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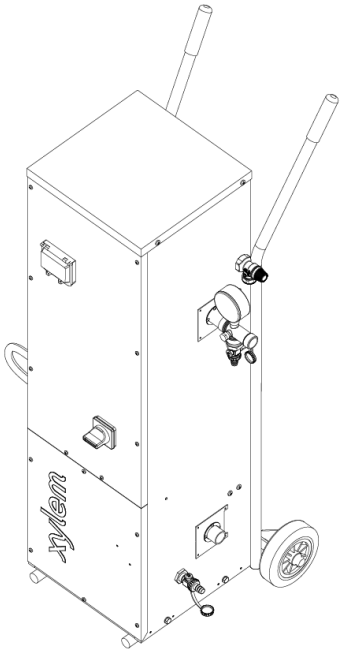
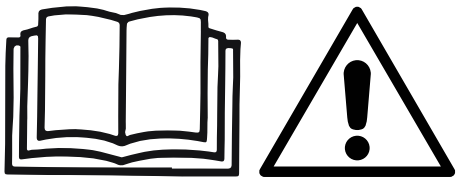
Let's Solve Water

EPX PLUS R1 IOM
UKLIT0252

Original Instructions – English
Keep for future reference

CAUTION: Read instructions before using this machine





EPX Plus R1 Mobile Heater

Installation, Operations and Maintenance manual – May 2023
Software Version – V1

Complementary Documents:

- EPX Plus Quick Commissioning Guide
- Avensor Start Up guide
- Ecocirc IOM
- DHW Application Guide

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To access this document “**EPX Plus R1 Mobile Heater IOM**” digitally, please scan the below QR Code:

EPX Plus R1 Mobile Heater IOM

To access “**EPX Plus Quick Commissioning guide**” digitally, please scan the below QR Code:

EPX Plus Quick Commissioning Guide

Table of Contents

1. Introduction & Safety

1.1 Introduction

This manual contains information to enable the safe Installation, Operation and Maintenance of the EPX Plus Mobile Heater.

This manual is an integral part of this product. The following instructions must be read and understood by all persons responsible for the installation, operation and maintenance of this product. This manual must always be made available to the user, stored in the proximity of the unit and kept in good condition.

1.2 Manufacturers details

The EPX Mobile Heater is manufactured by:

Xylem Water Solutions UK
Millwey Rise Industrial Estate
3 Weycroft Ave
Axminster
EX13 5HU
United Kingdom

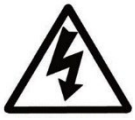
Tel: 01297 630200
Email: lowara_uk.enquiries@xylem.com
Website: www.xylem.com/uk

1.3 Warning Symbols

Before using the unit, the user must read, understand and comply with the indications of the danger warnings in order to avoid the following risks:

- Injury's and health hazards
- Damage to the product
- Unit malfunction

Safety instruction where noncompliance would affect safety



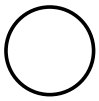
Safety instruction where electrical hazard is involved

Safety instruction where noncompliance could cause damage to the equipment

Safety instruction where hot surfaces are present and if not avoided, could result in serious injury

Safety instruction where PPE (Personal Protective Equipment) is required

Where shown denotes the switch is on



Where shown denotes the switch is off

Where shown indicates the location of a Protective Earth bonding point

Where shown advises the user to consult the manual

1.4 Instruction for safe use

This product has been designed for the heating and circulation of water through an unvented system in the operating conditions shown. This product should not be installed until this leaflet has been studied carefully. Handling, transportation and installation of this equipment should only take place with the proper use of lifting equipment. This product must be stored in a dry frost-free, environment.

1.5 Warning to inexperienced users

This product must be operated by qualified personnel only. Be aware of the following precautions:

This product is not to be used by anyone impaired by physical or mental disabilities, or anyone without the relevant experience and knowledge, unless they have received instructions on using the equipment and on the associated risks or are supervised by a responsible person.

Children must be supervised to ensure that they do not play on or around the product.

1.6 Protection of the environment

You must comply with local regulations when disposing of the product or packaging.

WARNING:
If the EPX Heater has been exposed to ionizing radiations, implement the necessary safety measures for the protection of people. When shipping the pump set, inform the carrier and the recipient accordingly, so that appropriate safety measures can be put in place.

2. Technical Description

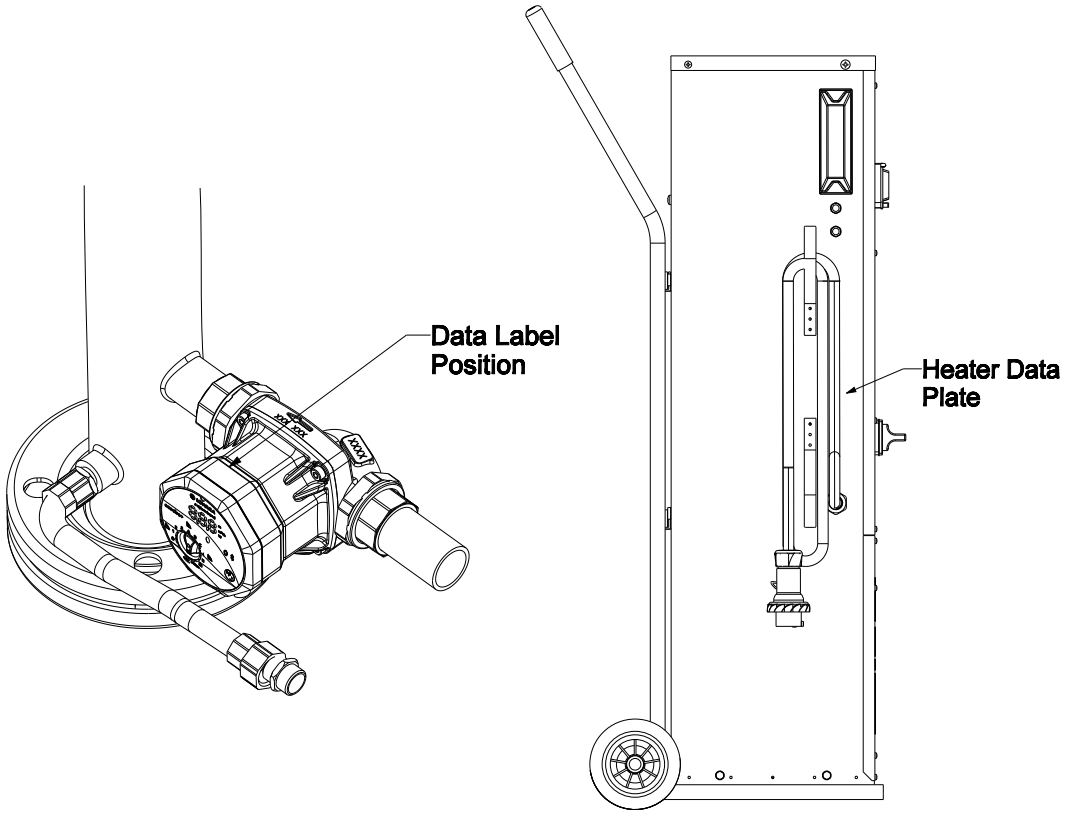
2.1 Designation

The EPX Heater is a portable immersion Heater designed to heat and circulate water through an unvented heating circuit.

