



INSTRUCTIONS  
MANUAL

# ADHESIVE MELTER MACRO FOAM SERIES



Published by:

**Focke Meler Gluing Solutions, S.A.**

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Edition December 2020

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# 1. SAFETY GUIDELINES

## General

The information contained in this section applies not only to everyday equipment operation, but also to any procedure carried out on it, whether for preventive maintenance or in the case of repairs and the replacement of worn out parts.

It is very important to observe the safety warnings in this manual at all times. Failure to do so may result in personal injury and/or damage to the equipment or the rest of the installation.

Before beginning work on the equipment, read this manual carefully, and in case of any doubt, contact our Technical Service Center. We are available for any clarification that you might need.

Keep manuals in perfect condition and within reach of personnel that use the equipment and perform maintenance on it.

Also provide necessary safety material: appropriate clothing, footwear, gloves and safety glasses.

In all cases, observe local regulations regarding risk prevention and safety.



## Symbols

The symbols used on both the melter/applicator equipment and in this manual always represent the type of risk we are exposed to. Failure to abide by a warning signal may result in personal injury and/or damage to the equipment or the rest of the installation.

**Warning:** Risk of electrical shock. Carelessness may produce injury or death.



**Warning:** Hot zone with high temperatures. Risk of burns. Use thermal protective equipment.



**Warning:** System under pressure. Risk of burns or particle projection. Use thermal protective equipment and glasses.



**Warning:** Important information for the correct use of the system. May include one or several of the previous hazards, and therefore must be kept in mind to avoid damage and injury.



**Warning:** Dangerous area. Risk of entrapment. Carelessness may produce injury or death.



## Mechanical components



The hot-melt installation, which is installed to this device, requires moving parts that can cause damage. Use the equipment correctly, and do not remove the safety guards while the equipment is in operation; prevent the risk of possible entrapment due to moving mechanical parts.



Do not use the equipment if the safety devices are not in place or appear to be inadequately installed.

For maintenance or repair operations, stop the movement of moveable parts by turning off the main switch.

The device has no moving mechanical parts, so it does not pose risks to consider in this section.

## Electrical components



The system works with single-phase or three-phase current of a certain power. Never handle the equipment with the power connected, as this may result in powerful electrical shocks.

The installation must be correctly grounded.



The installation's power cable conductors must match the required electric current and voltage.

Periodically inspect the cables to check for crushing, wear and tear, as well as to prevent tripping and falls as a result of their placement.

Although the system meets EMC requirements, it is inadvisable to use devices that transmit high levels of radiation, i.e., mobile phones or soldering equipment in their vicinity.

## Hydraulic components



As this is a pressurized system, precautions related to this type of equipment must be observed.

Before each operation, always make sure that the adhesive circuit is completely free of pressure. There is a high risk of hot particle projection, along with the corresponding danger of burns.

Use caution with the residual pressure that may remain in the hoses when the adhesive cools. When reheated, there is a risk of hot particle projection if the outputs are left open.

## Pneumatic components



Some equipment uses compressed air to 6 bar pressure. Before any manipulation, please ensure that the circuit has lost fully air pressure. The risk of projection of particles at high speed can cause injury to a certain severity.

Extreme precautions with the residual pressure that could be contained in the circuit, before disconnecting any pneumatic feeding tube.

## Thermal components

The entire system works with temperatures that can exceed 200°C (392°F). The equipment must be operated using adequate protection (clothing, footwear, gloves and protective glasses) that completely cover exposed parts of the body.

Keep in mind that, due to the high temperatures reached, the heat does not dissipate immediately, even when the power (in this case, electric) source is disconnected. Therefore, use caution, even with the adhesive itself. It may remain very hot, even in a solid state.

In case of burns:

1. If the burn is the result of contact with melted adhesive, do not try to remove the adhesive material from the skin. Do not try to remove it once it has solidified either.
2. Cool the affected area down immediately with lots of cold and clean water.
3. Seek medical attention as soon as possible either from the company's medical service or the nearest hospital. Provide the medical staff with the Safety Information Sheet of the adhesive.



## Materials

Meler systems are designed for use with hot-melt adhesives. They should not be used with any other type of material, and especially not with solvents, which may cause personal injury or damage to internal system components.

Some units are specifically designed to use polyurethane reactive (PUR) hot-melt adhesives. Using PUR on a unit that is not prepared for that purpose may cause severe damage to the unit.

When using adhesive, follow the corresponding guidelines found in the Technical and Safety Sheets provided by the manufacturer. Pay special attention to the advised work temperatures in order to prevent adhesive burning and degradation.

Ventilate the work area adequately in order to remove the vapors produced. Avoid the prolonged inhalation of these vapors.

Always use original Meler components and replacement parts, which guarantee the correct system operation and service.



## Noise emission declaration

The A-weighted emission sound pressure level ( $L_{pA}$ ) of the unit in operation does not exceed 70 dB(A) under any circumstances.

The maximum C-weighted sound pressure level ( $L_{pCpeak}$ ) and the A-weighted sound power level ( $L_{WA}$ ) do not exceed values worthy of mention and thus do not represent a specific risk that must be taken into account.



### Intended use

The equipment are designed to be used in the following conditions:

- Hot-melt adhesive fusion and pumping at temperatures up to 200 °C (392 °F). Consult with Meler technical service to operate with higher working temperatures.
- Use of equipment with Meler accessories.
- Installation of equipment according to the security regulations currently in force and the instructions provided in this manual (anchoring, electrical connection, hydraulic connection, etc).
- Use of equipment in non-explosive, non-chemically aggressive environments.
- Use of equipment following the safety instructions indicated in this manual, as well as on the labels accompanying the equipment, using adequate means of protection during each mode of operation.

### Limited use

The equipment should never be used under the following conditions:

- Use with reactive polyurethane or any other material that might cause safety or health risks when heated.
- Use of equipment in environments where cleaning is necessary using water jets.
- Use of equipment to heat or melt food products.
- In potentially explosive atmospheres, aggressive chemical environments or outdoors.
- Use or operation without adequate safety protection.
- If the person in question does not have the necessary training to use the unit or to apply all of the necessary safety measures.



**Note:** Do not modify the equipment or use components that were not supplied by Meler. For any modification of a component of the equipment or part of the installation, you must firstly consult the After-Sales Service

## 2. INTRODUCTION

In this manual you will find information about the installation, use and maintenance of the hot-melt adhesive melter in meler's Macro Foam series.

The Macro series includes the 35, 50 and 120 liter range of hot-melt adhesive melters.

Most of the photographs and illustrations that appear in this manual refer to the 35-liter Macro Foam melter. This model has been used as a reference for writing this manual as its main characteristics, with the exception of the tank capacity and the connection outputs are the same as those in the rest of the Macro Foam series.



## Description

The Macro Foam series are designed for use with Meler hoses and applicators in hot-melt adhesive applications. Their different variations – line, coating or swirl-spray – cover a wide range of applications, being very versatile in all markets where they are used.

### Intended use

The hot-melt melters in the Macro Foam series are designed to be used in the following conditions:

- Hot-melt adhesive fusion and pumping at temperatures up to 200°C.
- Use of hot-melt melters with Meler accessories.
- Installation of hot-melt melters according to the security regulations currently in force and the instructions provided in this manual (anchoring, electrical connection, hydraulic connection, etc).
- Use of hot-melt melters in non-explosive, non-chemically aggressive environments.
- Use of hot-melt melters following the safety instructions indicated in this manual, as well as on the labels accompanying the equipment, using adequate means of protection during each mode of operation.

### Limited use

The Macro Foam series hot-melt melters must be used for their intended uses and never in the following conditions:

- Use with adhesives or any other material that might cause safety or health risks when heated.
- Use of hot-melt melters in environments where cleaning is necessary using water jets.
- Use of hot-melt melters to heat or melt food products.
- Use or operation without adequate safety protection.

### Modes of operation

These melters may be used in all of the following modes:

**Work mode**\_The hot-melt melter keeps materials hot at the pre-selected temperature indicated on the display. The pump is kept activated, waiting for the consumption command when one or more applicators are activated.

**Internal control of pumping and pressure**\_Switches in the position ok 'int' and ref 'int'. In this mode of operation, the user has full control of pumping and the set work pressure of the pump.

**Control of internal pumping and external pressure\_Switches** in the position ok 'int' and ref 'ext'. This mode of operation is performed through internal pumping control and pressure control by means of an external 0-10 V signal sent from the main machine.

**Control of external pumping and internal pressure\_Switches** in the position ok 'ext' and ref 'int'. This mode of operation is performed through external pumping control and manual pressure control.

**Control of external pumping and pressure\_Switches** in the position ok 'ext' and ref 'ext'. In this working mode, both pumping and pressure are controlled from the main machine. Pressure is controlled by means of an external 0-10 V signal sent from the main machine.

**Standby mode**\_The hot-melt melter remains in a resting state, with the materials kept at (programmable) temperature values below the pre-selected value. The pump remains deactivated.

**Alarm mode**\_The hot-melt melter detects a malfunction and warns the operator of this event. The pump remains deactivated.



**Stop mode**\_The hot-melt melter remains off, without heating the materials and with the pump deactivated. The electrical and pneumatic supply remains activated between the network and the system, however.

### Hot-melt melter identification

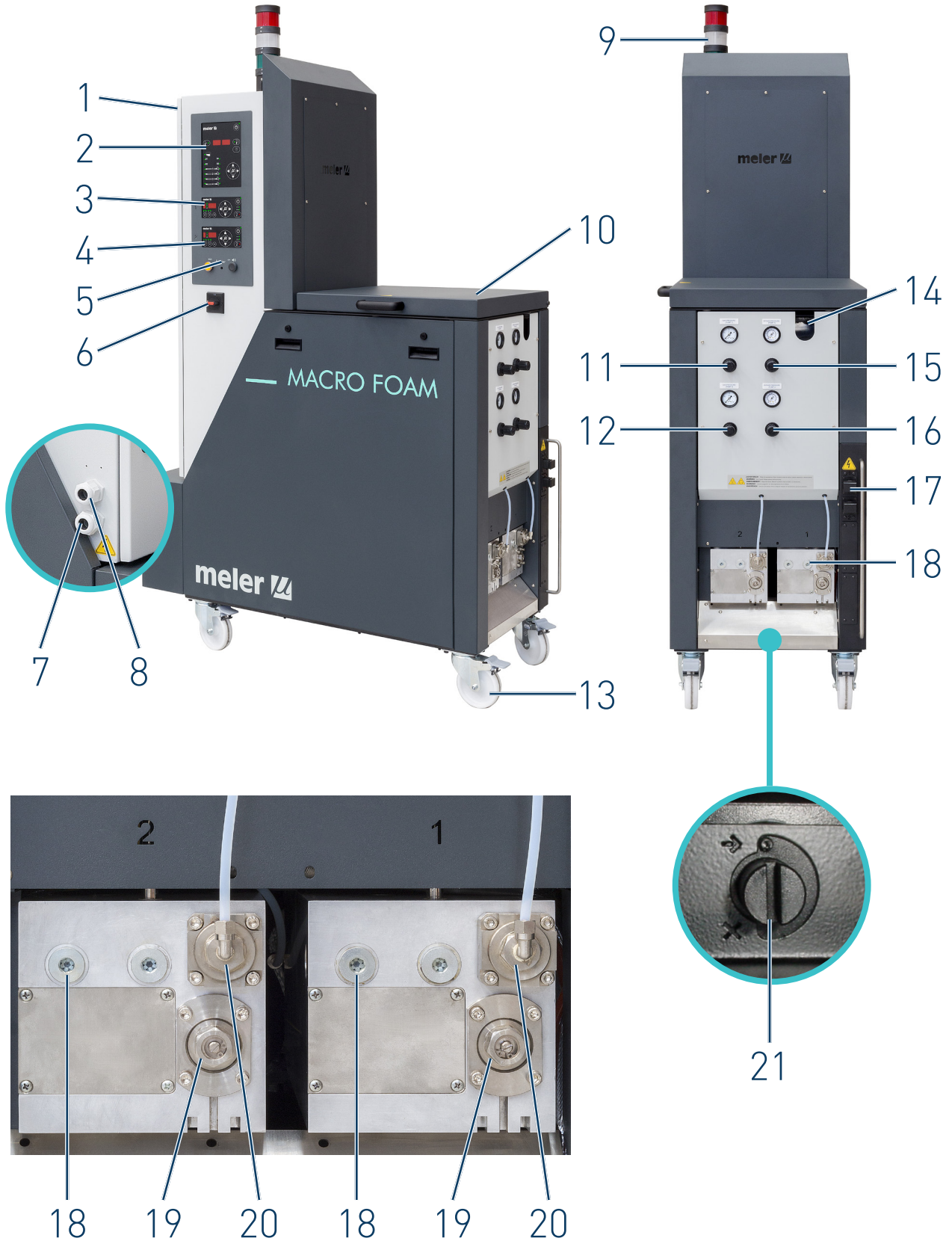
When placing orders for replacement parts or requesting help from our service center, you should know the model and reference number of your hot-melt melter.

This and other technical information will be found on the identification plate located on the side of the lower part of the hot-melt melter.



|  |                           |                      |                      |  |
|--|---------------------------|----------------------|----------------------|--|
| <br><small>www.meler.eu</small> | Ref.                      | Serial No./Nº Serie  |                      | <br><small>Made in E.U.</small> |
|  | <input type="text"/>      | <input type="text"/> |                      |  |
| Outputs/Salidas  | Power supply/Alimentación | Date/Fecha           |                      |  |
| <input type="text"/>   | <input type="text"/>      | <input type="text"/> | <input type="text"/> |  |

### Main components

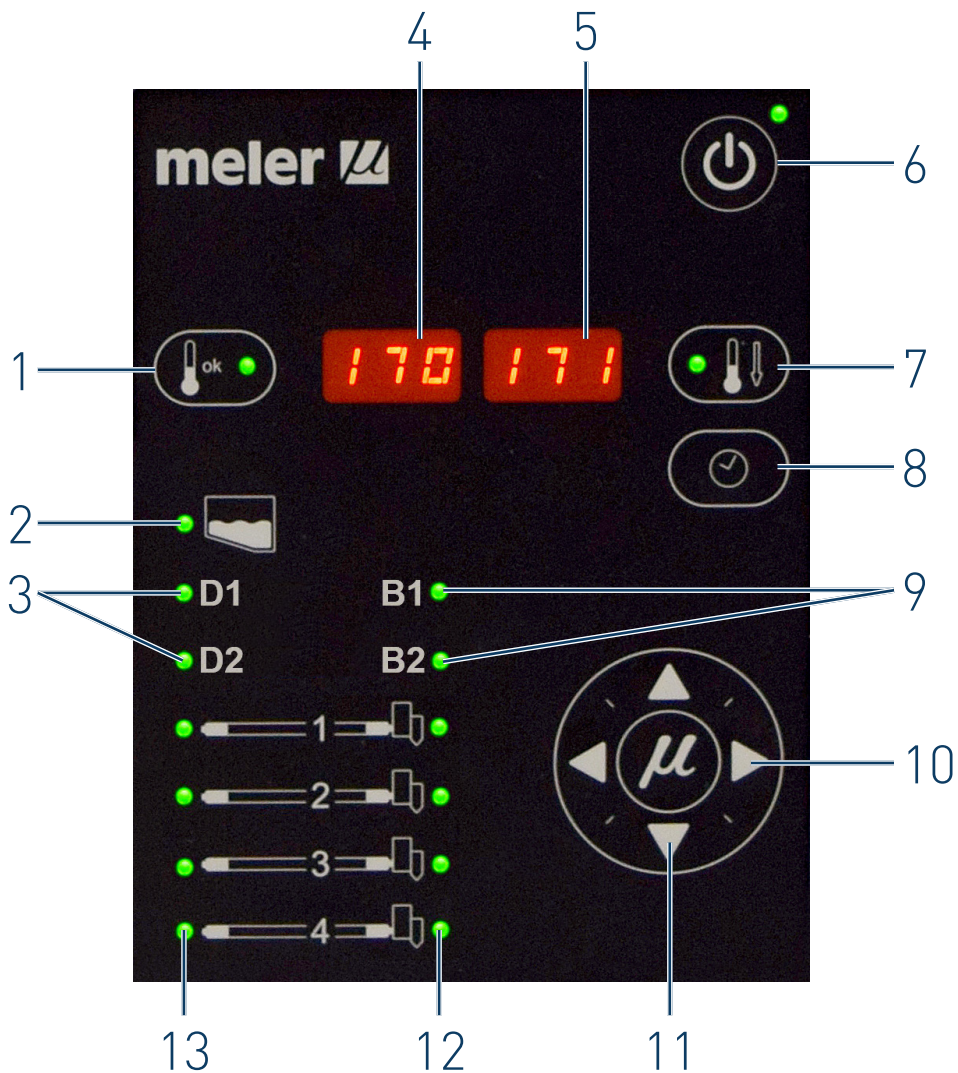




1. Access door to the electronic section and connections.
2. Front control card.
3. Pumping control card 1.
4. Pumping control card 2.
5. Control system of the external adhesive feeding (optional).
6. Main power switch.
7. Electrical main supply input.
8. Auxiliary I/O signals input.
9. Warning beacon system (optional).
10. Tank access cover.
11. Gas pressure regulator to pump 1.
12. Gas pressure regulator to pump 2.
13. Unit transport wheels.
14. External adhesive feeding inlet (optional).
15. Pneumatic by-pass valve pressure control with pressure gauge pump 1.
16. Pneumatic by-pass valve pressure control with pressure gauge pump 2.
17. Hose-applicator electrical connections. Right side or rear placed.
18. Hose output distributor. Right side or rear placed.
19. Pump filter and purge valve set.
20. By-pass valve pressure regulator with pressure gauge.
21. Tank-distributor shut off valve.

