Adhesive Melters
VersaPUR-S

for Slugs

Manual P/N 7179482_04
- English -

Edition 01/19

NORDSON ENGINEERING GMBH • LÜNEBURG • GERMANY

Note
This document applies to the entire series.

Order number
P/N = Order number for Nordson articles

❯ http://www.nordson.com/en/global-directory

Table of Contents

Section 1
Safety

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

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

Safety Alert Symbols

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

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

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

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

Responsibilities of the Equipment Owner

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

Safety Information

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

Instructions, Requirements, and Standards

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

User Qualifications

Equipment owners are responsible for ensuring that users:

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

  NOTE: Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information

- possess industry- and trade-specific skills and a level of experience appropriate to their job function
- are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities

Applicable Industry Safety Practices

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

Intended Use of the Equipment

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

Instructions and Safety Messages

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

Installation Practices

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

Operating Practices

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

Maintenance and Repair Practices

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

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

Equipment Safety Information

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

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

Equipment Shutdown

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

Relieving System Hydraulic Pressure

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

De-energizing the System

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

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

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

Disabling the Applicators

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

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

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

General Safety Warnings and Cautions

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

Equipment types are designated in Table 1-1 as follows:

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

PC = Process control

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

Table 1-1 General Safety Warnings and Cautions

Equipment Type	Warning or Caution
HM	 **WARNING!** Hazardous vapors! Before processing any polyurethane reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's MSDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with MSDS requirements can cause personal injury, including death.
HM	 **WARNING!** Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and applicators contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.
HM, CA	 **WARNING!** System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt or cold adhesive, causing personal injury.

Continued...

General Safety Warnings and Cautions (contd.)

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

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

Continued...

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

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

Other Safety Precautions

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

First Aid

If molten hot melt comes in contact with your skin:

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

Safety Labels and Tags

Figure 1-1 shows the location of the safety labels and tags that are affixed to the melter. Table 1-2 provides the text of any safety instruction that appears on the labels as well as the meaning of the symbols that appear without any safety message.

The text on a label may be covered with a new sticker to comply with local regulations.

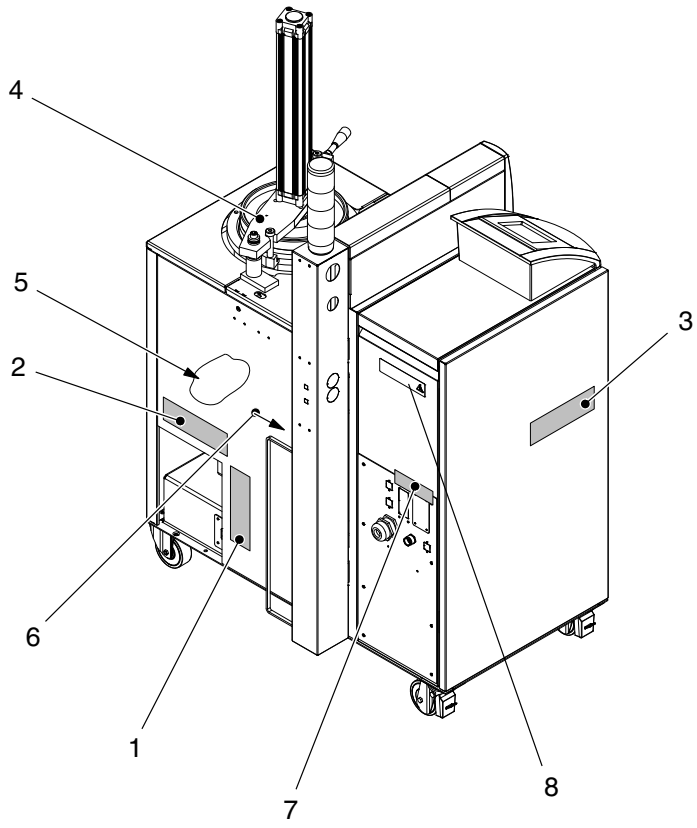
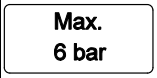
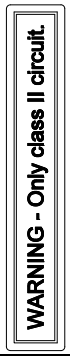


Fig. 1-1 Location of safety labels and tags

Continued ...

Table 1-2 Safety labels and tags

Position	P/N	Description	
1+2+3	1059866		1 set of labels, multi-lingual
1	1100252		**ATTENTION:** Hot adhesive. Relieve pressure. System and material pressurized. Relieve system pressure. Failure to observe can result in serious burns.
2	1100254		**CAUTION:** Hot surface. Failure to observe can cause burns.
3	1025795		**ATTENTION:** Risk of electrical shock. Failure to observe may result in personal injury, death, or equipment damage.
4	455754		**CAUTION:**Risk of squash! Failure to observe can cause hand injuries.
5	290083		**ATTENTION:** Risk of electrical shock. Failure to observe may result in personal injury, death, or equipment damage.
6	729077		Maximum inlet pressure (in this case: compressed air)
7	7104911		*WARNING - Only class II circuit.* NEC (National Electrical Code)
8			ID plate

Section 2
Introduction

Intended Use

Adhesive melters of the series *VersaPUR-S* may be used only to melt and convey polyurethane hot melt adhesives (PUR) from foil bags.

Any other use is considered to be unintended. Nordson will not be liable for personal injury and/or property damage resulting from unintended use.

Intended use includes the observance of Nordson safety instructions. Nordson recommends obtaining detailed information on the materials to be used.

Area of Use (EMC)

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

Operating Restrictions

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

Unintended Use - Examples -

The melter may not be used under the following conditions:

- In defective condition
- Without protective panels
- With electrical cabinet door open
- With tank lid open
- In a potentially explosive atmosphere
- When the values stated under *Technical Data* are not complied with.

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

- Explosive and flammable materials
- Erosive and corrosive materials
- Food products.

Residual Risks

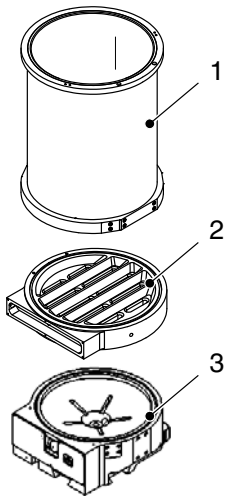
In the design of the melter, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided:

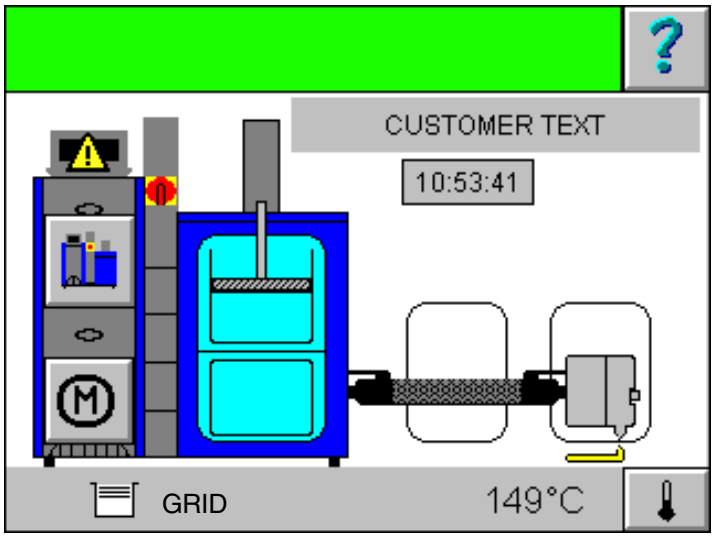
- Risk of burns from hot material
- Risk of burns when filling the tank and from the tank lid
- Risk of burns when conducting maintenance and repair work for which the melter must be heated up
- Risk of burns when attaching and removing heated hoses
- Material fumes can be hazardous. Avoid inhalation
- 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
- The safety valve may malfunction due to hardened or charred material.

Note on Manual

Features that the customer may not have purchased - depending on the configuration of the melter - are also described in the section *Operation*. In this case they are not visible on the control panel.

Tank Parts



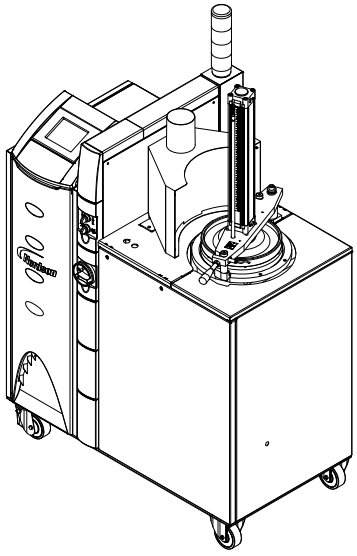


1 Tank extension, or: TANK

2 GRID

3 RESERVOIR

Definition of Terms



Operating side
(= front)

Interface Standard I/O

Component designation: XS 2

The interface transmits the digital input/output signals between the parent machine and the Nordson melter.

Interface Key-to-line

Component designation: XS5 or XS5.1 and XS5.2 with the option *Separate line speed signal inputs.*

NOTE: *Key-to-line* is also referred to as *Automatic mode* in Nordson literature.

In key-to-line the motor/pump speed is proportional to the speed of the parent machine.

Encoder

The encoder compiles the line speed of the parent machine. It supplies a certain number of electrical pulses per revolution. The frequency is a measure of line speed.

CAUTION: The cable length may not be modified; this could cause incorrect evaluation of the line speed, resulting in incorrect material applications.

Application Head = Applicator = Gun

In Nordson literature, an *Applicator* is also referred to as *Application head* or *Gun*.

Safety Valve Plate / Pump Block

The safety valve plate and the pump block together form an assembly, which is hereafter referred to as the safety valve plate.

Residual Current Device (RCD)

In this manual the term *Residual current circuit breaker* is still used.

Symbols

Original state

Nordson default

Original setting of parameters that can be reset to the defaults by touching .

Reset

Melter Description

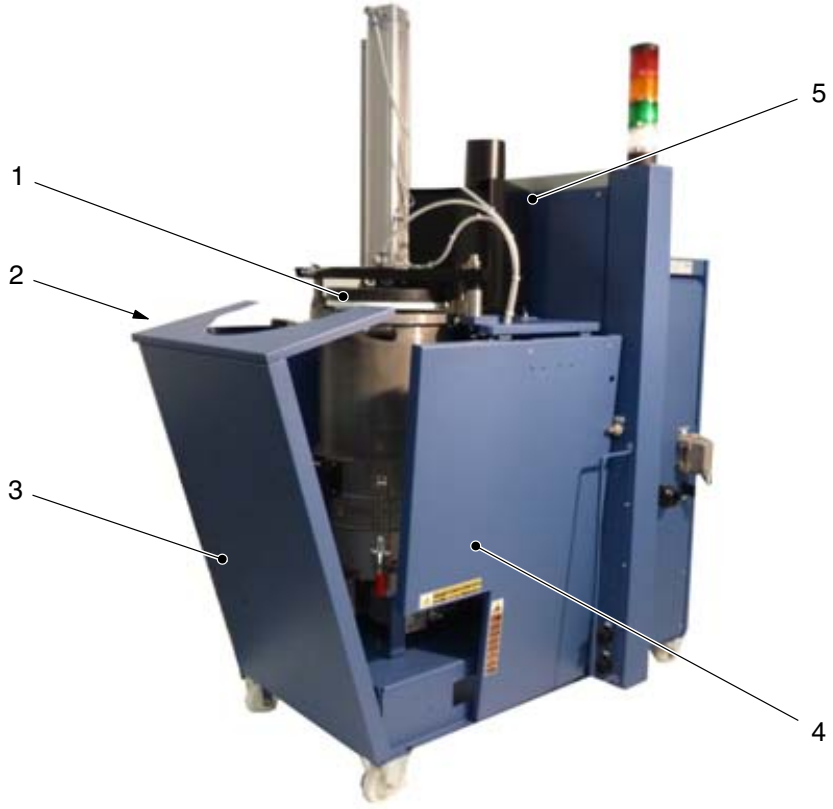


Fig. 2-1 Removable panels, hinged tank hood and swiveling tank lid

1 Tank lid
2 Front protective panel (hidden)
3 Side protective panel (open)
4 Rear protective panel
5 Exhaust hood

Exterior View

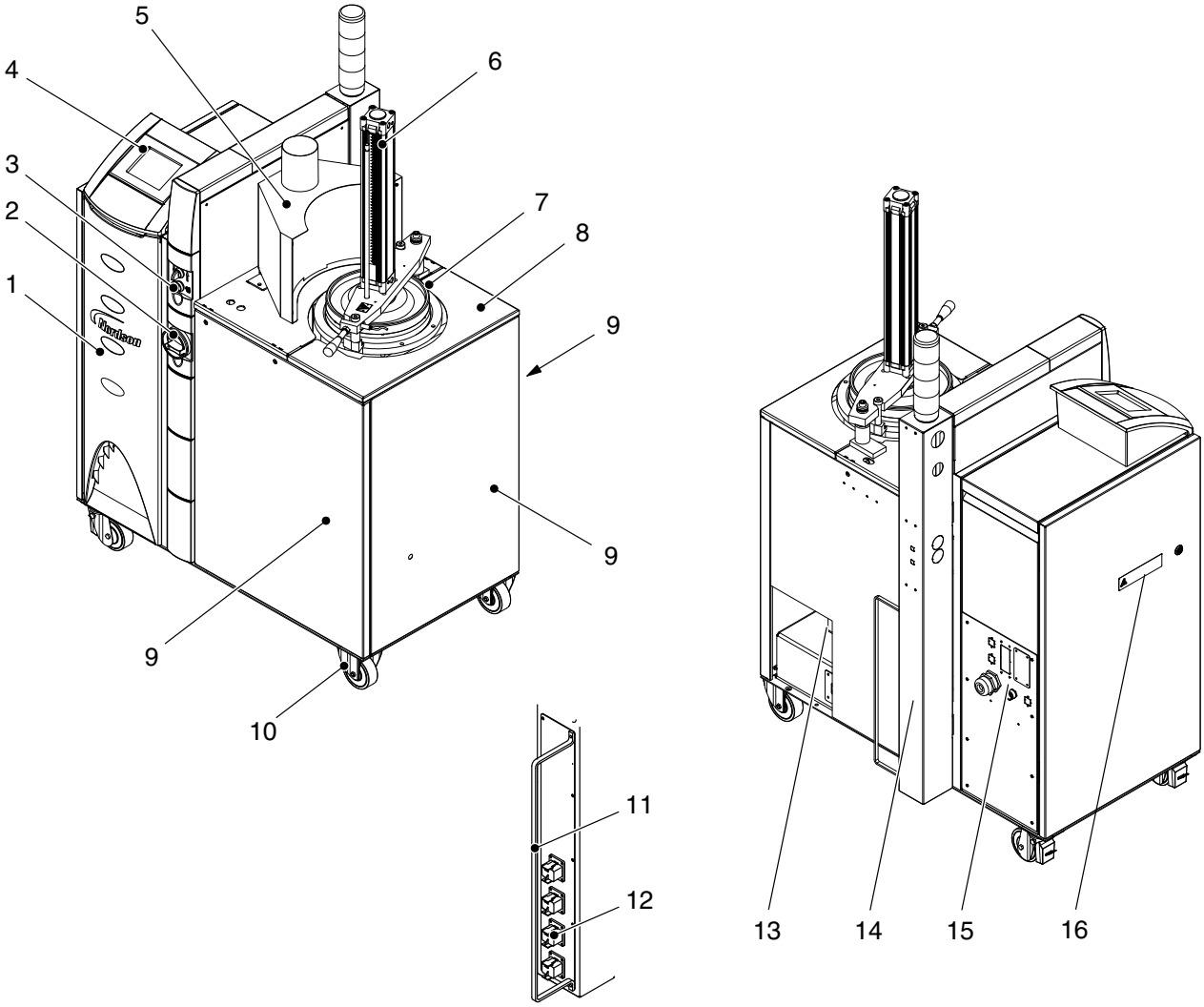


Fig. 2-2 VersaPUR-S

1 Electrical cabinet
2 Main switch
3 Platen switch
4 Control panel
5 Exhaust hood
6 Platen
7 Tank lid
8 Cover plate, removable
9 Protective panel, removable
10 Casters (option)
11 Protective bar
12 Hose receptacles
13 Manifold
14 Tower with compressed air connection
15 Interface receptacles (XS2, network, and others)
16 ID plate

Interior Components

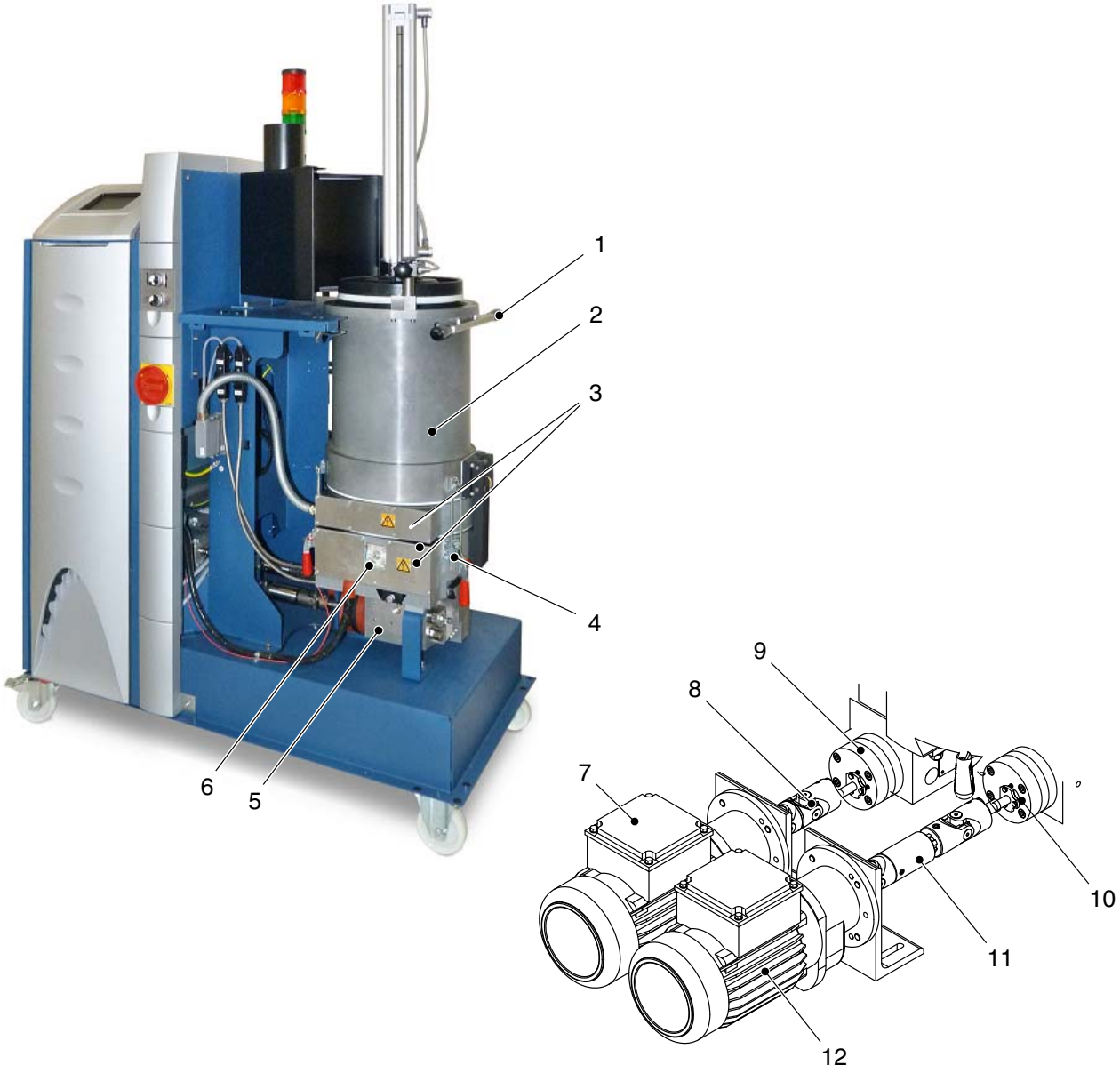


Fig. 2-3

1 Handle
2 Tank
3 Electrical equipment cover
4 Fastener (4x)
5 Safety valve plate (example with pneum. pressure control valve)
6 Tank isolation valve
7 Motor 1
8 Cardon joint 1
9 Pump 1
10 Pump 2
11 Cardan joint 2
12 Motor 2

Melt-on-Demand (MOD)

The melter automatically melts the amount of material from the slug that is needed to keep the reservoir full. The tank itself is not heated. This way the contents of the slug remain solid.

When a certain level is reached in the reservoir (upper switching point of level sensor), the melting plate is automatically deactivated and the pressure switched off.

The reservoir volume (1.3 l) ensures continuous adhesive dispensing, even when the slug is changed. If the level falls below the lower switching point of the level sensor, the pump runs only for an internally calculated number of revolutions.

The level sensor is continuously monitored. The level sensor sends the signals *Melt-on-Demand (MOD)* and *Reservoir empty* to the control unit.

If no adhesive is added, the message *Reservoir empty* appears on the control panel of the IPC. The IPC switches off the motors in this case.

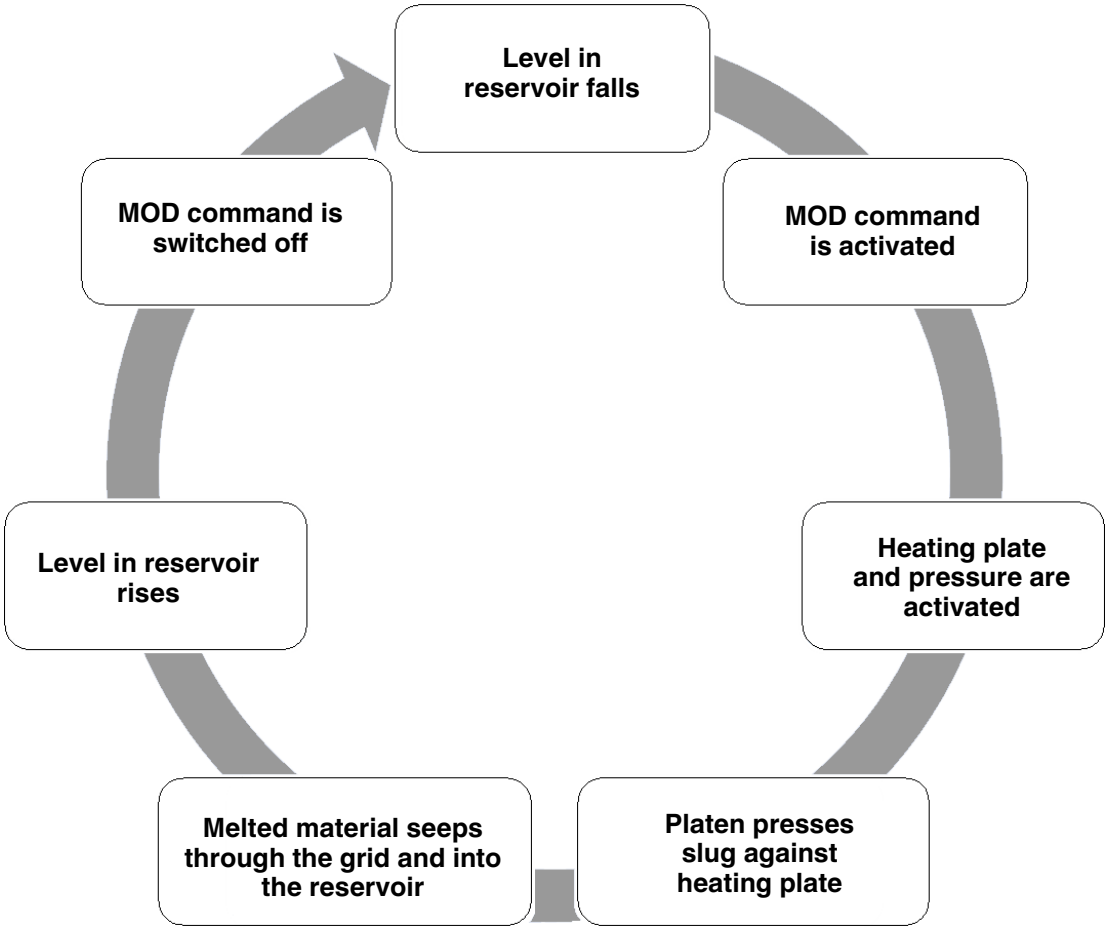


Fig. 2-4 Melt-on-Demand: a cyclical process

Tank Isolation Valve

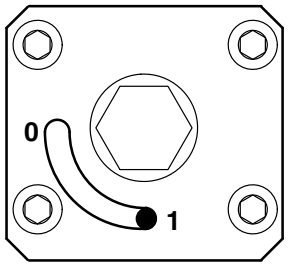


Fig. 2-5

The tank isolation valve enables replacement of the pump without first emptying the tank.

NOTE: Operate the tank isolation valve only when the melter is heated to operating temperature.

Pin in position ***0***: Closed

Pin in position ***1***: Open

Safety Valve Plate

For control purposes, the heated manifold belongs to the reservoir.

The safety valve plate can be slid in the groove to perform maintenance and repair work. Refer to section *Maintenance, Releasing Safety Valve Plate* and *Securing Safety Valve Plate.*

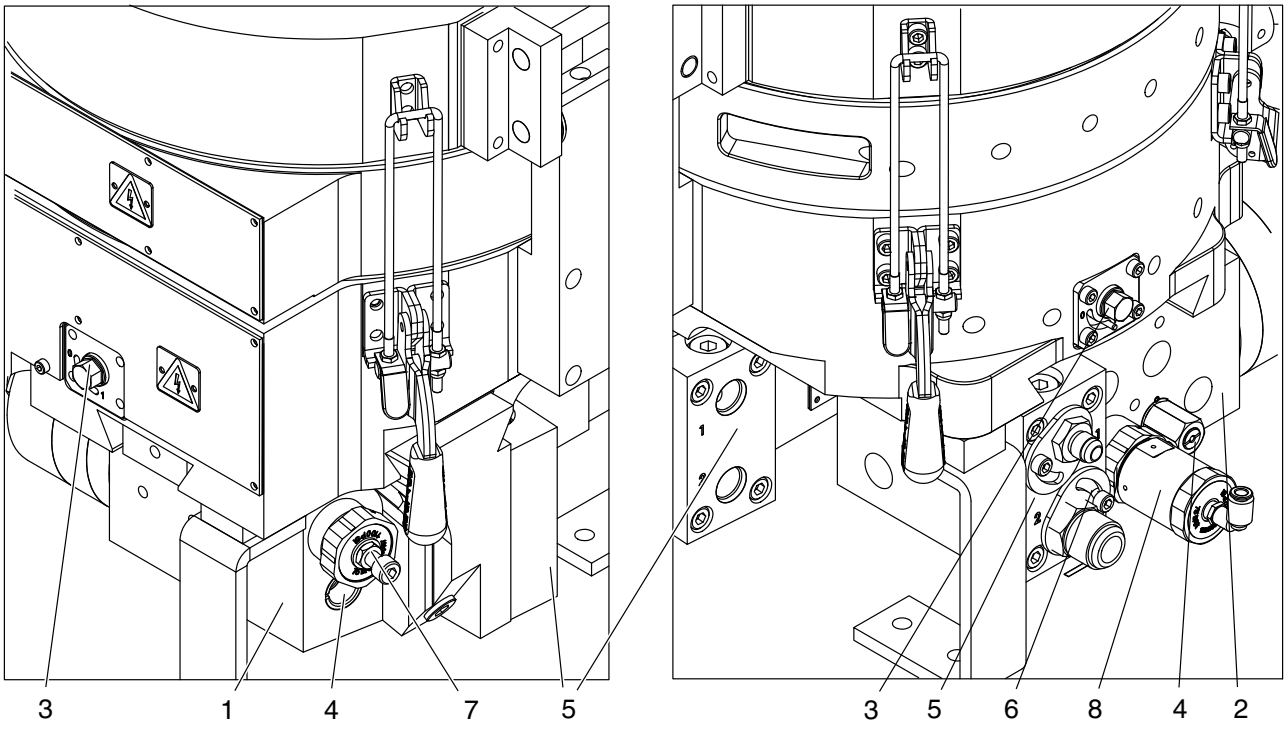
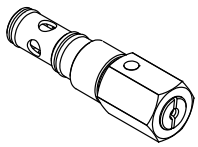


Fig. 2-6

1 Safety valve plate 1
2 Safety valve plate 2
3 Tank isolation valve
4 Safety valve
5 Manifold
6 Hose connection with anti-twist device
7 Mechanical pressure control valve
8 Pneumatic pressure control valve



Safety Valve

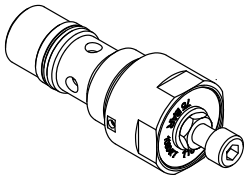
The standard safety valve is fixed at

85 bar	8500 kPa	1235 psi.

When the pressure is exceeded, the safety valve opens, allowing the material to circulate within the safety valve plate.

Pressure Control Valves

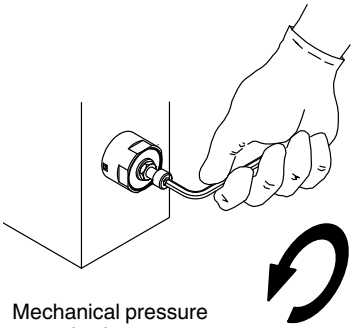
Mechanical Pressure Control Valve



The mechanical pressure control valve (illustration) can be manually adjusted up to

75 bar	7500 kPa	1100 psi.

The pneumatic pressure control valve replaces the mechanical pressure control valve with some options.



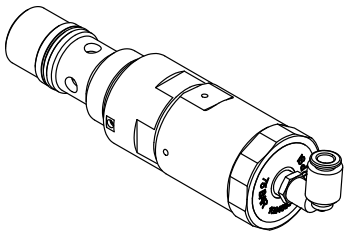
Mechanical pressure control valve

Fig. 2-7
Reduce pressure

Plug

With the option *Pressure control*, the bore for the pressure control valve is sealed with a plug.

Pneumatic Pressure Control Valve



The pneumatic pressure control valves used with the options *Automatic pneumatic pressure control* and *Bypass control* are not pressurized until temperature enable has occurred. This prevents excessive adhesive pressure from building up during the heatup phase.

For this purpose, electrical triggering is linked to the signal *System ready*, which is also used for the light tower.

Options

Exhaust Hood

The fumes that are produced when polyurethane hot melt adhesives (PUR) are processed should be suctioned off directly at the tank. There is an integrated exhaust hood (1) for this purpose.

The exhaust hood must be connected to the customer's exhaust device.

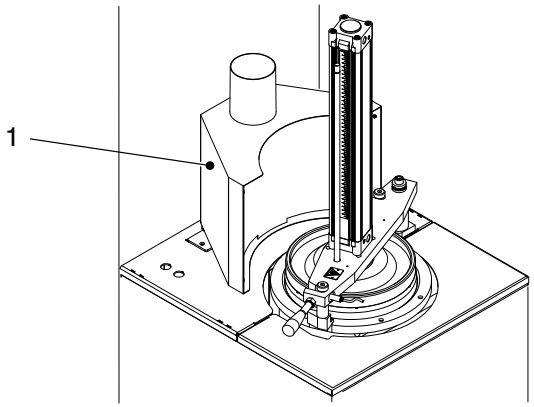


Fig. 2-8

Coupling with Anti-reverse Lock

The coupling is located between the cardan joint and the motor. It prevents the pump from turning backwards when the motor stops.

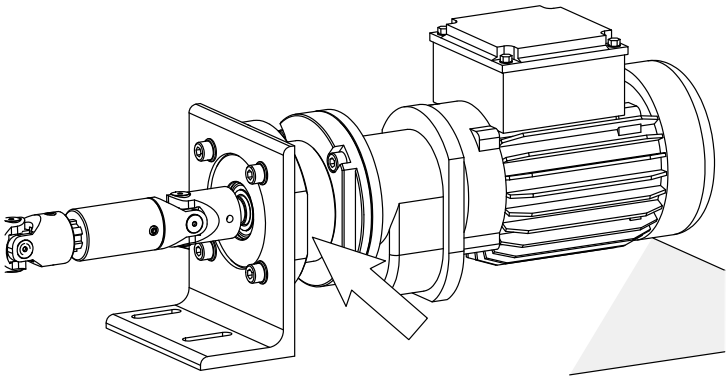


Fig. 2-9

Pressure Sensors for Pressure Display / Pressure Control

The sensing elements for the pressure sensors (1b) for material outlet pressure are located in the manifolds.

The pressure sensor measuring transducers (1a) are mounted on a bracket.

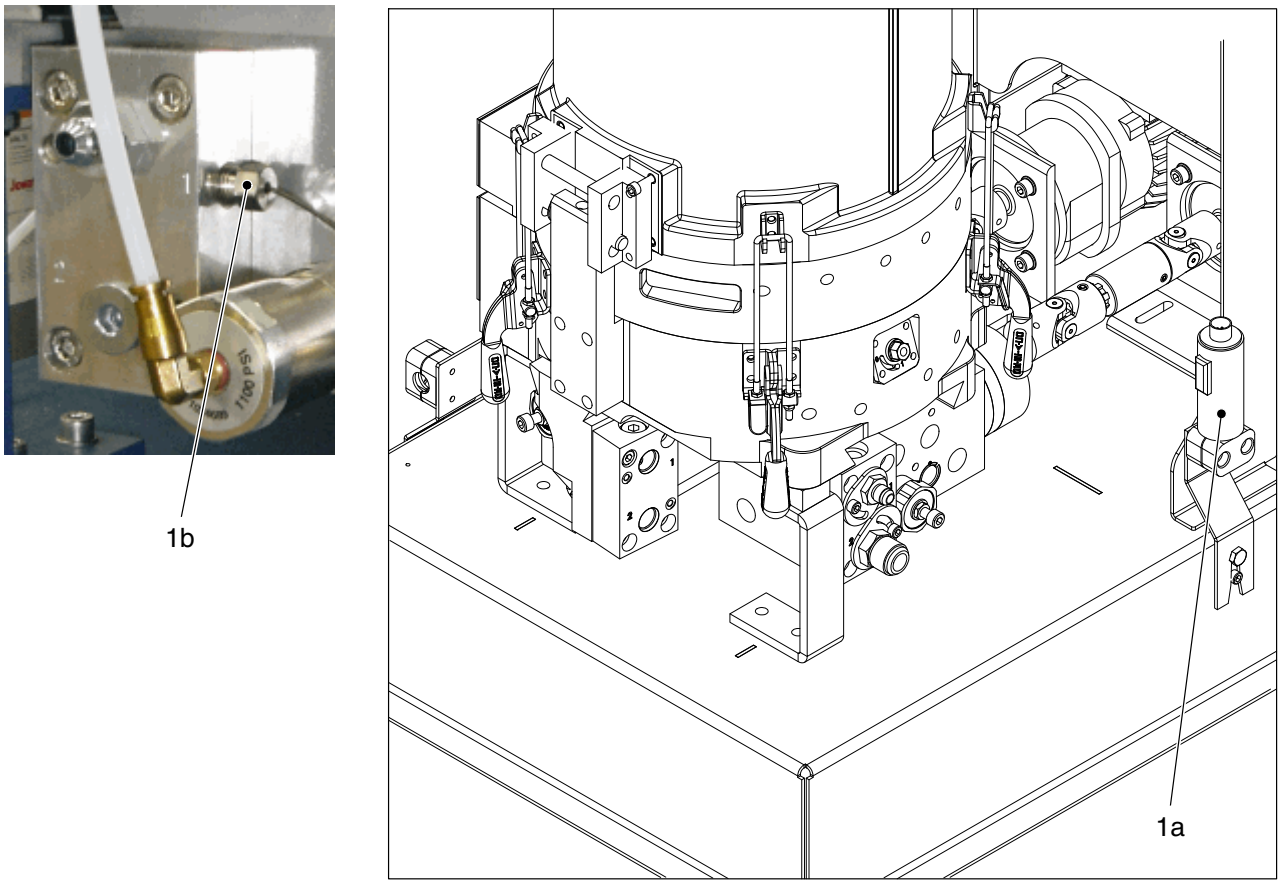


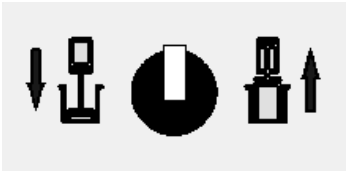
Fig. 2-10

Casters

The melter can be equipped with casters (2 fixed, 2 swiveling).

Electrical Cabinet

Selectors in Tower



Raise/Lower Platen

Position *Middle* (as shown): The feature is switched off.

Requirements for *Raise platen*

- The tank lid is closed

  AND
- The *Slug empty* detection is activated.

The warning *Slug empty* appears on the control panel of the IPC and the platen moves up automatically.

As soon as the tank lid is swiveled out, the warning is automatically reset.

Position *Lower* (left) and *Raise* (right)

The platen can be raised and lowered manually only when the mode switch Manual/Auto is set to manual mode.

Platen Manual Mode / Platen Automatic Mode

Position *Middle* (as shown): The feature is switched off.

Position *Platen Manual Mode*

The platen can be controlled manually with the switch *Raise/lower platen*.

In this position one can e.g. raise the platen even if the slug is not yet empty, such as to change the type of adhesive.

Prerequisite: The tank lid is closed.

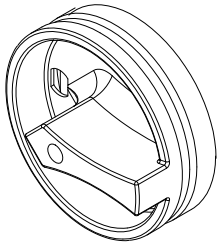
Position *Platen Automatic Mode*

The platen is automatically lowered when the prerequisites for *Lower platen* are met:

- The tank lid is closed AND the *Melt-on-Demand* feature is activated

  OR
- The tank lid is closed AND the position *Automatic mode* is selected within the next 30 s.

Main Switch



The standard model of the main switch is red/yellow and 3-pin.

NOTE: The main switch must always be set to I/ON when using the seven-day clock.

Used to switch the melter on and off.

Position 0/OFF = Melter is switched off.

Position I/ON = Melter is switched on.

Padlocks can be used to protect the main switch from unauthorized access.

Electrical Cabinet Ventilation

The electrical cabinet ventilation (fan with filter) reduces the temperature inside of the electrical cabinet. The filters must be serviced regularly.

Hose Receptacles

Used to connect two heating zones each (hose and applicator). Depending on the configuration, up to six receptacles are possible.

Interface XS 2

Standard I/O (XS2): Transmits the digital input/output signals between the parent machine and the Nordson melter.

Serves as the connection between the melter and external devices.

Interface Key-to-line

Key-to-line mode: Component designation XS5.1 and XS5.2 with two pumps.

NOTE: *Key-to-line* is also referred to as *Automatic mode* in Nordson literature.

In key-to-line the motor/pump speed is proportional to the speed of the parent machine.

The line speed voltage can be supplied e.g. by a tach generator (accessory) driven by the parent machine.

Interface Assignment

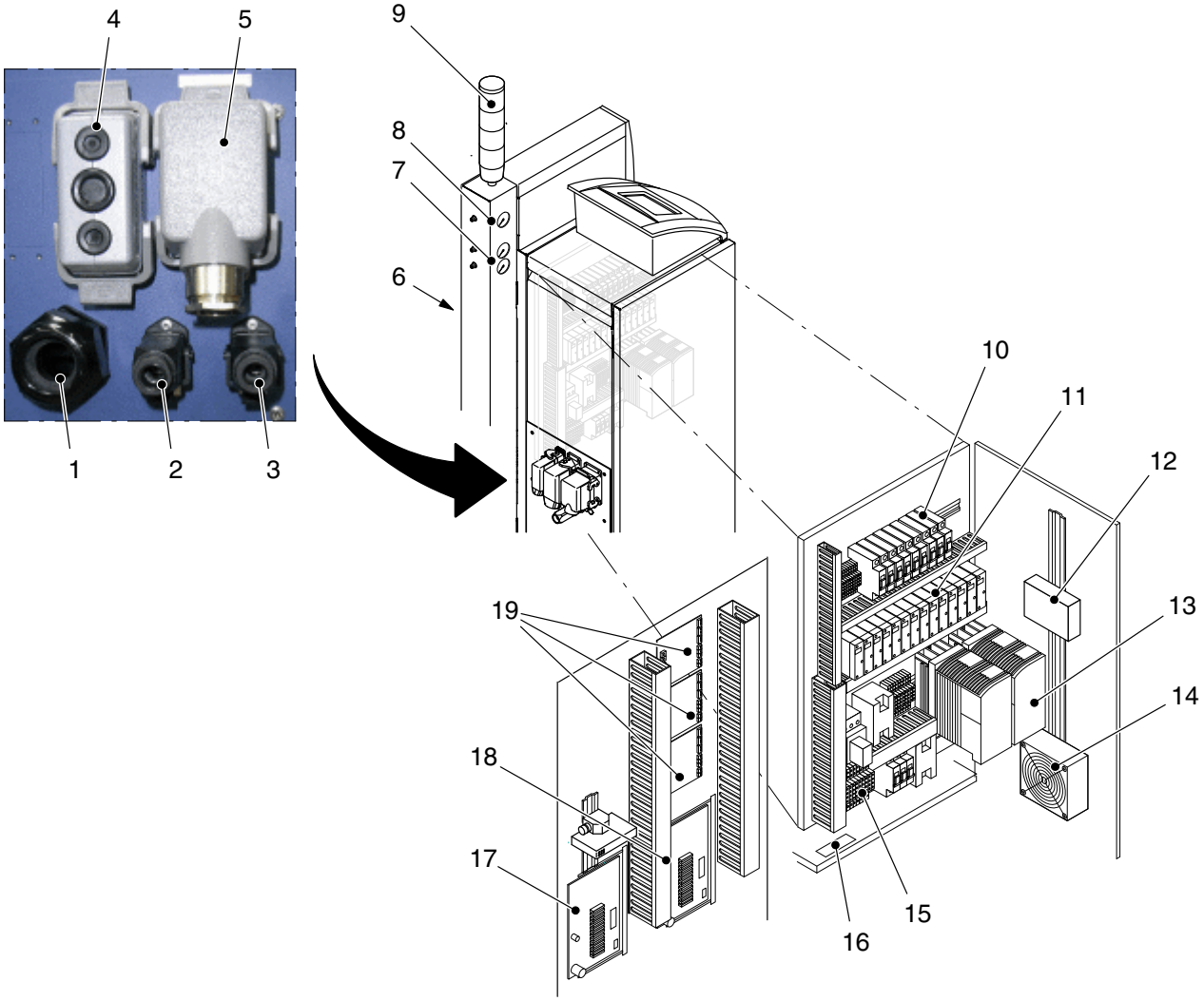


Fig. 2-11

1 Cable gland *Power supply*
2 Interface *Separate line speed voltage* Motor 2
3 Interface *Key-to-line*
4 Cable duct *Field bus* (option)
5 Interface *Standard I/O*
6 Interface *Pneumatic pressure control* and *Bypass control* (option)
7 Pressure displays *Pneumatic bypass pump 1 and 2* (option)
8 Pressure display *Platen control*
9 Light tower (option)
10 Circuit breakers
11 Solid state relay
12 Level evaluator
13 Motor controller
14 Fan
15 Mains terminals
16 ID plate
17 I/O board 2
18 I/O board 1
19 Temperature control board

Electrical Cabinet - Options

Light Tower

Four colors. Indicates operating mode of melter: ready, warning, fault or shutdown. Refer to section *Troubleshooting*.

Field Bus Interface

The field bus interface XSD (Profibus-DP, EtherNet/IP, ControlNet, ProfiNet I/O) enables operation by a higher-ranking control unit.

The different field bus interfaces are described in a separate document.

Main Switch

Refer to the configuration code in section 8 for additional models (black or red, 3-pin or 4-pin).

ID Plate

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

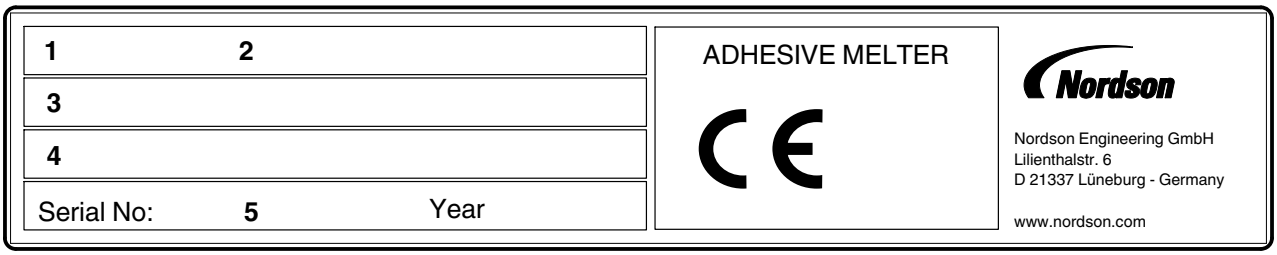
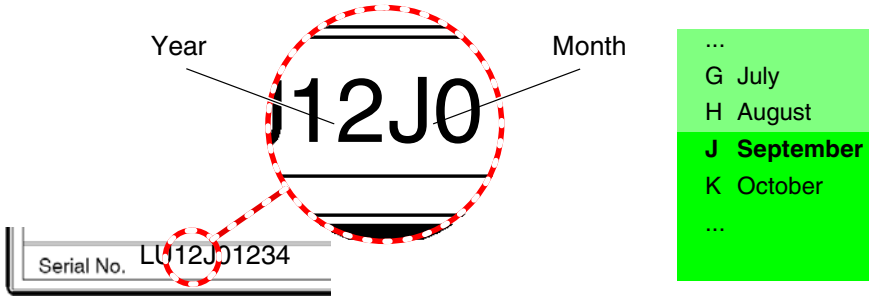


Fig. 2-12 Example

1	Melter designation
2	Order number
3	Configuration code
4	Electrical connection, operating voltage, line voltage frequency, melter fuse protection
5	Serial number  **NOTE:** The year and month of production are indicated within the serial number.
6	Year of construction

Section 3
Installation

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

Transport

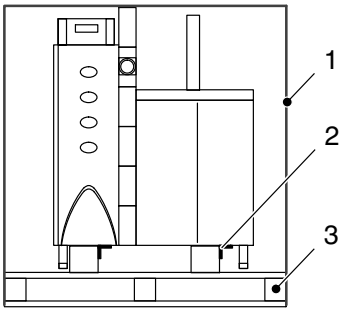


Fig. 3-1
Principle drawing

- Refer to section *Technical Data* for weight. Use only suitable transport devices.
- If possible, use the pallet (3) that came with the melter and use angle brackets (2) to fasten the melter.
- Use a sturdy box (1) or the folding box (4) to protect from damage.
- Protect from humidity and dust.
- Avoid jolts and vibrations.

Storage

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

Unpacking

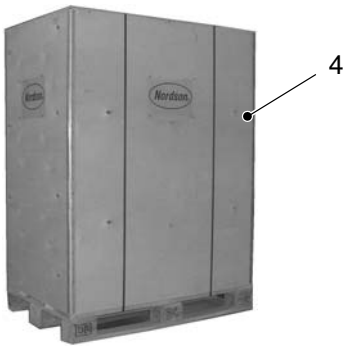


Fig. 3-2

Unpack carefully and check for damage caused during transport. Save pallet, angle brackets and box for later use, or dispose of it properly according to local regulations.

Lifting (Unpacked Melter)

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

Installation Requirements

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.

Space Requirement

NOTE: *) For minimum bending radius refer to the hose manual

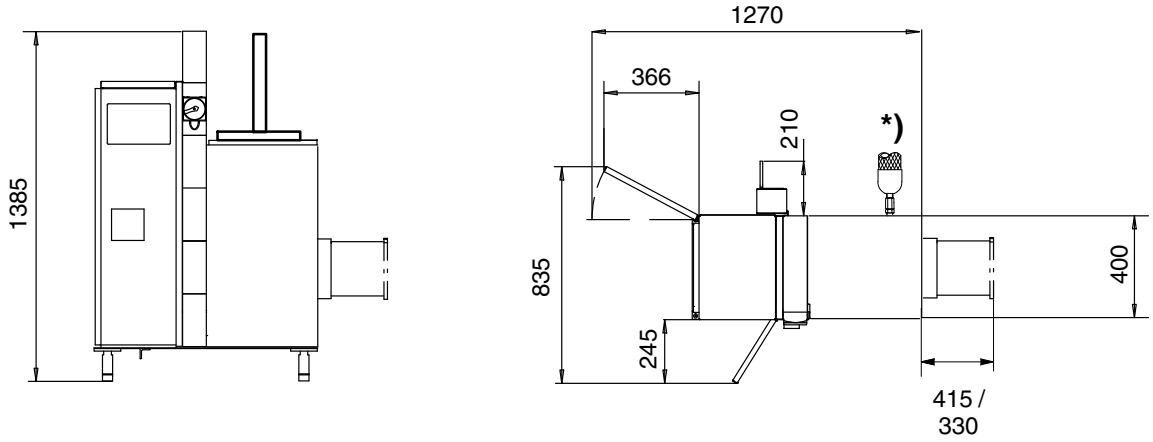
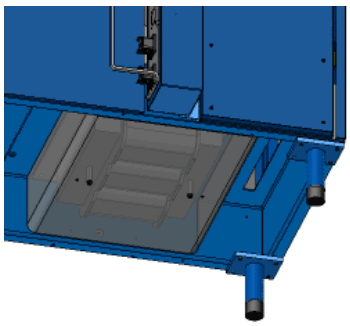


Fig. 3-3

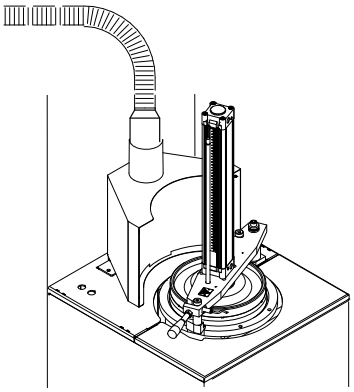
Melters with Transformer



The transformer is located under the melter.

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

Exhausting Material Vapors



Ensure that material vapors do not exceed the prescribed limits. Always observe the safety data sheet (MSDS) for the material to be processed. If necessary, exhaust material vapors and provide sufficient ventilation of the location of the system.

Fig. 3-4
Principle drawing

Screwing on Light Tower (Option)

The light tower is not attached upon delivery of the melter. Use the two included screws to fasten the light tower to the top of the melter tower.

Installation Personnel's Experience

The instructions contained in this section are intended for personnel with experience/authorization in the following fields:

- Application methods with hot melt adhesive or similar materials
- Industrial electrical wiring of power and control lines
- Industrial mechanical installation
- General knowledge of process control.

Electrical Connections

ATTENTION: Risk of electrical shock. Failure to observe may result in personal injury, death, or equipment damage.

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%.

CAUTION: Illuminated seals may not be installed in the application system.

Observe when Using Residual Current Circuit Breakers

Local regulations in some industrial branches require residual current circuit breakers.

Then observe the following points:

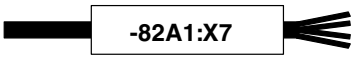
- Residual current circuit breakers are to be installed only between the power supply and the melter.
- Use only residual current circuit breakers sensitive to pulsating current or universal current (> 30 mA).

Laying Cable

ATTENTION: Use only temperature-resistant cable in warm areas 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 the 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.

Fig. 3-5 Example of cable label (in this case: connection to temperature control board #2, terminal X7)

Operating Voltage

ATTENTION: Operate only at the operating voltage shown on the ID plate.