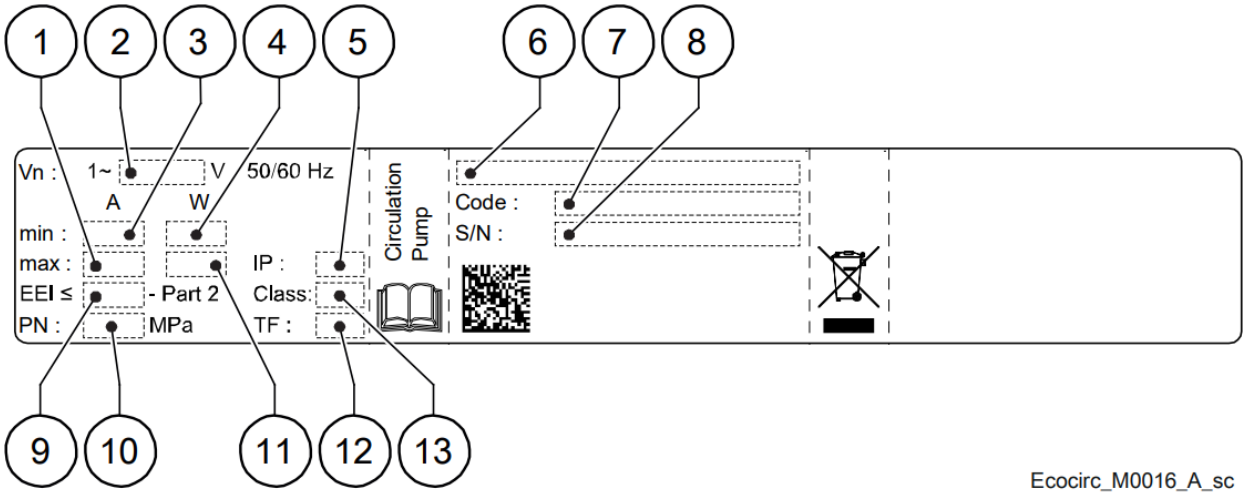
2.2 Data plate

On the EPX Heater there will be two Name plates on the unit:

- The pump name plate is positioned on the top of the pump casing. The pump can be found on the flow leg of the pipework, accessible by opening the bottom cabinet door.
- The model data for the EPX portable immersion Heater. The label will be located on the left-hand side of the unit, next to the electrical supply cable.

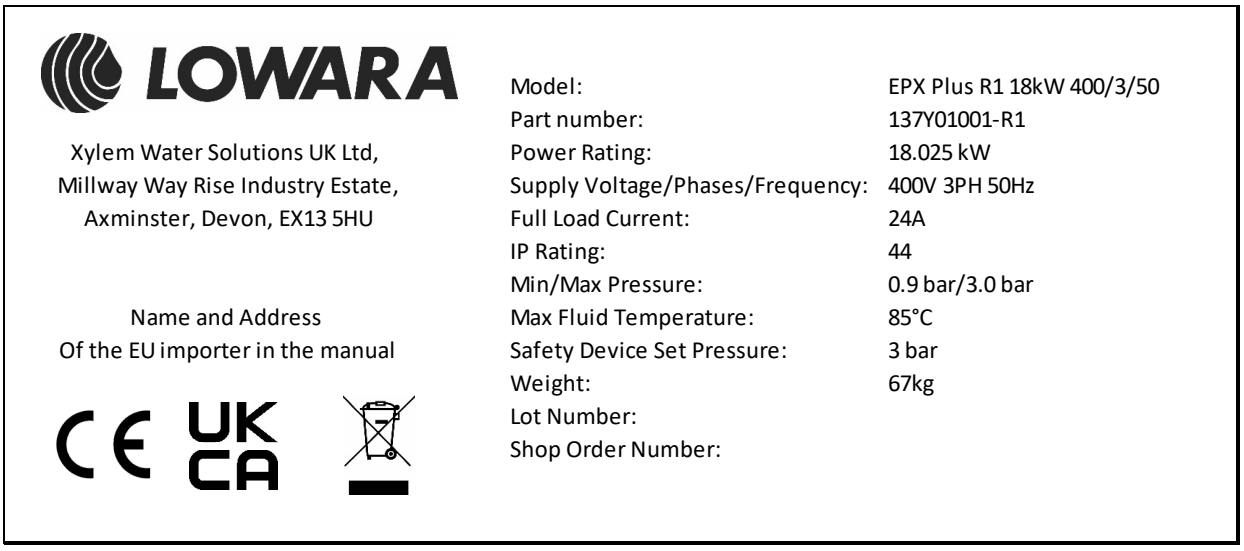


2.2.1 Ecocirc Circulator Pump Data Plate



Position Number	Description	Position Number	Description
1	Maximum Absorbed Current	9	EEI Value
2	Rated Voltage	10	Maximum operating pressure
3	Minimum absorbed current	11	Maximum absorbed power
4	Minimum absorbed power	12	Maximum liquid operating temperature
5	Protection Degree	13	Insulation Class
6	Pump Type		
7	Product code		
8	Serial Number		

2.2.2 EPX Data Plate



Label	Description
Model	Heater model reference
Part number	Heater part number
Power Rating	Heater power rating (total)
Supply voltage / Phases / Frequency	Heater supply voltage, Number of Phases, Heater frequency
Full load current	Full load current of the Heater (per phase)
IP Rating	IP Rating of the Heater
Min / Max pressure	Minimum and Maximum rated pressure for the Heater
Max Fluid Temperature	Maximum rated temperature of the fluid being used with the Heater
Safety Device Set Pressure	The factory set pressure limit for the safety valve. Exceeding this limit will open the safety valve
Weight	Total dry weight of the unit
Lot Number	For internal use only
Shop Order Number	For internal use only

2.3 Identification Code / Nomenclature

Example: EPX Plus 18kW 400/3/50

Reference	Description
EPX	Product range name
Plus	Product variant
18 kW	Element heat capacity (in kW)
400	Nominal input voltage
3	Number of phases
50	Supply Frequency (Hz)

2.4 Intended use

Typical applications include:

- Heating and Circulating hot water though an underfloor heating circuit to aid the screed drying process
- For temporary use, in place of a domestic boiler in the event of a gas boiler failure

Pumped liquids

- Water only
- Medium to Hot temperature (Not exceeding 85°C)
- Free of solids particle or fibers

2.5 Improper use

WARNING:
The unit was designed and built for the use described in the Intended Use Section. Any other uses are prohibited, as they could compromise the safety of the user and the efficiency of the unit itself. For more information, please contact the sales office.

