Insulating cylinder, large
3. Washer
4. Hexagonal nut
5. Serrated lock washer

Replace Temperature Sensor

Required tools: Pliers, side cutting pliers,as well as heat transfer compound.

1. Remove the electrical equipment cover.
2. Disconnect connecting wires and extract old temperature sensor by the connecting wires or with the aid of a pliers.
3. Apply heat transfer compound to new sensor.
4. Insert the sensor and reconnect electrically.
5. Put the the electrical equipment cover back into place when work is completed.

Level Display and Level Control: Installation and Operating Tips

- Lay the control lines such that they are isolated or shielded from main power lines. Despite protective switching, inductive voltage peaks can destroy the evaluation electronics in extreme cases.
- To prevent false signals, do not operate high-power walkie-talkies or other devices with a lower frequency range that could cause interference, e.g. long, medium or short wave transmitters, near the sensor or evaluator.
- All adjustments should be made with operating ground (= functional earth) connected. The operating ground must be linked to a metal casing - in this case the melter tank - along the shortest path.

  To do this, connect the operating ground cable lug to the blade terminal lug that secures the tank collar. Do not connect via the ground connector!

  If the overfill protection evaluator is also included, the operating ground connections for the two evaluators are bridged.
- Adjustment by electrostatically-charged persons can lead to malfunctioning of the amplifier.
- Always perform empty calibration when the sensor or evaluator is replaced.
- The length of the sensor cable may not be changed.
- All potentiometers for the overflow protection evaluator have 20 revolutions and no mechanical limit stop, meaning no fixed end position. They cannot be damaged by turning too far.