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

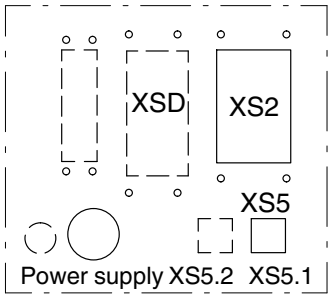
NOTE: The power cable cross-section must comply with the maximum power consumption (refer to section *Technical Data*).

Power Supply

NOTE: The melter must be installed securely (permanent power supply connection).

Operating voltage	Terminals					Mains terminals in electrical cabinet
	L1	L2	L3	N	PE	
200 V_{AC} 3-phase without neutral (- *Delta*)	●	●	●		●	
230 V_{AC} 3-phase without neutral (- *Delta*)	●	●	●		●	
400 V_{AC} 3-phase with neutral (star - *WYE*)	●	●	●	●	●	
400 V_{AC} 3-phase without neutral (- *Delta*)	●	●	●		●	
480 V_{AC} 3-phase without neutral (- *Delta*)	●	●	●		●	
Refer to wiring diagram for connecting arrangement.						

Customer's Power Cable



1. Connect the power cable / adapter cable to XS2 (Fig. 3-6) on the back of the electrical cabinet.
2. Line speed signal input XS5 / XS5.1 for motor 1
   Line speed signal input XS5.2 for motor 2
3. XSD duct for field bus cable

NOTE: When the melter is working with other devices in an application system, field bus cable must be used to connect it to the other system components. Observe the system plan.

Fig. 3-6 Back of electrical cabinet

Connecting Hose

Also refer to the hose manual.

Connecting Electrically

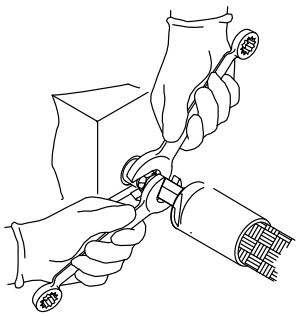
Fig. 3-7
Connect hose
1. Hose connection (hydraulic)
2. Hose connection (electrical)

First connect the hose electrically to the melter.

Use hose receptacles XS10 to XS15 (2) for the plugs of the hoses. The connections are protected with a clamp.

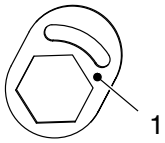
NOTE: For more than one hose: Every hose connection is allocated to a corresponding receptacle. Do not mistakenly exchange! Refer to wiring diagram for connecting arrangement.

Connecting



Second Open-end Wrench (for Hose Connections without Anti-twist Device)

Use a second open-end wrench when connecting and disconnecting the heated hose. This prevents the melter's hose connection from turning.



NOTE: Important when ordering: The anti-twist device (1) is a factor of the size (wrench size) of the hose connection.

CAUTION: Nordson melters are generally subjected to extensive testing prior to shipment. There may be some of the test material, similar to adhesive, left in the hose connection.

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

ATTENTION: Hot! Risk of burns. Wear heat-protective gloves.

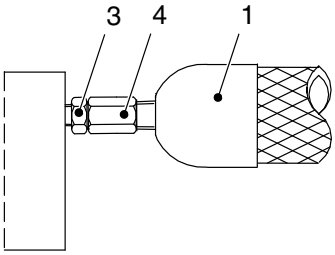


Fig. 3-8

4. Heat the melter and hose until the material softens.
5. Connect the hoses in the order of the numbers on the manifold. This prevents the creation of dead space that would otherwise result from unused connections.

   Close unused hose connections with Nordson port plugs.

Disconnecting

ATTENTION: System and material pressurized. Relieve bulk melter pressure before disconnecting pressurized components (e.g. hoses, pressure sensors). Failure to observe can result in serious burns.

Relieving Adhesive Pressure

ATTENTION: Hot! Risk of burns. Wear goggles and heat-protective gloves.

1. Switch off the motor(s) (Refer to section *Operation*).
2. Place a suitable drip pan under the applicator / assembly handgun.
3. Trigger the applicator / assembly handgun electrically or manually. Repeat this procedure until no more adhesive flows out.
4. Properly dispose of adhesive according to local regulations.

Installing Applicator

Refer to the applicator manual.

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

Conditioning Compressed Air for Applicator Control Modules

The quality of the compressed air must be at least class 2 as stipulated by ISO 8573-1. This means:

- Max. particle size 1 μm
- Max. particle density 1 mg/m^3
- Max. pressure dewpoint -40 °C
- Max. oil concentration 0.1 mg/m^3.

Observe when Processing PUR

- Wear respiratory protection when the maximum permissible concentration of hazardous substances is exceeded.
- During interruptions or breaks in production, lower the temperature and close the application slot of the applicators as far as possible. Seal the remaining opening with high-temperature grease or high-temperature tape.
- Purge the application system with a suitable cleaning agent before extended standstill. Use only a cleaning agent recommended by the hot melt material manufacturer.
- Seal open material connections airtight.

Key-to-line: Selecting Line Speed Voltage or Line Speed Current on I/O Board

ATTENTION: The melter must be switched off.

CAUTION: Electrostatic charges can destroy electronic components. Wear a grounding strap!

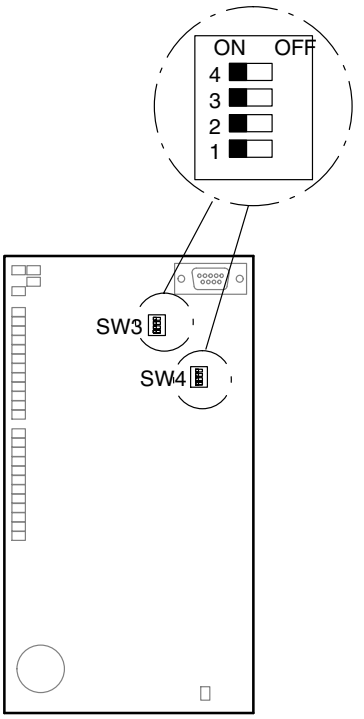


Fig. 3-9
DIP switches

The DIP switch SW 3 on the I/O board (91A1 / 92A1) can be used to choose between two current ranges (0 to 20 mA and 4 to 20 mA). The DIP switch SW 4 on the I/O board is used to switch between voltage and current.

The following tables indicate the original state when delivered by Nordson ( ).

NOTE: If the line speed signal is a frequency, these DIP switch settings have no relevance.

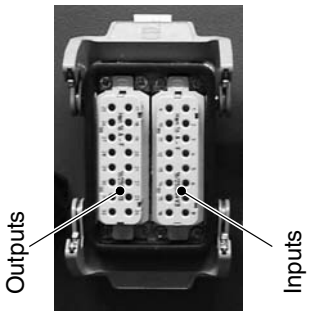
SW3	1	**ON**	4 - 20 mA
		OFF	0 - 20 mA
	2-4	**ON**	
		OFF	-

			One line speed signal input for all motors	**Separate line speed signal inputs (option)**
SW4	1	**ON**	Current	-
		OFF	Voltage (0-10 V)	
	2-4	**ON**	-	-
		OFF		

NOTE: *Voltage* or *current* must also be set on the melter control panel. Also refer to section *Operation*, *M2.1: Line Speed Signal*.

Interface Assignment

Interface Standard I/O



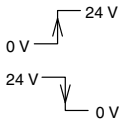
General Notes

- 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 this interface.

NOTE: * optional

Digital inputs		
Pin	**Input**	**Function**
1*	24 V_{DC}	Internal (melter)
2*	0 V_{DC}	External (customer's) **NOTE:** Customer connects his reference potential here, if 24 V_{DC} is provided by customer.
3	24 V / 0 V 24 V / 0 V	Rising edge: Heaters ON (main contactor closes) Falling edge: Heaters OFF (main contactor opens)
4		24 V: All motors ON (collective enable) 0 V: All motors OFF
5		24 V: Enable *Motor 1* 0 V: No *Motor 1* enable
6		24 V: Enable *Motor 2* 0 V: No *Motor 2* enable
Pin 7/8 not assigned		
9	24 V / 0 V 24 V / 0 V	Rising edge: Enter *Standby* Falling edge: Exit *Standby*
10	24 V / 0 V 24 V / 0 V	Rising edge: Key-to-line mode (for all motors) Falling edge: Manual mode (for all motors)

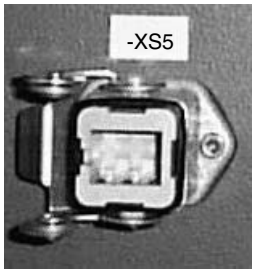
Continued ...

Digital inputs		
Pin	**Input**	**Function**
11		Rising edge: Switch application group to control mode (input 1) Falling edge: Switch application group to standby **or** Falling edge: Deactivate application group (*Standby* or *Deactivate* is dependent on the function selected on the control panel; refer to the section *Operation, Working with Application Groups, Setup, Selecting Feature*)
12		Like pin 11 (input 2)
Pin 13 - 16 not assigned		

NOTE: Contact rating max. 24 V_{DC}/2 A

Digital outputs		
Pin	**Contact**	**Function**
17 18	Make contact	Contact closed: Motor 1 running Contact open: Motor 1 not running
19 20	Make contact	Contact closed: Motor 2 running Contact open: Motor 2 not running
Pin 21 to 22 not assigned		
23 24	0 V 24 V_{DC}/90 W	Power supply *External voltage supply* -71T2
25	24 V_{DC}	External (customer's; to be connected by customer)
26	Make contact	24 V: System ready 0 V: System not ready
27	Break contact	24 V: No general alarm -warning- 0 V: General alarm -warning-
28	Break contact	24 V: No general alarm -fault- 0 V: General alarm -fault-
29	Break contact	24 V: Slug is empty 0 V: Slug is not empty
30	Make contact	24 V: Slug is almost empty 0 V: Slug is not almost empty
31	Break contact	24 V: Reservoir is empty 0 V: Reservoir is not empty
Pin 32 not assigned		

Interface Key-to-line



One Line Speed Signal Input for all Motors (XS5)

The connection shown as an example applies to encoders supplied by Nordson.

P/N	Description
772050	Encoder 500 pulses/revolution, ∅ 10 mm
772051	Encoder 500 pulses/revolution, ∅ 3/8 in (9.525 mm)
772052	Cable, 9 m (30 ft)
772054	Cable, 18 m (60 ft)

XS5					
			Connection example		
			Cable P/N 772052	Encoder P/N 772050 P/N 772051	
Pin	**Input**	**Function**	**Pin**	**Pin**	**Function**
1	- (Ground)	Analog input			
2	0 to 10 V or 0 to 20 mA*) or 4 to 20 mA*)				
3	+ 24 V_{DC}	Frequency input	POWER+V	D	POWER+V
4	- (Ground)		COM, SHIELD	F, G	COM, CASE
5	0 to 100 kHz		SIGNAL A	A	SIG. A
Pin 6 not assigned					

* Refer to *Key-to-line: Selecting Line Speed Voltage or Line Speed Current on I/O Board*

Separate Line Speed Signal Inputs (XS5.1, XS5.2)

XS5.n (3-pin)		
Pin	**Input**	**Function**
1	- (Ground)	Analog input
2	0 to 10 V_{DC}	
Pin 3 not assigned		

Pneumatics Diagram - Platen Control

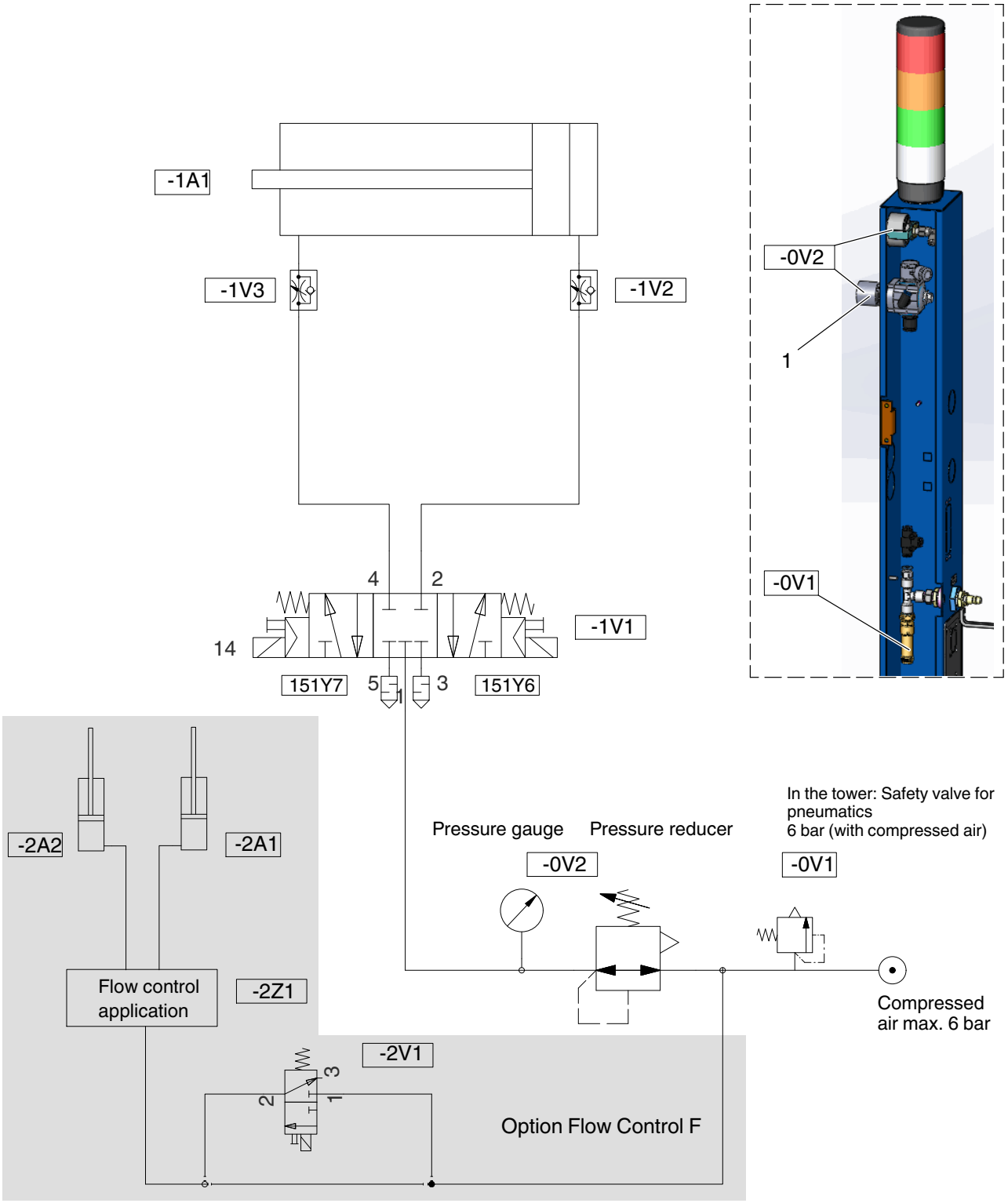


Fig. 3-10

Pneumatic Pressure Control / Bypass Control

Required Air Quality

The compressed air must be dry and non-lubricated. Dirt particles in the air may not exceed 30 µm in size.

Setting Pressures

The safety valve for pneumatics limits the inlet pressure to 6 bar (600 kPa / 87 psi).

The pneumatic pressure control valve has a transmission ratio-operating air pressure / material pressure of 1:18.7.

1: Pressure display *Pump 1* (with options *Manual pneumatic pressure control* and *Bypass control*)

2: Pressure display *Pump 2* (with options *Manual pneumatic pressure control* and *Bypass control*)

3: Safety valve for pneumatics

4: Interface XS4 (with options *Automatic pneumatic pressure control* and *Bypass control*)

5: Connection *Compressed air*

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*.

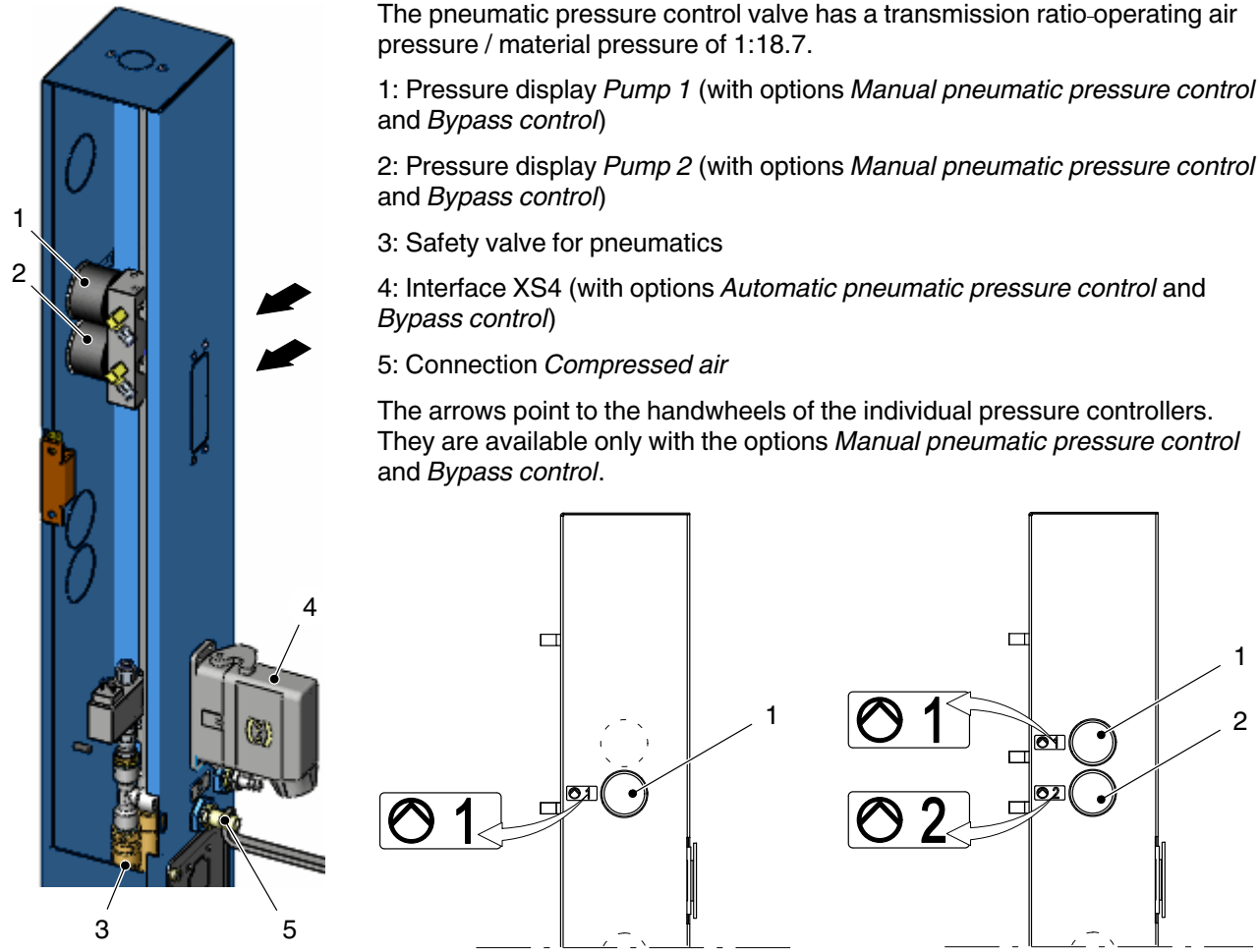
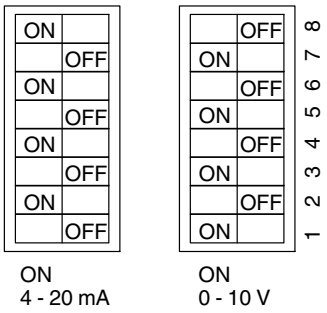


Fig. 3-11 Tower and labels with one pump / two pumps

Interface Assignment XS4: Automatic Pneumatic Pressure Control (Option P)

Fig. 3-12
Proportional valve

PIN	Input	Function
1 -	4 - 20 mA	Proportional valve pump 1
2 +	0 - 10 V	
3 -	4 - 20 mA	Proportional valve pump 2
4 +	0 - 10 V	



Proportional Valve

The proportional valves for automatic pneumatic pressure control are located in the melter tower.

DIP switch *SW1* to switch between 0 - 10 V and 4 - 20 mA.

0 - 10 V

Timer Relay

The voltage supply to the proportional valves is linked to the signal *System ready*. Wiring diagram page SLP 164a and SLP 71.

3 s switchon delay (timer relay P/N 7157900)

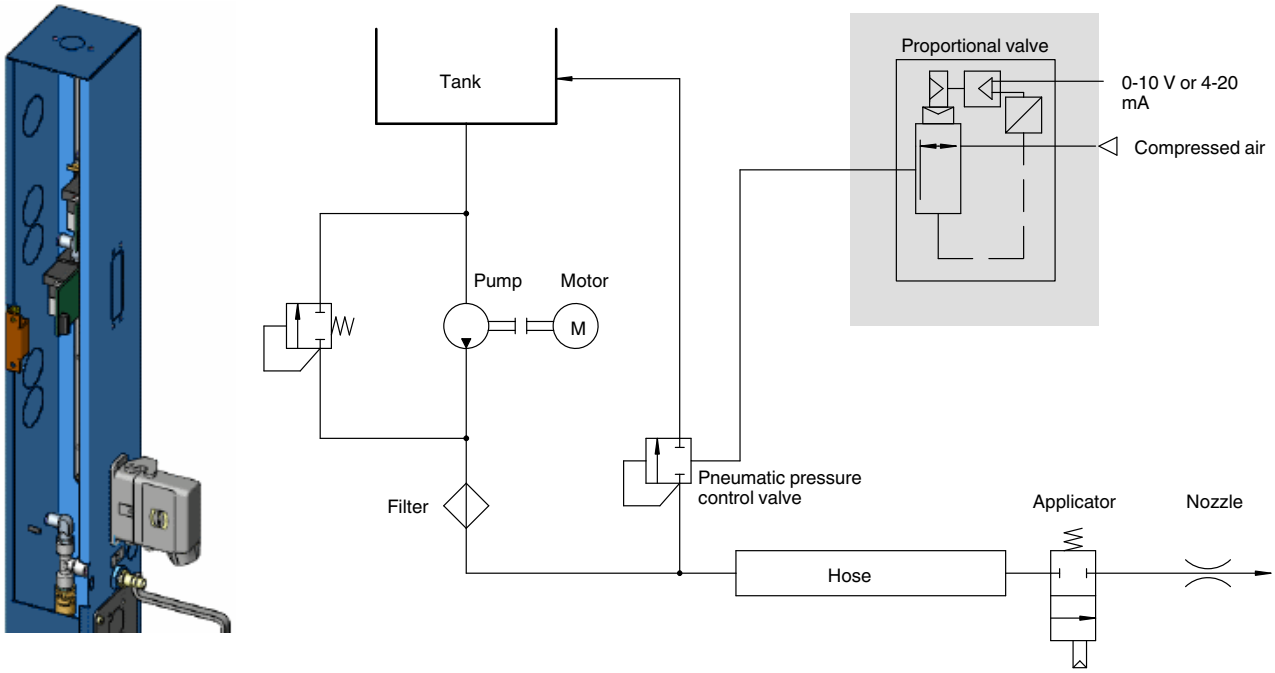


Fig. 3-13 Option P: *Automatic pneumatic pressure control* (1 pump)

Interface Assignment XS4: Bypass Control (Option F)

PIN	Input	Function
1	24 V_{DC}/ 4 W	Pneumatic pressure control valve 1
2		
3	24 V_{DC}/ 4 W	Pneumatic pressure control valve 2
4		

In normal production mode, the pressure control valve is supplied with maximum air pressure (approx. 6 bar) and closed. The material is conveyed to the melter outlet.

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

Solenoid Valve and Timer Relay

An additional solenoid valve (P/N 401116: -164Y8) in the air supply is linked to the signal *System ready*. Wiring diagram page SLP 164b.

The timer relay -164K6 is located in the left door of the electrical cabinet.

Approx. 3 s switchon delay (timer relay P/N 7157900)

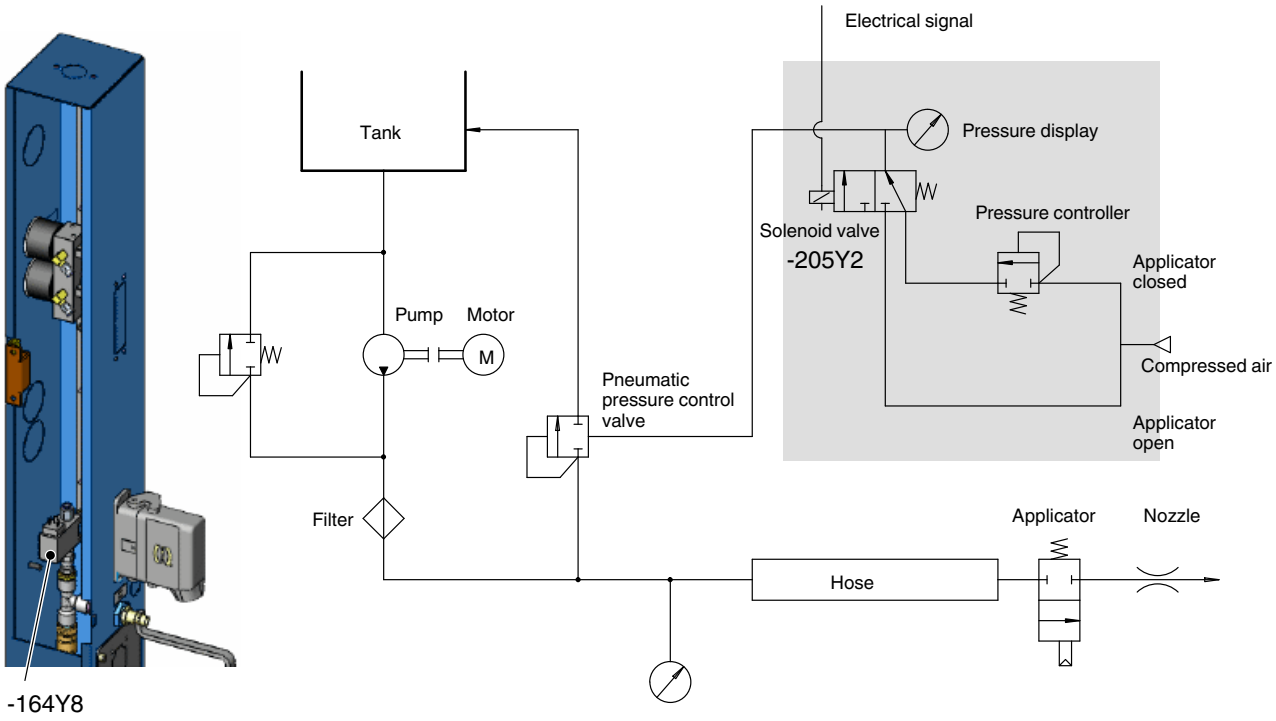


Fig. 3-14 Option F: *Bypass control*

Light Tower

Installing Kit (Accessory)

ATTENTION: Disconnect the melter from the line voltage.

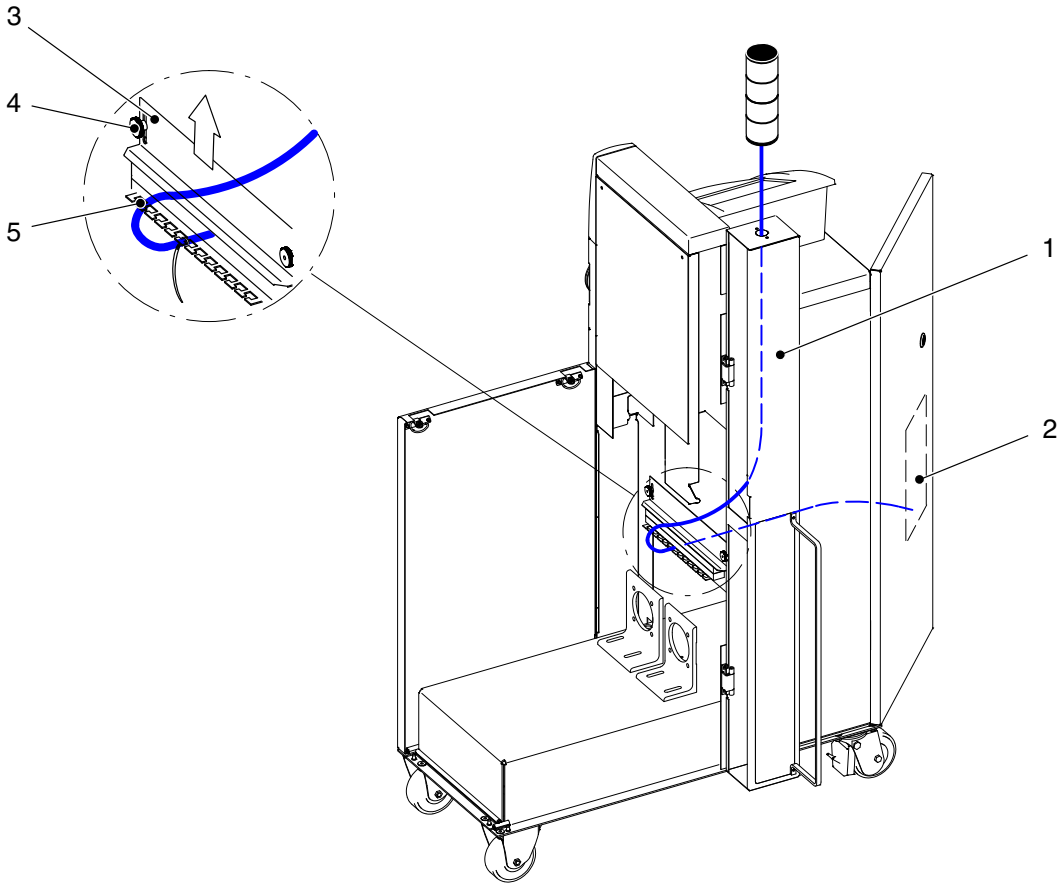


Fig. 3-15

1. Break out the plate from the top of the melter tower (1) along the punched lines and remove.
2. Swivel melter tower open.
3. Guide cable through the resulting hole.
4. Use the two screws M4 to fasten the light tower.
5. Guide the cable through the top opening of the melter tower and to the inside wall (tank side) of the electrical cabinet.
6. Release the knurled nuts (4) from the *Cable duct* bracket (3). Slide the bracket up in the slot.
7. Guide the cable through the resulting hole and then through the cable ducts to the I/O board (2) in the electrical cabinet door.

Continued ...

Installing Kit (Accessory) *(contd.)*

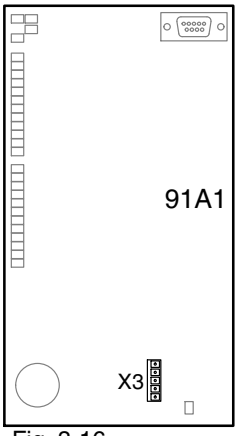


Fig. 3-16

8. Insert the light tower plug into X3 of the I/O board (Refer to Fig. 3-16).
9. Use a cable tie to fasten the cable to one of the metal teeth (5) below the bracket *Cable duct*.
10. Slide the bracket down and tighten the knurled nuts.
11. To activate the light tower, the new software configuration code must be entered. Box: 17 Code: W. Refer to section *Operation*, Key *Melter configuration* (V26 in the overview).

Calibrating Level Evaluator

Fig. 3-17

Before the melter is started up, the level evaluator in the melter electrical cabinet must be calibrated. The procedure is described in detail in section *Repair*.

Casters

Installing Kit (Accessory)

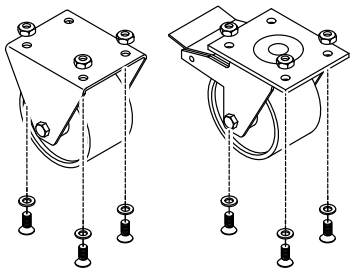


Fig. 3-18

The kit consists of a pair of casters with brakes and a pair without brakes.

NOTE: Attach the casters with brakes (Fig. 3-18, right) to the side of the electrical cabinet.

1. Lift the melter with a suitable floor conveyor (lift truck or forklift).
2. Detach machine feet.

NOTE: The back plug plate must be removed before the back left machine foot can be detached.

3. Attach casters. Use the fastening holes for the machine feet to attach the casters.

   Torque: 24 Nm (212 lbin)

Retrofitting Pressure Sensors

Refer to section *Repair, Replacing Pressure Sensor*.

Retrofitting a Temperature Control Board

For switch settings, refer to the section *Repair, Replacing I/O Board, Temperature Control Board*.

Connecting Melter to External PC

The melter can be connected to an external PC with a standard CAT-5 cable. Connect it to the free EtherNet slot on the IPC.

IPC Webserver

Refer to the section *Operation, Operation via the IPC Webserver* for information on the connecting cable to be used.

Melter Removal

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

Melter Disposal

When your Nordson product has exhausted its purpose, dispose of it properly according to local regulations.

Section 4
Operation

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

General Information

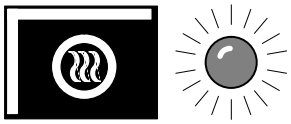
The control panel is a touch screen.

The melter can also be operated via the Webserver. The user interface is the same as the control panel. Refer to *Operation via the IPC Webserver* at the end of this section.

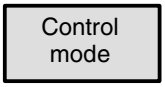
Transparent Keys

If a feature - e.g. pressure control - is available according to the melter configuration but contradicts the feature currently selected on the control panel (e.g. speed control), all of the keys relevant for pressure control will appear transparent.

Keys with and without Indication Lamp



The indication lamp indicates the status (lit = switched on). In this case: Heaters are switched on.



The label indicates the status. In this case: The temperature channel is in control mode.

Meaning of Colors

Red:	Fault
Yellow:	Display of e.g. status, actual values. Also a warning in status line
Green:	Adjustable values: Input of e.g. setpoints/text or switched on
Gray:	Selection (with keys) is possible

Description of Symbols

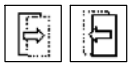
The following symbols appear in several screens and indicate

 Call up a help text

 Detailed information

 General information

 Return to previous level. Cancel and close when in input windows

 To next/previous screen

 Confirmation, acceptance of a value

 Backspace, delete

 Page up/down

 Increase/decrease value

 Setup

Standard Symbols of Temperature Channels

 Low melt (melting plate, grid)

 High melt (reservoir)

 Hose

 Applicator

 Additional temperature channel (e.g. air heater)

Input Window

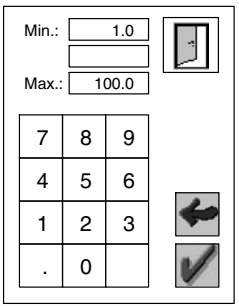


Fig. 4-1

When a field for entering a numerical value is touched, this input window with the limits *Min.* and *Max.* appears.

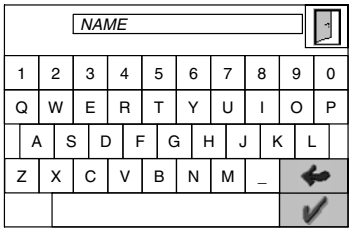


Fig. 4-2

When a field for entering a name is touched, this input window appears.

Screen Replacing Motor Controller

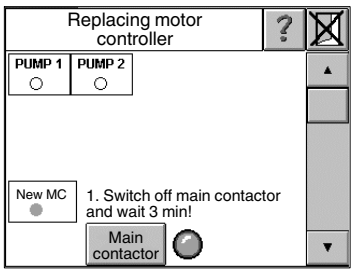
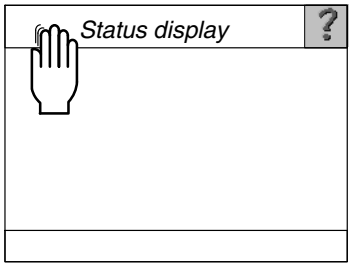


Fig. 4-3

This screen appears automatically when more than one motor controller has been replaced. It is not protected by password.

For instructions on how to proceed, refer to the section *Repair, On the Control Panel: Allocating Replaced Motor Controllers (MC) to their Motors*

Status Display



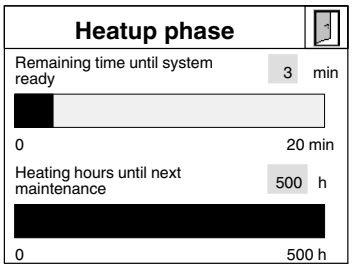
Another screen is called up by touching the line *Status display*. The contents of the screen is a factor of the displayed status:

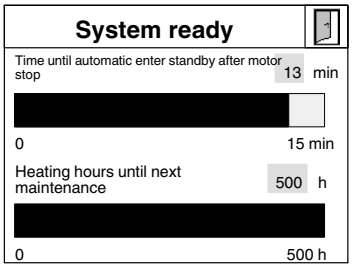
- Heatup phase
- System ready
- Startup protection
- Standby
- Heaters off or motor running.

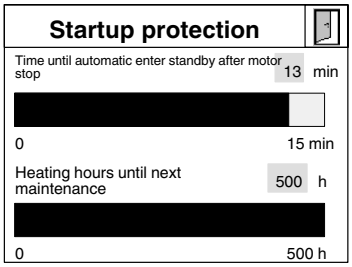
By status

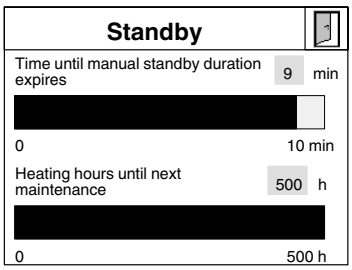
- Warning
- Fault
- Shutdown

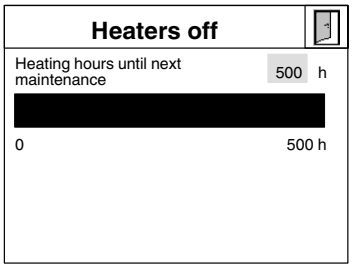
the system moves directly to the screen *Alarm log* (Refer to Fig. 4-29).











Initial Startup

After the melter has been properly installed, initial startup can take place.

Purging Melter

The melter was subjected to extensive testing prior to shipment. In doing so, the reservoir 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 material before starting production.

1. Open the slug and place it in the tank (Refer to page *Filling the Tank*).

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

2. Set the main switch to I/ON. The melter begins to heat up (default).

Position I/ON = Melter switched on.

Position 0/OFF = Melter switched off.

A padlock can be used to protect the main switch from unauthorized access.

Function Test

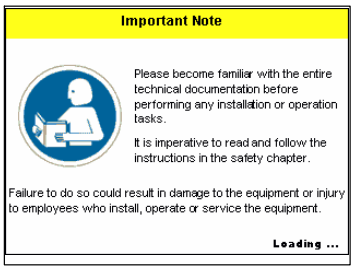


Fig. 4-4
IPC booting

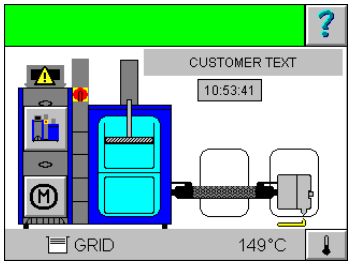


Fig. 4-5
Starting screen

During booting, the PC performs a function test to verify that all touch-sensitive areas are OK.

NOTE: Direct sunlight shining on the control panel can trigger the following fault indication:
Touch screen function test failed. Please clean the screen.

1. Confirm this message, or cover the control panel and repeat booting.

2. Wait until the light tower lamp test is completed and the starting screen appears on the control panel.

NOTE: When the very first startup occurs, password protection is not active (default).

Initial Startup *(contd.)*

Control Panel Settings

1. Basic Settings

   - Select language (English is the default)

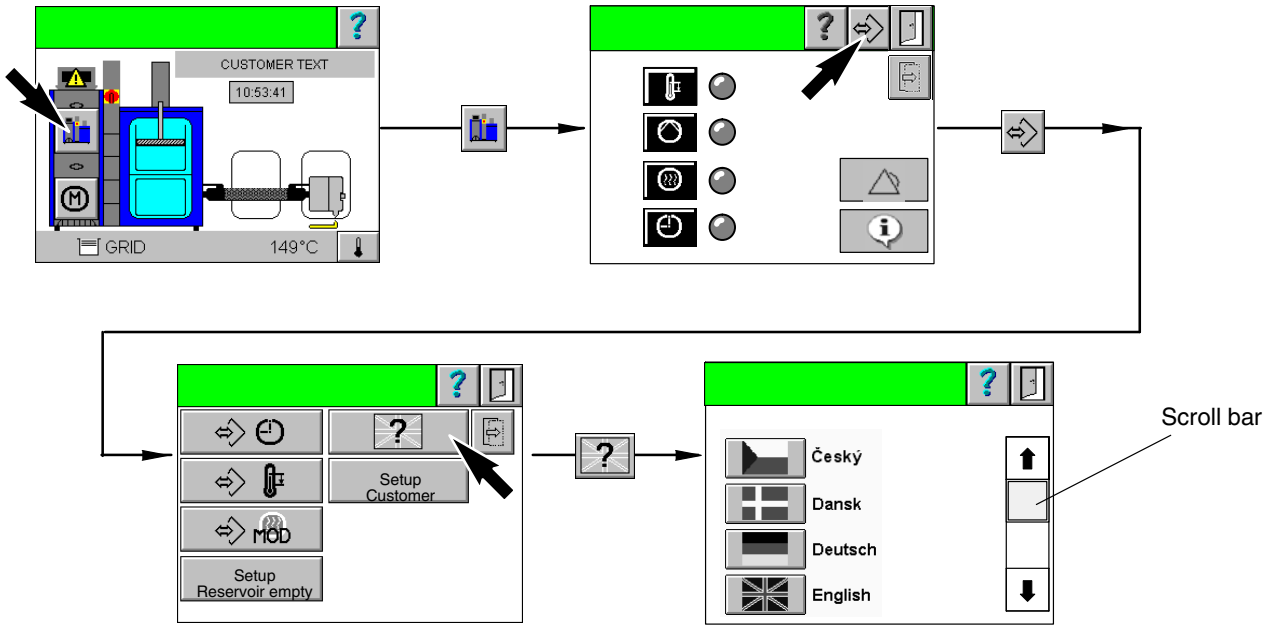


Fig. 4-6 Example: Selecting language

 Touch repeatedly until the starting screen reappears.

- Temperature setpoints (= processing temperatures)

  Refer to *Control Panel - Overview - / T1*.

- Undertemperatures / overtemperatures

  Refer to *Control Panel - Overview - / T2*.

- Activate/deactivate channels

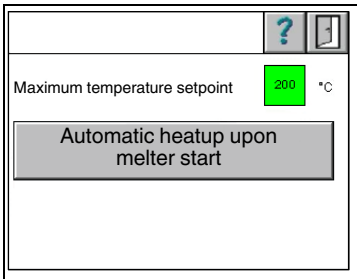
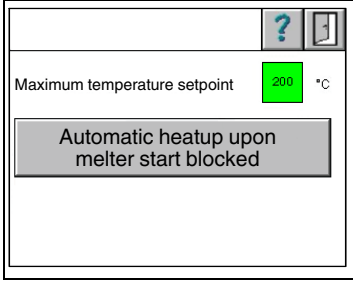
- Rename temperature channels if necessary

  NOTE: Texts that the customer can change are not translated into the selected local language.

  Refer to *Control Panel - Overview - / T3*.

- Select how the melter is to start up:
  - With or without the seven-day clock
  - With or without automatic heatup (password level 3).

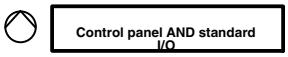
The following correlation applies:

 - Default value -	+	(Seven-day clock OFF)	Melter heating
	+	(Seven-day clock ON)	Melter not heating
	+	(Seven-day clock OFF)	Melter not heating
	+	(Seven-day clock ON)	Melter not heating

- Pump speed(s) in manual mode

  NOTE: To prevent excessive wear, the motor/pump speed should not continuously fall below 5 min^{-1} (rpm) or continuously exceed 80 min^{-1} (rpm).

  Refer to *Control Panel - Overview - / M1*.



- If the motors are to be switched via the interface *Standard I/O*, change the motor enable from *Control panel* to *Control panel AND standard I/O*.

  Refer to *Control Panel - Overview - / M2*

Initial Startup *(contd.)*

Control Panel Settings *(contd.)*

Standard I/O: 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 panel (*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.

- Key-to-line - settings

  Refer to *Control Panel - Overview - / M1* to *M3*.

- Select temperature unit, °C (default) or °F

  Select pressure unit: bar (default), psi or kPa

  Refer to *Control Panel - Overview -/ V15*.

- Set service interval

  The service tasks that are to be indicated as well as the intervals must be stipulated. For recommended intervals refer to section *Maintenance*. The intervals may need to be adapted to the operating conditions.

  Refer to *Control Panel - Overview - / V16*

- Additional parameters (depending on configuration)

2. Set the seven-day clock.

   Refer to *Control Panel - Overview - / V8*.

3. Assign passwords and select security level, if desired.

   Refer to Appendix A, *Password* and *Control Panel - Overview - / V18, V19*.

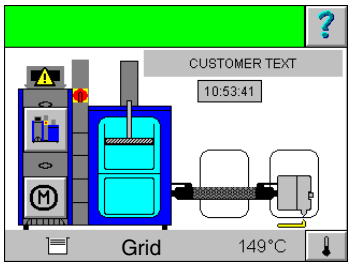


Fig. 4-7

4. Wait until the system is ready for operation (Fig. 4-7).

5. Enable the motor(s) (Fig. 4-8).
6. Switch on the motor(s) (Fig. 4-8).

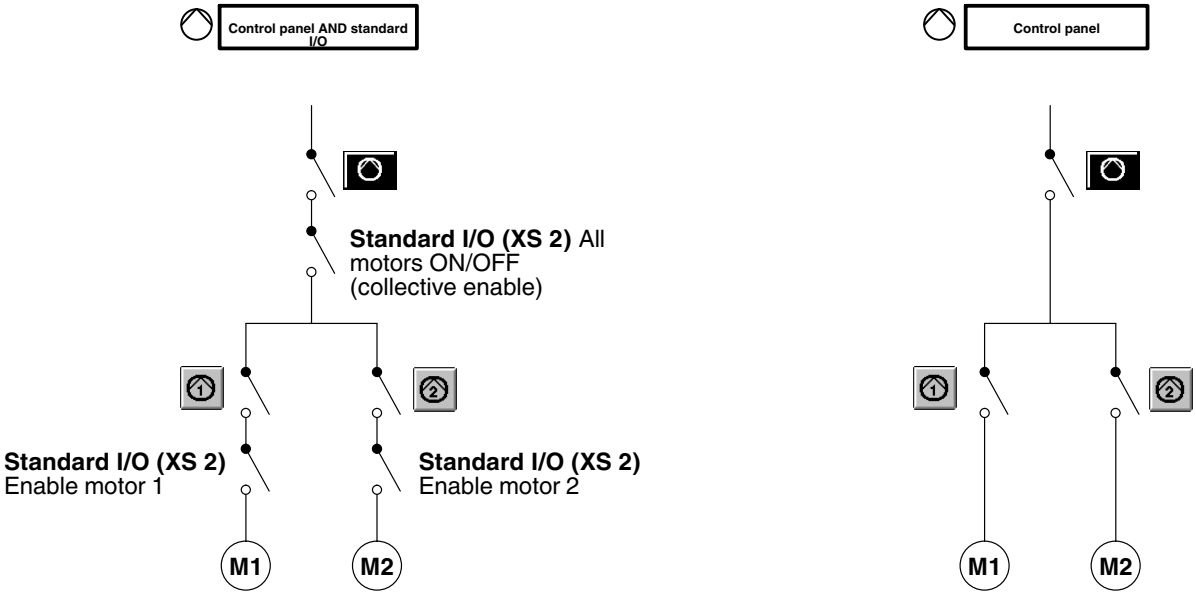


Fig. 4-8 Conditions for *Motor running* with and without interface *Standard I/O*

After First Heatup

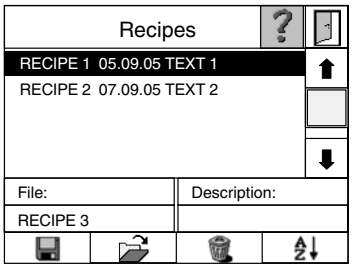
CAUTION: In the course of daily operation, heating and cooling can cause screwed parts to become loose, leading to leakage.

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

- Safety valve
- Pressure sensors (when applicable)
- Plug
- Hose fittings.