DANGER*:*
It is prohibited to use this unit to pump flammable and/or explosive liquids.

DANGER: Potentially explosive atmosphere hazard.
It is prohibited to start and run the unit in environments with potentially explosive atmospheres or with combustible dust.

Examples of improper use:

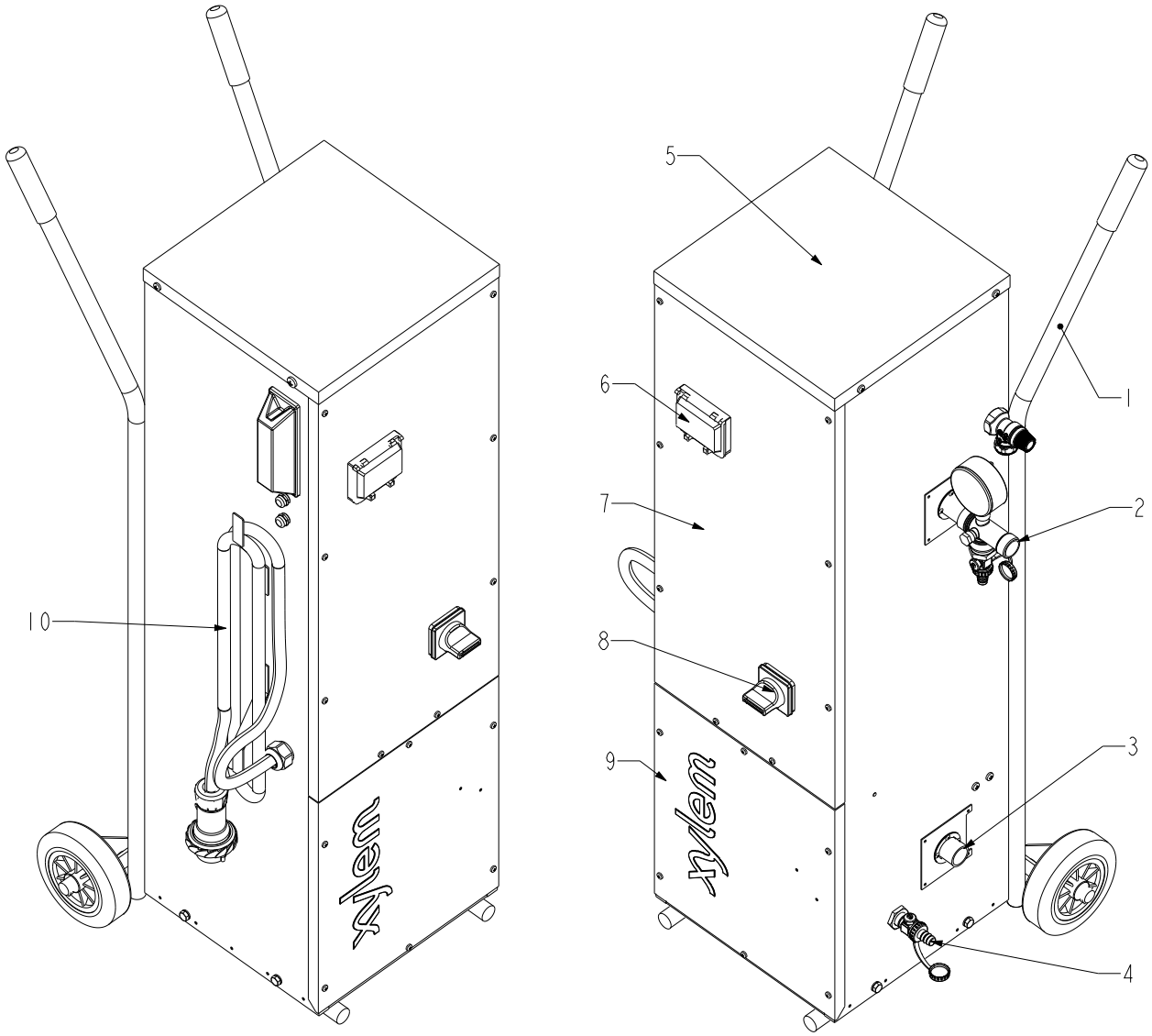
- Pumping Liquids not compatible with construction materials of the unit
- Pumping hazardous, toxic, explosive, flammable or corrosive liquids
- Pumping drinking liquids example potable water, wine or milk
- Pumping liquids containing abrasive, solid or fibrous substances
- Using the unit for flow rates exceeding the flow rate indicated on the pump data plate
- Using the EPX unit outside in contact with weather or direct sunlight

Examples of improper installation:

- Explosive and corrosive atmospheres
- Environments which exceed the rated ambient temperature for the product
- Environments where there are high EMC emissions that could affect the operation of the device
- Using the machine in such a way that the lead or pipework becomes a trip hazard