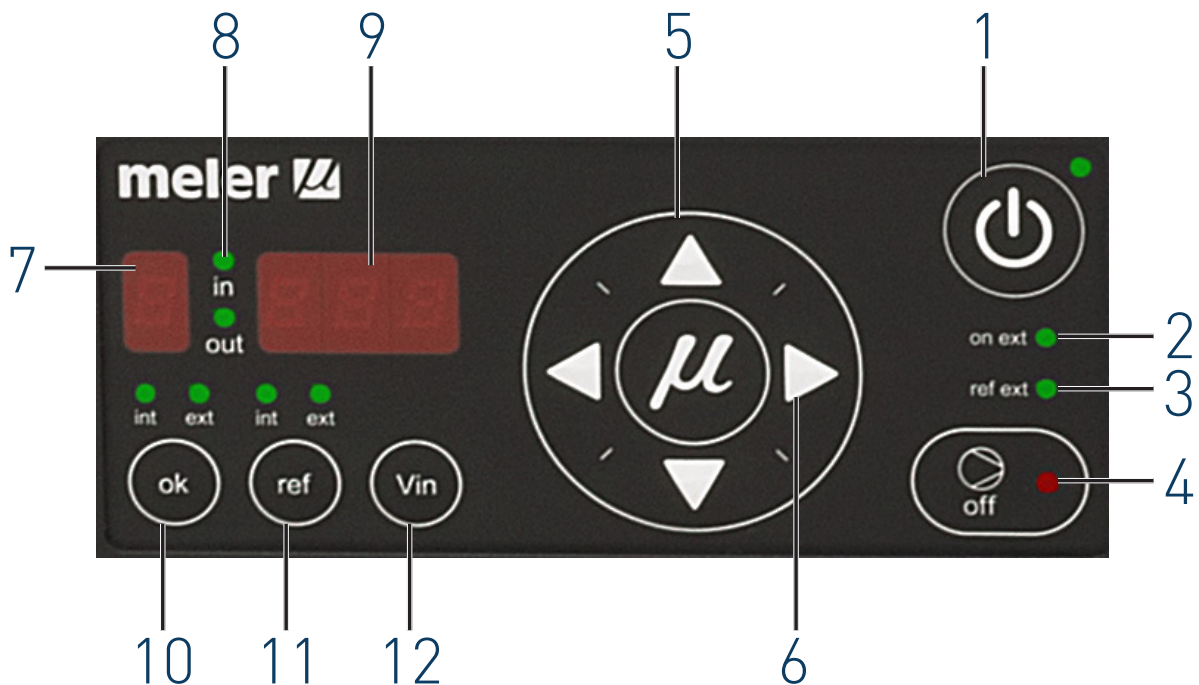
### Control card components

1. Temperature OK LED and pumping allow.
2. Tank indicator LED.
3. Distributors indicators LEDs.
4. Temperature set point.
5. Real temperature.
6. ON/OFF switch.
7. Standby function.
8. Time scheduling.
9. Pumps indicators LEDs.
10. Left/right button - channel selection.
11. Up/down button - temperature modification.
12. Applicator indicator LED.
13. Hose indicator LED.



## Pumping control card components

1. Main switch ON/OFF.
2. External start-stop LED.
3. External speed control LED.
4. Pumping permission LED.
5. Up/down arrow keys for selecting values.
6. Left/right arrow keys for selecting options.
7. Speed ramp steps display screen.
8. Speed ramp value selection LEDs (voltage/speed).
9. Voltage/ pump speed/ errors display screen.
10. Pumping control (internal/external) selection.
11. Pumping speed (internal/external) selection.
12. Voltage value display of the external signal of the speed control.



## Optional Equipment

In order to provide the melting equipment with more functions, the following optional elements may be added:

- Low melted adhesive level detection system.
- Light tower system.
- Automatic tank filling system.



### Three color light beacon

RED: Gas bottle empty.

WHITE: Low adhesive level.

GREEN: Temperature OK.

### 3. INSTALLATION

**Warning:** The melters are equipment with current technology and with certain foreseeable risks. Therefore, only allow qualified personnel with sufficient training and experience to use, install or repair this equipment.



#### Introduction

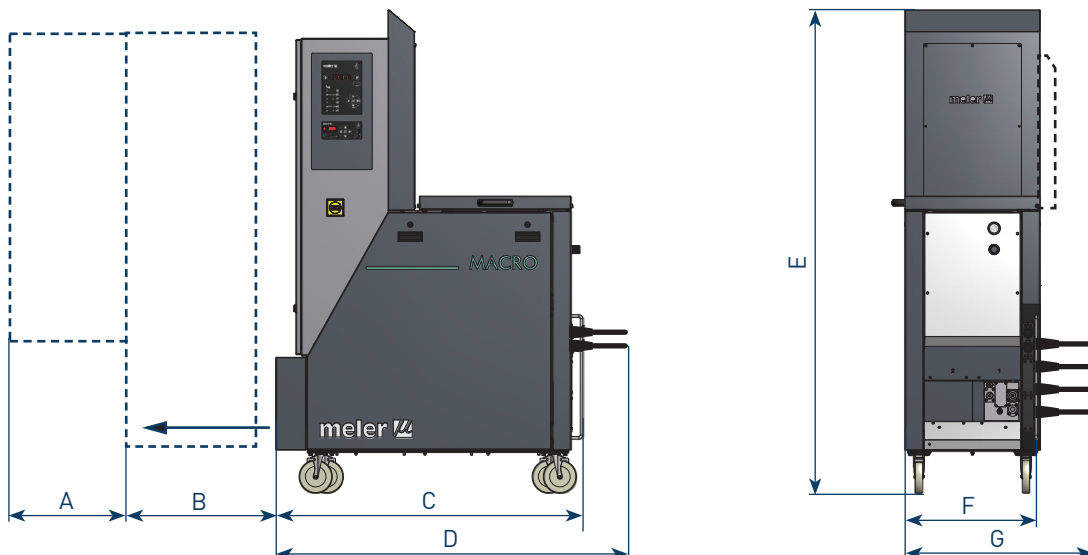
The Macro Foam series melters are delivered with all the materials necessary for their installation. However, some components must be provided by the user himself, according to the location and connections in each particular installation:

- Anchoring screws for the melter equipment if required.
- Power cord and plug for electrical power.
- Pneumatic conduct and connection to the compressed air system.
- Multicore cable for external electrical control.
- Optionally, a gas ventilation system.

#### Installation requirements

Before installing Macro Foam series melter equipment, we must make sure that the space assigned to it permits installing, connecting and using the entire system. Similarly, we must check to see that the electrical and pneumatic supplies meet the necessary requirements of the melter equipment being installed.

#### Free space



| Item | Description  | Dimensions  |         |
|------|--|-------------|---------|
|      |  | 35 L / 50 L | 120 L   |
| A    | DOOR OPENED  | 430 mm      | 795 mm  |
| B    | ELECTRICAL CABINET DISPLACEMENT                          | 410 mm      |         |
| C    | UNIT LENGTH  | 1150 mm     | 1150 mm |
| D    | UNIT LENGTH WITH FREE SPACE TO RIGHT SIDE DEVICES ACCESS | 2080 mm     |         |
| E    | UNIT HEIGHT  | 1825 mm     | 1825 mm |
| F    | UNIT WIDTH   | 510 mm      | 875 mm  |
| G    | UNIT WIDTH WITH FREE SPACE TO REAR SIDE DEVICES ACCESS   | 1510 mm     | 1875 mm |

**Electrical Consumption**

In order to install a Macro Foam series melter, we should take into consideration the total consumption of the installation, including the consumption of the installed hoses and applicators.

Before connecting, make sure that the voltage that is being connected to the melter is the correct one appearing on the equipment’s characteristics plate.

Connect the machine and check to see if it is well grounded.



**Warning:** Risk of electrocution. Even when the equipment is turned off, voltage remains in the intake terminals, which may be dangerous during internal equipment manipulations.

Install a power switch for disconnecting the melter equipment from the electrical network. It must be protected against overload and short circuits by circuit breaker and install appropriate personal protection leads to mass by differential switch.

Consumption figures, according to melter and output configuration, are included in the table in the section ‘Electrical power connection’.

**Compressed air**



As an option, a pneumatically activated by-pass valve may be installed. If this is added to the system, a dry, unlubricated compressed air network must be available, with a maximum pressure of 6 bar.

The by-pass valve consumes next to no air, given that this is a pressurized closed circuit.

**Other factors**

While installing Macro Foam series melters, other practical considerations should be kept in mind:

- Keep the load opening accessible for comfortable melter filling.
- Position the melter equipment in such a way that you can easily see the front panel display where temperatures and possible alarm signals are shown.
- As much as possible, try to avoid unnecessarily long hoses that result in elevated electrical energy consumption levels and pressure drops.
- Do not install the melter equipment beside powerful heat or cooling sources that may have distortional effects upon its operation.
- Avoid melter vibrations.
- Make sure that the melter maintenance areas (filter, purging valve, tank interior, etc.) are easily accessible.

## Unpacking

Before proceeding with the installation of the melter, it should be removed from its location on a pallet and examined in order to detect any possible breakage or deterioration. Communicate any defect, even to the outer packing materials, to your Meler Representative or to the Main Office

## Contents

The Macro Foam series packing materials may contain accessories that form part of the same order. If this is not the case, the following are the standard components that accompany the melter:

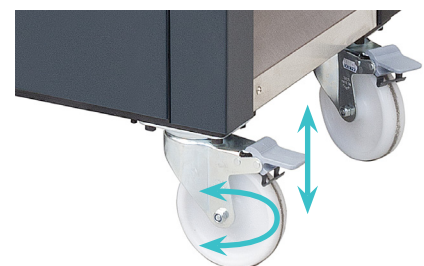
- Instruction manual.
- Guarantee card.
- Hose couplings.
- Electrical wall bushing Pg (on the unit).
- Connector for external I/O (included on the power card).

## Mounting the equipment

The Macro Foam series melting equipment are equipped with wheels for their easy transport and positioning near the main machine.

The four wheels turn 360°, and two are equipped with brakes. To move the unit, unlock the two wheels by lifting the lever.

Slide the unit to its final position. Lock the wheels once again, lowering the levers.



### Electrical power connection

Macro Foam series melters are designed to be connected to the electrical power supply in 3-phase 400 VAC with neutral.



A good ground connection is required in any case.

Consumption figures, according to melter and output configuration, are included in the table.

| Unit           | No. outputs | 3 Phases      |
|----------------|-------------|---------------|
|                |             | 400 VAC Y     |
|                |             | 1 Single Pump |
| Macro Foam 35  | 2           | 20.5 A        |
|                | 4           | 20.5 A        |
| Macro Foam 50  | 2           | 21.3 A        |
|                | 4           | 23.7 A        |
| Macro Foam 120 | 2           | 26.3 A        |
|                | 4           | 31.6 A        |



**Warning:** Risk of electrical shock. Carelessness may cause injury or death.

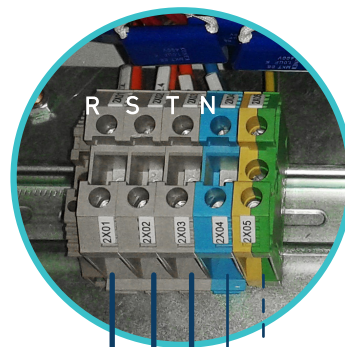
Install the electrical wall bushing Pg 21 in the area reserved for them, fastening them to the plate with the appropriate nut.



Pg21

Open the electric cabinet door as far as possible. Thread the power cord (Ø14-18 mm) through the electrical wall bushing Pg 21 and fasten it to the inside anchor, making sure that the cord reaches the power terminals block inside the cabinet.

Connect each wire in the power cord to its corresponding place on the power terminals block, as shown in the figures.



L1 L2 L3 N PE  
3N ~ 400V 50Hz + PE



## Pneumatic connection

If a pneumatically controlled by-pass pressure control valve is installed, the equipment must have a compressed air supply.

Before connecting the pneumatic power to the melter, make sure the pressure regulator is completely closed. To do this, turn the regulator handle located on next to the pressure gauge counterclockwise as far as it will go.

Connect the plant air supply (max. 6 bar) to the melter intake using flexible tubing with an outside diameter of 6 mm. The equipment is provided with a quick coupling for this purpose.

Activate the air supply to pass and turn the pressure regulator clockwise. The ratio between the pneumatic pressure and the hydraulic pressure on the circuit is 1 to 13 bar.

**Warning:** A 6 bar on the grid, the maximum pressure on the hydraulic circuit reaches 80 bar. There is a risk of burns or particle projection. Use thermal protective gear and goggles.



## Hose and applicator connection

Macro Foam series melters use standard Meler components. The entire range of Meler hoses and applicators may be connected to this equipment.

Up to four hose-applicator outputs may be connected to 50 and 120L Macro Foam melters, depending on the number of pumps installed.

**Warning:** When connecting hose-applicator outputs, verify that the connected power is not above the maximum allowable power for each output.



The Macro Foam series melting equipment is equipped with a hydraulic distributor for each pump, with 2 possible outputs, depending on the connections that will be used. Connect the hoses to the distributor according to the needs of the installation and the ease of connection.

Caution:

- In order to identify each hose-applicator, electrically connect them to the connector with the same number as the output they use.
- It is preferable to use couplings at a 45° or 90° angle to minimize the space the hoses occupy. Using straight couplings usually results in curves with very small radii that may damage the inside of the hose.
- Save the screw-on caps that are removed from the distributor in order to connect a hose. They may be necessary in the future if a hose is removed from its location.
- Perform the electrical hose and applicator connections with the equipment turned off. Failing to do so may result in electrical defects in the connection and the appearance of alarm messages on the melter display.

## Parameter Programming

Once the melter and its components are installed, you will need to program the operational parameters appropriate for the specific application that will be performed.

Macro Foam series melters simplify this task as much as possible, allowing the operator to modify only those parameters that are necessarily variable for each application.

Among the various parameters, it is necessary to program the set point temperature values for each component connected and the value for overheating warnings. There are two other parameters (weekly start-up and shut-down programming and the standby temperature value) left to program in advanced systems, although the factory default values are perfectly valid for operational purposes.

### Programming working temperatures

The melters leave the factory with the following set point temperatures:

- 160 °C (320 °F) for the tank, premelter and the distributor.
- 150 °C (302 °F) for hoses.
- 160 °C (320 °F) for applicators.

The general process for modifying set up temperature values for any component is described below.



1. Select the component for which you wish to modify the value with the left-right arrow.

The corresponding LED will blink quickly.

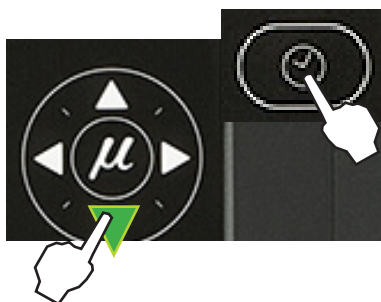
2. Using the up-down arrow, select the desired value for the set point temperature.
3. After ten seconds, the LED will stop blinking and the display will change by default to the set point temperature, saving the changed data.


This simple process must be repeated for each one of the components installed on the melter.

### Selecting the overheating value

1. Press the buttons with the clock symbol and the down arrow at the same time to enter the special menu.

The choice of display units (°C or °F) will appear on the display.



- Using the right arrow, we advance to the next screen where the overheating symbol appears. 

- Select the desired value with the up-down arrow.

The value displayed corresponds to the increase in real temperature over the set point temperature permitted without activating the alarm message.

- Use the right arrow to advance to the next screen.

- Exit the special menu using the left arrow and the tank temperatures will once again be displayed.

All the special menu values will be saved.

**Keeping a component on display**

By default, the main display shows the tank temperatures. However, it is possible to display indefinitely the temperatures of any component for analysis or tracking.

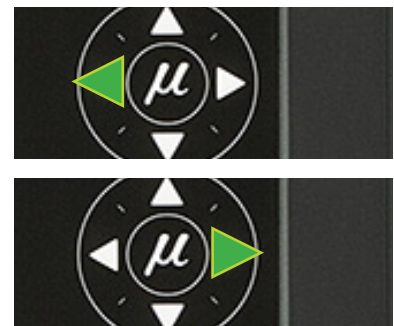
- Select the component you wish to see permanently with the left-right arrow.

The corresponding LED will blink rapidly.

- Hold the arrow button down for two seconds, selecting the desired component.

- The display will now remain on the selected component, without changing.

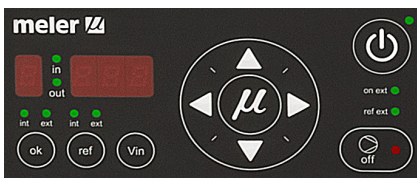
- Simple press any left-right arrow button again to restore the default display (tank).



## External I/O connections

The melter's input and output signals (I/O) allow it to communicate with the main machine simply and directly.

There are seven signals that may be used to communicate with the main machine:



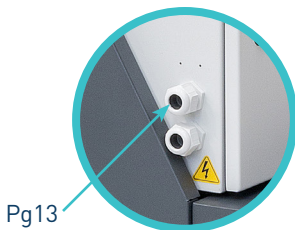
- **Temperatures ok**\_an output from a non-voltage contact that communicated to the main machine (or to a warning light beacon) that all the system temperatures have reached 3° below their set point value (and the delay time have finished) during start-up, or that their real value is not 20°C below their set point value during operation.
- **External Standby**\_control input from the standby mode, via a non-voltage contact. The standby function is connected with a closed contact; an open contact disconnects it.
- **Low level**\_an output from a non-voltage contact that communicates to the main machine (or to a warning light beacon) that the adhesive fluid level in the tank has reached the minimum level established (optional)
- **Output disabled**\_disabled input signal for each hose-applicator output via a non-voltage contact. With a closed contact, the output remains activated (output on); with an open contact, it is deactivated (output off).
- **Motor start up**\_for each pump installed, the motor start up may be controlled by closing an external non-voltage contact.
- **Foam pump pressure regulation**\_for each pump installed, the foam pump pressure may be controlled by means of a 0 to 10V DC external signal.
- **Failures output in pump control card**\_output from a non-voltage contact that communicates normally to a warning light beacon the failure from the pump control card.
- **Gas low level**\_an output from a non-voltage contact that communicates to the main machine (or to a warning light beacon) that the gas level has reached the minimum level established.
- **External adhesive feeder**\_an output from a non-voltage contact that communicates to the pre-fuser machine the orden of pumping adhesive.



**Warning:** Risk of electric shock. Carelessness may cause injuries or death.

### Temperature ok

1. If only this signal will be connected, use a 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.



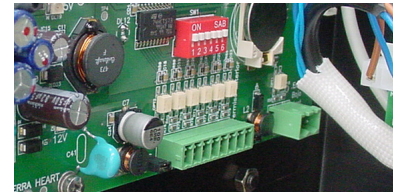
3. Connect the two wires from the start-up signal to the terminals XTOK1 and XTOK2. This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.



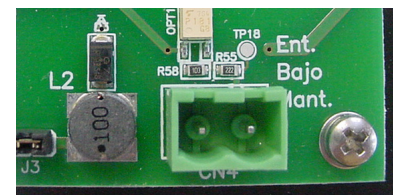
**Warning:** It must be connected to 24 AC or DC voltage with a maximum current of 500mA. If you connect this signal to 230V load current cannot be less than 50mA.

**External Standby**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Open the electrical cabinet door as far as possible. Thread the power cord (Ø4-8 mm) through the wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector at the position where it will be installed.
3. Remove the connector from the card and connect the two cable wires to their corresponding connector terminals:



4. Reconnect the card connector.
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.



**Low level (optional)**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Open the electrical cabinet door as far as possible. Thread the power cord (Ø4-8 mm) through the wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector at the position where it will be installed.



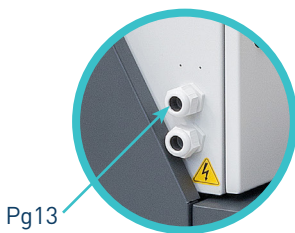


3. Connect the two wires from the start-up signal to the terminals XLD1 and XLD2. This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.



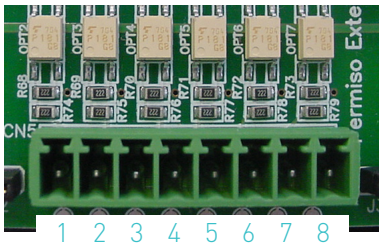
**Warning:** It must be connected to 24 AC or DC voltage. If you connect this signal to 230V load current cannot be less than 50mA.

