Translation of the
Original Instructions

Hot melt adhesive tank system

HB 6000

BÜHNEN
KLEBESYSTEME

HB6000XM (Release 07-2013)

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1 Safety Guidelines

General

The information contained in this section applies not only to everyday machine 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 machine or the rest of the installation.

Before beginning work on the machine, 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. They should always be accessible to the operating and maintenance personnel.

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 machine 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.

Mechanical components

The melter/applicator equipment installation uses moveable parts that may cause damage or injury. 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 machine 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.

Electrical components

The system operates with a one-phase current (230 V / 50 Hz) or a three-phase current (3 x 400 V + N / 50 Hz) at a certain rated 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 vecinity.

Hydraulic components

Take the usual precautionary measures for systems under pressure.

The melter/applicator equipment includes an automatic valve depressurization system. 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.

Thermal components

The entire system operates with temperatures reaching up to 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, immediately cool the affected area with clean, cold water. Seek medical attention as soon as possible from the company's medical service or the nearest hospital. Do not try to remove the adhesive material from the skin.

Noise

The noise level of the system is well below allowable levels (<70 dB(A)), and therefore does not present a specific risk to be taken into consideration.

Materials

'*Bühnen*' 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.

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

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.

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2 INTRODUCTION

In this manual you will find information about the installation, use and maintenance of the hot-melt adhesive melter/applicator in *Bühnen's "HB 6000"* series.

The '*HB 6000*' series includes the 4, 8 and 16 liter range of hot-melt adhesive melters/applicators.

Most of the photographs and illustrations that appear in this manual refer to the 4-liter '*HB 6040*' melter/applicator. 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 '*HB 6000*' series (HB 6080, HB 6160).

Description

The '*HB 6000*' are designed for use with '*Bühnen*' hoses and guns 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/applicators in the '*HB 6000*' series are designed to be used in the following conditions:

- Hot-melt adhesive fusion and pumping at temperatures up to 200°C (392°F)
- Use of hot-melt melters/applicators with '*Bühnen*' accessories
- Installation of hot-melt melters/applicators 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/applicators in non-explosive, nonchemically aggressive environments
- Use of hot-melt melters/applicators 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 '*HB 6000*' series hot-melt melters/applicators must be used for their intended uses and never in the following conditions:

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

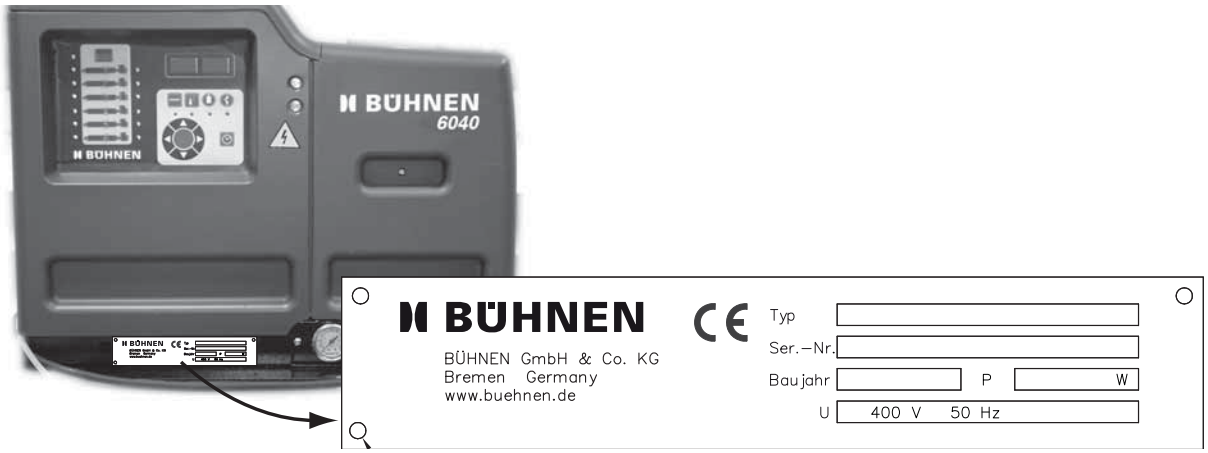
Modes of operation

The '*HB 6000*' series hot-melt melters/applicators may be used in all of the following modes:

- **Work mode**
  The hot-melt melter/applicator 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 application guns are activated.
- **Standby mode**
  The hot-melt melter/applicator 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/applicator detects a malfunction and warns the operator of this event. The pump remains deactivated.
- **Stop mode**
  The hot-melt melter/applicator 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.

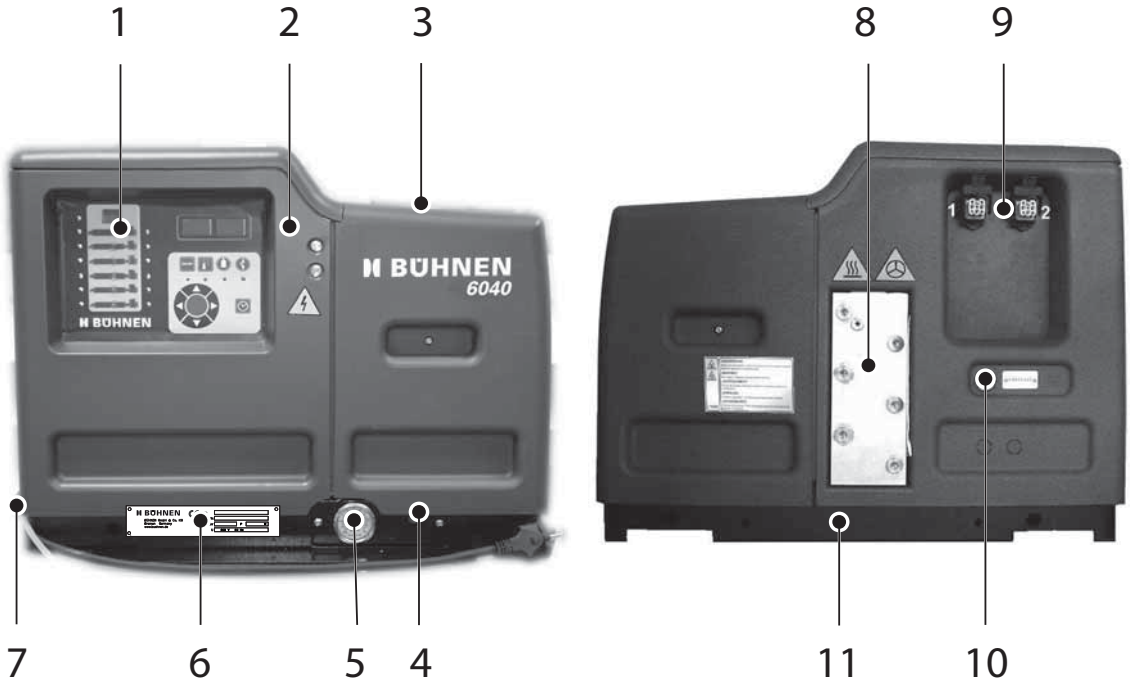
Hot-melt melter/applicator identification

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/applicator.

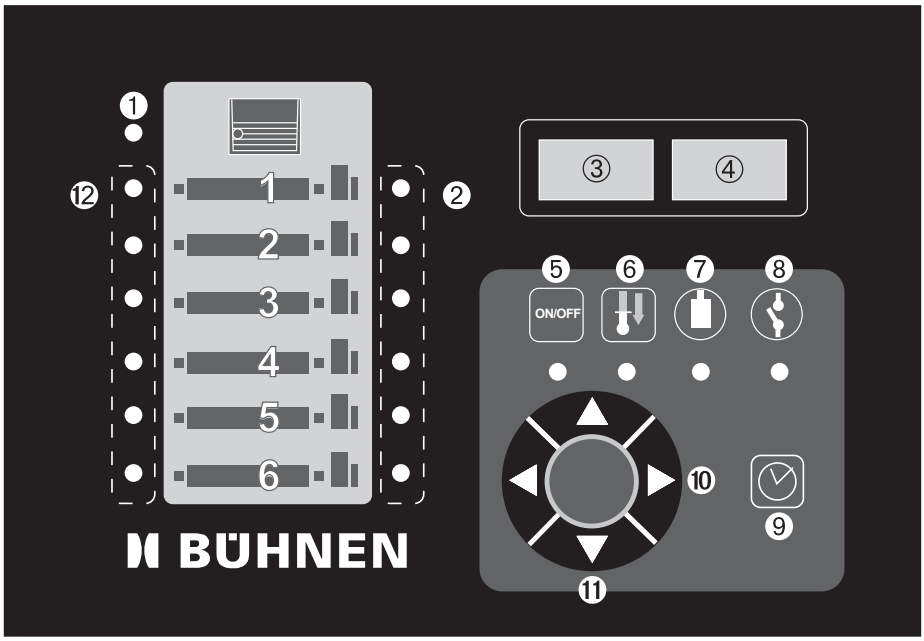


This and other technical information will be found on the identification plate located on the side of the lower part of the hotmelt melter/applicator.

Main components



1. Front control card
2. Access hatch to the electric/pneumatic area and for changing the filter
3. Tank access cover
4. Pump air pressure regulator
5. Air pressure gauge
6. Characteristic plate
7. Main switch and electrical hook-up
8. Hose output distributor (up to 6 hydraulic connections)
9. Hose-gun electrical connections
10. Compressed air hook-up (Max. 6 bar)
11. Machine-mounted base plate



1. Tank indicator LED
2. Gun indicator LED
3. Temperature set point
4. Actual Temperature
5. ON/OFF switch
6. Standby function
7. Temperature OK LED
8. Pump operation LED
9. Time scheduling
10. Left/right button - channel selection
11. Up/down button - temperature modification
12. Hose indicator LED

Optional Equipment

To increase the functionality of the hot-melt melters/applicators, the following optional components may be added:

- Channel control card that allows the activation and deactivation of each output independently from the main machine or an auxiliary control unit
- Pressure compensation control system that allows the regulation of the hot-melt applicator's pneumatic pressure, and therefore the output flow, depending on the application speed variations
- Air filtering system for matching the air supply conditions to the hot-melt melter/applicator requirements (clean, dry, and without lubrication)

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3 INSTALLATION

Warning:

The melters/applicators 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.

PREPARATION

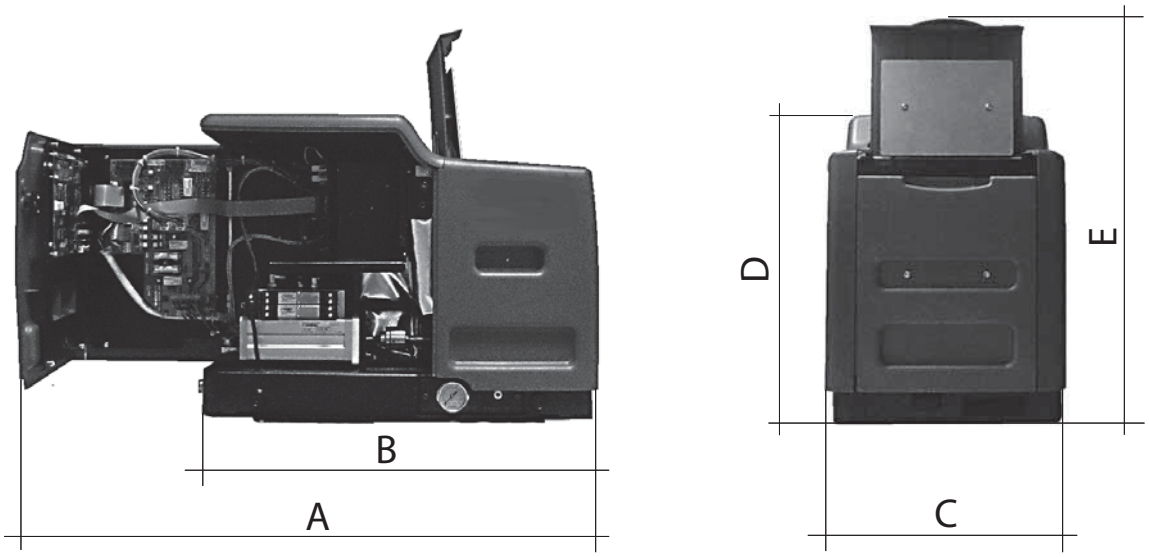
The '*HB 6000*' series melters/applicators are delivered with all the materials necessary for their installation. However, some components must be provided by the user himself, according to the location and connections in each particular installation:

- Anchoring screws for the melter/applicator equipment
- Multicore cable for external electrical control

INSTALLATION REQUIREMENTS

Before installing '*HB 6000*' series melter/applicator 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/applicator equipment being installed.

FREE SPACE



Item	Description	Dimensions	
A	Equipment length with door open	HB 6040 HB 6080 HB 6160	810 mm 886 mm 968 mm
B	Equipment length	HB 6040 HB 6080 HB 6160	560 mm 636 mm 719 mm
C	Equipment width	HB 6040 HB 6080 HB 6160	308 mm 308 mm 308 mm
D	Equipment height	HB 6040 HB 6080 HB 6160	416 mm 416 mm 521 mm
E	Equipment height with lid open	HB 6040 HB 6080 HB 6160	550 mm 586 mm 850 mm

Electrical Consumption

In order to install a *"HB 6000"* series melter/applicator, we should take into consideration the total consumption of the installation, including the consumption of the installed hoses and guns.

Before connecting, make sure that the voltage that is being connected to the melter/applicator 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.

The 'HB 6000' melting equipment must be connected according to the respectively valid regulations and to the latest state of technology. Please refer to the table "Electrical connection" on page 3-4 to dimension the fuse protection.

Compressed air

To install *"HB 6000"* series melters/applicators, it is necessary to have a dry, non-lubricated compressed air system with a maximum pressure of 6 bar.

The applicator's internal pneumatic equipment is able to work with a minimum of 0.5 bar, however, pressure lower than this will cause intermittent operational anomalies.

The air consumption is according to the number of stroke made by the pump cylinder, which in turn depends on the adhesive consumption during the application. It is therefore necessary to estimate this consumption in all cases. Generally speaking, we can provide as a maximum consumption value 40-50 l/min for a pressure of 6 bar at maximum pump speed.

Other factors

While installing *"HB 6000"* series melters/applicators, other practical considerations should be kept in mind:

- Keep the load opening accessible for comfortable melter/applicator filling
- Position the melter/applicator 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/applicator equipment beside powerful heat or cooling sources that may have distortional effects upon its operation
- Avoid melter/applicator vibrations
- Make sure that the melter/applicator maintenance areas (filter, purging valve, tank interior, etc.) are easily accessible

Unpacking

Before proceeding with the installation of the melter/applicator, 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 '*Bühnen*' Representative or to the Main Office.

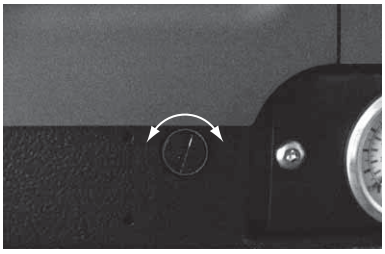
Contents

The *"HB 6000"* 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/applicator:

- Instruction manual
- Hose couplings
- Connector for external I/O (included on the power card)

Mounting the equipment

"HB 6000" series melters/applicators include a mounting base plate for easy mounting.

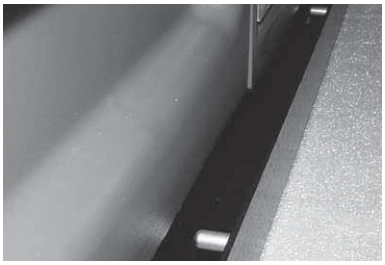


The base plate allows you to remove and position the melter/ applicator equipment easily, without having to touch the fastening screws.

To mount the base plate, place it on the machine bench and adjust its position. Mark and drill the four holes for the base plate's M8 fastening screws. The holes may be threaded or non-threaded, depending on the bench to which they are being attached.

Warning

Make sure that the bench where the base plate is fastened is level, free from vibrations and is able to support the total weight of the equipment.



Once the base plate is fastened in place on the bench, the melter/ applicator should be mounted on top of it.

Insert the fastening tabs on one side and insert the screws as far as possible.

Electrical power connection

"HB 6000" series melters/applicators are designed to be connected to the electrical power grid in two possible ways, depending on their power consumption:

- 1-phase 230 VAC
- 3-phase 400 VAC with neutral

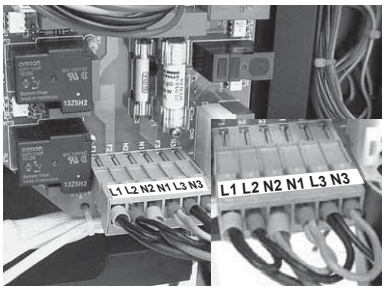
Equipment	No. outputs	1 Phase	3 Phases
		230 VAC	400 VAC
HB 6040	2	24.6 A	14.2 A
	4	-	14.2 A
	6	-	17.7 A
HB 6080	2	-	18.5 A
	4	-	18.5 A
	6	-	18.5 A
HB 6160	2	-	20.7 A
	4	-	20.7 A
	6	-	20.7 A

A good ground connection and a ground-fault circuit interrupter are required in all cases.

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

Warning

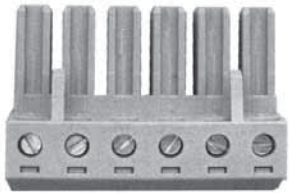
Risk of electrical shock. Carelessness may cause injury or death.

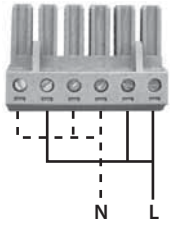


Install the electrical wall bushing Pg 13.5 in the area reserved for them, fastening them to the plate with the appropriate nut.

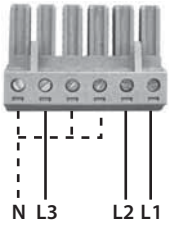
Open the electric cabinet door as far as possible. Thread the power cord (Ø6-12 mm) through the electrical wall bushing Pg 13.5 and fasten it to the inside anchor, making sure that the cord reaches the power card connector at the position where it will be installed.

Connect each wire in the power cord to its corresponding place on the power intake connector on the power card. .

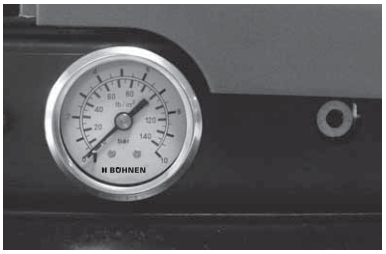




1 x 230 V + N



3 x 400 V + N



Pneumatic connection

Before connecting the pneumatic power to the melter/applicator, make sure the pressure regulator is completely closed. To do this, turn the regulator screw located on the equipment base next to the pressure gauge counterclockwise as far as it will go using a 5 mm Allen wrench.

Connect the plant air supply (max. 6 bar) to the melter/applicator 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. Adjusting to 1 bar of pressure is enough for checking the pump operation.

The pump will not operate and the pressure gauge will show 0 bar until the melter/applicator and the hoses-guns connected to it reach the correct temperature.

Once the pump operation has been checked, you may adjust the pressure to the desired operational value.

Hose and gun connection

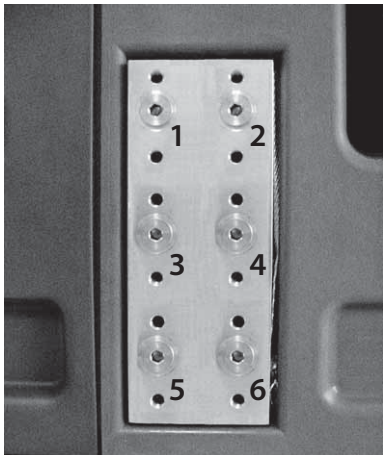
"HB 6000" series melters/applicators use standard '*Bühnen*' components.

Up to six hose-gun outputs may be connected to 4 and 8L *"HB 6000"* melters/applicators.

Warning:

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

"HB 6000" series melters/applicators are equipped with a six outputs hydraulic distributors. Connect the hoses to the distributor in order, following the numbering in the diagram.



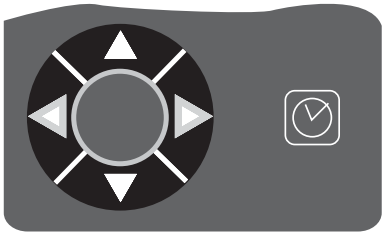
Caution:

- In order to identify each hose-gun, electrically connect them to the connector with the same number as the output they use.
- It is preferable to use couplings at a 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 gun 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/applicator display.

Parameter Programming

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

"HB 6000" series melters/applicators simplify this task as much as possible, allowing the operator to modify only those parameters that are necessarily variable for each application.

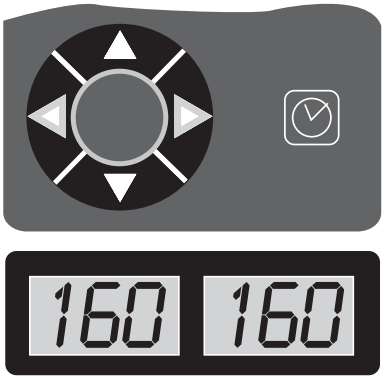


Among the various parameters, it is necessary to program the set point temperature values for each component connected and the value for overheating warnings. There are two other parameters (weekly start-up and shut-down programming and the standby temperature value) left to program in advanced systems,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

Programming working temperatures

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

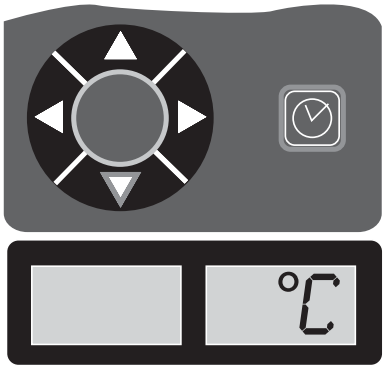
- 160 °C (320 °F) for the tank and the distributor
- Disconnected (OFF) for hoses and guns



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

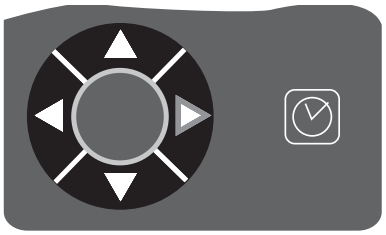
1. Select the component for which you wish to modify the value with the left-right arrow.
   The corresponding LED will blink quickly.
2. Using the up-down arrow, select the desired value for the set point temperature.
3. After ten seconds, the LED will stop blinking and the display will change by default 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/applicator.



Selecting the overheating value

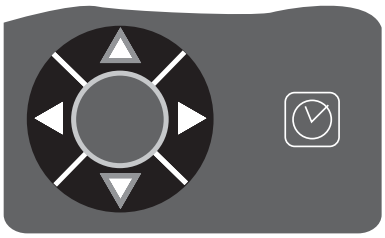
1. Press the button with the clock symbol and keep it pressed. Additionally press the down arrow to enter the special menu. The choice of display units (º C or º F) will appear on the display.



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

3. 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. .
4. Press the right arrow to get the next screen.
5. Exit the special menu using the left arrow and the tank temperatures will once again be displayed.

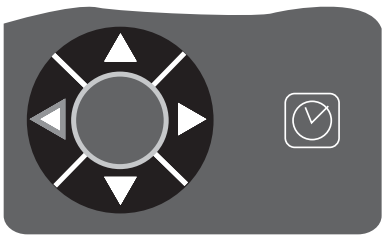
All the special menu values will be saved.

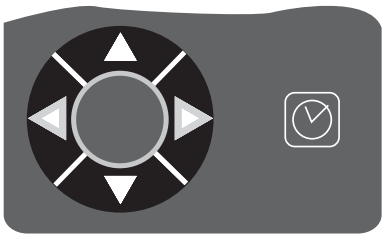


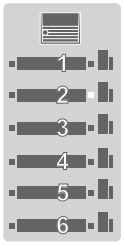
KEEPING A COMPONENT ON DISPLAY

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.

1. Select the component you wish to see permanently with the leftright arrow.
   The corresponding LED will blink rapidly.
2. Hold the arrow button down for two seconds, selecting the desired component.
3. The display will now remain on the selected component, without changing.
4. Simple press any left-right arrow button again to restore the default display.







EXTERNAL I/O CONNECTIONS

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

There are four 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.