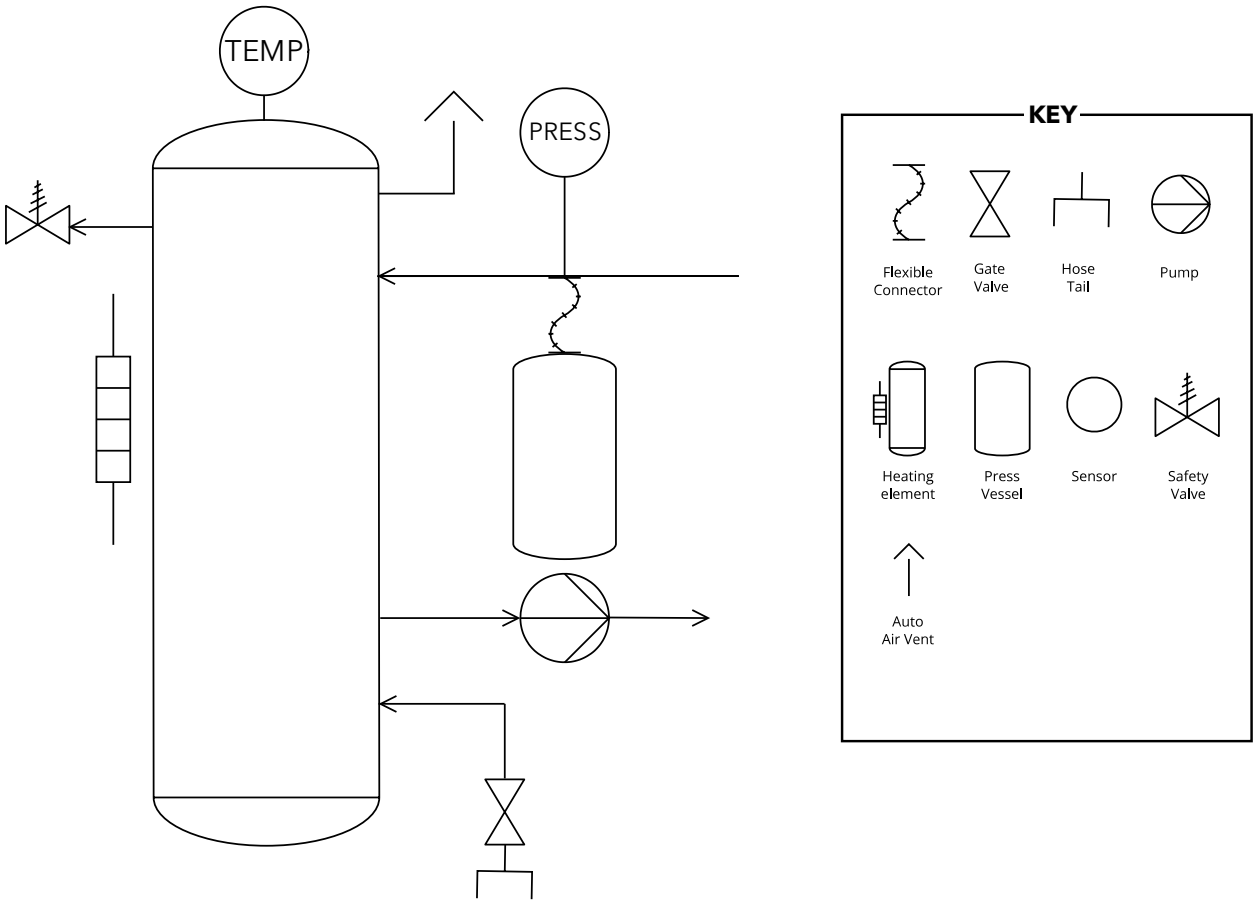
2.6 Names of the Main Components

Below are the main components of the Heater.



Drawing Ref	Description	Function
1	EPX Sack Truck	Allows the user to transport the Heater
2	Return Port	Connection for the return side of the circuit
3	Flow Port	Connection for the flow side of the circuit
4	Fill Port	Allows the user to the fill the sealed system with water
5	EPX Cabinet Lid	Provides access to the element head
6	EPX Controller	The controller and HMI for the EPX Heater
7	EPX Cabinet Top door	Allows access to the electrical compartment
8	Electrical Isolator	Allows the user to electrically isolate the unit
9	EPX Cabinet Bottom door	Allows access to the pump / bottom compartment
10	EPX Power cable	Provides power to the EPX unit

2.7 EPX – Pipework and Instrumentation drawing



3. Handling and Storage

3.1 Packaging

The EPX Heater is dispatched mounted on a wooden pallet and covered in a protective film, it is recommended that the unit be retained in the protective packaging until the product is put into service. The unit will arrive pre-packaged and wired ready for operation.

3.2 Unit inspection Upon Delivery

This product has been fully run tested at our works under simulated site conditions. The unit should be thoroughly checked for physical damage that may have been caused during transit. If you believe the EPX Heater has been subjected to vibration, shock or bumps it must be checked by a qualified Engineer before putting the EPX Heater into service. If the unit is found to have damage it must be reported immediately to the manufacturer and should not be installed.

3.3 Unit Handling

WARNING
When moving the EPX unit, the correct Personal Protection Equipment (PPE) must be used to ensure safety. Access the risk before carrying out any procedure.

Handling, transportation and installation of this equipment should only take place with the proper use of lifting equipment.

Use crane, ropes, lifting straps, hooks and clamps that comply with the current regulations and that are suitable for the specific use. Harnesses must not hit and / or damage the unit.

During handling, avoid injury to people or animals, and/or damage to property.