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

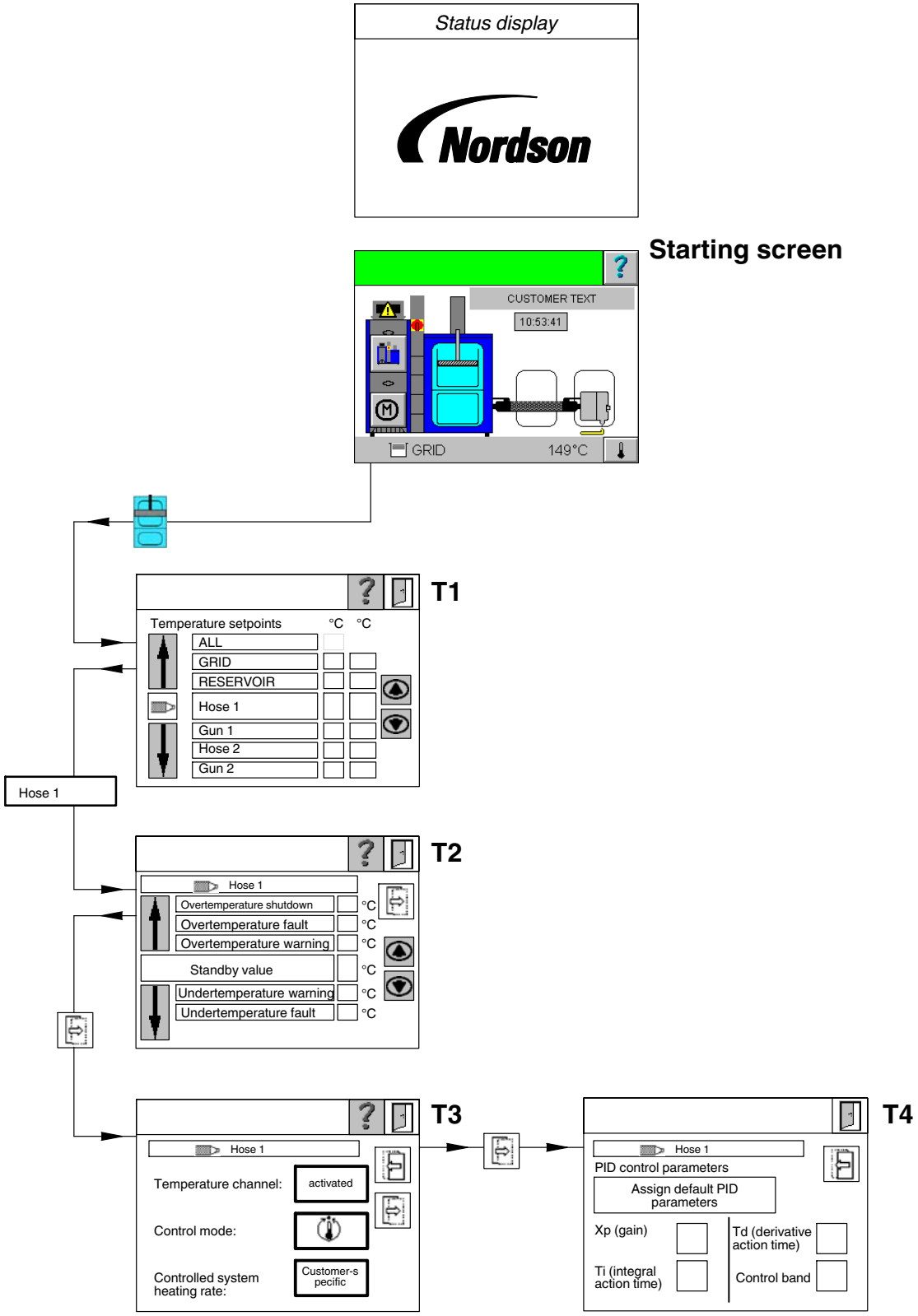
Saving Process Parameters



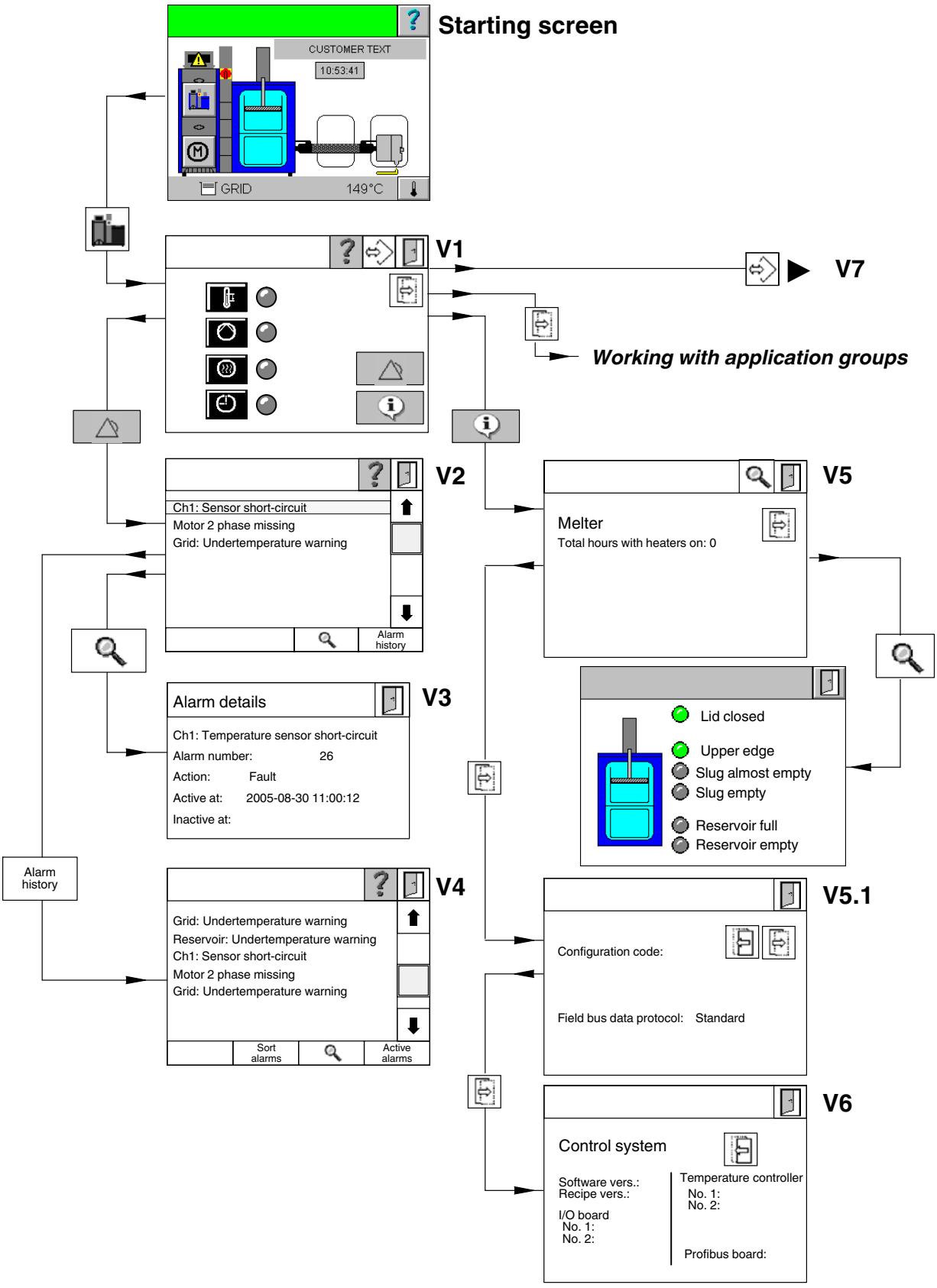
Process parameters can be saved on the melter memory board as a file (recipe) and then backed up onto an external PC from there.

Refer to *Operation via the IPC Webserver* for additional information.

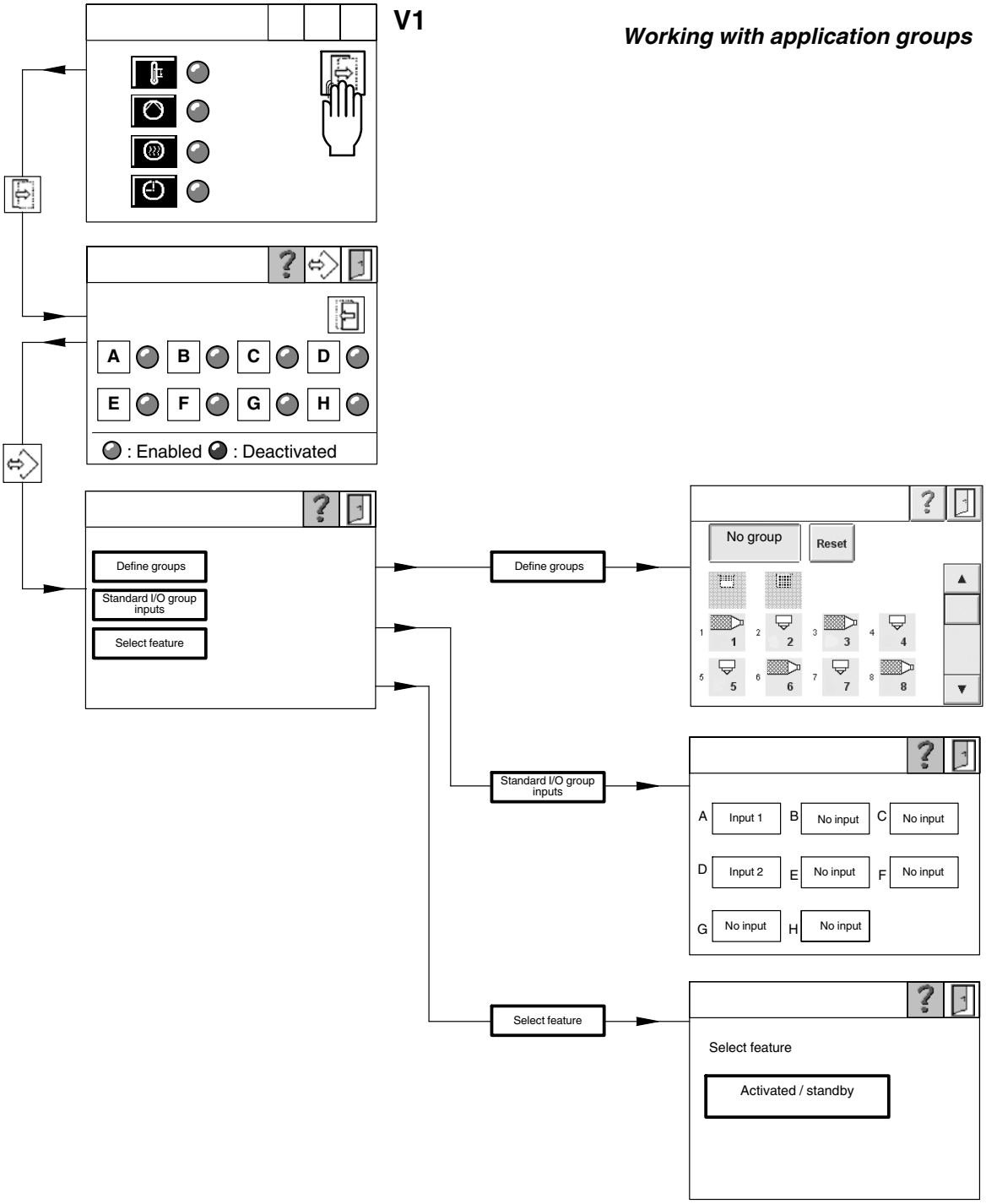
Control Panel - Overview -



Control Panel - Overview - *(contd.)*

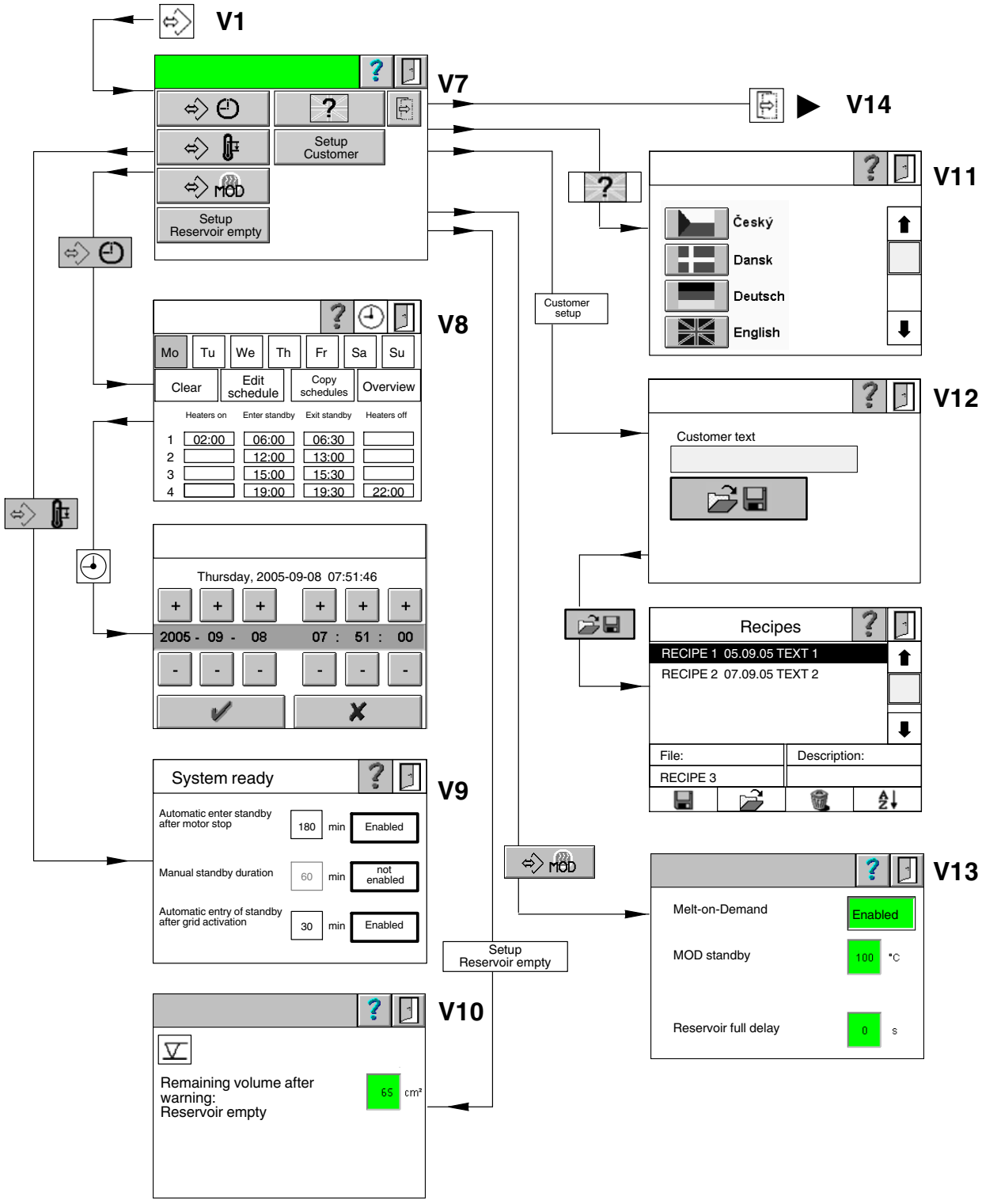


Control Panel - Overview - (contd.)

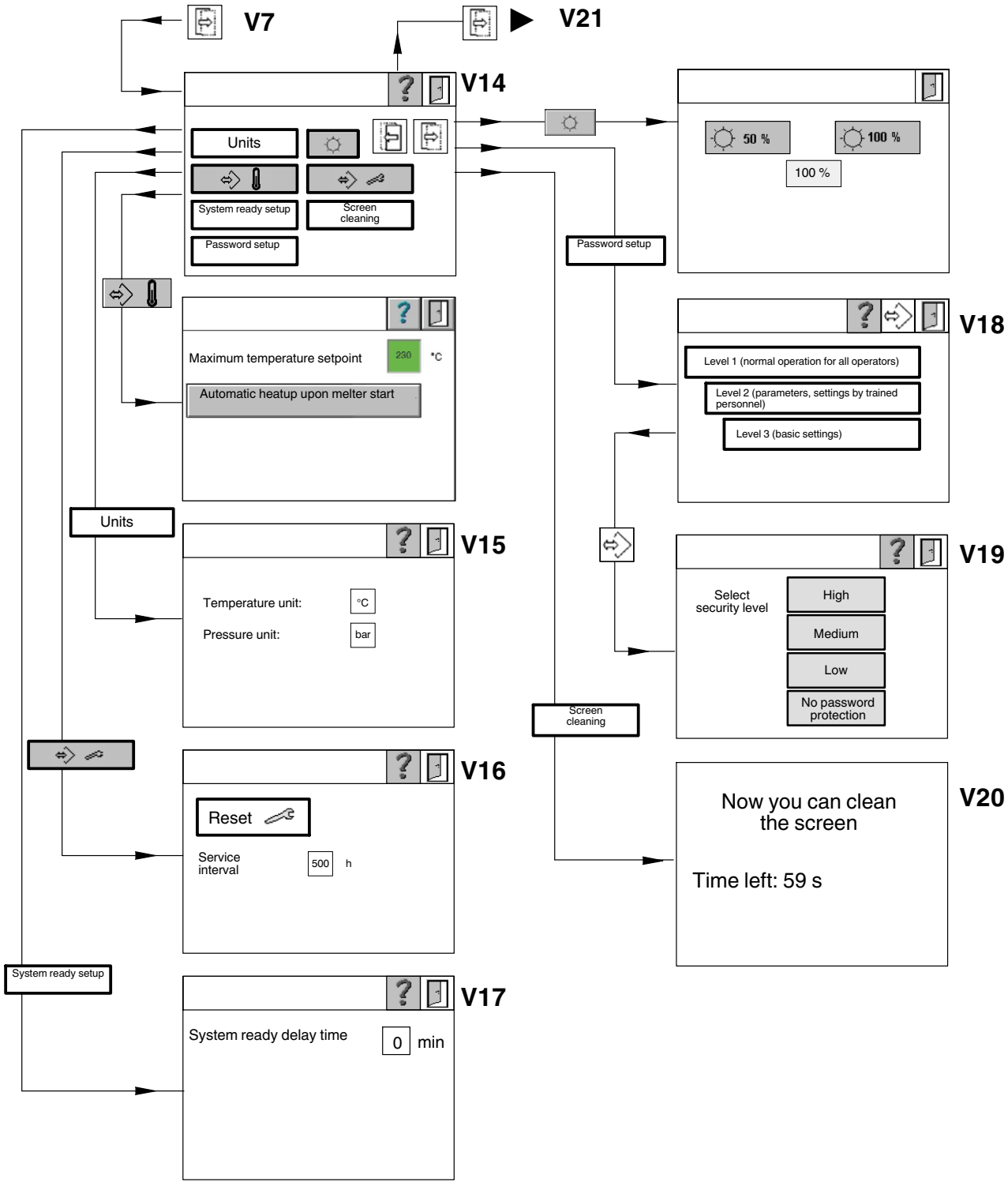


Working with application groups

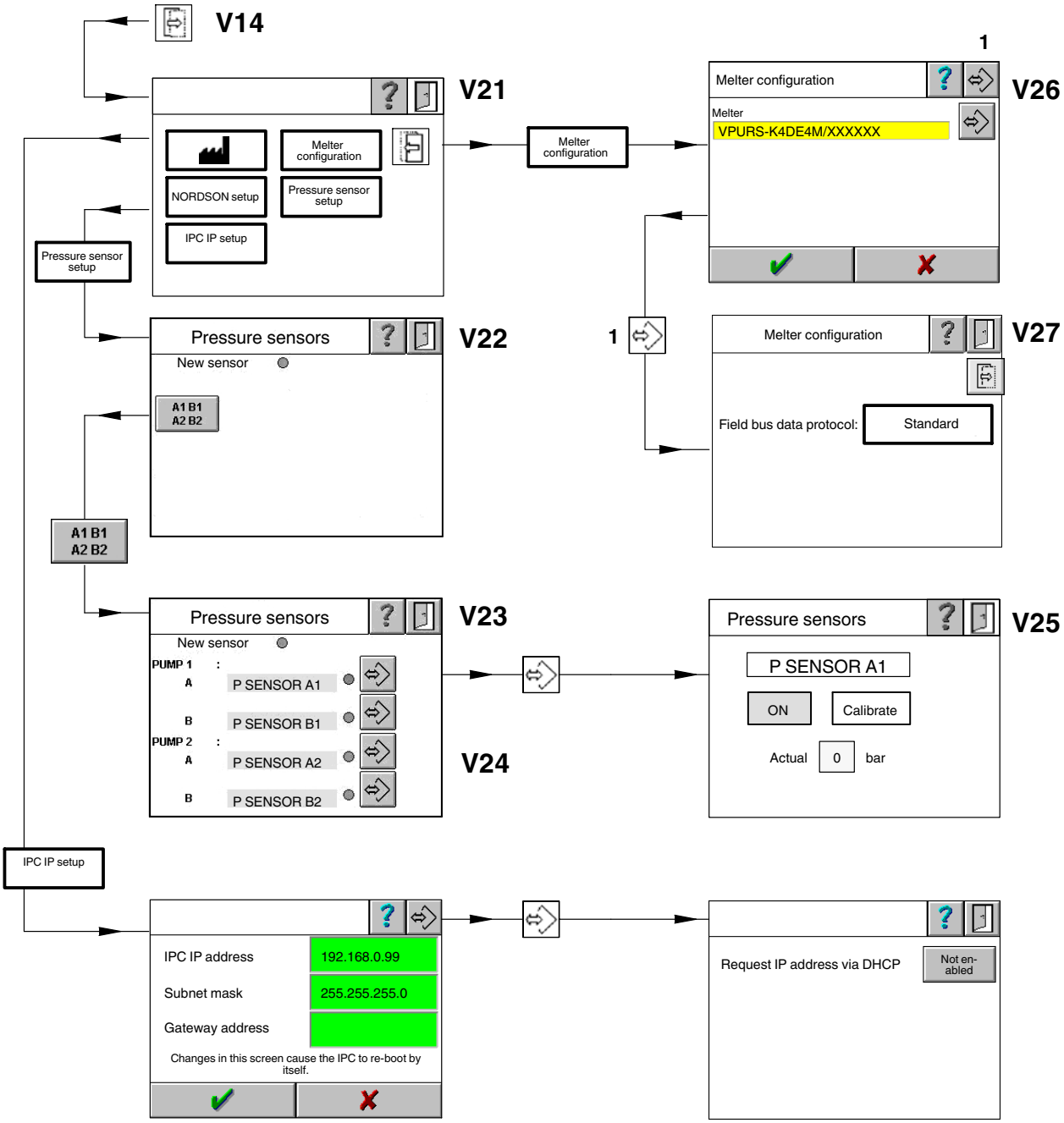
Control Panel - Overview - (contd.)

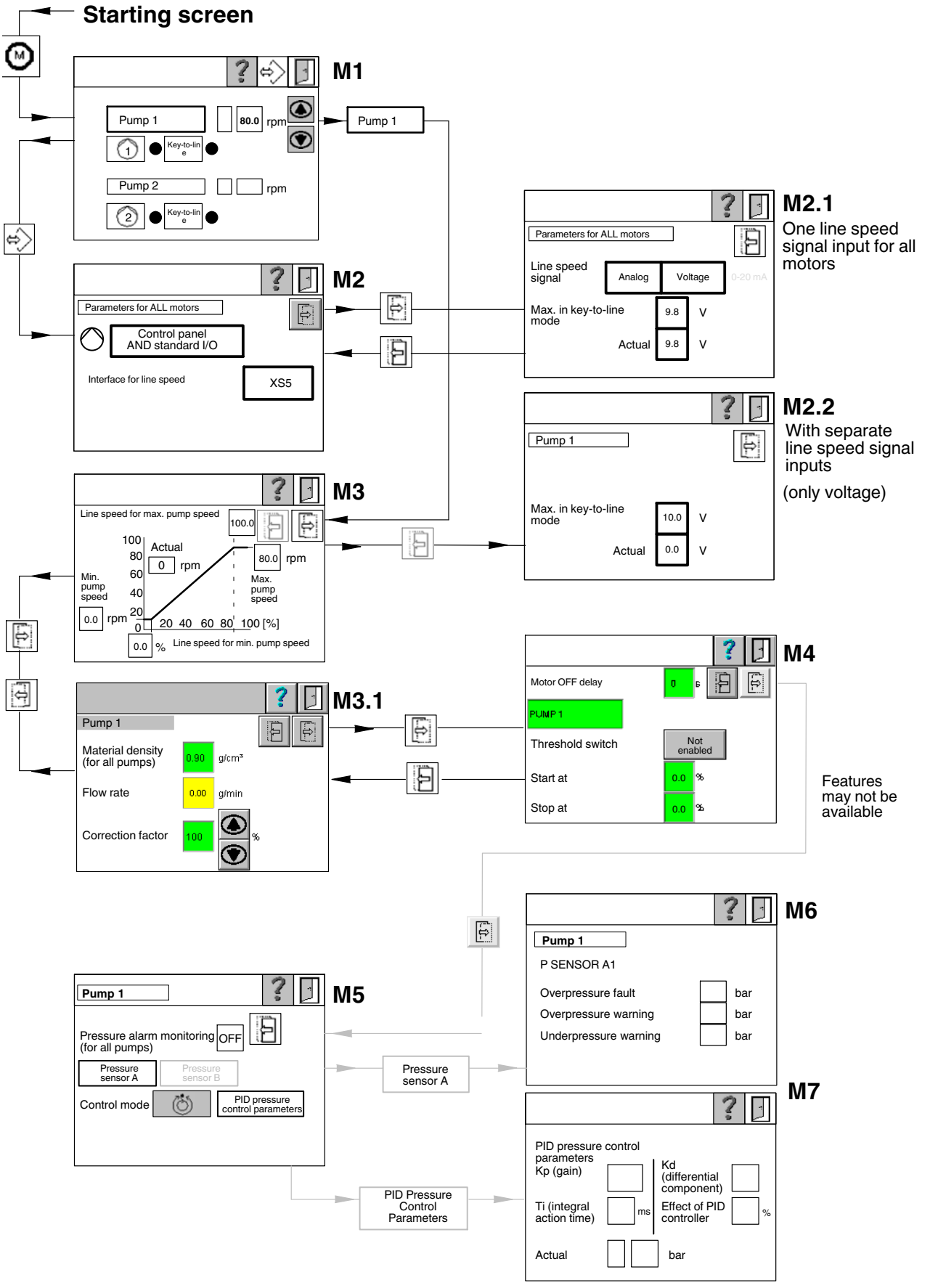


Control Panel - Overview - (contd.)



Control Panel - Overview - (contd.)




Starting screen
M1
Pump 1
80.0
rpm
Key-to-line
Pump 2
rpm
Key-to-line
Pump 1
M2
Parameters for ALL motors
Control panel AND standard I/O
Interface for line speed
XS5
M2.1
One line speed signal input for all motors
Parameters for ALL motors
Line speed signal
Analog
Voltage
0-20 mA
Max. in key-to-line mode
9.8
V
Actual
9.8
V
M2.2
With separate line speed signal inputs
(only voltage)
Pump 1
Max. in key-to-line mode
10.0
V
Actual
0.0
V
M3
Line speed for max. pump speed
100.0
Actual
0
rpm
80.0
rpm
Min. pump speed
0.0
rpm
Max. pump speed
100
80
60
40
20
0
20 40 60 80 100 [%]
0.0
%
Line speed for min. pump speed
M3.1
Pump 1
Material density (for all pumps)
0.90
g/cm³
Flow rate
0.00
g/min
Correction factor
100
%
M4
Motor OFF delay
0
s
PUMP 1
Threshold switch
Not enabled
Start at
0.0
%
Stop at
0.0
%
Features may not be available
M5
Pump 1
Pressure alarm monitoring (for all pumps)
OFF
Pressure sensor A
Pressure sensor B
Control mode
PID pressure control parameters
Pressure sensor A
PID Pressure Control Parameters
M6
Pump 1
P SENSOR A1
Overpressure fault
bar
Overpressure warning
bar
Underpressure warning
bar
M7
PID pressure control parameters
Kp (gain)
Kd (differential component)
Ti (integral action time)
ms
Effect of PID controller
%
Actual
bar

Inserting Slug

CAUTION: Do not completely empty the reservoir. If there is too little material in the reservoir, the material can overheat. Overheated material can char, collect on surfaces and cause malfunctioning.

Removing Empty Slug

CAUTION: Do not remove the empty slug until the new one is ready to be put into place. To ensure that the melter does not leak and material does not begin to harden, there should always be a slug in place.

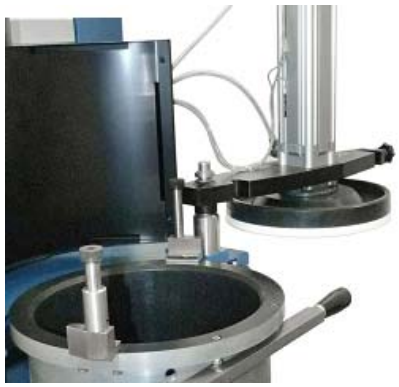
NOTE: Observe the use-by date of the slug. Verify that the slug is not torn or punctured.

1. The platen moves up.

NOTE: In automatic mode, the platen moves up automatically when the slug is empty.

ATTENTION: Hot! Risk of burns. Wear goggles and heat-protective gloves.

2. Open the tank lid and swivel it to the side (left illustration).
3. Take the empty slug (right illustration) out of the tank and dispose of according to local regulations.



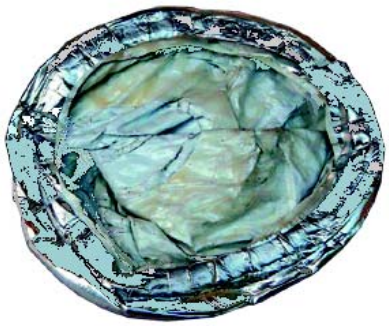


Fig. 4-9

4. Check the outer edge of the melting plate for material residue. If necessary, remove residue with a plastic or wooden scraper.

   CAUTION: The outer edge of the melting plate must be clean so that the slug lies flat against the plate and acts as a a seal.

Opening and Inserting New Slug

1. Cut a round hole in the center of the front of the slug.
2. Pull off the foil along the cut. Use caution to prevent the foil from tearing.

NOTE: The remaining outer edge must be at least 15 mm (0.6 in.) wide so that it completely seals the space between the slug and the melting plate.

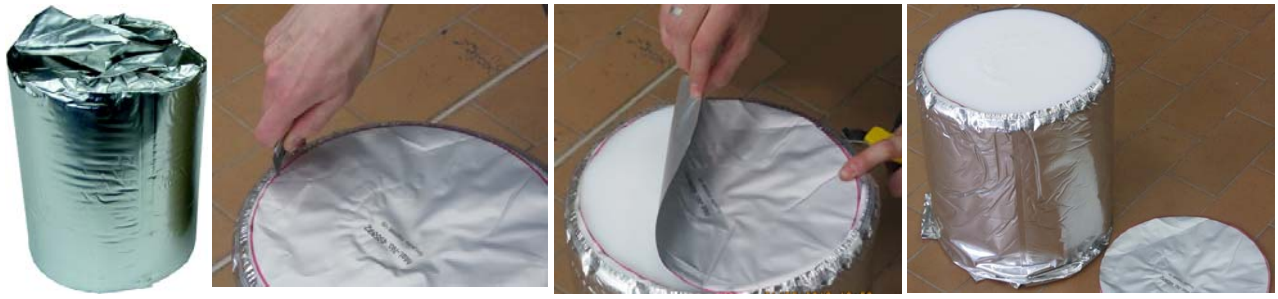


Fig. 4-10 Opening slug

3. Place the slug in the tank with the opening facing down.
4. Punch a hole in the side of the slug that is now on top to allow the inert gas injected at the factory to escape.
5. Swivel the tank lid back into place and close it.

Fig. 4-11

In Automatic Mode

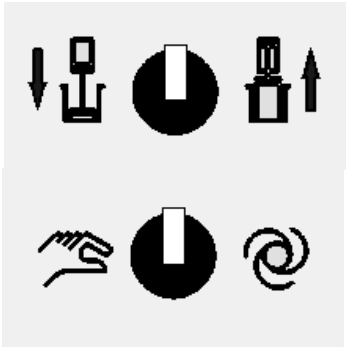
6. Acknowledge platen startup protection on the control panel.

   The platen is automatically lowered onto the slug.

OR:

In Manual Mode

7. Using the buttons on the melter, lower the platen until it touches the slug.



Heatup Guided by Reference Channel

After every switchon (depending on the setting chosen by the customer) and after standby is exited, the melter returns to *Heatup phase* (status display).

*) Automatic heatup upon daily startup can be prevented with a button in the screen *Maximum temperature setpoint*.

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

EXCEPTION: The grid heats to its setpoint independently of the reference channel. When it reaches the setpoint, it is deactivated until the heatup phase ends. Then activation and deactivation follow the standard procedure for *Melt-on-Demand, MOD*.

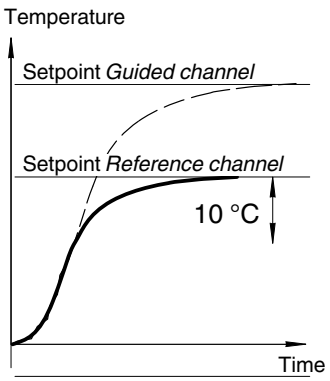


Fig. 4-12

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

The actual reservoir temperature serves as the current temperature setpoint for the other 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.

Initial Heating Behavior

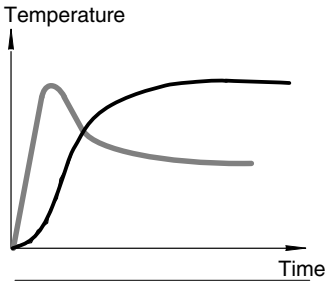


Fig. 4-13

Black line:

Initial heating behavior of VPUR-S when the reservoir is not full.

Gray line:

Initial heating behavior of VPUR-S when the reservoir is full.

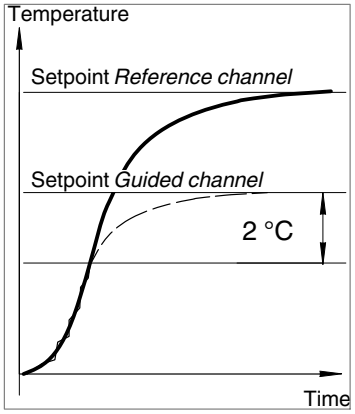


Fig. 4-14

When the current temperature setpoint of a guided channel (= actual value of reservoir/high melt) 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 (Refer to Fig. 4-14).

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* (status display) and after every standby. Also refer to section *Troubleshooting, Undertemperature Fault Triggered.* If the system ready delay time is activated, this time must also have expired before the interlock is disabled.

Motor Startup Protection

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

Condition for *Motor running*: *All motors ON* **AND** *Enable motor*

When the system is ready again (status display), the motors can be switched on again via the control panel or the interface *Standard I/O*.

Acknowledging Startup Protection

On Control Panel

Press the key *Switch on/off all motors (collective enable)*; startup protection is acknowledged and all enabled motors run again.

Via Standard I/O

Switch *All motors ON/OFF* from OFF to ON. All enabled motors 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 then back to 1). All enabled motors are running again.

or

Switch off all motors with the keys *Switch motor on/off (individual enable)* on the control panel; the startup protection is acknowledged. If the key(s) is/are touched again: The respective motor starts up again:

The same applies to acknowledgement via standard I/O or field bus with the signal *Enable motor* for the individual motor.

Daily Startup

NOTE: The following steps can be performed completely only with a level 1 password or, for basic settings, with a level 3 password.

Enter Password

The key that triggered the password input prompt must be touched again after the correct password has been entered. The level that corresponds to the password entered is enabled for 10 minutes.

Switch On Melter

CAUTION: Do not operate Nordson gear pumps without material. Before switching on the motor, ensure that a slug has been placed in the tank.

NOTE: How the melter is to be started up was specified upon initial startup.

If *Automatic heatup upon melter start* (default) was preset:

1. Set the main switch to I/ON.
   - When the seven-day clock is switched off, the melter begins to heat up
   - When the seven-day clock is switched on, the melter does not begin to heat up until the starting time is reached.

OR:

If *Automatic heatup upon melter start blocked* was preset:

1. Set the main switch to I/ON. The melter does not begin to heat up until the command is given. This applies regardless of whether or not the seven-day clock is switched on.
2. Wait until the system is ready for operation (green status display *System ready*).
3. Enable the motor(s) (password level 1). Refer to Fig. 4-28.
4. If desired, switch immediately to password-protected mode. Press  *Activate password protection*.

   (Refer to *Control Panel ć Overview - / V1*)

NOTE: To prevent excessive wear, the motor/pump speed should not continuously fall below 5 min^{-1} (rpm) or continuously exceed 80 min^{-1} (rpm).

5. Switch on the motor(s). Refer to Fig. 4-28.

Daily Shutdown

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.

NOTE: The melter can simply be switched off at the end of the day or over the weekend. The material in the slug is cold and hard. The is sealed on the melting plate in the tank.

And when the melter is used again the next work day, it just needs to be switched on.

Emergency Shutdown

ATTENTION: Switch off the melter immediately in any emergency situation.

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

NOTE: No additional precautionary measures are required. The material in the slug is cold and hard. The is sealed on the melting plate in the tank.

Black Main Switch (Special Model)

Melters with a black main switch are usually supplied with power through a higher-ranking system with a higher-ranking main switch. The black main switch does not serve as an EMERGENCY OFF device. Connected components can still be switched on!

Control Panel of the Industrial PC (IPC)

Screen Saver

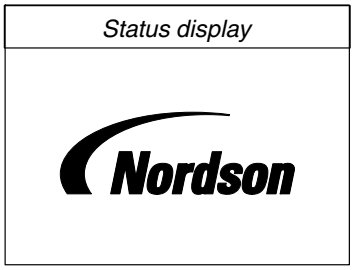


Fig. 4-15

The screen saver is activated when the screen has not been touched for ten minutes. The background lighting is reduced.

To deactivate the screen saver, touch the screen and exit with the door symbol.

Starting screen

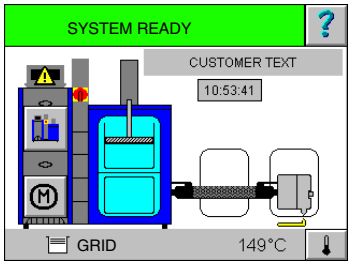


Fig. 4-16

CUSTOMER TEXT: Can be determined by the customer, e.g. adhesive type used in the production line. Refer to *Control Panel - Overview - / V12* for information on entering text.

Service symbol: A wrench lights up. Refer to *Control Panel - Overview - / V16.*

The scan line can show:

The actual values of the activated temperature channels

The motor speeds and the pressures of sensors assigned to a motor

Additional screens are called up by pressing these symbols:

Move to the screen in which the setpoints can be entered for all temperature channels (T)

Hoses, the group ALL HOSES and the group ALL, which contains hoses, are displayed.

Applicators, the group ALL APPLICATORS and the group ALL, which contains applicators, are displayed.

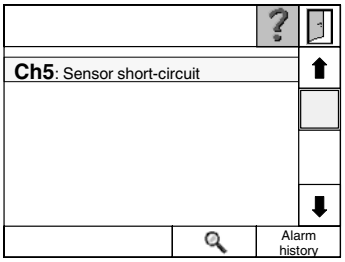
Move to melter screens (V)

Move to motor screens (M)

Channel Numbers

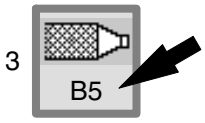
On Control Panel

NOTE: The grid and reservoir have no channel numbers.

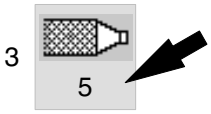


The numbers of the temperature channels shown on the control panel (alarm lists and setpoints) are a factor of the settings made by the operator.

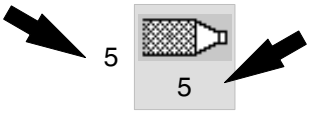
Channel *Ch5* (when part of a group)



Channel *Ch5* (when not part of group), if at least one other channel belongs to a group



Channel *Ch5* (when not part of a group), if no other channel belongs to a group



NOTE: To determine the current channel numbers, refer to the screen *Define Groups* on the control panel.

On Field Bus

When the *Channel number* (Refer to the communication data list) is transmitted via the field bus, the melter-internal channels grid (low melt) and reservoir (high melt) occupy numbers 1 and 2. This means that the external channels (applicators, hoses, ...) begin with number 3. The numbering of the wiring is the same as shown in the wiring diagram and, unlike on the control panel, can not be changed.

Temperature Parameters

CAUTION: Consider the maximum operating temperature of the installed applicator and the other heated system components when setting temperatures.

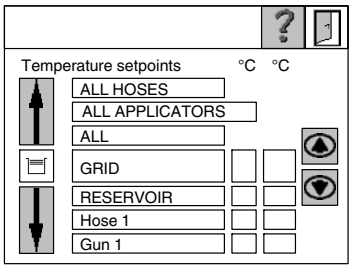


Fig. 4-17
T1

Left temperature column (yellow): Actual values

NOTE: If an actual value has a white background instead of yellow, the channel is in standby.

Right temperature column (green): Setpoints

Display	Meaning
Only setpoints	Channel is deactivated
Only actual values	Channel is activated and in display mode
Setpoints and actual values	Channel is activated and in control mode

ALL: All temperature channels receive the same setpoint.

ALL HOSES / ALL APPLICATORS: All temperature channels in the respective group receive the same setpoint.

Fig. 4-18
Keyboard symbol

NOTE: If all of the temperature channels or all temperature channels of a group do not have the same setpoint, a keyboard symbol is visible instead of a setpoint. Touch symbol and set temperature with the input window.

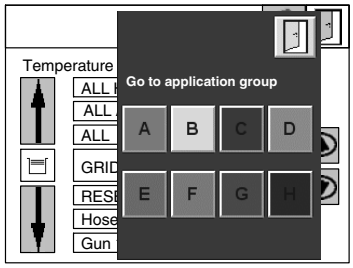


Fig. 4-19

Touch the *Channel symbol / number key.* A window opens. Touch the group key to move to the first temperature channel of the selected application group.

	Box 12 = L	Box 12 = M	Box 12 = T
Grid and reservoir	135 °C (275 °F)	150 °C (302 °F)	175 °C (347 °F)
Hose1 / Gun1	Deactivated or if activated, like grid and reservoir		
All other channels	Deactivated or 40 °C (104 °F), if activated		

Temperature Parameters *(contd.)*

Recommended Temperature Setpoints

CAUTION: When setting the temperature, the temperature prescribed by the hot melt adhesive manufacturer is decisive. The maximum operating temperature for the product described here and the heated system components may not be exceeded.
Nordson will grant no warranty and assume no liability for damage resulting from incorrect temperature settings.

The values indicated in the table are general values based on experience; the actual values required may differ.

Melting plate	Approx. 5 to 10 °C (9 to 18 °F) above softening temperature
Reservoir	10 °C (18 °F) below prescribed processing temperature
Undertemperature value - warning Undertemperature value - fault	 15 °C (27 °F) (differential to the setpoint)
Overtemperature value - warning Overtemperature value - fault	 15 to 30 °C (27 to 54 °F) (differential to setpoint)
Applicator (accessory)	Prescribed processing temperature
Hose (accessory)	Prescribed processing temperature

Example: Increase Setpoint Temperature

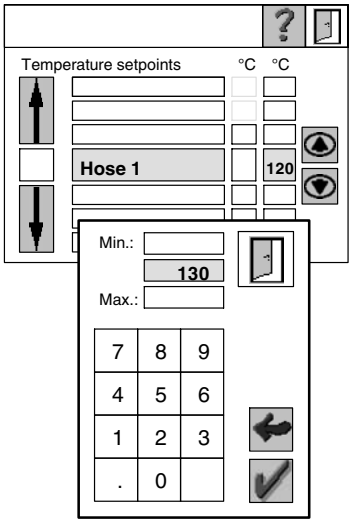
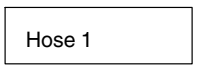


Fig. 4-20

1. Touch to select *Hose 1*.
2. Touch ten times / hold down

OR

3. Touch the green field *120 °C* in the right temperature column (setpoints).
4. Enter 130 in the input window and confirm with .



To set the parameters, select the temperature channel (in this case: Hose 1) and touch the green field *Hose 1*. Then refer to *Control Panel - Overview - / T2*.

For information on changing a name to your local language (e.g. *Hose 1* to *HOSE 1*), refer to *Control Panel - Overview / T3*.

Temperature Parameters *(contd.)*

Grid

Parameters (Screen 1: Alarm Values)

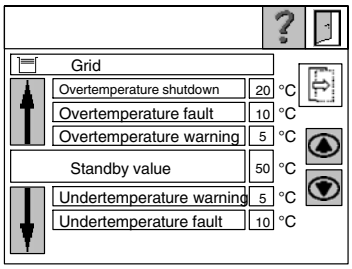


Fig. 4-21
T2

NOTE: The temperatures in this screen are differential values.

Standby temperature =	Setpoint temperature - **Standby value**

The minimum standby temperature is 40 °C (100 °F), even if the selected settings would (mathematically) permit the standby temperature to be lower.

Standby value: **50 °C** (90 °F)

The **values*** are not a factor of the setpoint during the heatup and cooling phases (Refer to *Monitoring of Heatup and Cooling*).

When the ALL, ALL HOSES and ALL APPLICATORS groups are used, the values for warning and fault are always assumed together, even if only one of the values has been changed. This ensures that the fault value is always larger than or equal to the value for the respective warning.

Warning *Overtemperature* = Temperature setpoint **+ Overtemperature warning***	**5 °C** (9 °F)
Warning *Undertemperature* = Temperature setpoint **- Undertemperature warning***	**20 °C** (36 °F)

NOTE: The warning value is a factor of the fault value in that the values for the warning may not be larger than the corresponding values for the faults. When appropriate, first increase the fault value.

Fault *Overtemperature* = Temperature setpoint **+ Overtemperature fault**	**10 °C** (18 °F)
Fault *Undertemperature* = Temperature setpoint **- Undertemperature fault**	**25 °C** (45 °F)

Temperature Parameters *(contd.)*

Overtemperature shutdown =	Setpoint temperature + **(Overtemperature fault + 10 °C)*** Setpoint temperature + **(Overtemperature fault + 20 °F)***

The overtemperature shutdown is calculated and therefore cannot be changed.

NOTE: When new material having a higher setpoint temperature is processed, the value that triggers an overtemperature faults must be reduced to prevent the melter from switching off when not intended.

Fixed maximum temperature for overtemperature shutdown

Box 12 = L	Box 12 = M	Box 12 = T
165 °C (330 °F)	195 °C (385 °F)	215 °C (420 °F)

Temperature Parameters *(contd.)*

Graphic Presentation of Temperature Parameters

*Refer to *Monitoring of Heatup and Cooling*

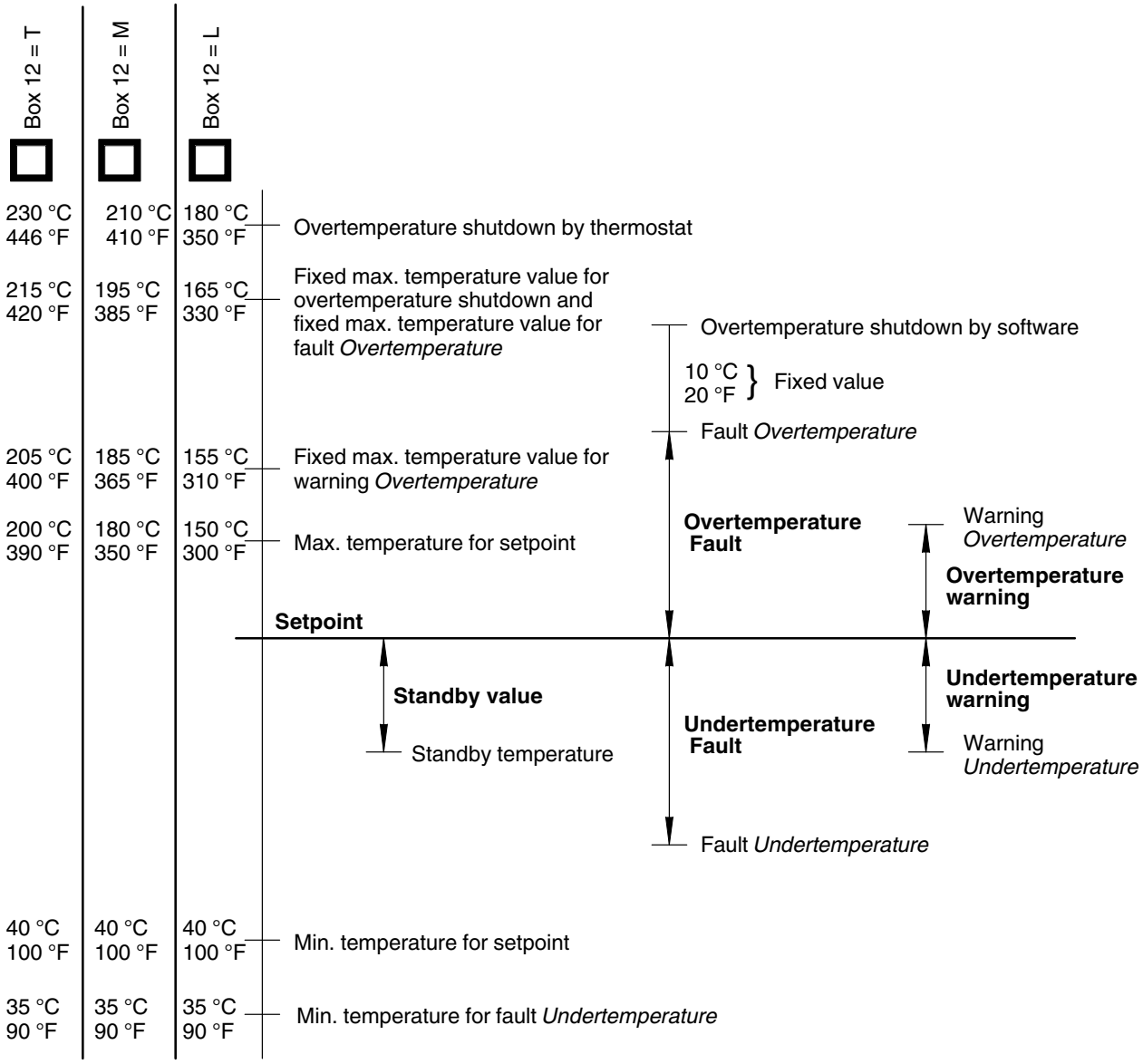


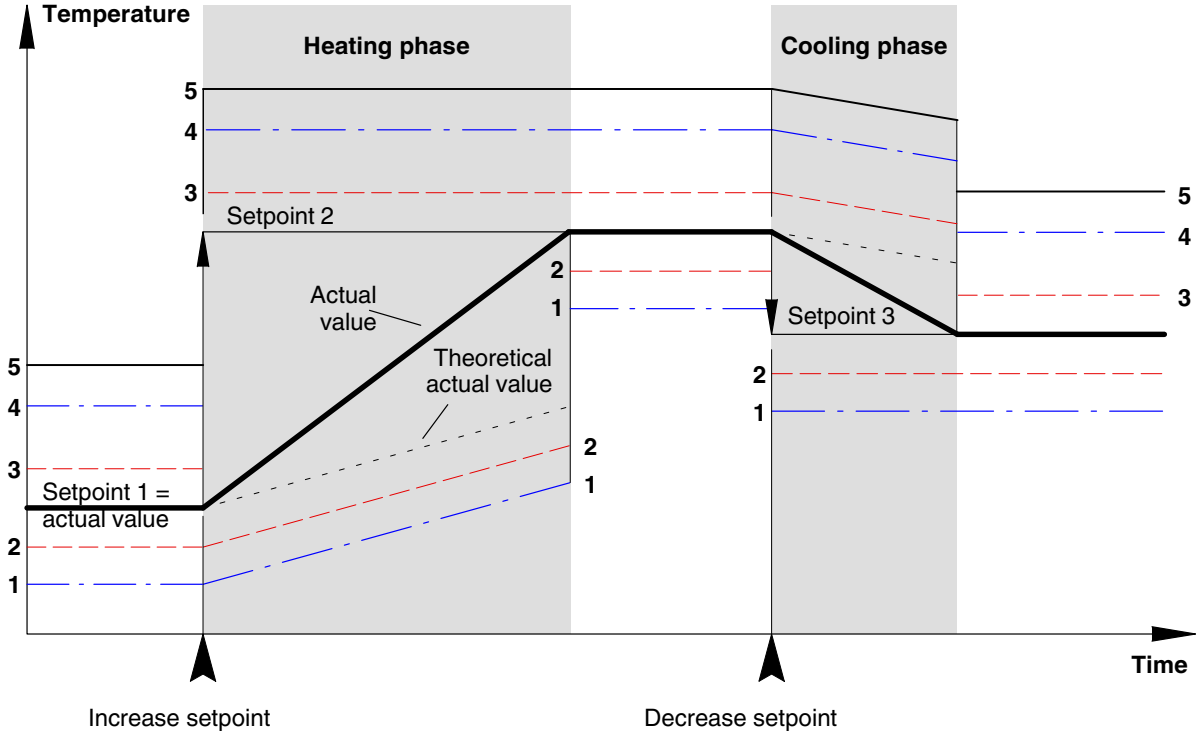
Fig. 4-22

Temperature Parameters *(contd.)*

Monitoring of 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 a theoretical 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.



5 Overtemperature shutdown
4 Overtemperature fault
3 Overtemperature warning
2 Undertemperature warning
1 Undertemperature fault

Actual value

Theoretical actual value

Fig. 4-23

Temperature Parameters *(contd.)*

Alarm

Refer to Fig. 4-24: If the actual value of a temperature channel is less by the undertemperature *Warning* ● than the theoretical value ○ that it should have at least reached after time X, an undertemperature warning is issued.