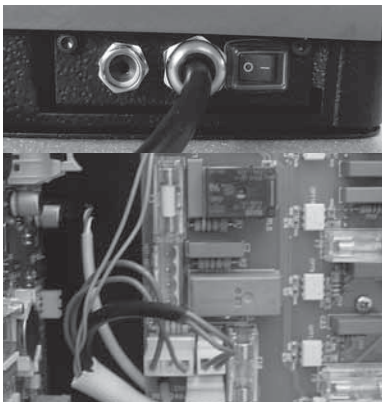
External Standby
control input from the standby mode, via a non-voltage contact. The standby function is connected with a closed contact; an open contact disconnects it.

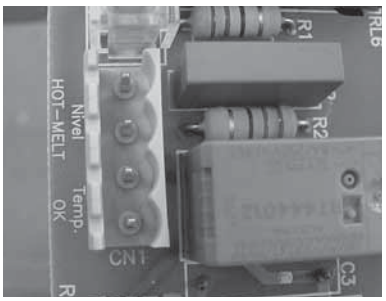
Low level
an output from a non-voltage contact that communicates to the main machine (or to a warning light beacon) that the adhesive fluid level in the tank has reached the minimum level established.

Output inhibitor (optional)
inhibitor tracking inputs for each hosegun output via a non-voltage contact. With a closed contact, the output remains activated; with an open contact, it is deactivated.

Warning

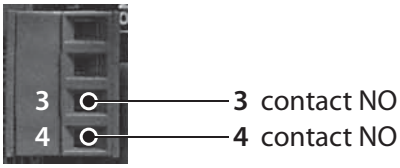
Risk of electric shock. Carelessness may cause injuries or death.





Temperature ok

1. If this is the only signal being connected, use 0.5 mm² two-wire cable.
   Install an electrical wall bushing Pg9 on the equipment base plate next to the electrical supply input.
2. Open the door to the electrical cabinet as far as possible. Thread the power cord (Ø 4-8 mm) through the electrical wall bushing Pg9 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:



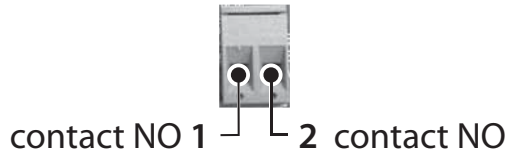
4. Reconnect the card connector
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.

Warning

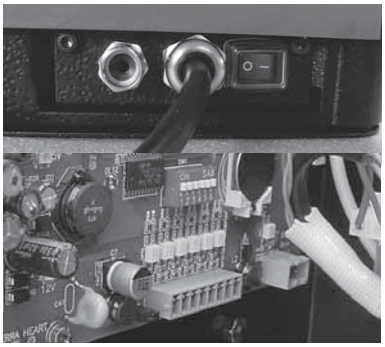
Connection to 24 V (AC or DC).

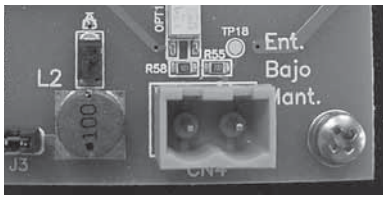
External Standby

1. If this is the only signal being connected, use 0.5 mm² two-wire cable.
   Install an electrical wall bushing Pg9 on the equipment base plate next to the electrical supply input.
2. Open the door to the electrical cabinet as far as possible. Thread the power cord (Ø 4-8 mm) through the electrical wall bushing Pg9 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:



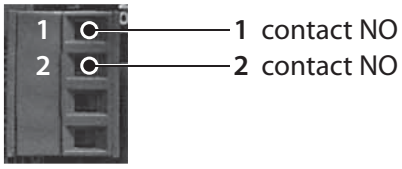
4. Reconnect the card connector
5. Make sure that the cable is well connected and that its path through the electrical cabinet presents no risks of snagging, being cut or any other accidental deterioration.

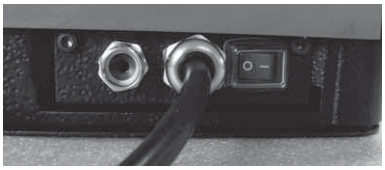


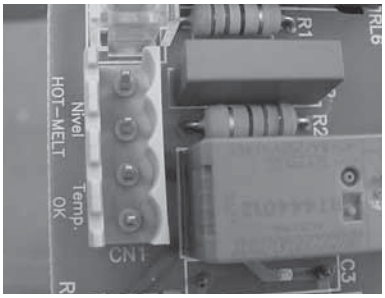


Low level

1. If this is the only signal being connected, use 0.5 mm² two-wire cable.
   Install an electrical wall bushing Pg9 on the equipment base plate next to the electrical supply input.
2. Open the door to the electrical cabinet as far as possible. Thread the power cord (Ø 4-8 mm) through the electrical wall bushing Pg9 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..

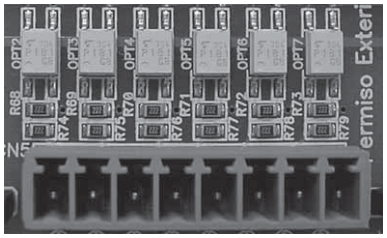
Warning

Connection to 24 V (AC or DC).

Output inhibitor (optional)

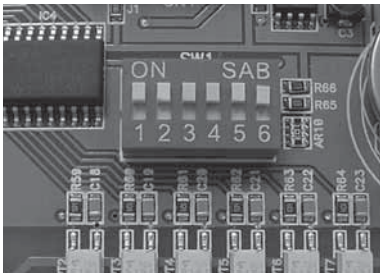
1. 1. If this is the only signal being connected, use a seven-wire cable no smaller than 0.22 mm^2.
   Install an electrical wall bushing Pg9 on the equipment base plate next to the electrical supply input.

2. Open the door to the electrical cabinet as far as possible. Thread the power cord (Ø 4-8 mm) through the electrical wall bushing Pg9 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 do not switch on

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 choose which channels will be controlled from the outside by the dip switches that are located above the plug. They control one channel each from 1 to 6 so that the unit can heat up without external control when the switch is set to ‘ON’.

If the switch is set to ‘OFF’, the respective channel will not heat up unless the channel is activated from the outside through the voltage-free contact between pin 1 (shared) and the corresponding pin.

4 OPERATION

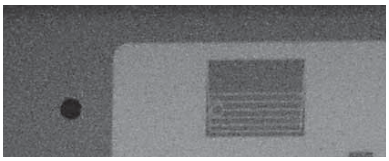
In this section we will introduce the method for using the melter/ applicator. Although its operation is very simple, it should not be used by untrained personnel.

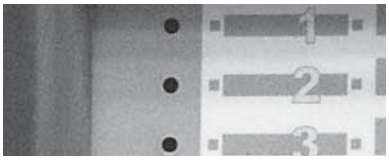
Warning

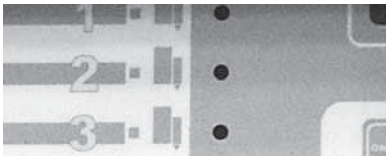
Improper use may cause damage to the machine or injury and even death to the person using it.

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/applicator guns. All of these are controlled from the front panel of the melter/applicator equipment.







The first large group is the tank-distributor group. Combined to form a single unit, they have separate controls even though their set point values are the same. Therefore, when you program a set point value for the tank, for example 170° C, the distributor adopts this same value.

The second group is the hose group. They are identified on the front panel, depending on the equipment model, by number, from No.1 to No.6 and by the corresponding hose picture. Each one has its own set point value.

The third group is the gun group. It is identified on the front panel, depending on the equipment model, by number from No.1 to No.6 and by the corresponding gun picture. Each one has its own set point value.

The hose and gun numbers are automatically assigned to the hose/ gun channel they are connected to on the rear part of the melter/ applicator.

Filling the tank

The tank is equipped with a floating-type low level sensor that warns when the level of hot-melt adhesive drops below a third of the tank's capacity.

The unit has floating signalling contacts for signalling to higher-level systems.

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/applicator equipment.

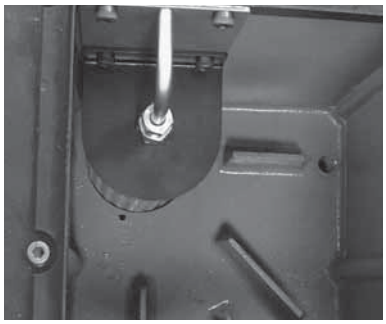
To fill the tank:

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.



Model	Capacity	
HB 6040	4 L	4 kg
HB 6080	8 L	8 kg
HB 6160	16 L	16 kg

For a density of 1g/cc

Starting up the melter/applicator equipment

Before starting up the melter/applicator 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.

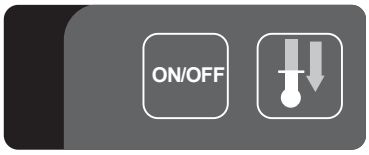
It is also necessary to make sure that the equipment has been filled with adhesive and that the operational parameters have been programmed.

To start:

1. Connect the melter/applicator's switch.

If the control card was turned off the last time the machine was disconnected, it will remain tuned 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.

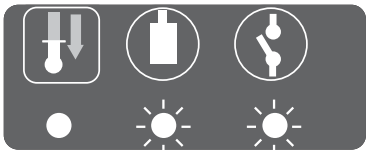


2. Press the ON/OFF button on the control card to turn it on, if it not already activated.

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

The tank heating control LED (green) will light up and the tank will begin to heat.

One 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 switched off by activating the off or standby button, or through programmed shutdown or by activating the standby, or by switching off the power supply or externally activating the standby, then when switching back on the system, the delay will only be activated if the container temperature has dropped by more than 20°C below the set point.

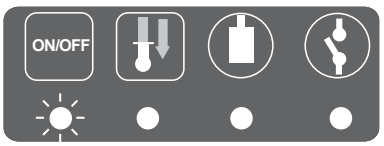
3. Use the machine's pressure gauge to make sure that the generated air pressure is adequate. Values below 0.5 bar may cause erratic pump action.

MELTER/APPLICATOR EQUIPMENT DISPLAYS

"HB 6000" series melters/applicators 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.

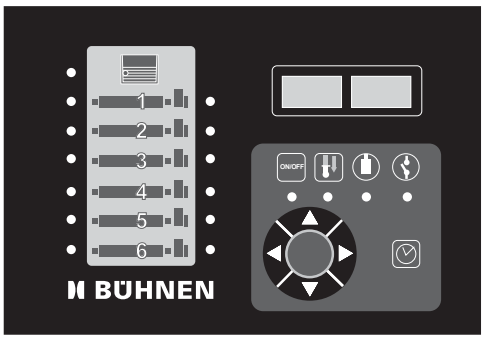
LED display	Component heating	Component status
constantly lit	constant	low temperature
blinking slowly		temperature near set point
blinking rapidly	selected channel	change in set point values possible
off	no heating	temperature reached

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.



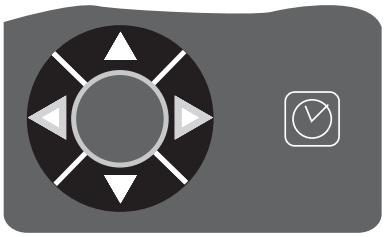
They also show LED indicators for programming the switching on and off times of the equipment as well as the switching on and off times for standby operation.

LED display	LED On/Off	LED Standby	LED pump ready for operation LED temperature OK
constantly lit	turned off unit	function activated	Release granted
blinking slowly	deactivation programmed for the current day	activation programmed for the current day	Delay time running
blinking rapidly	activation/deactivation programming mode	activation/deactivation programming mode	
off	unit ready for operation	function deactivated	No release



Displaying the temperature for each component

The temperature may be displayed for each component (tank, distributor and each hose and gun) 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.

The following is the display sequence:

distributor<—tank<—hose1<—gun1<—…<—hose6<—gun6

distributor—>tank—>hose1—>gun1—>…—>hose6—>gun6

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

Alarm displays

"HB 6000" series melter/applicator equipment tell the user when a malfunction has occurred in the unit, sending warning messages that may be seen on the control panel display.

code	source	actions		
		heating	pump	main machine signal
Err 0	tank broken sensor	only tank	off	off
Err 1	hose1 broken sensor	only hose1	off	off
Err 2	gun1 broken sensor	only gun1	off	off
Err 3	hose2 broken sensor	only hose2	off	off
Err 4	gun2 broken sensor	only gun2	off	off
Err 5	hose3 broken sensor	only hose3	off	off
Err 6	gun3 broken sensor	only gun3	off	off
Err 7	hose4 broken sensor	only hose4	off	off
Err 8	gun4 broken sensor	only gun4	off	off
Err 9	hose5 broken sensor	only hose5	off	off
Err 10	gun5 broken sensor	only gun5	off	off
Err 11	hose6 broken sensor	only hose6	off	off
Err 12	gun6 broken sensor	only gun 6	off	off
Err 13	distributor broken sensor	only distributor	off	off
Err 100	tank overheating	all components	off	off
Err 101	hose1 overheating	all components	off	off
Err 102	gun1 overheating	all components	off	off
Err 103	hose2 overheating	all components	off	off
Err 104	gun2 overheating	all components	off	off
Err 105	hose3 overheating	all components	off	off
Err 106	gun3 overheating	all components	off	off
Err 107	hose4 overheating	all components	off	off
Err 108	gun4 overheating	all components	off	off
Err 109	hose5 overheating	all components	off	off
Err 110	gun5 overheating	all components	off	off
Err 111	hose6 overheating	all components	off	off
Err 112	gun6 overheating	all components	off	off
Err 113	distributor overheating	all components	off	off

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.

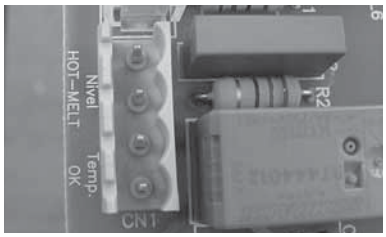
If a temperature sensor is broken, the system heats all the elements except the one where the failure is located.

The heating of the defective element is interrupted immediately in the event of overheating. If the defect lasts longer than three minutes the heating of all elements is interrupted and the power relays are also switched off. The card continues to display the alarm until the error is remedied. At this moment, the power relays are reset and the system heats up normally.

Hot-melt display level (optional)

When the level of hot-melt drops below 1/3 of the tank capacity, the level detector sends a signal to the melter/applicator control unit, which takes the following actions:

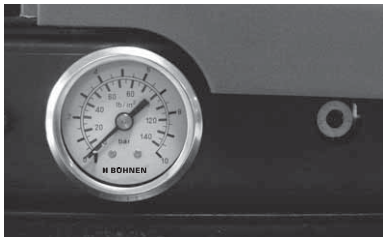
- Display on screen (when function is activated)
- It closes a non-voltage output contact where the user will install the required device (horn, light or SPC input).



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.

Operational pressure display and adjustment

The air pressure with which the pneumatic pump control device works with is shown on the pressure gauge located on the base of the melter/applicator. The pressure must be adjusted according to the application needs.



Warning

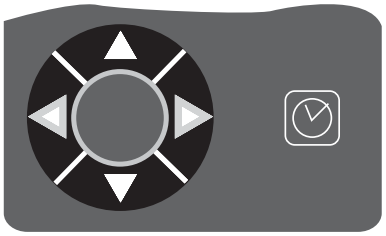
Avoid values below 0.5 bar, otherwise the pump will operate erratically. Never exceed pressures of 6 bar. Since 1 bar air pressure corresponds to 13.6 bar adhesive pressure, this would exceed the permissible adhesive pressure.

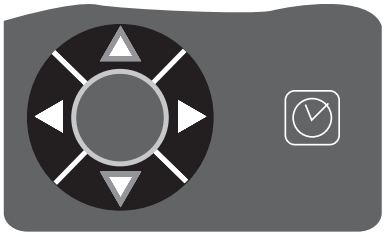
To regulate the pressure, use a 5 mm Allen wrench and turn the regulator clockwise (+) or counterclockwise (-) as needed.

Temperature adjustment

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

- 160 °C (320 °F) for the tank and distributor
- Disconnected (OFF) for the hoses and guns
- C displayed
- Overheating value: 25°C
- Standby value: 55%
- Delay time: 10 min
- On/off and stanby programming: OFF

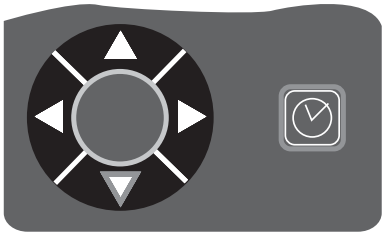




The general process for adjusting the temperatures of each components is described below.

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

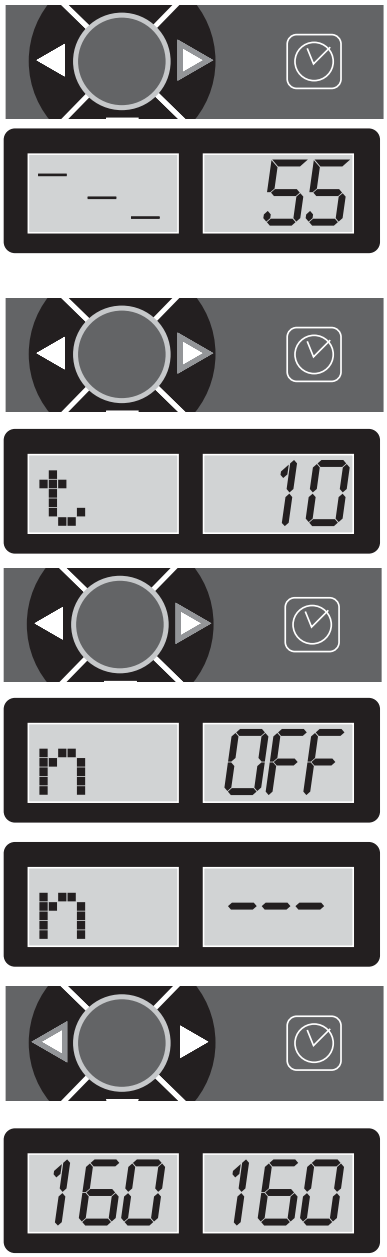
1. Press the button with the clock symbol and keep it pressed. Additionally press the down arrow to enter the special menu.

   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 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).
9. Pressing the right arrow takes you to the next screen where the activation/deactivation of the fill level detector appears.
10. Use the up/down arrow to select the required value (ON/OFF). If the value is set to OFF, there is no indication on the display and no activation of the external signal. If the value is set to ON, the screen shows the alarm (n - - -) if the hot melt level is low, and the external signalling contact is activated.
11. Press the right arrow to return to the output parameters.
12. Exit the submenu using the “left arrow” button. The container temperatures are displayed once more.

To save the parameters, always press the right arrow to get to the next parameter.



SETTING THE CLOCK

"HB 6000" series melters/applicators 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.
   On the left display, you will see the time with a dot, indicating that this is the value that may be modified, while the minutes appear on the second display.

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

4. Press the button with the clock symbol once again.
   Now the dot will appear on the right display.

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

6. Press the button with the clock symbol once again.
   A number appears next, specifying the weekday (1 – Monday / 7 – Sunday).

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

8. Press the button with the clock symbol once again.
   The '0' program appears once again.

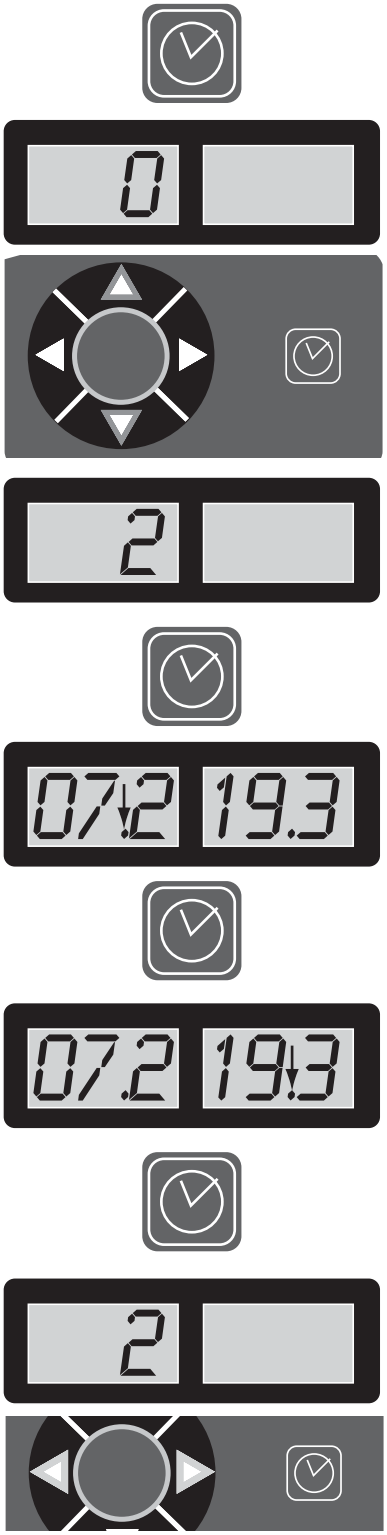
9. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

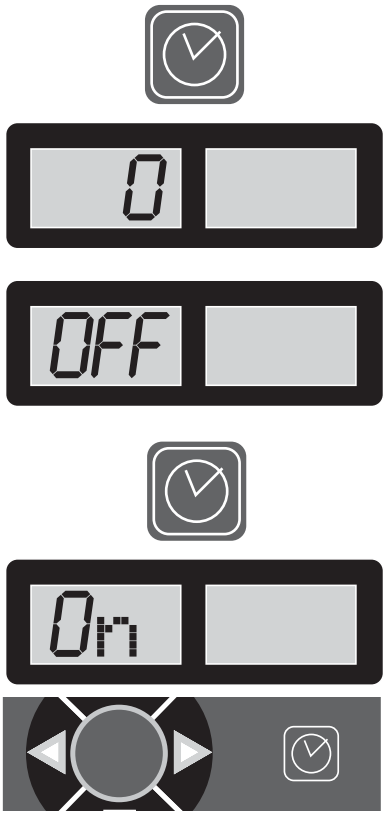
Programming equipment activation/deactivation

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. Use the up-down arrow to select the value for the desired day of the week, from Monday (1) to Sunday (7)
3. Press the button with the clock symbol once again.
   Two times will appear, one in each display. The display on the left shows the start time, while the display on the right shows the fi nish time.
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. Continue pressing the arrow until "On" appears in the display.
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.

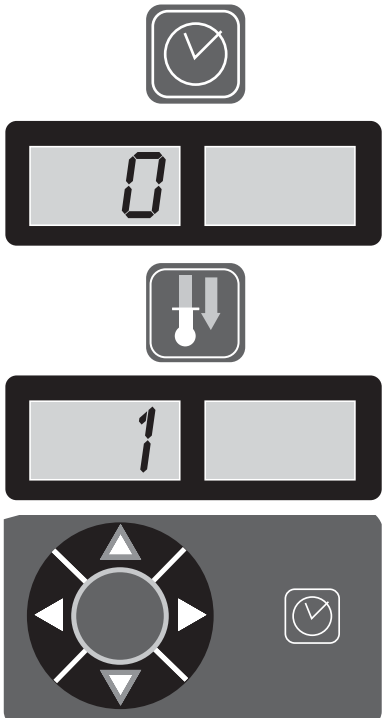




Disabling the equipment activation/deactivation program

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.



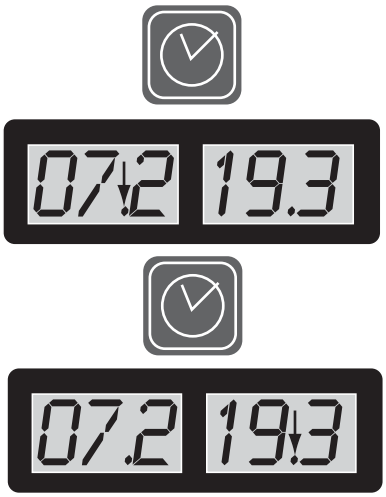
Programming the equipment’s standby function activation/ deactivation

You may program an activation and a deactivation time for every day of the week, from Monday (1) to Sunday (7).