Replace Level Sensor

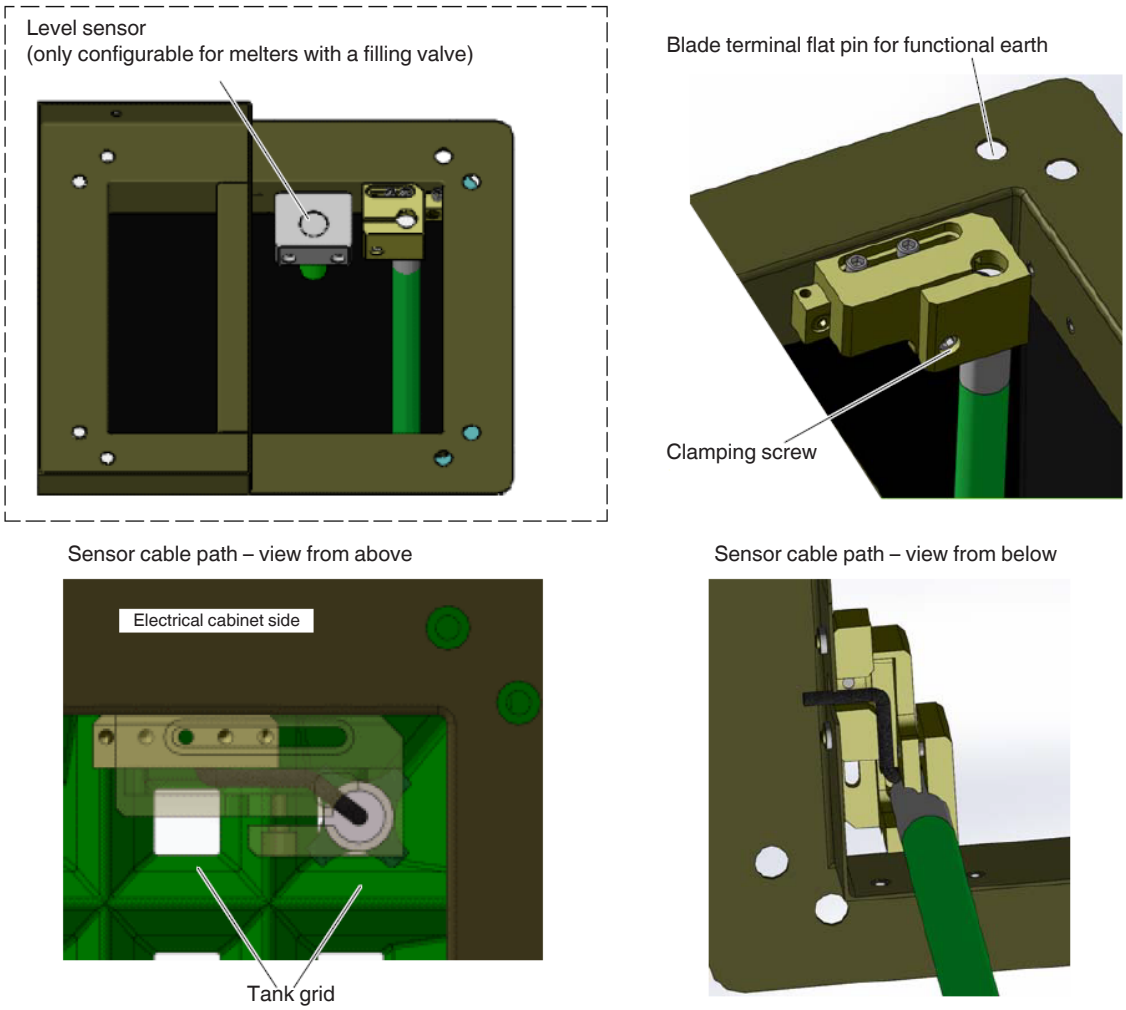


Figure 7-11

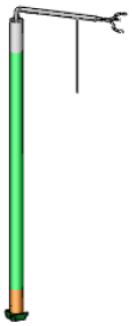


Figure 7-12

There is a star-shaped piece at the lower end of the level sensor. Position the sensor such that the star-shapes piece just barely does not touch the honeycomb.

The height of the level sensor can be adjusted with the clamping screw (Figure 7-11).