If the actual value of a temperature channel is less by the undertemperature *Fault* ● than the theoretical value ○ that it should have at least reached after time Y, an undertemperature fault is issued.

The same applies accordingly to the cooling phase.

This has the advantage that

- Changing the setpoint
- Switching on cold application groups
- Connecting cold or heated temperature channels to the hose receptacles

can occur during operation without triggering undertemperature or overtemperature fault/shutdown, which would cause interruptions in production.

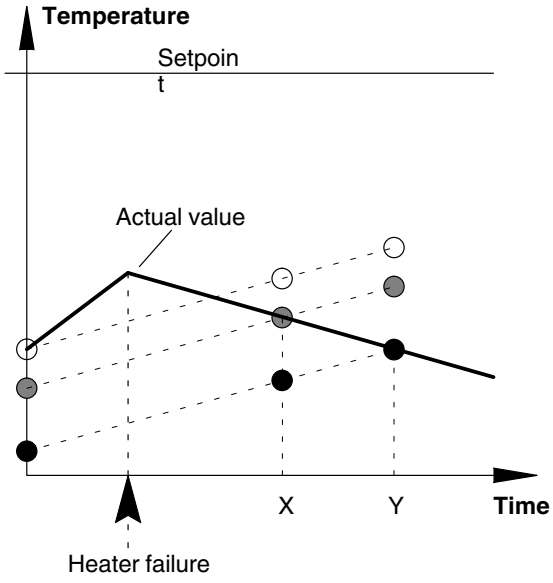


Fig. 4-24 Example *Alarm during heatup phase*

Temperature Parameters *(contd.)*

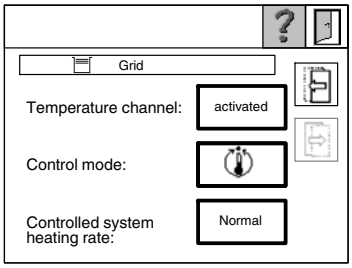


Fig. 4-25
T3

Parameters (Screen 2: Activate Channel, Mode, Controlled System Heating Rate)

Temperature Channel: Select Activated/Deactivated

Deactivated
A deactivated channel is not heated. Temperature control and monitoring for faults do not take place.

Exception: Overtemperature shutdown at fixed temperature of

Box 12 = L	Box 12 = M	Box 12 = T
165 °C (330 °F)	195 °C (385 °F)	215 °C (420 °F)

Enabled
Normal state of a channel during operation. Activated channels can be switched to display or control mode.

NOTE: Temperature channels for reservoir and grid can not be deactivated.

Deactivated

Mode: Select Display Mode or Control Mode

Display Mode
In *Display mode* only the measured temperature is displayed. Temperature control and monitoring for faults do not take place.

Exception: Overtemperature shutdown at fixed temperature of

Box 12 = L	Box 12 = M	Box 12 = T
165 °C (330 °F)	195 °C (385 °F)	215 °C (420 °F)

NOTE: Temperature channels for reservoir and melting plate (grid) as well as grouped channels cannot be switched to display mode.

Control Mode
The PID control algorithm is used for the selected controlled system heating rate, e.g. *Normal*, in control mode.

Control mode

Temperature Parameters *(contd.)*

Controlled System Heating Rate

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

There are fixed parameter sets for the first four types.

Type	Suitable for
Slow*	Temperature channels that heat slowly
Normal	Grid, reservoir, hose, applicator
Fast **	Temperature channels that heat quickly
Very fast	Air heater
Customer-de fined	Refer to *Parameters (Screen 3)*.

* To be set if heating the last 5 °C (9 °F) up to the setpoint takes too long (possible with a very high temperature setpoint)

** To be set if the temperature swings above the setpoint during heatup (possible with a very low temperature setpoint)

Normal

Parameters (Screen 3)

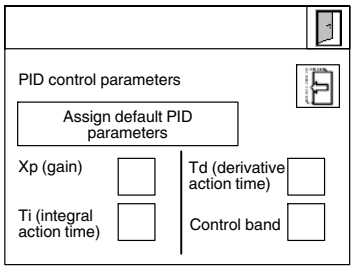


Fig. 4-26
T4

Controlled System Heating Rate: Customer-defined

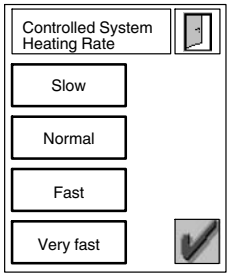
The PID control parameters can be selected as desired in this screen.

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

NOTE: The I-component can be deactivated with the value *0*.

The control band is the +/- range around the temperature setpoint. Above the band the heater is always off, and below the band the heater is always on.

Recommended control band: 5 °C (9 °F)



Assign default PID parameters For orientation purposes, the parameter set of one of the four controlled system heating rates can be loaded. Then individual values can be adjusted.

Melter

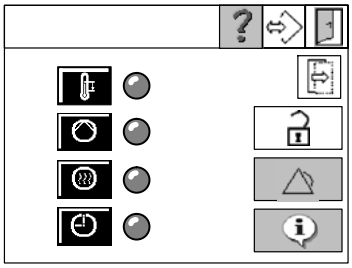


Fig. 4-27
V1

Entering/Exiting Standby

Refer to *Control Panel - Overview - / V9* for information on standby setup.

Switching On/Off All Motors (Collective Enable)

Also refer to *Initial Startup* (Fig. 4-8) and *Motor Startup Protection.*

Only enabled motors can be switched on. Prerequisite: The system is ready for operation.

Enabling

If there is no individual enable, the motors are enabled with the key *Switch all motors on/off (collective enable)* **AND** via the interface *Standard I/O* with the signal *All motors ON (collective enable)*.

Switching On

If there are individual enables, the motors are switched on with the key *Switch all motors on/off (collective enable)* **AND** via the interface *Standard I/O* with the signal *All motors ON (collective enable)*.

The indication lamp in the key can be different colors:

Gray (off):	No collective enable on control panel
Yellow:	Collective enable on control panel, but no motor running
Green:	Motor running.

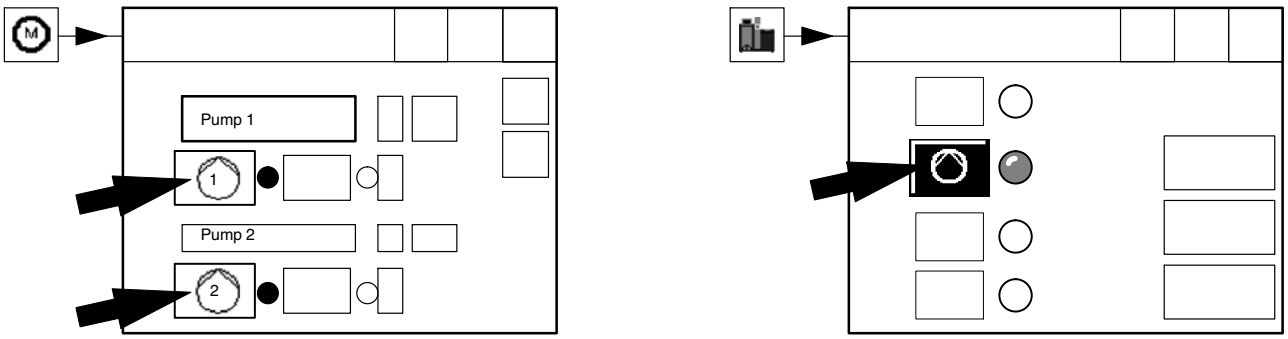


Fig. 4-28 Motor(s): Enable on the motor screen - switch on on the melter screen

Melter *(contd.)*

NOTE: The *Standard I/O* interface signals *All motors ON/OFF (collective enable)* and *Enable motor* can be deactivated with a key. The motors can then only be enabled and switched on via the control panel (Refer to Fig. 4-83, *Motor enable*).

Switching On/Off Heaters

The heaters can be switched on via the control panel, the *Standard I/O* interface, the seven-day clock or the field bus. The main switch must be set to I/ON.

The main contactor closes. The power supply to the heaters and motors is switched on. The heatup phase begins.

NOTE: When the heaters have been switched off, the control unit continues to be supplied with voltage, so the heaters can be switched on at any time via the seven-day clock.

Switching On/Off Seven-day Clock

Refer to *Control Panel - Overview - / V8*

Activate Password Protection

The password protection (selected security level) is active immediately; if this key is not touched, it is activated after 10 minutes.

Also refer to *Control Panel - Overview - / V19*.

NOTE: This key is visible only when a password has been entered.

Melter *(contd.)*

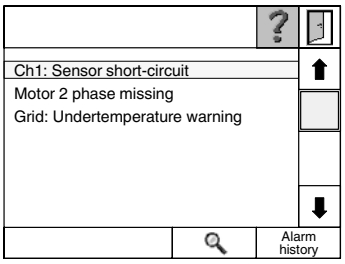


Fig. 4-29
V2

Alarm Log

Also refer to *Channel Numbers* at the beginning of this section.

Mark an alarm via the scroll bar or touch it to see the details of the alarm (using magnifying glass symbol).

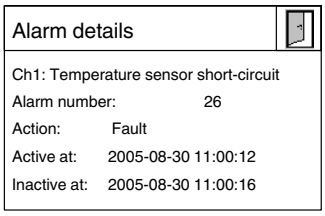


Fig. 4-30
V3

Alarm Details

Active at and *Inactive at:* Date and time of alarm.

The date is shown in the following format: YYYY-MM-DD.

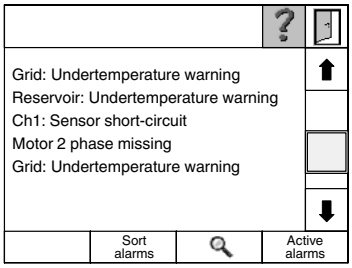


Fig. 4-31
V4

Alarm History

Up to 512 alarms are displayed.

Active alarms: Return to *Alarm log*.

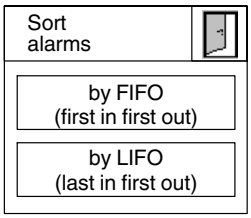


Fig. 4-32

Sorting Alarms

The alarms can be sorted first to last (FIFO) or last to first (LIFO).

The date is shown in the following format: YYYY-MM-DD.

Melter *(contd.)*

Information (Melter and Control System)

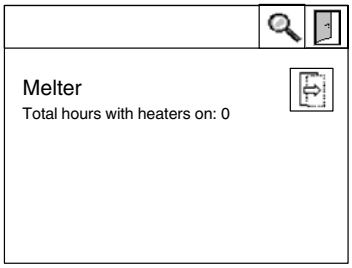


Fig. 4-33
V5

Total hours with heaters on: This value indicates the hours that the heaters were switched on.

The magnifying glass is a link to the next screen:

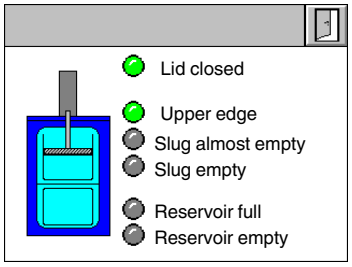


Fig. 4-34
V6.1

Tank Status

The message *Upper edge* means that the platen has just moved into the tank.

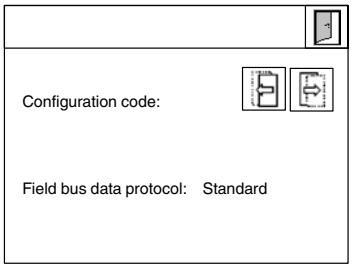


Fig. 4-35
V5.1

The software configuration code, the type of field bus data protocol as well as the firmware and software versions used are shown in the subsequent screens.

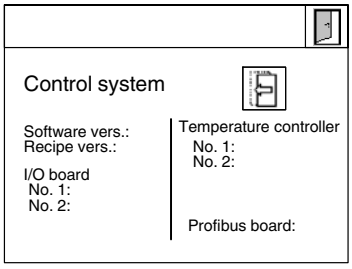


Fig. 4-36
V6

Software vers. Version of control panel software
X.YY.ZZZ (example: 6.00.000)

Melter *(contd.)*

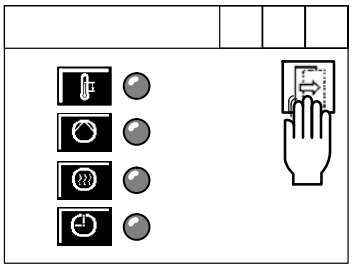
Working with Application Groups

All temperature channels (except for grid and reservoir) can be combined to application groups *Group A* to *Group H*. Channels not assigned to any group belong to *No group*.

The channels of *Group A*, then *Group B*, etc. up to the channels without group *(No group)* are displayed in the scan line of the starting screen.

Of the eight possible application groups, two can be switched via the control panel as well as via the interface Standard I/O; the others can be switched only via the control panel.

Refer to *Standard I/O Group Inputs*.



Creating Application Group(s)

1. Define groups
2. Select standard I/O group inputs if groups are to be switched via the interface.
3. Select feature (*Deactivated* or *Standby*)
4. Switch application group(s).

Switching Application Group(s)

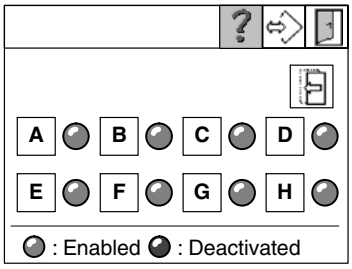


Fig. 4-37

Temperature channels (except for grid and reservoir) can be combined to application groups A to H (Refer to *Defining Groups*).

The indication lamp shows whether the application group is activated (green) or whether the application group is deactivated or in standby (gray). Touch key to switch between activated and deactivated/standby.

The feature *Deactivated* or *Standby* can be selected in the setup screen. The selection is valid for all application groups.

Melter *(contd.)*

Application Groups Setup

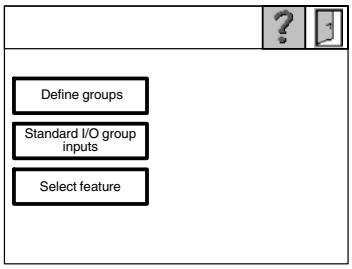


Fig. 4-38

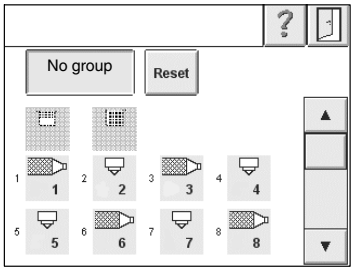


Fig. 4-39

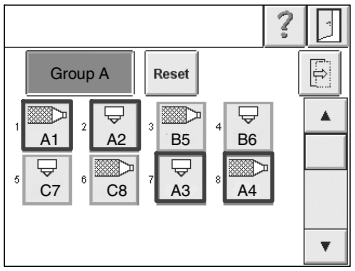


Fig. 4-40

Defining Groups

The first screen always indicates all of the temperature channels allocated to the melter. For a standard melter, there are no more than 14 channels (2 internal, 12 external).

The two internal channels for grid and reservoir are not numbered. This means that the first external channel is assigned the number 1 (original state).

Also refer to *Channel Numbers* at the beginning of this section.

Example:

1. Select group letter, e.g. *Group A*.

   A different group letter can be selected by repeatedly pressing the group key.

2. Mark channels that are to be included in the group by touching the respective channel key.

   In Fig. 4-40: Channel 1, 2, 7 and 8. The frame around the key is shown in the color of the group key. The channels are counted within the group, and the consecutive number (in this case A1 to A4) appears below the channel symbol.

   If necessary, the channel symbol (hose, applicator, air heater) can be changed by pressing the channel symbol repeatedly.

3. Repeat steps 1 and 2 for every group.

   NOTE: Each channel can be assigned only once. It appears transparent for all other groups and can not be assigned to another group until it has been removed from the old group.

Melter *(contd.)*

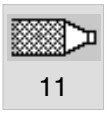


Fig. 4-41
No group

Removing a Channel from a Group

1. Select the group from which the channel is to be removed by repeatedly pressing the group key.
2. Touch the channel key repeatedly until the colored frame around the key and the group letter under the channel symbol disappear. Refer to Fig. 4-41.

   The channel can now be assigned to another group. Refer to *Defining Groups, Example*.

Key Reset

When this key is touched, all groups are dissolved and the channel symbols are reset. However, the PID parameters remain unchanged.

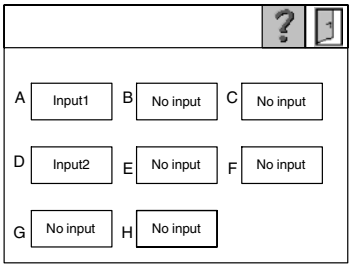


Fig. 4-42

Standard I/O Group Inputs

Input: No more than two of the eight possible application groups A to H can be assigned to the two corresponding inputs of the interface *Standard I/O*.

The desired input for the application group is selected by pressing the key repeatedly. The inputs 1 and 2 are permanently assigned to the pins 11 and 12 of the interface.

No input: These application groups can not be switched via the interface *Standard I/O*. These groups must be switched by the operator via the control panel or via the field bus.

Select Feature

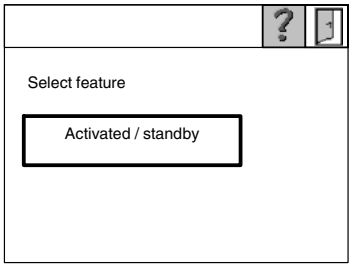


Fig. 4-43

Deactivated: The temperature channels assigned to a deactivated application group are not heated.

Standby: The temperature channels in this application group are lowered by the standby values set in the temperature parameter screen (Refer to Fig. 4-21).

Melter *(contd.)*

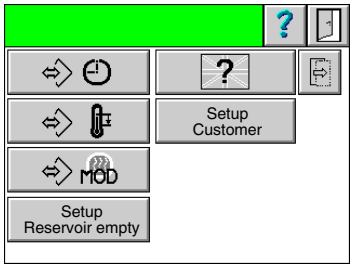


Fig. 4-44
V7

Setup (Screen 1: Seven-day Clock, Standby, Melt-on-Demand (MOD), Adjusting Remaining Volume, Changing Language, Recipes)

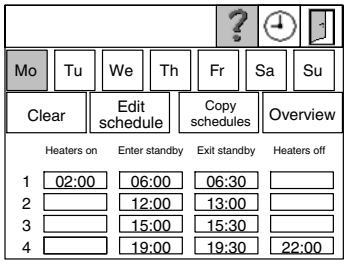
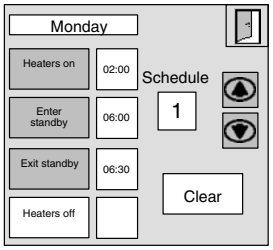


Fig. 4-45
V8: Main screen

Seven-day Clock

Heaters and standby can be controlled via the seven-day clock. Up to four schedules that run at the same time can be stored for each day of the week.

Clear: All of the schedules for the marked day (in this case: Monday) will be deleted.



Editing Schedule

The times are entered by row. The corresponding key must be activated to be able to enter a time.

NOTE: 00:00 is a valid time; it does not mean that this feature is switched off.

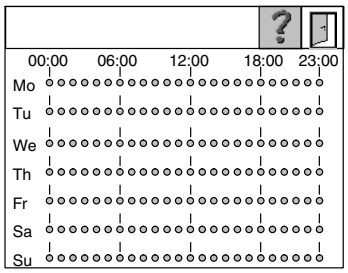
Delete (individual schedules): The displayed schedule is deleted.

Copying Schedules (Example: Copy schedules for Monday to Tuesday and Friday)

1. Select Mo in the main screen.
2. Schedule copy : A window opens in which the days Tuesday and Friday have to be marked.
3. Confirm selection with ✓.

The schedules have been copied.

Melter *(contd.)*



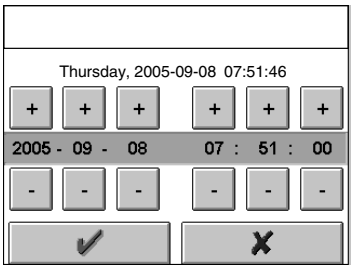
Overview

Gray: Heaters off / standby off

Yellow: Enter standby

Green: Heaters on

NOTE: The programmed times are shown, not the melter mode.



Set Date / Time

The current date and time can be set with the +/- keys.

The date is shown in the following format: YYYY-MM-DD (Y: year; M: month; D: day)

NOTE: The time is not automatically changed to and from daylight savings time.

Important when Using the Seven-day Clock (Example of a Schedule)

Heaters on	08:00
Enter standby	12:00
Exit standby	13:00
Heaters off	17:00

If the seven-day clock is not switched on until after 08:00 (key), the switching time 08:00 has already passed; the heater is not switched on by the seven-day clock. The schedule is ineffective.

Melter *(contd.)*

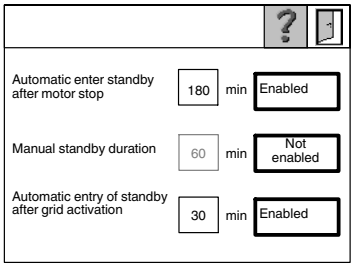


Fig. 4-46
V9

Standby

Standby serves to protect the material and to save energy during breaks in production. The time after which standby should be entered can be selected by the operator (between one minute and 24 hours).

For information on setting the standby value (value by which the setpoint temperature is reduced), refer to *Control Panel - Overview - / T2.*

Automatic Entry

(A) Standby is entered as soon as all of the motors have been stopped for a certain time. Enable *Automatic enter standby ... after motor stop* for this purpose.

Automatic enter standby after motor stop: **enabled** (180 min)

(B) Standby is entered as soon as the melting plate has been in control mode for a certain time and the motor has been stopped. The warning *Grid activated too long* appears.

For most applications the melting plate has be remain active for much less than the 30 min default to meet the adhesive requirement in the reservoir. So if the melting plate remains in control mode for a substantially longer time, it is likely that no adhesive has been fed and that the heaters are switched on but not working, or the level sensor is not calibrated properly. The set time may need to be adapted to the production.

The time after which standby should be entered can be selected by the operator (between one minute and 120 minutes).

Enable *Automatic enter standby ... after grid activation* for this purpose.

Automatic entry of standby after grid activation: **enabled** (30 min)

Manual Exit

Automatic standby is exited by the operator on the control panel .

Manual standby duration is ineffective here.

Continued ...

Melter *(contd.)*

Automatic Exit

Exit standby can also occur automatically. Enable *Manual standby duration* for this purpose. After the set time has expired, the melter automatically returns to heatup guided by reference channel.

The time can be selected by the operator (between one minute and 24 hours).

Manual standby duration: **Disabled**

OR:

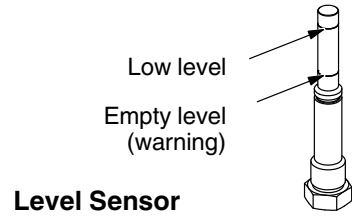
Manual standby duration: **60 min**, if enabled

Manual Entry/Exit (Control Panel)
External Entry/Exit (Interface)

Either the operator enters and exits standby on the control panel or this occurs via the interface *Standard I/O*.

Entering/Exiting via the Seven-day Clock

Refer to *Control Panel - Overview - / V7* and *V8*.



Level Sensor

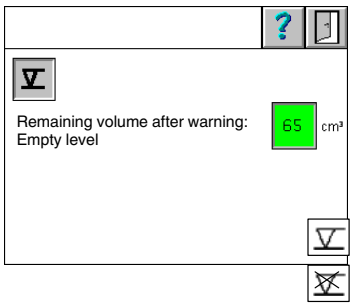


Fig. 4-47
V13

Empty level configuration

Adjusting Remaining Volume

The remaining volume is the volume available between the warning *Empty level* and the fault *Empty level*.

The software calculates the consumption with the theoretic output volume of the installed pumps. The adhesive stuck to the reservoir is not taken into consideration.

This means that the automatically calculated pump revolutions until the reservoir is empty and the fault *Empty level* is indicated are also theoretic values.

In the input field the customer can enter the actual remaining volume based on his production conditions.

Generation of the fault *Empty level* can be switched off with this symbol to be able to empty the reservoir for maintenance and repair work. The operator must then switch off the motors.

Remaining volume: 65 cm^3

Error indication is switched on.

Melter *(contd.)*

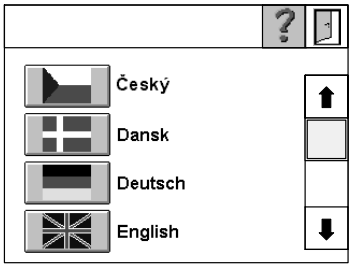


Fig. 4-48
V11

Change Language

The IPC enables the system to be operated in many different languages. The operating language can be selected in this screen.

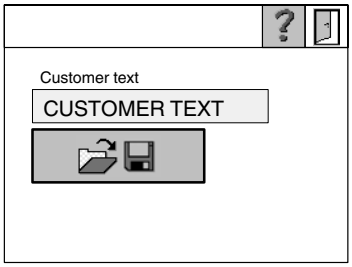


Fig. 4-49
V12

Customer Setup

Text can be entered that will appear in the starting screen, e.g. adhesive type used in the production line.

 Move to recipes

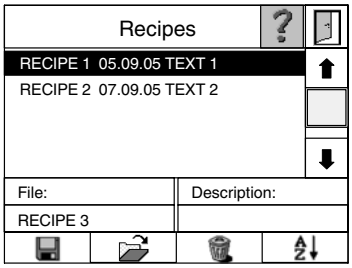


Fig. 4-50

Recipes

A recipe is a file in which the customer saves his production-specific parameters.

Recipes are saved on the IPC memory board. They can also be saved on an external PC and then transferred from there again. This allows:

- Recipes to be exchanged between melters
- Existing recipes to continue to be used, even after the memory board is replaced.

Refer to *Operation via the IPC Webserver* for *Upload and Download of Customer Recipes*.

Continued ...

Melter *(contd.)*

 Save recipe

The operator must enter a name (max. 8 characters) under *File*. To better identify the individual recipes, information such as the name of the application can be entered under *Description*. All current, adjustable parameters are saved, except for the following.

Exceptions:

- Brightness
- Date / time
- Local language
- IPC IP address, subnet mask and gateway address
- PROFIBUS address
- Passwords
- Selected line speed signal and all values based on the line speed signal.

 Load recipe

The current parameters are overwritten with the values from the selected recipe.

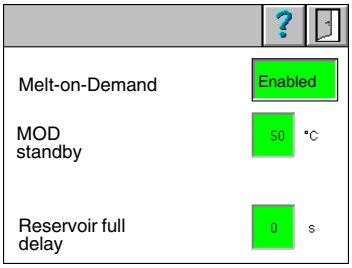
NOTE: If during loading of the recipe (approx. 4 s) the melter is switched off (e.g. power failure), the control unit will no longer function properly. The desired recipe must then be loaded again.

 Recipe is irrevocably deleted.

 Sort recipes by name, description or date.

Melter *(contd.)*

Melt-on-Demand, MOD



Melt-on-Demand (MOD) is used to gently melt the proper amount of adhesive. This feature controls how the melting plate is heated as a factor of how full the reservoir is.

Melt-on-Demand

Melt-on-Demand is switched on and off on the IPC. The button indicates: *Enabled* or *Disabled*.

The *Melt-on-Demand* feature ensures that the precise quantity of adhesive needed for the current production is melted.

When *Melt-on-Demand* (MOD) is enabled, the system automatically switches between the MOD standby temperature and heating control mode of the temperature channel *Grid* (melting plate).

MOD Standby

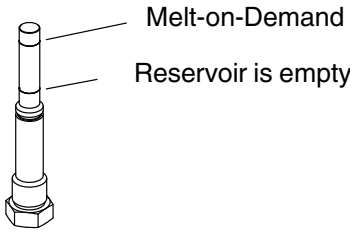
As soon as a certain level is reached in the reservoir, the melting plate automatically switches to *MOD standby*. The MOD standby setting should be selected to suit the material and application.

The feature *MOD standby* is used to reduce the temperature of the the melting plate when no material is being melted. The temperature selected should be low enough that the material just barely does not melt. This protects the material.

Reservoir Full Delay

The time can be selected by the operator (between 0 and 60 seconds).

Reservoir full delay: **0 s**



This means that the melting plate immediately melts new material when the level falls below the level sensor switching point *Melt-on-Demand*.

The melting plate switches off as soon as the level exceeds the switching point *Melt-on-Demand*.

The feature *Reservoir full delay* is used to extend the interval during which the melting plate heats and the reservoir is filled with liquid material. This may be necessary if too much material is supplied.

The delay time must be determined for the current production conditions and then entered on the IPC.

Melter *(contd.)*

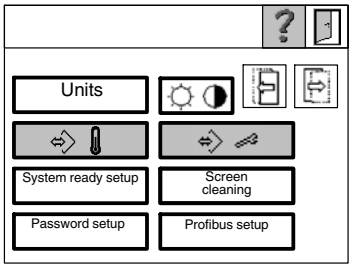


Fig. 4-51
V14

Setup (Screen 2: e.g. Units, Ready Delay Time, Password, Service Interval, Field Bus)

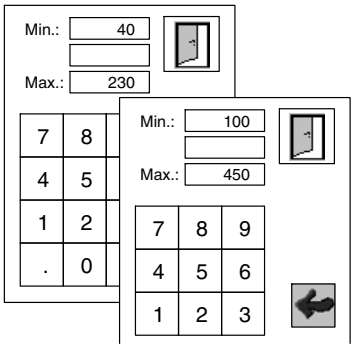


Fig. 4-52
Example °C and °F

Select Temperature/Pressure Units

The limits *Min* and *Max* are not converted exactly; they are rounded to a whole value.

If a setpoint is near a limit, switching back and forth repeatedly between the units can result in deviations from the initial input.

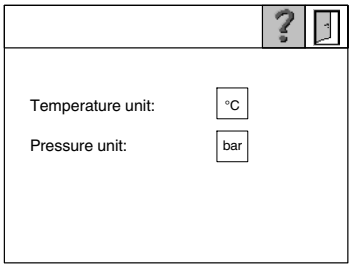


Fig. 4-53
V15

Either °C or °F can be selected as the temperature unit.

°C

Either bar, psi or kPa can be selected as the pressure unit.

bar

Melter *(contd.)*

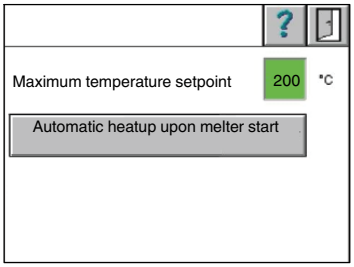


Fig. 4-54

Maximum Temperature Setpoint

This parameter is used to adapt the melter to the maximum material processing temperature permitted. The maximum temperature setpoint is a factor of the configuration code:

	Box 12 = L	Box 12 = M	Box 12 = T
	150 °C (300 °F)	180 °C (350 °F)	200 °C (390 °F)

Automatic Heatup upon Melter Start / Automatic Heatup upon Melter Start Blocked

Refer to *Daily Startup*.

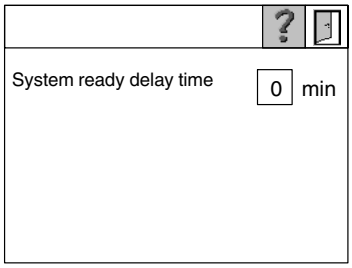
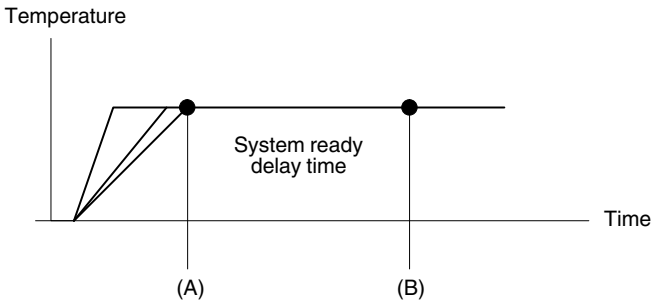


Fig. 4-55
V17

System Ready Setup

The system ready delay time is the time after which all components have reached their setpoint temperatures (A) and before the system indicates readiness (B). This additional time allows the material to reach a thermally homogenous state.



The system ready delay time, if activated, runs after every *Heatup phase* (status display).

The time can be selected by the operator (between 0 and 60 minutes).

0 min

Melter *(contd.)*

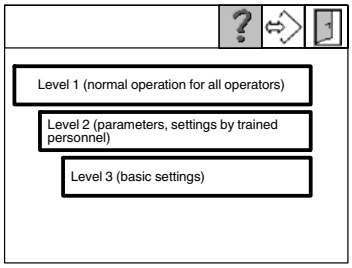


Fig. 4-56
V18

Password Setup (Also Refer to Appendix A)

Assigning New Password, e.g. for Level 1

Level 1 (normal operation for all operators) Touch key. An input window appears in which the new password must be entered and confirmed (repeated).

NOTE: The passwords must be different for each level and must be at least one character long and no longer than 16 characters.

NOTE: Every security level also applies to the lower ones. Example: The password for level 2 also grants access to the features of level 1.

When the passwords have been assigned, a security level must be selected. Refer to *Select Security Level.*

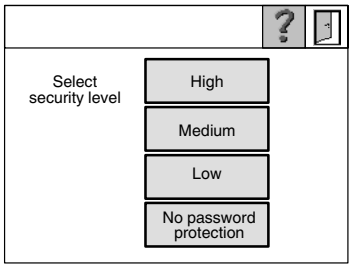


Fig. 4-57
V19

Selecting Security Level

High: Password protection is switched on for all three levels.
Medium: Password protection is switched on for level 2 and 3.
Low: Password protection is switched on only for level 3.
No password protection: Password protection is switched off for all three levels.

No password protection

If no keys are touched for 10 minutes, the selected password protection becomes active again. Then the password prompt appears again for password-protected features.

Melter *(contd.)*

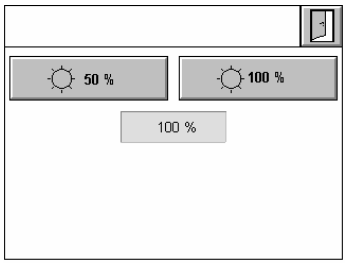


Fig. 4-58

Brightness / Contrast

Brightness: 50 % or 100 % selectable

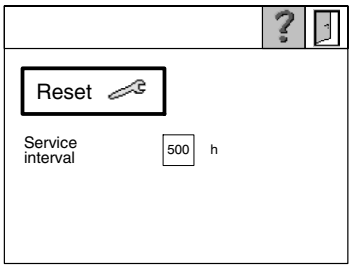


Fig. 4-59
V16

Service Interval Setup

When the *Service interval* time defined by the customer has expired, the service symbol (open-end wrench) lights up on the starting screen.

Reset The time for the service interval is reset, and the service symbol is switched off.

500 h (total hours with heaters on)

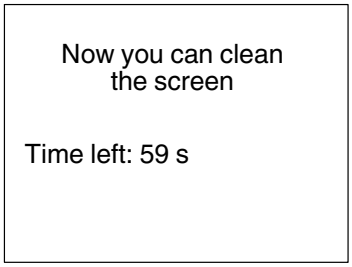


Fig. 4-60
V20

Screen Cleaning

The screen can be cleaned until the time shown has expired, without accidentally triggering any features. An indication is issued when the time has expired, and 10 s later the previous screen appears again.

Melter *(contd.)*

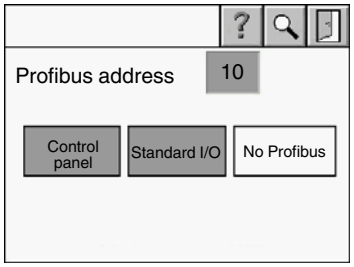


Fig. 4-61
Profibus

Profibus Setup

The melters on the field bus each require an address for communication; each address may be assigned only once in the entire field bus.

Profibus: The address is set on the IPC (Refer to Fig. 4-61).

10

Refer to section *Troubleshooting / Checking Transmitted Field Bus Data*.

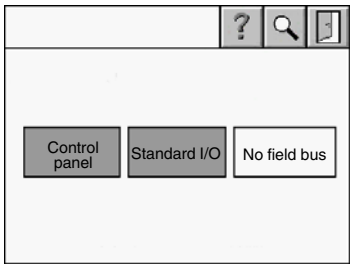


Fig. 4-62

Selecting Control Mode

NOTE: The control mode can be changed only on the control panel.

The option *Field bus communication* offers several control modes, Refer to *Control Modes* on the next page.

The illustrations 4-63 to 4-69 show the keys that must be touched to set the desired control mode.

Standard

Melter *(contd.)*

Control Modes

Standard

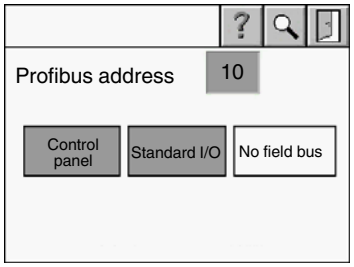


Fig. 4-63

- Control access from control panel and from external control signals via the interfaces or the IPC Webserver
- Parameter input only via control panel
- Line speed signal input via interface *Key-to-line* (XS5).

Field Bus

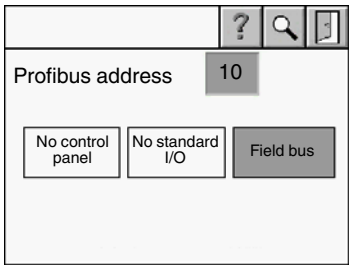


Fig. 4-64

- Control access only from master
- Control via the IPC Webserver and the interface *Standard I/O* is not possible
- Parameter input only via master On the control panel, parameters can only be displayed; there are a few exceptions.

  Exceptions:
  - Brightness
  - Date / time
  - Local language
  - PROFIBUS address
  - Control mode

Melter *(contd.)*

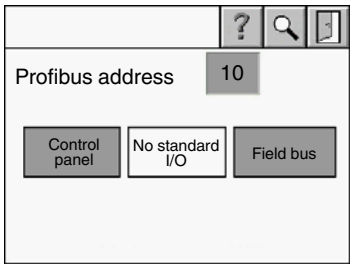


Fig. 4-65

Dual

- Control access can occur via the control panel or the IPC Webserver as well as via the master (*Who-touched-me-last*).
- Operation via the interface *Standard I/O* (XS2) is not possible
- Parameter input can occur via the control panel or the IPC Webserver as well as via the master.
- Line speed signal input via the interface *Key-to-line* (XS5) or via the field bus
- **AND** link for switching on the motors

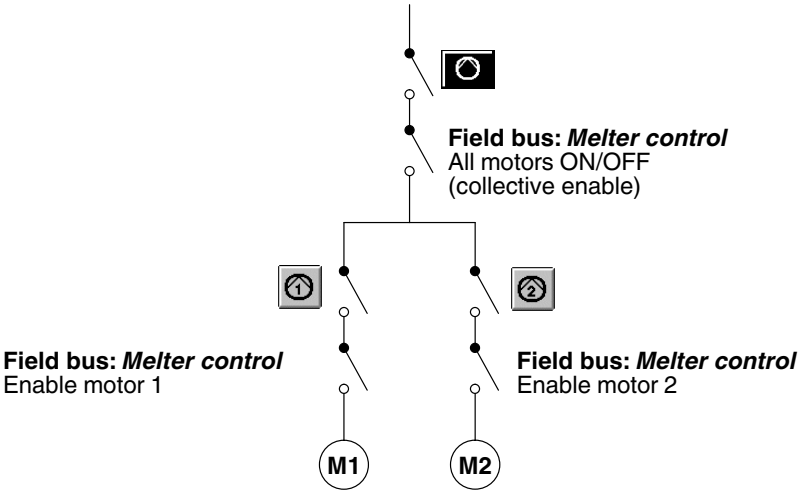


Fig. 4-66 **AND** link in *Dual* mode

Melter *(contd.)*

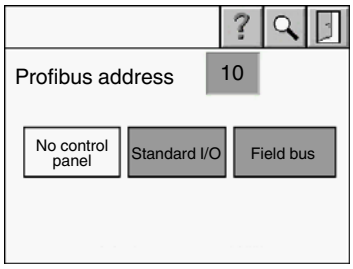


Fig. 4-67

Field Bus (Extended)

- Control access and parameter input from the master or via the interface *Standard I/O* (XS2)
- Operation via the IPC Webserver is not possible
- On the control panel, parameters can only be displayed
- Line speed signal input via the interface *Key-to-line* (XS5) or via the field bus
- **AND** link for switching on the motors

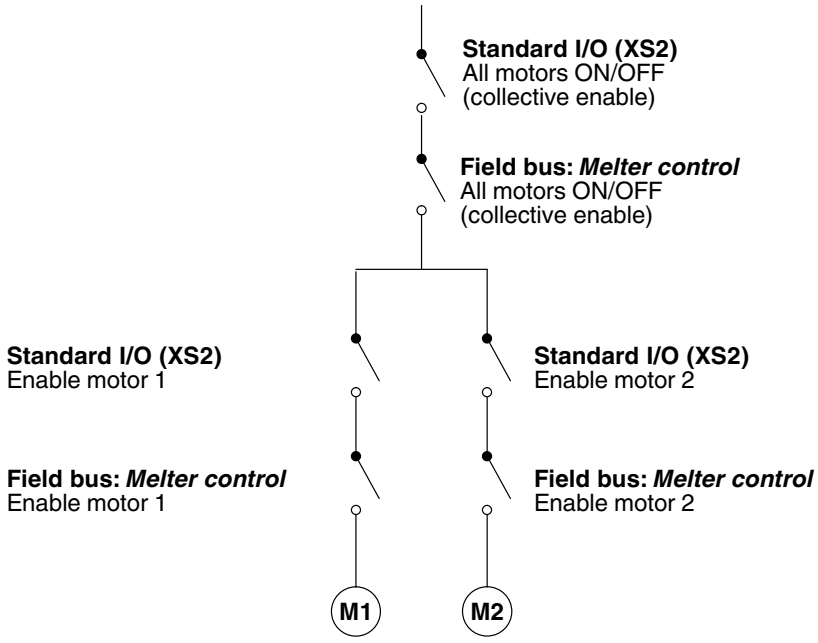


Fig. 4-68 **AND** link in *Field bus (extended)* control mode

Melter *(contd.)*

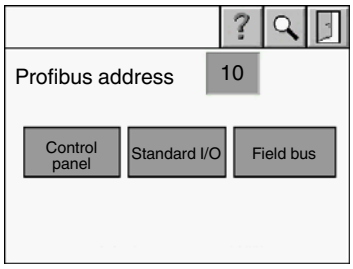


Fig. 4-69

Dual (Extended)

- Control access and parameter input from the control panel or the IPC Webserver, from the master or via the interface *Standard I/O*
- Line speed signal input via the interface *Key-to-line* (XS5) or via the field bus.
- **AND** link for switching on the motors

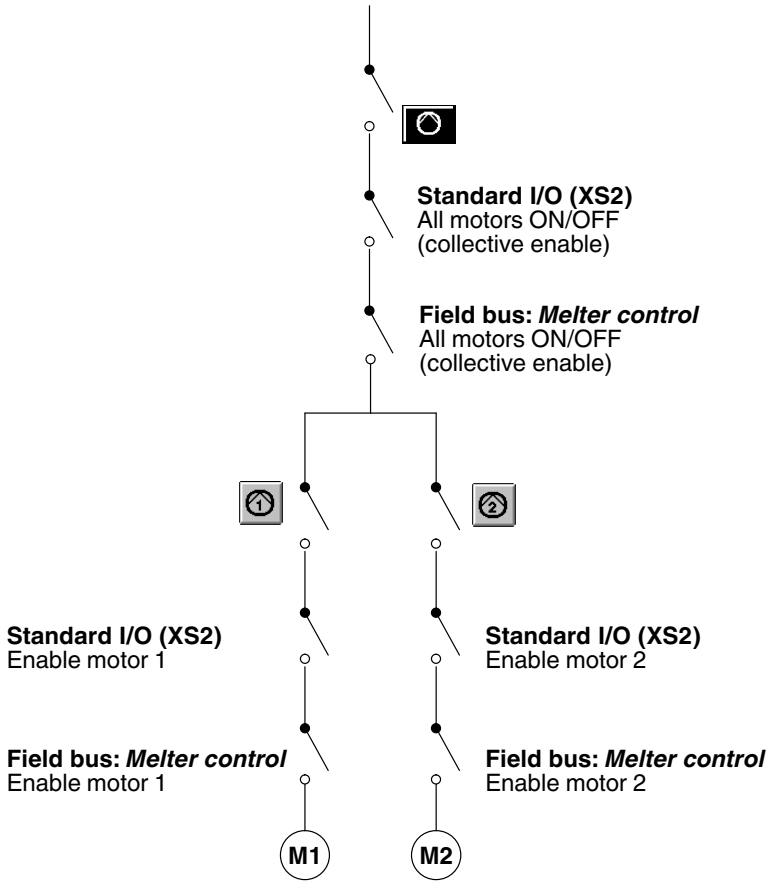


Fig. 4-70 **AND** link in *Dual (extended)* mode

Melter *(contd.)*

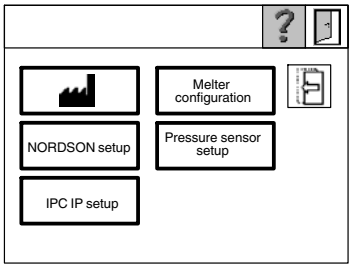


Fig. 4-71
V21

Setup (Screen 3: e.g. Restore Default Settings, Assign New Pressure Sensor)

All parameters are returned to the Nordson default settings.

Exceptions:

- Brightness
- Date and time
- Local language
- IPC IP address, subnet mask and gateway address
- PROFIBUS address
- Passwords
- Selected line speed signal and all values based on the line speed signal
- Customer text and other free texts, such as names of temperature channels, etc.
- Alarm history
- Counter (total hours with heaters on)
- Application groups
- Assignment of standard I/O group inputs
- Feature for switching application groups
- Settings in the screen *Melter configuration*.

NORDSON Setup

Only for Nordson employees with the Nordson password.

Melter *(contd.)*

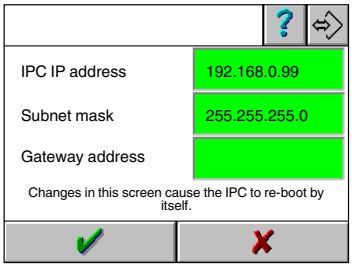


Fig. 4-72
V24

IPC IP Setup

These settings are needed to communicate with the IPC when using the Webserver. They must be clearly defined in an EtherNet network.

- IPC IP address: 192.168.0.99
- Subnet mask: 255.255.255.0
- Gateway address: *Blank* (not a required field)

Requesting IPC IP Address via DHCP

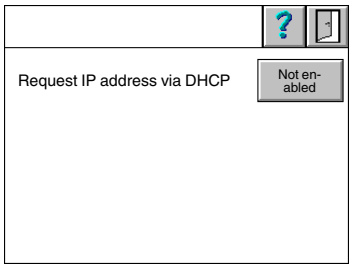


Fig. 4-73
V24.1

DHCP: The Dynamic Host Configuration Protocol is a method for automatically assigning IP addresses.

If this feature is enabled, the IPC requests an IP address from the server. The assigned IPC IP address, the Subnet mask and the gateway address of the intranet are displayed, but they cannot be changed.

- Requesting IPC address via DHCP: Disabled

Deleting Gateway Address

When a gateway address has been assigned (whether manually or via DHCP), 0.0.0.0 must be entered to delete it again. When *Requesting IP Address via DHCP* has been enabled, initially set this feature to *Not enabled*. The field is empty again after booting.

Example: Setting IP Addresses in a Network

All Nordson melters are delivered with the same IPC IP address. To be able to work together in a network, every device, including a PC, must be assigned its own IP address (Fig. 4-97).

The subnet mask mentioned above allows changes to be made to the last part (host or melter part) of the IP address.

NOTE: All IP addresses ending with 1 to 254 are possible. IP addresses ending with 0 or 255 are not permitted.

Melter *(contd.)*

Melter Configuration

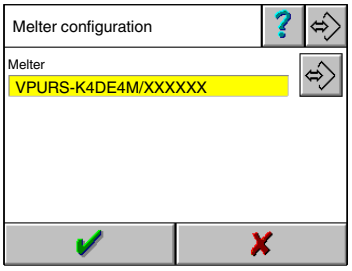


Fig. 4-74
V26 - Overview -

If the memory board is replaced or parts relevant to the configuration are retrofitted, the melter software configuration code must be entered twice.

Touch ⇔ next to the configuration code.

NOTE: The options are shown in the configuration code following the slash. If no options or no additional options are entered, the software automatically places an X in the remaining positions.

If the two codes entered are the same, the key to confirm is enabled. After confirmation, the system returns to the overview screen.

NOTE: All of the configurations are saved on the memory board only when the key *Confirm* is touched in the overview screen.

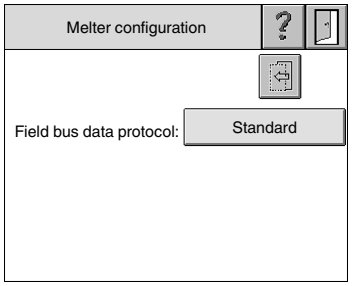


Fig. 4-75
V27

Selecting the Type of Field Bus Data Protocol

Refer to *Standard Index Protocol* or *Extended Index Protocol* in the separate field bus documentation.

CAUTION: The type of protocol selected on the control panel must correspond to the implementation on the master; the type may not be changed during field bus operation.

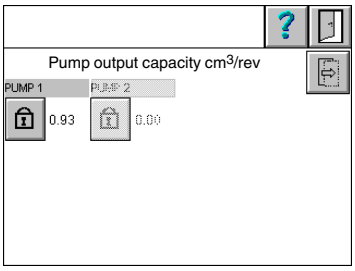


Fig. 4-76
V28

*Adapting Output Capacity of Special Pumps**

*Special pumps are pumps not included in the software configuration code.

The output capacity of a special pump can be stored in this screen. To do this, release the lock:

Press the *Release lock* key. The icon changes to *Lock open* and the input field turns green, indicating that input is now possible. Do not lock the field again after entering the information.

A closed lock indicates that the output capacity was taken from the configuration code, as is correct for the selected code (= pump type).

Melter *(contd.)*

Pressure Sensor Setup

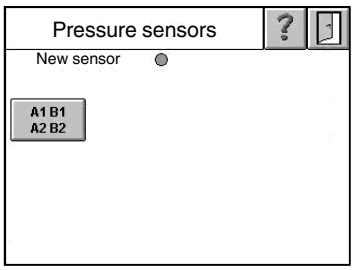


Fig. 4-77
V22 - Overview -

A CAN bus sensor is found automatically and indicated by the lamp.

Continue with [A1 B1 / A2 B2] to assign the pressure sensor to a pump.

NOTE: Only one pressure sensor can be assigned at a time.

Assigning New CAN Bus Sensor

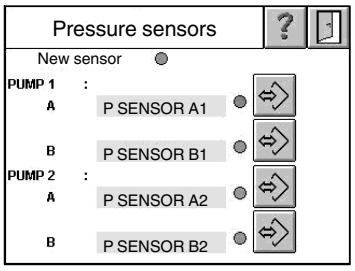


Fig. 4-78
V23

[A1 B1 / A2 B2]

The first two lines are intended for two pressure sensors of pump 1, lines 3 and 4 for two pressure sensors of pump 2. Melters of the type *VersaPUR-S* are delivered with only one sensor (A) per pump. There are no pressure sensors B here.