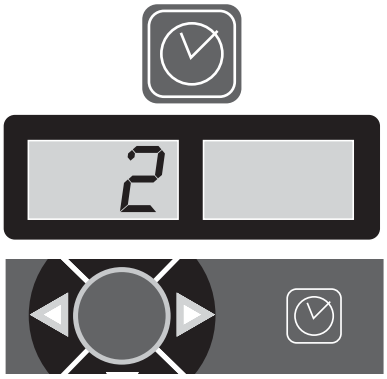
Time is expressed in 15 minute increments, so we cycle from 10.0 (10 hours and 0 minutes) to 10.1 (10 hours and 15 minutes) to 10.2 (10 hours and 30 minutes) to 10.3 (10 hours and 45 minutes).

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.



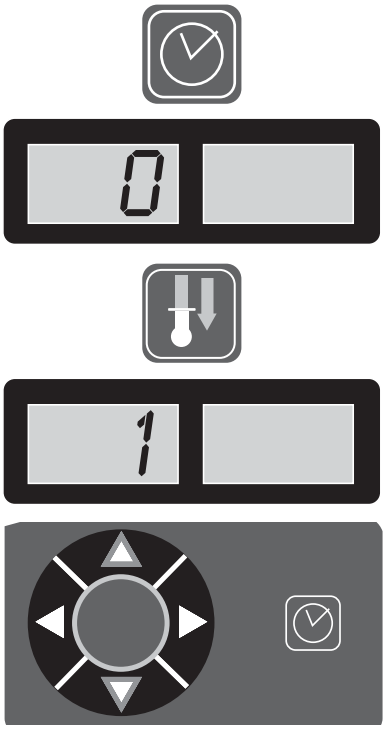
9. Pressing either the left or the right arrow button will exit this program and return to the tank temperature display.

The green “Standby” LED 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).

'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 *"HB 6000"* series melters/applicators 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/applicator 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/applicator 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 *"HB 6000"* melters/applicators have the following priority protocols:

1° manual standby function button

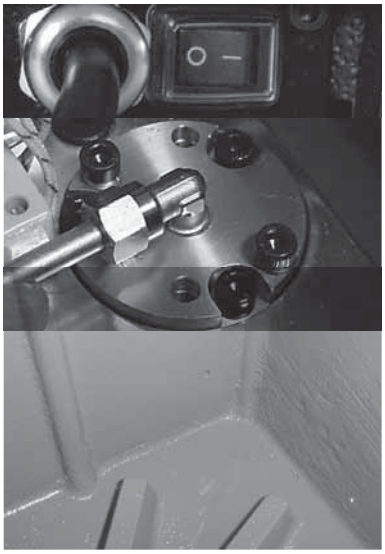
2° standby function external signal

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.



Turning off the melter/applicator equipment

If you need to disconnect the melter/applicator equipment:

1. Turn off the equipment switch, located on the side next to the power input.
   The depressurization valve frees pressure from the hydraulic circuit, returning the adhesive to the tank.
2. Disconnect the pneumatic power to the guns and the electrical power to the control unit programmer, if there is one.

5 MAINTENANCE

Warning

The melter/applicator 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/applicator equipment maintenance. Always read the corresponding section carefully.

If the equipment does not work or works incorrectly, you may refer to the next chapter ‘6. Quick problem solving’.

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) - With each adhesive change	*Filter maintenance*
Emptying and cleaning the tank	- When burnt adhesive is present - With each adhesive change	*Tank cleaning*
Equipment change	- Equipment change or repair	*Dettaching equipment from base*

EQUIPMENT CLEANING

To continue to take advantage of the melter/applicator’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.

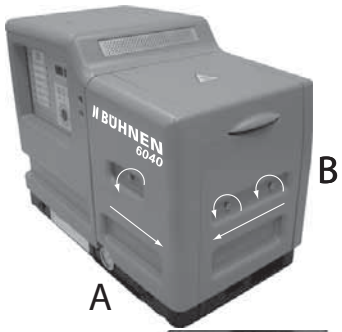
Warning

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.

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.

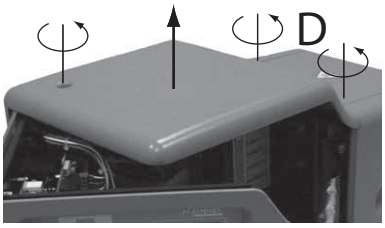
Removing and changing exterior panels:



1. Disconnect the melter/applicator equipment.
2. Disconnect the compressed air from the equipment intake.
3. Remove the screws fastening the various side panels (A, B, C) and the upper panel (D).
4. Remove each panel sliding it in the direction shown in the fi gures.
5. To replace the panels, follow steps 1 through 4 in the reverse order.

[Panels A, B and C must be disassembled in this order and assembled in the reverse order. For the HB 6160 model, the panels surrounding the container area are made of sheet steel. That is why they are not equipped with sliding stays.

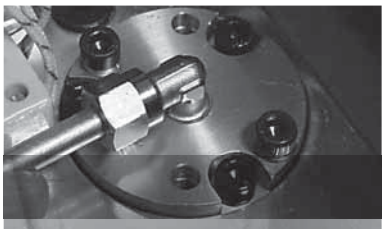
DEPRESSURIZING THE SYSTEM



"HB 6000" series melters/applicators are equipped with a decompression valve that allows you to depressurize the system whenever the equipment is pneumatically or electrically disconnected.

Before disconnecting any hydraulic component or opening any distributor output, it is necessary to follow these steps:

1. Disconnect the equipment switch located on the side next to the power input.
   The depressurization valve releases the pressure from the hydraulic circuit, returning the adhesive to the tank.
2. Purge all guns that have been used either manually or with the corresponding program command.



FILTER MAINTENANCE

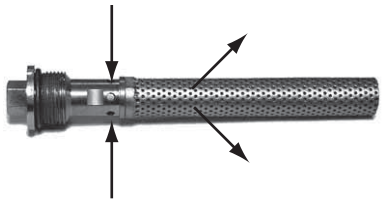
"HB 6000" series melter/applicator equipment is equipped with a 100 mesh pump filter.
The filter prevents impurities and burnt adhesive remains from being pushed out from the tank by the pump.

Warning:

It is a good idea to also use an air filter in the tank intake valve. This filter performs a first-step filtration, preventing impurities resulting from burning in the tank and other impurities that may enter from the outside from passing through.

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.



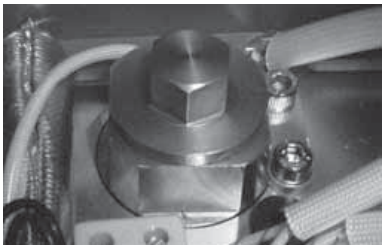
No rule exists for determining when to change the filter. Several factors influence this decision:

- 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

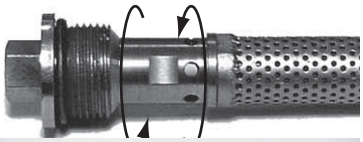
Warning

Risk of burns.
Always use protective gloves and glasses.

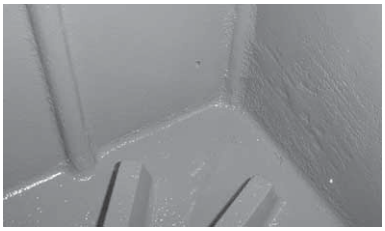


To change the filter:

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



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 hotmelt and to avoid it from being retained inside when consequential burning occurs.

Furthermore, when adhesives are mixed, reactions may occur between them, causing 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 guns).

Cleaning burnt adhesive

Warning

Use appropriate protective equipment for high temperatures.

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).

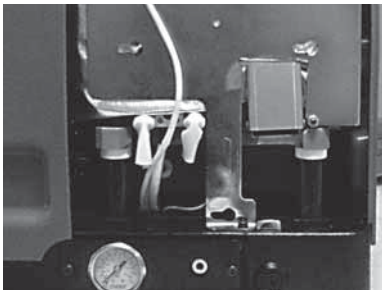
1. Empty the tank directly (see the section ‘Emptying the tank’) to prevent the burnt material from passing through the pump circuit.

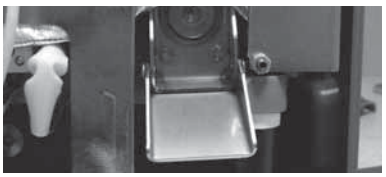
2. Clean the adhesive remains and burnt material inside the tank. Do not use sharp objects that might damage the inside coating. We recommend using a wood spatula.
3. Remove the filter cartridge and clean it, if necessary (see the section ‘Filter maintenance’).
4. Reinstall the hexagonal cover without the mesh insert.
5. Add the appropriate type and quantity of adhesive and wait for it to melt.
6. Pump a minimum of one tank through the distributor output marked number 1 *(see page 3-6)*.
7. Remove the hexagonal cover and install a clean mesh insert. Reinstall it in the distributor.
8. Refill the tank with adhesive, wait for it to melt and continue working as usual.

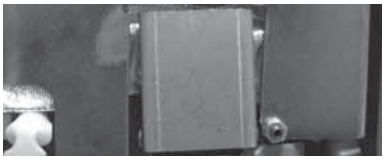
Emptying the tank

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

Warning

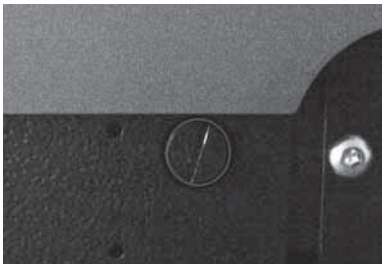
Risk of burns.
Use appropriate protective equipment for high temperatures.

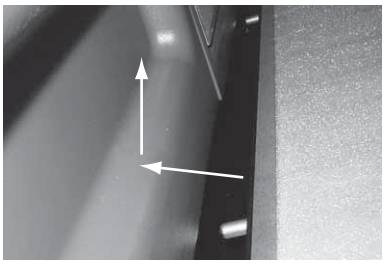
Detaching the equipment from its base

For more thorough equipment maintenance, it is necessary to remove it from its present location to be able to perform operations more comfortably and with greater accessibility.

To do this, the equipment should be removed from its base in the following manner:

1. Disconnect the equipment electrically from the main switch.
2. Depressurize the system.
3. Disconnect the hoses connected to the distributor outputs both electrically and hydraulically.
4. Disconnect the power input and the ground connection.
5. Unscrew the screws fastening the equipment to the base: on the left side, in a clockwise direction, on the right side in the opposite direction (counterclockwise).
6. Slide the equipment forward and raise it off its base.





6 QUICK PROBLEM SOLVING

This chapter shows basic help for solving simple problems without intervention from '*Bühnen*' technical personnel.

It is very important to respect the security instructions in this manual at all times. Failure to do so may result in personal injury and/or damage to the machine or to the rest of the installation.

Warning

The melter/applicator equipment is equipped with current technology, but with certain foreseeable risks. Therefore, only allow appropriate personnel with enough training and experience to use, install or repair this equipment.

Each observed problem corresponds to a chapter section. There are four different columns in each one:

- possible causes
- verification to be performed
- actions
- useful observations

The system is simple. Locate the chapter section that corresponds to the observed problem. Starting with the column on the left, follow horizontally along the second and third columns. By the time you reach the a text **in bold type** (action) in the third column, the problem should have been resolved. If you reach a text in italics (go to), the help section tells us to see another chapter section. If you do not reach either text, follow along vertically to the next cause, or if there is none, to the next problem.

If you are unable to solve the problem with the help provided in this chapter, contact your Area Technical Service Center or 'Bühnen' headquarters directly.

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THE TANK DOES NOT HEAT

CAUSES	CHECKING	ACTIONS	COMMENTS
EQUIPMENT POWERSUPPLY MALFUNCTION	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUCTION*	
POWER BOARD POWER SUPPLY MALFUNCTION	CHECK POWER BOARD POWER SUPPLY	*SEE ELECTRONIC BOARD MALFUNCTION*	
EQUIPMENT TEMPERATURE MALFUNCTION	REGULATE CONTROL BOARD TEMPERATURES	*SEE TANK TEMPERATURE MALFUCTION*	
TANK FUSE BLOWN	CHECK TANK FUSE F6 (FTANQUE)	**CHANGE FUSE F6 (FTANQUE)**	
TANK POWER OUTPUT MALFUNCTION	CHECK POWER BOARD OUTPUT VOLTAGE (CN2-TANQ/N)	**CHANGE POWER BOARD**	CONTROL BOARD ON LED PERMANENTLY LIT CONNECTOR CN2 (TANQ/N) POWER CARD
RESISTANCE BLOWN OR SHORTCIRCUIT	REMOVE THE TANK POWER CALBES FROM THE CARD AND MEASURE THE RESISTANCE	**CHANGE RESISTANCE**	CONNECTOR CN2 (TANQ/N) POWER BOARD
THERMOSTAT MALFUNCTION	CHECK OVERHEATING THERMOSTAT	**CHANGE THERMOSTAT**	

THE DISTRIBUTOR DOES NOT HEAT

CAUSES	CHECKING	ACTIONS	COMMENTS
EQUIPMENT POWER SUPPLY MALFUNCTION	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUCTION*	
POWER BOARD POWER SUPPLY MALFUNCTION	CHECK POWER BOARD POWER SUPPLY	*SEE ELECTRONIC BOARD MALFUNCTION*	
EQUIPMENT TEMPERATURE MALFUNCTION	CHECK CONTROL BOARD TEMPERATURES	*SEE DISTRIBUTOR TEMPERATURE MALFUCTION*	
DISTRIBUTOR FUSE BLOWN	CHECK DISTRIBUTOR FUSE F4 (FDIS)	**REPLACE FUSE F4 (FDIS)**	
DISTRIBUTOR POWER OUTPUT MALFUNCTION	CHECK POWER BOARD OUTPUT VOLTAGE (CN2-DIST/N	**REPLACE POWER BOARD**	CARD LED PERMANENTLY LIT CONNECTOR CN2 (DIST/N) POWER BOARD
RESISTANCE BLOWN OR SHORTCIRCUIT	REMOVE THE TANK POWER CALBES FROM THE CARD AND MEASURE THE RESISTANCE	**REPLACE RESISTANCE**	CONNECTOR CN2 (DIST/N) POWER BOARD
THERMOSTAT MALFUNCTION	CHECK OVERHEATING THERMOSTAT	**REPLACE THERMOSTAT**	

EQUIPMENT POWER SUPPLY MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
POWER SUPPLY INPUT MALFUNCTION	CHECK VOLTAGE AT POWER INPÙT (CN1)	**CONNECT**	
EQUIPMENT SHORTCIRCUIT		*SEE EQUIPMENT SHORTCIRCUIT MALFUNCTION*	
MAIN POWER SUPPLY MALFUNCTION	CHECK FACTORY POWER	**REPAIR POSSIBLE MALFUNCTION**	
INPUT CONNECTION DEFECT	CHECK CONNECTION AT POWER INPUT (CN1)	**CONNECT ACCORDING TO THE DIAGRAM**	RECOMMENDED CONNECTION 3X400 V+N+T
INPUT SWITCH MALFUNCTION	CHECK EQUIPMENT SWITCH (CN11)	**CHANGE SWITCH**	
FUSE MALFUNCTION	CHECK FUSES F1 TO F9	**CHANGE FUSES**	F1-FCA6 F2-FCA2 F3-FCA1 F4-FDIS F5-FCA3 F6-FTANQUE F7-F.H.M. F8-FCA5 F9-FCA4 F13-F.F.A.

ELECTRONIC BOARD MALFUCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
CONTROL BOARD SWITCH DEFECT	CHECK CONTROL BOARD ON/OFF SWITCH	**CONNECT**	*IF THE CURRENT TIME APPEARS ON DISPLAY, IT IS 'OFF'*
TIME PROGRAMMING CONNECTED	CHECK PROGRAMMING HAS BEEN SET UP	**CANCEL**	
INPUT POWER MALFUNCTION	CHECK EQUIPMENT POWER	*SEE EQUIPMENT POWER SUPPLY MALFUCTION*	

PUMP MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
QUICK PUMPING IN BOTH SENSES	CHECK IF THERE IS MELTED HOT-MELT	**ADD MORE HOT-MELT**	
		WAIT TILL ADHESIVE IS MELTED	
	CHECK IF INTAKE FILTER IS CLEAN	**CLEAN FILTER**	CHANGE CARTRIDDGE AND/OR MESH IF NECESSARY
	EXCESSIVE PRESSURE IN THE REGULATED CIRCUIT	**LOWER THE EQUIPMENT PRESSURE**	
		SEE HOT-MELT LEAKAGE	
QUICK PUMPING IN ONE SENSE	CHECK BALL-VALVE SHAFT	**CLEAN OR CHANGE SHAFT**	
	CHECK INTAKE VALVE	**CLEAN VALVE**	
		SEE HOT-MELT LEAKAGE	
PUMP BLOCKED	TRY TO MANUALLY MOVE THE SHAFT	**CLEAN PUMP**	

EQUIPMENT SHORTCIRCUIT MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
HOSE OR GUN SHORTCIRCUIT	DISCONNECT HOSES AND GUNS. CHECK.	*SEE HOSE DOES NOT HEAT*	
	DISCONNECT EVERY HOSE-GUN PAIR ONE AT A TIME	*SEE HOSE DOES NOT HEAT* *SEE GUN DOES NOT HEAT*	
TANK SHORTCIRCUIT	DISCONNECT TANK POWER CABLES. CHECK.	*SEE TANK DOES NOT HEAT*	CN6 CONNECTOR POWER BOARD
DISTRIBUTOR SHORTCIRCUIT	DISCONNECT DISTRIBUTOR POWER CABLES	*SEE DISTRIBUTOR DOES NOT HEAT*	CN6 CONNECTOR POWER BOARD
SHORTCIRCUIT IN PNEUMATIC UNIT COIL	DISCONNECT SOLENOID VALVE CONNECTOR. CHECK.	**CHANGE COIL**	

PNEUMATIC UNIT MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
TEMPERATURES NOT REACHED	REGULATE TEMPERATURES ON CONTROL BOARD	**WAIT FOR PROGRAMMED TEMPERATURES**	
	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUNCTION*	
	CHECK POWER BOARD POWER SUPPLY	*SEE ELECTRONIC BOARD MALFUNCTION*	
	REGULATE TEMPERATURES ON CONTROL BOARD	*SEE CONTROL BOARD TEMPERATURES ERROR*	
ABSENCE OF AIR PRESSURE	CHECK PNEUMATIC PRESSURE	**APPLY AIR PRESSURE TO EQUIPMENT**	
	PRESSURE REGULATOR COULD BE DAMAGED	**REPLACE PRESSURE REGULATOR**	
	CHECK PNEUMATIC UNIT FILTER	**CLEAN OR REPLACE**	
	CHECK SOLENOID VALVE (MANUAL OPERATION)	**CHANGE SOLENOID VALVE**	
PNEUMATIC UNIT ACTIVATION SIGNAL MALFUNCTION	CHECK PNEUMATIC UNIT CONNECTION CONTACT	**REPLACE CONTROL BOARD**	POWER BOARD CN2 CONNECTOR
SOLENOID VALVE MALFUNCTION	MANUALLY ACTIVATE SOLENOID VALVE	**REPLACE COIL**	TWO POSITIONS: AUTO/MAN
IT DOES NOT MOVE	ELIMINATE PUMP CONNECTION. IT DOES NOT MOVE	**REPLACE COMPLETE PNEUMATIC UNIT**	
IT DOES NOT CHANGE SENSE	INCREASE PRESSURE. IT DOES NOT CHANGE SENSE	**CHANGE DIFFERENTIAL VALVE**	
	CHECK SOFT CYLINDER MOVEMENT	**CHANGE CYLINDER O-RINGS AND CLEAN**	
	ELIMINATE PUMP CONNECTION. IT DOES NOT CHANGE SENSE	**CHANGE SLIDE PILOT VALVE**	
		REGULATE HINGE JOINT ADJUSTMENT	

TANK TEMPERATURE MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
SENSOR MALFUNCTION	CHECK REAL TEMPERATURE	**CHANGE SENSOR**	
	CHECK SENSOR	**CHANGE SENSOR**	
DEFFECTIVE PLACEMENT	MAKE SURE IT IS CORRECTLY INSERTED IN ITS HOUSING	**RECTIFY**	
DEFFECTIVE CONNECTION	CHECK SENSOR BOARD CONNECTIONS	**RECTIFY**	SENSOR BOARD CN1 CONNECTOR POINTS 1 AND 2
		CHANGE SENSOR BOARD	

DISTRIBUTOR TEMPERATURE MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
SENSOR MALFUNCTION	CHECK ACTUAL TEMPERATURE	**CHECK REAL TEMPERATURE**	
	CHECK TEMPERATURE SENSOR	**CHECK SENSOR**	
DEFFECTIVE PLACEMENT	CHECK FOR CORRECT SEAT IN THE HOUSING	**MAKE SURE IT IS CORRECTLY INSDERTED IN ITS HOUSING**	
DEFFECTIVE CONNECTION	CHECK CARD CONNECTIONS	**CHECK SENSOR BOARD CONNECTIONS**	SENSOR BOARD CN1 CONNECTOR POINTS 3 AND 4
	CHECK EXTERNAL INFLUENCES	**CHECK EXTERNAL EFFECTS**	AIR CURRENTS, PNEUMATIC HOSE COUPLING LEAKS, ETC.