Replace Level Evaluator of Analog Sensor

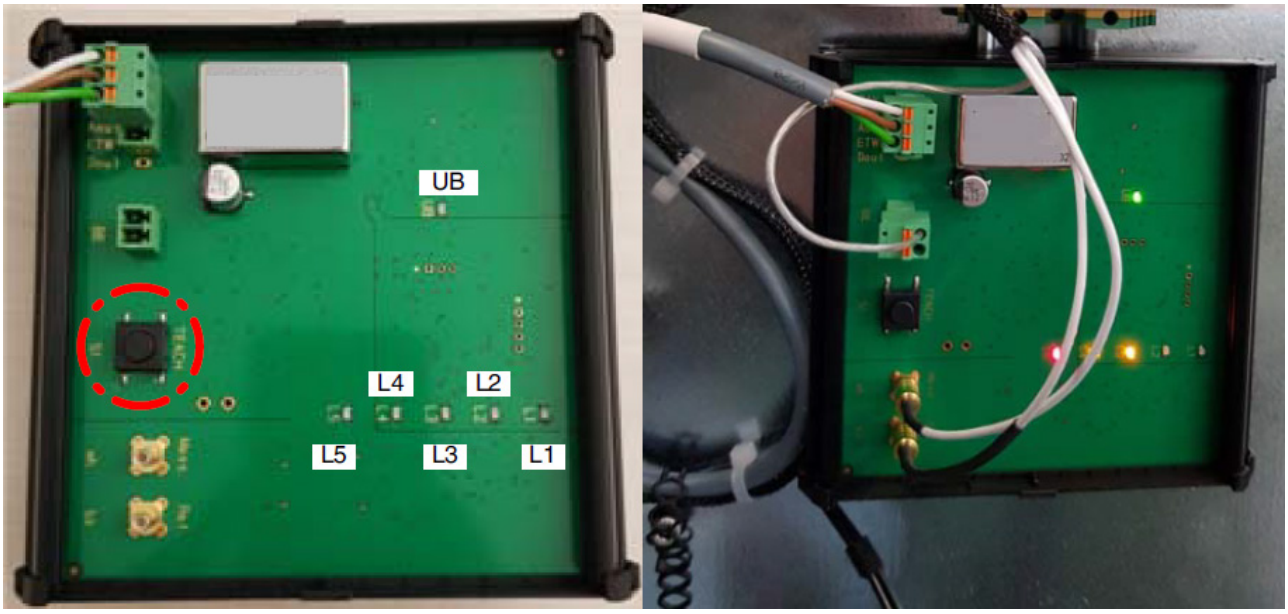


Figure 7-13

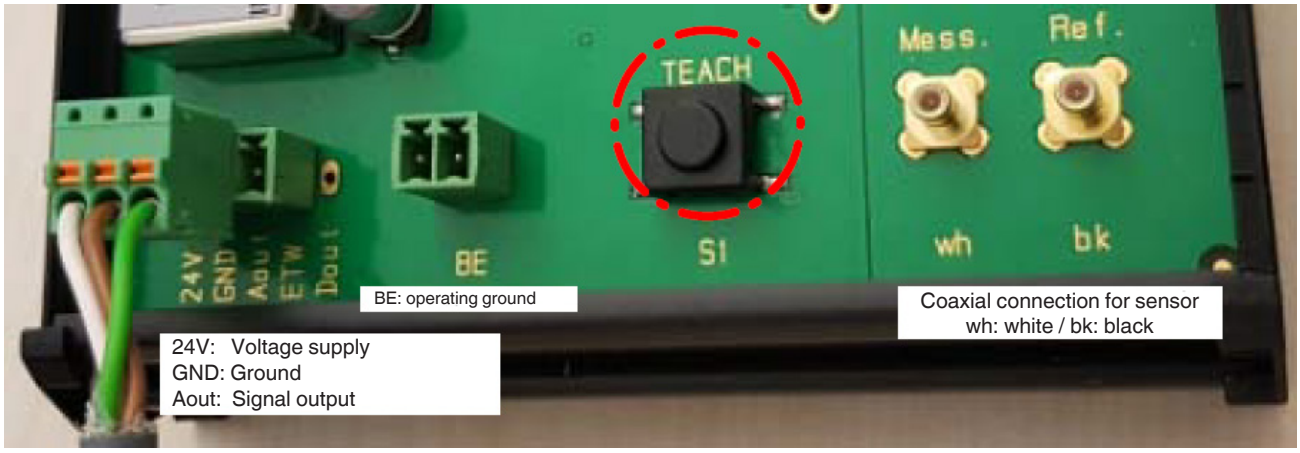
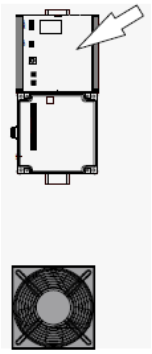


Figure 7-14 P/N 7597302

Replace Level Evaluator of Analog Sensor *(contd.)*



The evaluator is located in the electrical cabinet door.

CAUTION! Observe the label on the board. Do not mix up the sensor connecting cables; long shrink hose = black

Figure 7-15

LED (Fig. 7- 17)	Color	Meaning
UB	Green	The LED UB lights up when operating voltage is applied. The evaluator has a TEACH button. Different modes are enabled as a factor of how long the key is pressed. The LED UB indicates the respective modes by flashing in different ways.
L5	Red	Reference measuring section The LED L5 lights up as soon as the reference measuring section (area between the lower inactive section and the measuring section of the sensor) is covered with adhesive. The LED L5 flashes when a fault occurs: Calibration could not be performed. Sensor or BE (functional earth) not connected
L4 to L1	yellow	Measuring section / trend indicator Lights up when the adhesive reaches the respective sensor point NOTE: The enabled measuring range is indicated by two lines on the level sensor.

Replacing Level Evaluator of Analog Sensor *(contd.)*

Empty Calibration

WARNING! The electrical cabinet has to be energized to be able to perform the following settings with the TEACH button.

When melters are supplied with a built-in evaluator, empty calibration has already been performed by Nordson.

Prerequisites

- Level sensor is installed, fastened mechanically and connected electrically. Also refer to *Test Function*.
- Reservoir (tank) is empty
- Level sensor is clean
- Operating voltage is applied (LED UB is illuminated).