NOTE: Pressure sensor A is usually located at the melter outlet. With the option *Pressure display and pressure control*, it transmits the values to the IPC.

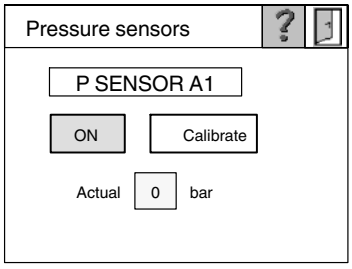
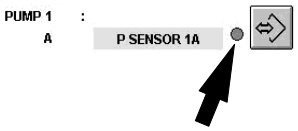


Fig. 4-79
V25



1. Select [⇔] of the desired line, then switch the pressure sensor [ON].

   The pressure sensor can be switched on and off. If a pressure sensor is switched off, it is removed from the assigned location and is available as a *New sensor* after a short time.

   CAUTION: Do not switch off the melter as long as the ON/OFF key appears transparent.

2. Wait until the keys are no longer subdued.
3. Check the color of the indication lamp:

Green	:	Pressure sensor is assigned
Red	:	Pressure sensor is defective
		CAN bus to sensor is interrupted
		CAN bus is faulty
Gray	:	No pressure sensor

4. Repeat steps for every new pressure sensor until all have been assigned.

Melter *(contd.)*

Calibrating Pressure Sensor

NOTE: To calibrate the sensor, the melter must be heated to processing temperature and may not be pressurized (relieve pressure if necessary; refer to section *Installation*).

Calibrat Perform nullification. Nullification should be performed even if 0 bar is displayed as the actual value; internal calibration is more precise.

Motor

Switching On/Off Motor (Individual Enable)

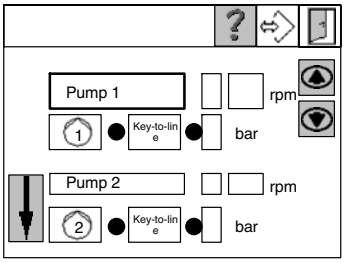


Fig. 4-80
M1: Mode *Speed control* with pressure display

Only enabled motors can be switched on. Prerequisite: The system is ready for operation.

rpm: revolutions per minute

Selecting Key-to-line or Manual Mode

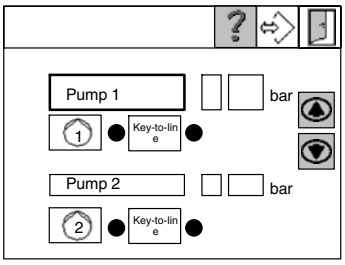


Fig. 4-81
M1: Mode *Pressure control*

In manual mode the motor runs at the set speed; in key-to-line it runs at the speed determined by the line speed signal value.

Key-to-line mode: Indication lamp lit.

Manual mode: Indication lamp not lit.

Motor *(contd.)*

Also refer to *Initial Startup* (Fig. 4-8) and *Motor Startup Protection.*

Enabling

If there is no collective enable, the individual motors are enabled with the key *Switch motor on/off (individual enable)* **AND** via the interface *Standard I/O* with the signal *Enable motor*.

Switching On

If there is collective enable, the individual motors are switched on with the key *Switch motor on/off (individual enable)* **AND** via the interface *Standard I/O* with the signal *Enable motor*.

The indication lamp in the key can be different colors:

Gray (off):	No motor enable on the control panel
Yellow:	The motor is enabled on the control panel but at least one of the other enables is not set (motor not running)
Green:	Motor running.

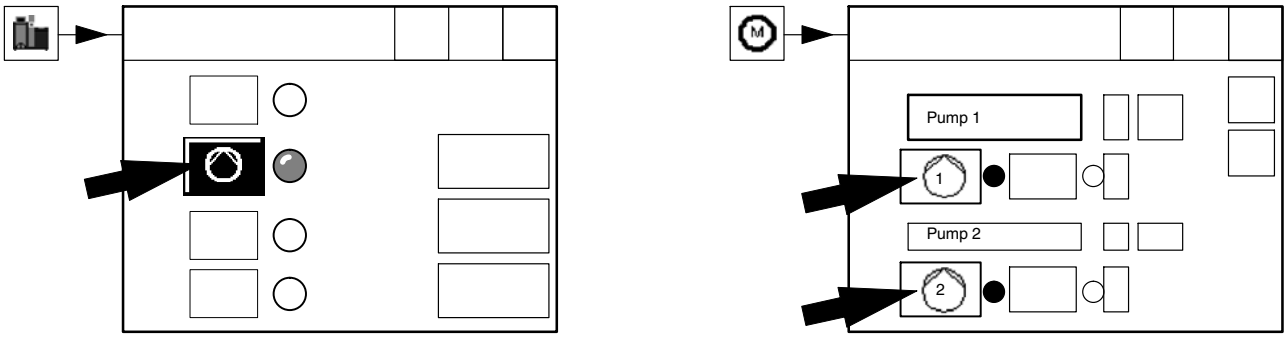


Fig. 4-82 Motors: Enable on the melter screen - switch on via the motor screen

NOTE: The *Standard I/O* interface signals *All motors ON/OFF (collective enable)* and *Enable motor* can be deactivated with a key. The motors can then only be enabled and switched on via the control panel (Refer to Fig. 4-83 *Motor enable*).

Motor *(contd.)*

Parameters (Screen 1: Type of Motor Enable, Adaptation to Parent Machine)

: Motor Enable Via Control Panel / Control Panel AND Standard I/O

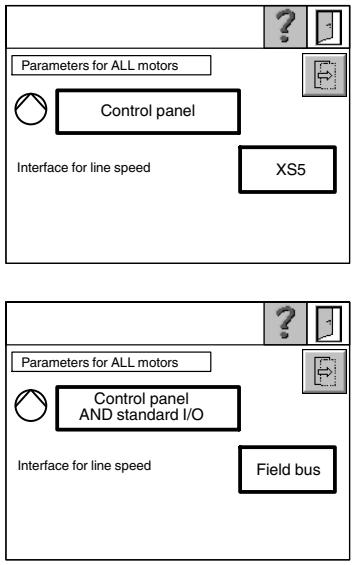


Fig. 4-83
M2

Control panel: The *Standard I/O* interface signals *All motors ON/OFF (collective enable)* and *Enable motor* are deactivated.

The motors can then only be enabled and switched on via the control panel.

In this case the melter can function even without a standard I/O connection to the parent machine, e.g. if it is to be purged for maintenance purposes.

With the option *Field bus communication*, other enables may be required, depending on the control mode selected (Fig. 4-63 to 4-70).

Depending on the control mode, the control panel may be deactivated (only parameter display is possible).

Enable motor via **Control Panel**

Interface for Line Speed

When a field bus-based control mode *) is used, the source of the line speed signal can be either the interface *Key-to-line mode* (XS5) (Fig. 4-83, top) or the field bus (Fig. 4-83, bottom).

Field bus

*) Control modes:

- Field bus
- Field bus (extended)
- Dual and
- Dual (extended)

Motor *(contd.)*

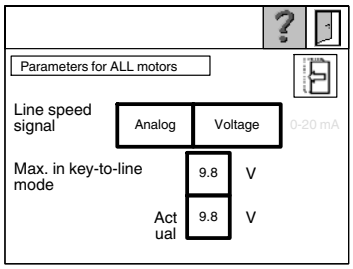


Fig. 4-84
M2.1

Line Speed Signal

Either *Analog* or *Frequency* can be selected, and either *Voltage* or *Current* can be selected.

Depending on what is selected, the keys not used will be transparent and the units will change. *0-20 mA* or *4-20 mA* is retrieved from the I/O board.

NOTE: Voltage or current and 0 - 20 mA or 4 - 20 mA must have been set on the I/O board with the DIP switches (Refer to section *Installation*).

The switch setting is loaded once when the melter starts up, and it is displayed on the control panel.

Max. in Key-to-line Mode

This screen can be called up with  of *Parameters (Screen 2)* when every motor receives its own line speed signal.

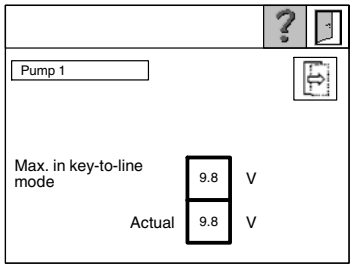


Fig. 4-85
M2.2

This feature is used for calibration with the signal (voltage, current or frequency) received from the parent machine.

Example of operation with pilot voltage:

- The parent machine runs at maximum speed. An input signal of 9.8 V (*actual* value) is displayed.
- Then set *Max. in key-to-line mode* to 9.8.

Motor *(contd.)*

Parameters (Screen 2: Key-to-line)

To M2.2. This key is available only with separate line speed signal inputs (option).

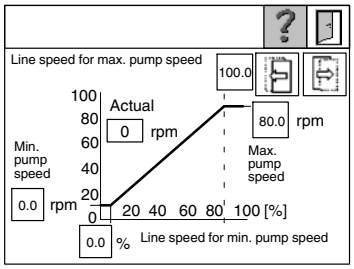


Fig. 4-86
M3

NOTE: The graph does not change to adapt to the entered values.

Min. Pump Speed

Pump speed setpoint when the external line speed signal lies below the entered value Line speed for min. pump speed.

0.0 min^{-1}

Max. Pump Speed

Pump speed setpoint when the external line speed signal exceeds the entered value Line speed for max. pump speed.

80.0 min^{-1}

Line Speed for Min./max. Pump Speed

Line speed signal value in %, below or above which the pumps begin to rotate at the set min./max. speed.

Max: 100.0 %

Min: 0.0 %

Motor *(contd.)*

Entering Density, Flow Rate and Correction Factor

The key leads to a screen in which the data for material density, flow rate and correction factor can be entered.

Calculating Correction Factor

ATTENTION: Hot! Risk of burns. Wear goggles and heat-protective gloves.

Level calibration is a simple way to check the flow rate. This is done by weighing the amount of material that flows out in one minute. At least three samples should be taken to obtain a good average.

If a flow rate is determined that deviates from the setpoint, control must be corrected. The arrows in motor screen M 3.1 are used for this purpose.

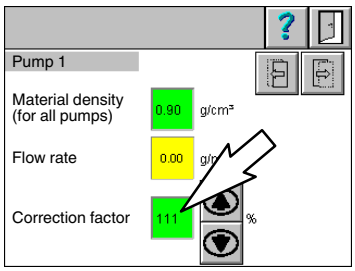


Fig. 4-87
M9

Sample calculation

Calculated flow rate: 4.5 g/min

Desired flow rate: 5.0 g/min

$$\text{Correction: } \frac{5.0 \text{ g/min} \times 100\ \%}{4.5 \text{ g/min}} = \mathbf{111}\ \%$$

Motor *(contd.)*

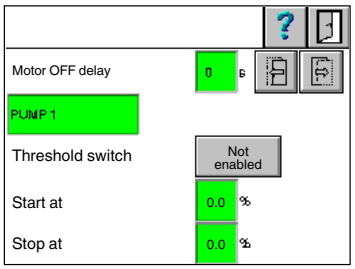


Fig. 4-88
M4

Parameters (Screen 3: Motor OFF Delay, Threshold Switch)

Motor OFF Delay:

The motor OFF delay supports overtravel when identifying the product, if the sensor distance to the applicator needs to be considered.

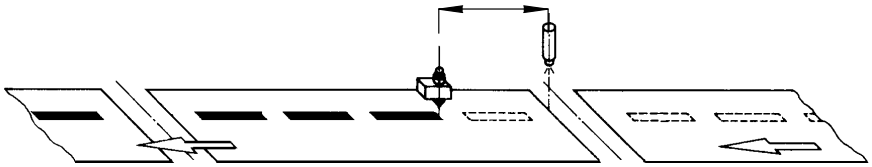


Fig. 4-89 Product identification

If this feature is not activated (delay = 0 s), the motor stops as soon as it is switched off.

If this feature is activated, the motor continues to run for the set time after it has been turned off via the interface *Standard I/O*.

NOTE: If the motor is switched on via the *Standard I/O* interface before the motor OFF delay has expired, the *Motor OFF delay* ends immediately.

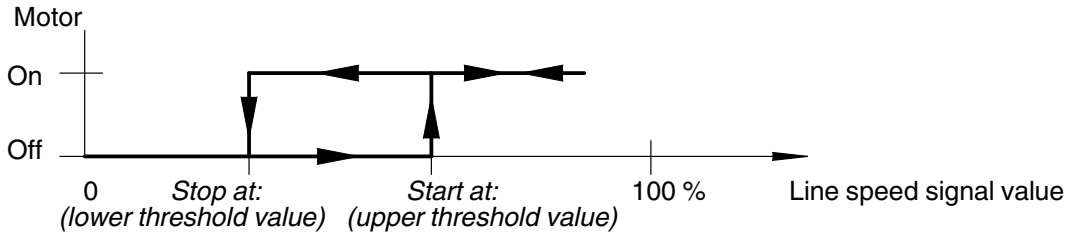
0 s

Motor *(contd.)*

Threshold Switch

NOTE: The threshold switch is automatically deactivated as long as pressure build-up is enabled.

In threshold switch mode the motors are started and stopped by the line speed signal.



When the upper threshold value is exceeded, the motor starts; when the value falls below the lower value, the motor stops.

Start at: **10.0 %**

Stop at: **5.0 %**

Parameters (Screen 4: Pressure Alarms, Switching Between Speed / Pressure Control)

Pressure Alarm Monitoring (For All Pumps)

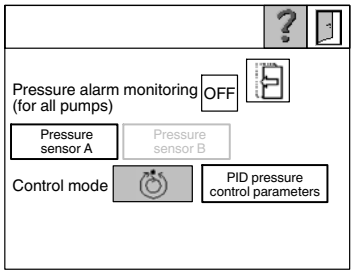


Fig. 4-90
M5

Pressure alarm monitoring is available only with 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 warning and fault values (Refer to *Pressure Sensor A*).

NOTE: When the speed is regulated in key-to-line mode, an underpressure warning may be displayed during parent machine startup until the melter speed setpoint is reached.

Motor *(contd.)*

Pressure Sensor A

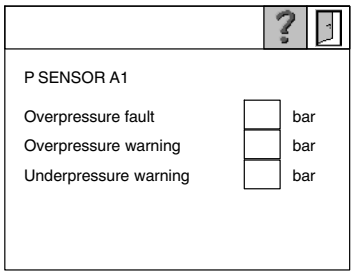


Fig. 4-91
M6

One pressure sensor (A) can be assigned per pump (Refer to *Pressure Sensor Setup* Fig. 4-78). The measured pressure is displayed in the scan line of the starting screen and in the motor screen (Fig. *M1)*.

NOTE: The values for warnings and faults are absolute values in *Speed control* mode with the option *Pressure display* (Fig. 4-92). They are differential values with the option *Pressure control* (Fig. 4-93).

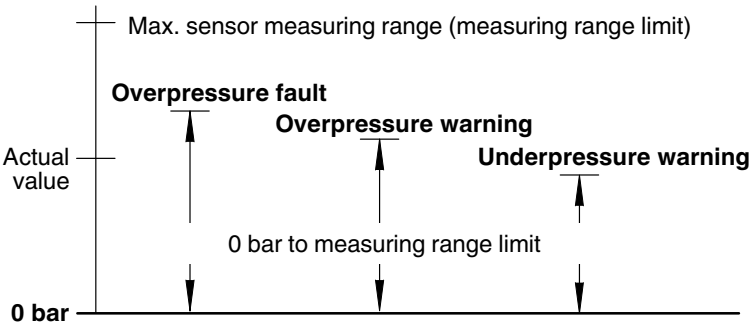


Fig. 4-92 Absolute values

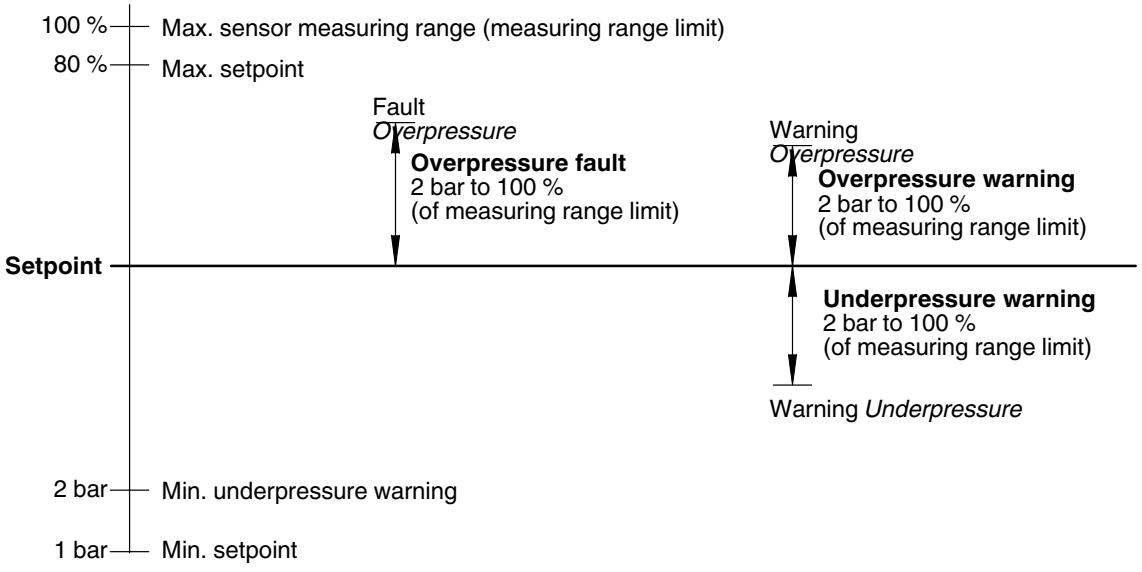


Fig. 4-93 Differential values

Motor *(contd.)*

Pressure Sensor A *(contd.)*

NOTE: The value for the overpressure warning can not be greater than the value for the overpressure fault.

NOTE: Only with *Speed control (pressure display):* The value for the overpressure warning/fault can not be less than the value for the underpressure warning.

Overpressure fault: **15 bar** (1500 kPa / 218 psi)

Overpressure warning: **10 bar** (1000 kPa / 145 psi)

Underpressure warning: **0 bar** (0 kPa / 0 psi)

Switching Between Speed Control  ***and Pressure Control*** 

The motors must be off to be able to change control mode.

Speed Control - Manual Mode -

In manual mode the operator has control over the motors. The pump speed is equal to the setpoint and does not change.

Speed setpoint: **5 min^{-1}**

Motor *(contd.)*

Example: Increase Pump Speed Setpoint

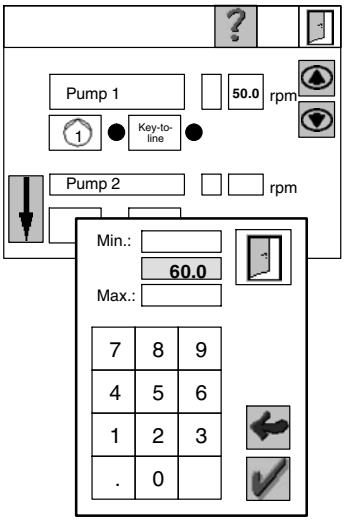


Fig. 4-94

Prerequisite: *Speed control* mode is selected, and the indication lamp next to key *Key-to-line* is off.

1. Touch  to select the desired pump.
2. Touch the green field *50.0 min^{-1}* (rpm) (setpoint).
3. Enter 60.0 in the input window and confirm with  .
4. If necessary, enable pump (indication lamp next to key  is illuminated).

Motor *(contd.)*

Speed Control - Key-to-line -

Control can occur via various signals:

A. **Frequency**: 0 to 100 kHz

NOTE: Not available with the option *Separate line speed signal inputs.*

Settings on the control panel:

Key-to-line signal: Frequency

Max. in key-to-line mode: The frequency at maximum line speed is then 100 %.

B. **Voltage**: 0 to 10 V_{DC}

Setting on the I/O board: Voltage

Settings on the control panel:

Key-to-line signal: Analog, voltage

Max. in key-to-line mode: The voltage at maximum line speed is then 100 %.

C. **Current**: 0 to 20 mA or 4 to 20 mA

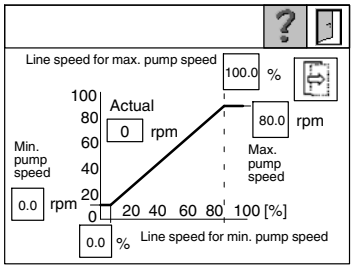
NOTE: Not available with the option *Separate line speed signal inputs.*

Settings on the I/O board: Current and 0 - 20 mA or 4 - 20 mA

Settings on the control panel:

Key-to-line signal: Analog, current

Max. in key-to-line mode: The current at maximum line speed is then 100 %.



Other Settings

- Speeds (Refer to illustration)
- Touch key *Key-to-line* so that the LED lights up (Refer to Fig. 4-80)

Motor *(contd.)*

Pressure control

Pressure Control - Manual Mode -

In manual mode the operator has control over the motors. The pressure is equal to the setpoint and does not change.

Only pressure sensor A: **5 bar** (500 kPa / 73 psi)

Pressure Control - Key-to-line -

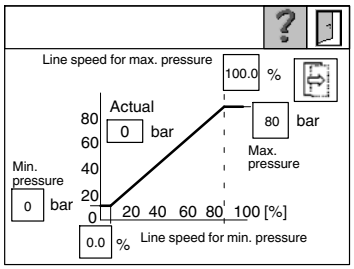


Fig. 4-95

NOTE: The graph does not change to adapt to the entered values.

Min. pressure: Pressure setpoint when the external line speed signal lies below the entered value *Line speed for min. pressure.*

0 bar (0 kPa / 0 psi)

Max. pressure: Pressure setpoint when the external line speed signal exceeds the entered value *Line speed for max. pressure.*

80 bar (8000 kPa / 1160 psi)

Line speed for min./max. pressure: Line speed signal value in %, below or above which the pumps begin to generate the set min./max. pressure.

Max: **100 %**

Min: **0 %**

Motor *(contd.)*

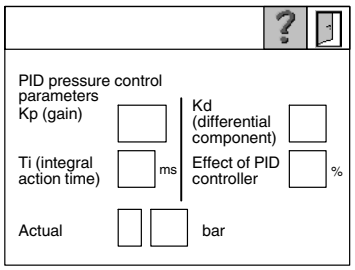


Fig. 4-96
M7

PID pressure control

PID Pressure Control Parameters

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

The regulation ratio is multiplied by the *Effective rate*.

Kp: **0.80**

Ti: **600 ms**

Kd: **0.0**

Effective rate: **100.0 %**

Operation via the IPC Webserver

- PC system requirements: Java Runtime Environment (Sun), version 1.1 or higher
- The server (IPC) and the client (HTML browser) are linked with an EtherNet cable (Cat5).

  NOTE: Use a cross-over cable for a direct connection between the PC and the IPC.
- Use a cable duct P/N 7104405.
- IP Address Setup

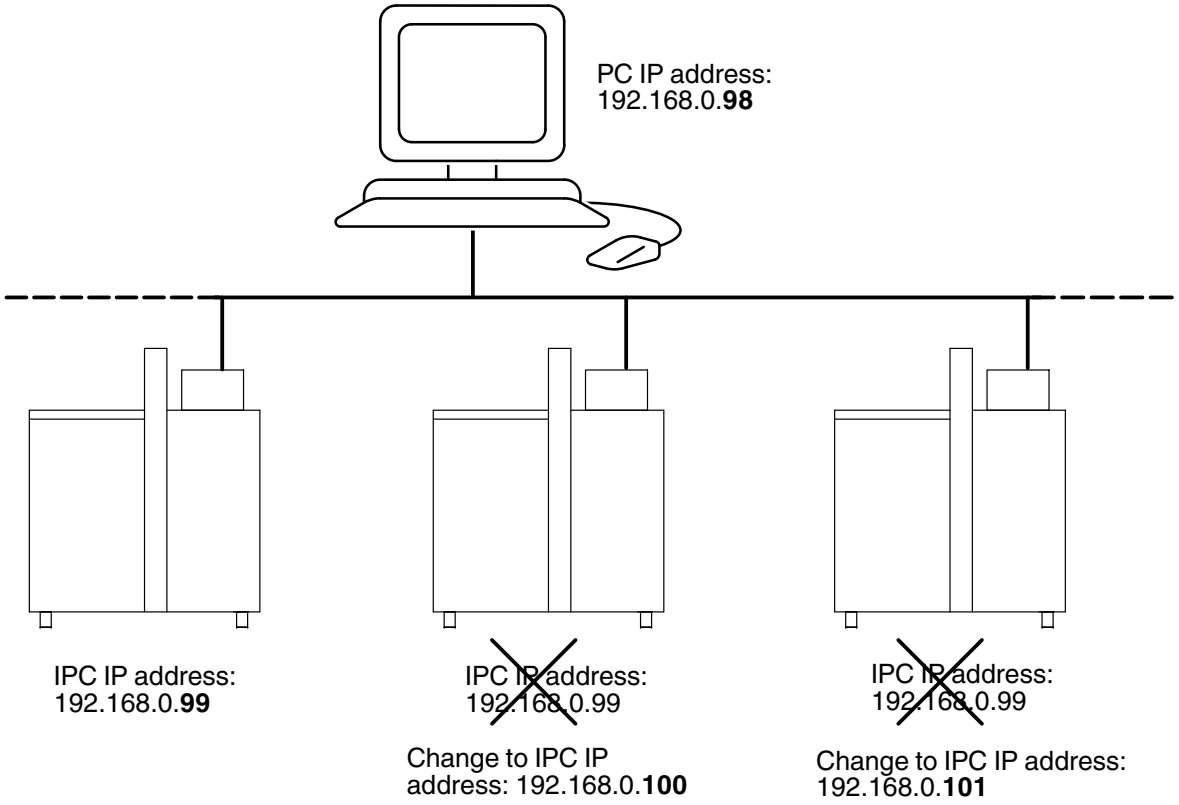


Fig. 4-97 IP addresses in a network -Example-

Webserver Login from the Customer's Windows®7 Operating System

Open the start menu, enter *gpedit.msc* in the search box and press ENTER.

Make the following settings:

Local Computer Policy / Computer Configuration / Windows Settings / Security Settings / Local Policies / Security Options / Network security: LAN Manager authentication level from
Send NTLMv2 response only to
Send LM and NTLM - use NTLMv2 session security if negotiated.

Setting up Connection Between the Server and the Client

ATTENTION: Switch off the melter with the main switch and disconnect from the line voltage.

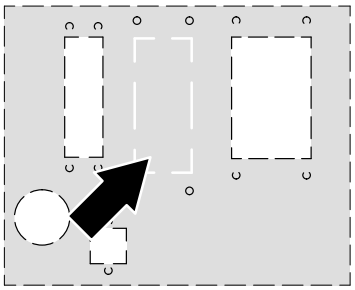


Fig. 4-98

1. Fig. 4-98 shows the area on the back of the melter intended to accommodate the cable.

   Punch out perforated plate and remove.

2. Connect the EtherNet cable.

   NOTE: This EtherNet cable is not used to transfer data on the field bus, described in the separate field bus document, section *EtherNet/IP*.

Connecting EtherNet Cable

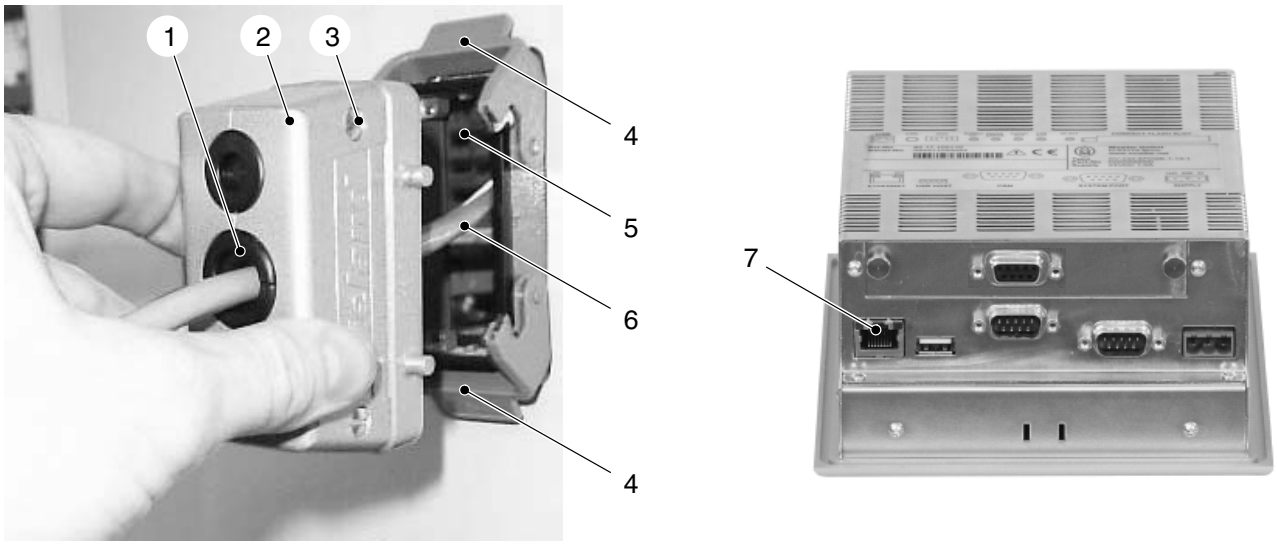


Fig. 4-99

1. Release clamps (4) (if present) and pull the socket casing (2) off of the casing plate (5).
2. Screw the casing plate (5) onto the back of the melter.
3. Release screws (3) and open socket casing.
4. Slide one of the sealing rings (1) onto the EtherNet cable (6).
5. Guide the cable through the socket casing, then insert the cable and sealing ring in the socket casing and secure with a cable clamp.

Continued ...

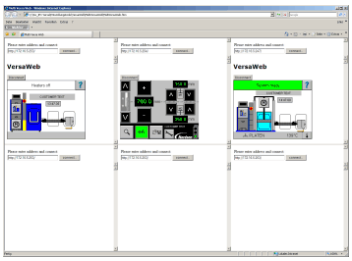
6. Guide free end of EtherNet cable through the casing plate.

   Connect the EtherNet cable to the control panel (7).

7. Screw the two halves of the socket casing together again, put into place on the casing plate and secure with clamps.
8. Close the electrical cabinet.
9. Connect the other end of the EtherNet cable to the PC.

CAUTION: Lay the cable outside of the melter such that there is no risk of stumbling over it.

10. Switch on the melter again.
11. Call up melter (VersaWeb).



NOTE: On the included CD there is a programming example *MultiVersaWeb*, how to call up up to six melters in one browser window..

Calling up Melter (VersaWeb)

On the PC

1. Call up the melter in the browser with the configured address, for example http://192.168.0.99/.
2. Touch the button *VersaWeb*.

   The web server is protected. Refer to Appendix A of this manual for the user name and keyword to log on.

3. Skip *Password* input in the next window by touching OK. Then the current control panel screen is displayed.

ATTENTION: Operation via the Webserver and operation via the control panel are not mutually exclusive.

Upload and Download of Customer Recipes

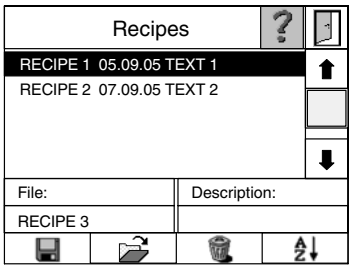


Fig. 4-100

Process parameters can be saved in recipes on the memory board.

When the memory board has to be replaced, the recipe data can be transferred to the new memory board, if the recipe versions of the old and new software are compatible.

NOTE: With software version V5.00.000 and higher, older recipes from version 3 or higher (corresponds to software version ≧ V3.20.013) can be accepted.

Download (Copying Recipe from Memory Board to PC)

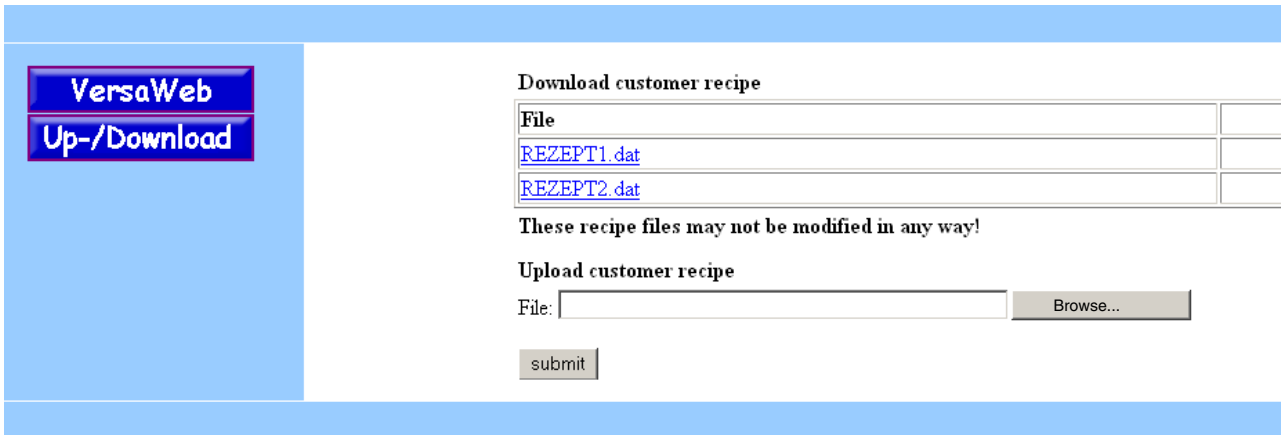


Fig. 4-101

1. Click *Upload/Download* on the IPC Webserver.

All of the recipes are shown under *Download customer recipe* (Fig. 4-101).

2. Click the desired recipe name.
3. Download the recipe as instructed by the operating system.

Repeat the process for additional recipes. Replace the memory board as described in section *Repair*.

Upload (Copying and Loading Recipe from PC to New Memory Board)

1. Jump to the recipe screen on the control panel.

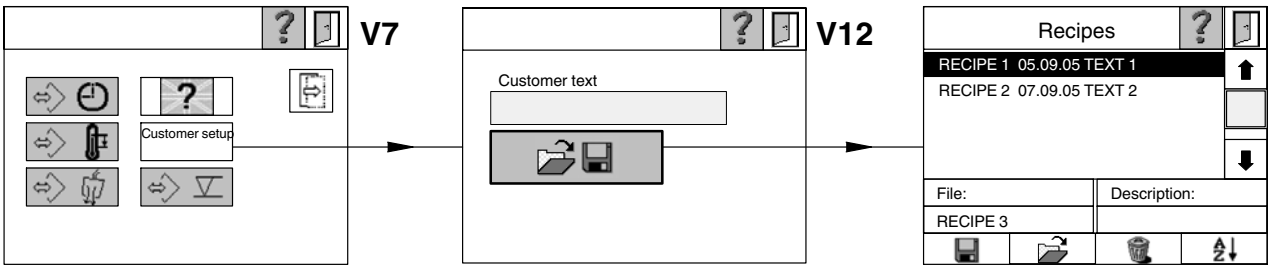


Fig. 4-102

2. Touch the *Browse* key under *Upload customer recipe* on the PC.

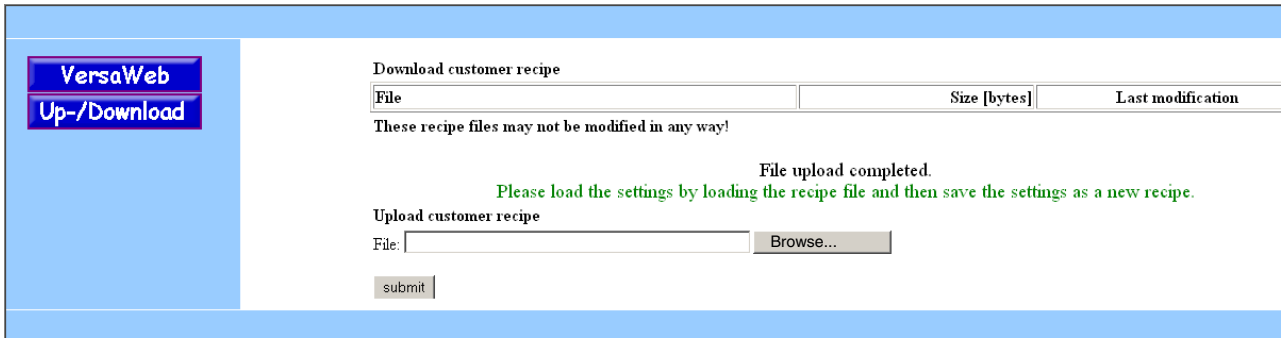


Fig. 4-103

A file selection window showing all of the recipes created opens.

3. Select the recipe and confirm with *Submit*.

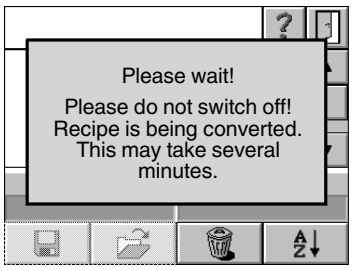


Fig. 4-104

Software version V5.00.000 and higher: Old recipes are automatically converted and copied to the memory board in the melter. During the conversion process, a warning is indicated on the control panel.

Additional Note Regarding Converted Recipes

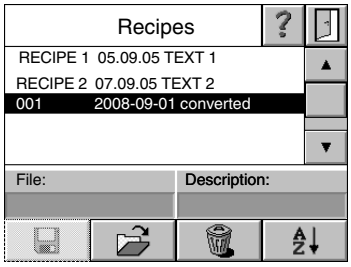


Fig. 4-105

After conversion, the recipe is available with a number as its file name. The word *converted* appears in the description; refer to Fig. 4-105.

4. Load this recipe and save it under a new name.
5. Then delete the recipe with the number in the file name.

NOTE: If an invalid recipe (version too old, version modified by customer) is uploaded via the Webserver, an error indication appears on the control panel.

6. Close the browser window.
7. Load the desired recipe on the control panel.

   Refer to *Customer Setup / Recipes* in this section for settings that are not stored in the recipe.

Settings Record

Production information:	
Material:	Processing temperature
	Viscosity
	Manufacturer
Cleaning agent:	Flash point
	Manufacturer

Processing temperatures (setpoints):					
Low melt (grid)					
High melt (reservoir)					
Hose	(accessory)	1)	2)	3)	4)
		5)	6)		
Applicator	(accessory)	1)	2)	3)	4)
		5)	6)		
Air heater	(accessory)	1)	2)	3)	4)
		5)	6)		
Speeds / pressures (setpoints):					
Pump	[min^{-1}]	1)	2)		
Sensor A	[bar] [kPa] [psi]	1)	2)		
Pump	[min^{-1}]	1)	2)		
Sensor A	[bar] [kPa] [psi]	1)	2)		

Air pressures at applicator (accessories):				
Control air	1)	2)		
	1)	2)		

Notes:	
Name	**Date**

Settings Record - Spare Copy

Production information:	
Material:	Manufacturer
	Processing temperature
	Viscosity
Cleaning agent:	Manufacturer
	Flash point

Processing temperatures (setpoints):					
Low melt (grid)					
High melt (reservoir)					
Hose	(accessory)	1)	2)	3)	4)
		5)	6)		
Applicator	(accessory)	1)	2)	3)	4)
		5)	6)		
Air heater	(accessory)	1)	2)	3)	4)
		5)	6)		
Speeds / pressures (setpoints):					
Pump	[min^{-1}]	1)	2)		
Sensor A	[bar] [kPa] [psi]	1)	2)		
Pump	[min^{-1}]	1)	2)		
Sensor A	[bar] [kPa] [psi]	1)	2)		

Air pressures at applicator (accessories):				
Control air	1)	2)		
	1)	2)		

Notes:	
Name	**Date**

Section 5
Maintenance

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

NOTE: Maintenance is an important preventive measure for maintaining operating safety and extending the service life of the melter. It should never be neglected.

Risk of Burns

ATTENTION: Hot! Risk of burns. Wear appropriate protective clothing/equipment. Some maintenance work can only be done when the melter is heated up.

Relieving Material Pressure

ATTENTION: System and material pressurized. Relieve system of pressure before disconnecting hoses, applicators and assembly handguns. Failure to observe can result in serious burns.

ATTENTION: Hot! Risk of burns. Wear goggles and heat-protective gloves.

1. Set the motor speed to 0 min-1 (rpm); switch off the motor(s).
2. Place a suitable drip pan under the applicator / assembly handgun.
3. Trigger the applicator / assembly handgun electrically or manually. Repeat this procedure until no more material flows out.
4. Properly dispose of material according to local regulations.

Important when Using Cleaning Agents

- 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 section *Safety*.
- Use only a cleaning agent recommended by the hot melt material manufacturer. Observe the Material Safety Data Sheet for the cleaning agent.
- Properly dispose of the cleaning agent according to local regulations.

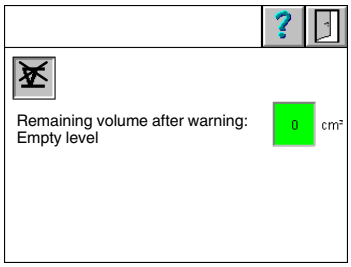
Processing Materials

Designation	Order number	Use
High temperature grease • Can 10 g • Tube 250 g • Cartridge 400 g	P/N 394769 P/N 783959 P/N 402238	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.
Temperature-resistant adhesive *Loctite 640* • 50 ml	P/N 230359	Secures screw connections
Heat transfer compound *NTE303* • 1 g	P/N 1023441	To improve heat conducting of temperature sensors

When Tank/Melter has to be Emptied

Switched off: 

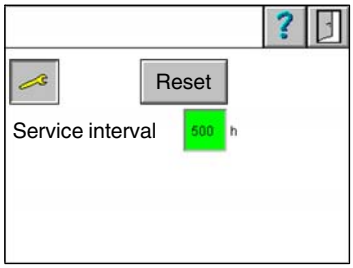
Key *Empty level setup*: Generation of the fault *Empty level* can be switched off with this symbol to be able to empty the reservoir for maintenance and repair work.



Preventive Maintenance

The maintenance intervals are general guidelines based on experience. Depending on operating environment, production conditions and hours of operation, other scheduled maintenance tasks may prove necessary.

Service Interval Setup



The maintenance interval can be switched on and off with the wrench symbol. When it is switched on, a warning is indicated when the time defined by the customer as the *Service interval* has elapsed. Since only *Service interval expired* is indicated, the customer must first determine the component to which the warning applies.

The service interval can be switched on and off at any time. When switched off, the set time with heater on is stopped; it resumes again when switched on.

Reset The service interval timer is reset, and the warning is revoked.

NOTE: Motor controllers are maintenance-free.

Melter part	Activity	Interval
Complete melter	External cleaning Visual inspection for external damage	Daily
	Purge with cleaning agents	When material is changed
Connecting cables Air hoses	Visual inspection for external damage	Daily
Displays and lamps Other safety devices	Safety and function tests	Daily
Fan and air filter	Check filter, clean or replace if necessary Clean fan screen	Depending on dust accumulation; daily if necessary
Gear pump	Check for leakage	Depending on hours of operation, pump speed and pump temperature Recommendation: Monthly
	Retighten fixing screws	Every 500 hours of operation
Motor / gear box	Clean fan cover	Depending on dust accumulation; daily if necessary
	Change lubricant	Every 15 000 hours of operation or at least every 4 years

Continued ...

Melter part	Activity	Interval
Tank, grid, reservoir	Visual inspection for pollution in tank; clean if necessary	Before filling each time
Safety valve plate	Replace O-ring(s)	At the latest when leakage occurs
Safety valve	Activate the piston	Monthly
	Replace outer O-rings	At the latest when leakage occurs
Safety valve for pneumatics	Performance check; replace if necessary	Every six months
Tank isolation valve	Replace O-rings	At the latest when leakage occurs
Pressure control valve	Replace O-rings	At the latest when leakage occurs
Punch plate	Check air relief holes for blockage; clear if necessary	Before filling each time
Pressure sensor	Calibrate	Once/year, more often when conditions dictate
	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
Level evaluator	Calibrate (Refer to section *Repair)*	When evaluator or level sensor is replaced When the material is changed or the processing temperature changes by more than 30 °C (54 °F)

External Cleaning

External cleaning prevents impurities created during production from causing the unit to malfunction.

CAUTION: Observe the melter's Degree of Protection when cleaning (Refer to *Technical Data*).

CAUTION: Do not damage or remove warning labels. Damaged or removed warning labels must be replaced by new ones.

Remove material residue only with a cleaning agent recommended by the material manufacturer. Heat with an air heater if necessary.

Remove dust, flakes etc. with a vacuum cleaner or a soft cloth.

Nordson recommends the cleaning agent P/N 771192 - CLEANER C, 12 spray bottles, 0.5 liter each. Observe material safety data sheet!

Control Panel

CAUTION: Set *Screen cleaning*. This ensures that no functions are unintentionally triggered when the screen is touched.

Clean the insides of the plastic frame on the control panel front regularly with a damp, soft cloth. Use caution to ensure that the surface is not scratched or scoured, particularly when removing hard residue and abrasive dust. Do not allow solvents to come into contact with the control panel front; solvents could corrode the plastic frame.

Visual Inspection for External Damage

ATTENTION: When damaged parts pose a risk to the operational safety of the melter and/or safety of personnel, switch off the unit 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.

Detaching Protective Panels

Use a size 4 Allan key to open the front and back protective panels first. Release the two clasps under the upper cover and remove the right panel.

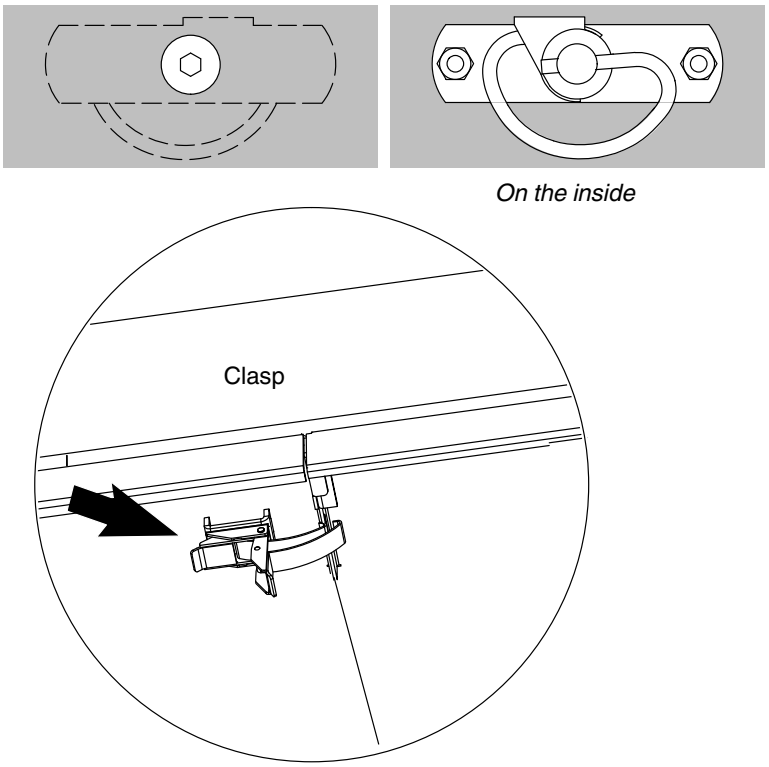


Fig. 5-1

Fan and Air Filter

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

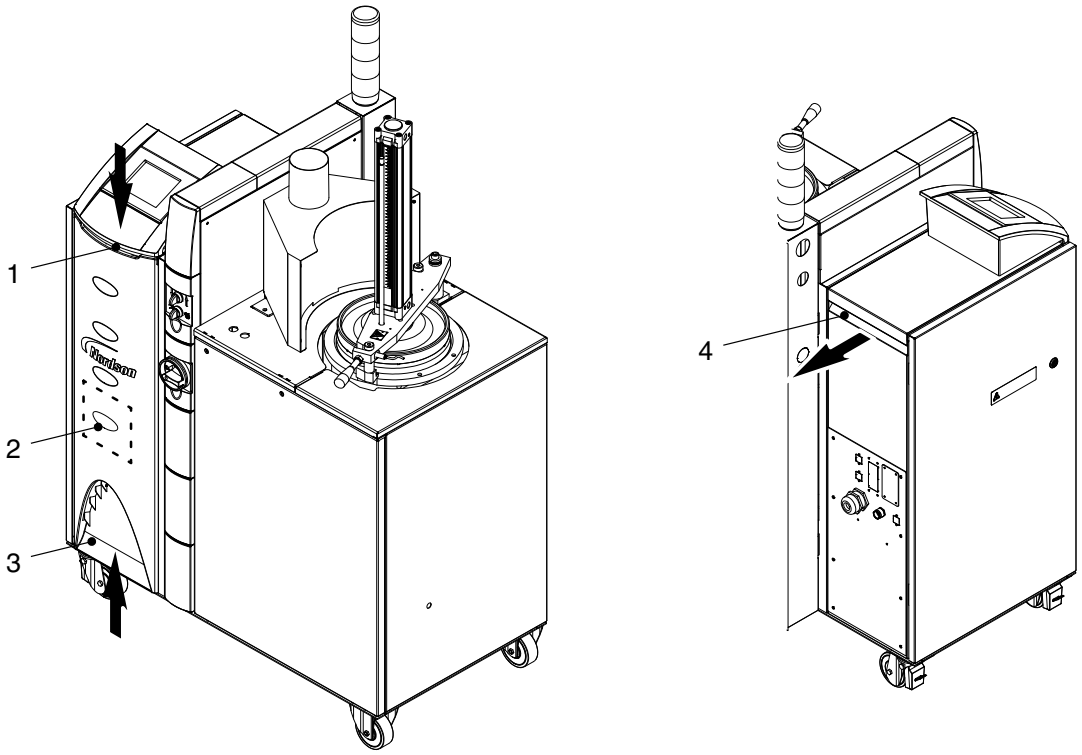


Fig. 5-2

1 Air filter, top air inlet
2 Fan
3 Air filter, bottom air inlet
4 Air filter, air outlet

Gear Pump

Checking for Leakage

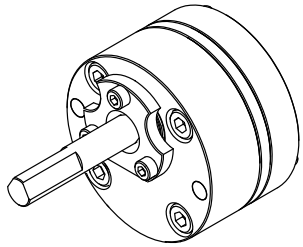


Fig. 5-3

The gear pump is equipped with a shaft seal. Material may seep out along the shaft at irregular intervals.

Replacing Pump Shaft Seal

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 shaft seal. Refer to section *Repair* and to the separate parts list.

Retighten Fixing Screws

Normal heat cycling (heating and cooling) can cause the fixing screws to become loose.

NOTE: Retighten fixing screws only using a torque wrench (25 Nm / 220 lbin) and when the melter is cold.

Motor

The only motor maintenance required is cleaning the fan cap.

Gear Box

Selecting Lubricant

NOTE: Use only the stated lubricant or one that has proven to be equivalent (Refer to *Lubricant Selection*). Using any other lubricant can result in premature wear and/or damage to the gear box.