HOSE TEMPERATURE MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
SENSOR MALFUNCTION	CHECK REAL TEMPERATURE	**CHANGE HOSE**	
	CHECK AFFECTED SENSOR	**CHANGE HOSE**	
DEFFECTIVE CONNECTION	CHECK HOSE CONNECTIONS	**RECTIFY**	CONNECTOR PINS 3 AND 4
	CHECK EQUIPMENT CONNECTIONS	**RECTIFY**	CONNECTOR PINS 3 AND 4
	CHECK SENSOR BOARD CONNECTIONS	**RECTIFY**	CN2/CN3/CN4/CN5/CN6/CN7 POINTS 1 AND 2 ON SENSOR BOARD
EXTERNAL COOLING	CHECK EXTERNAL EFFECTS	**RECTIFY**	AIR CURRENTS, PNEUMATIC HOSE COUPLING LEAKS, ETC.
POWER BOARD MALFUNCTION	CHECK HOSE-GUN ASSEMBLY ON OTHER CHANNEL	**POWER BOARD DOES NOT REGULATE. CHANGE POWER BOARD**	
POWER BOARD CHANNEL MALFUNCTION	CHECK ANOTHER HOSE-GUN ASSEMBLY ON THE DEFFECTIVE CHANNEL	**CHANNEL DOES NOT REGULATE. CHANGE POWER BOARD**	IF EXTRA CHANNELS ARE AVAILABLE, YOU MAY CONTINUE WORKING

GUN TEMPERATURE MALFUNCTION

CAUSES	CHECKING	ACTIONS	COMMENTS
SENSOR MALFUNCTION	CHECK REAL TEMPERATURE	**CHANGE SENSOR**	
	CHECK AFFECTED SENSOR	**CHANGE SENSOR**	
DEFFECTIVE CONNECTION	CHECK GUN CONNECTIONS	**RECTIFY**	CONNECTOR PINS 3 AND 4
	CHECK HOSE CONNECTIONS	**RECTIFY**	MALE CONNECTOR PINS 5 AND 6 AND FEMALE CONNECTOR PINS 3 AND 4
	CHECK EQUIPMENT CONNECTIONS	**RECTIFY**	CONNECTOR PINS 5 AND 6
	CHECK SENSOR BOARD CONNECTIONS	**RECTIFY**	CN2/CN3/CN4/CN5/CN6/CN7 POINTS 3 AND 4 ON THE SENSOR BOARD
EXTERNAL COOLING	CHECK EXTERNAL EFFECTS	**RECTIFY**	AIR CURRENTS, PNEUMATIC HOUSE COUPLING LEAKS, ETC.
POWER BOARD MALFUNCTION	CHECK HOSE-GUN ASSEMBLY ON OTHER CHANNEL	**CARD DOES NOT REGULATE. CHANGE POWER BOARD**	
POWER BOARD CHANNEL MALFUNCTION	CHECK ANOTHER HOSE-GUN ASSEMBLY ON DEFFECTIVE CHANNEL	**CHANNEL DOES NOT REGULATE. CHANGE POWER BOARD**	IF EXTRA CHANNELS ARE AVAILABLE, YOU MAY CONTINUE WORKING

CONTROL BOARD TEMPERATURE ERROR

CAUSES	CHECKING	ACTIONS	COMMENTS
ERR 0	TANK BROKEN SENSOR	*SEE TANK TEMP. MALFUNCTION*	
ERR 1	HOSE1 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 2	GUN1 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 3	HOSE2 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 4	GUN2 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 5	HOSE3 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 6	GUN3 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 7	HOSE4 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 8	GUN4 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 9	HOSE5 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 10	GUN5 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 11	HOSE 6 BROKEN SENSOR	*SEE HOSE TEMP. MALFUNCTION*	
ERR 12	GUN6 BROKEN SENSOR	*SEE GUN TEMP. MALFUNCTION*	
ERR 13	DISTRIBUTOR BROKEN SENSOR	*SEE DISTRIBUTOR TEMP. MALFUNCTION*	
ERR 100	TANK OVERHEATING	*SEE OVERHEATING*	
ERR 101	HOSE1 OVERHEATING	*SEE OVERHEATING*	
ERR 102	GUN1 OVERHEATING	*SEE OVERHEATING*	
ERR 103	HOSE2 OVERHEATING	*SEE OVERHEATING*	
ERR 104	GUN2 OVERHEATING	*SEE OVERHEATING*	
ERR 105	HOSE3 OVERHEATING	*SEE OVERHEATING*	
ERR 106	GUN3 OVERHEATING	*SEE OVERHEATING*	
ERR 107	HOSE4 OVERHEATING	*SEE OVERHEATING*	
ERR 108	GUN4 OVERHEATING	*SEE OVERHEATING*	
ERR 109	HOSE5 OVERHEATING	*SEE OVERHEATING*	
ERR 110	GUN5 OVERHEATING	*SEE OVERHEATING*	
ERR 111	HOSE6 OVERHEATING	*SEE OVERHEATING*	
ERR 112	GUN6 OVERHEATING	*SEE OVERHEATING*	
ERR 113	DISTRIBUTOR OVERHEATING	*SEE OVERHEATING*	

HOT-MELT LEAKAGE

CAUSES	CHECKING	ACTIONS	COMMENTS
PUMP PLUG LEAKS	NEEDS TO BE TIGHTENED	**RETIGHTEN PUMP PLUG**	
	DAMAGED O-RINGS	**CHANGE PLUG O-RING**	
PUMP SHAFT LEAKS	DAMAGED O-RINGS AND/OR COLLARS	**CHANGE O-RINGS AND COLLARS**	
	SCORED SHAFT	**CHANGE SHAFT**	
	PUMP INTERIOR SCORED	**CHANGE PUMP**	
LEAKS BETWEEN PUMP AND TANK	SEATING O-RINGS DAMAGED	**CHANGE PUMP SEATING O-RINGS**	
COMPENSATION VALVE LEAKS	JOINTS AND/OR COLLARS DAMAGED	**CHANGE COMPENSATION VALVE O-RINGS AND COLLAR**	
PUMP HOSE COUPLING LEAKS	NEEDS TO BE TIGHTENED	**RETIGHTEN PUMP HOSE COUPLINGS**	
	DAMAGED O-RING	**CHANGE HOSE COUPLING O-RING**	

A HOSE DOES NOT HEAT

CAUSES	CHECKING	ACTIONS	COMMENTS
HOSE CONNECTION MALFUNCTION	CHECK IF HOSE IS CONNECTED	**CONNECT**	
EQUIPMENT POWER SUPPLY MALFUNCTION	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUNCTION*	
POWER BOARD POWER SUPPLY MALFUNCTION	CHECK POWER BOARD POWER SUPPLY	*SEE ELECTRONIC BOARD MALFUNCTION*	
EQUIPMENT TEMPERATURE MALFUNCTION	CHECK TEMPERATURES ON CONTROL BOARD	*SEE HOSE TEMPERATURE MALFUNCTION*	
HOSE POWER OUTPUT MALFUNCTION	CHECK POWER BOARD OUTPUT VOLTAGE (CN3/CN4/CN5)	**CHANGE POWER BOARD**	WITH CONTROL BOARD LED PERMANENTLY ON BETWEEN PINS 1 OR 4 (CN3/CN4/CN5) AND NEUTRAL
BLOWN FUSES	REMOVE FUSE (6A) F1/F2/F3/F5/F8/F9. CHECK.	**CHANGE FUSE**	
RESISTANCE BLOWN OR SHORTCIRCUITED	DISCONNECT HOSE AND CHECK	**CHANGE HOSE**	HOSE CONNECTOR PINS 1 AND 2

HOT-MELT DOES NOT FLOW

CAUSES	CHECKING	ACTIONS	COMMENTS
EQUIPMENT POWER SUPPLY MALFUNCTION	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUNCTION*	
POWER BOARD POWER SUPPLY MALFUNCTION	CHECK POWER BOARD POWER SUPPLY	*SEE ELECTRONIC BOARD MALFUNCTION*	
EQUIPMENT TEMPERATURE MALFUNCTION	REGULATE TEMPERATURES ON CONTROL BOARD	*SEE TANK TEMPERATURE MALFUNCTION*	
		SEE DISTRIBUTOR TEMPERATURE MALFUNCTION	
PUMP STOPPED	CHECK PUMP MOVEMENT	*SEE PUMP MALFUNCTION*	
		SEE PNEUMATIC UNIT MALFUNCTION	
HOSE OR GUN TEMPERATURE MALFUNCTION	CHECK HOSE AND GUN TEMPERATURE	*SEE HOSE DOES NOT HEAT*	
		SEE HOSE TEMPERATURE MALFUNCTION	
		SEE GUN DOES NOT HEAT	
		SEE GUN TEMPERATURE MALFUNCTION	
COIL BROKEN	ACTIVATE MANUALLY	**CHANGE EV**	LOOK AT EV POWER VOLTAGE

A GUN DOES NOT HEAT

CAUSES	CHECKING	ACTIONS	COMMENTS
GUN CONNECTION MALFUNCTION	MAKE SURE THE GUN IS CONNECTED	**CONNECT**	
HOSE CONNECTION MALFUNCTION	MAKE SURE HOSE IS CONNECTED	**CONNECT**	
EQUIPMENT POWER SUPPLY MALFUNCTION	CHECK EQUIPMENT POWER SUPPLY	*SEE EQUIPMENT POWER SUPPLY MALFUNCTION*	
POWER BOARD POWER SUPPLY MALFUNCTION	CHECK POWER BOARD POWER SUPPLY	*SEE POWER BOARD POWER SUPPLY MALFUNCTION*	
GUN TEMPERATURE MALFUNCTION	CHECK TEMPERATURES ON CONTROL BOARD	*SEE GUN TEMPERATURE MALFUCTION*	
GUN OUTPUT POWER MALFUNCTION	CHECK POWER BOARD OUTPUT VOLTAGE (CN3/CN4/CN5)	**CHANGE POWER BOARD**	WITH CONTROL BOARD LED PERMANENTLY LIT BETWEEN PINS 3 OR 6 (CN3/CN4/CN5) AND NEUTRAL
BLOWN FUSES	REMOVE FUSE (6A) F1/F2/F3/F5/F8/F9. CHECK.	**CHANGE FUSE**	
RESISTANCE BLOWN OR SHORTCIRCUITED	DISCONNECT GUN AND CHECK	**CHANGE RESISTANCE**	GUN CONNECTOR PINS 1 AND 2
HOSE CABLES BROKEN	DISCONNECT HOSE AND CHECK CONTINUITY	**CHANGE HOSE**	EQUIPMENT CONNECTION-GUN CONNECTION (7-1/2-2/5-3/6-4)

OVERHEATING

CAUSES	CHECKING	ACTIONS	COMMENTS
TANK TEMPERATURE MALFUNCTION	CHECK POWER BOARD TANK OUTPUT VOLTAGE (CN2)	*SEE TANK TEMP. MALFUNCTION* **CHANGE POWER BOARD**	WITH CONTROL BOARD LED PERMANENTLY OFF POWER BOARD CONNECTOR CN2
DISTRIBUTOR TEMPERTAURE MALFUNCTION	CHECK POWER BOARD DISTRIBUTOR OUTPUT VOLTAGE (CN2)	*SEE DISTRIBUTOR TEMP. MALFUNCTION* **CHANGE POWER BOARD**	WITH CONTROL BOARD LED PERMANENTLY OFF POWER BOARD CONNECTOR CN2
HOSE TEMPERATURE MALFUNCTION	CHECK POWER BOARD HOSE OUTPUT VOLTAGE (CN3, CN4, CN5)	*SEE HOSE TEMP. MALFUNCTION* **CHANGE POWER BOARD**	WITH CONTROL BOARD LED PERMANENTLY OFF BETWEEN PINS 1 AND 2 AND CN3/CN4/CN5
GUN TEMPERATURE MALFUNCTION	CHECK POWER BOARD GUN OUTPUT VOLTAGE (CN3, CN4, CN5	*SEE GUN TEMP. MALFUNCTION* **CHANGE POWER BOARD**	WITH CONTROL LED PERMANENTLY OFF BETWEEN PINS 3 AND 4 AND CN3/CN4/CN5

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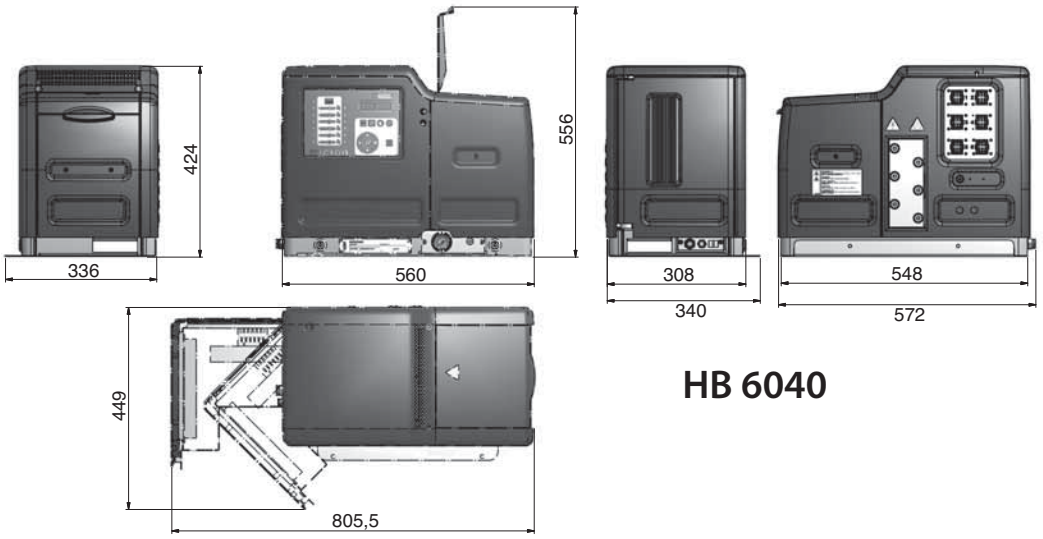
7 TECHNICAL CHARACTERISTICS

GENERAL

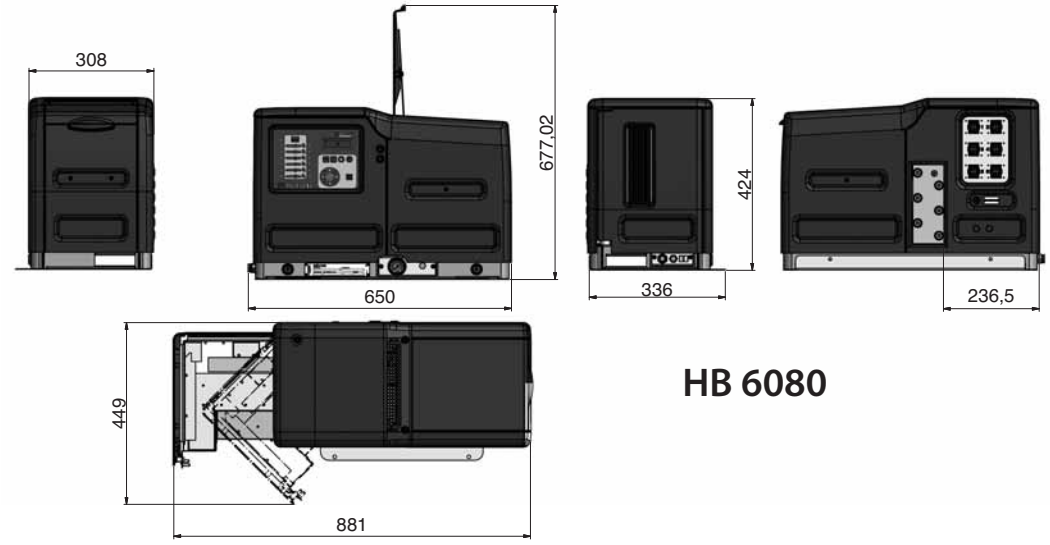
	HB 6040	HB 6080	HB 6160
Tank capacity	4 liters	8 liters	16 liters
Tank opening	180 x 150 mm	210 x 180 mm	255 x 175 mm
Pump rate	29,3 kg/h (*) pump 7 cc/cycle 66,0 kg/h (*) pump 19 cc/cycle	29,3 kg/h (*) pump 7 cc/cycle 66,0 kg/h (*) pump 19 cc/cycle	29,3 kg/h (*) pump 7 cc/cycle 66,0 kg/h (*) pump 19 cc/cycle
Melt rate	6,0 kg/h (*)	11,2 kg/h (*)	18 kg/h (*)
Outputs	2, 4 or 6	2, 4 or 6	2, 4 or 6
Temperature range (optional)	40 to 200 °C (100 bis 392° F) 230 °C (450° F)	40 to 200 °C (100 bis 392° F) 230 °C (450° F)	40 to 200 °C (100 bis 392° F) 230 °C (450° F)
Temperature control	±0.5 °C (±1° F) Pt-100 or Ni-120	±0.5 °C (±1° F) Pt-100 or Ni-120	±0.5 °C (±1 °F) Pt-100 or Ni-120
Maximum melt pressure (at 6 bar air pressure)	81.6 bar (1183 psi)	81.6 bar (1183 psi)	81.6 bar (1183 psi)
Maximum power supply (at 400 V)	5200 W (2 outputs) 7600 W (4 outputs) 10.000 W (6 outputs)	6200 W (2 outputs) 8600 W (4 outputs) 10.000 W (6 outputs)	6700 W (2 outputs) 9100 W (4 outputs) 10.000 W (6 outputs)
External functions	temperatures ok output low level signal Input “standby” Inputs channel block	temperatures ok output low level signal Input “standby” Inputs channel block	temperatures ok output low level signal Input “standby” Inputs channel block
Electrical requirements	230V 1~ 50/60 Hz + N + PE 400V 3~ 50/60 Hz + N + PE 400V 3~ 50/60 Hz + PE	400V 3~ 50/60 Hz + N + PE 400V 3~ 50/60 Hz + PE	400V 3~ 50/60 Hz + N + PE 400V 3~ 50/60 Hz + PE
Protection class	IP30	IP30	IP30
Workplace temperature	0 to 40 °C	0 to 40 °C	0 to 40 °C
Dimensions	560 x 308 x 424	637 x 308 x 424	719 x 308 x 520
Weight	48 kg (empty)	52,7 kg (empty)	67,9 kg (empty)

(*) Under standard conditions

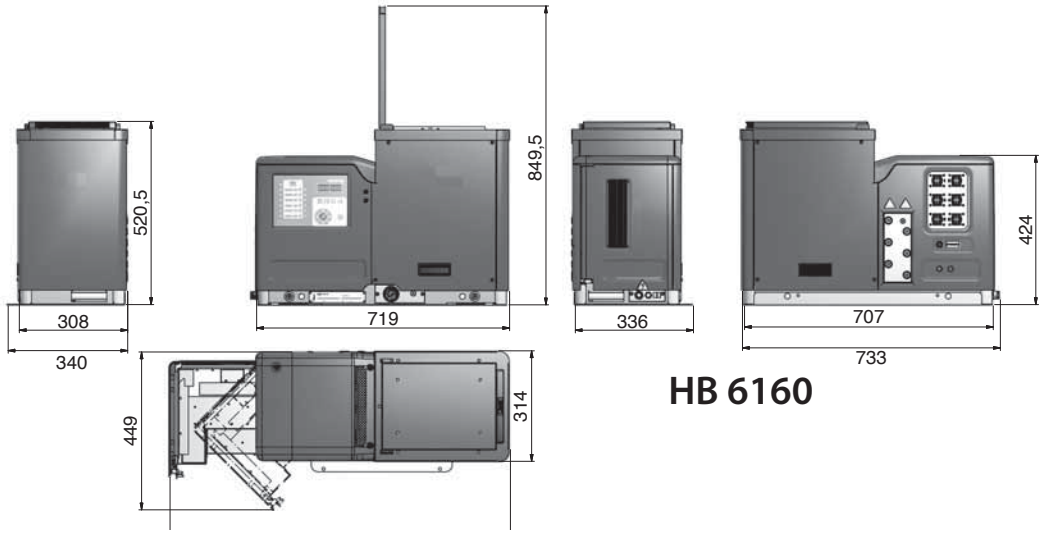
DIMENSIONS



HB 6040

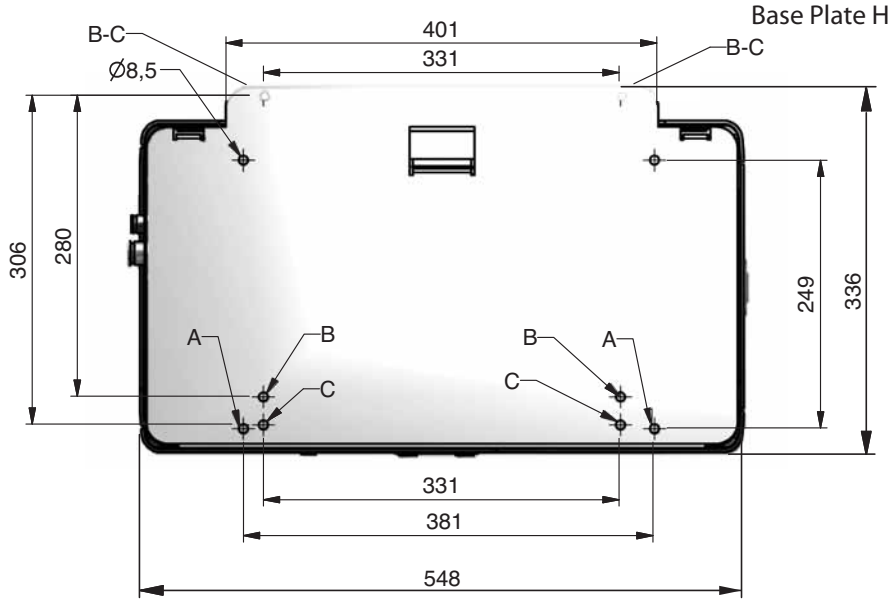


HB 6080

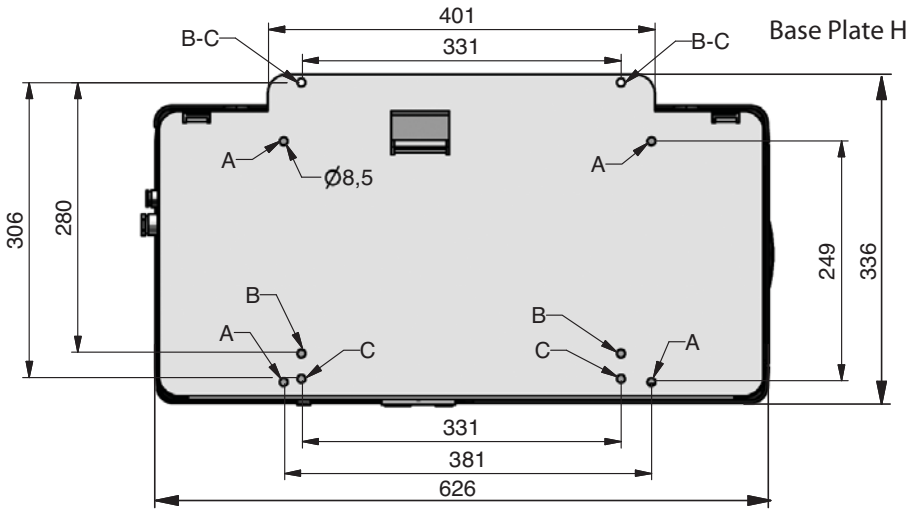


HB 6160

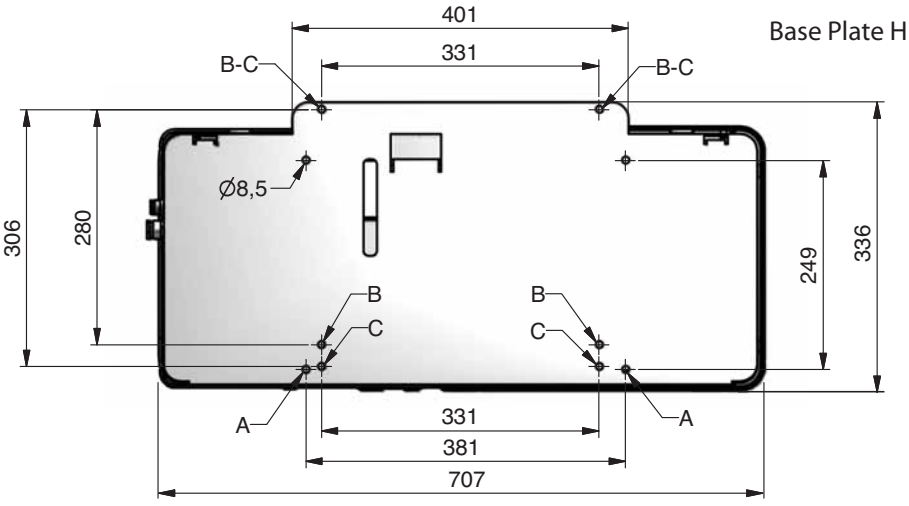
Base Plate HB 6040



Base Plate HB 6080



Base Plate HB 6160



Accessories

VP-200 Automatic pressure control system

Permits controlling the application fl ow, by means of a proportional valve, according to the variation in the machine speed.

Fill level monitoring system

For the adhesive fill level monitoring from the display of the control card or from the main machine, through the NO contact (usually open) without voltage.

400 VAC Connection system without neutral

Transformer box for connection to three-phase 400 V systems without neutral. Only compatible with melters/applicators that are prepared for this type of connection.

Air filtering system

For adapting the air supply conditions to the hot-melt melter/applicator requirements (clean, dry, and without lubrication).