**Output inhibitor**

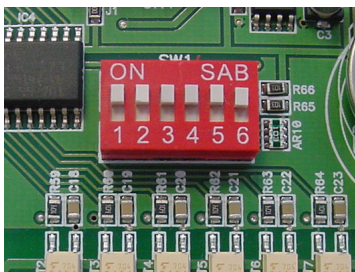


Pg13

1. If this is the only signal being connected, use a seven-wire cable no smaller than 0.22 mm<sup>2</sup>.
2. Open the door to the electrical cabinet as far as possible. Thread the power cord (Ø4-8 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector at the position where it will be installed.
3. Remove the connector from the card and connect the two cable wires to their corresponding connector terminals:



- 1 common + voltage output
- 2 input for inhibitor output 1
- 3 input for inhibitor output 2
- 4 input for inhibitor output 3
- 5 input for inhibitor output 4
- 6 input for inhibitor output 5
- 7 input for inhibitor output 6
- 8 without connection.



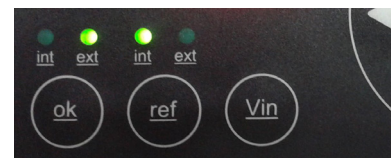
4. Reconnect the card connector.
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.

It is possible to select the channels that you want to control from the outside using the small switches located above the connector. Switches 1 through 6 control each of the channels, so that the switch in the 'ON' position means heating from the equipment, without any external control.

When the switch is in the 'OFF' position, the corresponding channel does not heat unless activated from the outside, through a non-voltage contact between pin 1 (the common pin) and the pin that corresponds to the channel.

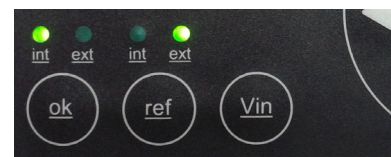
**Starting up the motor (ok ext)**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.
3. Connect the two wires from the start-up signal to the terminals XP11 and XP12 (motor 1) or XP21 and XP22 (motor 2). This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.
5. For the signal to work, the led 'ok ext' on the control panel must be on.



**Foam pump pressure regulation (ref ext)**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.
3. Connect the two wires from the foam pump pressure regulation signal to the terminals XV11 and XV12 (pump 1) or XV21 and XV22 (pump 2). This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. The positive signal wire must be connected to point XV12/XV22 of the terminal, while the negative wire must be connected to point XV11/XV21.
4. Make sure that the cables are firmly attached by the terminal screws.
5. For the signal to work, the led 'ref ext' on the control panel must be on.





**Failures output in pump control card**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.
3. Connect the two wires from the failures in pump control card signal to the terminals XE11 and XE12 (pump 1) or XE21 and XE22 (pump 2). This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.



**Warning:** It must be connected to 24 AC or DC voltage with a maximum current of 1A.



**Gas low level**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.
3. Connect the two wires from the gas low level signal to the terminals 8X81 and 8X82. This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.



**Warning:** It must be connected to 24 AC or DC voltage with a maximum current of 1A.



**External adhesive feeder**

1. If this is the only signal being connected, use 0.5 mm<sup>2</sup> two-wire cable.
2. Thread the power cord (max. Ø12.5 mm) through the electrical wall bushing Pg13 and fasten it to the inside anchor, making sure that the cord reaches the power card connector.
3. Connect the two wires from the external adhesive feeder order signal to the terminals 17X11 and 17X12. This is a double terminal, which makes it necessary to connect each wire in one of the two holes in the terminal. Since this contact is not under voltage, there is no connection polarity.
4. Make sure that the cables are firmly attached by the terminal screws.



**Warning:** It must be connected to 24 AC or DC voltage with a maximum current of 1A.



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## 4. MELTER OPERATION

In this section we will introduce the method for using the melter. Although its operation is very simple, it should not be used by untrained personnel.

**Warning:** Improper use may cause damage to the machine or injury and even death to the person using it.



### General information

There are three large groups of components with thermal control in a hot-melt installation: the fusion unit, the transport hoses and the melter applicators. All of these are controlled from the front panel of the melter equipment.

The first large group is the premelter-tank-distributor assembly. The premelter is the first heated zone for the adhesive before it is melted. It has its own temperature control but it forms a single unit with the tank, with separate controls, even though their set point value is the same. The tank receives the melted adhesive from the premelter and distributes it to the pumps. It has its own control and is identified on the front panel by the corresponding picture. Distributors are connected to channels number 1 to 4 with independent set point values and temperature controls.

The second group is the hose group. These are identified on the front panel from No. 1 to No. 4 and by a picture of the corresponding hose. Each has its own set point value.

The third group is the applicator group. These are identified on the front panel from No. 1 to No. 4 and by a picture of the corresponding applicator. Each has its own set point value.

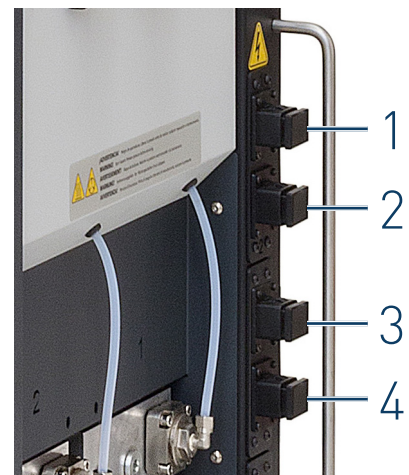
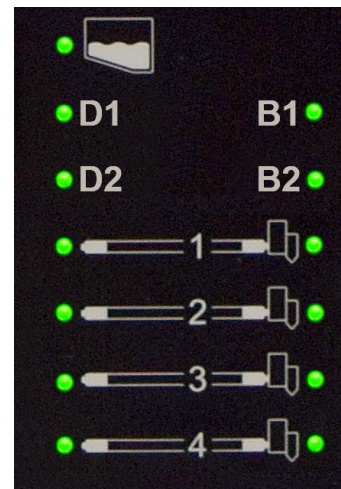
The hose and applicator numbers are automatically assigned to the hose channel they are connected to on the rear or right side part of the melter.

### Filling the tank

The tank can be equipped with a low level sensor (optional) that warns when the level of hot-melt adhesive drops below a third of the tank's capacity.

The unit will activate the external signal and, if it is connected, the corresponding warning device.

**Warning:** Before refilling the tank, make sure that the adhesive is the same type as that already in the tank. Mixing different types of adhesives can cause damage to the melter equipment.



To fill the tank:

1. Open the tank lid.
2. Use a shovel or a ladle to fill the tank with adhesive. Do not fill the tank above the loading opening level. The lid must be able to close normally.



**Warning:** Risk of burns. Always refill using protective gloves and glasses.

3. Close the lid when you have finished refilling the tank. Different adhesive types can damage the melting equipment.

| Model                      | Capacity* |        |
|----------------------------|-----------|--------|
| Macro Foam 35              | 35 L      | 35 kg  |
| Macro Foam 50              | 50 L      | 50 kg  |
| Macro Foam 120             | 120 L     | 120 kg |
| [*] For a density of 1g/cc |           |        |

### Starting up the melter equipment

Before starting up the melter equipment, it is necessary to check to see if the unit has been correctly installed and all its input/output and accessory connections are correctly established.

It is also necessary to make sure that the equipment has been filled with adhesive and that the operational parameters have been programmed.

To start:

1. Connect the melter's switch.

If the control card was turned off the last time the machine was disconnected, it will remain turned off when the machine is started up again (time display).

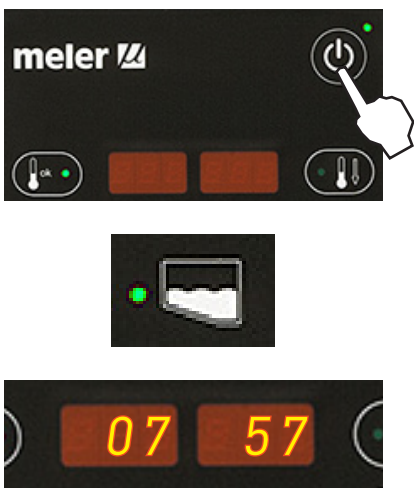
If the control card was on the last time that the machine was disconnected, it will turn on when the machine is started up again.

2. Press the ON/OFF button on the control card to turn it on, if it is not already activated.

By default, the set point and real temperature values shown are those corresponding to the tank.

The tank (and distributors, hoses and applicators connected) heating control LED (green) will light up and the tank will begin to heat.

Once it has reached 3° below the programmed temperature (set point) of the tank, a programmable delay timer starts until, guaranteeing fusion, the pump receives permission to operate and the signal will be sent to the main machine, indicated by the two corresponding (green) LEDs.



While the system is running the delay timer both LEDs remains blinking until the programmed time value has been reached. If then, any other element has not reached 3° below its temperature setting point, the LEDs turn off.

If the system is shut down, for any possible mode, when it is turning on the delay timer only starts again if the tank temperature is 20° below setting point.

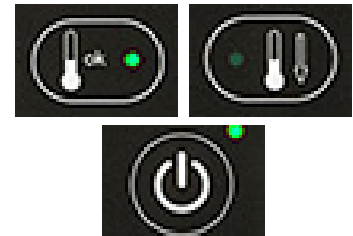
3. Make sure that the control switches for each pumping control cards installed are in the correct positions (see Chapter '2. Introduction. Operating modes').



### Melter equipment displays

Macro Foam system series melters have two displays built into their control panel, with three sets of 7 segments each for displaying the temperature values (set point and real temperature), programmable parameters and alarms.

They are equipped with LED indicators to display the heating of each component, as well as the pump activations and the main machine connection signal.



| LED display      | Component heating                     | Component status           |
|------------------|---------------------------------------|----------------------------|
| constantly lit   | constant                              | low temperature            |
| blinking slowly  | as need (according to PID parameters) | temperature near set point |
| blinking rapidly | programming or display                | change in set point values |
| off              | not heating                           | temperature reached        |

They are also equipped with LEDs indicating equipment connection/disconnection and standby function connection/disconnection:

| LED display   | On/off  | Standby                                   |
|---|---|---|
| constantly lit  | turned off unit   | function activated                        |
| blinking slowly   | deactivation programmed for the current day                             | activation programmed for the current day |
| blinking rapidly  | activation/deactivation programming mode                                | activation/deactivation programming mode  |
| off   | unit in operation   | function deactivated                      |
| simultaneous intermittence from leds of pump activation and main machine signal | timing in progress, once the tank has reached its set point temperature |   |



**Displaying the temperature for each component**



The temperature may be displayed for each component (premelter, tank, distributor and each hose and applicator) by selecting the component with the cursor.

Press the left-right arrow until the desired component is displayed.

After 10 seconds, the display will return to the default component (the tank).

If you wish to keep the component displayed permanently, press and hold the left-right arrow for 2 seconds while selecting the chosen element.

For units that have one pump installed, the display sequence is the following:

premelter←—tank←—distributor 1←—pump 1←—distributor 2←—pump 2←—  
hose 1←—applicator 1←—...←—hose 4←—applicator 4

premelter—>tank—>distributor 1—>pump 1—>distributor 2—>pump 2—>  
hose 1—>applicator 1—>...—>hose 4—>applicator 4

To remove a component from permanent display, simply press either of the left-right arrows.

## Alarm displays

Macro Foam series melter equipment tell the user when a malfunction has occurred in the unit, sending warning messages that may be seen on the control panel display.

When an alarm appears, the control unit takes a series of steps to protect the unit. Simply correct that malfunction and the control unit will reactivate the equipment functions.

Standby function does not generate any alarm.

If a temperature sensor is broken, the system heats all the elements except the one where the failure is located.

In case of overheating the system cuts off immediately the damaged element. After three minutes if the failure continues all the system will be shut down. After repairing the failure the system starts heating normally.

| Code    | Source                      | Actions               |      |                     |
|---------|-----------------------------|-----------------------|------|---------------------|
|         |                             | Heating               | Pump | Main machine signal |
| Err 0   | tank broken sensor          | only tank off         | off  | off                 |
| Err 1   | distributor 1 broken sensor | only distributor1 off | off  | off                 |
| Err 2   | pump 1 broken sensor        | only distributor2 off | off  | off                 |
| Err 3   | distributor 2 broken sensor | only distributor3 off | off  | off                 |
| Err 4   | pump 2 broken sensor        | only distributor4 off | off  | off                 |
| Err 5   | hose 1 broken sensor        | only hose1 off        | off  | off                 |
| Err 6   | applicator 1 broken sensor  | only applicator1 off  | off  | off                 |
| Err 7   | hose 2 broken sensor        | only hose2 off        | off  | off                 |
| Err 8   | applicator 2 broken sensor  | only applicator2 off  | off  | off                 |
| Err 9   | hose 3 broken sensor        | only hose3 off        | off  | off                 |
| Err 10  | applicator 3 broken sensor  | only applicator3 off  | off  | off                 |
| Err 11  | hose 4 broken sensor        | only hose4 off        | off  | off                 |
| Err 12  | applicator 4 broken sensor  | only applicator4 off  | off  | off                 |
| Err 13  | premelter broken sensor     | only premelter off    | off  | off                 |
| Err 100 | tank overheating            | all components off    | off  | off                 |
| Err 101 | distributor 1 overheating   | all components off    | off  | off                 |
| Err 102 | pump 1 overheating          | all components off    | off  | off                 |
| Err 103 | distributor 2 overheating   | all components off    | off  | off                 |
| Err 104 | pump 2 overheating          | all components off    | off  | off                 |
| Err 105 | hose1 overheating           | all components off    | off  | off                 |
| Err 106 | applicator1 overheating     | all components off    | off  | off                 |
| Err 107 | hose2 overheating           | all components off    | off  | off                 |
| Err 108 | applicator2 overheating     | all components off    | off  | off                 |
| Err 109 | hose3 overheating           | all components off    | off  | off                 |
| Err 110 | applicator3 overheating     | all components off    | off  | off                 |
| Err 111 | hose4 overheating           | all components off    | off  | off                 |
| Err 112 | applicator4 overheating     | all components off    | off  | off                 |
| Err 113 | premelter overheating       | all components off    | off  | off                 |

### Hot-melt display level (optional)

If the equipment is fitted with a level detector, and the hot-melt level drops below the programmed level (capacitive detector), a signal is sent to the melter control which launches the following actions:



1. On-screen display (if the function is activated).
2. It closes a non-voltage output contact where the user will install the required device (horn, light or PLC input).

Simply refill the tank and wait for the adhesive to melt enough that the sensor sends the message that the correct level has been reached.

### Display and adjustment of the working pressure



The pump pressure (in bar) is shown on the display for each pump control card on the equipment. These pressure may be adjusted by using the up/down arrow keys (pumping pressure, internal reference), through a voltage signal from the main machine or by modifying the full scale (pumping pressure, external reference). The pump pressure work must be adjusted to the requirements of the application.

**Warning:** Although pressure can be selected between 0 and 85 bar it is not advisable to operate at pressures of less than 10 bar (the flow may become inconstant depending on the motor load) or greater than 80 bar (pump operating at maximum pressure).

**Note:** for further information on adjusting working pressure, see the section 'Modes of operation'.

### Temperature adjustment

The melters leave the factory with the following set point temperature values:

- 160 °C (320 °F) for the tank, premelter and distributor.
- 150 °C (320 °F) for the hoses.
- 160 °C (320 °F) for the applicators.
- Disconnected (OFF) for the hoses and applicators.
- °C displayed
- Overheating value: 25°C
- Standby value: 40%
- Delay time: 10 min
- Timetable programs: ON



The general process for adjusting the temperatures of each components is described below.

1. Select the component whose value you wish to modify using the left-right arrow. The tank and the distributor have the same set point value.

The corresponding LED will blink rapidly.

2. Select the desired set point temperature value with the up-down arrow. Below 40°C the set point value displays 'OFF' canceling the heating of that element.

3. After ten seconds, the LED will stop blinking and the display will show the tank's set point temperature value by default, saving the modified data.

This simple procedure should be repeated for each of the components whose set point temperature value you wish to modify.



## Programming the applicator parameters

1. Simultaneously press the buttons with the clock symbol and the down arrow to enter the special menu.

The choice of temperature display units (°C or °F) will appear on the display.

2. Select the desired value using the up-down arrow.

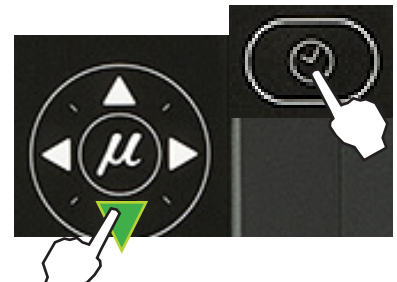
3. Use the right arrow to move to the next display where the overheating symbol appears.

4. Select the desired value (between 10 and 25) using the up-down arrow.

The value shown corresponds to the increase in real temperature allowed over the set point temperature without activating the alarm message.

5. Use the right arrow to go to the next display where the standby function symbol appears.

6. Use the up-down arrow to select the desired value (between 25 and 55).





The value shown corresponds to the percent decrease in the real temperature compared to the set point temperature that will occur when this function is activated.

7. Use the right arrow to go to the next display where delay time value appears.
8. Use the up-down arrow to select the desired value (between 0 and 60 min).



**Attention:** in order to ensure the proper flow of the adhesive, it is recommended not set a value less than 10 minutes.

9. Use the right arrow to advance to the next screen, where the level detector activation/deactivation is found.
10. Use the up-down arrow to select the desired value (ON/OFF). When OFF is selected, neither the on-screen display nor the external signal activation will be operational. If ON is selected, when the level of hot-melt is low the alarm (n - - -) will be displayed on the screen and the external signal contact will be activated.
11. Use the right arrow to return to the initial parameter.
12. For any parameter, the left arrow may be used to exit the special menu and display the tank temperatures once again.

To record any parameter, you must always move to the next parameter, using the right arrow.

### Setting the clock

Macro Foam system series melters are equipped with a weekly programmable system controlling equipment connection and disconnection and activating and deactivating the standby function.

Before programming these functions, it is necessary to introduce into the control unit data corresponding to the day and hour used to execute these programs.

#### Programming the current day and hour

1. Press the button with the clock symbol.

A '0' will appear on the display, indicating the program for current day and hour information.

2. Press the button with the clock symbol once again.







4. The blinking dot next to the start time indicates that this is the value that may be modified. Use the up-down arrow to select the desired value.

5. Press the button with the clock symbol once again.

The dot changes to the finish time.

6. Use the up-down arrow to select the desired value.

7. Press the button with the clock symbol once again.

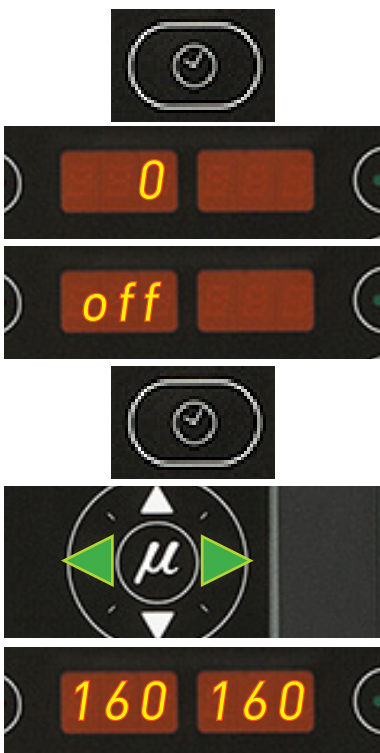
The selected program will appear once again. Use the up-down arrow to select other programs.

8. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

The green LED next to the 'ON/OFF' button will remain blinking as long as there is an equipment disconnection time programmed for the current day.

#### Disabling the equipment activation/deactivation program

It is possible to disable the equipment activation/deactivation programming without canceling the daily programming. This way the programmed data is saved, but the programming will have no effect on the equipment.



1. Press the button with the clock symbol.

A '0' will appear on the display, indicating the program for current day and hour information.

2. Use the up-down arrow to go past the selection for the last day of the week (7).

The message 'ON/OFF' will appear on the display, depending on the current status.

3. Press the button with the clock symbol once again.

The status will alternate each time you press the button.

4. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

### Programming the equipment's standby function activation/deactivation

You may program an activation and a deactivation time for every day of the week, from Monday (1) to Sunday (7). Time is expressed in 15 minute increments, so we cycle from 10.0 (10 hours and 0 minutes) to 10.1 (10 hours and 15 minutes) to 10.2 (10 hours and 30 minutes) to 10.3 (10 hours and 45 minutes).

1. Press the button with the clock symbol.

A '0' will appear on the display, indicating the program for current day and hour information.

2. Press the standby function button.

A '1' will appear, indicating the first day in the standby function programming.

[Since the current time and date are values common to both programs, the value '0' does not appear in this menu].

3. Use the up-down arrow to select the desired value for the day of the week, Monday (1) to Sunday (7).

4. Press the button with the clock symbol once again.

Two times will appear, one in each display. The left display shows the start time, while the right display shows the finish time.

5. The blinking dot next to the start time indicates that this is the time that may be modified.

Use the up-down arrow to select the desired value.

6. Press the button with the clock symbol once again.

The dot changes to the finish time.

7. Use the up-down arrow to select the desired value.





8. Press the button with the clock symbol once again.

The selected program appears once again. You may use the up-down arrow to select other programs.

9. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

The green LED next to the 'standby' button will remain blinking as long as there is an equipment standby function activation time programmed for the current day.

### Disabling the equipment standby function programming

It is possible to disable the equipment standby function programming without canceling the daily programming. This way the programmed data is saved, but the programming will have no effect on the equipment.



1. Press the button with the clock symbol.

A '0' will appear on the display, indicating the program for current day and hour information.

2. Press the standby function button.

A '1' will appear, indicating the first day in the standby function programming.

3. Use the up-down arrow to go past the selection for the last day of the week (7).

The message 'ON/OFF' will appear on the display, depending on the current status.

4. Press the button with the clock symbol once again.

The status will alternate each time you press the button.

5. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

## Special function buttons

The simplicity of programming Macro Foam system series melters reduces the use of the special function buttons to only the standby function.

This manual function allows you to alternate between the operational mode and the standby mode. Using the standby function during periods of melter inactivity helps save energy and allows the heated elements to return quickly to their set point temperatures once you return to the operational mode.

When the standby function is activated, the set point temperature for all the heated components is lowered to a certain value, according to the programmed parameter (see 'Programming melter equipment parameters'). For example, if the tank set point temperature is 160 °C and the standby temperature is programmed as 30 (30%), when you press the standby function button, the tank set point temperature will drop to 112 °C (70% of 160 °C).

The three means for activating the standby function available with Macro Foam melters have the following priority protocols:

1. Manual standby function button.
2. Standby function external signal.
3. Standby function activation/deactivation programming.

Therefore, if the function is activated by any of the three means, it may always be deactivated using the manual button. On the other hand, if it was activated using the manual button, it may not be deactivated by either of the other two means. The weekly programming may not deactivate a standby function that has been activated by either of other two means.

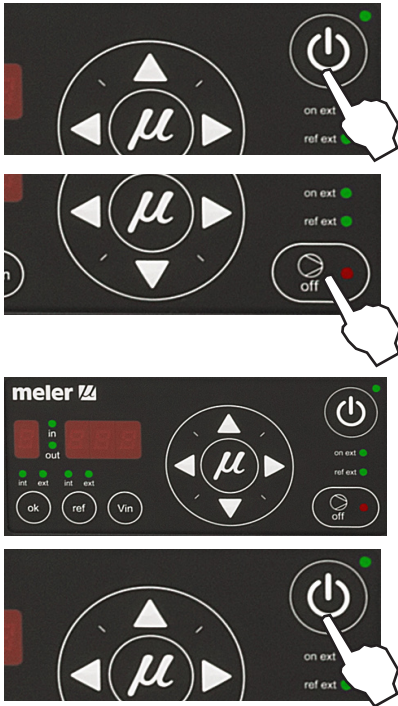
The following criteria are suggested for standby function use:

- If the period of inactivity is less than 2 hours, allow the melter applicator equipment to heat as normal.
- If the period of inactivity is more than 2 hours and less than 4 hours, use the standby function.
- If the period of inactivity is over 4 hours, use one of the following two options: turn off the equipment if you do not plan on using it for the rest of the day or keep the standby function on if you plan on using the equipment during that same day.



## Pumping control

### Starting up the pump control card



The pump control card (hereinafter also control card), features an ON-OFF button that allows us to turn off the displays and LEDs (leaving on only the 24 Vdc power supply LED)

The control card will turn off automatically depending on the status of pumping permission input:

- Whenever the pumping permission input is deactivated, the interface will be turned off and the control will be inoperative, unless turned on with the control card ON-OFF button.
- Should the 24 Vdc power supply to the control card be lost, on recovering the power supply the control card will remain turned off until pumping permission input is activated. If on recovering the power supply the pumping permission input is activated, it will turn on directly.
- If the power supply is available and pumping permission has not been received and the control card be turned off it must be turned on with the control card ON-OFF button.

### Pumping safety measures

To prevent the equipment from starting up unexpectedly, the control panel features by default a safety option that prevents pumping from commencing until enabled by pressing the ON-OFF button on the control card. This function may be disabled in the 'User configuration menu'.

For the pumping control to allow the pump to operate, the pumping ON-OFF button must be pressed, leaving it enabled (the red LED on the pumping ON-OFF button will turn off). When enabled, the control card will allow pumping as soon as all the required conditions are recovered, including pumping permission.

When pumping safety is enabled:

- In the event of loss of 24 Vdc power supply or the control panel is turned off with the control card ON-OFF button, the control will start up with pumping disabled (red ON-OFF button LED is illuminated) on recovering the power supply or turning the control card on, and prevent pump operation even if the pumping permission input is closed again, until the pumping ON-OFF button is pressed and the red LED turns off.
- Whenever the pumping permission input is deactivated, the control disables pumping (red ON-OFF button LED is illuminated) and prevents the operation of the pump even if the pumping permission input is closed again, until the pumping ON-OFF button is pressed and the red LED turns off.



- Whenever an error occurs, the control disables pumping (red ON-OFF button LED is illuminated) and prevents the operation of the pump until the error is reset, the pumping ON-OFF button is pressed again and the red LED turns off.

When pumping safety is disabled:

- In the event of loss of 24 Vdc power supply or the control is turned off with the control card ON-OFF button, on recovering the power supply or turning on the control card the control maintains the enabled status of the pumping ON-OFF button (if this was at the position ON, the unit will start up in ON and if it was at the position OFF it will start up in OFF).
- Whenever pumping permission input is deactivated, the pumping control stops the pumping operation, but does not disable it (red ON-OFF button LED turned off) and will allow pumping operation as soon as the pumping permission input is closed again.
- Whenever an error occurs, the pumping control stops the pumping operation, but does not disable it (red ON-OFF button LED turned off) and will allow pumping operation.

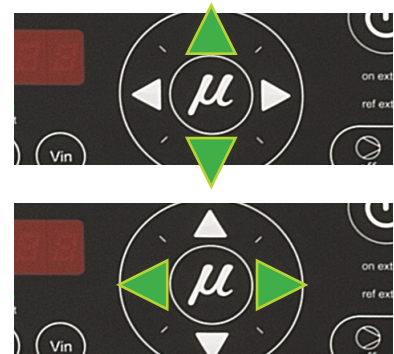
To deactivate pump safety see the section 'User configuration menu', paragraph 5.

### Password security

If the option selected in the password security configuration is '1', security enabled, only the control card ON/OFF and pumping ON/OFF buttons will be operational. While this security option is programmed, in order to avoid the need to turn off and restart the machine to return to the 'User configuration menu', on pressing any key (except the control card ON/OFF and pumping ON/OFF buttons) a password will be required. When the password is entered correctly, the control card can be left operational by setting it to '0'. When using this method to access the control card security configuration options, i.e., when the password has been entered, the buttons on the control card are temporarily unprotected until one minute has elapsed during which no buttons are pressed or until any key is pressed and the control panel resumes its protected status.

Whenever you are requested to enter a security password, the message P00 will appear on the displays. With the up/down arrow keys, select the 3-digit number that is your security password; as soon as the correct value for the programmed password is selected, press the right arrow key, if the password is correct, it will allow access to the selected field. The right arrow key will validate the password, provided it is the correct one; if it not the correct one, the message P00 will reappear on the screen and the process will recommence.

By default, the password is set to '000'.



**LED indicators**

Described below are the LED indicators on the pump control card to identify the status of the equipment:

- 1. Control card ON/OFF LED:** when the external 24 Vdc power supply is present, this LED will always be illuminated; with no power supply, it will be turned off. This LED is green in colour.
- 2. Pumping ON/OFF LED:** when pumping is enabled, this LED will be turned off, and will be illuminated when pumping is disabled. This LED is in colour.
- 3. Int and ext (ok) LEDs:** when the equipment is operating in Internal start-stop (ok) mode, the 'int' LED will be illuminated and the 'ext' LED will be turned off. When the equipment is operating in external start-stop (ok) mode, the 'ext' LED will be illuminated. And the 'int' LED will be turned off. These can never be both on or both off at the same time. These LEDs are green in colour.
- 4. Int and ext (ref) LEDs:** when the equipment is operating in internal reference mode, the 'int' LED will be illuminated and the 'ext' LED turned off. When the equipment is operating in external reference mode, the 'ext' LED will be illuminated and the 'int' LED will be turned off. These can never be both on or both off at the same time. These LEDs are green in colour.
- 5. Ext on LED:** when the equipment is operating in external start-stop (OK) mode, and the external permission contact is closed, this LED will be illuminated; if the external contact is open, this LED is turned off. This LED is green in colour.
- 6. Ext ref LED:** when operating in external reference mode and the external reference voltage is other than zero, this LED will be illuminated. When the external reference voltage is zero, this LED will be turned off. This LED is green in colour.
- 7. In/Out LED:** when operating in external set point reference mode, these LEDs will be activated and deactivated as the pressure curve options are programmed. These LEDs are green in colour.



## Modes of operation

First of all, we must bear in mind that when password security is enabled and the control card is not manipulated during one minute, it is blocked and you need to enter the password. To prevent this from happening, password security may be disabled following the steps in the section 'Password security'.

### Mode of operation with internal pumping control and internal pressure control

In this working mode the user has full control of the start/stop function and pressure pump set.

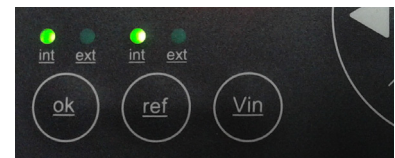
Follow the steps below to use this operating mode:

1. Press the ON/OFF button to light up the control card.
2. Select 'ok' in the position 'int' and 'ref' in the position 'int'.



To activate the start-up status, all of the following conditions must be met:

- That the input for pumping permission (E4) at central control is activated, as pumping is not possible unless the equipment temperature is OK.
- That pumping is enabled with the pumping ON-OFF button (red LED is turned off).
- That the failure input is not activated (E5), in which case starting the pump would be impossible. In case of the pump be operating and this input is activated, pumping will cease immediately.



If a pressure has been previously set, this value will be shown on the display and the pump will start to rotate at the pressure indicated provided that all prior conditions are met. Otherwise:

3. Using the up/down arrows, select the work pressure and/or wait for pumping permission to be enabled (red LED is turned off).

At this moment, the pump will start to rotate at the pressure indicated on the display.



4. Adjust the pressure to the value required for the application. The selected value is set pressing the right arrow key after blinking three times.

The pump will stop whenever:

- The control card is disabled with its ON/OFF button.
- The pumping ON-OFF button is pressed (red LED is illuminated).
- When a variator error signal is activated (E5).
- When the MAXIMUM RPM ALARM TIME appears.
- When the MINIMUM RPM ALARM TIME appears.



The maximum full scale for admissible pressure is 85 bar.

This full scale can be adjusted by reducing this value in percentage terms. To make adjustments consult the 'User configuration menu', '1. MAXIMUM PRESSURE ALARM'.

### Mode of operation with internal pumping control and external pressure control

In this operating mode, pumping is controlled from the equipment and pressure is controlled by a 0-10 V external signal from the main machine.

Follow the steps below to use this operating mode:



1. Press the ON/OFF button to light up the control card.
2. Select 'ok' in the position 'int' and 'ref' in the position 'ext'. The 'ref ext' LED will illuminate when voltage is received.

To activate the start-up status, all of the following conditions must be met:

- That the signal from the main machine reaches input E2 and its value is not 0.
- That the input for pumping permission (E4) at central control is activated, as pumping is not possible unless the equipment temperature is OK.
- That pumping is enabled with the pumping ON-OFF button (red LED is turned off).
- That the failure input is not activated (E5), in which case starting the pump would be impossible. In case of the pump be operating and this input is activated, pumping will cease immediately.

The system will wait for the pressure signal from the main machine. When the signal has been received, if a work pressure has been previously set it will appear on the display and the pump will begin to work at the indicated pressure.

If not, the pressure must be adjusted to the value required for the application. There are three ways to do this:

1. Change the voltage applied from the main machine.
2. Change the full scale (see section '1. MAXIMUM PRESSURE ALARM' in the 'User configuration menu').
3. Modify the pressure curve (see section 'Configuring pressure curve').

Keeping the 'Vin' key pressed will show the voltage sent by the main machine.

The pump will stop whenever:

- The control card is disabled with its ON/OFF button.
- The pumping ON-OFF button is pressed (red LED is illuminated).
- When the MAXIMUM PRESSURE ALARM TIME appears.
- When the MINIMUM PRESSURE ALARM TIME appears.
- When the voltage signal from the main machine is zero.

The maximum full scale for admissible pressure is 85 bar.

This full scale can be adjusted by reducing this value in percentage terms. To make adjustments consult the 'User configuration menu', '1. MAXIMUM PRESSURE ALARM'.

#### Mode of operation with external pumping control and internal pressure control

In this operating mode, pumping is controlled from the main machine while pressure is controlled from the equipment.

Follow the procedure below to use this operating mode:

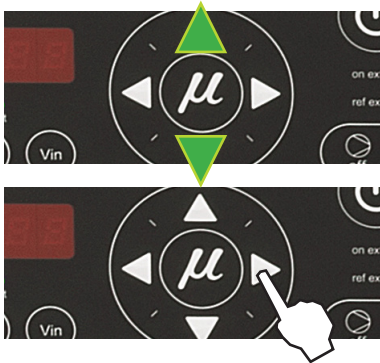
1. Press the ON/OFF button to light up the control card.
2. Select 'ok' in the position 'ext' and 'ref' in the position 'int'. The 'on ext' LED will be illuminated when temperature is ok.



To activate the start-up status, all of the following conditions must be met:

- That the input for pumping permission (E4) at central control is activated, as pumping is not possible unless the equipment temperature is OK.
- That pumping is enabled with the pumping ON-OFF button (red LED is turned off).
- If the external 'ok' mode (start-stop) is selected, the external 'ok' input (E3) must be activated.
- That the failure input is not activated (E5), in which case starting the pump would be impossible. In case of the pump be operating and this input is activated, pumping will cease immediately.

The system will wait for the pumping control signal from the main machine. If a work pressure has been previously set, this value will be shown on the display and the pump will start to work at the pressure indicated provided that all prior conditions are met. Otherwise:



- Using the up/down arrows, select the pressure and/or wait for pumping permission to be enabled (red LED is turned off).

At this moment, the pump will start to work at the pressure indicated on the display.

- Adjust the work pressure to the value required for the application. The selected value is set pressing the right arrow key after blinking three times.

The pump will stop whenever:

- The control card is disabled with its ON/OFF button.
- The pumping ON-OFF button is pressed (red LED is illuminated).
- When the pumping permission input is deactivated (E3).
- When a variator error signal is activated (E5).
- When the MAXIMUM PRESSURE ALARM TIME appears.
- When the MINIMUM PRESSURE ALARM TIME appears.

The maximum full scale for admissible pressure is 85 bar.

This full scale can be adjusted by reducing this value in percentage terms. To make adjustments consult the 'User configuration menu', '1. MAXIMUM PRESSURE ALARM'.

**Mode of operation with external pumping control and external pressure control**

In this working mode, both pumping and pressure are controlled from the main machine.

Follow the steps below to use this operating mode:



- Press the ON/OFF button to light up the control card.
- Select 'ok' in the position 'ext' and 'ref' in the position 'ext'. The 'on ext' and 'ref ext' LEDs will be illuminated when temperature is ok and voltage is received.

To activate the start-up status, all of the following conditions must be met:

- That the signal from the main machine reaches input E2 and its value is not 0.
- That the input for pumping permission (E4) at central control is activated, as pumping is not possible unless the equipment temperature is OK.
- That pumping is enabled with the pumping ON-OFF button (red LED is turned off).
- If the external 'ok' mode (start-stop) is selected, the external 'ok' input (E3) must be activated.
- That the field MAXIMUM PRESSURE ALARM is not set to zero (this field is available on the control card 'User configuration menu').
- That the failure input is not activated (E5), in which case starting the pump would be impossible. In case of the pump be operating and this input is activated, pumping will cease immediately.

The system will wait for the main machine to send the pumping activation and work pressure signals. When this signal has been received, if a work pressure has been previously set, this value will appear on the display and the pump will start to work at the indicated pressure.

If not, the pressure must be adjusted to the value required for the application. There are three ways to do this:

1. Change the voltage applied from the main machine.
2. Change the full scale (see section '1. MAXIMUM PRESSURE ALARM' 'User configuration menu').
3. Modify the pressure curve (see section 'Configuring pressure curve').

Keeping the 'Vin' key pressed will show the voltage sent by the main machine.

The pump will stop whenever:

- The control card is disabled with its ON/OFF button.
- The pumping ON-OFF button is pressed (red LED is illuminated).
- When the pumping permission input is deactivated (E3).
- When a variator error signal is activated (E5).
- When the MAXIMUM PRESSURE ALARM TIME appears.
- When the MINIMUM PRESSURE ALARM TIME appears.
- When the voltage signal from the main machine is zero.