Lubricants

Lubricant manufacturer	Mineral oil CLP 220
AGIP	Blasia 220
ARAL	Degol BMB 220 or Degol BG 220
BP	Energol GR-XP 220
DEA	Falcon CLP 220
ESSO	Spartan EP 220 or GP 90
KLÜBER	Klüberoil GEM 1-220
OPTIMOL	Optigear 220
SHELL	Omala Oil 220
TEXACO	Geartex EP-A SAE 85 W-90

Lubricant Changing Interval

When lubricant temperature is below 100 °C / 212 °F:

Every 15000 hours of operation or at least every 4 years.

Capacity

The lubricant quantity is indicated on the ID plate. Ensure that the upper gears and rolling bearings are properly lubricated.

NOTE: Never mix different types of lubricants.

Changing Lubricant

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.

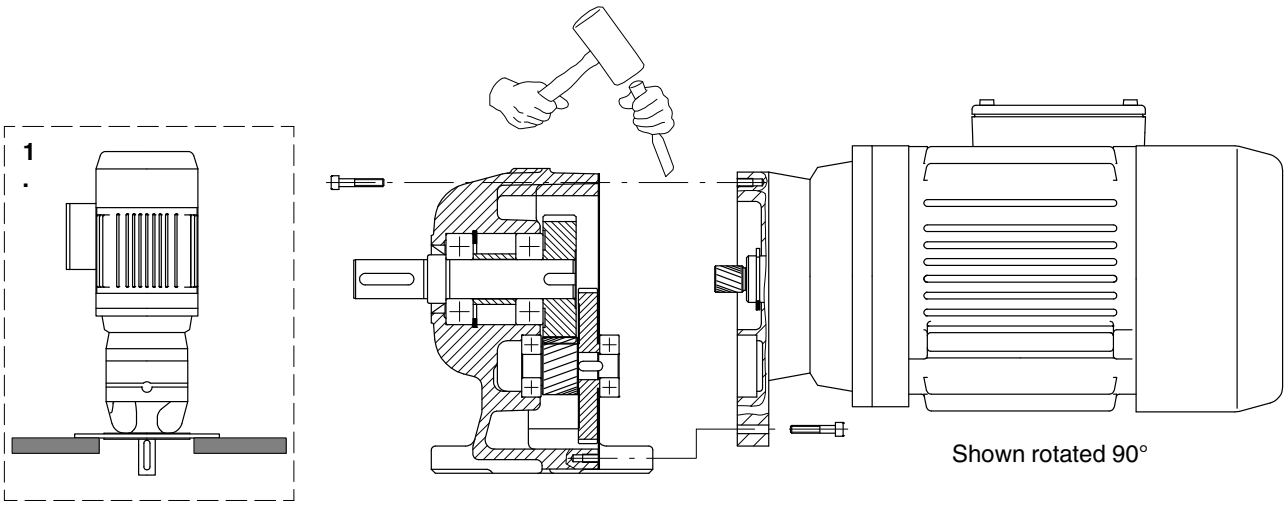


Fig. 5-4 Example

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.

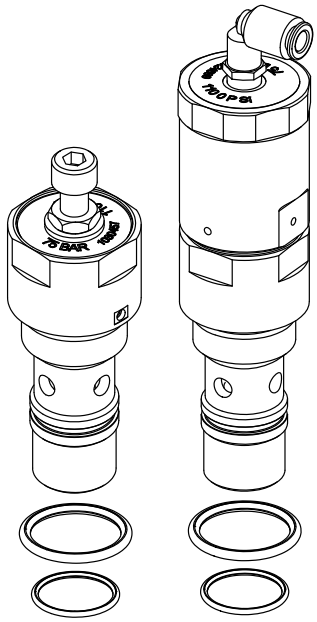
Pressure Control Valve

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

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

NOTE: Screw in/out only when valve is warm and material is soft (approx. 70 °C/158 °F, depending on material).

Replacing O-rings



optional

1. Heat the melter to operating temperature.
2. Relieve melter pressure.
3. Close the tank isolation valve.
4. Optional: Close the compressed air supply.
5. Refer to *Measuring Insertion Depth* or optional: Unscrew the air hose.
6. Use an open-end wrench to screw out the pressure control valve, then extract with a pliers.
7. Remove old O-rings and clean pressure control valve.
8. Install new O-rings. Apply high temperature 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. Refer to *Adjusting Pressure Control Valve* or optional: Attach air hose.
11. Open tank isolation valve.
12. Optional: Open compressed air supply again.

Pressure Control Valve *(contd.)*

Important for Mechanical Pressure Control Valve

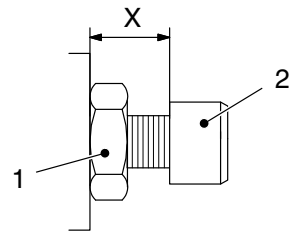


Fig. 5-5
Insertion depth

Measuring Insertion Depth

Measure and make a note of the insertion depth of the setting screw (dimension X). This way the insertion depth can be replicated after reassembly.

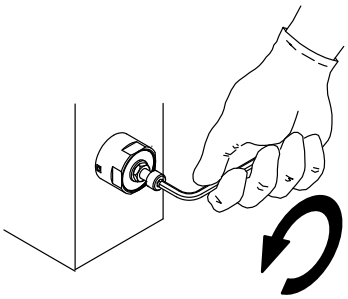


Fig. 5-6
Reduce pressure

Adjusting Pressure Control Valve

The setting screw (2) is secured with the locknut (1).

1. Loosen the locknut.
2. Adjust the setting screw to the recorded dimension X.
   - Turning to the right increases material pressure.
   - Turning to the left decreases material pressure.
3. Tighten the locknut.

Safety Valve Plate

In some Nordson documents, the safety valve plate is called *Pump block*.

CAUTION: If the safety valve plate is pulled out to enable maintenance to or repair of other components, ensure that the O-ring (6, Fig. 5-8) is positioned properly in the groove when the safety valve plate is slid back into place. Otherwise leakage can occur.

Releasing Safety Valve Plate

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

1. Heat the melter until the material softens (approx. 70 °C/158 °F, depending on the material).

NOTE: Work quickly.

2. Close the tank isolation valve in the corresponding safety valve plate / pump.
3. Turn the cardan joint such that it can swivel out in the direction in which the safety valve plate is pulled.
4. Release the hexagonal screw (1 or 2, Fig. 5-7). This releases the safety valve plate (4 or 5, Fig. 5-7).
5. Pull the safety valve plate in the groove in the direction of the arrow.

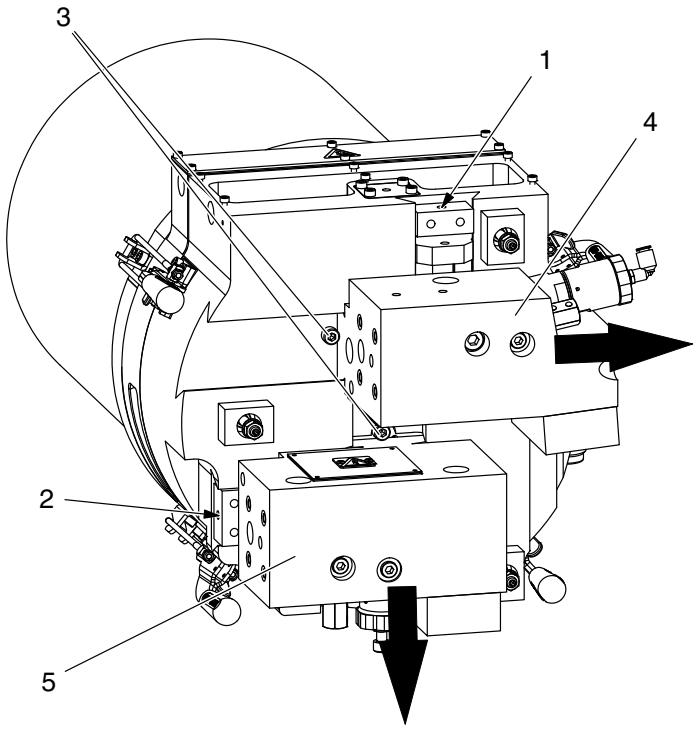


Fig. 5-7 Tank from below

Safety Valve Plate *(contd.)*

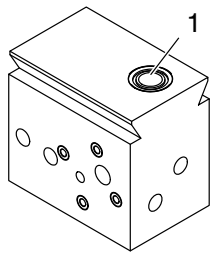


Fig. 5-8

Safety Valve Plate: Replacing O-ring

1. Remove the old O-ring (1, Fig. 5-8).
2. Clean sealing surfaces on tank, safety valve plate and pump.
3. Apply high temperature grease to the O-ring and sealing surfaces. Put O-ring into place.

   Ensure that the O-ring (1) sits properly in the groove. Otherwise the O-ring may be damaged when the safety valve plate is slid back into place.

Securing Safety Valve Plate

1. Slide the safety valve plate all the way back (Screw head: 3, Fig. 5-7) and secure with a hexagonal screw (1 or 2, Fig. 5-7).
   Torque M = 13 Nm.
2. Secure screw with locknut.
   Torque M = 10 - 13 Nm.
3. Fill the tank.
4. Open the tank isolation valve again at operating temperature.

Safety Valve

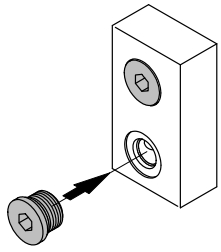


Fig. 5-9

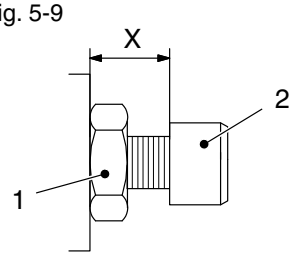


Fig. 5-10

Activate the safety valve piston. This prevents the material from blocking the safety valve.

Procedure:

1. Relieve pressure as described in section *Installation*.
2. Disconnect all hoses.
3. Close the hose connections with Nordson port plugs (Fig. 5-9).
4. **Mechanical pressure control valves**: Measure the insertion depth (Fig. 5-10): of setting screw (2) (dimension X) and make a note. This ensures that the insertion depth can be reproduced. Close the pressure control valve by turning it all the way clockwise.

   Pneumatic pressure control valves: Set the compressed air supply to 6 bar.
5. Operate the melter at full motor speed and with hose connections closed. Switch the motor on and off several times.

CAUTION: For safety reasons, the safety valve may not be disassembled. The complete valve must be replaced every time. Refer to section *Repair*.

Nordson recommends keeping a supply of replacement safety valves and outer O-rings (spare parts kit; refer to parts list).

Changing Type of Material

NOTE: The overtemperature thermostats must be adjusted (replaced) to accommodate the maximum temperature of the material used. The shutdown value of the thermostat may not exceed the maximum operating temperature of the melter!

1. Run the melter until empty.
2. Before changing the type of material, determine whether the old and new material may be mixed.

- May be mixed: Remaining old material can be flushed out using the new material.
- May not be mixed: Thoroughly purge the melter with a cleaning agent recommended by the material supplier.

NOTE: Properly dispose of the old material according to local regulations.

Purging with Cleaning Agent

CAUTION: Use only a cleaning agent recommended by the hot melt material manufacturer. Observe the Material Safety Data Sheet for the cleaning agent.

Before starting production again, flush out residue of the cleaning agent using the new material.

NOTE: Properly dispose of the cleaning agent according to local regulations.

Tank

NOTE: The tank, melting plate (grid) and reservoir are release-coated on the inside. Do not use metallic tools to clean. Do not use wire brushes! This could damage the release coating.

Draining Material

Pump material out of the melter.

CAUTION: Do not feed charred material through the applicator. Particles can block the gun. Instead unscrew the hose (Refer to the section *Installation*).

Cleaning Tank by Hand

Fig. 5-11

Because the material is in slugs, the tank walls remain clean (easy clean). Remove the old slug and dispose of properly.

Any cold material left can usually be peeled off of the sides of the tank. Heat the tank to the material softening temperature, if necessary.

The tank can be tilted for cleaning. This makes it easier to access the components to be cleaned.

The following illustration shows the tank folded over and the melting plate (left) as well as the reservoir below (right).

Fig. 5-12 Swung open tank, melting plate (grid, left) and reservoir (right)

Melting Plate and Reservoir

Check the O-rings between tank/grid and grid/reservoir every time the equipment is cleaned. Replace any damaged O-rings.

The tank can be tilted to clean the melting plate and the reservoir.

1. Remove the front and back protective panels (1), open the tower and swivel it out.
2. Release the lid clamps (2).
3. Turn the lid plate (3) to the side.

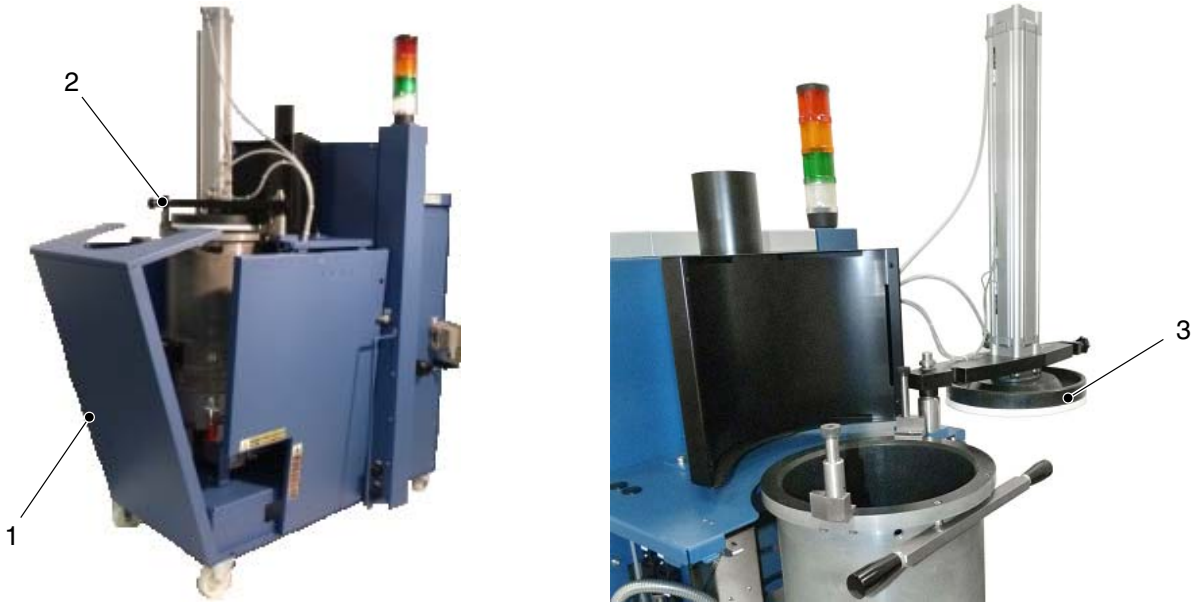


Fig. 5-13

4. Check if the tank is empty.
5. Release the four fasteners.
6. Keep the weight in mind when tilting out the top section of the tank!
7. Release the melting plate (grid) cable harness.
8. Detach the grid from the reservoir.
9. Clean the tank and reassemble.
10. Reconnect the temperature sensor and the grid plug.
11. Tip the tank back and secure the fasteners again.
12. Attach the protective panels again and close the tank lid.

Fig. 5-14

Tank *(contd.)*

Cleaning Punch Plate Air Relief Bores

Fig. 5-15

1. Slide the protective panel to the side.
2. Swivel out the tank lid.
3. Push a wooden or plastic pick through the air relief bores to clear them.

CAUTION: Do not use metallic tools to clean.

Replacing Overtemperature Thermostat

The overtemperature thermostats serve as an automatic switchoff in case the overtemperature shutdown of the temperature controller does not function properly.

NOTE: The tank overtemperature thermostats must be adjusted (replaced) to accommodate the maximum temperature of the material used. Refer to *Technical Data*.

In this case, the melter configuration code (Refer to the section Options) must be changed.

Tank Isolation Valve

Replacing O-rings

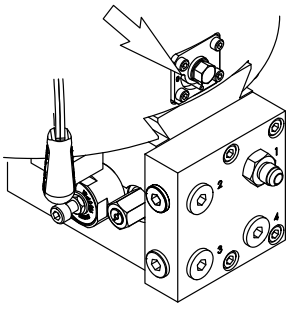
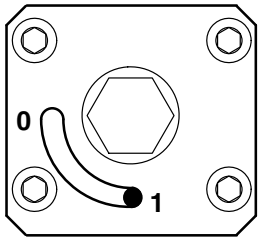


Fig. 5-16

1. Remove slug and heat melter to operating temperature.



0: Closed
1: Open

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

2. Empty reservoir.
3. Release four Allan screws M5 and lift off plate. Use a pliers to extract the tank isolation valve.
4. Remove the old O-rings and clean the tank isolation valve.
5. Apply high temperature grease to O-rings, then install again with tank isolation valve.

NOTE: Operate the tank isolation valve only when the melter has reached operating temperature.

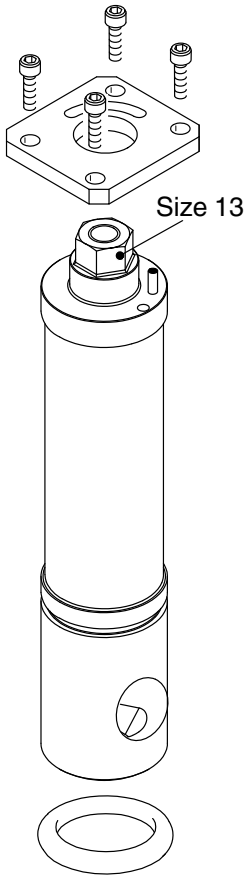


Fig. 5-17

Safety Valve for Pneumatics

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: One safety valve is in the melter tower and - depending on the the option - the second would be in the tank.

Performance Check

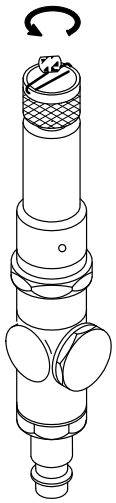


Fig. 5-18

The performance of the safety valve should be checked approx. every six months. Do this by turning the knurled screw until the compressed air is audibly released. If the safety valve does not function properly, it should 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!

Maintenance Record

Melter part	Date / Name	Date / Name	Date / Name
Complete melter: Visual inspection			
Complete melter: External cleaning			
Air filter			
Gear pump			
Motor / gear box			
Tank, grid, reservoir			

Maintenance Record Form *(contd.)*

Melter part	Date / Name	Date / Name	Date / Name
Safety valve plate			
Safety valve			
Tank isolation valve			
Safety valve for pneumatics			
Pressure control valve			
Pressure sensor			

Section 6
Troubleshooting

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

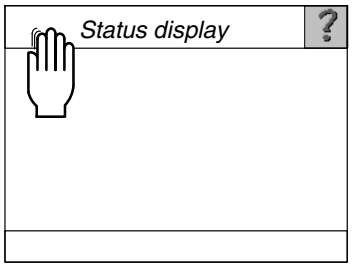
ATTENTION: Troubleshooting activities may sometimes have to be carried out when the melter is energized. Observe all safety instructions and regulations concerning energized unit components (active parts). Failure to observe may result in an electric shock.

Helpful Tips

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 activated?
- Could the fault have been caused by an external PLC?
- Are external, inductive loads (e.g. solenoid valves) equipped with recovery diodes?

Alarm Number, Alarm Text and Optional Light Tower



The status line of the control panel indicates only *Warning*, *Fault* or *Shutdown*.

The special alarm text can be found under  (V2, Alarm log) or is shown directly when the line status display or the warning triangle is touched.

Fig. 6-1

* If another status indication overwrites a pending alarm, the IPC indicates that e.g. a warning has been issued.

	Status	Light tower colors		
		Green	Yellow	Red
Status display	**Heatup phase**		●	
	(Motor) **startup protection** active	●	●	
	System ready	●		
	Standby active		●	
	Heaters off			
	Motor running	●		
	Lid not closed		●	

Status Indications and Light Tower Colors

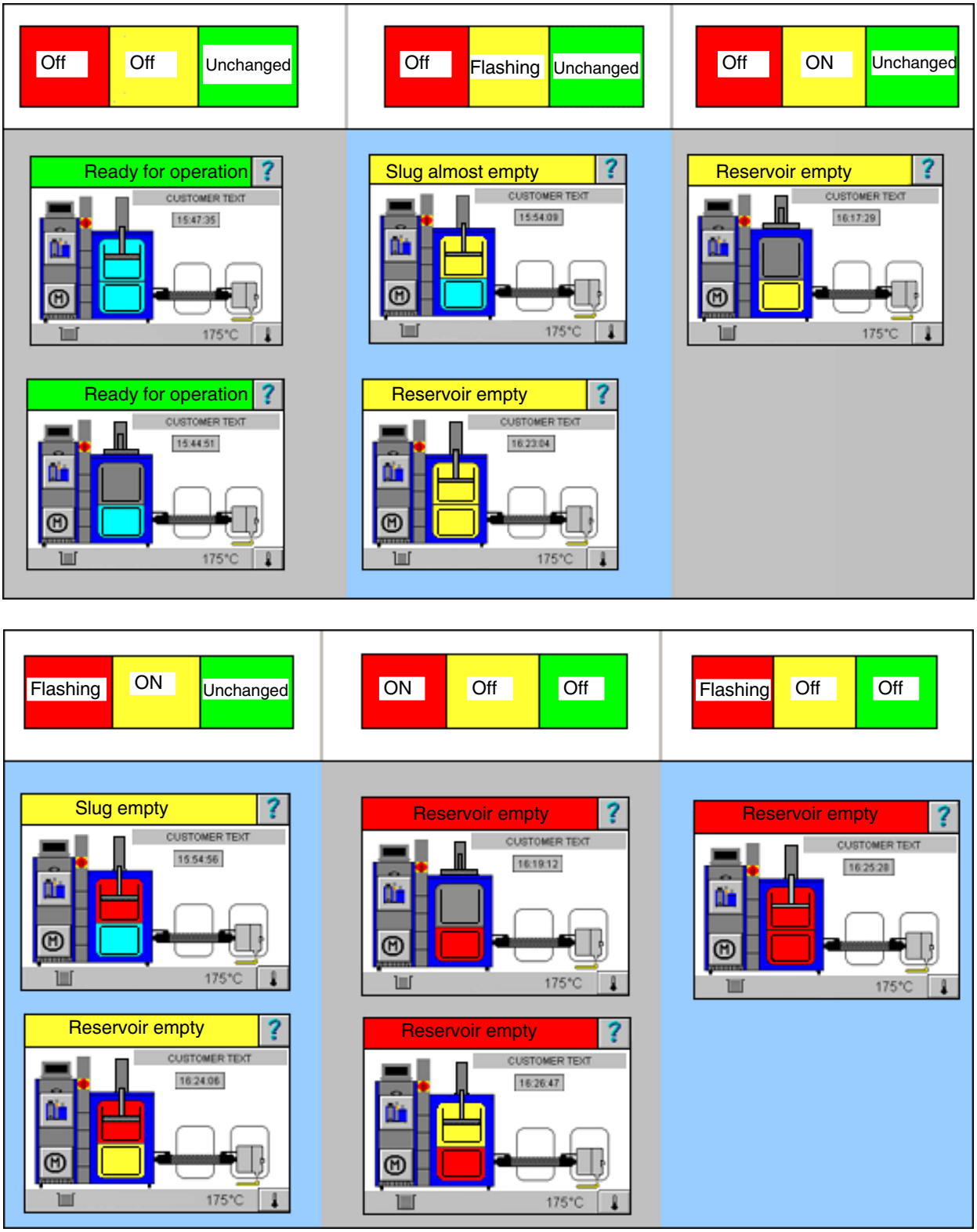


Fig. 6-2

Alarm Numbers, Alarm Text and Optional Light Tower

(contd.)

Status	Light tower colors		
	Green	**Yellow**	**Red**
Low level (warning)	●	Flashing	
Empty level (warning) The reservoir is empty, but there is some remaining volume available. Adhesive should be added now, at the latest.	●	●	Flashing
Empty level (fault) The reservoir is empty and the remaining volume has also been used up. The motors have been stopped. Add adhesive, wait for the ready indication and then start the motors again.			Flashing

Alarm no.	Status	Light tower colors		
		Green	**Yellow**	**Red**
Status display	**Warning** The operator must decide whether the situation is critical for the application and action is required. The system remains ready for operation.	●	●	
6	Service interval is expired	●	●	
14	I/O board: incorrect software version • The firmware version of the I/O board installed is not compatible with the IPC program version		●	
22	*Channel:* Overtemperature warning • Refer to alarm no. 21 *Channel:* Overtemperature fault	●	●	
24	*Channel:* Undertemperature warning • Refer to alarm no. 23 *Channel:* Undertemperature fault	●	●	
41	Overpressure warning: Motor #, sensor # • Refer to *Troubleshooting Tables* in this section	●	●	
42	Underpressure: Motor #, sensor # • Refer to *Troubleshooting Tables* in this section	●	●	
51	Grid activated too long • Calibrat level sensor • Heater defective • Adapt the time for *Automatic entry of standby after grid activation* to the production conditions	●	●	

Alarm no.	Status	Light tower colors		
		Green	Yellow	Red
Status display	**Fault** A fault switches off the motors. As soon as the fault is corrected, the motor startup protection is automatically enabled.			●
3	Command from field bus master missing in control mode *Field bus / Field bus (extended), Dual* or *Dual (extended)* • 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 • Defective or missing bus terminating resistor • The network was not set up properly • Sudden resets or crashes, e.g. due to electro-magnetic interference **NOTE:** Field bus data transmitted from the field bus master to the melter can be checked. Refer to *Checking Transmitted Field Bus Data*.			●
5	Temperature controller output short-circuit			●
21	*Channel:* Overtemperature fault • 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?			●
23	*Channel:* Undertemperature fault • 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?			●

Continued ...

Alarm Numbers, Alarm Text and Optional Light Tower

(contd.)

Alarm no.	Status	Light tower colors		
		Green	Yellow	Red
Status	**Fault**			●
25	*Channel:* Sensor input open or sensor broken (Sensor = temperature sensor) • Hose/applicator connected?			●
26	*Channel:* Sensor short-circuit (Sensor = temperature sensor)			●
31	Motor or controller overheated • Check motor controller wiring at the terminal with the label *T1-T2* • Motor fan cap / motor controller cooling section dirty • Ambient temperature too high			●
40	Overpressure fault: Motor #, sensor # • Refer to *Troubleshooting Tables* in this section			●

Alarm no.	Status	Light tower colors		
		Green	Yellow	Red
Status display	**Shutdown** Shutdown turns the melter off (main contactor opens).			●
1	Main contactor / thermostat fault • Main contactor defective • Main contactor switches incorrectly due to wrong wiring: Check wiring of main contactor and checkback contact. • Transformer temperature exceeded • Tank temperature exceeded			●
2	CAN bus not started • Check CAN bus cable (particularly at the motor controllers) • Check CAN bus plugs on all components • Check CAN terminating resistors Measure bus resistor when switched off (CAN-H, CAN-L): 60 Ω			●

Continued ...

Alarm no.	Status	Green	Yellow	Red
2	I/O board failure • Contact fault in voltage supply • Fuse(s) on board have activated • Incorrect or fluctuating operating voltage • The CAN bus address of the board was changed (dial) while the melter was operating. • Short-circuiting or potential faults at the plug connections X5, X10, X14, X15 of the I/O board Temperature controller failure • Refer to *I/O Board Failure* Pressure sensor failure Controller fault • Controller or controller CAN module defective • Controller not connected to CAN bus • Overload • Motor short-circuit Gateway failure • Contact fault in voltage supply or fuses have activated • Gateway defective or not connected to the serial Subnet • Serial cable IPC to gateway *Subnet* defective • Bus terminating resistor missing or defective			●
13	Temperature controller: incorrect software version • The firmware version of the controller installed is not compatible with the IPC program version			●
20	*Channel:* Overtemperature shutdown			●
30	Motor phase missing			●
32	Motor coupling blocked or phase missing (motor current exceeds limit) • Pump blocked by foreign material • Pump operates too sluggish • Material too cold			●
33	Controller: Faulty parameter file			●
34	Controller: No parameter file			●
36	Controller: Wrong type • Hardware does not correspond to software configuration			●
50	Incompatible IPC software version / memory board • An attempt is being made to operate an IPC II with a software version 6.00.000 or higher.			●

Triggering and Resetting Alarms

Faults can trigger different alarms with various consequences. If several alarms are triggered at once, the most severe takes priority: *Shutdown* before *Fault* before *Warning*.

Graphic Presentation of Temperature Parameters

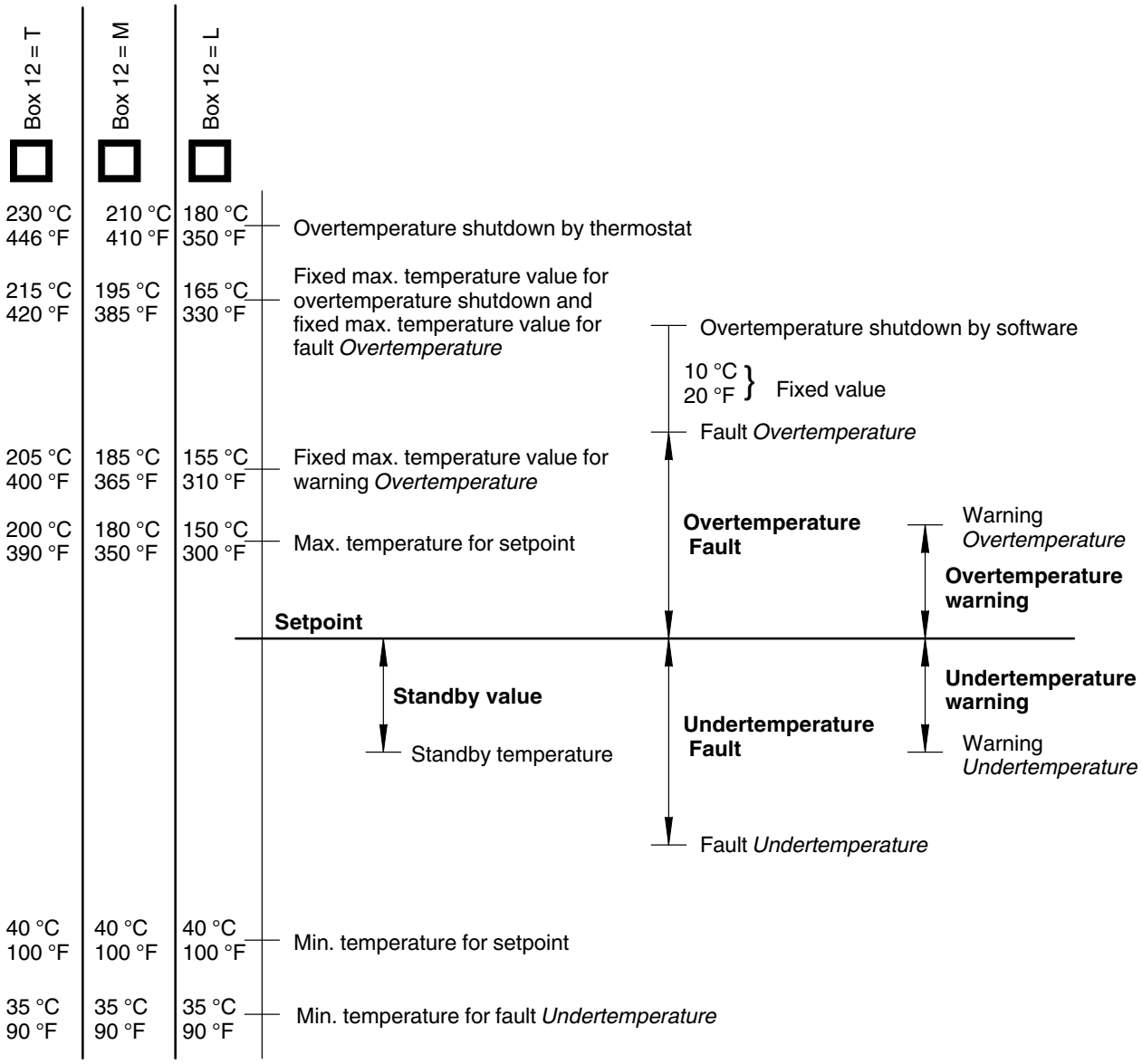
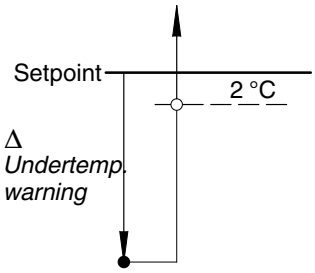


Fig. 6-3

Undertemperature and Overtemperature - Warning -

● Alarm triggered
○ Alarm reset



Undertemperature warning

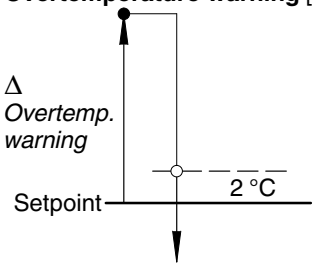
Undertemperature Warning Triggered

The temperature has fallen below the setpoint by more than the differential value (Δ) *Undertemperature warning delta* for longer than 5 seconds.

Automatic Reset

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

Overtemperature warning [1]

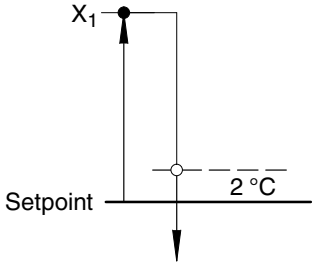


Overtemperature Warning Triggered

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature warning delta* for longer than 5 seconds.

or

Overtemperature warning [2]



[2] The value X_1 was exceeded for longer than 5 seconds

	Box 12 = L	Box 12 = M	Box 12 = T
X_1	155 °C (310 °F)	185 °C (365 °F)	205 °C (400 °F)

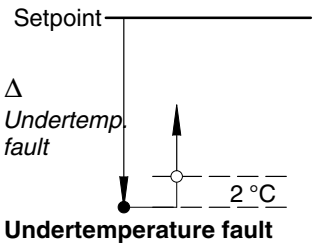
Automatic Reset

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

Triggering and Resetting Alarms *(contd.)*

Undertemperature and Overtemperature - Fault -

● Alarm triggered
○ Alarm reset

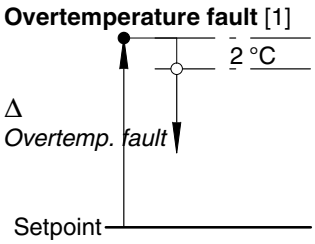


Undertemperature Fault Triggered

The temperature has fallen below the setpoint by more than the differential value (Δ) *Undertemperature fault delta* for longer than 5 seconds.

Automatic Reset

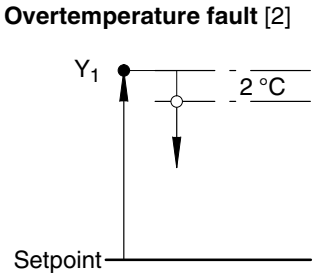
The temperature has exceeded the setpoint minus the differential value (Δ) *Undertemperature fault delta* by 2 °C (3.6 °F).



Overtemperature Fault Triggered

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature fault delta* for longer than 5 seconds.

or



[2] The temperature was below the value Y_1 for longer than 5 seconds

	Box 12 = L	Box 12 = M	Box 12 = T
Y_1	165 °C (330 °F)	195 °C (385 °F)	215 °C (420 °F)

Automatic Reset

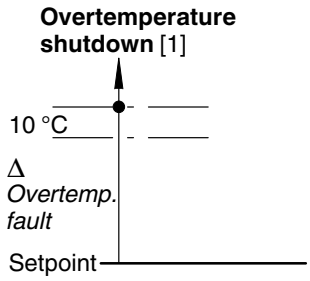
[1] The temperature has fallen below the setpoint plus the differential value (Δ) *Overtemperature fault delta* by 2 °C (3.6 °F).

or

The temperature has fallen below the value Y_1 by 2 °C (3.6 °F).

Overtemperature - Shutdown -

- Alarm triggered

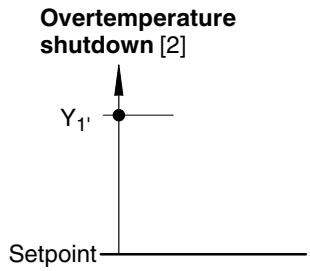


Software-triggered

[1] The temperature has exceeded the setpoint by more than the differential value (Δ) *Overtemperature fault delta* plus 10 °C (20 °F) for longer than 5 seconds.

or

[2] The value Y_1' was exceeded for longer than 5 seconds



	Box 12 = L	Box 12 = M	Box 12 = T
Y_1'	165 °C (330 °F)	195 °C (385 °F)	205 °C (400 °F)

NOTE: Channels in display mode trigger shutdown only when they have reached the maximum Y_1'.

Reset

Switch melter off/on with main switch.

Shutdown by Thermostats

Tank Thermostat

There is one thermostat each on the melting plate and the reservoir. The shutdown value depends on the thermostats installed; it is the same for both melting plate and reservoir.

	Box 12 = L	Box 12 = M	Box 12 = T
Shutdown value	180 °C (350 °F)	210 °C (410 °F)	230 °C (446 °F)

Transformer Thermostat

For all melters with transformer: The melter is switched off when the transformer temperature reaches 155 ± 5 °C / 311 ± 9 °F.

Reset

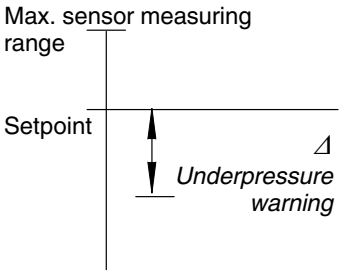
Switch melter off/on with main switch.

Triggering and Resetting Alarms *(contd.)*

Underpressure - Warning -

NOTE: The values for warnings and faults 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.

Underpressure Warning Triggered

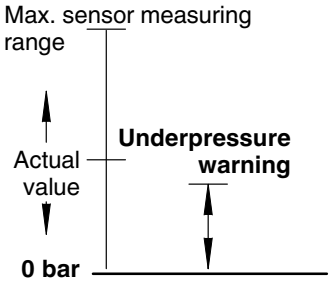


Pressure Control: Pressure Sensors A and B

The pressure has fallen below the setpoint by more than the differential value (Δ) *Underpressure warning* for longer than 20 seconds. 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 has exceeded the setpoint minus differential value (Δ) *Underpressure warning*.



Speed Control (Pressure Display): Pressure Sensors A and B

The pressure has fallen below the absolute value *Underpressure warning* for more than 20 seconds. This warning is indicated even if the system is not yet ready.

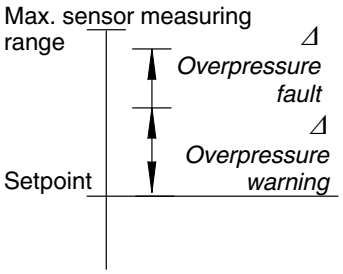
Automatic Reset

The pressure has exceeded the absolute value *Underpressure warning*.

Overpressure - Warning - / Overpressure - Fault -

NOTE: The values for warnings and faults 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.

Overpressure Warning Triggered

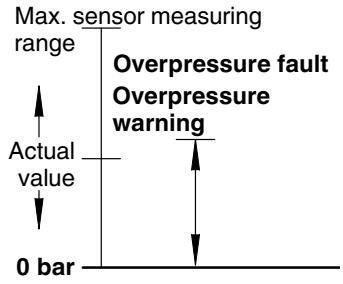


Pressure Control: Pressure Sensors A and B

The pressure has exceeded the setpoint by more than the differential value (Δ) *Overpressure warning* for longer than 20 seconds. This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure has fallen below the setpoint plus differential value (Δ) *Overpressure warning*.



Speed Control (Pressure Display): Pressure Sensors A and B

The pressure has exceeded the absolute value *Overpressure warning* for more than 20 seconds. This warning is indicated even if the system is not yet ready.

Automatic Reset

The pressure has fallen below the absolute value *Overpressure warning*.

Overpressure Fault Triggered

Pressure Control: Pressure Sensors A and B

The pressure has exceeded the setpoint by more than the differential value (Δ) *Overpressure fault* for longer than 60 seconds. This fault is indicated even if the system is not yet ready.

Automatic Reset

The pressure has fallen below the setpoint plus differential value (Δ) *Overpressure fault*.

Speed Control (Pressure Display): Pressure Sensors A and B

The pressure has exceeded the absolute value *Overpressure fault* for more than 60 seconds. This fault is indicated even if the system is not yet ready.

Automatic Reset

The pressure has fallen below the absolute value *Overpressure fault*.

Triggering and Resetting Alarms *(contd.)*

Temperature Sensor - Fault -

Every temperature sensor is monitored.

Short-circuit-triggered

The temperature is lower than - 10 °C (14 °F) for more than 5 seconds.

Triggered by Broken Sensor or Open Sensor Input

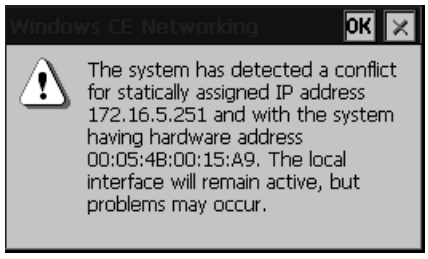
The temperature is lower than 305 °C (581 °F) for more than 5 seconds.

Automatic Reset

After the fixed internal value has been exceeded or fallen below for longer than 5 seconds or after a defective sensor has been replaced.

Troubleshooting Tables

Melter not Functioning

Possible cause	Possible fault / troubleshooting	Corrective action
1. No line voltage	-	Connect line voltage
2. Main switch not switched on	-	Switch on main switch
3. Main switch defective	-	Replace main switch
4. Main circuit breaker triggered	-	Switch on main circuit breaker
5. Main circuit breaker activated again	Check for short circuit in melter or accessories	-
6. 24 V_{DC} power supply defective	-	Replace
7. 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

Possible cause	Possible fault / troubleshooting	Corrective action
1. Channel is deactivated	-	Activate the temperature channel on the control panel (or via the optional field bus)
2. Channel is assigned to a group, and the group is deactivated or in standby	Check the state of the group in the screen *Switch application group(s)* (Refer to the section *Operation*)	Activate the group via the control panel, or if set up so, via the Standard I/O interface.
3. Channel is in display mode	-	Switch to control mode

No Line Speed Signal (Voltage / Current / Frequency)

Possible cause	Possible fault / troubleshooting	Corrective action
1. Parent machine not operating	-	Start up parent machine
2. Polarity of line speed voltage input is reversed	-	Reverse polarity
3. Encoder defective	-	Replace

Control Panel does not Function

Problem	Possible cause	Corrective action
1. Does not start. Control panel dark or fault indications upon startup	Memory board (CompactFlash) not in place	Insert as described in section *Repair, Replacing Memory Board*
2. Control panel dark or bright	Brightness setting was changed	Use  to adjust (Refer to section *Operation*)
3. Control panel does not function/react	Hardware defective Control panel dirty	Refer to the separate document *Parts List* for spare part numbers Clean as described in section *Maintenance / External Cleaning / Control Panel*
4. No EtherNet connection Refer to the section *Operation, Operation via the IPC Webserver*	Wrong/invalid IPC IP address set Incorrect EtherNet cable plugged in	Correct the IP address on the control panel (Refer to section *Operation / Control Panel - Overview - / V24*) The LINK LED is lit when connected properly The ACT LED flashes when data is transferred properly Also refer to *LEDs of the IPC* in this section

No Material (Motor does not Rotate)

Possible cause	Possible fault / troubleshooting	Corrective action
1. System not yet ready for operation (heatup phase)	-	Wait until the melter has heated up and when appropriate until *System ready delay time* has expired (*System ready* appears in the status line).
2. Melter has lost system ready status (undertemperature during operation)	A new slug has been inserted	Wait until the melter is heated.
3. Motor not switched on	-	Switch on motor **NOTE: AND** link. Refer to *Initial Startup*, illustration "Conditions for *Motor running* with and without interface *Standard I/O*."
4. Motor startup protection activated	Standby entered Undertemperature during operation	Switch on the motor(s) again
5. Speed (rpm) not set	The parameter *Max. pump speed* in key-to-line is on 1 min^{-1}	Set the speed (Refer to section *Operation / Control Panel - Overview - / M3*)
6. *Key-to-line* mode selected, however melter should be in manual mode	-	Switch to manual mode
7. No external motor enabling via interface *Standard I/O*	-	Activate the corresponding contacts of the interface. To do this, the motor enable key must be set to *Control panel AND standard I/O*.
8. *Key-to-line* 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 control panel (analog/frequency)
9. Threshold switch not properly set	-	Check and set values on control panel
10. Standby entered	-	Exit or wait until standby period has expired

Continued ...

No Material (Motor does not Rotate)

Possible cause	Possible fault / troubleshooting	Corrective action
11. Motor overheated	Ambient temperature too high	Decrease ambient temperature by cooling or airing out
	Fan cap dirty	Clean
	Pump blocked by foreign material	Replace pump
	Pump operates too sluggish	Replace pump
	Material too cold	Set temperature accordingly
12. Motor defective	-	Replace
13. Motor not supplied with voltage	-	Technical inspection
14. Motor controller fault	⇒	Switch melter off and on again with main switch
	Motor overheated	Refer to **11.**
	Motor controller overheated	Decrease ambient temperature by cooling or airing out
		Clean cooling section of motor controller
	Short circuit	Check motor cable
	Overload (pump blocked by foreign material, pump too sluggish, material too cold)	Refer to **11.**
15. Motor controller defective	-	Replace **NOTE:** If more than one motor controller has been replaced, the screen *Replacing motor controller* appears. Refer to section *Repair, Replacing Motor Controller*.

No Material (Motor Rotating)

Possible cause	Possible fault / troubleshooting	Corrective action
1. Tank isolation valve closed	-	Open
2. Tank empty	-	Fill tank
3. If there is a filter cartridge, it is clogged	-	Clean or replace filter screen
4. Material supply hole to pump or pump suction hole clogged	Blocked by foreign objects/particles Blocked by unmelted material	Detach pump and clean supply hole or suction hole Refer to table *Too Little Material, Large tank and large quantity of material*
5. Hose or applicator is cold	Hose/applicator not connected electrically Hose/applicator temperature channel not activated Hose/applicator heater defective	Insert plug into the corresponding receptacle (Refer to wiring diagram for assignment) Activate on control panel Replace hose Replace heater cartridge(s) in applicator
6. Platen does not compress the slug	Check platen function and compressed air supply	-

Too Little Material or Irregular Feeding

Possible cause	Possible fault / troubleshooting	Corrective action
1. Material supply hole to pump or pump suction hole partially clogged	-	Detach pump and clean supply hole or suction hole
2. Pump block of the gear pump worn	-	Replace pump
3. Tank isolation valve not completely open	-	Open
4. If there is a filter cartridge, it is partially clogged	-	Clean or replace filter screen
5. Pressure control valve defective	-	Clean or replace
6. Processing temperature set too low	-	Correct temperature setting

Material Pressure too High

Possible cause	Possible fault / troubleshooting	Corrective action
1. Safety valve or pressure control valve dirty and thus blocked	-	Disassemble and clean or replace
2. Safety valve or pressure control valve defective	-	Replace
3. Pressure control valve set incorrectly	-	Set to default

Material Pressure too Low

Possible cause	Possible fault / troubleshooting	Corrective action
1. Gear pump is worn	-	Replace pump
2. Safety valve does not close any more	-	Replace
3. Pressure control valve dirty and thus clogged	-	Disassemble and clean or replace
4. Pressure control valve defective	-	Replace
5. Pressure control valve set incorrectly	-	Set to default

Incorrect Motor Rotation in Key-to-line Mode

Possible cause	Possible fault / troubleshooting	Corrective action
1. Line speed signal fluctuates during constant machine speed	Encoder defective or loose contact Drive element (e.g. belt) slips	Replace Eliminate slip

Material Residue in Tank / Material Hardens in Tank

Possible cause	Possible fault / troubleshooting	Corrective action
1. Tank setpoint temperature set too high	-	Correct temperature setting
	Material of low quality or not appropriate for application (temperature resistance poor)	Consult material supplier

Platen Does Not Move Up

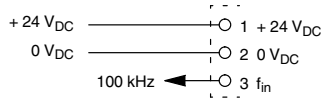
Possible cause	Corrective action
Charred material is clogging the melting plate bores, forming a vacuum	1. Increase pneumatic cylinder pressure to maximum. If the platen slowly begins to move up: Wait until it is out of the tank 2. Allow the melter to cool. Heat expansion is probably causing the melting plate to jam. 3. If the platen still remains in the same position: Inform Nordson customer service Before filling every time: Check air relief bores for blockage; clear if necessary

Others

Problem	Possible cause	Corrective action
1. Leakage at pump shaft seal	Pump shaft seal is worn	Pumps with gland: tighten Replace pump shaft seal
2. Material pressure too low, output quantity too low	Gear pump is worn	Replace pump
3. Gear pump blocked	Processed material too cold	Correct temperature setting (observe data sheet of material manufacturer)
	Foreign material in gear pump	Replace pump
4. Leakage at applicator during heatup phase	Safety valve does not open (expansion pressure)	Replace safety valve
5. Melter always switches to *Shutdown*	CAN bus terminating resistors not connected properly	Terminate CAN bus on both ends (*Temperature control board - motor controller* or *Temperature control board - pressure sensor*) as shown in the wiring diagram.
	One or more control components on the CAN bus have failed	Check, replace if necessary
6. IPC 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 the sensor on the control panel as described in *Assigning New CAN Bus Sensor* (section *Operation*) so that the IPC can assign the new, correct CAN address.

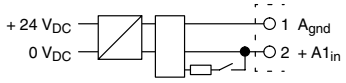
I/O Board LEDs and Plugs

Frequency Input

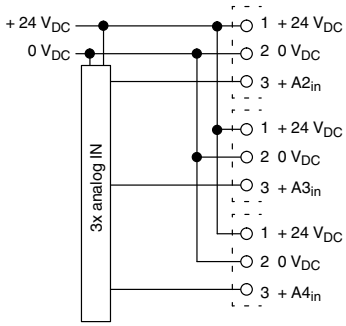


X14	One line speed signal for all motors

Analog Inputs



X4	One line speed signal for all motors



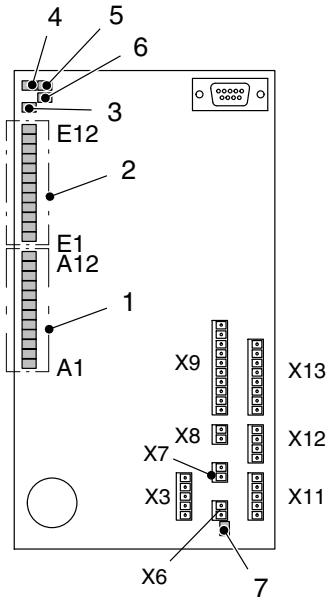
X5	*Reserved*

X10	Line speed signal for motor 1

X15	Line speed signal for motor 2

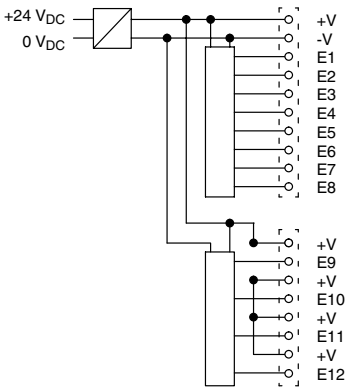
Digital Inputs/Outputs (LEDs)

The new revision of the I/O module implements the *Watchdog* feature, which restarts the I/O board if it "freezes." Flashing LEDs 3, 4 and 6 indicate that this process is taking place.