8 CIRCUIT DIAGRAMS

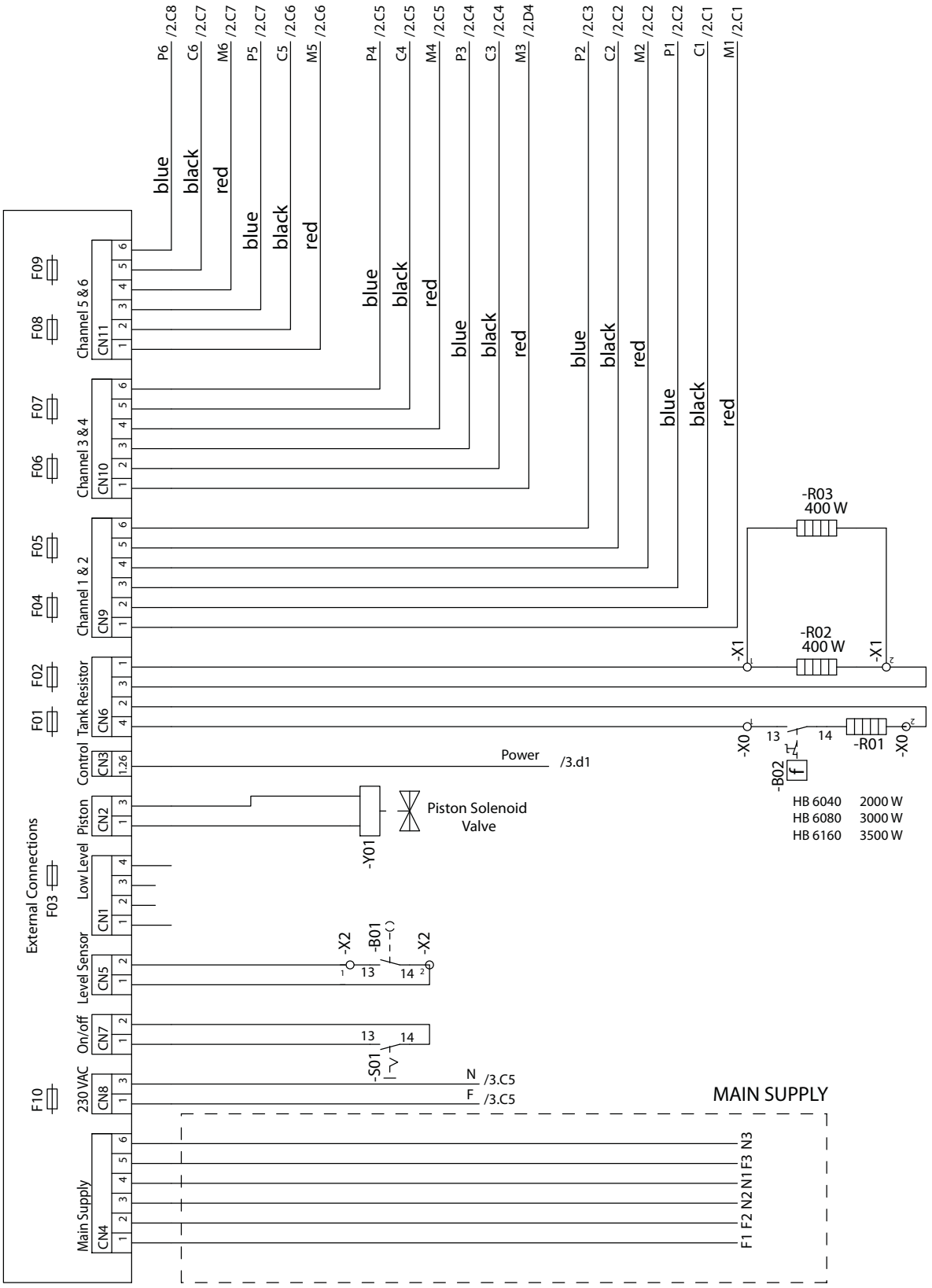
COMPONENTS LIST VERSION PT-100

-A01	Power card (2, 4 or 6 outputs)
-A03	Sensor card (2, 4 or 6 outputs)
-A04	Control card
-B01	Level sensor
-B02	240ºC safety thermostat
-B03	Pt-100 tank temperature sensor
-B04	Pt-100 distributor temperature sensor
-S01	ON-OFF switch
-Y01	Pneumatic group solenoid valve
-R01	Tank resistance 2000 W 230 V (4) / 3000 W 230 V (8) / 3500 W 230 V (16)
-R02	Distributor resistance 1 distributor 400 W 230 V
-R03	Distributor resistance 2 distributor 400 W 230 V
-X0	Tank connection ceramic lead
-X1	X1 ceramic strip distributor terminal
-X2	Distributor connection ceramic lead
-X3	8-pole channel 1 connector
-X4	8-pole channel 2 connector
-X5	8-pole channel 3 connector
-X6	8-pole channel 4 connector
-X7	8-pole channel 5 connector
-X8	8-pole channel 6 connector
-F1	Tank fuse 16 A 500 V gG
-F2	Distributor fuse 6 A 500 V gG
-F3	Low level signal fuse (F.H.M.) 2 A 250V F
-F4	Channel 1 fuse (hose-gun) 6 A 250V F
-F5	Channel 2 fuse (hose-gun) 6 A 250V F
-F6	Channel 3 fuse (hose-gun) 6 A 250V F
-F7	Channel 4 fuse (hose-gun) 6 A 250V F
-F8	Channel 5 fuse (hose-gun) 6 A 250V F
-F9	Channel 6 fuse (hose-gun) 6 A 250V F
-F10	DC Power supply fuse (F.F.A.) 0.5 A 250V T

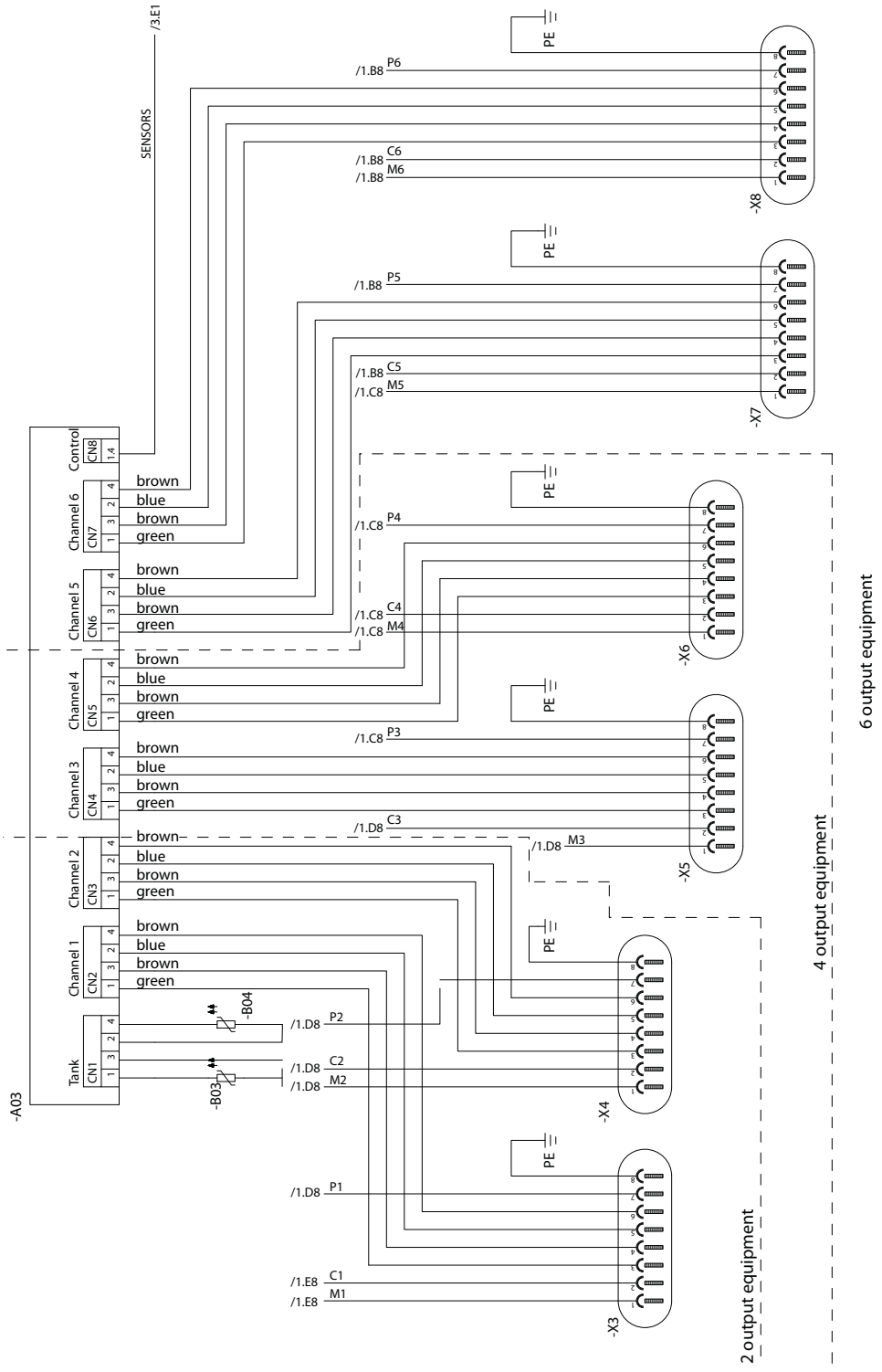
List of components version Ni-120

-A01	Power card (2, 4 or 6 outputs)
-A03	Sensor card (2, 4 or 6 outputs)
-A04	Control card
-B01	Level sensor
-B02	240ºC safety thermostat
-B03	Ni-120 tank temperature sensor
-B04	Ni-120 distributor temperature sensor
-S01	ON-OFF switch
-Y01	Pneumatic group solenoid valve
-R01	Tank resistance 2000 W 230 V (4) / 3000 W 230 V (8) / 3500 W 230 V (16)
-R02	Distributor resistance 1 distributor 400 W 230 V
-R03	Distributor resistance 2 distributor 400 W 230 V
-X0	Tank connection ceramic lead
-X1	X1 ceramic strip distributor terminal
-X2	Distributor connection ceramic lead
-X3	8-pole channel 1 connector
-X4	8-pole channel 2 connector
-X5	8-pole channel 3 connector
-X6	8-pole channel 4 connector
-X7	8-pole channel 5 connector
-X8	8-pole channel 6 connector
-F1	Tank fuse 16 A 500 V gG
-F2	Distributor fuse 6 A 500 V gG
-F3	Low level signal fuse (F.H.M.) 2 A 250V F
-F4	Channel 1 fuse (hose-gun) 6 A 250V F
-F5	Channel 2 fuse (hose-gun) 6 A 250V F
-F6	Channel 3 fuse (hose-gun) 6 A 250V F
-F7	Channel 4 fuse (hose-gun) 6 A 250V F
-F8	Channel 5 fuse (hose-gun) 6 A 250V F
-F9	Channel 6 fuse (hose-gun) 6 A 250V F
-F10	DC Power supply fuse (F.F.A.) 0.5 A 250V T