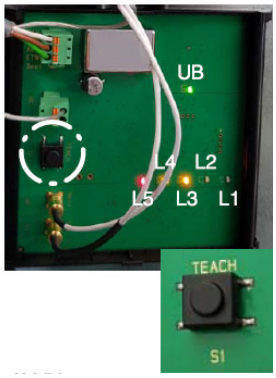


Figure 7-16

CAUTION! When calibrating, keep hands and conducting tools away from coaxial connections to prevent distortion of the signal.

1. Press the TEACH button for about five seconds, until the LED UB flashes.
2. Release the TEACH button. The green LED UB flashes quickly during calibration.

Empty calibration is completed after 30 to 40 seconds.

Restore Default Settings (Reset)

1. Press the TEACH button for about ten seconds, until the LED UB flashes in double pulses.
2. Release the TEACH button. The LED UB goes off for 1.5 seconds.

This means that the empty calibration settings have been deleted and the evaluator returned to the default. A new empty calibration is required.

3. Perform empty calibration.

Test Function

This feature checks whether the level sensor and evaluator are connected properly.

1. Press the TEACH button for longer than 15 seconds and keep it pressed during the test. The green LED UB flashes at 0.5 Hz.

During the test, the analog output signal alternates slowly between 0 and 10 VDC. The four yellow LEDs go on and off one after the other.

2. Release the TEACH button to stop the test function. Previously set values are not changed.

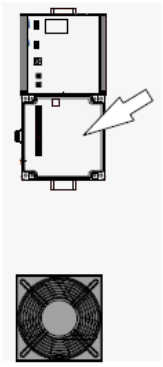
Technical Data

Degree of protection IEC60529	IP 20
Permissible ambient temperature	-25 °C to +55 °C (14 °F to 140 °F)
Operating voltage	18 ... 36 VDC
Analog output	0 to 10 V

Replace Overflow Protection Evaluator

Figure 7-17

1. LED Operating voltage (green)
2. Potentiometer P3
3. Potentiometer A
4. Triaxial socket for sensor cable
5. LED Empty (green)
6. LED Full (red)



The evaluator is located in the electrical cabinet door.

Figure 7-18

Replacing Overflow Protection Evaluator *(contd.)*

Empty Calibration

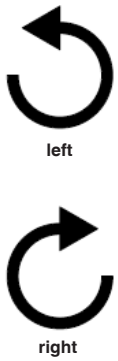


Figure 7-19 Direction

Prerequisites

- Level sensor is installed, fastened mechanically and connected electrically (observe color coding of sensor cable)
- Tank is empty (empty calibration: most sensitive setting, material irrelevant)
- Operating voltage is applied (LED Operating voltage (1) illuminated).

Broken Sensor

1. Turn potentiometer A (3) 20 revolutions to the left.
2. Turn potentiometer P3 (2) to the right until the green LED Empty (5) is off and the red LED Full (6) starts flashing.

NOTE: Skip step 2 if the LED state is already known.

3. Turn potentiometer P3 to the left to the switching point (green LED Empty on, red LED Full off).
4. From the switching point, turn one to two revolutions more to the left.

NOTE: The closer the setting is to the switching point, the more precise is the measurement. When the potentiometer P3 is turned all the way to the left, sensor break monitoring is deactivated.

5. Perform function test: Disconnect sensor cable; sensor break monitoring is triggered (red LED Full flashes).

Limit Switching Points

6. Turn potentiometer A to the right to the switching point (green LED Empty off, red LED Full on).
7. Turn back from switching point until the green LED Empty is on.

Electrical Cabinet Heat Exchanger

Install New Heat Exchanger

Figure 7-20 Details

Important Only When Retrofitting

1. Attach the circuit breaker as shown in the included wiring diagram (arrangement diagram). To ensure that all phases are loaded equally, the order shown here has to be maintained. Connect the circuit breakers using the included current bars.
2. Affix the self-adhesive seal to the back of the heat exchanger to achieve the degree of protection.
3. Install a cable duct and lay a power line into the electrical cabinet, all the way to the circuit breakers. Screw on the heat exchanger (small black arrow).
4. Attach air deflector to the inside and outside of the electrical cabinet.
5. Connect electrically as shown under *Option Heat Exchanger* on page 69 of the wiring diagram.

Section 8
Parts

Refer to separate parts document. The texts are available only in English.