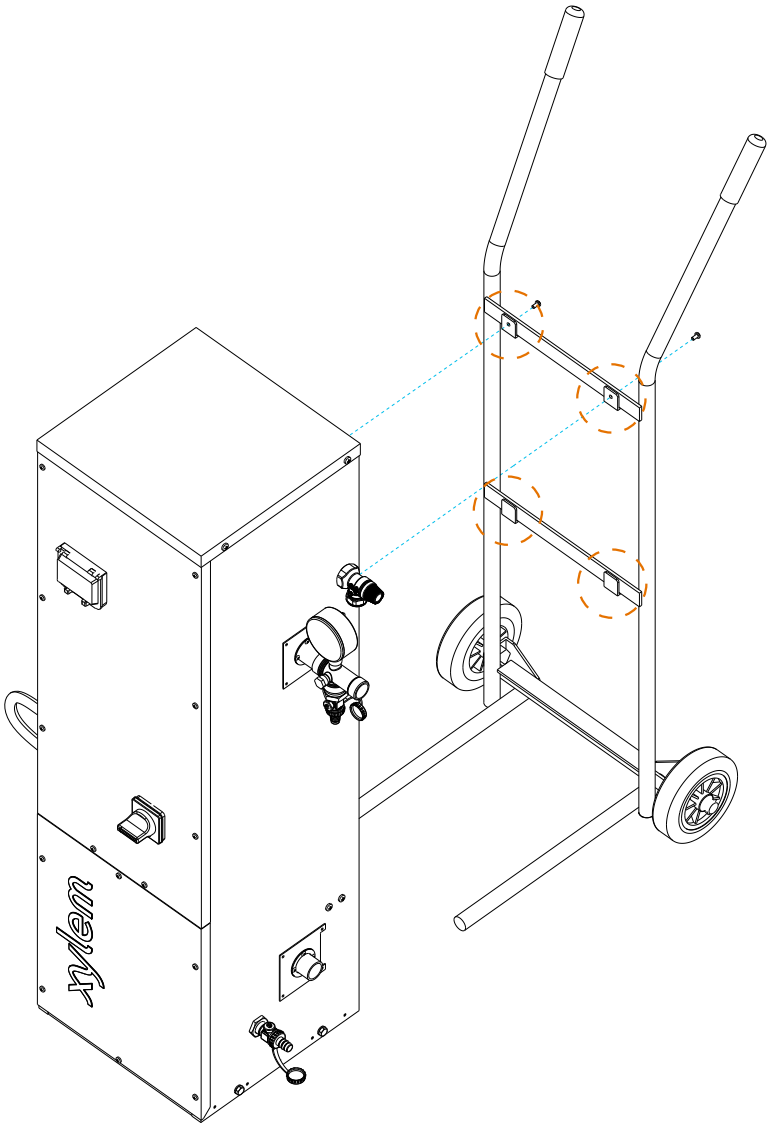
3.4 Storage

The unit must be stored:

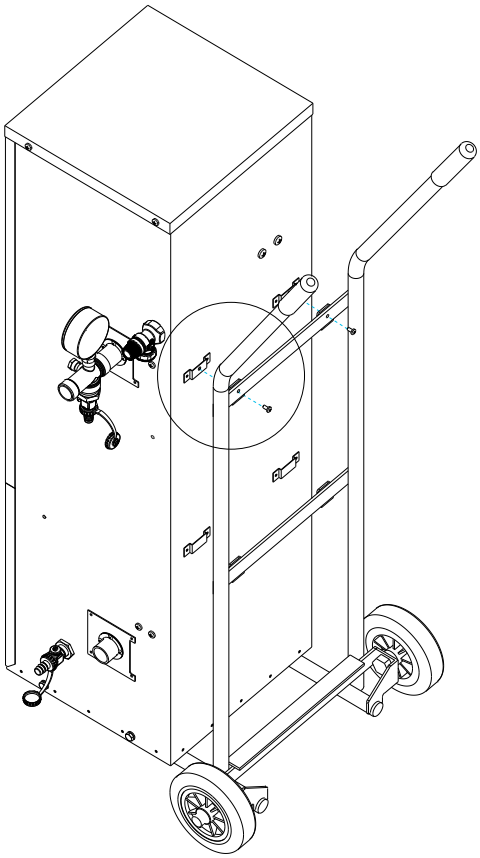
- In a covered and dry place
- Away from direct heat sources
- Protected from dirt
- Protected from vibrations
- Dry frost-free environment
- At an ambient temperature between -20°C and +55°C and relative humidity between 5% and 50%
- Without placing heavy loads on top of the unit
- Protecting the unit from collisions

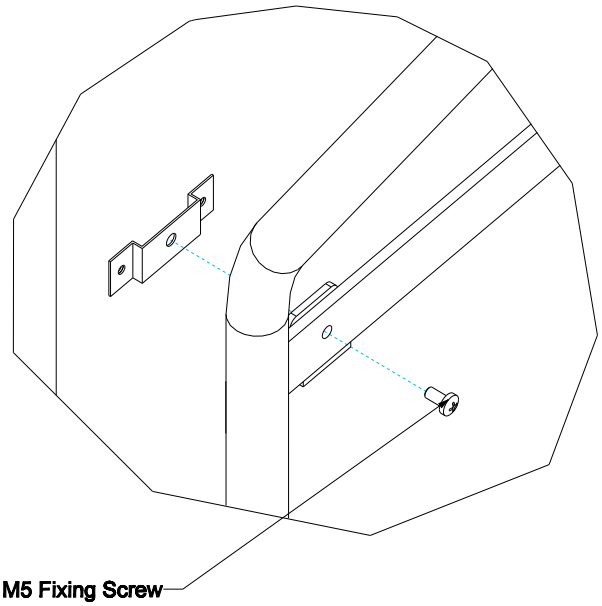
3.5 Moving the Unit

WARNING:
The EPX Heater comes supplied with a “Sack truck” in order to move to and from site. Please ensure that the Heater is firmly positioned onto the sack truck and the 4 hooks on the front of the sack truck connect with the bracket on the back of the Heater (Hooks highlighted on the drawing below). Failing to secure the unit may result in the Heater toppling over and causing injury to the user or bystanders.



WARNING:
The EPX Heater is fixed to the sack truck using M5 bolts. When transporting and maneuvering the Heater, ensure that the two bolts are tight and that the cabinet is securely fixed to the sack truck.





The EPX Heater can be difficult to move. Make certain that the user is physically capable of moving the weight on the sack truck before attempting to do so.

Before moving the EPX Heater:

- Switch off isolator
- Switch off electrical supply source
- Disconnect lead
- Allow system fluid to cool
- Depressurise the system
- Drain the system
- Disconnect pipework

3.6 Lifting the Unit

WARNING:
Only use the lifting point advised by the Manufacturer.

WARNING:
Use ropes, chains and/or slings, hooks and/or clasps and/or shackles that comply with the applicable directives and are suitable for use.

WARNING:
Lift and handle the EPX Heater slowly to avoid stability issues.