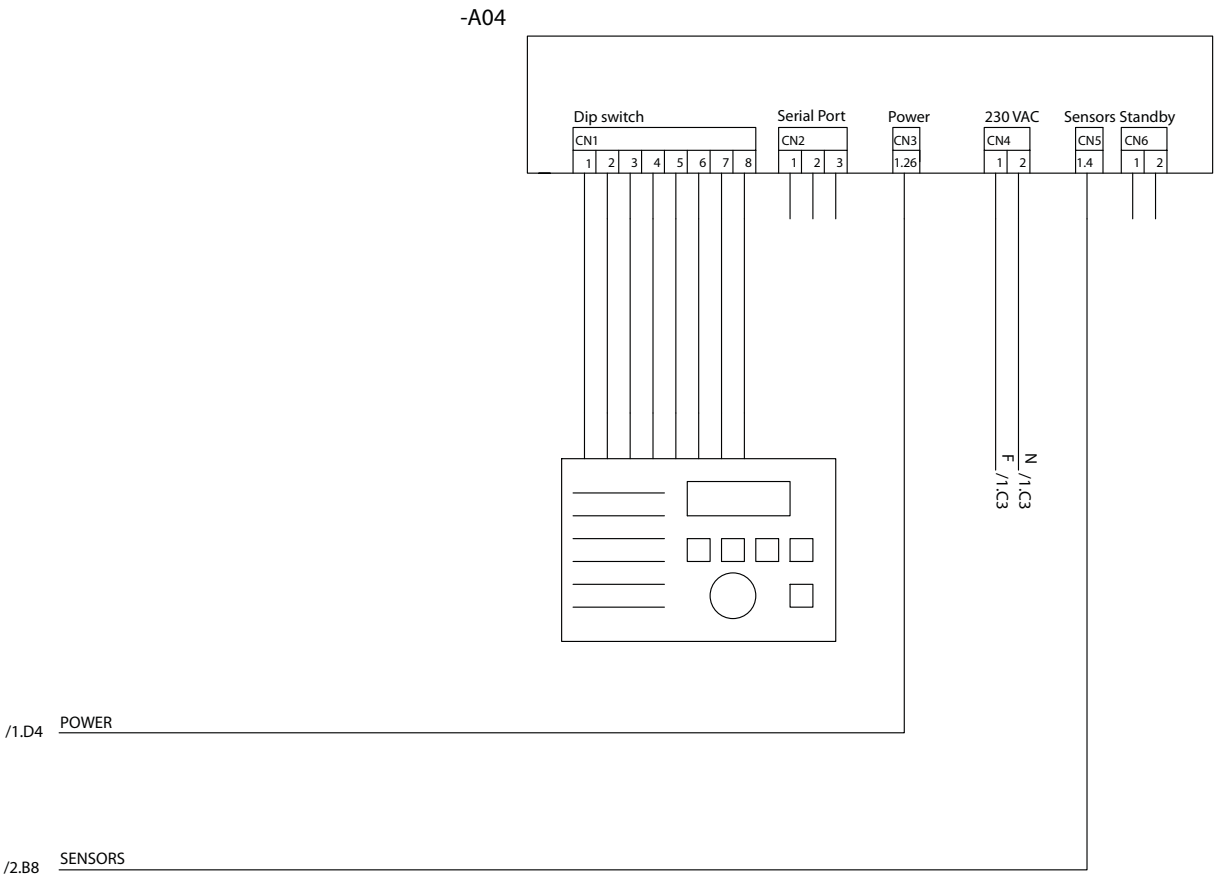
Power supply version Pt-100



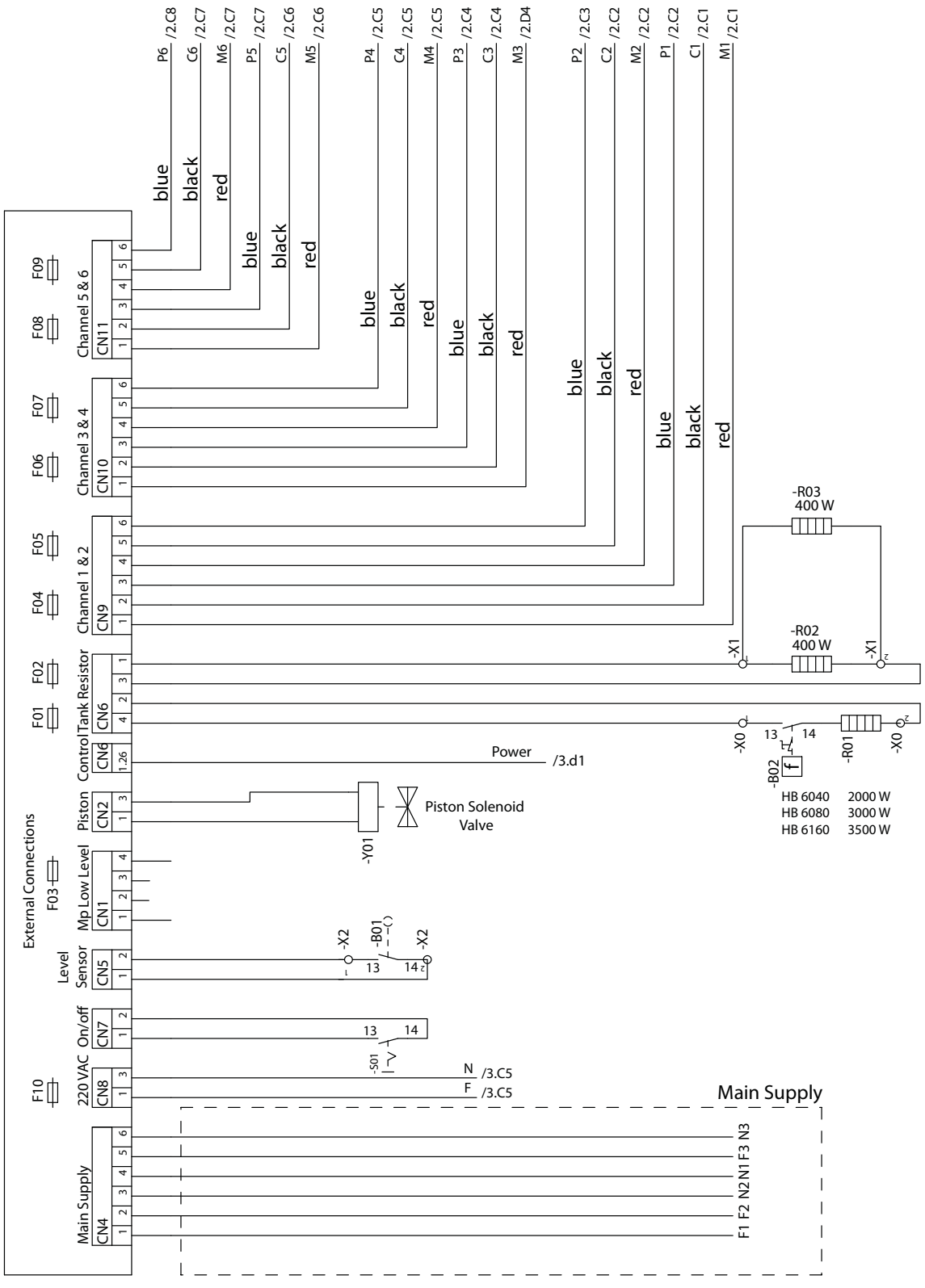
Outputs version Pt-100



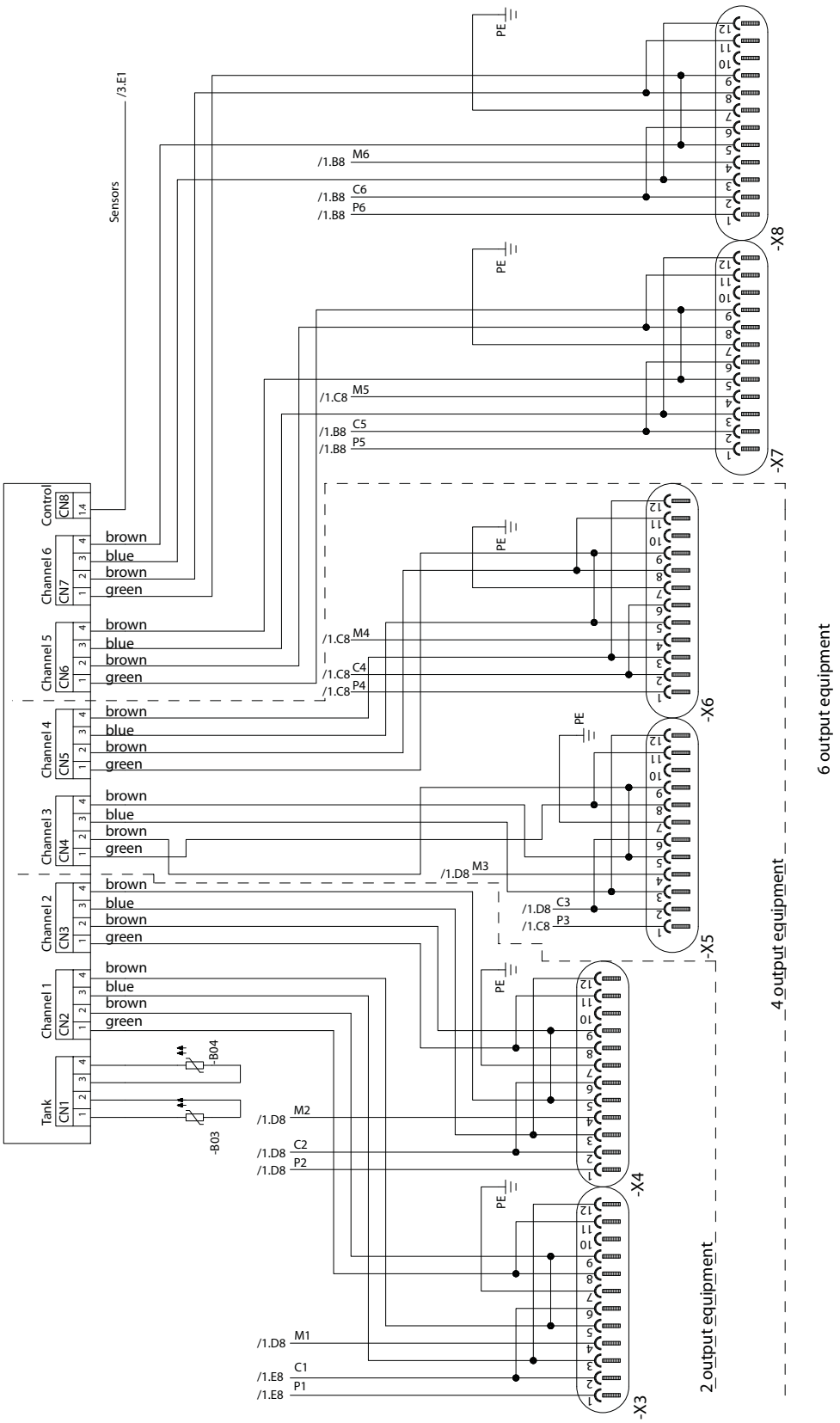
CONTROL VERSION PT-100



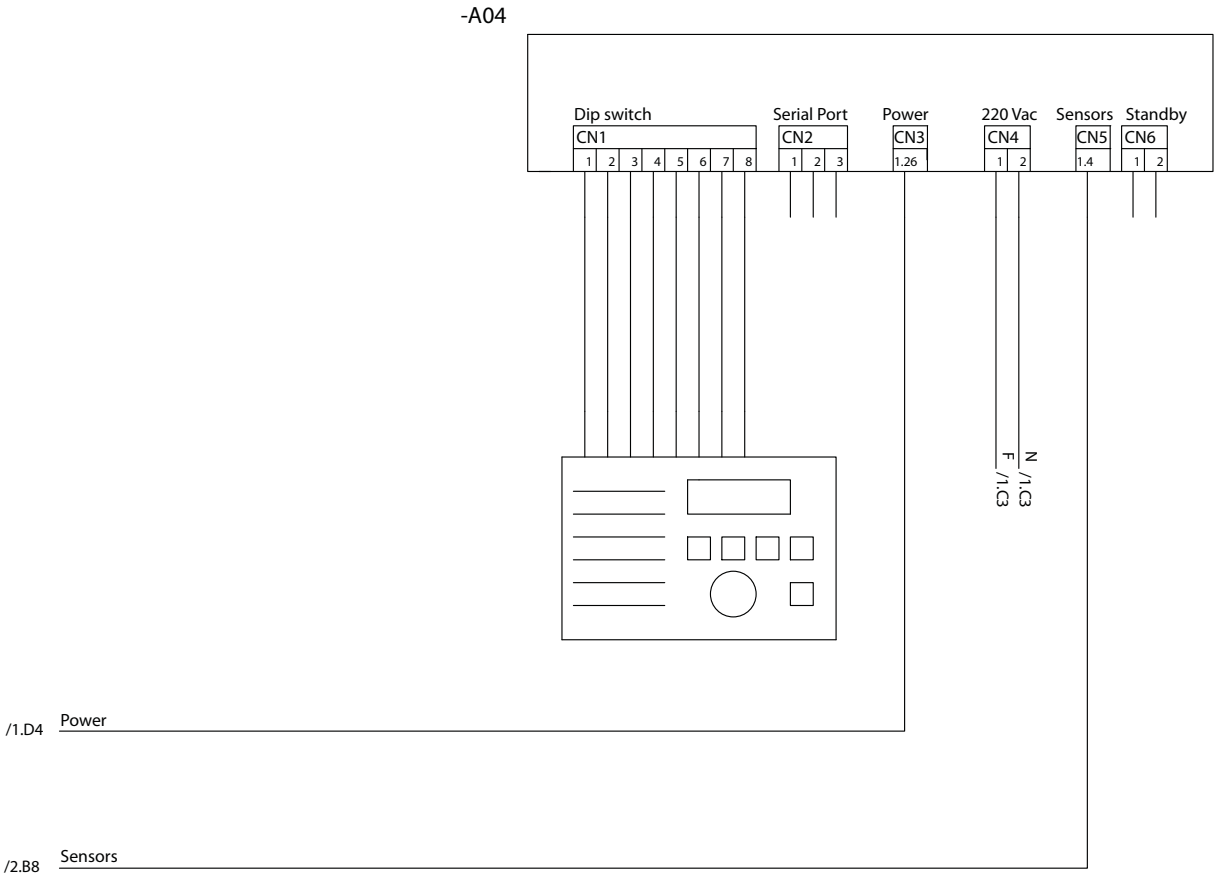
Power supply version Ni-120



Outputs version NI-120

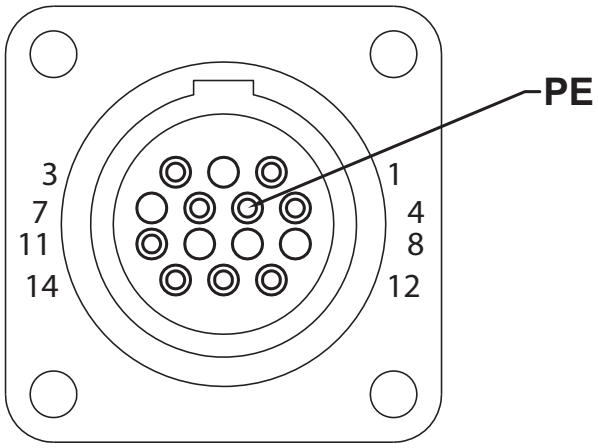


CONTROL VERSION NI-120



Pin Assignment of Circular Connector

Type: AMP 14-pole



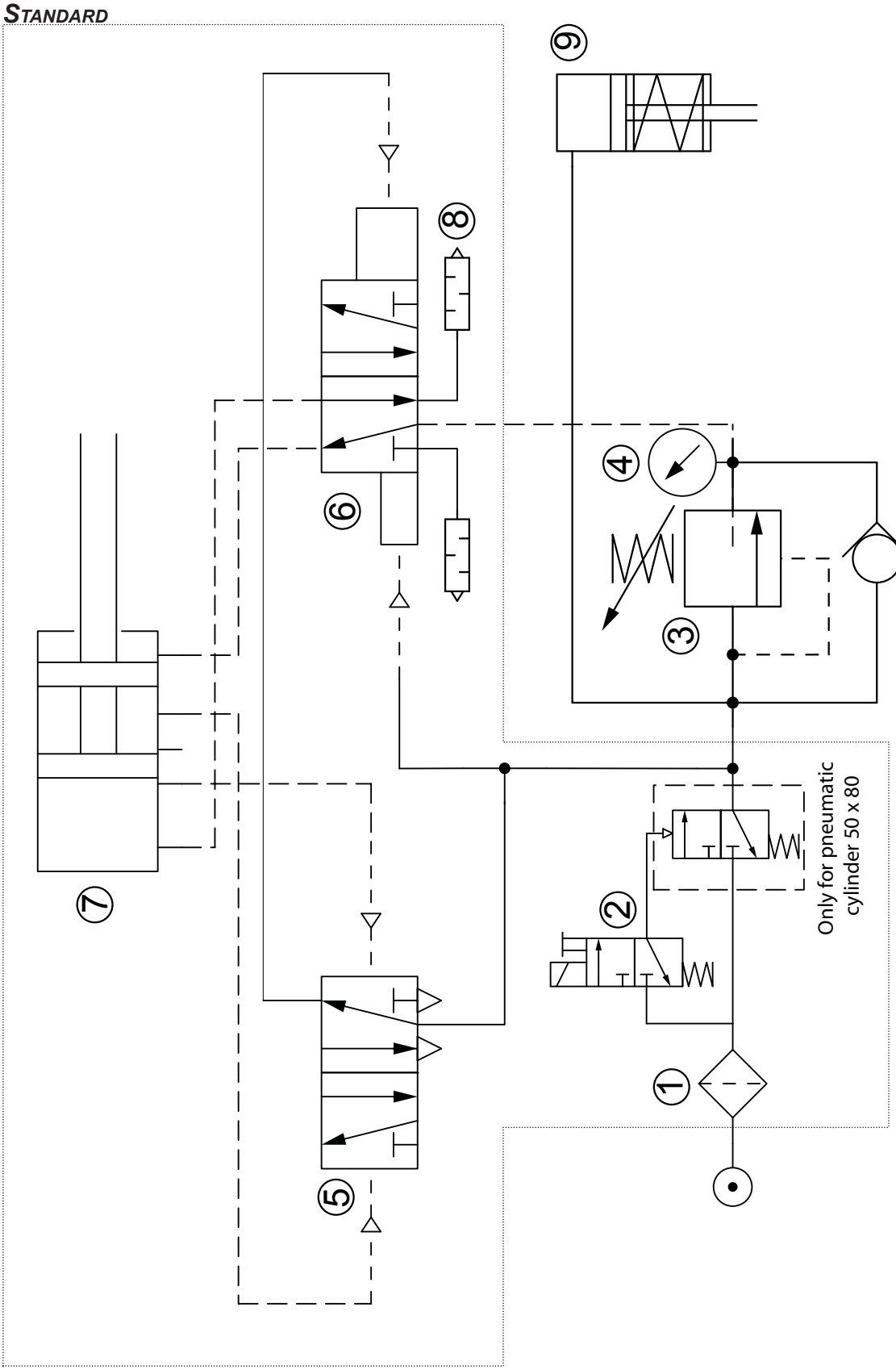
1	N black - Heating of manual application unit
2	NC
3	L 1 blue - Heating of manual application unit
4	blue - Sensor of manual application unit
5	PE green/yellow - Protective earth
6	brown - Sensor of manual application unit
7	NC
8	NC
9	NC
10	NC
11	green - Sensor of hose
12	brown - Sensor of hose
13	L 1 red - Heating of hose
14	N black - Heating of hose

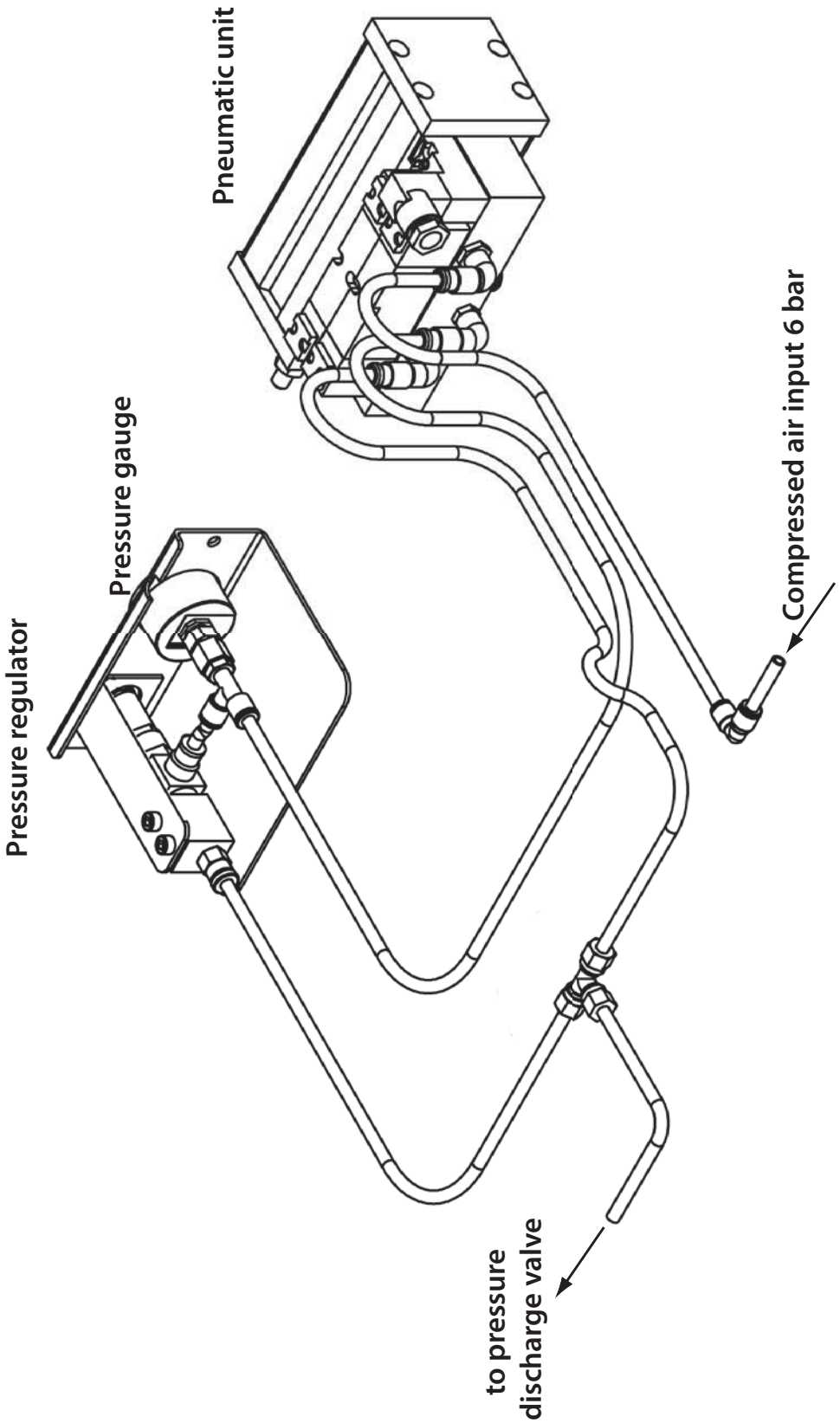
9 PNEUMATIC DIAGRAMS

COMPONENTS LIST

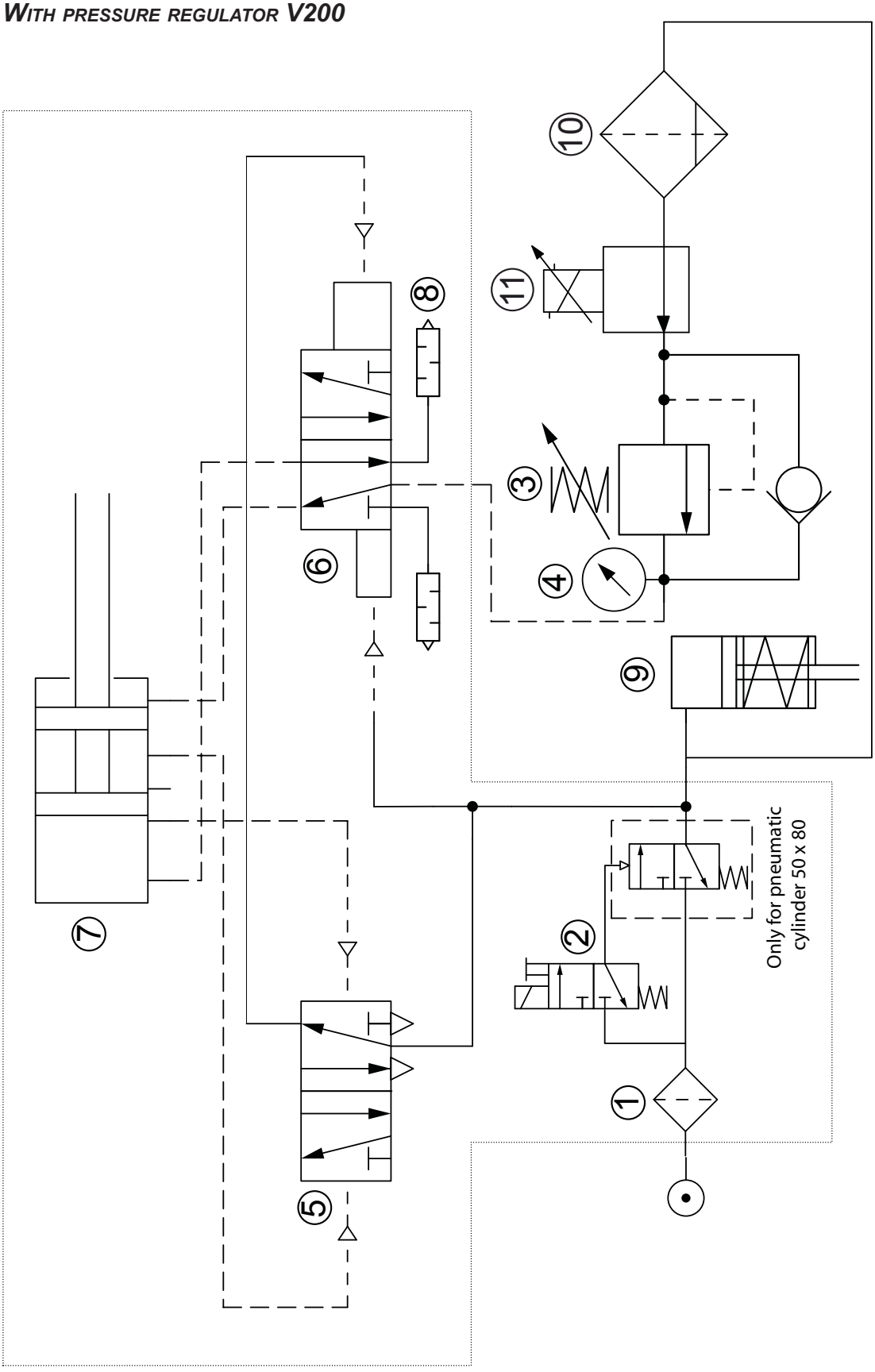
- 1	Innlet filter (filtering disk)
- 2	Input solenoid valve 3/2 (230 V 50 Hz 1.5 VA) 3/2-way valve pneumatic control (Ø80 x 50 pneumatic cylinder)
- 3	Pressure regulator 1-8 bar
- 4	Pressure gauge 0-10 bar
- 5	5/2-way valve, pneumatic control
- 6	5/2-way valve, pneumatic, bistable-dominant
- 7	Pneumatic cylinder double acting double chamber Ø50 x 50 (7cc pump) Ø80 x 50 (19cc pump)
- 8	Exhaust port filter
- 9	Pressure discharge valve
With pressure regulator VP200:	
- 10	Air intake filter 5µ
- 11	Pressure proportional valve

STANDARD




Pneumatic unit
Pressure gauge
Pressure regulator
Compressed air input 6 bar
to pressure
discharge valve

With pressure regulator V200



10 Spare parts list

The most common spare parts list of the *"HB 6000"* 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 4, 8 or 16 liters unit.

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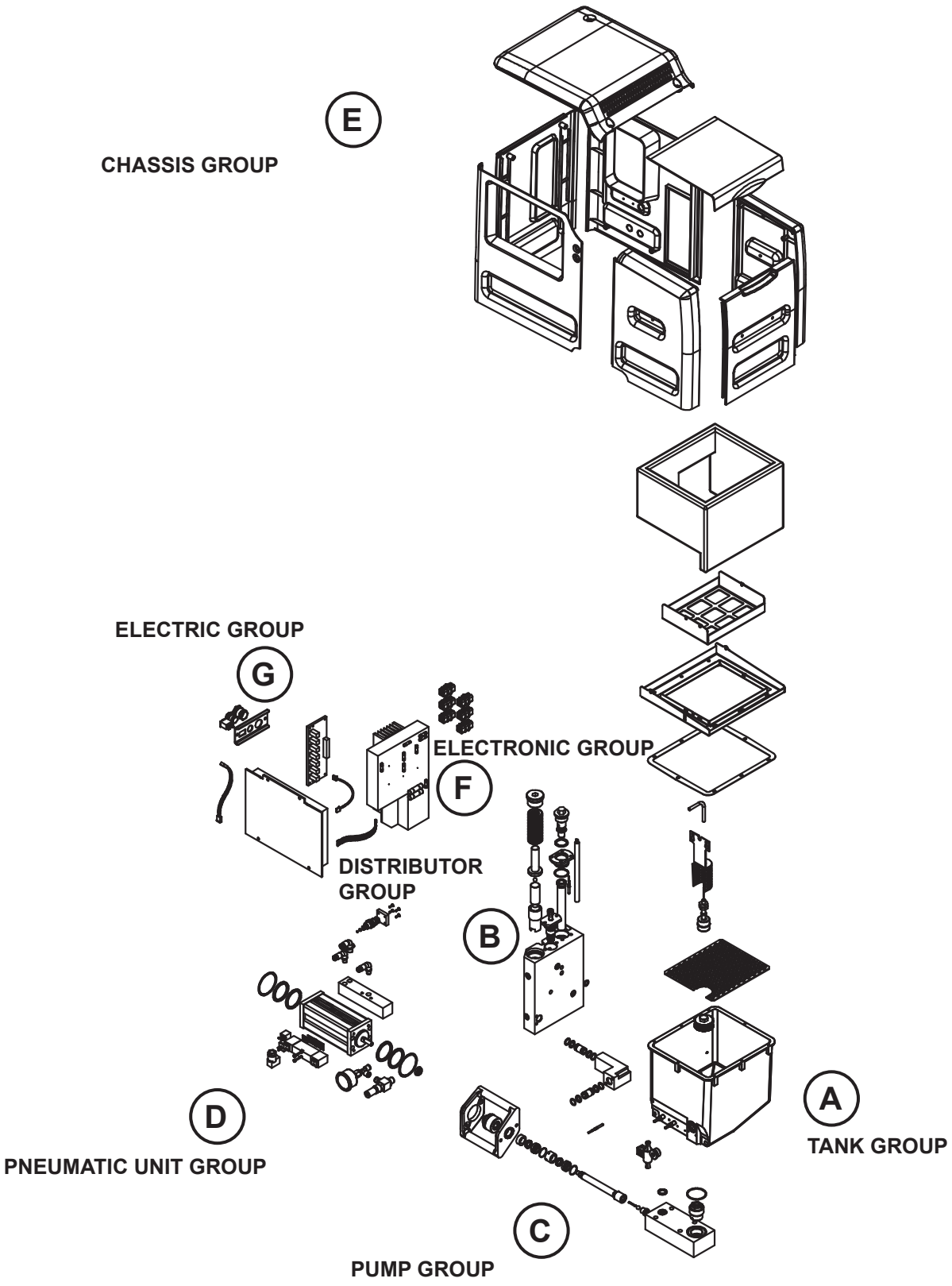
E
CHASSIS GROUP
ELECTRIC GROUP
G
ELECTRONIC GROUP
F
DISTRIBUTOR
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B
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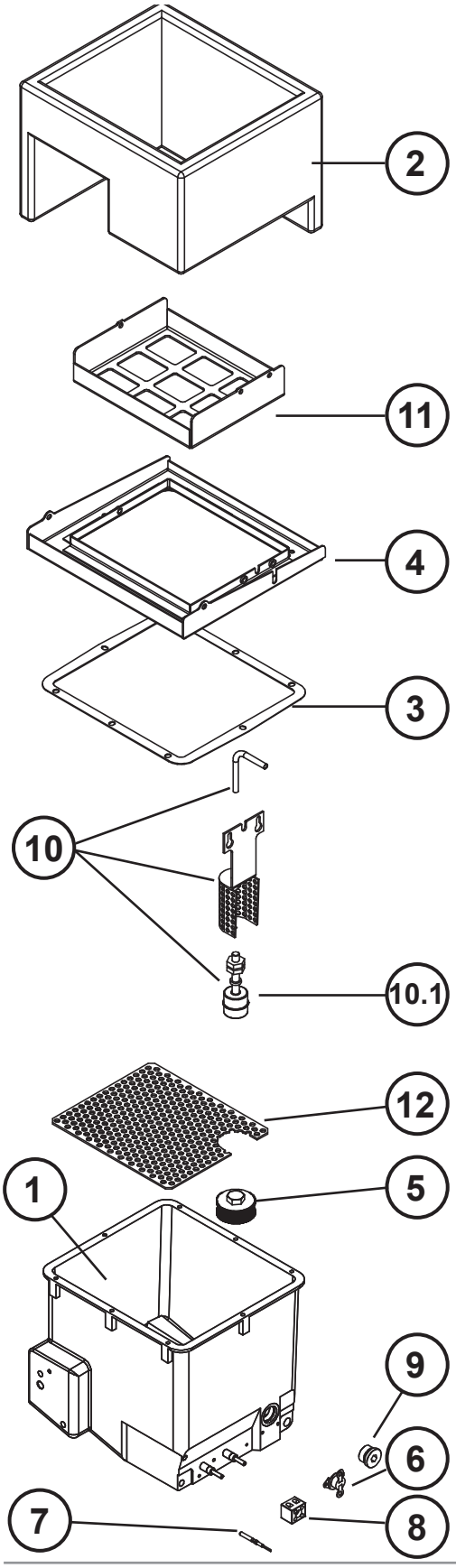
A
TANK GROUP
C
PUMP GROUP

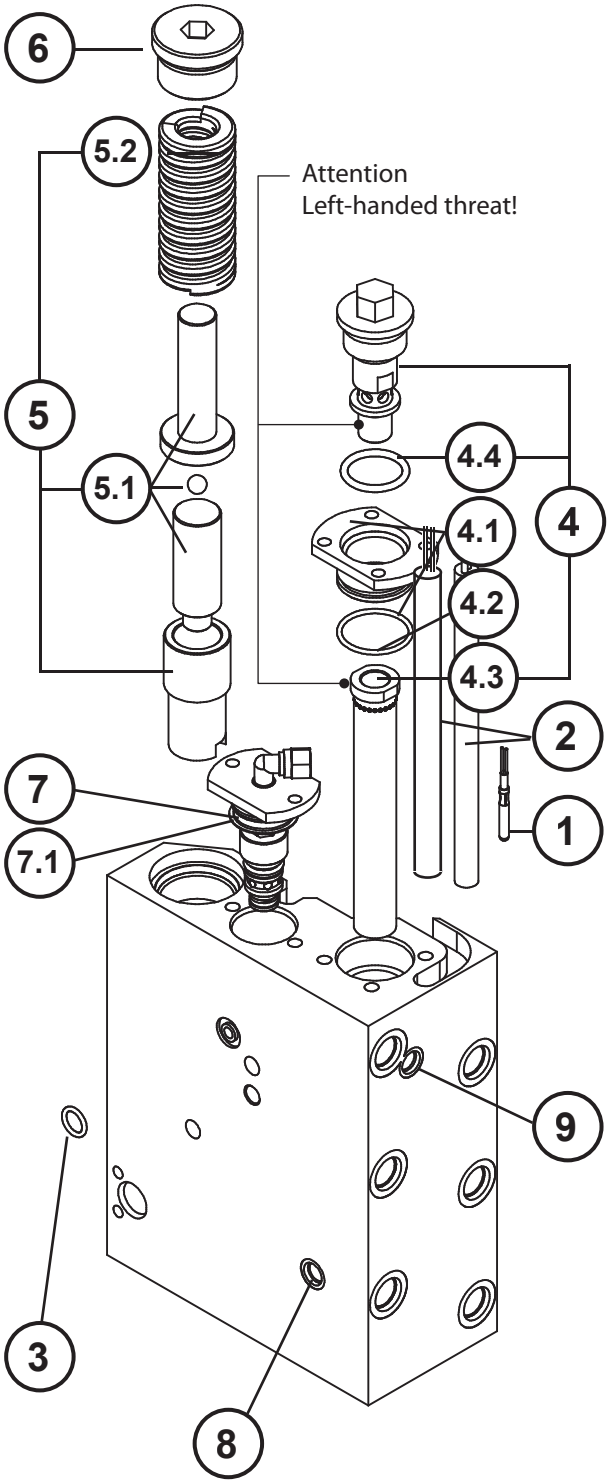


A TANK GROUP

Nº	Ref.	Description
1	M150024620	Complete tank assembly HB 6040
1	M150024840	Complete tank assembly HB 6080
1	M150024920	Complete tank assembly HB 6160
1.1	M150024610	PTFE coated tank HB 6040
1.1	M150024830	PTFE coated tank HB 6080
1.1	M150025100	PTFE coated tank Behälter HB 6160
2	M150021610	Insulation mantle HB 6040
2	M150021620	Insulation mantle HB 6080
2	M150023030	Insulation mantle HB 6160
3	M150024650	Tank gasket HB 6040
3	M150024890	Tank gasket HB 6080
3	M150025070	Tank gasket HB 6160
4	M150024990	Tank port housing HB 6040
4	M150024870	Tank port housing HB 6080
4	M150025060	Tank port housing HB 6160
5	M10100070	Flat tank filter
5	M10100085	Flat tank filter, extra-thick
5.1	M10100071	Flat tank filter screen
5.1	M10100086	Flat tank filter screen, extra-thick
6	M10030009	Safety thermostat 240 ºC
7	M150022640	Tank temperature sensor Pt-100 HB 6000
7	M150022650	Tank temperature sensor Ni-120 HB 6000
8	M10030007	Tank hook-up fitting-electrical lead
9	M150021790	Draining cover with gasket
9.1	M150021730	Gasket draining cover tank
10	M150024660	Level assembly detector HB 6040 (*)
10	M150024880	Level assembly detector HB 6080 (*)
10	M150025190	Level assembly detector HB 6160 (*)
10.1	M150021920	Level detector HB 6000 (*)
11	M150025160	Tank grid HB 6040 (*)
11	M150025170	Tank grid HB 6080 (*)
11	M150025180	Tank grid HB 6160 (*)
12	M150025200	Aluminium grating HB 6040 tank
12	M150025210	Aluminium grating HB 6080 tank
12	M150025220	Aluminium grating HB 6160 tank
12	M150025230	Aluminium grating HB 6040 tank with fill level detector
12	M150025240	Aluminium grating HB 6080 tank with fill level detector
12	M150025250	Aluminium grating HB 6160 tank with fill level detector