Using the Illustrated Parts Lists

The following chart provides guidance for reading the parts lists.

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

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

A description of the parts, sometimes with dimensions or technical data, is contained in the column *Description*. The points in the column Description show the relationship between assemblies, subassemblies and single parts.

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

The column *Quantity* indicates how many parts of this type are used for the assembly shown in the illustration in the parts list. The abbreviation AR (as required) is used to designate that items are stated in drum sizes or that the quantity required per assembly is a factor of the product version or the model. A [w] after the quantity indicates a part that wears.

Item	Part	Description	Quantity	Note
—	0000000	Assembly A	1	
1	000000	• Part of assembly A	2	A
2	- - - - - -	• • Part of pos. 1	1	
3	0000000	• • • Part of pos. 2	AR	
NS	000000	• • • • Part of pos. 3	2 [w]	
NOTE A: Important information about 1 AR: As required NS: Not shown				

Component Designation

The electrical components are labeled in compliance with DIN EN IEC 81346-2.

Ordering Parts

To order spare parts, please call customer service or speak to your local Nordson representative. The designation and correct position of the parts can be found in the 5-column parts list and the corresponding illustrations.

Section 9
Technical Data

General Specifications

Position	Data			
Storage temperature	-45°C to +75 °C		-49 °F to +167 °F	
Min. ambient temperature	-5 °C		23 °F	
Max. ambient temperature	40 °C		104 °F	
Humidity	10 to 95 %, not condensing			
Max. operating height	3000 m		9840 ft	Above standard elevation zero
Type of heating	Cast-in electrical resistance heating elements Hopper: Heating cuff			
Possible temperature sensors	Ni120 Pt100			
- Measuring precision	± 1 °C		± 1 °F	(1 digit)
Material pressure (standard)	5 to 85 bar		500 to 8500 kPa	72.5 to 1233 psi
	The pressure control valve is preset at the factory. Default:			
	35 bar		3500 kPa	508 psi
Degree of protection	IP 54			
Motor type	3 ph AC motor			
Gear box type	Helical gear			
Noise emission L_{pA} Distance: 1 m, height: 1.1 m	Operator side (front)	Electrical cabinet door (left)	Back of melter (rear)	Filter side (right)
No motor	55.5 dB(A)	50.5 dB(A)	49.5 dB(A)	49.5 dB(A)
1 motor	58.2 dB(A)	54.5 dB(A)	54.5 dB(A)	55 dB(A)
2 motors	60.5 dB(A)	56.5 dB(A)	57.5 dB(A)	57.5 dB(A)
3 motors	61.1 dB(A)	57.9 dB(A)	58.5 dB(A)	58.5 dB(A)
4 motors	62.2 dB(A)	59 dB(A)	60 dB(A)	60 dB(A)

General Specifications *(contd.)*

Position	Data	
Motor/pump speed setting range	1.0 to 100 rpm NOTE: To prevent excessive wear, the motor/pump speed should not continuously fall below 5 rpm or continuously exceed 80 rpm. In speed-controlled mode the pump is no longer adequately lubricated when the speed is too low. With pressure control, in production mode speeds lower than the specified 5 rpm may be needed to maintain the preliminary pressure, e.g. for a downstream metering station. This is not a problem as the adhesive pressure ensures adequate lubrication.	
Heatup time	Box 21 = N, P	< 45 min
Melting capacity	1 full tank per hour	

Temperatures

CAUTION! The maximum operating temperature of the installed applicator and other heated components should be considered when setting temperatures on the melter control device.

CAUTION! Observe adhesive flash point temperature:

Depending on the switching temperature of the installed tank thermostats, use only adhesives with a flash point at least 10 °C (18 °F) above the thermostat switching temperature.

The flash point temperature of the adhesive can be found in the corresponding data sheet provided by the adhesive manufacturer; otherwise ask the adhesive manufacturer.