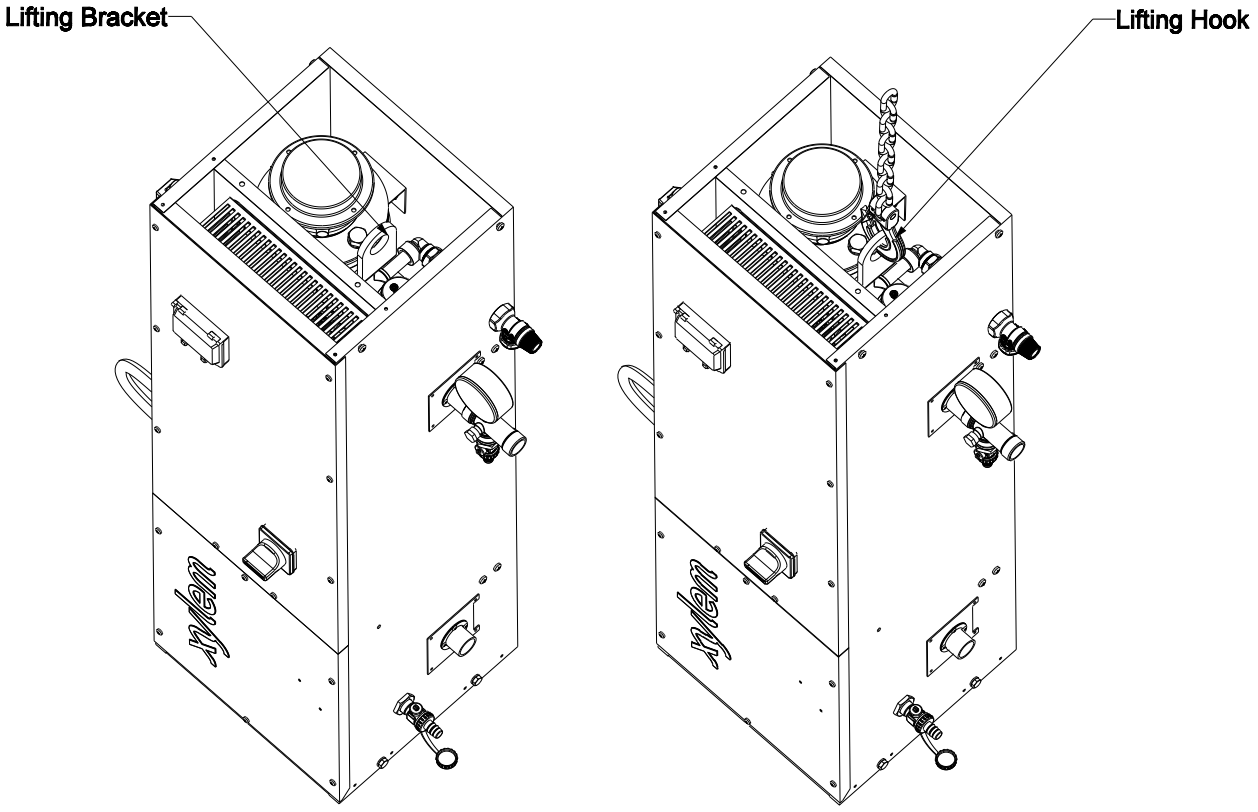
WARNING:
During handling, make sure to avoid injury to people and animals, and/or damage to property.

WARNING:
Do not lift the EPX Mobile Heater with the sack truck fitted to the cabinet. Remove the two fixing bolts on the back of the sack truck that fix the cabinet. See section **3.5 Moving the unit** for more information.

It is expected that during the lifetime of the EPX Heater, the unit will need to be lifted for either transport or to service the product. Due to the weight and size of the product, its recommended:

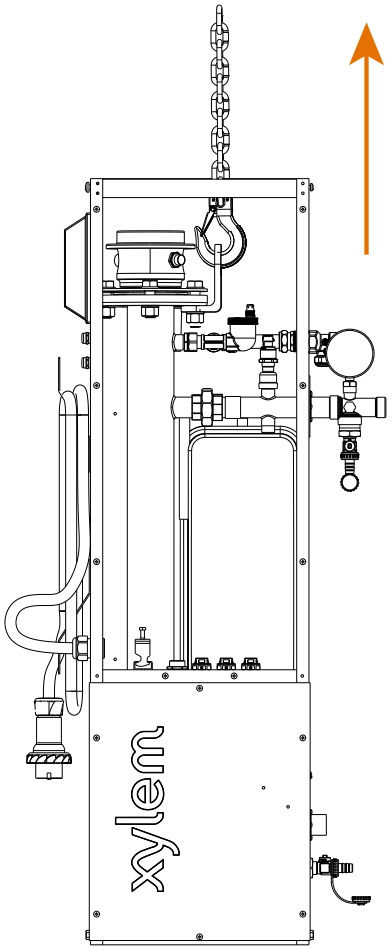
- To only use a crane with a lifting capacity greater than the total weight of the product.
- To use a hook with a safety latch to prevent the disengagement of the EPX Mobile Heater with the crane.
- To only lift from the lifting bracket fitted on the wetted assembly on the Heater.

Please refer to the diagram below for the location of the lifting bracket.



Preparing the pump set for lifting

1. Ensure that the EPX mobile Heater is positioned on a flat and even surface
2. Remove the lid off the EPX Heater to access the lifting bracket. The lid is fixed to the cabinet by 4 screws on the left and right side of the lid
3. Position the lifting hook directly above the EPX Mobile Heater
4. Lower the lifting hook and attach to the lifting bracket shown in the above diagram
5. Ensure that the hook is securely connected and that the safety latch of hook is locked back into position.
6. Lift the crane and tension the ropes without lifting the unit

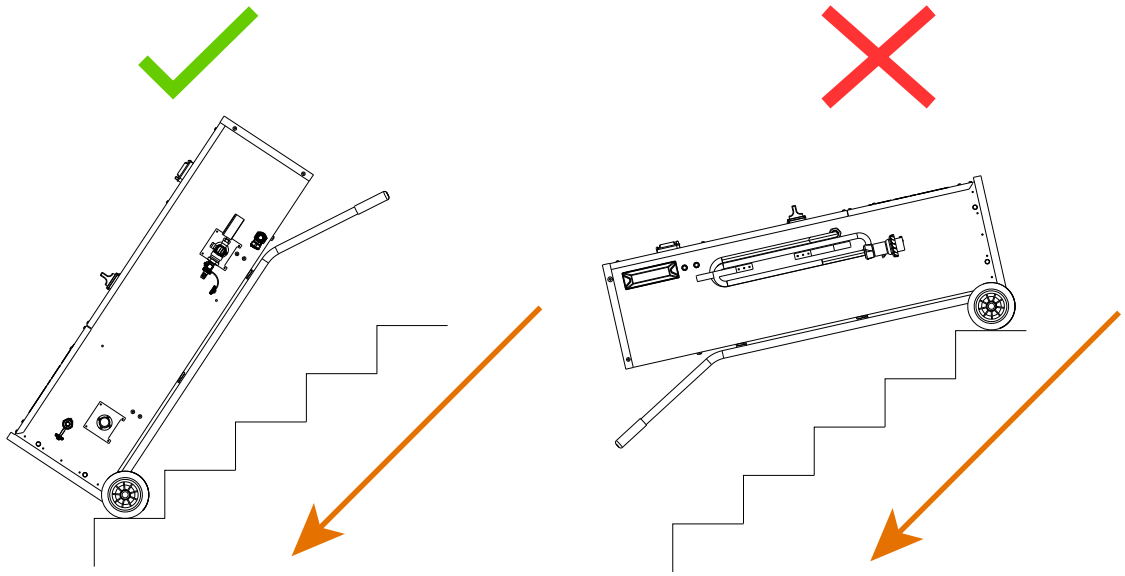


Lifting and positioning the pump set

1. Slowly lift and move the EPX Heater
2. Ensure that the Heater remains level and does not swing
3. Slowly place the heater set on the ground and make sure the unit is completely level
4. Lower the crane slightly allowing enough slack to remove the hook
5. Remove the hook from the lifting bracket.
6. Replace the lid and refit the 4 fixing screws