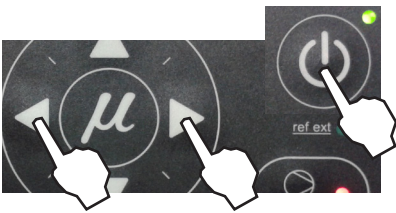
The maximum full scale for admissible pressure is 85 bar.

This full scale can be adjusted by reducing this value in percentage terms. To make adjustments consult the 'User configuration menu', '1. MAXIMUM PRESSURE ALARM'..

The pump control card is designed with certain parameters programmed at Meler that can be modified if necessary to meet your requirements. Modifications may be made through the 'User configuration menu' and programming pressure curve menus.

### User configuration menu

To open this menu, press simultaneously the left arrow key, the right arrow key, and ON/OFF button of the pump control card.



If the security password is enabled, the security password must be entered to access this menu. By default, all the equipments is set to 000 that the user may change at any time. If the security password is not enabled, direct access will be given to the following menu:

- 1. MAXIMUM PRESSURE ALARM:** this will be a value set between 0 and the value programmed in the MAXIMUM PRESSURE field. If we do not wish this alarm to be operational it must be programmed to the MAXIMUM PRESSURE value. The default value is 85 (consequently, alarm not operational).
- 2. MAXIMUM PRESSURE ALARM TIME:** this will be a period programmed between 0 and 999 (in seconds). In the event that the output PRESSURE exceed the value programmed for MAXIMUM PRESSURE ALARM during the period established in this field, MAXIMUM PRESSURE error will be activated (the pump will stop, and an error message will be displayed). By default, this value is 30 seconds.
- 3. MINIMUM PRESSURE ALARM:** this will be a value set between 0 and the value programmed in the MAXIMUM PRESSURE field. This value may never be greater than the value programmed in the MAXIMUM PRESSURE ALARM field. If the value programmed is '0' the error function will be disabled. By default, this value is 0 (disabled).
- 4. MINIMUM PRESSURE ALARM TIME:** this will be a period programmed between 0 and 999 (in seconds). In the event that the output PRESSURE are less than the programmed value for MINIMUM PRESSURE ALARM during the period established in this field, MINIMUM PRESSURE error will be activated (the pump will stop, and an error message will be displayed). By default, this value is 30 seconds.
- 5. PUMPING SAFETY FUNCTION:** this consists of an editable field (0 enabled – 1 disabled). By default, this is set to '0' (enabled).
- 6. SECURITY PASSWORD:** The security password may be changed in an editable field. The current password must be entered to access and edit the field. (See the section 'Password security' in this chapter).
- 7. ENABLING THE SECURITY PASSWORD:** this consists of an editable field (0 disabled, 1 enabled). The current password must be entered to access and edit the field. By default, this is set to '0'. (See the section 'Password security' in this chapter).



## Displaying alarms and reset function

### Maximum pressure alarm

This alarm will be triggered when the pump work at a pressure exceeding the MAXIMUM PRESSURE ALARM value for the period established in the MAXIMUM PRESSURE ALARM TIME field.

- When this alarm is triggered, an 'E.H.' error is shown on the control card.
- To reset this error, you must turn off and start up the control card with its ON/OFF button.

### Minimum pressure alarm

This alarm will be triggered when the pump works at a pressure that is below the MINIMUM PRESSURE ALARM for the period established in the MINIMUM PRESSURE ALARM TIME field.

- When this alarm is triggered, an 'E.L.' error is shown on the control card.
- To reset this error, you must turn off and start up the control card with its ON/OFF button.

### Variator alarm

This alarm is triggered when the control card input is activated by a variator error signal.

- When this alarm is triggered, an 'E.U.' error is shown on the control card.
- The error message will be maintained while the variator error input (E5) remains active. As soon as this input is deactivated the alarm will be reset.

**Note:** In the event that a PRESSURE alarm and a variator ERROR alarm should coincide, alternating messages will appear on the display.



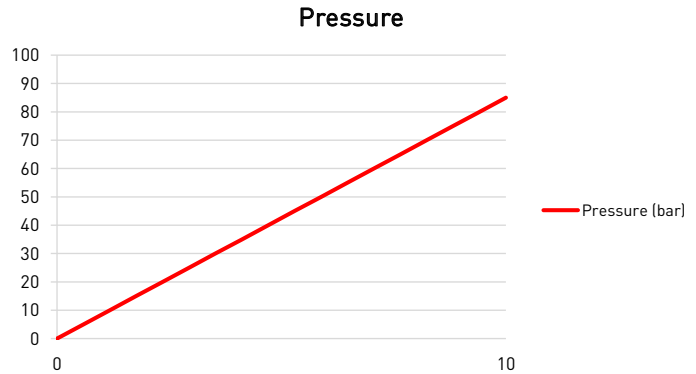
## Configuring pressure curve

For equipment operating in external reference, the display will show the current pump pressure set point (input reference conversion as per the full scale and the conversion table).

The conversion table may be programmed with up to 5 points (input voltage (V) and output pressure (bar)).

By default the table is programmed (0 V = 0 bar and 10 V = 85 bar):

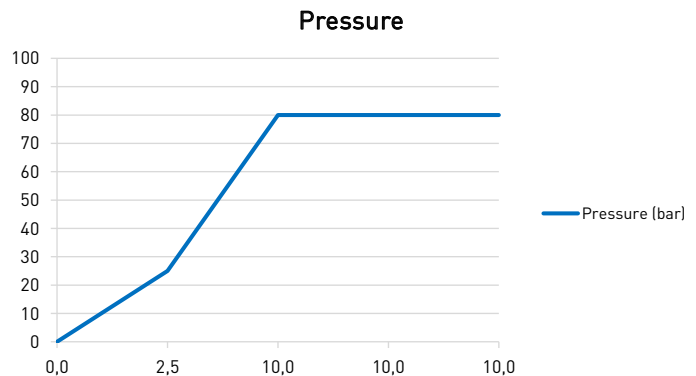
|         | Vin  | Pressure (bar) |
|---------|------|----------------|
| point 1 | 0,0  | 0              |
| point 2 | 10,0 | 85             |
| point 3 | 10,0 | 85             |
| point 4 | 10,0 | 85             |
| point 5 | 10,0 | 85             |



Notes on the editable values in the conversion table:

- The value for voltage must always be shown to one decimal place.
- Point 1 is the starting point for the pressure curve, and therefore the voltage will always be 0, while the value for output PRESSURE is editable.
- The possible values for each point must be equal to or greater than the value corresponding to the previous point.
- Point 5 is the final point for the pressure curve, and therefore the voltage will always be 10, while the value for output PRESSURE is editable.
- It is not necessary to program the value for MAXIMUM PRESSURE in this table.
- If, at any point, the maximum value for Vin = 10 V is entered, the corresponding values for Vin and PRESSURE at higher points will be automatically updated according to the value for this point.
- If, at any point, the maximum value is entered, that is, PRESSURE (bar) = MAXIMUM PRESSURE, the corresponding values for PRESSURE at higher points will be automatically updated to MAXIMUM PRESSURE.

|         | Vin  | Pressure (bar) |
|---------|------|----------------|
| point 1 | 0,0  | 0              |
| point 2 | 2,5  | 25             |
| point 3 | 10,0 | 80             |
| point 4 | 10,0 | 80             |
| point 5 | 10,0 | 80             |



### Programming pressure curve

To access this menu and program the different points corresponding to the voltage-pressure ratio, you must select external reference ('ref ext' LED is illuminated) and press the right arrow key. Then the following message is displayed:

The IN LED to the position **ON** and the OUT LED to the position **OFF, 1 000**, **NOT EDITABLE**; press the right arrow to go to the next point:

The IN LED to the position **OFF** and the OUT LED to the position **ON, 1 XXX**, which means that the output pressure is being programmed for point 1 (when the input voltage is 0 V); with the up/down arrow keys the value may be modified, within a range from 000 to MAXIMUM PRESSURE; press the right arrow key to go to the next point:

The IN LED to the position **ON** and the OUT LED to the position **OFF, 2 XXX**, which means that the input voltage value is being programmed for point 2; with the up/down arrow keys the value may be modified, within a range from 00.0 to 10.0 (to one decimal place); press the right arrow key to go to the next point:

The IN LED to the position **OFF** and the OUT LED to the position **ON, 2 XXX**, which means that the output pressure value is being programmed for point 2; with the up/down arrow keys the value may be modified, within a range from 000 to MAXIMUM PRESSURE; press the right arrow key to go to the next point:

The IN LED to the position **ON** and the OUT LED to the position **OFF, 3 XXX**, which means that the input voltage value is being programmed for point 3; with the up/down arrow keys the value may be modified, within a range from 00.0 to 10.0 (to one decimal place); press the right arrow key to go to the next point:

The IN LED to the position **OFF** and the OUT LED to the position **ON, 3 XXX**, which means that the output pressure value is being programmed for point 3; with the up/down arrow keys the value may be modified, within a range from 000 to MAXIMUM PRESSURE; press the right arrow key to go to the next point:

The IN LED to the position **ON** and the OUT LED to the position **OFF, 4 XXX**, which means that the input voltage value is being programmed for point 4; with the up/down arrow keys the value may be modified, within a range from 00.0 to 10.0 (to one decimal place); press the right arrow key to go to the next point:

The IN LED to the position **OFF** and the OUT LED to the position **ON, 4 XXX**, which means that the output pressure value is being programmed for point 4; with the up/down arrow keys the value may be modified, within a range from 000 to MAXIMUM PRESSURE; press the right arrow key to go to the next point:

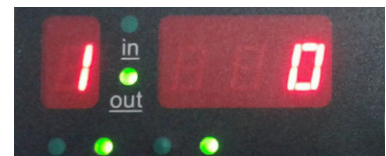
The IN LED to the position **ON** and the OUT LED to the position **OFF, 5 100**, **NOT EDITABLE**; press the right arrow key to go to the following message:

The IN LED to the position **OFF** and the OUT LED to the position **ON, 5 XXX**, which means that the pressure value is being programmed for point 5; with the up/down arrow keys the value may be modified, within a range from 000 to MAXIMUM PRESSURE; press the right arrow key to exit the menu.

Press the right arrow key to return to the menu, and the initial message is displayed: The IN LED to the position **ON** and the OUT LED to the position **ON, 1 000**.

To exit this menu, the equipment must be turned off and started up using the control card ON/OFF button.

To save the newly entered data, use the right and left arrow keys to go forward or backward in the menu: if any field has been modified using the up/down arrow keys, and the ON/ OFF button is pressed to turn the equipment off, the data will not be saved.





**Current Vin voltage display**

Whenever the Vin key is held pressed, the three digits on the right will show the input voltage reading to one decimal point.

If the values for any point in the pressure curve table is being edited, and the Vin key is held pressed for 3 seconds, the voltage value which is operating at this time it will be copied to that value on the table.

**By-pass valve regulation**



For safety reasons, the pressure must be discharged when the circuit exceeds the operating value (normally with a closed circuit and the pump activated), which makes the use of a discharge valve or a by-pass valve necessary.

This valve may be a manual adjustment valve, using a threaded screw, or with pneumatic control, using a pressure regulator and a pressure gauge. In the latter case, the adhesive circuit pressure has a 1:13 ratio to the pressure displayed on the pressure gauge.

To adjust the pressure with this valve model, follow these steps:

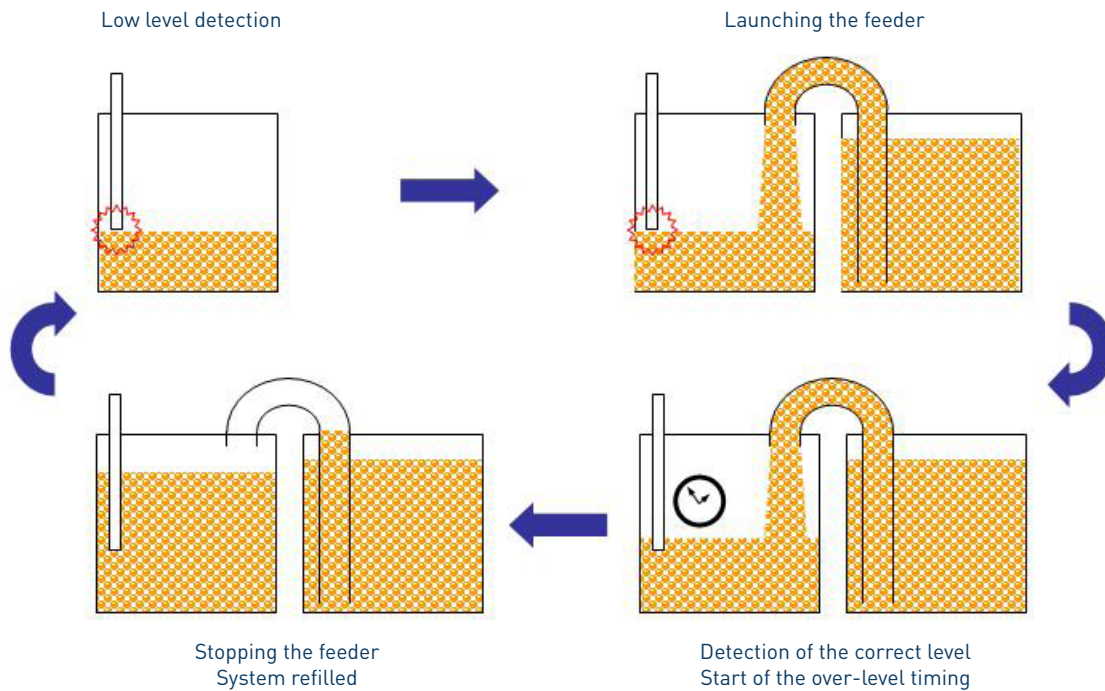
1. Unlock the pressure regulator control by pulling on it gently.
2. Turn it clockwise to increase the pressure. This will be seen reflected on the pressure gauge located next to it.

**Start up and operation of the loader**



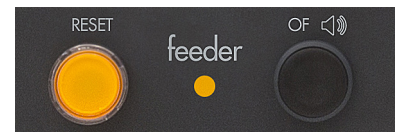
The automatic pellet feeder operates fully automatically regardless of whether the equipment temperature is OK; for example, if the equipment is running it will begin to load whenever it detects that the level is too low, even if the equipment temperature is not OK. The normal loading process is as follows, and proceeds according to the scheme below:

1. Push the switch on the front of the control panel to switch on the equipment (see figure).
2. If the melter basket level is high enough, autoloading will not be activated and the warning light and the buzzer will both be OFF.
3. If it detects that the level is too low after the level stabilisation time has passed, the electrovalve will be activated and the warning light will go on, at which point loading will begin.
4. When it detects that the level is high enough after the disconnection delay time has passed, loading will stop, and the electrovalve and the warning light will both switch off.



### Loader OFF function

If you want to disable the automatic pellet feeder, push and hold the OFF button for 3 seconds. The warning light will start to flash slowly. If you want to activate loading, push the lit "RESET" button and loading will be reactivated. OFF mode resets all existing alarms (if it goes into OFF mode with the open lid alarm activated, when loading is activated and if the lid is still open it will wait the programmed time to activate the open lid alarm).



### Colourless warning light

If the equipment has the warning light optional feature, the colourless warning light statuses are as follows:

1. OFF: the equipment's level is high enough.
2. Steady on: the equipment is loading (EV= ON)
3. Very slow flashing: load blocked status
4. Fast flashing: error status.



## Level sensor adjustments

### Sensitivity adjustment

The adjustable sensitivity of the sensor, depending on the material used and the hysteresis admitted to the operation of the vacuum feeder is factory pre-set and therefore it is NOT necessary to change. In most cases the factory setting is perfectly valid to use the vacuum feeder.

If it is necessary to correct the adjustment contact the Technical Services Meler or Area Representative.

### Level stabilisation time

The level stabilisation time is the time that passes between when the equipment detects that the level is too low and when the electrovalve is activated (EV=ON) to load adhesive. This parameter is not programmable from the timer menu; it is a set time that may only be modified by editing the program. The default time is 2 seconds.

## Programmable times using the timer

### Disconnection delay time

The extra time that the loader operates after the correct level has been reached is called the disconnection delay time. The screen shows 'T.EV 00:00s' and you can program the first digits in seconds and the digits after the ":" in hundredths of a second.

### Operating alarms

#### 1. Load error alarm

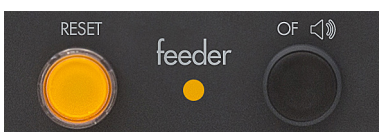
Each time the load sensor detects low adhesive a safety timer is connected (Default 90 seconds). That controls of time lap the device is charging. This timer is resetted when the sensor detects correct adhesive level.

In case that within the scheduled time (90 seg) the level sensor has not detected the correct level, the system assumes the existence of a failure in the loading circuit and connects the warning signs:

- Beep buzzer.
- Amber light blinking signal in the control panel.

Both signals remain activated while they are not restarted.

Pressing the black button the acoustic signal can be overridden.



Pressing the amber light button the system will be resetted. The security time will begin to count again.

You just have to press the reset button after having corrected the existing failures:

- Obstruction of aspiration hose.
- Mismatch of the sensitivity of the level sensor .
- Empty adhesive container.

## 2. Open lid alarm

When you open the lid of the hot-melt melter grid, the magnetic sensor gives the signal to the programmable relay to interrupt the loading procedure. Closing the lid, after 10 sec. the loading procedure restarts.

If keep the lid open longer than the time programmed into the parameter 'ALARM', the alarm is triggered and connects the warning signs:

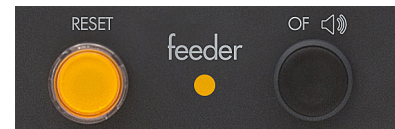
- Beep buzzer.
- Amber light blinking signal in the control panel.

Both signals remain activated while you do not act on them.

Pressing the black button the acoustic signal stopps.

Pressing the amber light reset button the system restarts except if the lid is still open.

When either of these alarms occurs, the loading cycle stops if it had not yet begun, or does not begin if the equipment is in standby. The electrovalve output is deactivated, the warning light flashes quickly and the buzzer starts. The screen shows 'T.AL 00:00m' and you can program the first digits in minutes and the digits after the ":" in seconds.



## Setting programmable times using the timer

Inside the electric cabinet there is a programmable relay to set the disconnection delay time of the electrovalve (T.EV), the error alarm (T.AL) and the standby (T.ST) for periods of inactivity.

To open the electric cabinet, loosen the screw that holds in place the door to the electric cabinet casing on the left side, and slide it out.

The following is the procedure to change the times for each element:

1. Press the ESC key for several seconds until the cursor appears under the first digit of T.EV.
2. Use the left-right arrows to move to the value you want to change. Click OK and you will see the digit in negative (light digit over a dark background).
3. Change the T.ST value with the up-down arrows.
4. Use the left-right keys to move to a different digit.
5. Once finished, click the OK key to validate the changes and exit editing mode by pushing ESC. The change is now in operation.



## Manual feeding

For production needs or if there is any fault in the level detector it is possible to do manual loading.

In this case the automatic feeder must be in inhibition mode (by pressing for 3 seconds stop button).