Position	Data		
Min. operating temperature (setpoint)	40 °C	100 °F	
Max. operating temperatures	Box 21 = N	230 °C 450 °F	Ni120
	Box 21 = P	230 °C 450 °F	Pt100
Overtemperature shutdown by tank thermostat	Box 21 = N	260 °C 500 °F	Ni120
	Box 21 = P	260 °C 500 °F	Pt100
Shutdown by transformer thermostat	155 ± 5 °C	311 ± 9 °F	
Max. operating temperature of filling valve	230 °C	450 °F	

Electrical Specifications

Position	Data
Electrical connection	230 V_{AC}
	230 V_{AC}, 3 φ, PE (3 ph. delta), 50/60 Hz
	400 V_{AC}, 3 φ, N/PE (3 ph. WYE), 50/60 Hz
With transformer	400 V_{AC}, 3 φ, PE (3 ph. delta), 50/60 Hz
	480 V_{AC}, 3 φ, PE (3 ph. delta), 50/60 Hz
Input voltage tolerance	±10%
	Network and interface XS2, XS2.1
Short-circuit current rating (SCCR)	10 kA
Melter fuse protection	Refer to ID plate
Key-to-line	0 - 10 V_{DC}
Max. input at interface XS5.x	0 to 20 mA
	4 to 20 mA

Max. Melter Load

Box 3 = B, C, D, E: Without Accessories

Box 6 - 8	012	025	050	100, 10H
All data at 230 V_{AC}				Only box 3: D, E
With 1 motor	6850 W	7480 W	12805 W	21540 W
With 2 motors	7650 W	8280 W	13605 W	22340 W
With 3 motors	8450 W	9080 W	14405 W	23140 W
With 4 motors	9250 W	9880 W	15205 W	23940 W

Box 3 = B, C: With Accessories

Box 6 - 8	012	025	050
All data at 230 V_{AC}	*Max. 6 hose/applicator pairs		
Total	10800 W		
Per pair*	2000 W		
Per channel	1800 W		

Box 3 = D, E: With Accessories

Box 6 - 8	025	050	100, 10H
All data at 230 V_{AC}	*Max. 8 hose/applicator pairs		
Total	14400 W		
Per pair*	4000 W		
Per channel	2000 W		

Mechanical Data

Platforms 2 and 3

The melters are available with two different surface areas, also referred to as platforms. They are defined by box 3. Depending on the surface area, different tank sizes are possible; some include a hopper (heated tank extension).

Platform (PF)	Melter configuration Box 3 (tank size)			
Size 2	A	25 / 50 l	B, C	12 / 25 / 50 l
Size 3	A	100 l	D, E	25 / 50 / 100 l

Transformer Weight

PF	P/N	Net weight	Nominal voltage in/out Rated power
2	6082472	66.5 kg	480/400V_{AC} 25.4 kVA
3	6082474	81 kg	480/400V_{AC} 38.1 kVA

Box 3 = B, C: Melters with 12-, 25- or 50-liter Tank

Tank size			
Technical data	**012**	**025**	**050**
Weight of empty melter** (Melter with two pumps, without transformer, without packaging)	Approx. 225 kg	Approx. 250 kg	Approx. 275 kg
Capacity	15 l	29 l	50 l
Tank opening – mm (inches)	165 × 191	160 × 359	230 × 460
Tank opening with filling valve	-	160 × 205	230 × 308

** Refer to consignment note for exact weight

Box 3 = D, E: Melters with 25-, 50- or 100-liter Tank

Tank size			
Technical data	**025**	**050**	**100**
Weight of empty melter** (Melter with two pumps, without transformer, without packaging)	Approx. 265 kg	Approx. 290 kg	Approx. 360 kg
Capacity	29 l	50 l	97 l
Tank opening – mm (inches)	160 × 359	230 × 460	306 × 685
Tank opening with filling valve	160 × 205	230 × 308	306 × 419

** Refer to consignment note for exact weight

Box 3 = D, E: Melters with 10H*-liter Tank

*H= Hopper / warm tank extension

Tank size	
Technical data	**10H**
Weight of empty melter** (Melter with two pumps, without transformer, without packaging)	Approx. 375 kg
Capacity	147 l (97+50)
Tank opening – mm (inches)	306 × 685 (12 × 19)