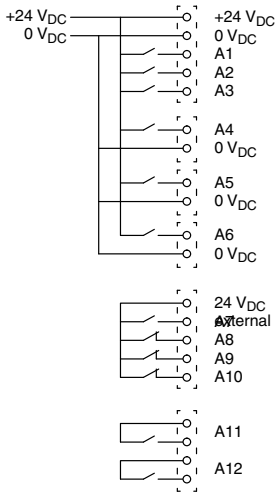
Outputs LEDs (1)	Lit for active output
Inputs LEDs (2)	Lit for active input
FIN LED (3)	Lit as soon as pulses > 1 Hz at frequency input **Flashes when watchdog is triggered**
RUN LED (4)	Lit when power is ON (melter switched on) Flashing during operation **Flashes when watchdog is triggered**
CAN communication (5)	Lit as soon as communication occurs at CAN bus
CAN error (6)	Lit with communication fault **Flashes when watchdog is triggered**
Fuse (7)	Lit when 24 V_{DC} supply to internal outlets OK

I/O Board #1



Plug	LED	Inputs (LED lit, if 24 V_{DC} supplied)
X9.3	E1	Heaters on
X9.4	E2	All motors ON (collective enable)
X9.5	E3	Enable *Motor 1*
X9.6	E4	Enable *Motor 2*
X9.7	E5	Enter standby
X9.8	E6	LED illuminated: Manual mode on (motor) LED not illuminated: Key-to-line mode on (motor)
X9.9	E7	Application group 1
X9.10	E8	Application group 2
X13.2	E9	*Reserved*
X13.4	E10	*Reserved*
X13.6	E11	Main switch (main contactor)
X13.8	E12	Reservoir full

NOTE: The LED indicates only that there is voltage at the I/O board input; it does not indicate whether the function is activated



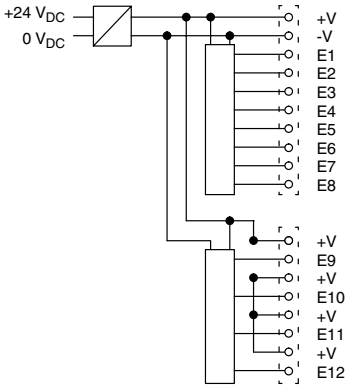
Plug	LED	Outputs (LED lit)
X3.3	A1	Light tower: Green lamp *System ready*
X3.4	A2	Light tower: Yellow lamp *Warning*
X3.5	A3	Light tower: Red lamp *Fault*
X6.1	A4	Main contactor
X7.1	A5	*Reserved*
X8.1	A6	*Reserved*
X11.2	A7	System ready
X11.3	A8	General alarm -warning-
X11.4	A9	General alarm -fault-
X11.5	A10	Slug empty
X12.1	A11	*Reserved*
X12.2		
X12.3	A12	Slug almost empty
X12.4		

Refer to the wiring diagram for the signals at XS2.

I/O Board LEDs and Plugs *(contd.)*

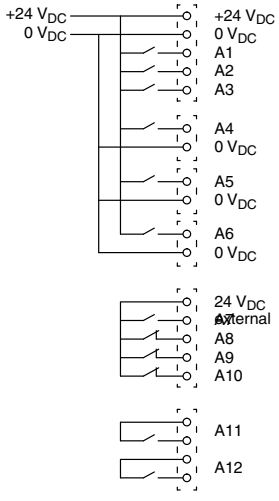
I/O Board #2

The frequency input and analog inputs are not assigned.



Plug	LED	Inputs (LED lit, if 24 V_{DC} supplied)
X9.3	E1	Lid closed detection
X9.4	E2	Slug almost empty detection (middle Reed contact)
X9.5	E3	Slug empty detection (lower Reed contact)
X9.6	E4	Upper position detection (upper Reed contact)
X9.7	E5	LED illuminated: Selector switch Platen manual mode LED not illuminated: Selector switch Platen automatic mode
X9.8	E6	Button lower (platen)
X9.9	E7	Button raise (platen)
X9.10	E8	*Reserved*
X13.2	E9	*Reserved*
X13.4	E10	*Reserved*
X13.6	E11	*Reserved*
X13.8	E12	*Reserved*

NOTE: The LED indicates only that there is voltage at the I/O board input; it does not indicate whether the function is activated



Plug	LED	Outputs (LED lit)
X3.3	A1	*Reserved*
X3.4	A2	*Reserved*
X3.5	A3	*Reserved*
X6.1	A4	Mode Lower (platen)
X7.1	A5	Mode Raise (platen)
X8.1	A6	*Reserved*
X11.2	A7	*Reserved*
X11.3	A8	*Reserved*
X11.4	A9	Reservoir empty
X11.5	A10	*Reserved*
X12.1	A11	*Reserved*
X12.2		
X12.3	A12	*Reserved*
X12.4		

Refer to the wiring diagram for the signals at XS2.

LEDs of Temperature Control Board

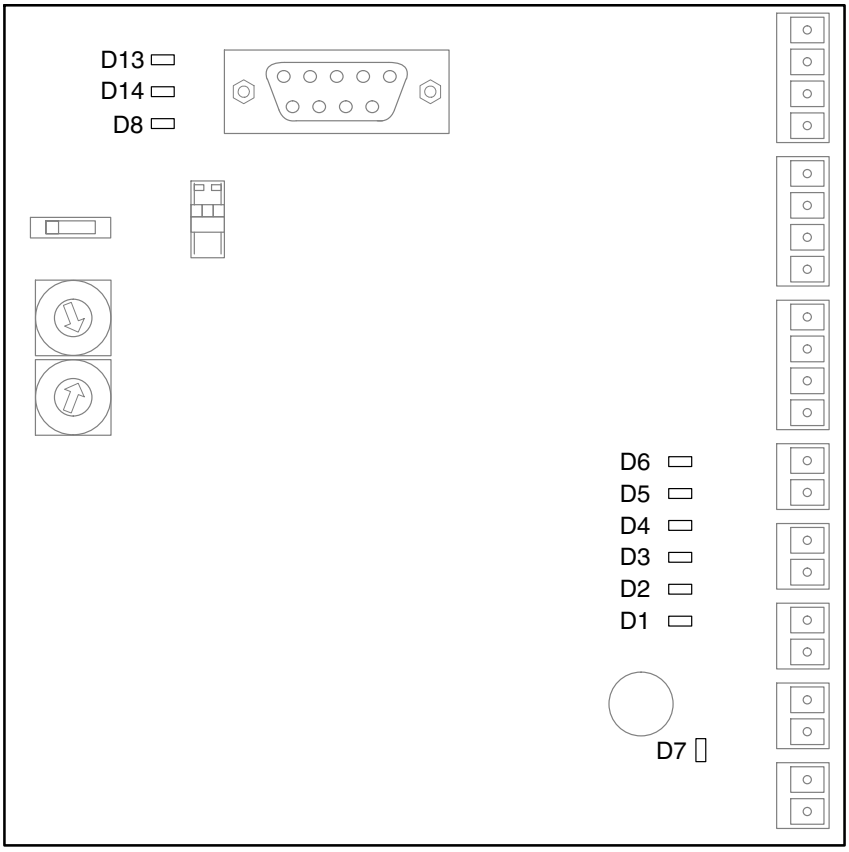
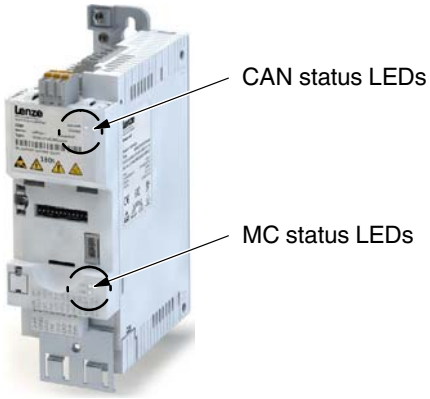


Fig. 6-4

LED	
D7	Operating voltage present
D8	CAN data received or transmitted
D14	No connection to control unit (IPC)
D13	Lit: Controller software reset Flashing: CAN fault counter overflow, stack error, power down not finished properly
D1	Heater output of the first channel is switched on. **NOTE:** Depending on position of dials S1 and S2, the first channel of this temperature control board is channel 1, 7 or 13.
D2 (... D6)	Heater output of the second channel (... the sixth channel) is switched on.

LEDs of Motor Controller 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 active
Flashing (5 Hz)		Not yet ready
On		Ready for operation
Flashing 1x / 1 s off		Stopped
	On	No bus
	Flashing 1x / 1 s off	Warning limit reached
	Flashing 2x / 1 s off	Heartbeat event
On	Flashing 3x / 1 s off	Sync message error

Blue LED ”RDY	Red LED "ERR"	Description of MC status
Off	Off	No supply voltage
Flashing (1 Hz)	Off	Safe torque off (STO) active
	Flashing fast (4 Hz)	Safe torque off (STO) active, warning active
Flashing (2 Hz)	Off	Motor controller blocked
	On briefly every 1.5 s	Motor controller blocked, no immediate circuit voltage
	Flashing fast (4 Hz)	Motor controller blocked, warning active
	On	Motor controller blocked, fault active
On	On	Motor controller being started (initialization) or quick stop active
	Off	Motor controller enabled. The drive turns according to the specified setpoint.
	Flashing fast (4 Hz)	Motor controller enabled, warning active. The drive turns according to the specified setpoint.
	Flashing (1 Hz)	Motor controller enabled, quick stop active as reaction to a fault

LEDs of Motor Controller 8200

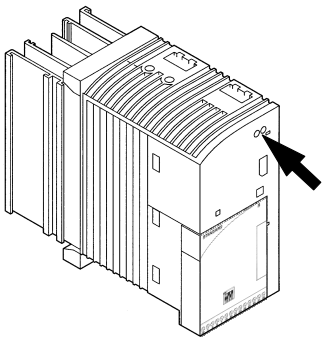
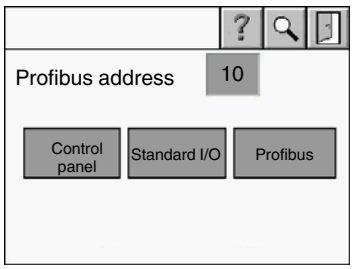


Fig. 6-5
LEDs

During operation the operating mode of the motor controller is displayed by two LED's on the front of the unit.

LED display		Operating mode
Green	**Red**	
On	Off	Motor controller enabled
On	On	Mains switching and automatic start blocked
Flashing	Off	Motor controller blocked
Off	Flashing (every 1 s)	Fault message or motor controller is being parameterized
Off	Flashing (every 0.4 s)	Overvoltage or undervoltage shutdown
Off	Off	Missing voltage supply

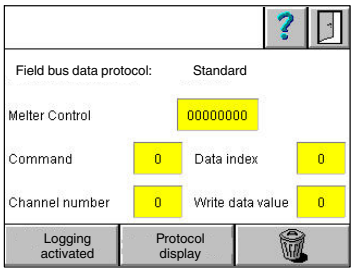
Checking Transmitted Field Bus Data



Introductory screen (example) *Profibus setup*

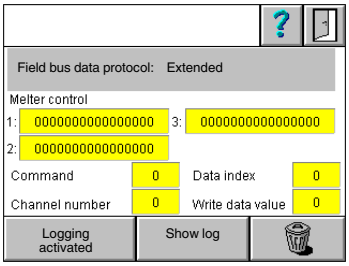
Touch  to access the information on the field bus data protocol.

The field bus data shown is a factor of the field bus data protocol used, which was selected under *Melter configuration*.



When *Standard* is used:

- *Melter control*, binary display
- *Command*, decimal display
- *Data index*, decimal display
- *Channel number*, decimal display
- *Write data value*, decimal display.

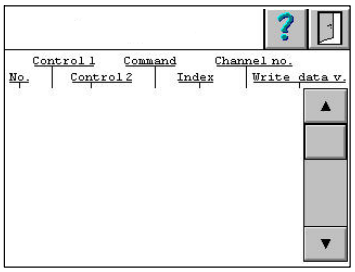


When *Extended* is used:

- *Melter control 1*, binary display
- *Melter control 2*, binary display
- *Melter control 3*, binary display
- *Command*, decimal display
- *Data index*, decimal display
- *Channel number*, decimal display
- *Write data value*, decimal display.

This data forms a data set. Every change in the data set is recorded when logging is activated (key *Logging activated*).

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 (key *Show log*).

NOTE: Melter control, hexadecimal display in this case

- *No.* = Data set counter, decimal display from 1 to 99

Section 7
Repair

ATTENTION: Allow only qualified personnel to perform the following tasks. Follow the safety instructions here and in the entire documentation.

Risk of Burns

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

Some melter components can only be detached when the melter is heated up.

Observe Before Performing Repairs

ATTENTION: Risk of electrical shock. Failure to observe may result in personal injury, death, or equipment damage.

ATTENTION: Disconnect equipment from line voltage before any repairs.

Relieving Pressure

ATTENTION: System and material pressurized. Relieve system of pressure before disconnecting hoses, plugs, applicators and hot melt handguns. Failure to observe can result in serious burns.

1. Switch off the motor(s) (Refer to section *Operation*).
2. Place a container under the nozzle(s) of the applicator / assembly handgun.
3. Activate the solenoid valve(s) electrically or manually; or, pull the trigger of the assembly handgun. Repeat this procedure until no more material flows out.
4. Properly dispose of material according to local regulations.

Control Panel

Fig. 7-1 Location of connections; IPC 4 shown with Profibus interface

1 SD card slot
(SDSC, SDHC or SDA 2.0)

2 EtherNet
(RJ45, 8-pin, 2 LEDs, CAT5e/6e, LAN1, 10/100 Mbps)

3 Blade terminal lug (functional earth) *)

4 USB host
(USB 2.0, plug type A, full power (500 mA))

5 USB device
(USB 2.0, plug type B)

6 COM 1
(RS232, plug Sub D 9-pin)

7 COM 2
(RS485, plug Sub D 9-pin)

8 PROFIBUS-DP (option)
(receptacle Sub D 9-pin)

9 CAN
(plug Sub D 9-pin)

10 24 V_{DC} voltage supply (2-pin, no PE) *)

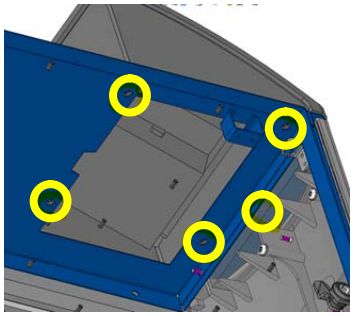
Note: *) The IPC 4 **must** be connected with the functional earth (FE) to the melter casing such that it is electrically conductive. Refer to the upgrade kit documentation for a description.

EtherNet LED (2)		Meaning
LINK (green)	Illuminated	EtherNet connected and detected
ACT (yellow)	Flashing	EtherNet active (data traffic)

Detaching Control Panel

If the control panel is to be replaced, it is easier to remove the console and control panel together. The console is secured to the electrical cabinet with five screws that are more easily accessible than the retaining clips on the control panel.

If a defective control panel is to be replaced, refer to *Installing Memory Board* (page 7-4) for information on how to copy the settings - to the extent that this is possible.



View from below into opened electrical cabinet

1. Disconnect the melter from the line voltage.
2. Detach functional earth from the flat pin.
3. Detach all connectors from the control panel.
4. Release the Torx fixing screws (circles) and remove the console.
5. Release the retaining clips (Fig. 7-2) to separate the control panel from the console.

Attaching Control Panel

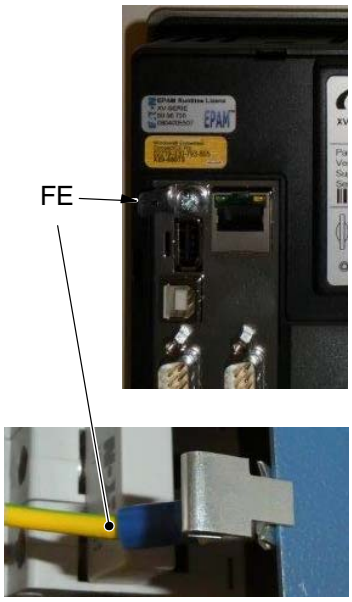
Use the six included retaining clips to secure the control panel to the console.

1. Insert one retaining clip in the corresponding opening in the casing.

Fig. 7-2 Retaining clip with setscrew in IPC casing

2. Screw in the setscrew until it touches the surface of the console. Use a size 2 Allan key.
3. Repeat on the opposite side of the casing.
4. Insert the next clip in the casing, offset by 90°, and repeat steps 2. and 3..
5. Insert and secure the last two retaining clips as described above.

Continued ...



6. Check that the control panel is aligned properly and fits securely in the console; adjust if necessary. The gap between the IPC and the console has to be uniform.

   Maximum torque for the setscrews: 0,1 Nm (0.86 lbin).

7. Place the console and control panel on the electrical cabinet and secure it from below with the five Torx fixing screws.

8. Re-attach all electrical connections.

   NOTE: The green-yellow functional earth line must be re-connected to the electrical cabinet casing for the control panel to be able to work properly.

   Slide the green-yellow functional earth (FE) onto the flat pin of the EMC clamp connector and/or the flat pin of the control panel. Any interfering signals to or from the IPC are now directly dissipated.

Installing Memory Board (IPC 4 Spare Parts)

NOTE: The IPC 4 does not work with the memory board from the old model. And in contrast to the old model, the memory board may not remain in the melter all the time; this would cause the selection screen (step 8.) to appear every time the melter is switched on.

A melter delivered with IPC 4 has already been set. A selection screen as described in step 8. is omitted. A memory board was not included in the delivery.

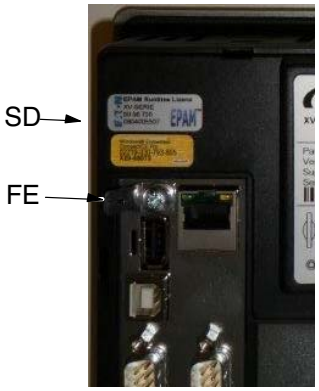
ATTENTION: The memory board may be inserted only when the melter is switched off.

NOTE: When the memory board is inserted and the system is booted, the melter returns to its original state upon delivery. All of the set parameters are lost, if they were not saved as a recipe on an external PC.

1. Make a note of the software configuration code.
2. If there are pressure sensors, make a note of the pressure sensor assignment.
3. Save and download the recipe.

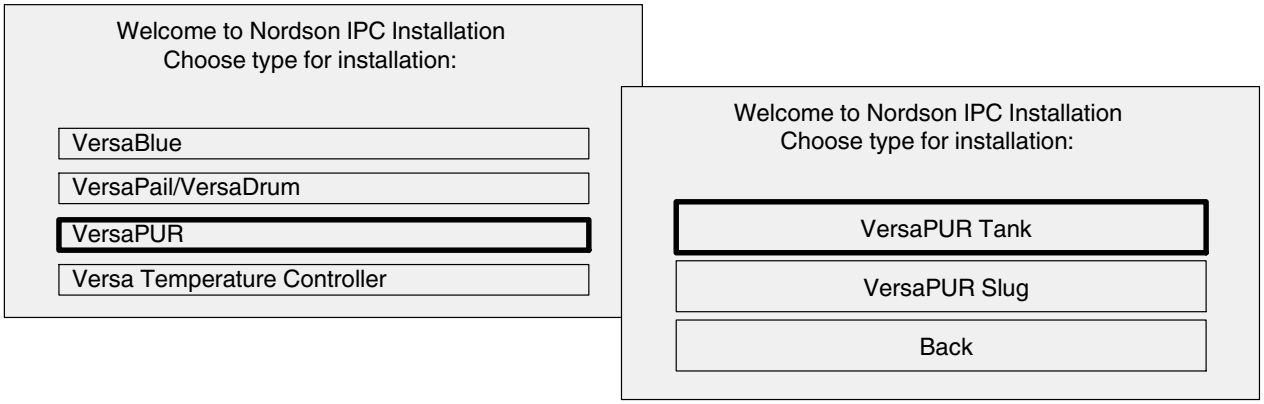
   Refer to section *Operation, Upload and Download of Customer Recipes*.

Continued ...



4. Switch off the melter with the main switch.
5. Carefully slide the new memory card (SD, arrow) into the new control panel until it clicks into place.
6. Reconnect any cables that may have come loose from the control panel.
7. Close the electrical cabinet.
8. Switch on the melter.

   The IPC starts with a selection screen.



Back = return to first screen

9. Choose the proper device.

NOTE: The IPC 4 then automatically copies all of the files required for operation from the new SD card into the internal memory. This can take a minute. Do not touch the screen during this process.

When copying is finished, a new screen appears, prompting the operator to remove the SD card (*Extract SD card*) and restart the device (*Reboot*).

ATTENTION: The following step must be performed when the melter is energized. Observe all safety instructions and regulations concerning energized unit components (active parts). Failure to observe may result in an electric shock.

Continued ...

ATTENTION: The following step must be performed when the melter is energized. Observe all safety instructions and regulations concerning energized unit components (active parts). Failure to observe may result in an electric shock.

10. Open the electrical cabinet. Press the SD card all the way into its slot, extract it from the IPC and store it carefully. Close the electrical cabinet.
11. Select *Reboot*.

    NOTE: If the wrong melter was selected in the selection screen, touch *Main menu* instead of *Reboot* to return to the selection screen. Go back to step 9.

12. Enter software configuration code.

    Refer to section *Operation, Melter Configuration*.

13. To avoid the fault indication *Controller: wrong type*:, set the motor controller type on the control panel if motor controller 8200 is still in the melter.

    NOTE: The default setting is the motor controller i550 (successor model of 8200).

14. Check assignment of each pressure sensor on the control panel; set up and calibrate if necessary.
15. If the Webserver is used, set the IPC IP address.
16. Upload the recipe, load it on the control panel and save it under its own name.

Replacing Motor Controller

CAUTION: 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!

CAUTION: No more than two motor controllers can share a mains filter. If an i550 motor controller is installed to replace the built-in 8200 vector, the corresponding mains filter in the melter must also be replaced.

NOTE: If more than one motor controller has been replaced, the screen *Replacing motor controller* appears. Continue with *On the Control Panel: Allocating Replaced Motor Controllers (MC) to their Motors*

Replacing CAN Module of Motor Controller (Only 8200)

NOTE: The motor controller i550 has CAN-on-board.

1. Disconnect motor controller from power supply and wait at least 3 minutes.
2. Release CAN module connections.
3. Use a screwdriver to pry away the male connector (1) first and then the CAN module (2).
4. Remove protective cap (3) of the new CAN module.
5. Insert the CAN board into the serial port of the motor controller.
6. Insert male connector (1) into female connector of the CAN board.
7. Connect according to the labels on the lines.

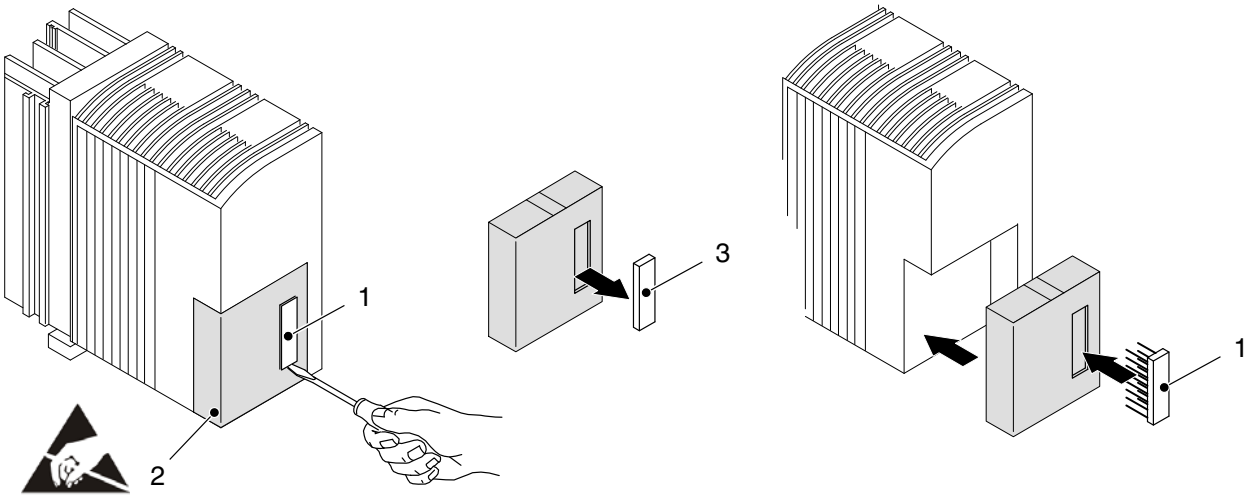


Fig. 7-3

Continued ...

CAN Bus Terminating Resistor

A terminating resistor should be on both sides of the CAN bus. One of the two terminating resistors is on the last temperature control board and must be switched on.

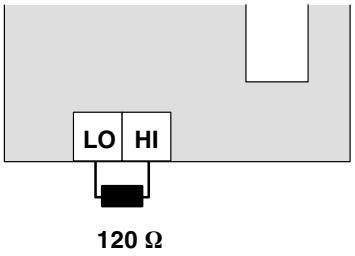


Fig. 7-4
CAN module on 8200

The second terminating resistor (120 Ω) must be installed or switched on

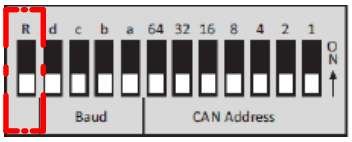
- On the CAN module of the last motor controller 8200 (Fig. 7-4) or with the DIP switch on the last motor controller i550 (Fig. 7-5).

  or

- If there are one or more pressure sensors installed in the system, on the last pressure sensor. Refer to Fig. 7-11.

NOTE: The two CAN bus terminating resistors are switched in parallel via the bus. Thus, when they are installed, resistance measuring indicates a value of 60 Ω.

DIP Switches (i550)



Terminating resistor switched on: "R" to ON
Set to OFF if more pressure sensors follow. Then a terminating resistor is attached to the last pressure sensor along the bus.

The *Baud* and *CAN address* settings are made automatically by the control unit. Set their DIP switches to OFF for this purpose.

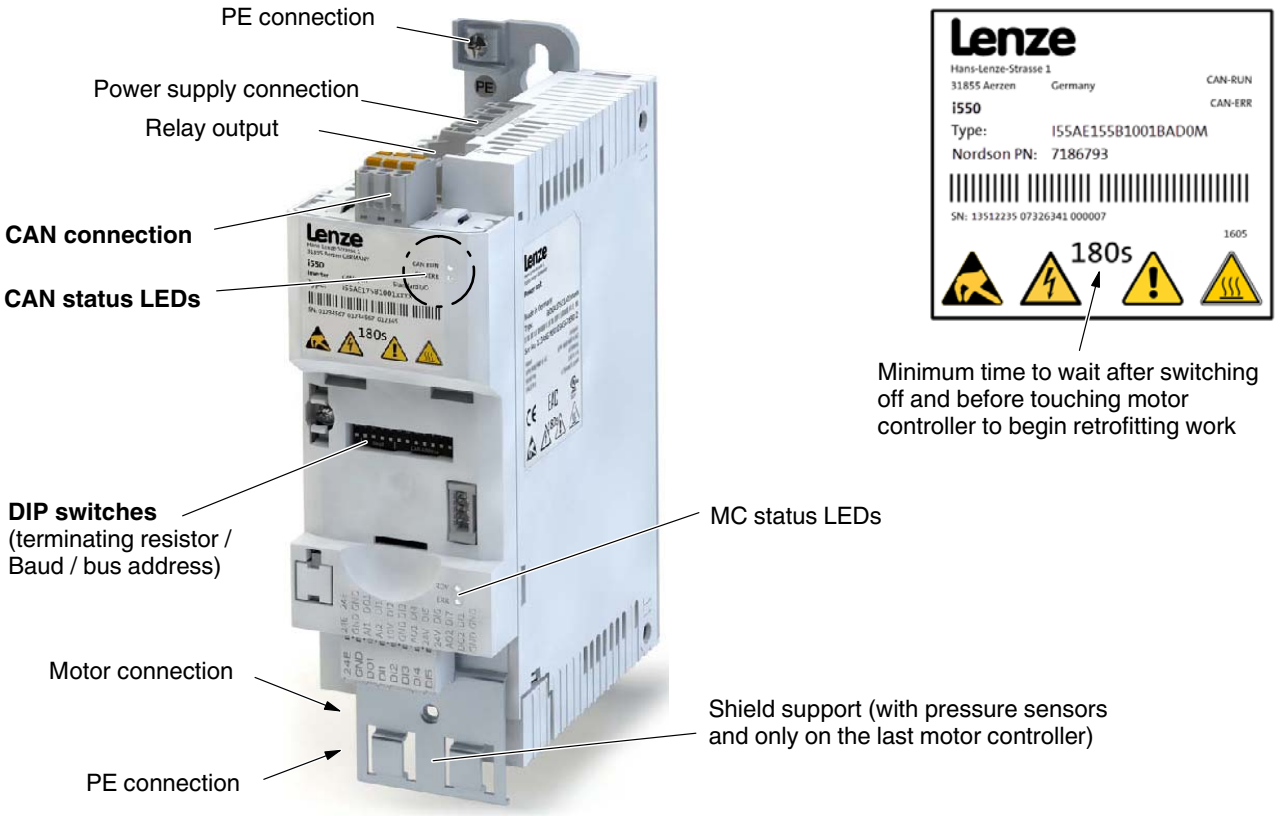


Fig. 7-5

On the Control Panel: Allocating Replaced Motor Controllers (MC) to their Motors

Example: On a melter with four configured motors/pumps, the motor controller for motors 2 and 4 were replaced because they were defective. When the melter is switched on again, Fig. 7-6 appears.

NOTE: If only one MC is defective and thus replaced, the IPC automatically assigns it to the correct motor. The operator need not assign manually.

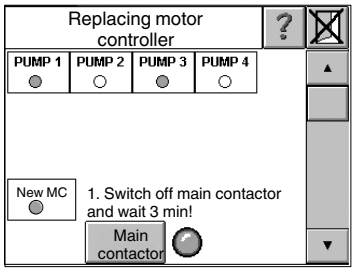


Fig. 7-6

Indications lamps show the configured motors/pumps for which motor controllers are found. In this case: Pumps 1 and 3.

Allocation is possible only when the system has found only one motor controller (indication lamp *New MC* lit). This is why the replaced motor controllers must be integrated into the CAN bus individually.

There is a switch for the main contactor in this screen to allow work to be done when the load circuit is switched off.

1. Switch off the main contactor and wait 3 min.

   NOTE: The screen can be scrolled up and down.

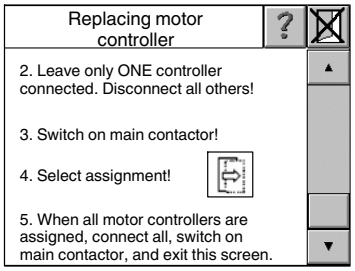


Fig. 7-7

2. Leave only ONE motor controller connected. Disconnect all of the others from the power supply. In this case: Disconnect the operating voltage from MC 1, 3 and 4.
3. Switch on the main contactor.
4. Select assignment. Touch  to go to Fig. 7-8.

Continued ...

On the Control Panel: Allocating Replaced Motor Controllers (MC) to their Motors *(contd.)*

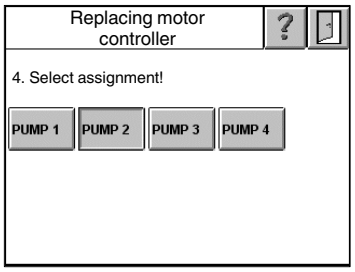


Fig. 7-8

5. In this case: Touch key PUMP 2.

   Exit the screen again by touching the door symbol.

6. Switch off the main contactor and wait 3 min.

7. Disconnect the operating voltage from MC 1, 2 and 3. Connect MC 4.

8. Switch on the main contactor.

9. Select assignment. Touch key PUMP 4.

10. Switch off the main contactor and wait 3 min.

11. Reattach all motor controller connections. In this case: MC 1, 2 and 3.

12. Switch on the main contactor.

All motor controllers are now assigned.

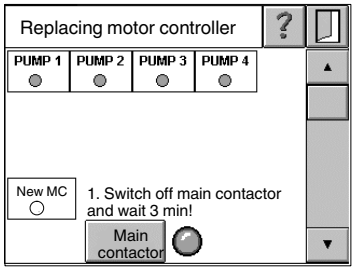


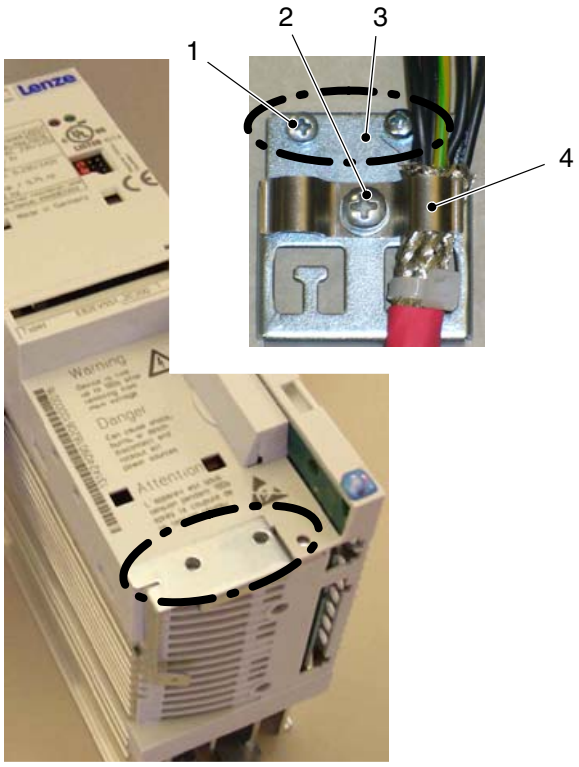
Fig. 7-9

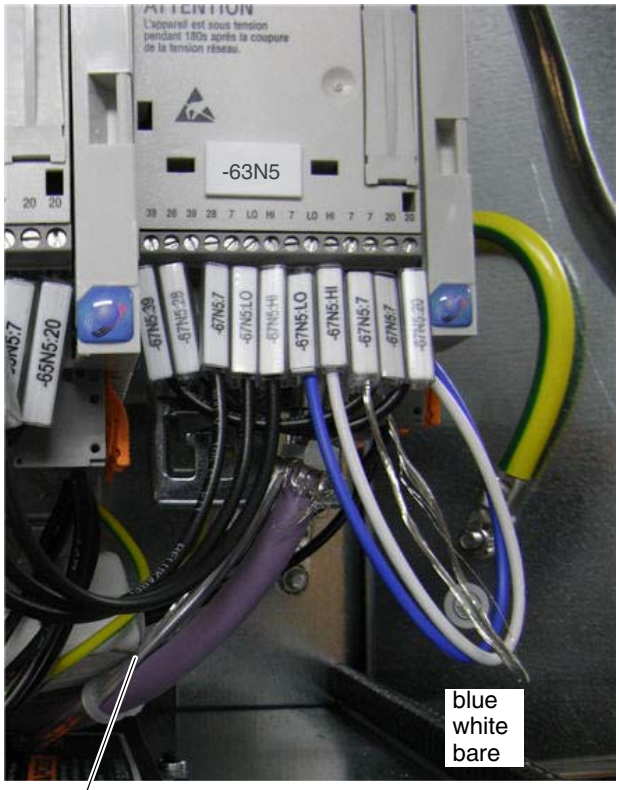
13. Exit the screen again by touching the door symbol.

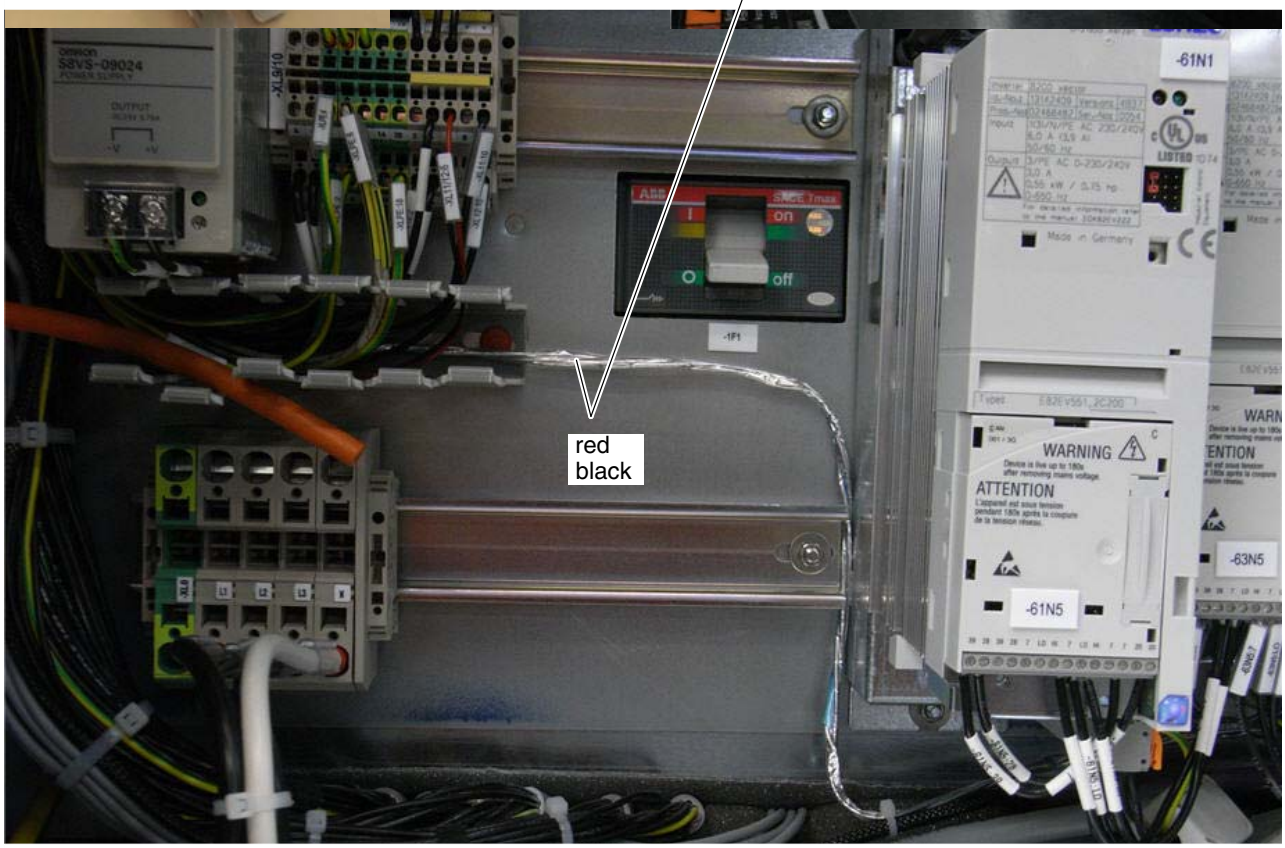
    NOTE: The screen cannot be exited until all of the motor controllers have been assigned.

14. Switch melter off and on again with main switch.

Retrofitting First Pressure Sensor (Electrical)



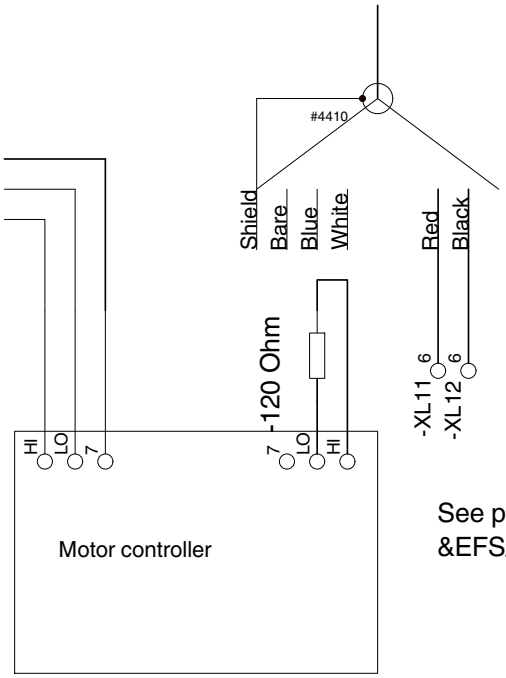




Illustrations show motor controller 8200

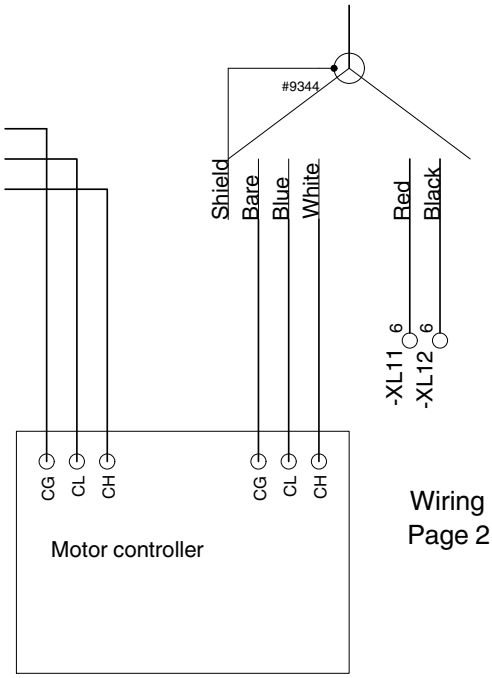
Retrofitting First Pressure Sensor (Electrical) *(contd.)*

Motor controller 8200 with CAN module



See page &EFS/211

Motor controller i550 (CAN-on-board)



Wiring diagram Page 211

Melters with pressure sensors have a shielding plate for the CAN bus on the motor controller If the pressure sensor is added, the shielding plate also has to be added.

NOTE: If there are two pressure sensors, ensure that they are positioned correctly (Refer to the numbers in the manifold). When the first pressure sensor has been connected, set it up on the control panel. Then connect the second one.

Fig. 7-10

1. Use two screws (1) to fasten the shielding plate (3) to the last motor controller 8200; for the i550, slide in the shield.
2. Carefully insulate the pressure sensor line (CAN bus). The "red" and "black" lines should be positioned similarly to the illustration.

   “red,” “black,” “bare,” “blue,” “white”: These designations correspond to wiring diagram page SYS.

3. Then remove only the sheath from the pressure sensor line to expose the braided screen (approx. 20 mm / 0.8 inch).

   Fold over the braided screen so that it overlaps the sheath. This increases the diameter of the pressure sensor line somewhat, so it rests more firmly in the clamp.

   Use a screw (2) to fasten the clamp (4) to the shielding plate. The braided screen of the pressure sensor line must be inside of the clamp.

   Use cable ties (Fig. 7-10) to fasten the pressure sensor line to the shielding plate.

Replacing Pressure Sensor

Refer to section *Maintenance / Pressure Sensor* for information on inserting and extracting the pressure sensor.

Information on T-tap and CAN Bus Cables with Hexagon Nut

Fig. 7-11: Tighten the hexagon nut with 0.6 Nm torque. 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 Ω).

CAN Bus Terminating Resistor

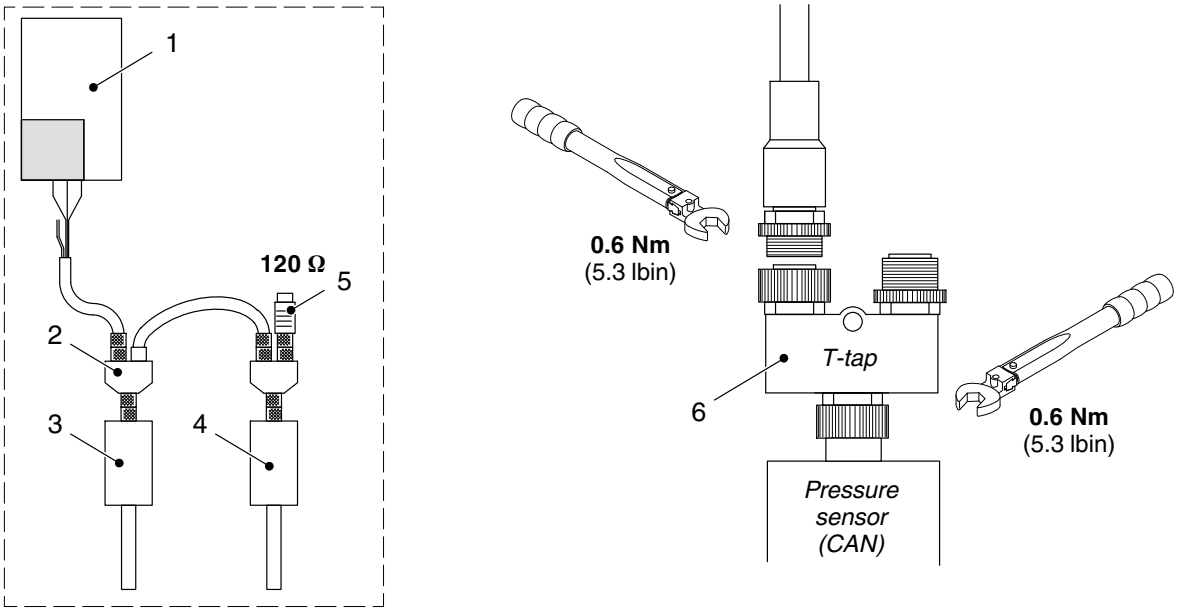


Fig. 7-11 Example with two pressure sensors and information on T-Tap and CAN bus cables with hexagon nut

1 Motor controller
2 Manifold (old)
3 First pressure sensor
4 Last pressure sensor
5 Terminating resistor
6 Manifold *T-Tap* (new)

Procedure

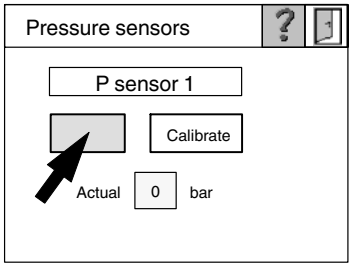


Fig. 7-12
Example

1. Switch off the pressure sensor to be replaced (*P sensor 1* in the example). Also refer to section *Operation*.
2. Wait until the ON/OFF key is no longer subdued.
3. Disconnect the pressure sensor from the CAN bus.
4. Connect the CAN bus cable to the new pressure sensor.
5. Also refer to Fig. 7-11 for information on T-Tap and CAN bus cables with hexagon nut.
6. Refer to *Pressure Sensor Setup* in the section *Operation* for information on how to proceed.

NOTE: If during work on the CAN bus errors occur that have no readily apparent cause (red indication lamps) or the unit shuts down, switch the melter off then on again with the main switch.

Replacing Pump

Nordson recommends replacing the pump and sending the old one in to be repaired.

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

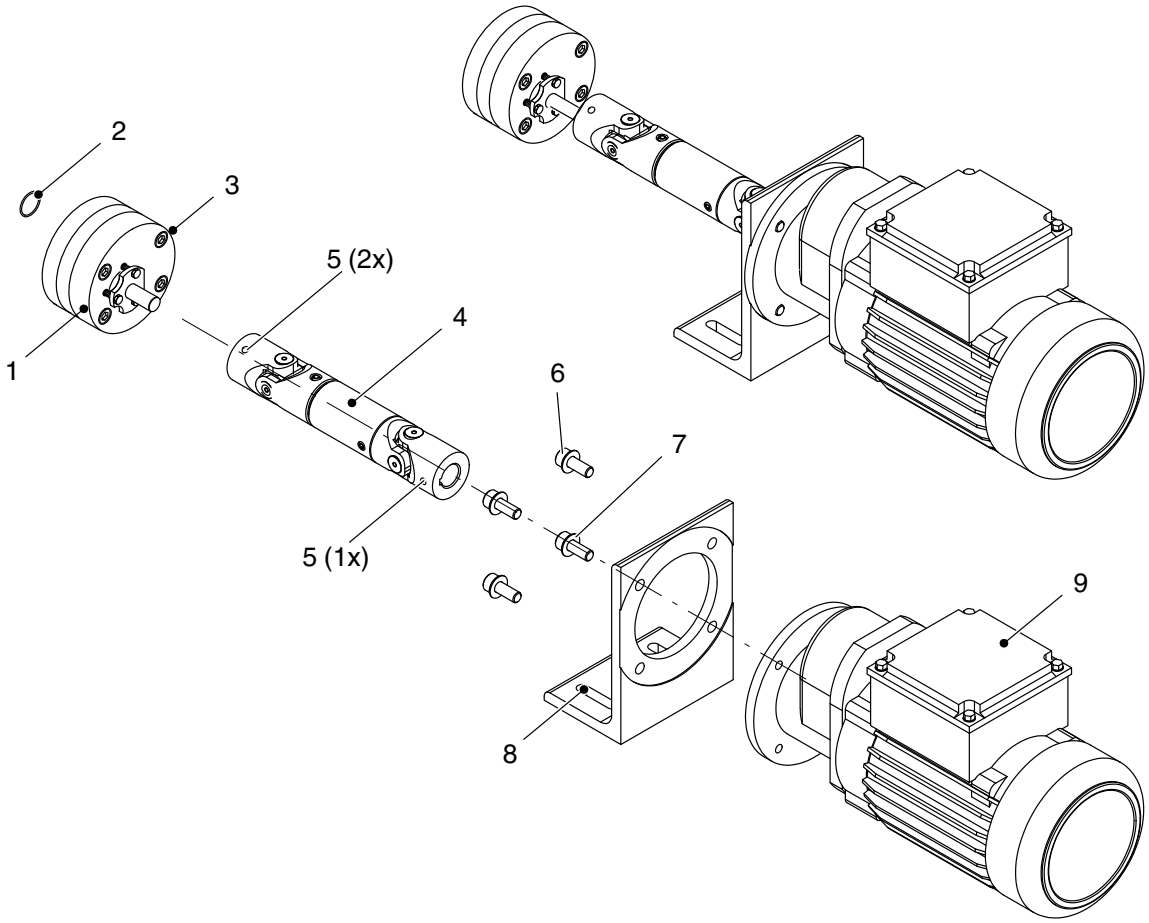
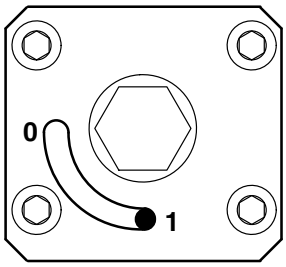


Fig. 7-13

1 Pump
2 O-ring
3 Hex bolt M8x70
4 Cardan joint
5 Setscrew
6 Hex bolt M8x20
7 Washer
8 Bracket
9 Motor

Detaching Pump



NOTE: Detach the pump only when the material is soft (approx. 70 °C/158 °F, depending on material).

1. Close the tank isolation valve.

   NOTE: Operate the tank isolation valve only when the melter is heated to operating temperature.

   Pin in position ***0***: Closed

   Pin in position ***1***: Open

2. Turn the cardan joint until the two setscrews (5, Fig. 7-14) on the pump side are accessible.
3. Loosen the setscrews on the pump side.
4. Pump 1: Release the motor bracket screws and pull out the motor bracket with the motor and cardan joint in the slot.
5. Extract the complete safety valve plate 1.
6. Pump 2: Disconnect the cardan joint. The second motor does not have to be moved.
7. Extract the complete safety valve plate 2 along with the pump and the rest of the cardan joint.