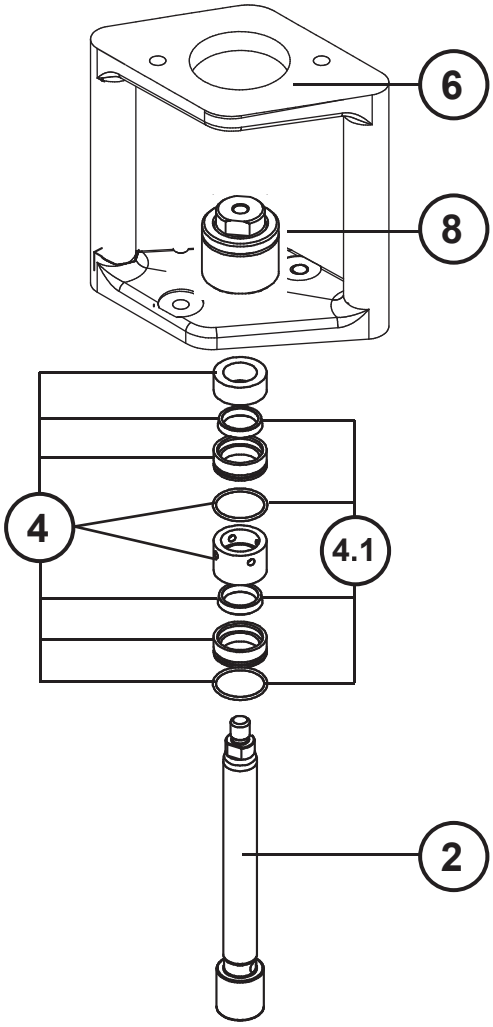
(*) optional

B DISTRIBUTOR GROUP

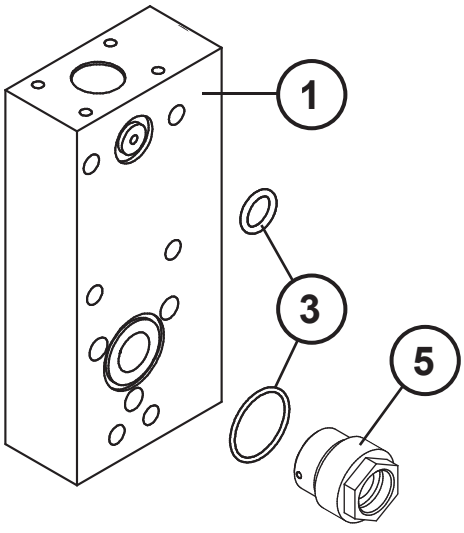


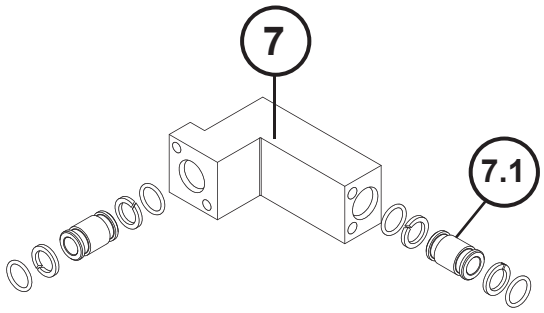
N°	Ref.	Description
1	M150022660	Distributor RTD sensor Pt-100 HB 6000
1	M150022670	Distributor RTD sensor Ni-120 HB 6000
2	M150021710	Heating element 10x160 400W
3	M150025310	Tank-distributor seating o-rings kit
4	M150029240	Distributor fi lter assembly HB 6000 complete
4.1	M150025260	Distributor filter body with gasket HB 6000
4.2	M150025270	Distributor filter body gasket HB 6000
4.3	M150029250	Distributor filter cartridge HB 6000
4.4	M150029260	Distribuitor o-ring HB 6000
5	M150021820	Compensation valve assembly HB 6000
5.1	M150021830	Compensation valve piston-plunger assembly HB 6000
5.2	M10100096	Compensation valve spring
6	M150022110	Cover complete
7	M150024750	Pressure discharge valve assembly
7.1	M150024760	Pressure discharge valve o-rings kit
8	M10120095	Cover with gasket equalizing valve
8.1	M10120096	Cover gasket equalizing valve
9	M10100082	Pump cover with gasket
9.1	M10100083	Gasket pump cover
	M150025290	Insulation HB 6040/6080 distributor
	M150025300	Insulation HB 6160 distributor

C PUMP GROUP



N°	Ref.	Description
1	M150024790	Pump body with braces and fittings HB 6000, small
1	M150024800	Pump body with braces and fittings HB 6000, big
2	M10100011	Pump shaft, small
2	M150023080	Pump shaft, big
3	M150024810	Pump seating o-rings kit HB 6000
4	M10100013	Pump shaft guide tips and fittings assembly
4	M150023090	Kit guide bushing large pump
4.1	M10100105	Kit pump shaft retainer fittings
4.1	M150023100	Kit gaskets large pump axis
5	M150024970	Set HB 6000 feed valve pump
5	M150024980	Set HB 6000 feed valve large pump
6	M150024770	Pump holding support HB 6000
6	M150024780	Bracket large pump HB 6000
7	M150025010	HB 6040/6080 pressure adapter
7	M150025020	HB 6160 pressure adapter
7.1	M150022120	Transition piece pump distributor HB 6000
8	M150020590	Ball joint short pump axis drive

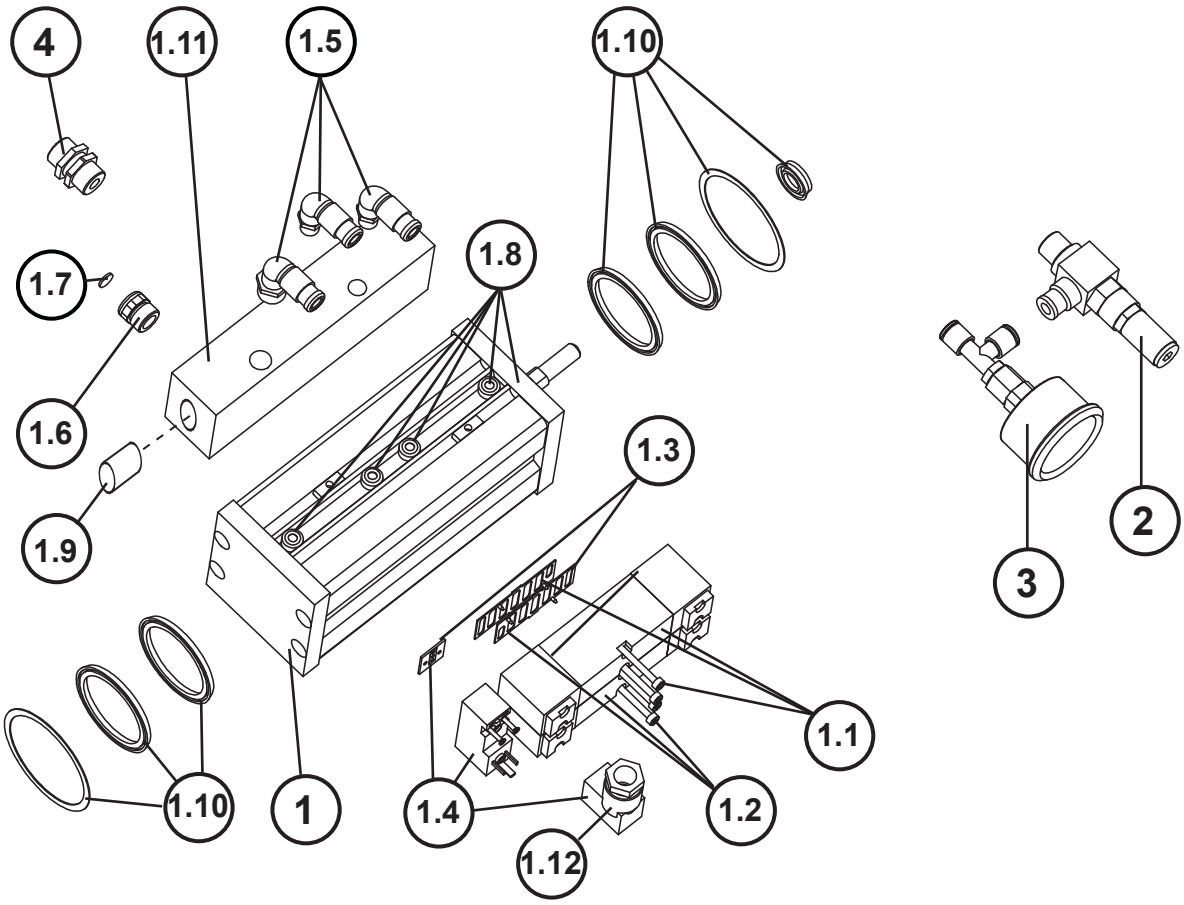




D PNEUMATIC UNIT GROUP

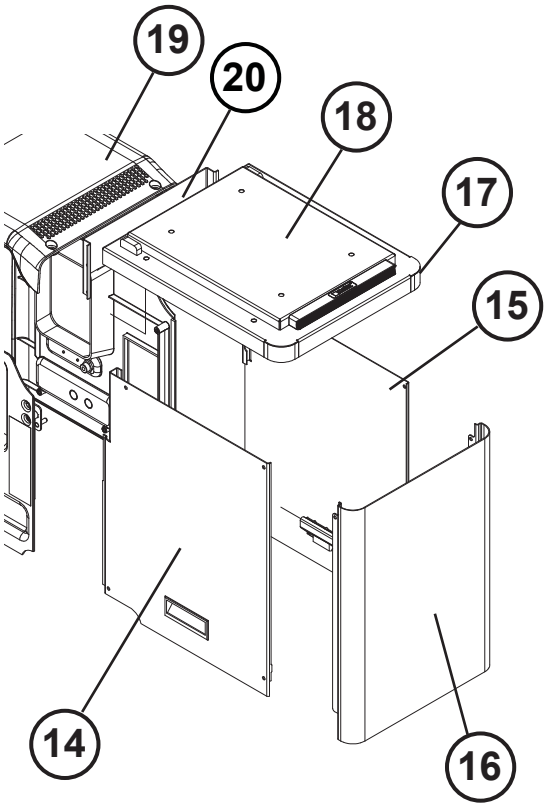
N°	Ref.	Description
1	M150022680	50x50 Pneumatic unit assembly with filter
1	M150023350	80x50 Pneumatic unit assembly with filter
1.1	M150020490	Differential valve with gasket
1.2	M150020500	Slide pilot valve with gasket
1.3	M150020510	Pneumatic unit valves gasket kit
1.4	M150020520	Intake solenoid valve (220V AC)
1.5	M150020540	Pneumatic unit fittings kit
1.6	M10110051	Pneumatic unit exhaust silencer 50x50
1.6	M150023330	Pneumatic unit exhaust silencer 80x50
1.7	M150020560	Pneumatic unit filtering disc (2)
1.8	M150020570	50x50 Pneumatic cylinder with seating gaskets

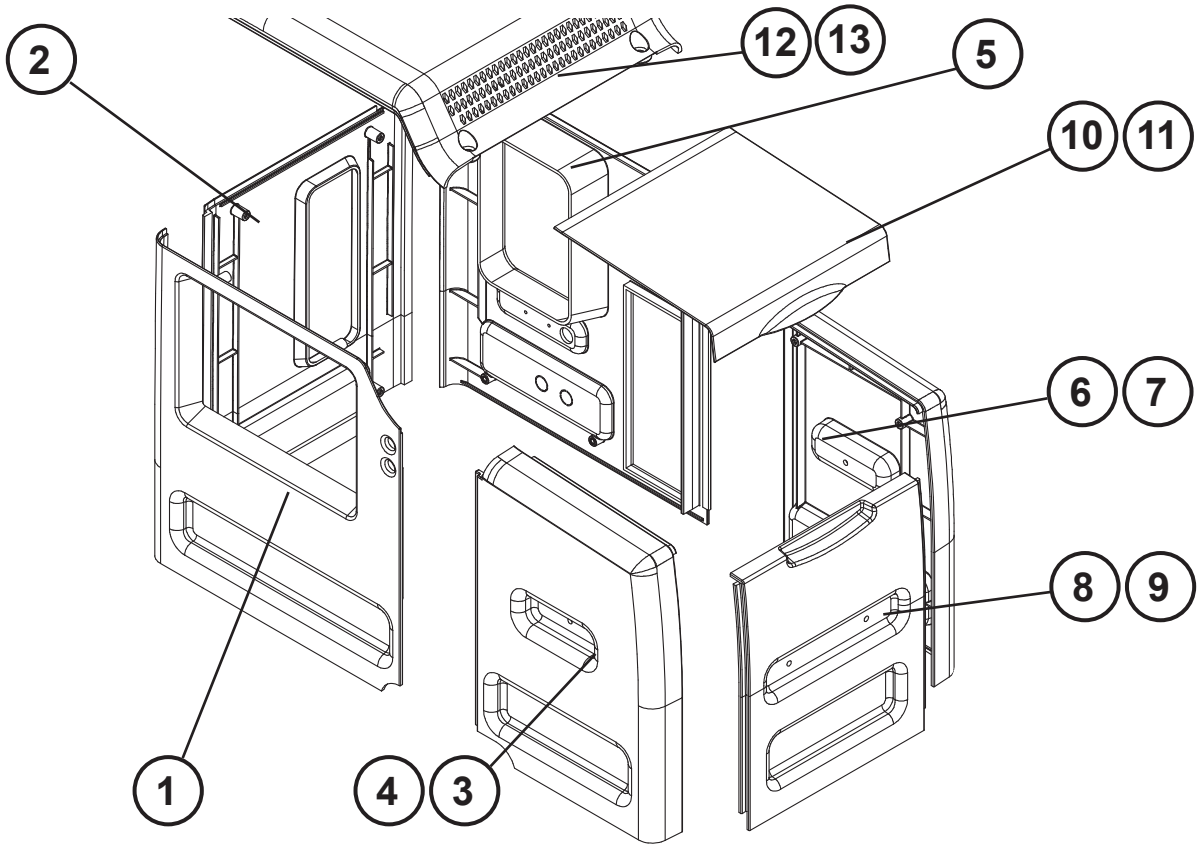
N°	Ref.	Description
1.8	M150023310	80x50 Pneumatic cylinder with seating gaskets
1.9	M150025340	Inlet valve cylinder 80x50
1.10	M150020580	Gasket kit cylinder 50x50 pneumatic assembly
1.10	M150023300	Gasket kit cylinder 80x50 pneumatic assembly
1.11	M150020620	Distributor plate cylinder 50x50
1.11	M150023320	Distributor plate cylinder 80x50
1.12	M150020630	Connector 2P+T 15x15
2	M150021850	Pressure regulator
3	M150029390	Manometer HB 6000
4	M10120021	Quick air input fi tting



E CHASSIS GROUP

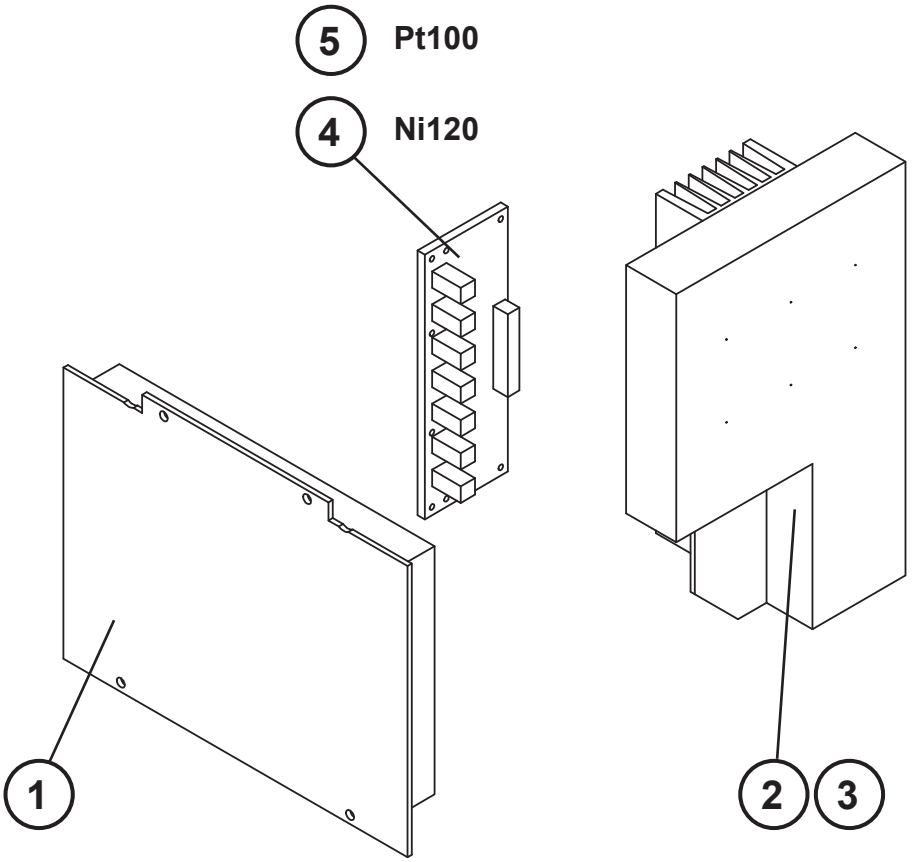
Nº	Ref.	Description
1	M150029400	Control board door housing HB 6000
2	M150029410	Power board door housing HB 6000
3	M150029470	Front movable housing HB 6040
4	M150029480	Front movable housing HB 6080
5	M150029440	Rear fixed housing HB 6000
6	M150029450	Rear movable housing HB 6040
7	M150029460	Rear movable housing HB 6080
8	M150029420	Panelling side removable HB 6040
9	M150029430	Panelling side removable HB 6080
10	M150029490	Lid assembly HB 6040
11	M150029500	Lid assembly HB 6080
12	M150029510	Cover housing HB 6040
13	M150029520	Cover housing HB 6080
14	M150029580	Panelling front removable HB 6160
15	M150029570	Panelling rear removable HB 6160
16	M150029560	Panelling side removable HB 6160
17	M150029590	Panelling cover HB 6160
18	M150029600	Set covering HB 6160
19	M150029610	Panelling top HB 6160
20	M150029620	Tank left side fixed housing HB 6160





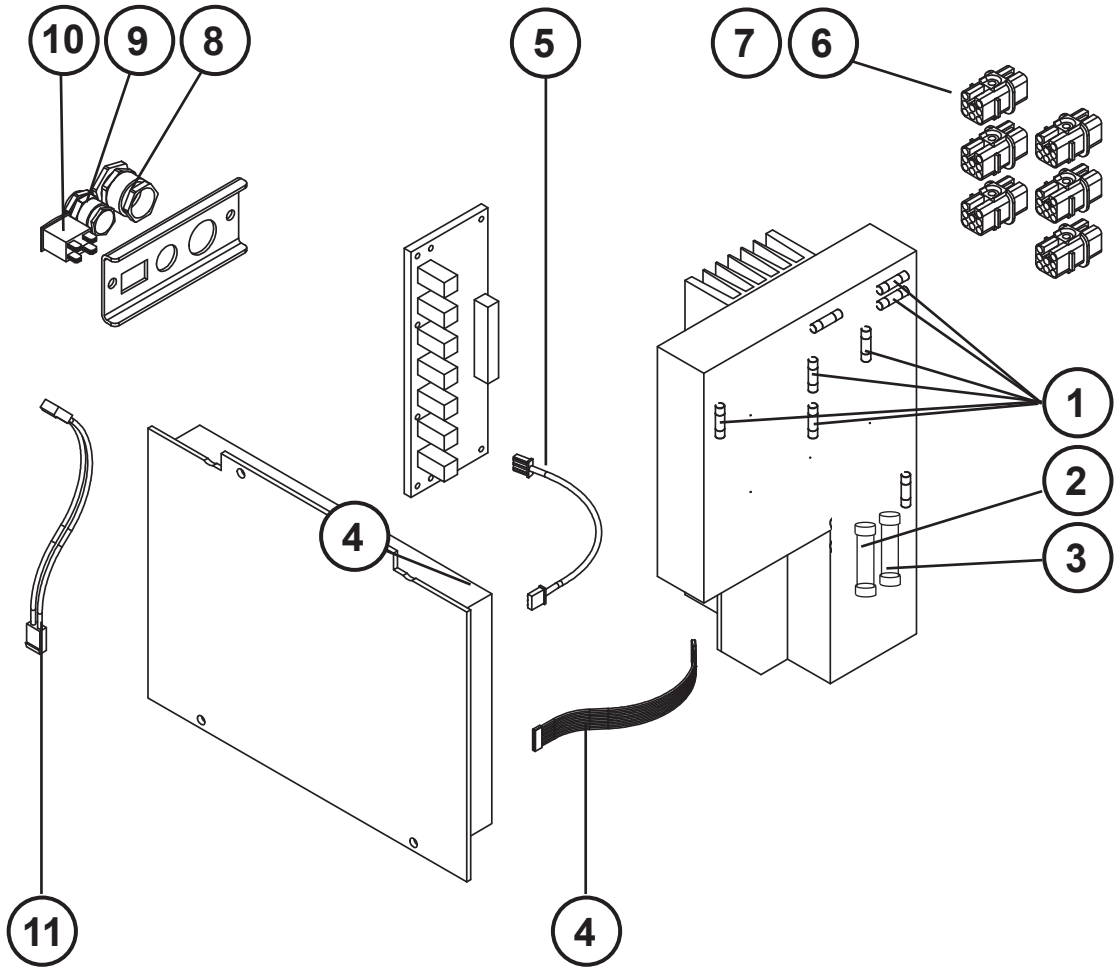
F ELECTRONIC GROUP

Nº	Ref.	Description
1	M150024720	Control board HB 6000
2	M150024700	Power board HB 6000 2 outlets
3	M150024690	Power board HB 6000 6 outlets
4	M150024710	Sensor board Ni120 HB 6000
5	NCN0495	Sensor board Pt100 HB 6000



G ELECTRIC GROUP

N⁰	Ref.	Description
1	M10010300	Fuse 6 A
2	M150021530	Fuse 6 A 10x38 gG type
3	M150021540	Fuse 16 A 10x38 gG type
4	M150024730	Control to power board ribbon cable assembly
5	M150024740	Control to sensor board ribbon cable assembly
6	M150029530	9-pin round outlet
7	M150020720	12-pin square outlet
8	M10140040	Cable gland Pg13
9	M150021590	Cable gland Pg9
10	M150021600	Main switch
11	M150024900	Connection cable output power supply unit



11 Declaration of Conformity

CE

Declaration of Conformity

We **Bühnen GmbH & Co KG.**
D-28277 Bremen

declare in sole responsibility that the product

Hot Melt Adhesive Tank System HB 6000 series

to which this declaration refers, conforms to the following standards or normative documents in its delivery state:

DIN EN ISO 12100-1, -2
DIN EN ISO 13732-1
DIN EN 60204-1
DIN EN 61000-6-4/6-2

in accordance with the provisions of the directives

98/37/EG
2002/95/EG
2004/108/EG
2006/42/EG

Bremen, July 2009

Hermann Kruse
Technical Director
Dokumentation Representative

Hanno Pünjer
Managing Director

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12 Instruction Handbook Heatable Hose

This document describes dealing with heatable hoses

- Type NS (for applicator heads)
- Type KS (for applicator heads) and
- Type HP (for manual applicator devices)

Specific security advice

Possible dangers

Danger of burns!

due to hot metal parts, hot melt material, and hot melt material vapors.

Therefore, always wear heat protection gloves.

Intended use

Heatable hoses are used as flexible connections between machines or machine parts. They are used to transport melted hot melt material, such as from a tank system to the manual application unit.

Attention!

Heatable hoses Types HP and KS are only approved for operation with BÜHNEN applicator heads and manual application devices.

Disconnection and connection to the applicator head/manual application device for Type HP may only be carried out by trained electricians. Switch the tank unit off beforehand!

Notes on safe operation

Danger of burns!

- The maximum permissible working temperature (T_{max}, see type plate) may not be exceeded. Too high temperatures will cause the pressure load capacity to sink. This could destroy the hose.