** Refer to consignment note for exact weight

Melter Dimensions

Melter type		**Length**		**Width**	**Height**	
Box 3	Box 6 - 8	L_1	L_2	W	H_1	H_2
B, C	012	1110 mm 44 in.	2045 mm 81 in.	790 mm 31 in.	1665 mm	1575 mm
	025					
	050					
	25H					
	50H					
D, E	025	1194 mm 47 in.	2630 mm 103.5 in.	1029 mm 41 in.	1660	1634 mm
	050					
	100					
	25H					
	50H					
	10H					

NOTE: L_1: Melter closed, L_2: Melter open

NOTE: H_1 Melter with light tower is the highest

NOTE: H_2 Melter with tank lid open is the highest

Melter Dimensions *(contd.)*

Melter Types B and C

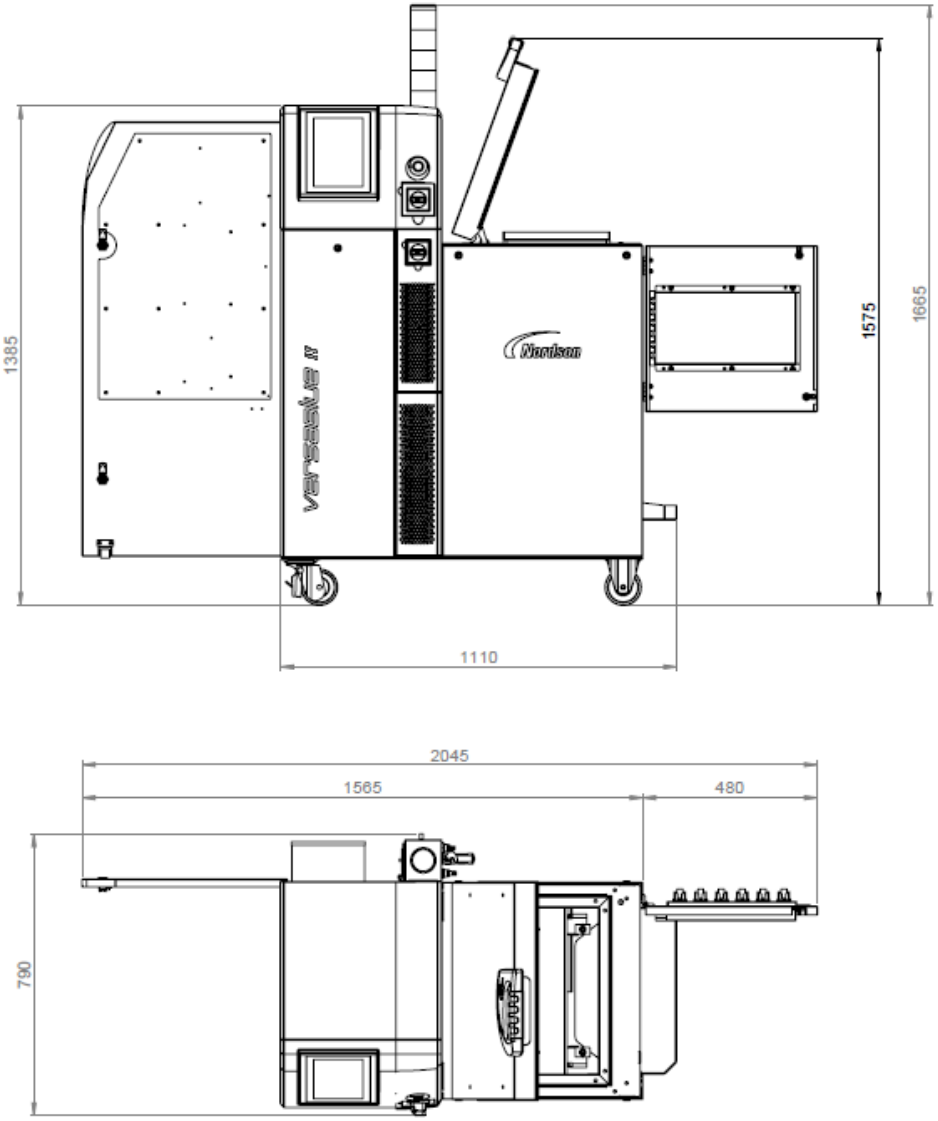


Figure 9-1 Melter types B and C: Outer dimensions, front view and top view

Melter Types D and E

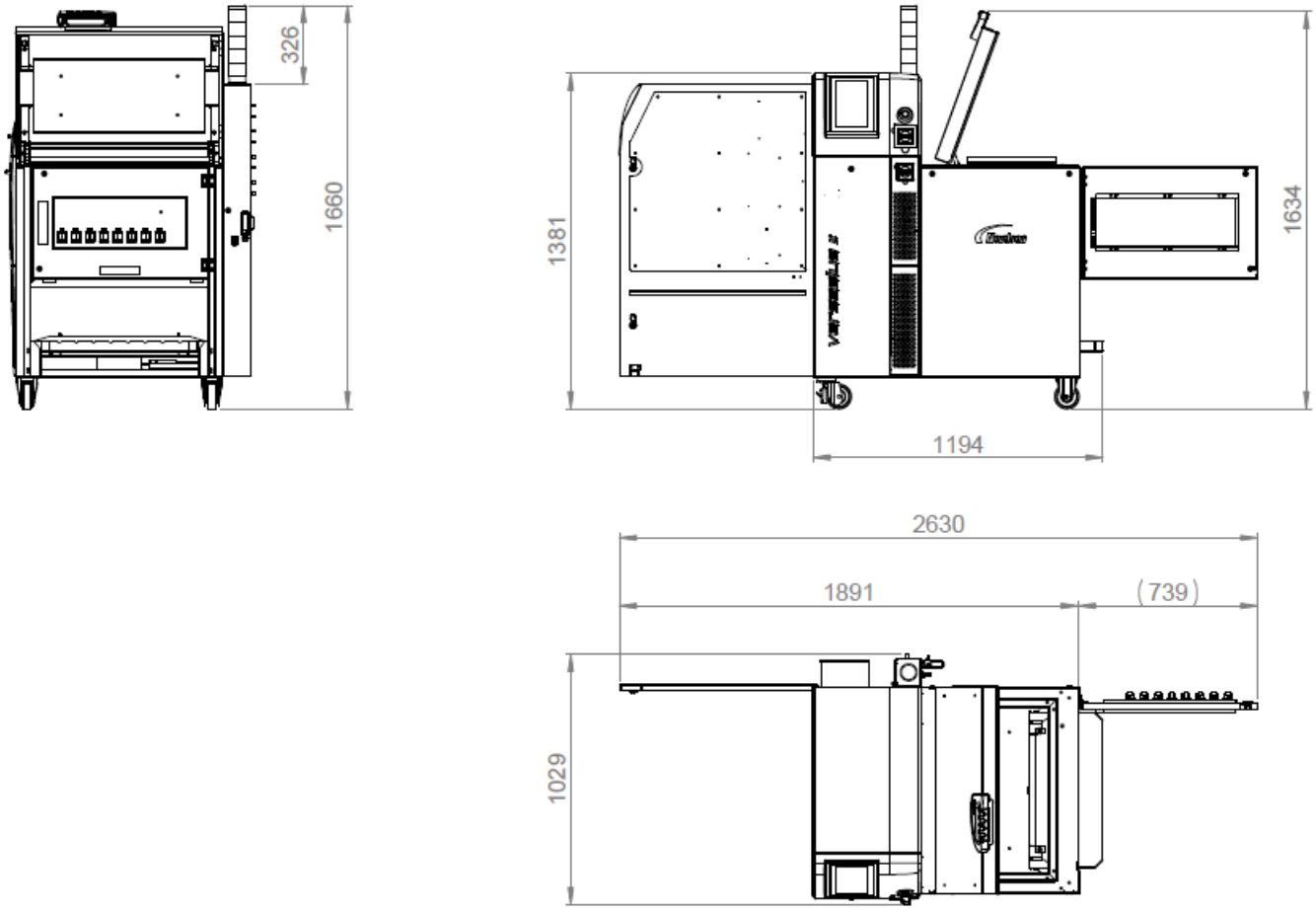


Figure 9-2 Melters D and E: Outer dimensions, side view, front view and top view