Once in this mode you can make a manual loading by pressing the RESET button over 2 seconds and keeping it pressed. Load contact and reset button LED will be activated and will remain active until the RESET button is released. Manual loading mode does not depend on level detector so there is a risk of overflow.

## Turning off the melter equipment

If you need to disconnect the melter equipment:

1. Turn off each pump control card installed in the unit.
2. Turn off the machine switch on the door of the electrical cabinet.
3. Reduce the pressure to 0 using by-pass valve in the case of pneumatic control.
4. Disconnect the pneumatic power to the applicators and the electrical power to the control unit programmer, if there is one.

## Conditions for good performance

1. The surface tension of the adhesive for the working temperature must be suitable so that once mixed with the gas, it is able to retain the gas bubbles in the interior.
2. The setpoint pressure must be such that the pump speed is at least 30 rpm.
3. The gas pressure must not exceed the saturation of the adhesive, that is, it should not exceed the value from which "spitting" is reproduced in the application.



## 5. MAINTENANCE

**Warning:** The melter equipment is equipped with current technology, but has certain foreseeable risks. Therefore, only allow qualified personnel with enough training and experience to operate install or repair this equipment.



The following table briefly summarizes the indications for adequate melter equipment maintenance. Always read the corresponding section carefully.

| Operation                              | Frecuency  | Refer to                  |
|--|--|---------------------------|
| External cleaning                      | Daily  | Equipment cleaning        |
| System depressurization                | Before performing maintenance tasks and repairing the hydraulic system                             | Depressurizing the system |
| Filter cleaning or changing            | - As needed (once a year minimum)<br>- With each adhesive change                                   | Filter maintenance        |
| Emptying and cleaning the tank         | - When burnt adhesive is present<br>- With each adhesive change                                    | Cleaning the tank         |
| Check for pump leaks                   | Depending on the hours of operation and the temperature and speed parameters (min. once per month) | Pump maintenance          |
| Check the lubrication (motor and gear) | Depending on the temperature and conditions of use (max. 8000 hours)                               | Motor-gear maintenance    |
| Check thermostats operating            | - Checking while working   | Thermostats maintenance   |

If the equipment does not work or works incorrectly, called to your Meler Representative or to the Main Office.

### Equipment cleaning

To continue to take advantage of the melter’s benefits and to ensure the perfect mobility of its components, it is necessary to keep all its parts clean, especially the ventilation grate on the upper part of the machine.

**Warning:** Risk of electric shock. Carelessness may result in injury or death. Clean the exterior using a cloth moistened with water. Do not use flammable liquids or solvents.



To carry out external cleaning:

- Use cleaning products compatible with polyamide materials.
- Apply the cleaning product with a soft cloth.
- Do not use sharp tools or scrapers with sharp edges.



Removing and changing exterior panels:

1. Disconnect the melter equipment.
2. Disconnect the compressed air from the equipment intake.
3. Turn counterclockwise 1/4 turn the two screws holding the panel.
4. Tilt the panel and pull it up by means of two handles placed below fixing screws.
5. To replace the panels, follow steps 1 through 4 in the reverse order.

## Depressurizing the system

Melting equipment belonging to the Macro system series include a safety valve (a by-pass valve) that limits the maximum pressure within the system, especially during continuous pumping periods with closed applicator applicators.

However, even with the motor turned off, residual pressure may exist in the circuit. This must be kept in mind when performing any operation on the hydraulic circuit.

Before disconnecting any hydraulic element or opening any distributor outlet, it is necessary to perform the following steps:

1. Disconnect the equipment switch located on the front.
2. Operate the purge valve housed in each distributor to free any residual pressure from the circuit.
3. Manually purge (or use the corresponding control command) all the applicators that have been used.

## Filter maintenance

### Pump filter

Macro system series melter equipment is equipped with a 50 mesh pump filter. The filter prevents impurities and burnt adhesive remains from being pushed out from the tank by the pump.

The adhesive flows from the inside to the outside of the filter, with impurities being trapped inside it.

When the filter is removed from its housing, all the impurities remain trapped inside, and the inside of the distributor stays perfectly clean. The filter may be cleaned or replaced directly with a new one.

No rule exists for determining when to change the filter. Several factors influence this decision:

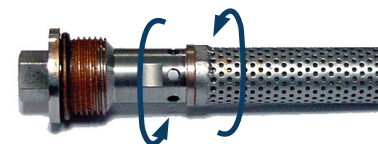
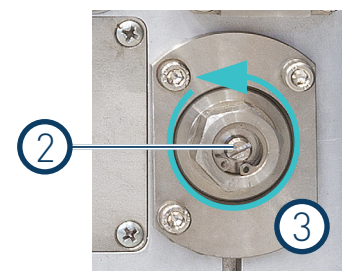
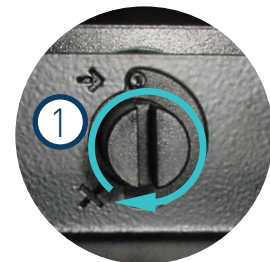
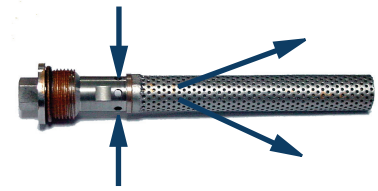
- The type and purity of the adhesives used.
- The adhesive work temperatures.
- Adhesive consumption in relation to the time it spends in the tank.
- Changes in the type of adhesive used.

In any case, we recommend checking and cleaning the filter at least every 1000 hours of operation (melter equipment turned on).

**Warning:** Always use protective gloves and glasses. Risk of burns.

To change the filter:

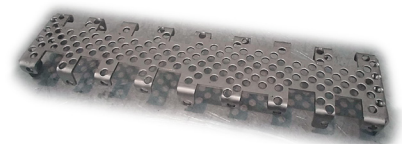
1. Close the by-pass valve from the tank to the distributor.
2. Depressurize the system using the purge valve.
3. Using a 15 mm wrench, unscrew the hexagonal filter cap and remove it.
4. Unscrew the filter cartridge in a clockwise direction.
5. Depending on the dirt inside the cartridge, clean it or dispose of it directly, abiding by any existing waste regulations.
6. Screw back the cartridge back onto the filter cap in a counterclockwise direction.
7. Replace the filter seal if damaged.
8. Place the assembly inside the distributor once more and tighten as much as possible.
9. Continue with normal operation.

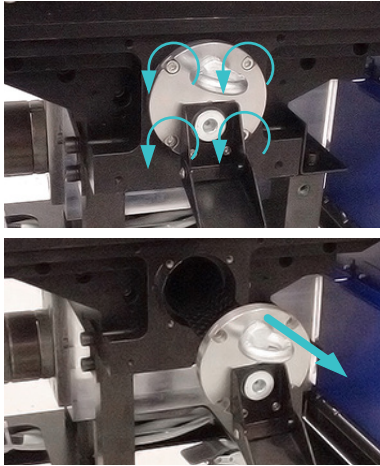


**Tank Grating**

Inside the tank, just before the entrance to the manifold, there is a grating which acts as the first filtering stage, avoiding the impurities to get into the circuit.

For being able to clean this grating, it is required to have the tank completely empty, so the melted adhesive should be removed from it using the purging system.





### Tank filter

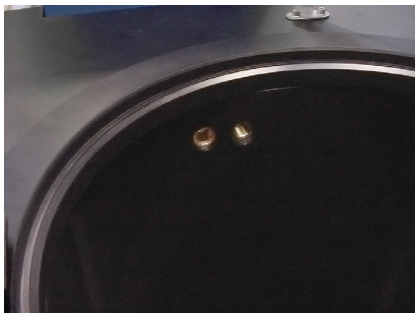
At the manifolds input there is a coarse filter inside the tank itself. This filter acts as a first step stopping dirty and parts from the outside.

This filter includes an output to empty the tank for cleaning it or changing the adhesive. Therefore to clean the filter the tank must be empty previously.

To remove the filter:

1. Remove four screws that fix the assembly.
2. Take out the filter using the holding ring at the end of the filter.
3. Clean the grid of dirty and burnt adhesive.
4. Replace the o-ring if it is damaged.
5. Put the assembly into the tank fixing it with the four screws.

### Cleaning the tank



The hot-melt tank must be cleaned on occasion to maintain its fusion and anti-adherence properties. The tank is covered on the inside with PTFE and inclined enough to aid unloading the hot-melt and to avoid it from being retained inside when consequential burning occurs.

Furthermore, when adhesives are mixed, reactions may occur between them, causing a degeneration and thus problems in unloading in the direction of the pump.

Therefore, it is recommended to clean the deposit every time that:

- A change is made to a different type of hot-melt.
- Too much burnt material is generated in its interior.

### Changing adhesive type

1. Use up as much of the adhesive as possible.

If it is necessary to unload the adhesive without having used it up as much as possible, follow the instructions in the section 'Emptying the tank'.

2. Clean the remains of hot-melt adhesive on the inside of the tank.

**Warning:** Use appropriate protective equipment for high temperatures.

3. Add the appropriate type and quantity of the new adhesive, wait for it to melt and pump at least one full tank through the system (hoses and applicators).



**Cleaning burnt adhesive**

1. Empty the tank directly (see the section 'Emptying the tank') to prevent the burnt material from passing through the pump circuit.
2. Clean the adhesive remains and burnt material inside the tank. Do not use sharp objects that might damage the inside coating.

**Warning:** Use appropriate protective equipment for high temperatures.

3. Add the appropriate type and quantity of adhesive and wait for it to melt.
4. Remove the filter cartridge and clean it, if necessary (see the section 'Filter maintenance').
5. Reassemble the filter without the cartridge.
6. Pump a minimum of one tank through the distributor output marked number 1.
7. Remove the filter and attach it to the corresponding cartridge. Reinstall it in the distributor.
8. Refill the tank with adhesive, wait for it to melt and continue working as usual.



**Warning:** Whenever you handle the filter or any other element subject to pressure, you must always perform a system depressurization first (see the corresponding section)



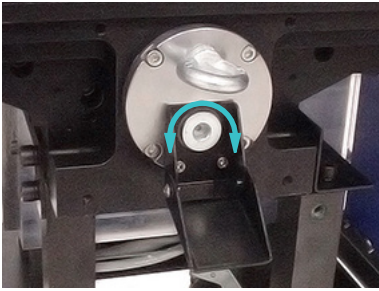
**Emptying the tank**

During normal maintenance activities, it is recommended, and sometimes necessary to empty the tank directly, without passing the adhesive through the pump system.

To do so, follow these instructions:

1. Maintain the tank at operating temperature.
2. Remove the side shroud cap.
3. Para acceder a la rampa de evacuación y bajarla no es necesario soltar la manta aislante pero para mayor comodidad para realizar esta operación se recomienda soltarla. Para ello, soltar los remaches de la zona indicada y los muelles tensores tanto de esta cara como la de su opuesta.

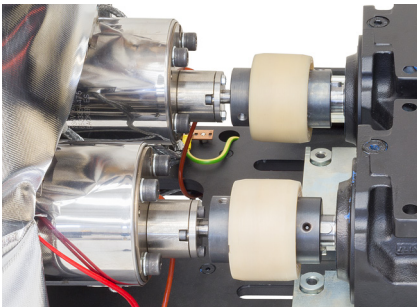




4. Lower the discharge ramp located next to the tank and put an appropriate container in place.
5. Unscrew the emptying plug and allow the adhesive to flow freely into the container.
6. Once completely empty, clean the any remaining adhesive from around the output hole and ramp.
7. Replace the plug.
8. Raise the discharge ramp and replace the side shroud cap.



**Warning:** Use appropriate protective equipment for high temperatures.



## Pump maintenance

### Inspecting for leaks

The pump is equipped with a gasket system on the shaft to prevent adhesive from leaking through it. On occasion, some adhesive may leak out, which makes it necessary to retighten the screws or change the gasket.

**Warning:** Changing the gasket with a hot pump.



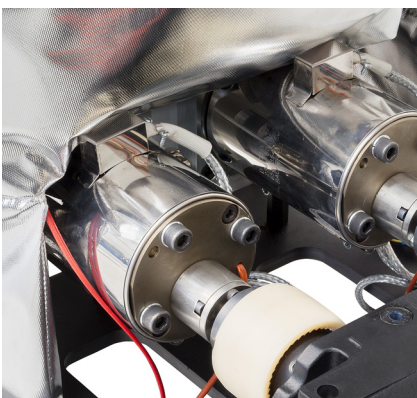
Release the shaft coupling from the pump. Retighten or remove the screws that hold the gasket in place. Replace the gaskets and reassemble the parts.

Occasionally, as a result of the system's heating-cooling cycles, it may be necessary to retighten the screws.



**Warning:** Always wear protective gloves and goggles. Risk of burns.

### Changing the pump probe



The pump carries a probe attached to a metal part on one of its faces. To release the probe use an Allen wrench 3 on the indicated screw. If the probe does not come out, at the bottom of the metal part there is a screw from which the probe can be pushed upwards to come out.

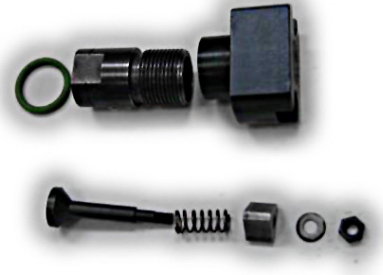
**Gas injection valve cleaning**

Once depressurised the system and at a pump temperature of around 80-100 °C, release the two screws securing the gas valve to the pump.

Then remove the gas valve, and disassemble it.

**Note:** The thread between the two main pieces is left thread.

Clean all parts in case they have adhesive residues and reassemble as shown in the picture.



**Motor-gear maintenance**

**Cleaning the motor fan**

Periodically inspect the condition of the motor fan and its vent screen.

If dust has accumulated, blow gently with air to clean it (remove the protective cover, if necessary).

**Checking the lubricant**

The gear reducers are delivered filled with synthetic grease for lubrication -free of outside contamination- 'for life'. Ambient temperature 0 ÷ 40 °C, with peaks of as low as -20 °C and up to +50 °C.

Use only those lubricants recommended by the manufacturer. The use of other types may cause premature wear or damage to the gear reducer.

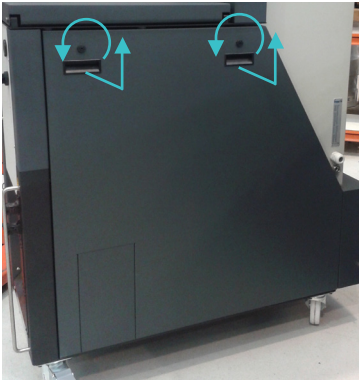
If the unit features a 0.375 kW gear motor, its gearbox will have a capacity for approximately 0.19 kg of lubricating grease. In the case of 0.55 kW, 0.75 kW and 1.1 kW gear motors, the gearboxes need at least 1.1 litres of lubricating oil.



**Recommended lubricants**

| Brand | Type of grease     |
|-------|--------------------|
| IP    | Telesia Compound A |
| SHELL | Tivela Compound A  |
| MOBIL | Glygoyle Grease 00 |

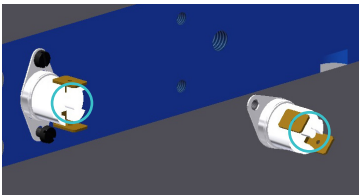
| Brand  | Type of oil          |
|--------|----------------------|
| KLÜBER | Klübersynth GH 6-220 |
| SHELL  | Tivela Oil S 220     |
| MOBIL  | Glygoyle 30          |



## Thermostats maintenance

If one of the two existing thermostats is deactivated, follow these instructions to reset them:

1. Remove the side plate, as shown in the image.
2. Lift the insulating blanket and locate the thermostats.
3. After the blanket has been lifted off the thermostats, identify the thermostat that has been deactivated and press its corresponding button to reset it (see Figure).





## 6. TECHNICAL CHARACTERISTICS

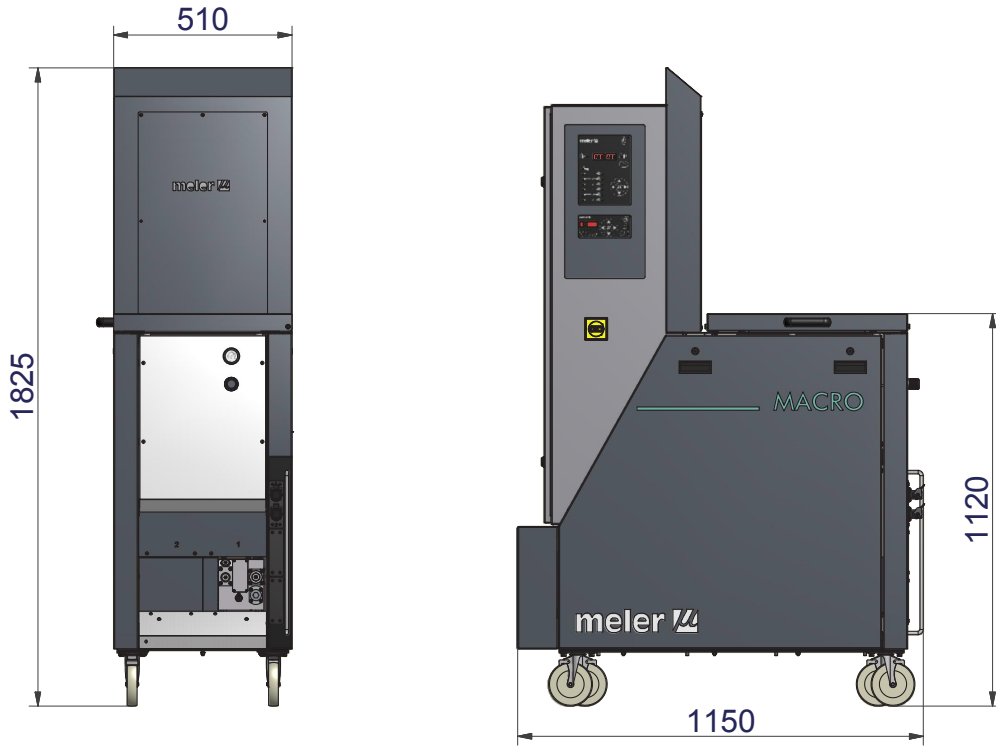
### General

|                                  | <b>35 liters / 50 liters</b>      | <b>120 liters</b>                 |
|----------------------------------|-----------------------------------|-----------------------------------|
| Tank capacity                    |                                   |                                   |
| Pumping rate (*)                 |                                   |                                   |
| single pump                      | 1.6 ; 3.3; 6.6 cc/rev             | 1.6 ; 3.3; 6.6 cc/rev             |
| Melting rate (*)                 | 35kg/h - 50 kg/h                  | 120 kg/h                          |
| Number of pumps                  | Up to 4 single pumps              | Up to 4 single pumps              |
|                                  | 2 per pump                        | 2 per pump                        |
| Number of hydraulic outputs      | 2 or 4 outputs (Standard version) | 2 or 4 outputs (standard version) |
| Number of electric outputs       | 40 to 200°C (100 to 392°F)        | 40 to 200°C (100 to 392°F)        |
| Temperatures range               | RTD ±0.5°C (±1°F)                 | RTD ±0.5°C (±1°F)                 |
| Temperature control              | Pt-100 or Ni-120                  | Pt-100 or Ni-120                  |
| Max. working pressure (at 6 bar) | 80 bar (1.160 psi)                | 80 bar (1.160 psi)                |
| Max. power supply                |                                   |                                   |
| one single pump                  | 4.260 W / per phase (2 outputs)   | 6.060 W / per phase (2 outputs)   |
| two single pumps                 | 5.560 W / per phase (4 outputs)   | 8.260 W / per phase (4 outputs)   |
| four single pumps                | 6.720 W / per phase (4 outputs)   | 9.010 W / per phase (4 outputs)   |
| External functions               | Temperatures ok output            | Temperatures ok output            |
|                                  | Low level signal                  | Low level signal                  |
|                                  | Standby input                     | Standby input                     |
|                                  | External outlet inhibitor         | External outlet inhibitor         |
|                                  | Motor start up input              | Motor start up input              |
|                                  | Foam Pump pressure control input  | Foam Pump pressure control input  |
|                                  | Failures in pumping card output   | Failures in pumping card output   |
|                                  | Low gas alarm output              | Low gas alarm output              |
|                                  | External loader adhesive output   | External loader adhesive output   |
| Electrical requeriments          | 3N ~ 400V 50/60 Hz + PE           | 3N ~ 400V 50/60 Hz + PE           |
| Workplace temperature            | 0 to 40 °C                        | 0 to 40 °C                        |
| Dimensions (LxWxH)               | 1150x510x1825                     | 1150x875x1825                     |