The procedure for releasing and extracting the safety valve plate is described in the section *Maintenance*. Refer to *Safety Valve Plate / Releasing Safety Valve Plate* and *Securing Safety Valve Plate.*

8. Place a container under the pump to collect any material left.
9. Detach pump.
10. Clean sealing surface on the plate. If necessary, heat material residue with a hot air fan, then remove.
11. Allow melter to cool to room temperature.

Attaching Pump

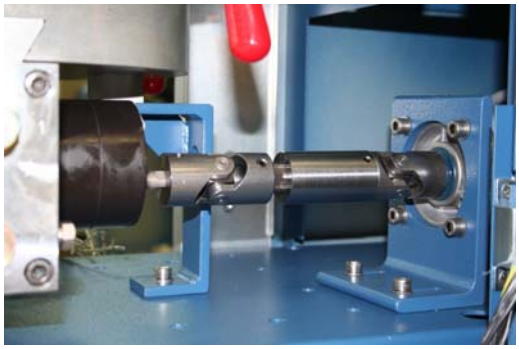
NOTE: The pump may only be attached when the melter is cold.

The sealing surfaces on the plate and the pump must be clean. Always replace all O-rings.

1. Apply high temperature grease (Refer to section Maintenance, *Processing Materials*) to the new pump.
2. Apply high-temperature grease to the fixing screws and O-rings.
3. Tighten the fixing screws crosswise using a torque wrench; tighten only when the melter is cold.
   Torque: 25 Nm / 220 lbin
4. Slide safety valve plate 1 back into the original position.

CAUTION: If the safety valve plate is pulled out, ensure that the O-ring is positioned properly in the groove when the safety valve plate is slid back into place. Otherwise leakage can occur.

5. Slide the motor bracket with the motor and cardan joint all the way back in the slot, then tighten the motor bracket screws.
6. Fasten the pump shaft to the cardan joint using the two setscrews.
7. Insert safety valve plate 2 and, along with the pump and the rest of the cardan joint, slide it back into the original position.
8. Put together the cardan joint and slide the safety valve plate against the stop screw.



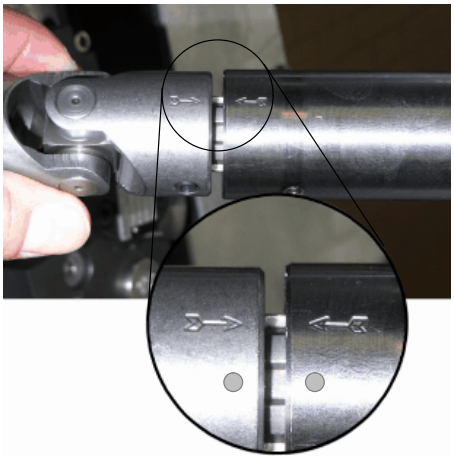


Fig. 7-14

9. Align the cardan joint and screw into place.

When installing the cardan joint, ensure that the mark (arrows or dots) is positioned properly. Refer to Fig. 7-14.

10. Heat melter to operating temperature and open tank isolation valve again.

Replacing Variseal

NOTE: 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 shaft seal.

NOTE: Nordson cannot provide a guarantee for Variseals that have been replaced by anyone besides a Nordson employee.

1. Remove the gear pump from the melter but do not disassemble it!
   Refer to *Replacing Pump* in this section.
2. Have a new seal and a suitable assembly tool ready.

Assembly Tool

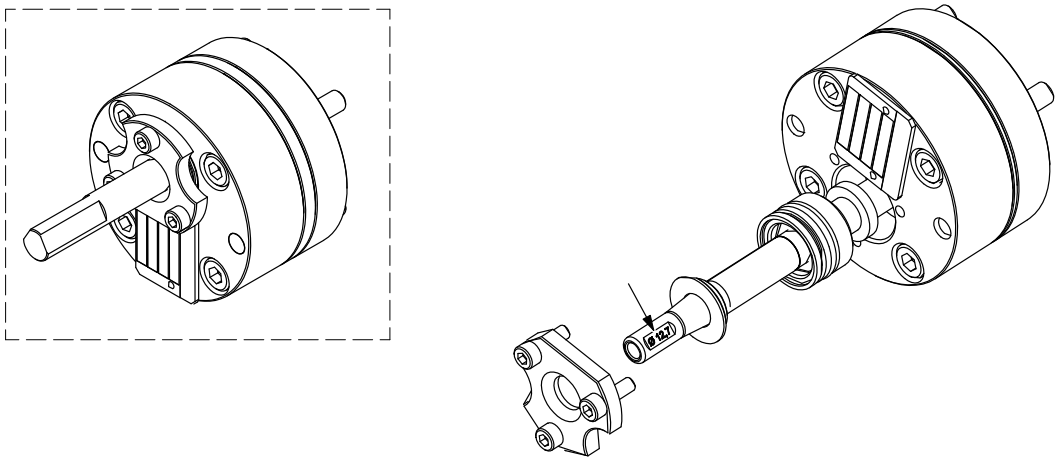


Fig. 7-15

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.

1. Follow the instructions *Assembly Tools for Sealing Kits with Variseal Seals* (P/N 7146229) to proceed.
2. Put the gear pump back into place.

Replacing Motor

NOTE: Perform the work only when the material is soft (approx. 70 °C / 158 °F, depending on material); otherwise the cardan joint cannot be turned.

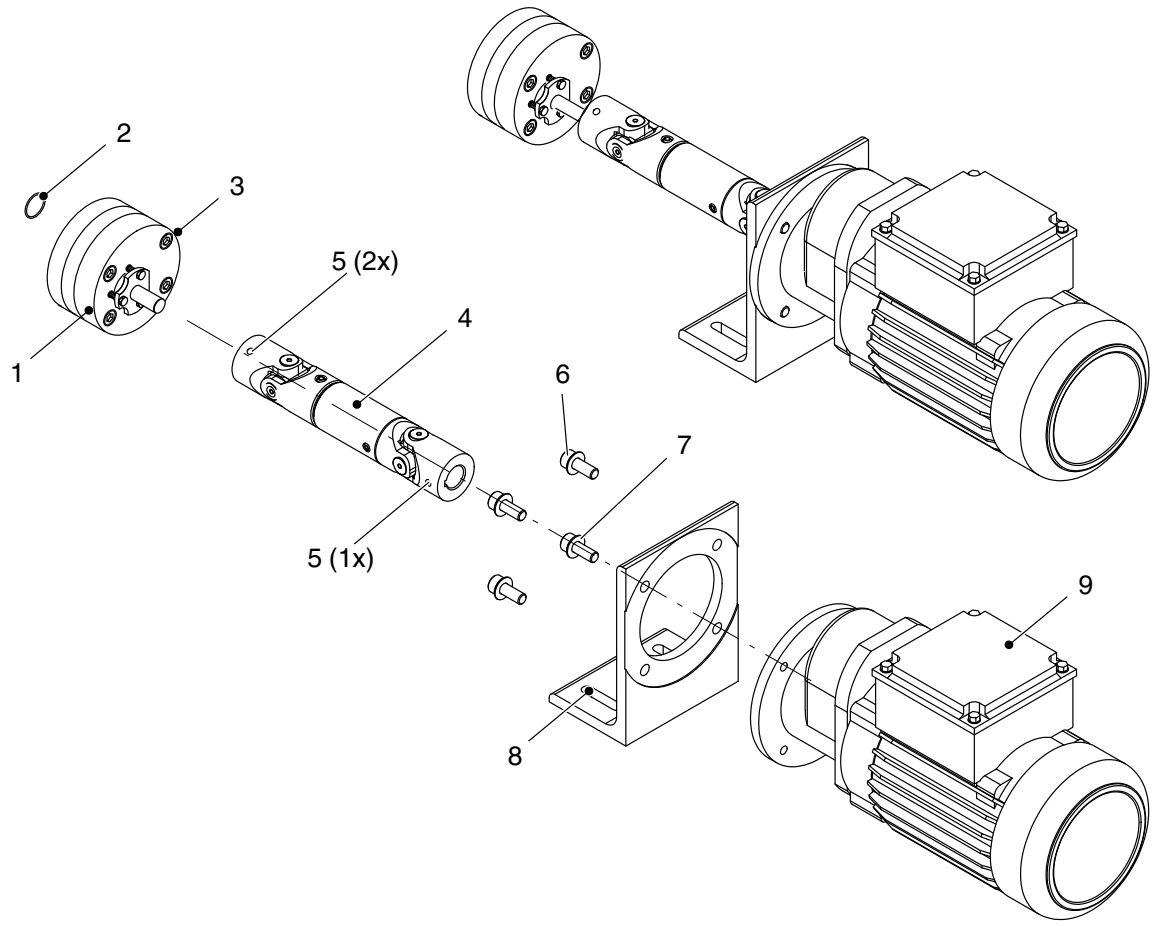


Fig. 7-16

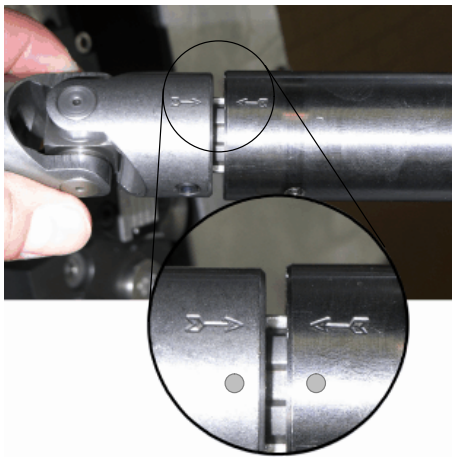
1 Pump	4 Cardan joint	7 Washer
2 O-ring	5 Setscrew	8 Bracket
3 Hex bolt M8x70	6 Hex bolt M8x20	9 Motor

Replacing Motor *(contd.)*

1. Disconnect the motor power cable in the electrical cabinet.
2. Detach the plug connector from the motor controller.
3. Turn the cardan joint (4, Fig. 7-16) until the setscrew (5) on the motor side is accessible.
4. Loosen the setscrew.
5. Remove the hex bolts (6) and detach the old motor (9).
6. Remove any protective varnish from the shaft of the new motor.

   Guide the shaft into the cardan joint without using force (no jolts or pounding). If necessary, sand pulley keys and shaft with emery cloth. Lubricate pulley keys and shaft if needed.
7. Install the new motor in the bracket. Tighten the fixing screws crosswise using a torque wrench. Torque: 20 Nm / 177 lbin.
8. Fasten the motor shaft to the cardan joint using the setscrew.

   When installing the cardan joint, ensure that the mark (arrows or dots) is positioned properly. Refer to the illustration.



9. Reconnect motor electrically.
10. Secure the power cable with strain relief. Ensure that the cable shield and the clamp have contact.
11. Verify that the connection effects the desired direction of rotation (see arrow).

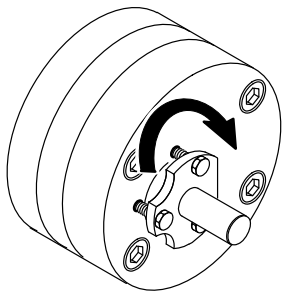


Fig. 7-17
Direction of pump rotation

Replacing Safety Valve

ATTENTION: For safety reasons, the safety valve may not be disassembled. The complete valve must be replaced every time.

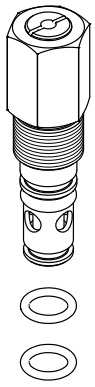
Refer to *Installing Service Kit* for procedure. However, points 3 and 4 are omitted.

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

Installing Service Kit

The kit contains two O-rings and high-temperature grease.

NOTE: Screw in/out only when the valve and the pump are warm and the material is soft (approx. 70 °C/158 °F, depending on material).

Service kit P/N: 394592	
Required tools: Open-end wrench, size 19 Pliers Torque wrench	
	1. Close tank isolation valve.
	2. Use an open-end wrench to unscrew the safety valve, then extract with a pliers.
	3. Remove outer O-rings and clean outside of safety valve.
	4. Install new O-rings.
	5. Apply grease to all threads and O-rings.
	6. To prevent damage to the O-rings, carefully guide the valve into the hole when the melter is warm.
	7. Tighten valve with a torque wrench. Torque: 15 Nm (133 lbin)
	8. Open tank isolation valve.

Replacing Thermostat

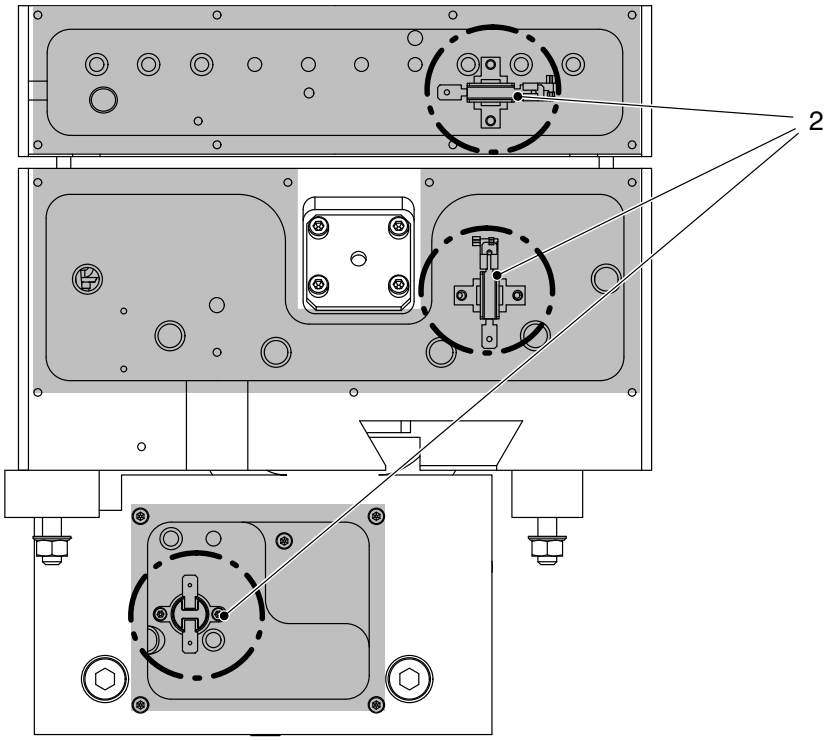
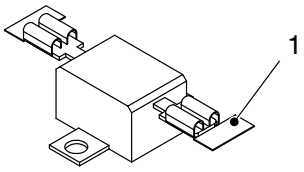


Fig. 7-18

1. Remove the electrical equipment cover and seal.
2. Release fixing screws and remove the old thermostat.
3. If necessary, clean the fastening point with a lint-free cloth.
4. Attach connecting wires to the new thermostat.
5. Apply heat transfer compound to the bottom of the thermostat (Refer to*Processing Materials* in the section *Maintenance*), then fasten it to the tank again.



CAUTION: Ensure that the flat receptacles (1) do not touch the side of the tank.

6. Put the electrical equipment cover and seal back into place.

NOTE: Each safety valve plate is protected with an overtemperature thermostat. Refer to the wiring diagram page for the reservoir.

Replacing Heater Cartridges

CAUTION: A total of 5000 Watt for the grid and 3200 Watt for the reservoir may not be exceeded.

Slide in the new heater cartridges **without** heat transfer compound.

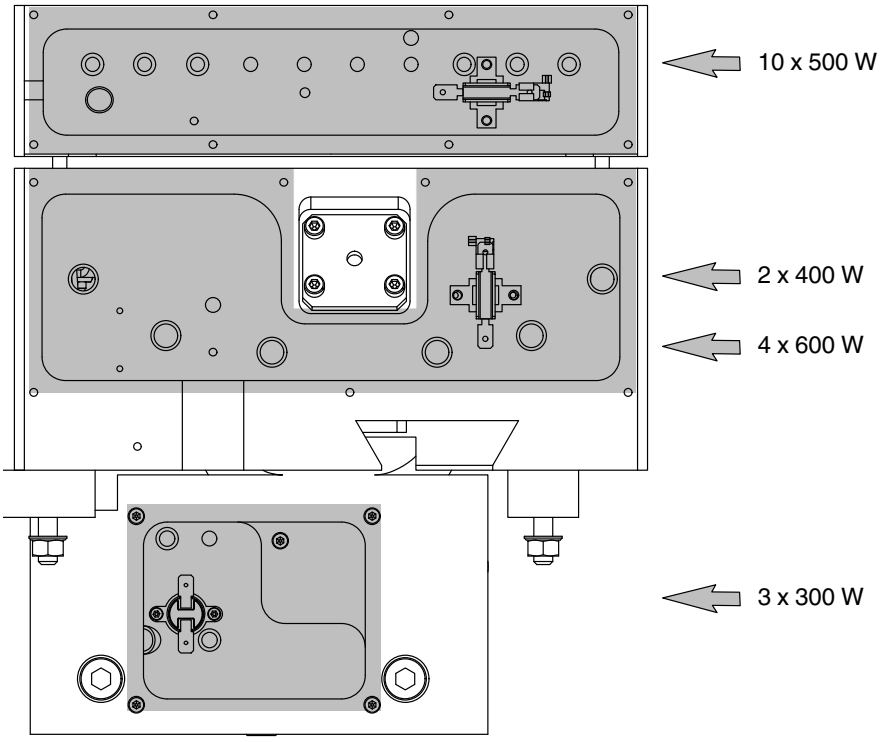


Fig. 7-19 Positions of heater cartridges

NOTE: For the exact positions and P/Ns of the heater cartridges, refer to the separate parts list for melters VPUR-S and VPUR-T (P/N 7192178).

Each safety valve plate is heated by three heater cartridges of 300 Watt each. Refer to the wiring diagram page for the reservoir.

Plug XS20 for safety valve plate *Pump 1*
Plug XS21 for safety valve plate *Pump 2*

Fig. 7-20

Replacing Temperature Sensor

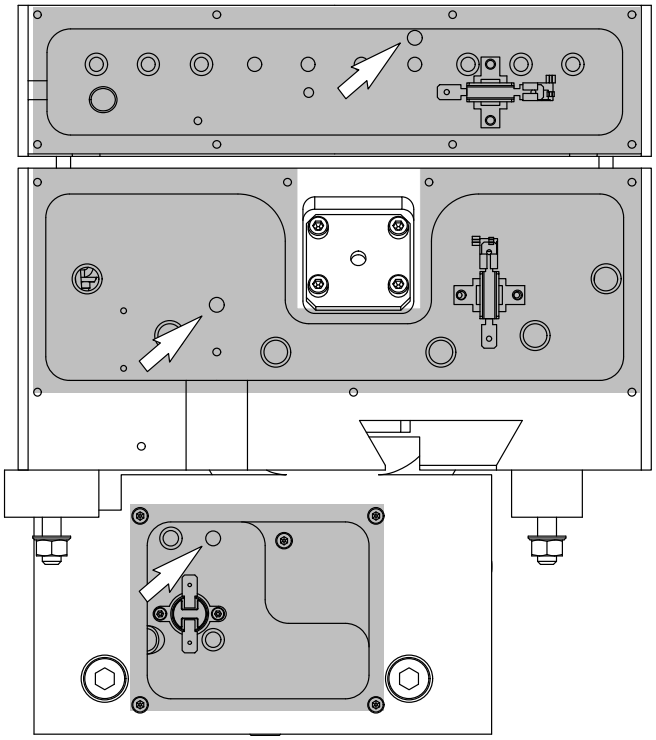


Fig. 7-21 White arrows: Installation positions of temperature sensors

Installing Service Kit

The kit contains the temperature sensor and heat transfer compound.

Service kit P/N: 394597 (Ni120)	
Required tools: Pliers Side cutting pliers	
1.	Remove 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 sensor and reconnect electrically.
5.	Attach electrical equipment cover again.

Replacing Level Evaluator

Important Notes

- The length of the sensor cable may not be changed.
- Adjustment by electrostatically-charged persons can lead to malfunctioning of the amplifier.
- All adjustments should be made with operating ground connected (no ground conductor function). The operating ground must be linked to the metal casing of the melter along the shortest path. Do not connect via the ground connector!
- All potentiometers have 20 revolutions and no mechanical limit stop, meaning no fixed end position. They cannot be damaged by turning too far.

Observe when Replacing Level Sensor

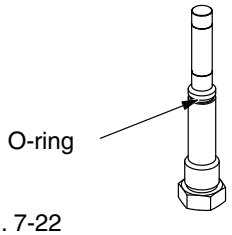


Fig. 7-22

1. Grease O-ring and thread.
2. Insert O-ring.
3. Screw in the level sensor until the sensor hexagon nut no longer protrudes.

CAUTION: Turn the sensor cable; do not twist! Disconnect from the electrical cabinet if necessary.

CAUTION: Plastic casing. Tighten the hexagon nut only by hand.

Empty Calibration

Find the most sensitive setting of the evaluation electronics for empty calibration. This setting is not a factor of the material.

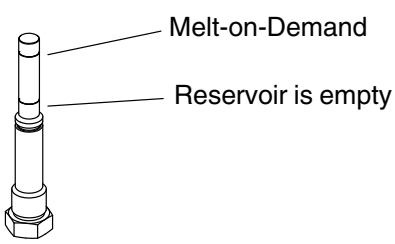
Prerequisites

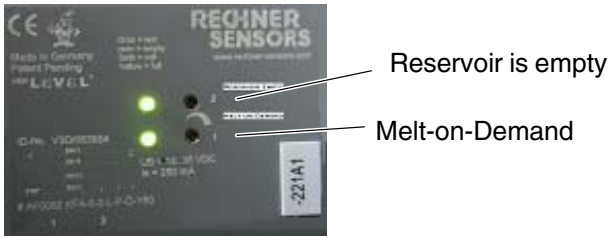
- The level sensor is installed, fastened mechanically and connected electrically
- The reservoir is empty
- The level sensor is clean
- The melter is heated to operating temperature
- Operating voltage is applied (LEDs illuminated)

Do Not Mix Up Switching Points!

The level sensor and evaluator have two switching points each: *Melt-on-Demand* and *Reservoir empty*.

The LEDs on the evaluator indicate the switching state.





Switching points on level sensor	Switching points on evaluator
TOP: Melt-on-Demand	TOP, potentiometer 2: Reservoir is empty
BOTTOM: Reservoir is empty	BOTTOM, potentiometer 1: Melt-on-Demand

Replacing Level Evaluator *(contd.)*

Empty Calibration *(contd.)*

Setting Upper and Lower Switching Points

Screws removed (potentiometers accessible)

Fig. 7-23

NOTE: The potentiometers 1 and 2 are each equipped with one screw.

1. Remove these two screws and place them aside before beginning adjustment.
2. Set the upper switching point: Use a screwdriver to turn potentiometer 1 clockwise until the green LED just turns to yellow.
3. Set the lower switching point: Use a screwdriver to turn potentiometer 2 clockwise until the green LED just turns to yellow.

Setting Switching Points for Filled Melter

NOTE: Now the switching points for a filled melter must be set on the (still) empty melter. Nordson recommends:

1. Turn potentiometer 1 (Melt-on-Demand) 2¼ revolutions counterclockwise. The LED switches from yellow back to green.
2. Turn potentiometer 2 (reservoir empty) 3½ revolutions counterclockwise. The LED switches from yellow back to green.
3. Fasten the screws in the potentiometer holes again.

Replacing I/O Board, Temperature Control Board

NOTE: Switch / DIP switch settings, bus terminating resistors yes/no and jumper settings are to be assumed from the replaced board.

The CAN address is set on the dials using a screwdriver.

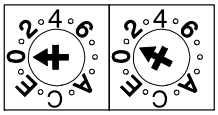


Fig. 7-24
Dial

I/O Board

CAN bus plug X16

Setting CAN Address

Dial (default)		Board no.
SW1	**SW2**	
0	5	1
0	6	2
NOTE: Dial setting SW1 may not be changed.		

Temperature Control Board

CAN bus plug X9

Setting CAN Address

Dial (default)		Board no.	Temperature channel
S1	**S2**		
7	1	1	1 to 6
7	2	2	7 to 12
7	3	3	13 to 18
NOTE: Dial setting S1 may not be changed.			

Setting Type of Temperature Sensor (Ni120)

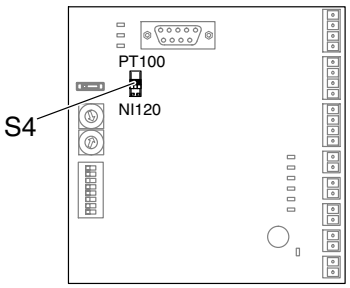


Fig. 7-25

The type of temperature sensor (Ni120) is set with the switch S4.

Switching Bus Terminating Resistor ON/OFF

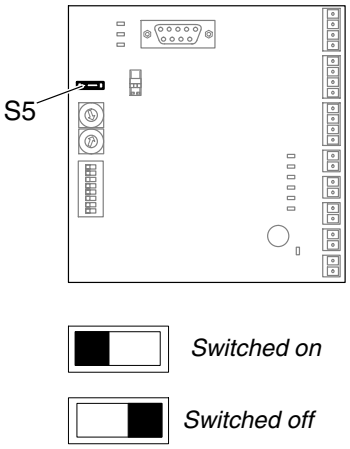


Fig. 7-26

The terminating resistor is switched on and off with switch S5. The terminating resistor on the last temperature control board must always be switched on; the others must always be switched off.

If e.g. a third board is added, the resistor of board 2 must be switched from *on* to *off*; the resistor of the retrofitted board 3 must be switched *on*.

Setting DIP Switches S3

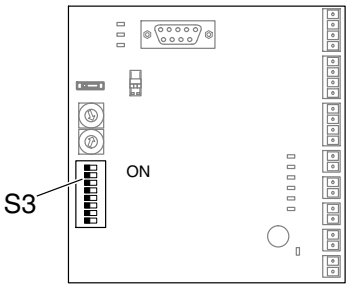


Fig. 7-27

Set all switches to OFF.

Section 8
Parts

How to Use Illustrated Parts List

The parts lists in the separate document *Parts List* are divided into the following columns:

Item Identifies parts that can be obtained from Nordson.

Part Nordson part number for each spare part shown in the illustration. A row of hyphens in the column Part (- - - - -) indicates that this part cannot be ordered separately.

Description This column contains the name of the part and, when appropriate, its dimensions and other properties. The points in the column *Description* show the relationship between assemblies, subassemblies and single parts.

Quantity The quantity needed per unit, assembly or subassembly. The abbreviation AR (as required) is used when this item is a bulk item or when the quantity per assembly depends on the product version or model.

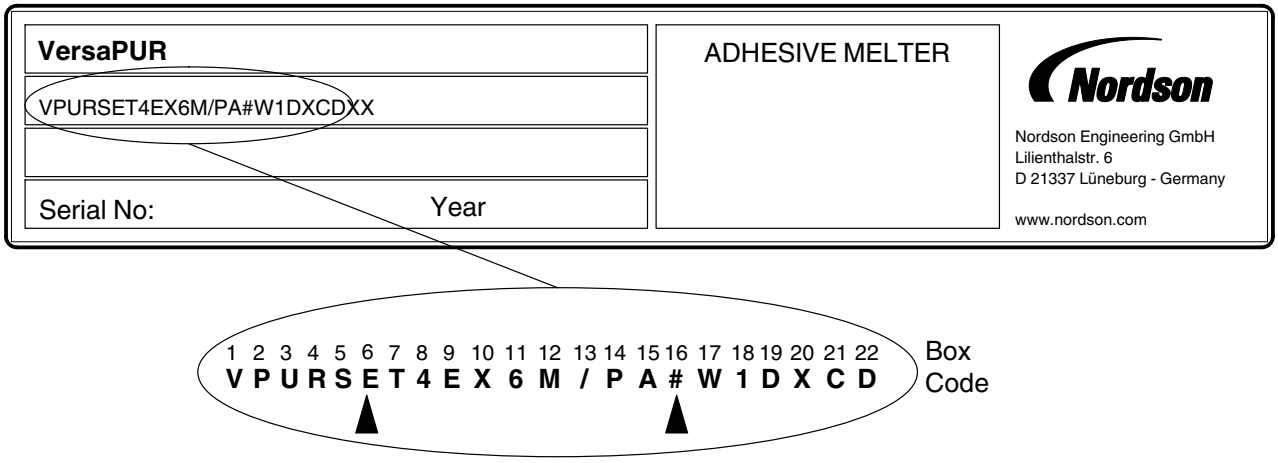
NOTE: The texts are available only in English. Refer to separate document *Parts List*, P/N 7192178.

Component Designation

The electrical components are labeled according to DIN 40719, part 2.

Continued ...

Special Models



An "E" (*engineered*) instead of the "-" in box 6 of the configuration code indicates a special model. The design deviates from what can be configured and is indicated by a hash sign "#" in the respective box. In the example above, it would be a special feature of level monitoring.

When necessary, a supplement describing the special feature is added to the manual.

When appropriate, a so-called Delta (△) Parts List is added to the document *Parts List*. It contains the parts that deviate from the standard and are indicated with a hash sign "#"; in the corresponding technical drawings or wiring diagram, the △ symbol is used.

Software Configuration Code for Special Models

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

The software configuration code for the special model can be found in the separate document *Table of Documents*. It must be entered e.g. when a software update has been installed.

Configuration Code

Box	Code	Description
1-5	VPURS	**VersaPUR-S** PUR: Polyurethan is a special moisture-crosslinking hot melt adhesive S: slug Slug
		Melter type
6	-	Standard
	E	Engineered*) *) This model differs from the configuration code. Such special aspects are described in a supplement when appropriate. The supplement is then added to this manual.
		Diameter of slug
7	K	280 mm (Europe)
	N	286 mm (North America)
		Operating voltage
8	2	200 V_{AC} 3-phase delta
	3	230 V_{AC} 3-phase delta
	4	400 V_{AC} 3-phase WYE
	5	400 V_{AC} 3-phase delta
	6	480 V_{AC} 3-phase delta
		Pump
9 + 10	A	SN0030 / PR 2m1
	B	SN0046 / PR 3m1
	C	SN0062 / PR 4m1
	D	SN0093 / PR 6m1
	E	SN0186 / PR 12m1
	F	SN0371 / PR 12m2
	G	SN0773 / PR 25m2
	H	SN1710 / PR 100 (only one pump is possible with this pump size)
	X	No
		Number of hose/applicator pairs
11	2	2 hose/applicator pairs
	4	4 hose/applicator pairs
	6	6 hose/applicator pairs
		Maximum Operating Temperature
12	L	150 °C / 300 °F
	M	180 °C / 350 °F
	T	200 °C / 390 °F

13	/	Options
		Pressure control
14	P	Automatic pneumatic pressure control (pneumatic safety valve)
	M	Manual pneumatic pressure control (pneumatic safety valve)
	F	Bypass control - pneumatic safety valve
	C	Pressure control and pressure display (prerequisite: Box 15: A)
	X	Standard - mechanical safety valve
		Pressure display
15	A	Pressure display (IPI = Internal Pressure Indication)
	X	No pressure display
		Level monitoring
16	F	Level monitoring (**mandatory** with VPUR**S**)
		Light tower
17	W	Light tower
	X	No light tower
		Main switch
18	1	Main switch red - 4-pin
	2	Main switch black - 3-pin
	3	Main switch black - 4-pin
	X	Standard main switch red - 3-pin
		Field bus communication
19	D	Profibus-DP
	N	ControlNet
	E	EtherNet/IP
	P	ProfiNet IO
	X	No field bus communication
		Line speed signal inputs
20	K	One line speed voltage per motor (separate line speed input signals)
	X	One line speed signal for both motors (one line speed input)
		Casters
21	C	Casters
	X	No casters (feet)
		Air dryer
22	X	No air dryer
		Exhaust hood
23	E	Exhaust hood
	X	No exhaust hood
		Coupling with anti-reverse lock
24	J	Coupling with anti-reverse lock
24	X	No coupling with anti-reverse lock

Section 9
Technical Data

General 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 above sea level	3000 m	9840 ft
Type of heating	Heater cartridges (grid and reservoir / safety valve plate)	
Temperature sensor **- Measuring precision**	Ni120 ± 1 °C	
Material pressure (standard)	The mechanical pressure control valve is preset at the factory. Default: 35 bar	3500 kPa 508 psi
Degree of protection	IP 54	
Noise emission at a distance of 1 m	1 motor: 62 dB(A) 2 motors: 65 dB(A)	
Motor type	3 ph AC motor	
Gear box type	Helical gear	
Motor/pump speed setting range	1.0 to 100 min^{-1} To prevent excessive wear, the motor/pump speed should not continuously fall below 5 min^{-1} (rpm) or continuously exceed 80 min^{-1} (rpm).	
Heatup time	<45 min	
Melting capacity	16 kg per hour	
Adhesive residue in slug	0.2 to 0,5 kg	
Reservoir volume	1,3 l	

Temperatures

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

	Box 12 = L		Box 12 = M		Box 12 = T	
Min. ambient temperature	10 °C	50 °F	10 °C	50 °F	10 °C	50 °F
Max. ambient temperature	40 °C	100 °F	40 °C	100 °F	40 °C	100 °F
Min. operating temperature (set-point)	40 °C	100 °F	40 °C	100 °F	40 °C	100 °F
Max. operating temperature	150 °C	300 °F	180 °C	350 °F	200 °C	390 °F
Overtemperature shutdown by thermostat	180 °C	350 °F	210 °C	410 °F	230 °C	446 °F
Shutdown by transformer thermostat Not present with Box 8: 3, 4	155 °C (±5 °C)	311 °F (±9 °F)	155 °C (±5 °C)	311 °F (±9 °F)	155 °C (±5 °C)	311 °F (±9 °F)

NOTE: Depending on the type of adhesive used, the overtemperature thermostats of the tank may need to be adapted to the maximum processing temperature of the adhesive (This may mean replacing it).

Dimensions and Weights

Melter dimensions	Length approx. 1100 mm Width approx. 765 mm Height approx. 1711 mm
Tank opening	Ø 285 for slug Ø 280 (Ø 11 in.) Ø 291 for slug Ø 286 (Ø 11.26 in.)
Weight	approx. 280 kg (617 lbs)
Transformer 200V / 230V (additional)	approx. 80 kg (176 lbs)
Transformer 400V / 480V (additional)	approx. 67,5 kg (149 lbs)
The weight depends on how the melter is equipped. Refer to consignment note for actual weight	

Electrical Data

CAUTION: The unit is designed for only one operating voltage. Operate only at the operating voltage shown on the ID plate.

Available operating voltages	3x200 V_{AC} 3-phase (- *Delta*) 3x230 V_{AC} 3-phase (- *Delta*) 3x400 V_{AC} 3-phase with neutral (star - *WYE*) 3x400 V_{AC} 3-phase (- *Delta*) 3x480 V_{AC} 3-phase (- *Delta*)
Permissible voltage deviations	$\pm$ 10% (power supply, standard I/O)
Operating voltage frequency	50/60 Hz
Melter fuse protection	Refer to table below Refer to ID plate for fuse protection of the specific unit
Key-to-line **Max. input**	0 to 10 V_{DC} 0 to 20 mA 4 to 20 mA 0 to 100 kHz
Load per hose receptacle (2 channels)	Heated hose 1800 Watt Applicator 1800 Watt

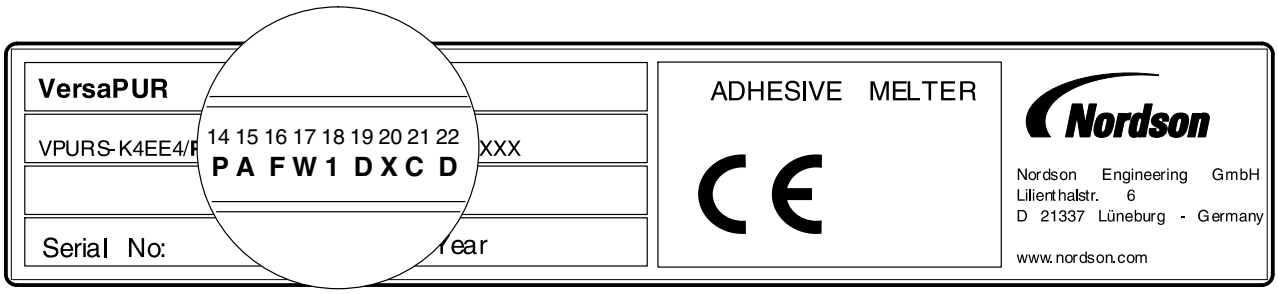
Melter Fuse Protection

Operating voltage	**Box 8** Code	**Hose/applicator pairs**		
		2	4	6
200 V, 3 Ph Δ	2	47 A	55 A	65 A
230 V, 3 Ph Δ	3	41 A	48 A	56 A
400 V, 3 Ph Y	4	26 A	33 A	33 A
400 V, 3 Ph Δ	5	26 A	33 A	33 A
480 V, 3 Ph Δ	6	21 A	28 A	28 A

Exhaust Hood (Information for Customer)

Nominal air quantity (recommendation)	205 m^3/h
Pressure loss at nominal air quantity	Approx. 50 Pa
Connecting sleeve	∅ 100 mm

Section 10
Options



Configuration code box	14	15	16	17	18	19	20	21	22	23	24
Options	P	A	F	W	1	D	K	C	X	E	J
	M				2	N					
	F				3	E					
	C					P					

Option in configuration code	Box	Description
Pneumatic pressure control	14	The pneumatic pressure control valve replaces the installed mechanical pressure control valve. **P**: Automatic A proportional valve supplies regulated compressed air to the pneumatic pressure control valve. It receives the line speed signal from the parent machine needed for regulation. **M**: Manual The operator sets the required compressed air with the pressure controller handwheel.

Continued ...

Option in configuration code	Box	Description
Bypass control	14	**F**: The pneumatic pressure control valve replaces the installed mechanical pressure control valve. In normal production mode, the pressure control valve is supplied with maximum air pressure (approx. 6 bar) and is closed. The material is conveyed to the melter outlet. When the applicator closes, the solenoid valve receives an electrical signal. The pressure control valve is supplied with regulated compressed air and begins to open. The material is returned to the tank (bypass).
Pressure display and pressure control	14	**C**: One pressure sensor per pump. There is no pressure control valve. The desired pressure is set on the control panel. The pressure sensor converts the pressure to an electrical signal, which is used for control via the CAN bus.
Pressure display	15	**A**: One pressure sensor per pump The melter outlet pressure is displayed and monitored. Alarms for underpressure and overpressure are displayed.
Level display	16	**F**: The level sensor measures the presence of material at two points. Mandatory for VersaPUR-S.
Light tower	17	**W**: Four colors. Indicates operating mode of melter.
Main switch	18	**1**: red-yellow, 4-pin **2**: black, 3-pin **3**: black, 4-pin **X**: Red/yellow, 3-pin (standard)
Field bus communication	19	**D**: PROFIBUS-DP **N**: ControlNet **E**: EtherNet/IP **P**: Profinet IO
Separate line speed signal inputs	20	**K**: Every motor receives its own line speed signal. **X**: Place holder, when there is only one pump in the melter.
Casters	21	**C**: To move melter; two can be locked
Air dryer	22	**X**: Not available in VersaPUR-S melter.
Exhaust hood	23	**E:**The fumes that are produced when PUR is processed should be suctioned off directly at the tank. An exhaust hood is attached to the melter for this purpose. The hood must be connected to the customer's exhaust system.
Coupling with anti-reverse lock	24	**J**: The coupling is located between the cardan joint and the motor. It prevents the pump from turning backwards when the motor stops.

Appendix A
Password

NOTE: The customer's master password is valid for levels 1 to 3.

Level	Functions enabled
No password protection	Switch on/off heaters Switch on/off collective motor enable Switch on/off seven-day clock Enter/exit standby Change language Brightness Change date / time
Level 1 Operation Normal operation for all operators	Temperature setpoints Switch application groups on/off Individual motor enable Pressure setpoint Speed setpoint Max. pump speed/pressure (in key-to-line mode)
Level 2 Parameters Settings for trained personnel	Undertemperature/overtemperature *warning/fault* Standby values Automatic enter standby Manual standby duration Temperature channel activated/deactivated Switch between manual mode / key-to-line
Level 3 Basic settings	Application names (temperature channels, pumps, pressure sensors) Controlled system heating rate temperature Switch between °C,°F Temperature channel: Display mode, control mode Maximum temperature setpoint Define application groups Select function for switching application groups Assign standard I/O inputs for application groups Seven-day clock: Delete, edit schedule, copy schedule

Continued ...

Level	Applies to
Level 3 *(contd.)*	Switch between bar, psi, kPa Pressure alarm monitoring on/off Overpressure and underpressure alarms Pressure PID parameters Motor enables from control panel / control panel AND standard I/O Key-to-line signal: Analog/frequency, voltage/current Speed control / pressure control Line speed for min./max. pump speed/pressure Min. pump speed/pressure (in key-to-line mode) Threshold switch Restore default settings Melter configuration Control modes (standard, field bus / field bus (extended), dual, dual (extended)) Customer setup (recipes / application names) Empty level configuration Service interval System ready setup Password setup Recipes IPC IP address, subnet mask and gateway address Pressure sensor setup Profibus setup ControlNet setup EtherNet/IP setup ProfiNet IO setup Automatic heatup upon melter start / automatic heatup upon melter start blocked Material density Material quantity correction
Level *Nordson* Only for Nordson personnel	NORDSON setup

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

Customer Master Password

For Nordson adhesive melters with IPC

X5SW3HH

User Name and Keyword

For Nordson adhesive melters with IPC for operation via the IPC webserver

NOTE: Observe capitalization.

User name

VersaWeb

Keyword

manager

Appendix B

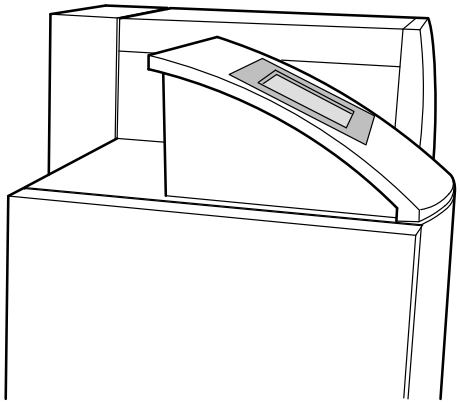
Control Panel P/N 7168037 (Third Generation)

Validity

- This appendix applies to melters with the above control panel of the 3rd generation and with the memory board P/N 7157764 as well as the communication assembly PROFIBUS-DP P/N 7116608.
- The appendix describes the differences between the old model and the new model.

Control Panel

CAUTION: When a melter has no communication assembly, operate only with the cover to protect the slot.



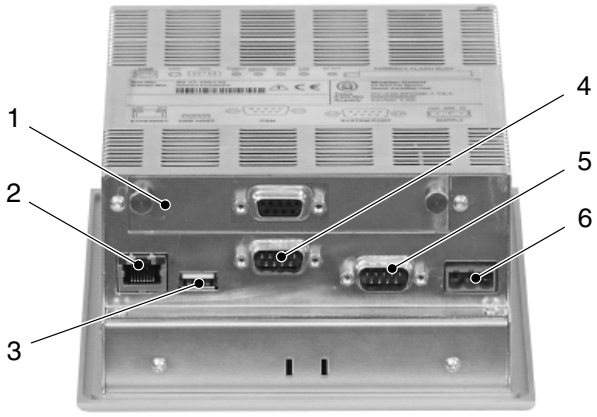
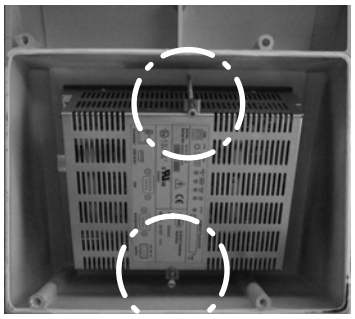


Fig. B-1

1 Communication assembly PROFIBUS-DP (option)*
2 RJ45 EtherNet
3 *Not in use*
4 CAN plug 9-pin DSub male
5 RS232 plug 9-pin DSub male *System port*
6 24 V_{DC} power supply

Note: * If the system does not include the option PROFIBUS DP, there is a cover on this port.

Detaching Control Panel



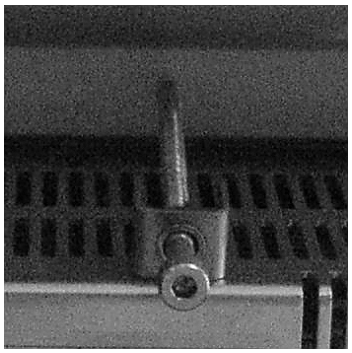


Fig. B-2

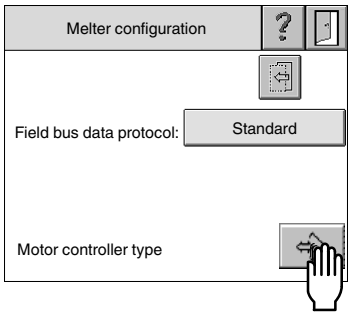
1. The control panel is fastened to the console with two clamping screws. The two angled brackets slide into the IPC cooling slots.
2. Release the clamps, then remove the clamping screws and brackets.
3. Detach the connections, if necessary. The control panel can now be removed.

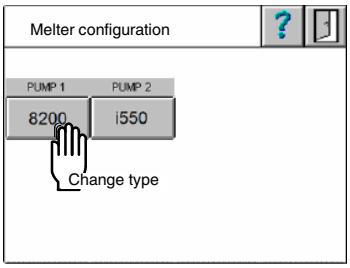
CAUTION: When the control panel is put into place, tighten the clamping screws only by hand.

Note on Memory Board

The software configuration code and recipes are saved on the IPC memory board.

Motor Controller, Spare Parts





When an older melter is equipped with a mix of different motor controller types because a motor controller part was needed, the software must be installed again once (Refer to *Replacing Memory Board* in this section - The memory board is included in the parts kit). Then, on the new control panel screen for the motor for which the controller 8200 was not replaced with the i550, change the type to "8200."

Replacing Memory Board

ATTENTION: The memory board may be replaced only when the melter is switched off.

NOTE: When the memory board is changed, the melter returns to its original state upon delivery. All of the set parameters are lost, if they were not saved as a recipe on an external PC.

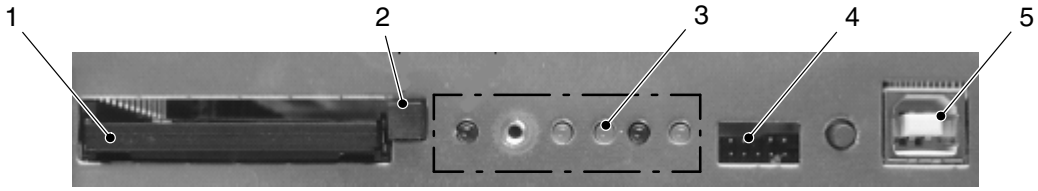


Fig. B-3

1 Memory board *CompactFlash*
2 Eject button for memory board
3 Indication lamps (LEDs)
4 *Not in use*
5 *Not in use*

1. Make a note of the software configuration code.
2. If there are pressure sensors, make a note of the pressure sensor assignment.
3. Save and download the recipe.
   Refer to section *Operation, Upload and Download of Customer Recipes*.
4. Switch off the melter with the main switch.
5. Refer to *Detaching Control Panel* (Fig. D-2).
6. Press the eject button and remove the old memory board.
7. Carefully slide in the new memory board until the eject button pops out again.
8. Reconnect any cables that may have come loose from the control panel.
9. Attach the control panel.
10. Switch on the melter again.
11. Enter software configuration code.
    Refer to section *Operation, Melter Configuration*.
12. Check assignment of each pressure sensor on the control panel; set up and calibrate if necessary.
13. Upload the recipe, load it on the control panel and save it under its own name.

Installing/Replacing the Communication Assembly

CAUTION: When a melter has no communication assembly, operate only with the cover to protect the slot.

Important!

- A grounding wrist-strap should be worn to protect electronic parts from electrostatic discharges when installing/removing the communication assembly.
- Install the communication assembly only when the IPC is deenergized.

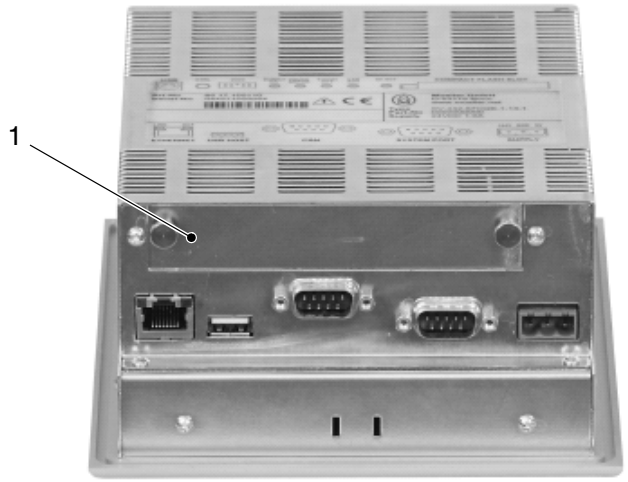


Fig. B-4

1. Unscrew the cover (1, Fig. B-4) and place aside for later use, or unscrew and extract the old communication assembly.
2. Carefully slide in the new communication assembly until it clicks into place.

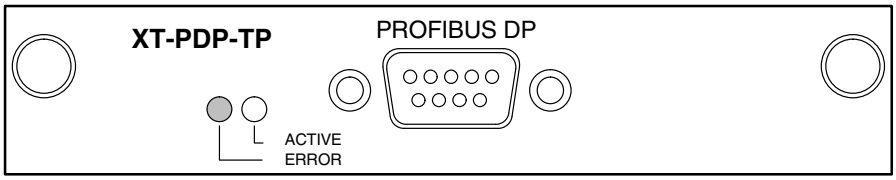


Fig. B-5 Communication assembly PROFIBUS DP

3. Secure the communication assembly with the two knurled screws.
4. Plug the angular adapter into the PROFIBUS DP receptacle.

NOTE: The photo shows an angular adapter on the RS232 port during ControlNet, EtherNet/IP or Profinet IO operation.

LEDs of IPC

Fig. B-6

1 CF ACT
2 CAN ACT
3 TOUCH ACT
4 TOUCH ERROR
5 SUPPLY OK
6 LINK (EtherNet)
7 ACT (EtherNet)
8 ERROR (Profibus DP)
9 ACTIVE (Profibus DP)

Pos.	LED		Meaning
1	CF ACT (red)	Flashes briefly	(Internal) access to memory board
2	CAN ACT (green)	Flashes briefly	CAN active (data traffic)
3	TOUCH ACT (green)	Illuminated	Control panel (touch panel) ready
		Flashing	When control panel is touched
		Off	During booting
4	TOUCH ERROR (red)	Illuminated	During booting, otherwise fault
		Flashing	Control panel dirty
		Off	Control panel (touch panel) ready
5	SUPPLY OK (green)	Illuminated	Energized
6	LINK (green)	Illuminated	EtherNet connected and detected
7	ACT (yellow)	Flashing	EtherNet active (data traffic)
8	ERROR	Illuminated	Command from field bus master missing: Field bus cable broken, defective or not connected Interruptions in communication, e.g. if the master is not switched on Defective or missing bus terminating resistor The network was not set up properly Sudden resets or crashes, e.g. due to electro-magnetic interference
9	ACTIVE	Flashing	Profibus active (data traffic)