3.7 Consideration when manvouering the EPX Heater

In the event of the user needing to manoeuvre the EPX Heater down a flight of stairs, it is recommended to tilt the sack truck slightly backwards toward you until the weight of the load is balanced over the wheels. Please see below example



4. Installation

4.1 Precautions

Before starting, make sure the safety instructions shown in section **1. Introduction and Safety** have been fully read and understood.

DANGER:
All the hydraulic and electrical connections must be completed by a technician or engineer possessing the technical professional requirements outlined in the current regulations.

DANGER: Potentially explosive atmosphere hazard.
It is prohibited to start and run the unit in environments with potentially explosive atmospheres or with combustible dust.

WARNING:
Always wear personal protective equipment.

WARNING:
Always use suitable working tools.

WARNING:
When selecting the place of installation and connecting the unit to the hydraulic and electric power supplies, strictly comply with current regulations.

WARNING:
Pipes can be hot which are associated with the installation. Care must be taken to avoid the risk of burning or scalding.

4.2 Installation Considerations

When preparing the EPX Heater for use on site, please ensure that there is plenty of room around the unit and is not impeding any access or walkways. Make certain that there is no way of the Heater toppling over, potentially causing injury to the user or a bystander. Toppling over could be caused by an uneven or fragile floor. The EPX Heater is for indoor use only.

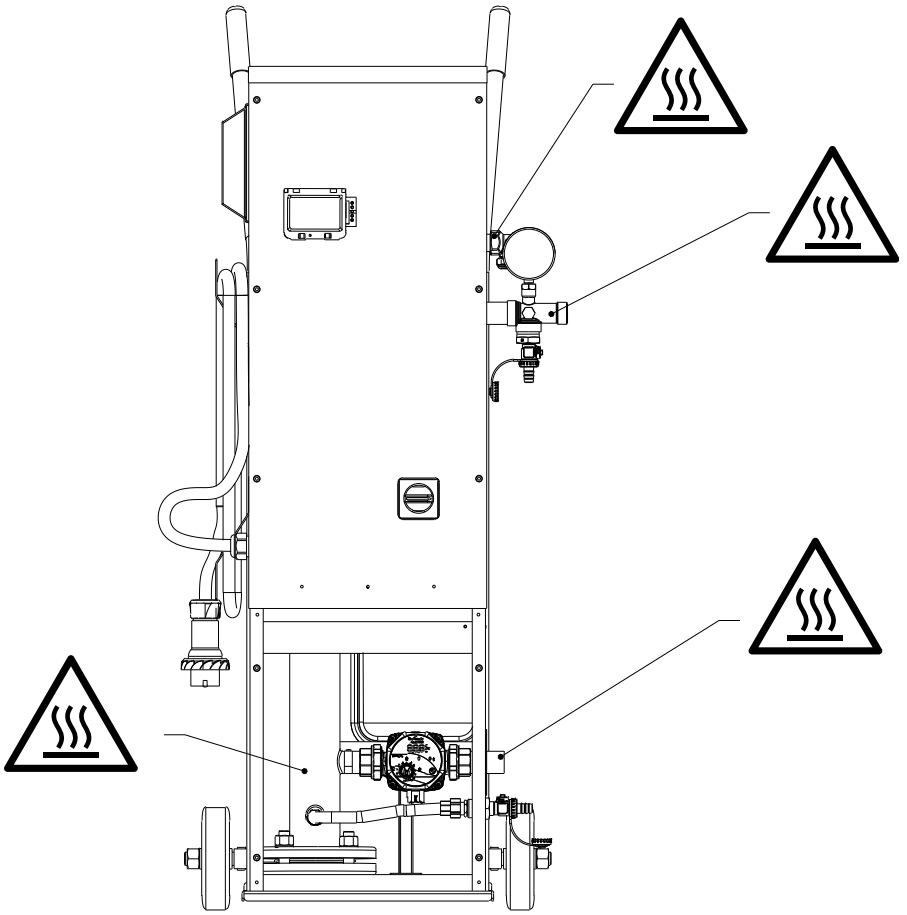
4.2.1 Installation Considerations – Hot surfaces

WARNING:
When in operation, do not touch surfaces with the Hot Surface Warning.
Before use, familiarise yourself with which surface could become hot under operation.

During operation of the Heater, some water carrying metallic components may become hot. Please see below diagram showing potential safety hazards while the Heater is in operation or has been in operation.

Hot surfaces include:

- Flow pipework
- Return pipework and fill valve
- Pressure and Temperature release valve
- Heater manifold



4.3 Installation area

Follow section 8.1 for Operating environment.

Check that the area chosen to install the EPX Heater is a level flat surface that is structurally sound. It is recommended to position the EPX Heater away from any walkways to avoid obscuring access. Please consider space around and above the unit for maintenance. In the extremely unusual circumstances where pressure or temperature builds up to over 3 bar or 90°C and all other safety protection (Software temperature and pressure limits, physical thermostat) has failed, the Pressure and Temperature safety valve on the back of the unit will open, ejecting hot water from the circuit to prevent catastrophic failure. Please take this factor into account when finding a suitable area to use the Heater. Make sure that the discharge from the safety valve is directed to drain where no one can be scalded or burnt with the hot discharge fluid. The unit should be sited in a dry frost-free environment