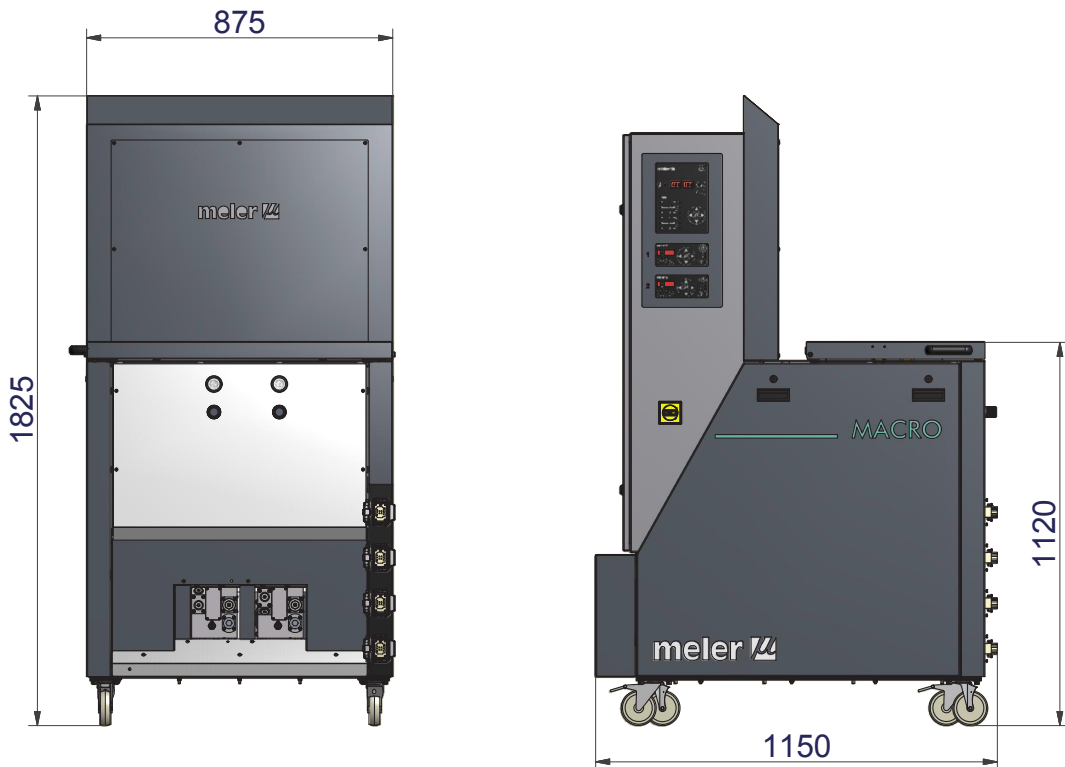
(\*) Under standard conditions.

### Dimensions

Macro 50



Macro 120



## 7. ELECTRICAL DRAWINGS

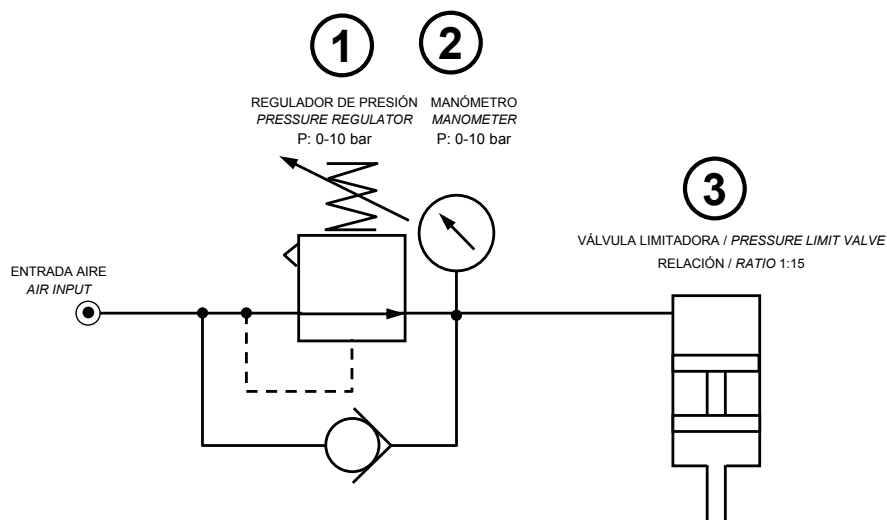
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## 8. PNEUMATIC DIAGRAMS

### Components list

#### Pneumatic by-pass valve control system

- 1 Pressure regulator 1-10 bar.
- 2 Pressure gauge 0-10 bar.
- 3 Pneumatic limit control valve.



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## 9. SPARE PARTS LIST

The most common spare parts list of the Macro Foam series adhesive melters is shown in this chapter to give you a quick and sure guideline to choose them.

The spare parts are listed by groups in a natural order as they are located on the units.

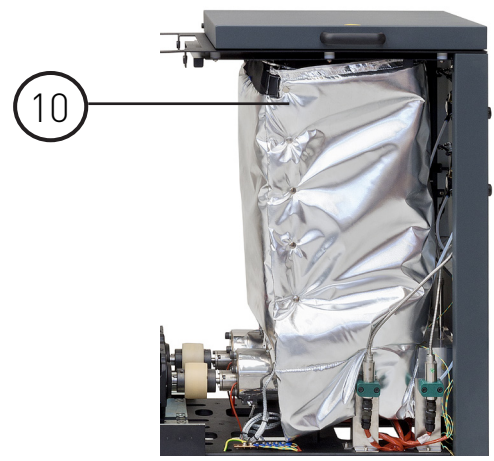
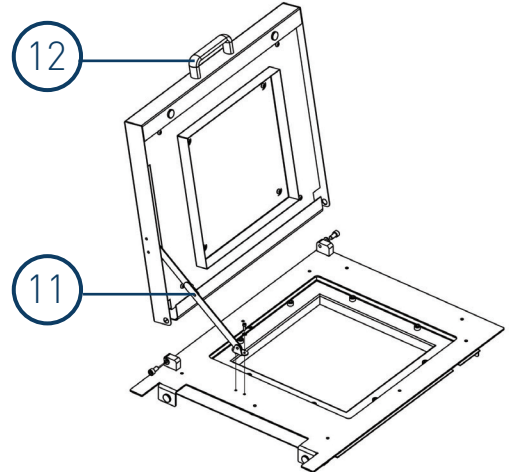
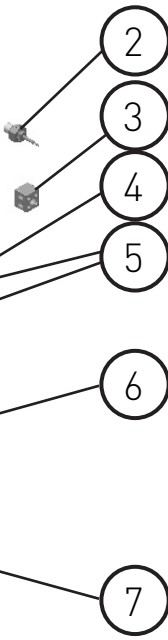
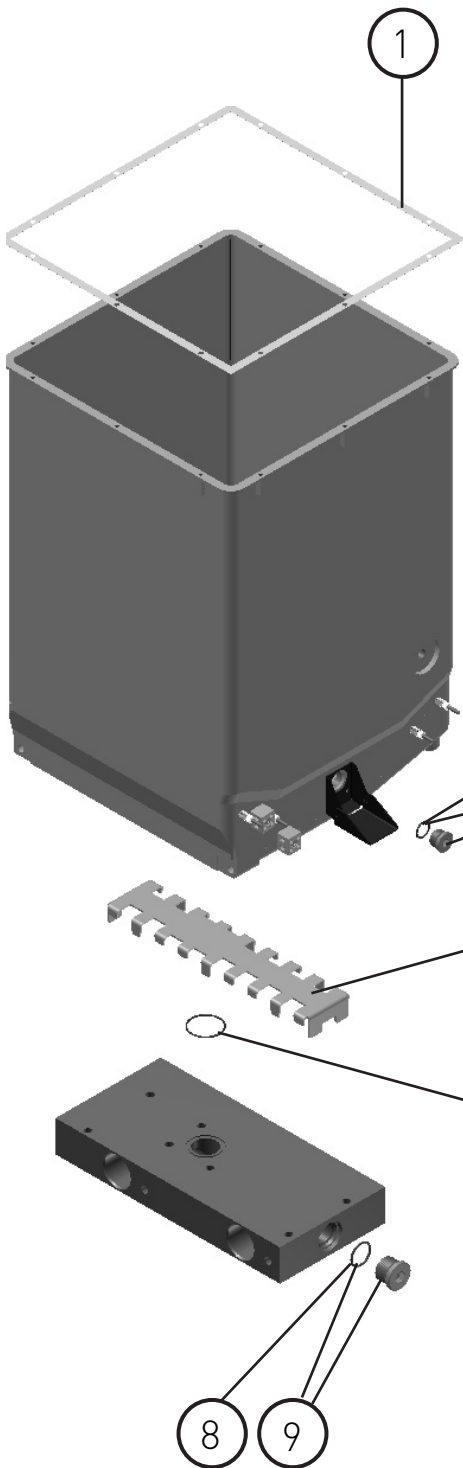
As a visual help the manual includes drawings of the components with a drawing number to easy find them through the list.

The list gives you the part number and description, showing if it is necessary, if the part number belongs to a 35, 50 or 120 liters unit.



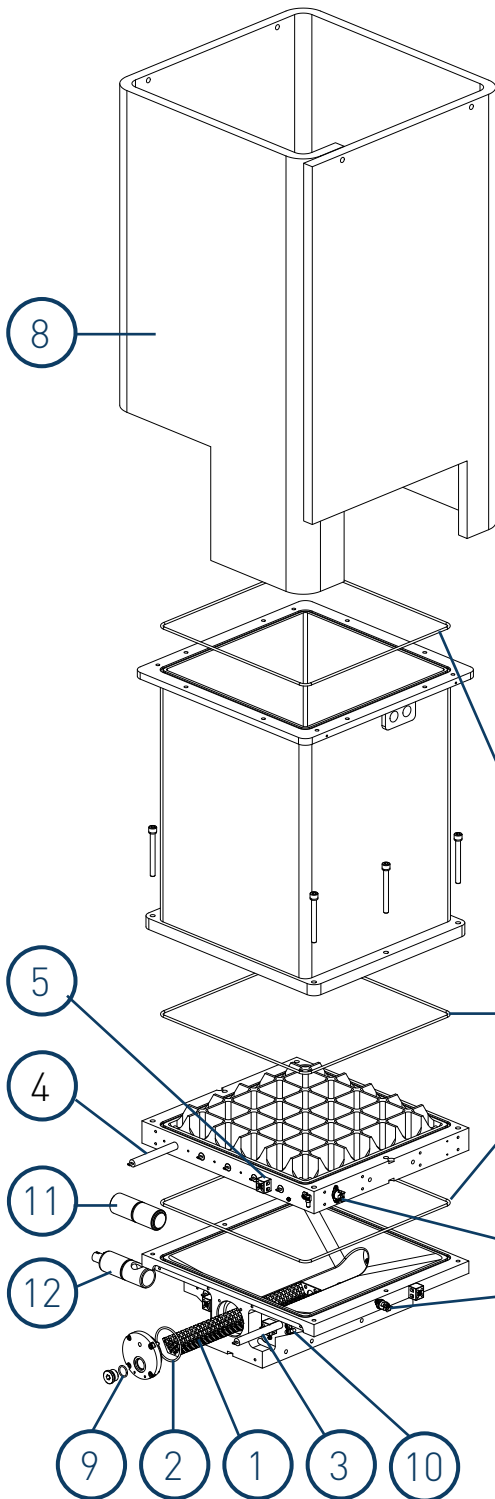
**A. COVER- TANK ASSEMBLY MACRO FOAM 35**

| Nº | Ref.      | Description                        |
|----|-----------|------------------------------------|
| 1  | 150113240 | Tank seal PTFE 7X2,5               |
| 2  | 150110140 | Capacitive detector                |
| 3  | 10030007  | Current connection strip           |
| 4  | 150010130 | O-ring Ø16x2                       |
| 5  | 150027960 | Pump 3/4" plug 16h UNF with O-ring |
| 6  | 150028830 | Tank grid (micrón 32)              |
| 7  | 150090360 | O-ring 37X2 VITON                  |
| 8  | 150026420 | O-ring M27X2                       |
| 9  | 150026410 | Plug M27X2 with O-ring             |
| 10 | 312000733 | Tank insulation mantle (35l)       |
| 11 | 150028120 | Left hinge 150x150                 |
| 12 | 150028110 | Fixing handle 117mm                |
|    | 10020011  | Sensor Pt-100                      |
|    | 150022650 | Sensor Ni-120                      |
|    | 150114620 | Safety thermostat 230 °C           |

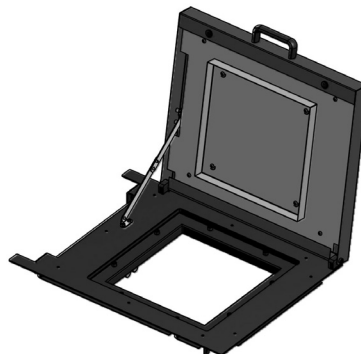
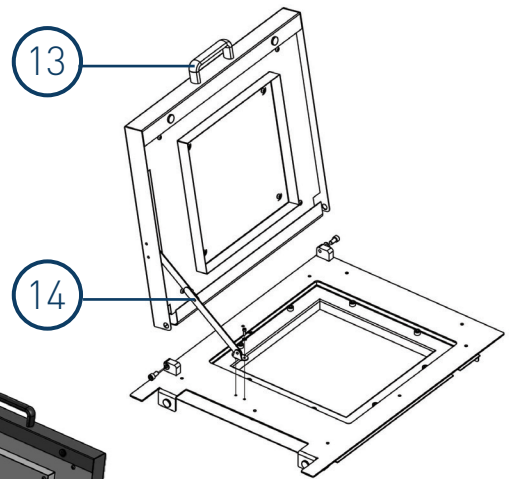




**B. COVER- TANK ASSEMBLY**

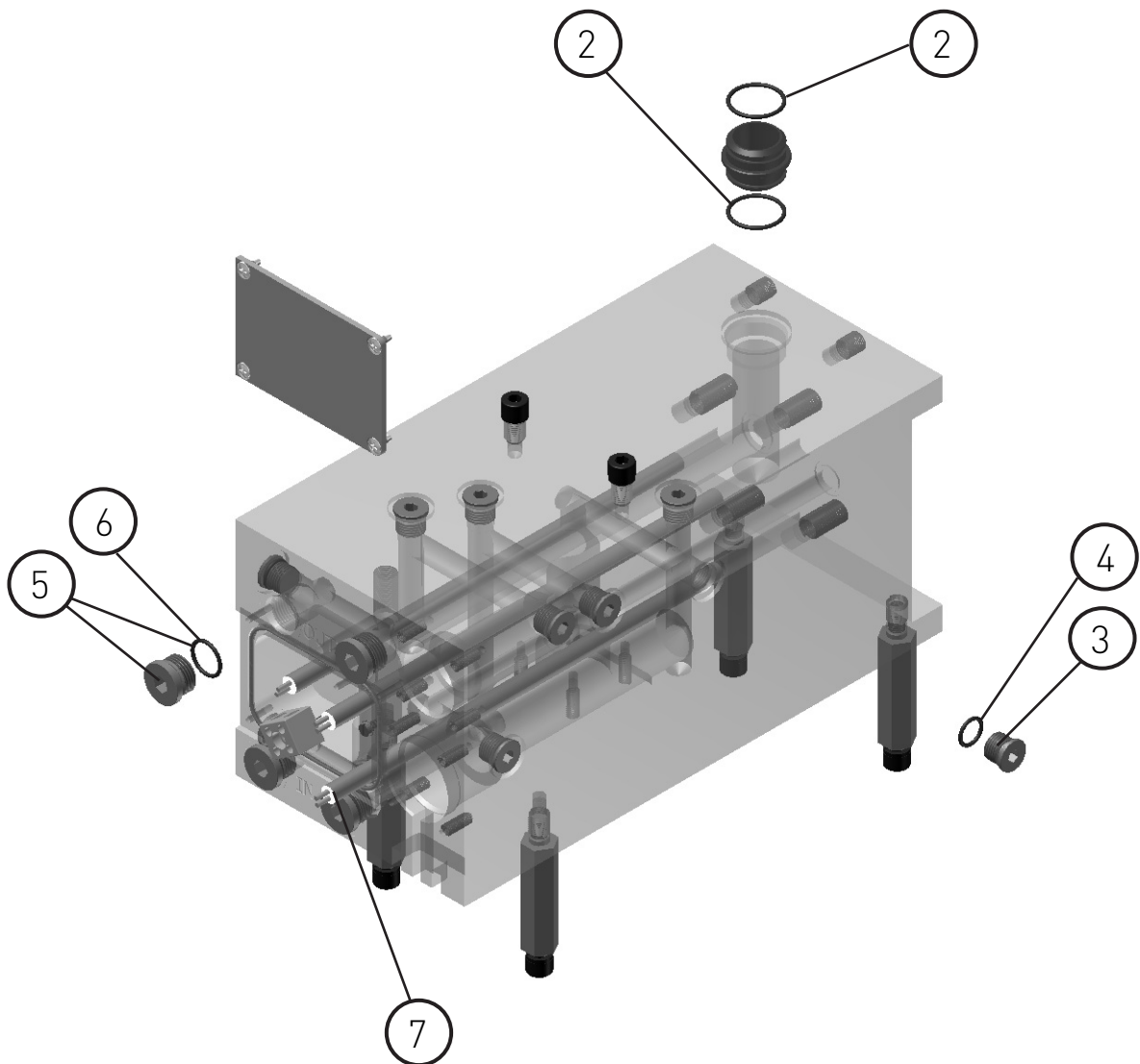


| N° | Ref.      | Description                       |
|----|-----------|-----------------------------------|
| 1  | 150027980 | Hopper tank grid                  |
| 2  | 150027990 | O-ring 54x3                       |
| 3  | 150028000 | Heating element 12.5x250 300W     |
| 4  | 150028010 | Heating element 12.5x350 900W     |
| 5  | 10030007  | Current connection strip          |
| 6  | 150028200 | Tank seal (50l)                   |
| 6  | 150028210 | Tank seal (120l)                  |
| 7  | 150114620 | Safety thermostat 230 °C          |
| 8  | 150028030 | Tank insulation mantle (50l)      |
| 8  | 150118100 | Tank insulation mantle (120l)     |
| 9  | 150010130 | O-ring Ø16x2                      |
| 10 | 10020011  | Sensor Pt100                      |
| 10 | 150117560 | Sensor Ni120                      |
| 11 | 150028230 | Tank isolation blind valve o-ring |
| 12 | 150025460 | Tank isolation valve o-ring       |
| 13 | 150028110 | Fixing handle 117mm               |
| 14 | 150028120 | Left hinge 150x150                |