- Release the system pressure before dismantling the heatable hose.

Danger!

Before every maintenance or repair work on the heatable hose, remove the mains plug from the tank system.

Danger of burning caused by hot melt adhesive!

TYPE NS30

Item no.	Designation
NKT0081	Hose NS30 0.6 m NW08
NKT0082	Hose NS30 1.2 m NW08
NKT0083	Hose NS30 1.8 m NW08
NKT0084	Hose NS30 2.4 m NW08
NKT0085	Hose NS30 3.0 m NW08
NKT0086	Hose NS30 3.6 m NW08
NKT0415	Hose NS30 4.0 m NW08
NKT0357	Hose NS30 4.2 m NW08
NKT0087	Hose NS30 4.8 m NW08
NKT0405	Hose NS30 6.0 m NW08
NKT0088	Hose NS30 7.2 m NW08
NKT0328	Hose NS30 8.0 m NW08
NKT0089	Hose NS30 10.0 m NW08
NKT0090	Hose NS30-SW 0.6 m NW08 surge water protected
NKT0091	Hose NS30-SW 1.2 m NW08 surge water protected
NKT0092	Hose NS30-SW 1.8 m NW08 surge water protected
NKT0093	Hose NS30-SW 2.4 m NW08 surge water protected
NKT0094	Hose NS30-SW 3.0 m NW08 surge water protected
NKT0095	Hose NS30-SW 3.6 m NW08 surge water protected
NKT0096	Hose NS30-SW 4.8 m NW08 surge water protected

Optional:

A =	replaceable inner liner (recommended for use with PUR or POR)
VA-FLEX =	VA casing (under extreme loading on external casing)
S =	external casing in signal colour (orange)

Typ KS, HP

XX_ _ _ _ xx

Type
HP = for manual applicator devices
KS = for applicator heads

Length
24 = 2,4 m
30 = 3,0 m
45 = 4,5 m

Ø Hose core
0 = 8 mm (Standard)
1 = 6 mm
x = other diameters as option

Art
0 = for extrusion application
1 = with integrated spray air line

Version

without	=	Standard T_{max} = 200° C
HT	=	High temperature T_{max} = 250° C
PS	=	Polyamide corrugated protection hose
PU	=	for PU hot melt adhesives
A	=	replaceable inner liner

Technical Data

Series NS30

Version	High-Flex
Supply voltage	230V AC/50…60 Hz
Max. operating temperature (Tmax)	210° C
Temperature sensor	Ni120
Pressure resistance (at 200° C)	160 bar
Standard nominal diameter	NW08
Cap external diameter	40 mm

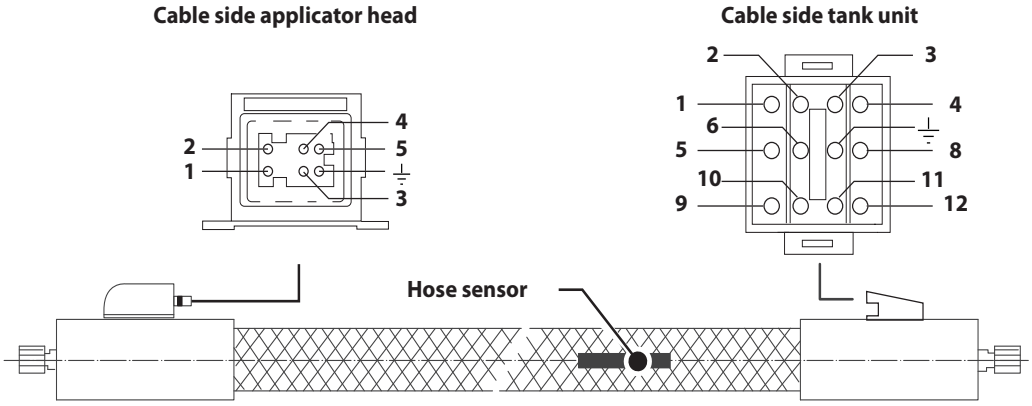
Type KS, HP

Design	Standard	High temperature (HT)
Supply voltage	230V AC/50…60 Hz	
Heating capacity (P)	up to 3 m hose length: 130 W/m as of 3 m hose length: 100 W/m	
Max. operating temperature (Tmax)	200° C	250° C
Temperature sensor	PT100	
Pressure load capacity (Pmax) for 8 mm hose core	The stated values have been established by measurement in stretched condition without movement. The values will change for mechanical loads. Especially short, frequently very high pressure peaks have a negative impact.	
Bursting pressure at 24°C Max. hot melt material pressure: up to 24° C at 100° C at 200° C at 250° C	900 bar 200 bar 180 bar 160 bar -	900 bar 250 bar 225 bar 200 bar 188 bar
Max. spray air pressure (P_{max}) (Only with spray manual application device)	5 bar	
Fitting	galvanized steel, 9/16-18 UNF thread, size 19 for nominal diameters 08 and 10	

PIN ASSIGNMENT

TYPE NS30

Plug type: 12-pole rectangle, pins (to tank unit)
6-pole rectangle, socket (to applicator head)



To applicator head (6-pole rectangle)

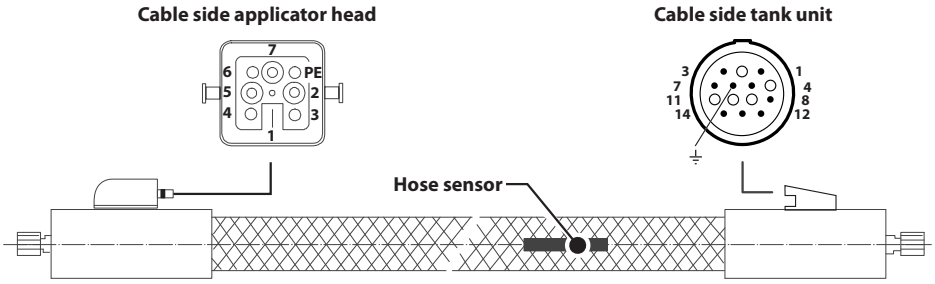
Pin	Colour	Function
1	white	Heater applicator head (L)
2	green	Heater applicator head (N)
3	orange	Applicator head sensor
4	free	
5	brown	Applicator head sensor
⏚	green/yellow	Protective earth

To tank unit (12-pole rectangle)

Pin	Colour	Function
1	white	Heater applicator head (L)
2	green	Heater applicator head (N)
3	orange	Connecting line to sensor applicator head, jumper to Pin 12
4	blue	Heater hose
5	brown	Sensor hose (out) Brown & red are connected in the plug together with the jumper to Pin 9
6	blue	Heater hose
7	green/yellow	Protective earth
8	red	Sensor hose (return), jumper to Pin 11
9	brown	Jumper to Pin 5
11	red	Jumper to Pin 8
12	orange	Jumper to Pin 3

TYPE KS

Plug type: AMP 14-pole, pins (to tank unit)
Harting, 8-pole, lining, (to applicator head)



To applicator head (8-pole)

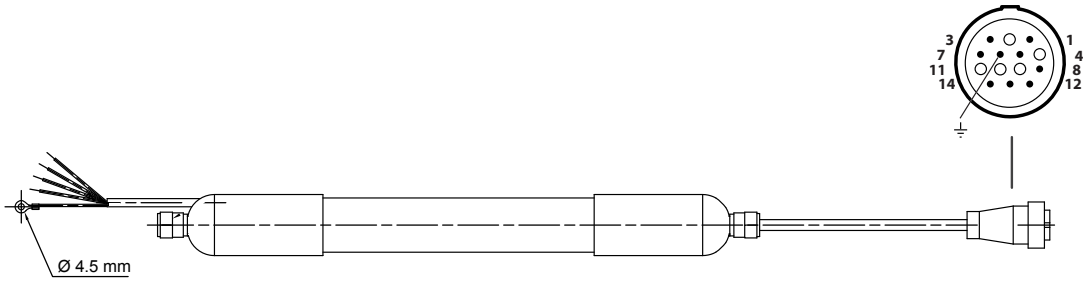
Pin	Colour	Function
1	free	
2	brown	Heater applicator head (L)
3	blue	Heater applicator head (N)
4	orange	Valve control
5	orange	Valve control
6	grey	Applicator head sensor
7	grey	Applicator head sensor
8	green/yellow	Protective earth

To tank unit (14-pole AMP)

Pin	Colour	Function
1	brown	Heater applicator head (L)
2	free	
3	blue	Heater applicator head (N)
4	grey	Applicator head sensor
5	green/yellow	Protective earth
6	grey	Applicator head sensor
7	orange	Valve control
8	free	
9	orange	Valve control
10	free	
11	white	Sensor hose
12	red	Sensor hose
13	yellow	Heater hose (L)
14	violet	Heater hose (N)

TYPE HP

Plug type: AMP 14-pole, pins (to tank unit)

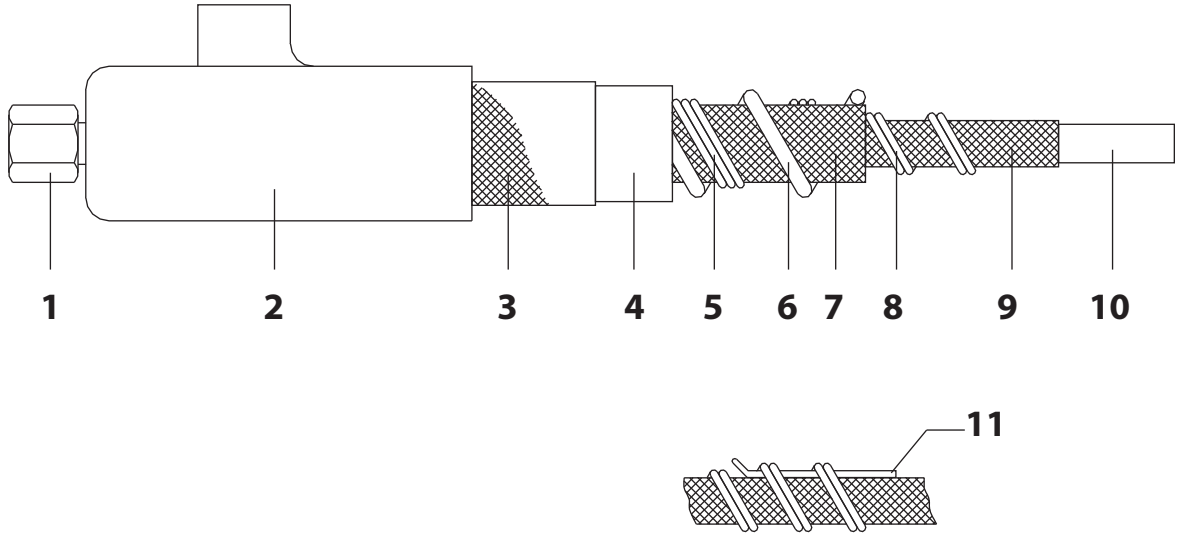


To tank unit (14-pole AMP)

Pin	Colour	Function
1	brown	Heater applicator head (L)
2	free	
3	blue	Heater applicator head (N)
4	grey	Applicator head sensor
5	green/yellow	Protective earth
6	grey	Applicator head sensor
7	orange	Valve control
8	free	
9	orange	Valve control
10	free	
11	white	Sensor hose
12	red	Sensor hose
13	yellow	Heater hose (L)
14	violet	Heater hose (N)

Construction and Function

Construction



Cons. No.	Designation
1	Fitting
2	End cap
3	Braid
4	Silicon foam
5	Control cores
6	PTFE hot air line (only in KS-S version)
7	Insulation
8	Heating
9	Stainless steel wire braid
10	PTFE inner liner
11	Pt 100/Ni120 temperature sensor

Funktion

The basis of the heatable hose is formed by the inner liner (10) through which the melt flows. It is made in high-quality PTFE with a smooth surface.

Since the inner liner (10) does not have very much pressure resistance, it is enclosed in a stainless steel braid (9). The connecting fittings (1) in galvanised steel are pressed together with the overall setup plan.

The heating conductors (8) consist of high-quality heating conductor alloys that are covered by a protective conductor braid. Fiberglass braid (7) that covers the heating conductors is used as heat insulation.

The PTFE insulated brush shunts (5) are coiled around this construction in a spiral shape.

A heat stabilizing silicone foam (4) with fine-pored cell structure covers the entire construction that is protected by a polyamide protective braid (3). The connection sides of the hose are provided with stable temperature end caps made of silicone.

A temperature sensor (Pt100) is installed between the heater and stainless steel fiber that reports the current hose temperature to the control electronics.

Heatable hoses in the spray version also include a PTFE hose (6) for spray air.

Temperature stability

The polyamide protective braiding is stabile up to 160° C. Local overtemperatures can occur by bundling several heatable hoses or by touching hot machine parts.

Attention!

The maximum permissible temperature (given as T_{max} on the type plate) may not be exceeded.

The too high temperatures causes the pressure load capacity of the heated hose to sink, which can cause the hose to be damaged or destroyed.

Chemical resistance of adhesive hose

PTFE is resistant to almost all media.

Water will diffuse through the walls in minor amounts.

Attention!

When using hot melt materials containing fluorinated hydrocarbons, oils, alkali metals, or halogens, have the respective manufacturer advise you about PTFE compatibility.
Unsuitable hot melt materials can damage the adhesive hose.

INSTALLATION

Attention!

The heatable hose may only be installed by competent personnel.

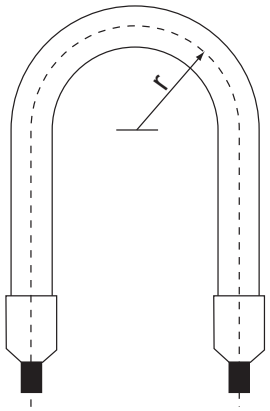
See the operating instructions of the tank system for more details.

CONNECTION / REMOVAL

Assembling the heatable hoses to the tank system is described in detail in the operating instructions of the tank system.

GUIDANCE NOTES

Bending radius

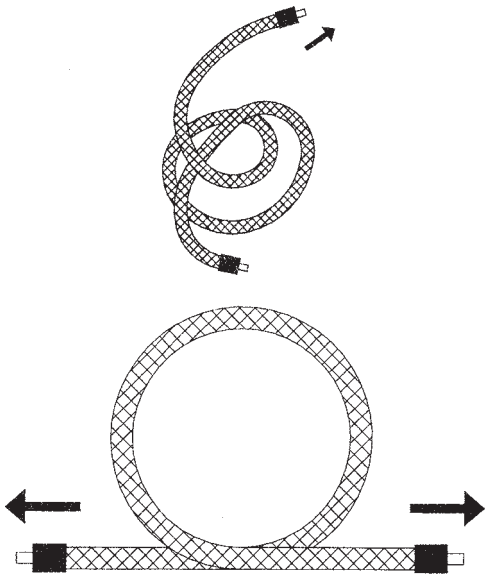
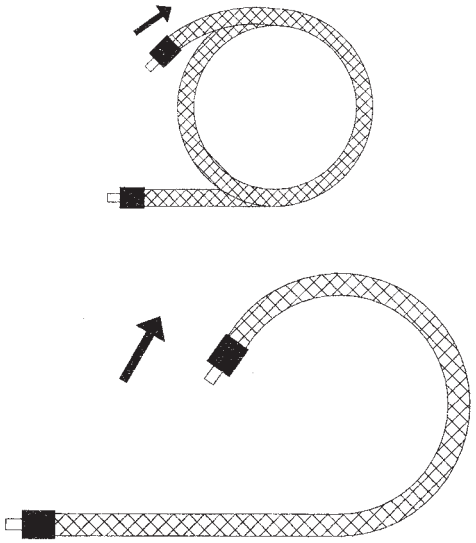
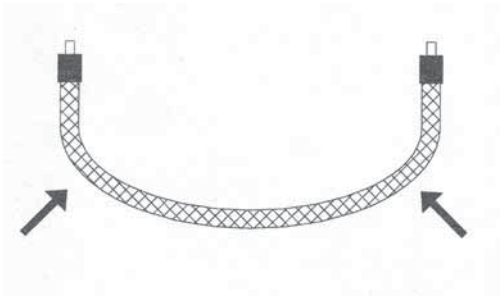
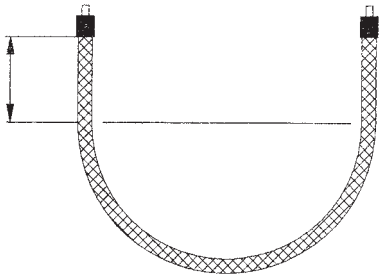


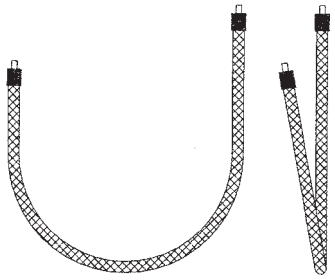
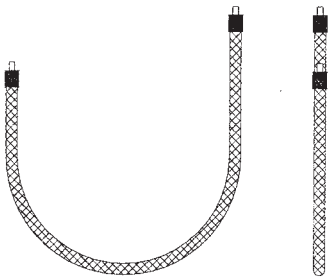
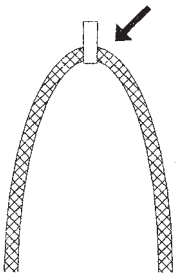
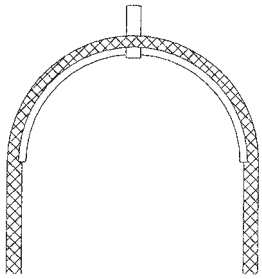
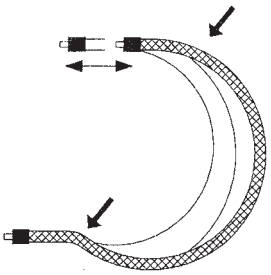
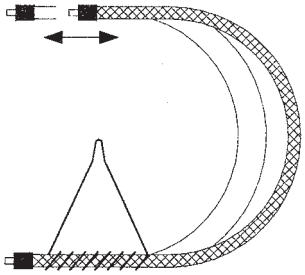
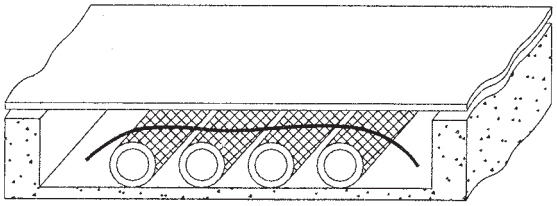
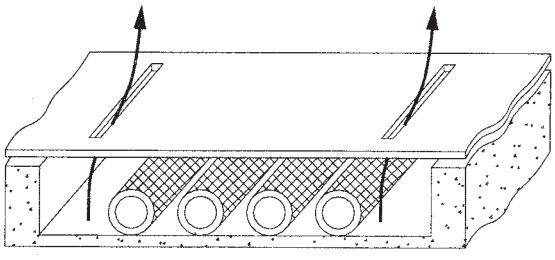
The minimum permissible bending radius for the heatable hose is r = 160 mm, and 240 mm in the case of hoses with integrated spray air lines.

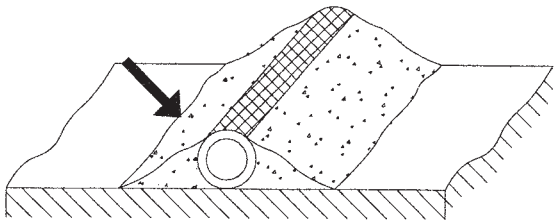
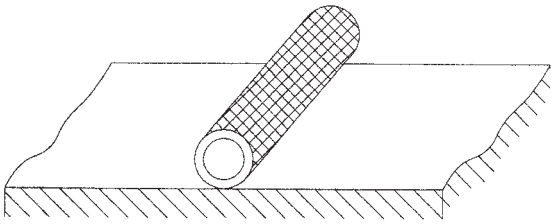
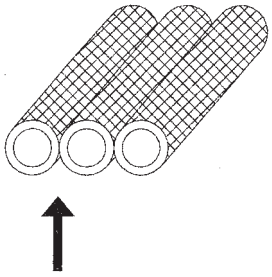
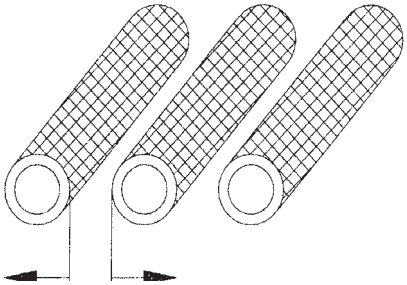
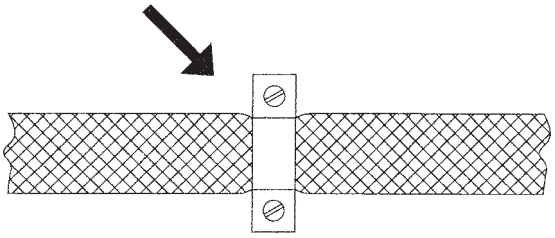
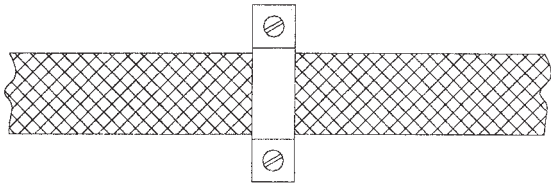
Please also observe the following notes

- Undercutting the minimum permissible bending radius, buckling, strong torsion loads (twisting) and S turns can cause the destruction of the hose.
- Movement and bending stresses may not occur directly at the connections.

FURTHER TIPS ON HOSE GUIDANCE

Wrong	Right
	
By pulling the ends of rolled up hoses, torsion stress occurs. The smallest permissible bending radius can be undercut!	Unwind the ring. (Do not pull off the hose)
	
A too short hose will buckle at the connection ends	Plan to leave a straight piece (length approx. 5 x hose diameter) at the connection ends. A greater bending radius will increase the service life of the hose.

Wrong	Right
	
Torsion movement leads to destruction of the heatable hose. This occurs frequently due to incorrect installation, but above all due to twisting the hose during assembly.	Let the hose axes run parallel during laying. Lay the hose in such a way that the direction of movement runs on a level with the hose axes.
	
Guidance clips can cause buckling to the hose and bending stress.	Remedy: Use a saddle or deflection pulley with corresponding diameter.
	
An unfavorable installation will let the hose sag.	Remedy: Spiral hose suspension
	
Heat accumulation can occur when laying the hoses in a closed canal or duct.	The hoses may not touch each other. Make sure you provide for adequate aeration.

Wrong	Right
	
If the hoses are covered with powdery substances, local overheating will occur.	Clean the hoses at regular intervals.
	
Bundling or laying the hoses with contact will lead to overheating at these contact sites.	Lay these hoses far enough apart.
	
Squeezing the hoses caused by brackets can damage the hoses.	Select the bracket with the matching diameter. Tighten the bracket enough so that the hose is secured but not squeezed.

Maintenance

Attention!

Maintenance works may only be implemented by competent personnel.

Maintenance intervals

Interval	Activity
Daily	Check the hoses for leak tightness.
	Check all mechanical and electrical connections for tight fit.
	Remove hot melt material residues and other incrustations.

Cleaning

Attention!

Do not use any aggressive solvent or combustible cleaning agents to clean the hoses. Such substances can cause damage to the hoses.

Using a suitable tool (e.g. cloth, soft brush, wood spatula), mechanically remove hot melt material residue and other pollution.

The heatable hose can also be cleaned by rinsing it with a suitable cleaning agent (see operating instructions of the basic unit).

REPAIRS

Repairs other than those described in these operating instructions may only be implemented by competent persons commissioned by the manufacturer or otherwise competent persons under utilization of original BÜHNEN spare parts.

WARRANTY

The unit was developed and manufactured according to the latest state of technology. The first purchaser receives warranty on function, material, and processing according to statutory regulations. Normal wear and tear is excepted.

The warranty is void if improper handling, use of violence, repairs by third parties and the installation of spare parts other than the original has been determined.

The warranty extends to servicing or replacing according to our choice. Warranty beyond our scope of delivery is excluded, as we do not have any influence on the competent and expert use of the unit.

Please observe our terms and conditions!

DISPOSAL

Take the unit, packaging, and accessories to an environmentally friendly recycling center (in accordance with Directive 2002/96/EG of the European Parliament and the Council of January 27, 2003).

13 Instruction Handbook Application Unit

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