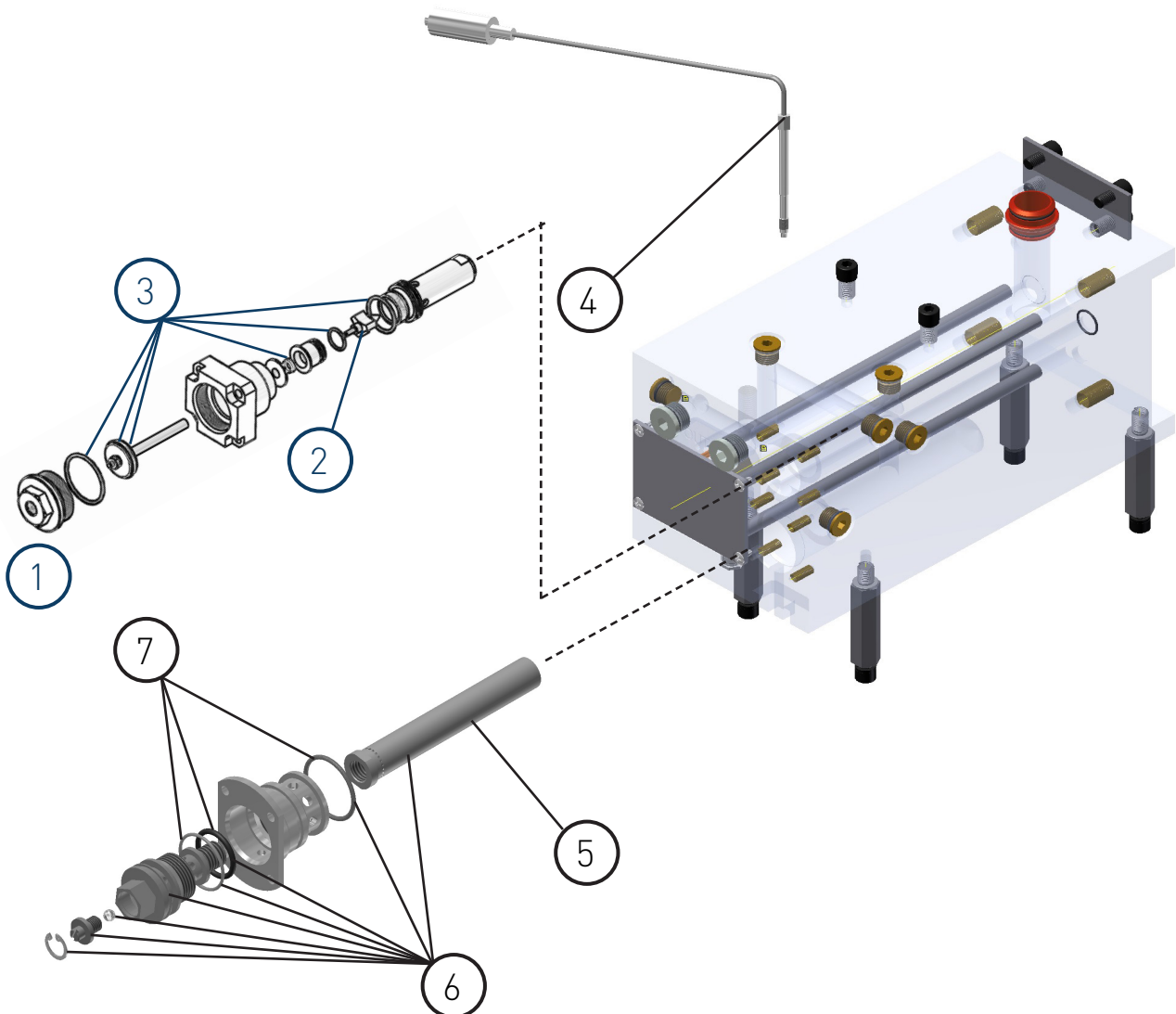
**C. DISTRIBUTOR ASSEMBLY**

| N° | Ref.      | Description                        |
|----|-----------|------------------------------------|
| 1  | 150113200 | O-ring Ø80 x 2                     |
| 2  | 150023950 | O-ring 24x2                        |
| 3  | 10100082  | Pump plug                          |
| 4  | 10100083  | Pump plug O-ring                   |
| 5  | 150027960 | Pump 3/4" plug 16h UNF with O-ring |
| 6  | 150041920 | O-ring 3/4"                        |
| 7  | 150027970 | Heating element 3/8" x 254 630W    |
| 8  | 10020011  | Sensor Pt100                       |
| 8  | 150090300 | Sensor Ni-120                      |



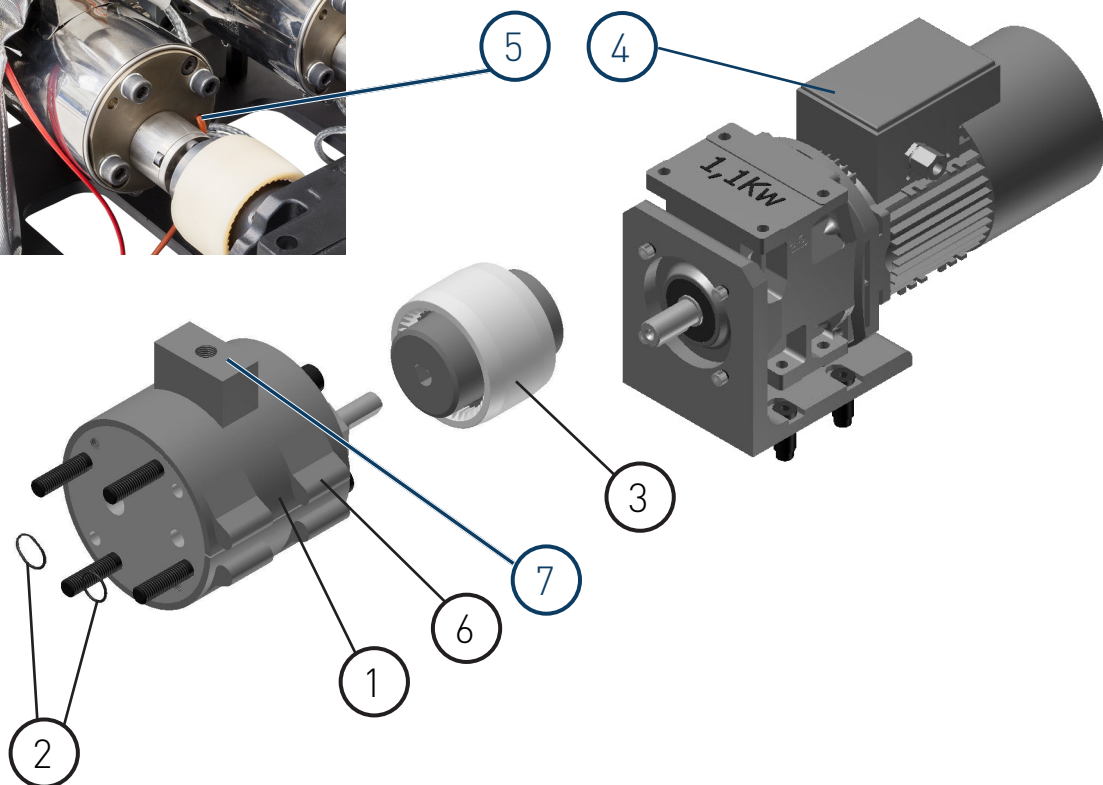
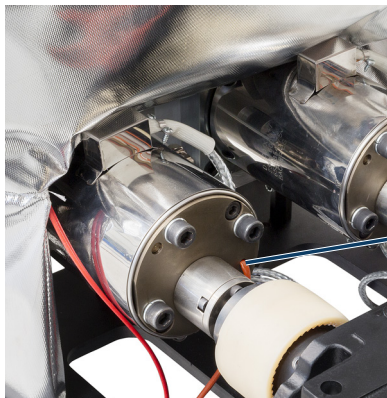
## D. FILTER/PURGE AND PRESSURE VALVE ASSEMBLY

| N° | Ref.      | Description                       |
|----|-----------|-----------------------------------|
| 1  | 150026270 | Pneumatic pressure valve assembly |
| 2  | 150026060 | Pressure valve closure needle     |
| 3  | 150026300 | Pneumatic pressure valve o-rings  |
| 4  | 150091090 | Pressure transducer               |
| 5  | 150029250 | Distributor filter cartridge      |
| 6  | 150113210 | Distributor filter assembly       |
| 7  | 150113220 | Distributor filter o-rings kits   |
| -  | 150110770 | Pressure gauge                    |
| -  | 10110031  | Pressure regulator                |
| -  | 150025260 | Gas pressure regulator            |



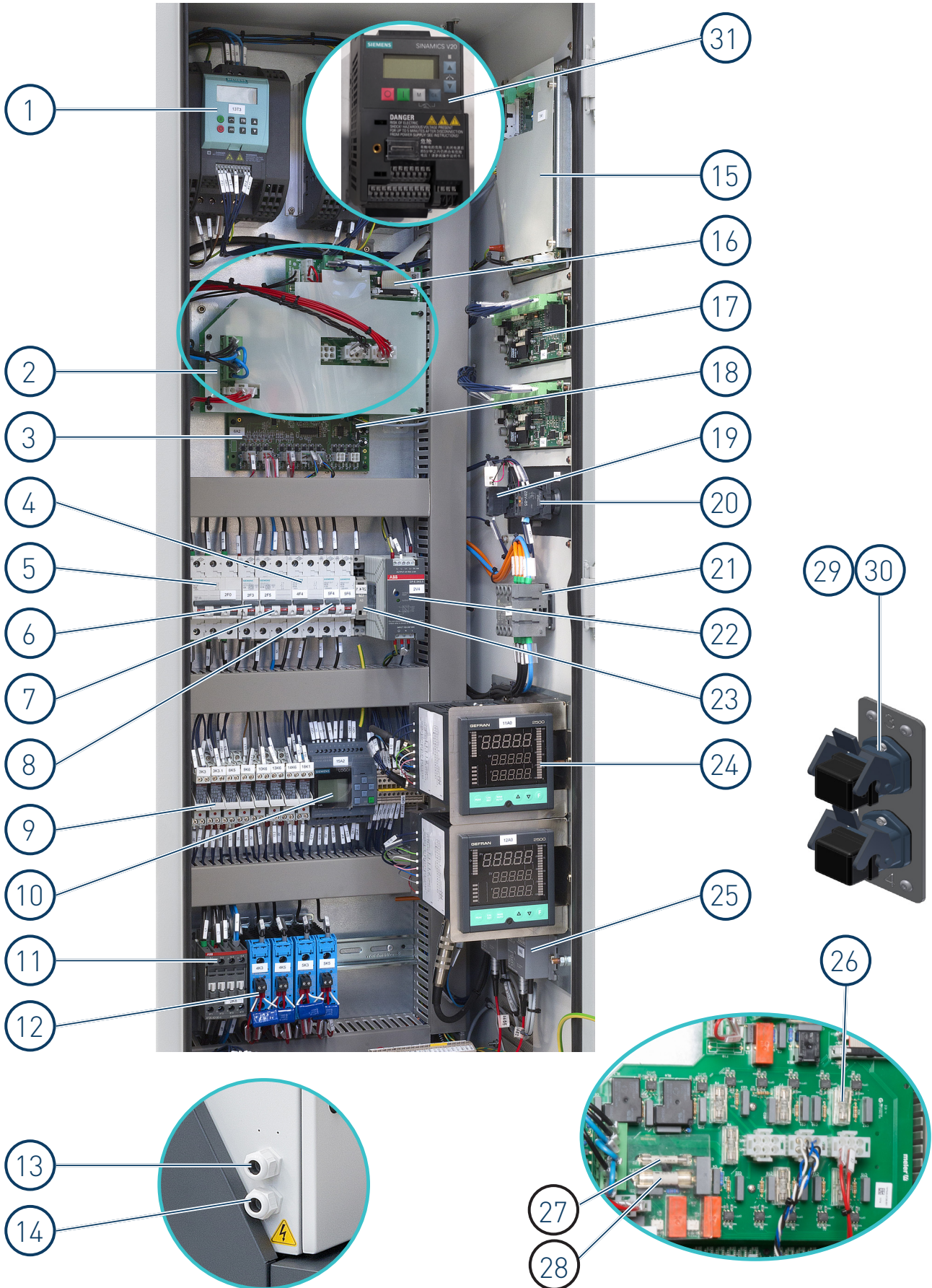
**E. GEARED MOTOR-PUMP ASSEMBLY**

| N° | Ref.      | Description                             |
|----|-----------|---|
| 1  | 150119570 | Single gear pump 6.6 cc/rev V1 2016     |
| 1  | 150119100 | Single gear pump 3.3 cc/rev V1 2016     |
| 1  | 150119580 | Single gear pump 1.6 cc/rev V1 2016     |
| 1  | 150119350 | Single gear pump 3.3 cc/rev 1:2.5 2016  |
| 1  | 150119980 | Single gear pump 9.9 cc/rev 1:2.5 2016  |
| 2  | 150111620 | Single pump o-rings Kit                 |
| 3  | 150113170 | Single pump motor coupling              |
| 4  | 150028080 | 0,375kW geared motor with booster fan   |
| 4  | 150029700 | 0.55kW geared motor with booster fan    |
| 4  | 150111330 | 0.75kW geared motor with booster fan    |
| 4  | 150110880 | 1,1kW geared motor with booster fan     |
| 5  | 10020011  | Sensor Pt-100                           |
| 5  | 150118560 | Sensor Ni-120                           |
| 6  | 150127250 | Heating element 400W 230V Pump 1.6 2016 |
| 6  | 150119360 | Heating element 450W 230V Pump 3.3 2016 |
| 6  | 150118660 | Heating element 600W 230V Pump 6.6 2016 |
| 6  | 150127260 | Heating element 720W 230V Pump 9.9 2016 |
| 7  | 150118500 | Foam pump gas inlet valve               |



## F. ELECTRICAL CABINET

| N° | Ref.      | Description  |
|----|-----------|--|
| 1  | 150091370 | Motor inverter G110 0.55kW                         |
| 1  | 150091580 | Motor inverter G110 1.1kW                          |
| 1  | 150091590 | Motor inverter G110 1.5kW                          |
| 2  | 150113680 | Power control board 6 outputs                      |
| 3  | 150024710 | Sensor board Pt100/Ni120                           |
| 4  | R0007825  | Circuit-breaker 2P 16A                             |
| 5  | 150110700 | Circuit-breaker 3P 32A                             |
| 6  | 150024110 | Circuit-breaker 1P 4A                              |
| 7  | 150021010 | Circuit-breaker 2P 16A (35 / 50)                   |
| 7  | 150024440 | Circuit-breaker 4P 63A (120)                       |
| 8  | 150024090 | Circuit-breaker 1P 10A                             |
| 9  | 150091610 | Relay 2 contacts 24V DC                            |
| 10 | 150117130 | Programmable relay LOGO                            |
| 11 | 150118360 | Contact 4P 45A 24V DC                              |
| 12 | 150028160 | Solid state relay 30A 230V                         |
| 13 | 150119180 | PG 13.5 Cable gland                                |
| 14 | 150028140 | PG 21 Cable gland                                  |
| 15 | 150113660 | Control board                                      |
| 16 | 150028150 | Control to power board ribbon cable assembly 600mm |
| 17 | 150117110 | Pumping control card                               |
| 18 | 150024740 | Control to sensor board cable assembly             |
| 19 | 150022510 | Back button  |
|    | 150022520 | Contact holder                                     |
| 20 | 150022480 | Yellow button with LED                             |
|    | 150022490 | Yellow LED   |
|    | 150022520 | Contact holder                                     |
| 21 | 150118130 | Main switch 4P 40A (35 / 50)                       |
| 21 | 150118140 | Main switch 4P 63A (120)                           |
| 21 | 150118150 | Main switch handle                                 |
| 22 | 150091600 | DC power supply 24V                                |
| 23 | 150119590 | Protection switch VDC 4A                           |
| 24 | 150091100 | Pressure regulator                                 |
| 25 | 150110150 | Rechner KXA-5-1-P-A amplifier                      |
| 26 | 10010300  | Fuse 6,3A 5x20                                     |
| 27 | 150028860 | Fuse 6.3A 6x32                                     |
| 28 | 150021540 | Fuse 16A 10x38                                     |
| 29 | 16010003  | 8 pin female connector (base housing)              |
| 30 | 150020720 | 12 pin female connector (base housing)             |
| 31 | 150126410 | Motor inverter V20 0.55kW                          |
| 31 | 150127100 | Motor inverter V20 1.1kW                           |
| 31 | 150127140 | Motor inverter V20 1.5kW                           |



# EC DECLARATION OF CONFORMITY

*Original Declaration*

The manufacturer,

**Focke Meler Gluing Solutions, S.A.**  
Pol. Los Agustinos, c/G, nave D-43  
E-31160 Orkoien, Navarra - Spain  
— Focke Group —

declaring that the machinery, Type:

Model:

Serial Number:

fulfils all the relevant provisions of the Directive 2006/42/EC on machinery,

and the object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- Directiva 2014/30/EU on the harmonisation of the laws of the Member States relating to electromagnetic compatibility .
- Directiva 2011/65/EU and its amendments on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

In reference to the harmonised standards:

- EN ISO 12100:2010. Safety of machinery - General principles for design - Risk assessment and risk reduction.
- EN ISO 13732-1:2008. Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces.
- EN ISO 13849-1:2015. Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.
- EN ISO 14120:2015. Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards.
- EN 60204-1:2006, +/A1:2009, +/AC:2010. Safety of machinery - Electrical equipment of machines - Part 1: General requirements.
- EN 61000-6-2:2005, +/AC:2005. Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments.
- EN 61000-6-4:2007, +/A1:2011. Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.
- EN 50581:2012. Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The person authorised to compile the technical file is the manufacturer established at the above address in this declation.

Signed in Orkoien, to date:



**Javier Aranguren**  
Managing Director

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For more information speak with your Focke Meler representative:



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*Focke Group*



Management System  
ISO 9001:2015



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