4.4 Installation Environment

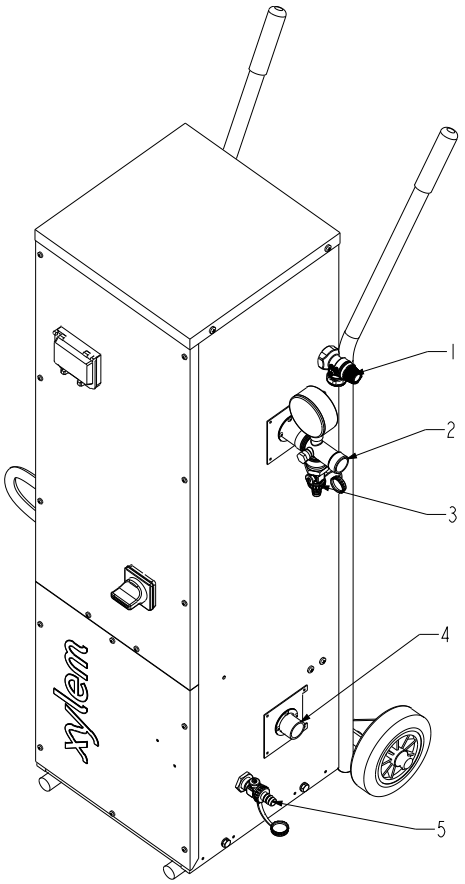
WARNING
The EPX Heater is not recommended for use outdoors and should only be operated indoors. Ensure that the ambient temperature remains in the range from 5 °C to 40 °C. Do not install outside in adverse weather conditions (in either direct sunlight or rain). Water ingress into the electrical compartment could lead to an electrical hazard for the installer / user.

4.5 Hydraulic connections

The flow and return lines of the EPX Heater have a 1” threaded male connection. This allows the installer to fit a set of quick release fittings of their choice. The EPX Heater is not supplied with quick release fittings, however, can be purchased as an accessory if needed. If the installer wishes to fit their own quick release fittings, please consider the design temperature and the construction materials.

On the filling line, there is a 1/2” hose tail connection screwed into the isolation valve. It is recommended when fitting the hose to the 1/2” hose tail, to use a hose clamp (commonly referred to as a Jubilee Clip) to ensure that the hose remains connected when filling the circuit.

The supply to the filling loop must comply with local authority bylaws and contain a double check valve together with an approved stop cock.

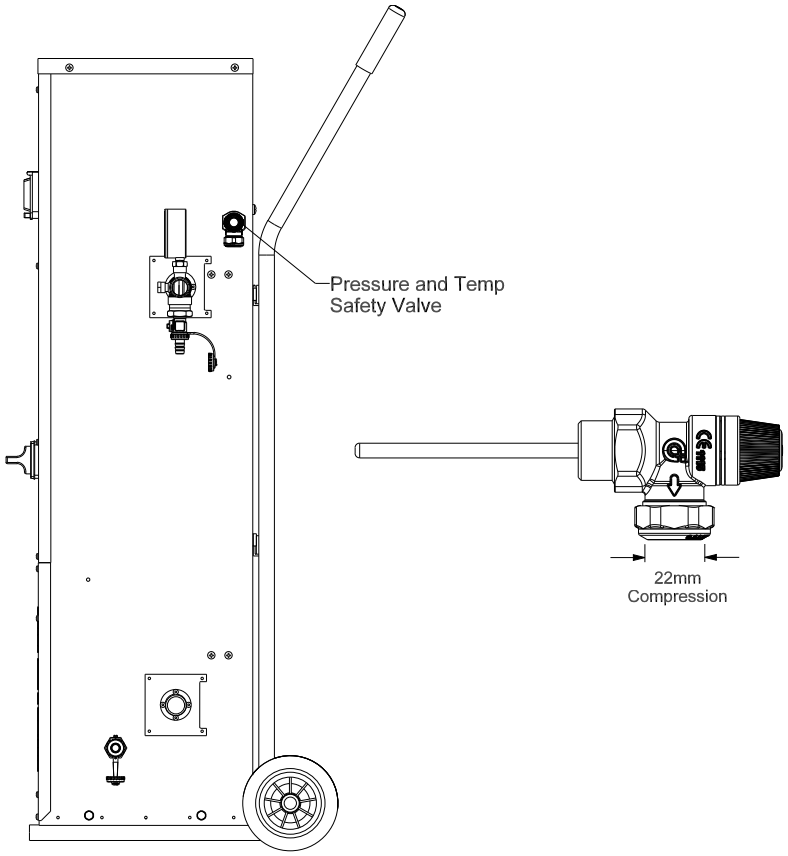


Drawing Ref	Description	Connection Type	Size
1	Pressure and Temp safety valve	Compression	22mm
2	Return connection	Threaded Female	1”
3	Fill port – Top	Hose tail	½”
4	Flow connection	Threaded Female	1”
5	Fill Port – Bottom	Hose tail	½”

4.5.1 Pressure and Temperature safety valve connections

There is also a connection on the right side of the unit for the Pressure and Temperature safety valve which has a 22mm compression outlet. This valve opens at 3 bar pressure and / or 90°C fluid temperature.

WARNING
The safety valve must be piped to a drain where no one can access the hot water discharge in the event of an over temperature or over pressure situation. Operating the unit without the safety valve being piped away risks hot water being sprayed on the user or bystanders.



4.5.2 Filling the Heater

When filling the Heater, it is advised to use the bottom fill port connection. The unit should only be filled with cold clean water. During the filling process, the pressure of the system may fluctuate as air in the circuit is released. Please follow the steps for filling the unit in the **EPX Plus Commissioning guide.**

Caution
If the incoming pressure of the water exceeds 3 bar, it may trigger the opening of the safety valve. If filling the Heater with water of a higher pressure of 3 bar, please take notice of the circuit pressure displayed on the pressure gauge.

4.5.2 Purging the air from the system

Before running the Heater, the system needs to be purged of air to ensure the continuous operation of the unit. During the filling of the unit, you may hear air rushing out of the system through the Auto air vent situated on the top of the Heater manifold. Depending on the size of the system, it could take serval attempts of opening and closing the filling valve to repressurise the system once air leaves the circuit.

The circulation pump also has an air purge mode. It is recommended to run the air purge mode to remove any trapped air from the system once you believe the circuit is filled and pressure begins to rise. For more information on purging the air from the system, please consult the **EPX Plus Commissioning guide.**

WARNING
The Heater must be purged of air before starting an operating program. Air inside the system could cause the Heater to over pressurise and trigger the opening of the safety valve.

4.5.2 Draining the Heater after use

WARNING
The Heater must only be drained once the water is cold.

Once the Heater has finished operation follow the following steps before draining the system.

- Stop the operation of the Heater via the PLC
- Turn the isolator switch on the front of the Heater
- Turn off the power supply e.g. Generator
- Disconnect the EPX power plug from the power source
- Attach a ½" hose to the bottom fill port. You may need to use a pipe clamp (jubilee clip) to hold the hose in place.
- Ensure that the hose runs to a drain
- Open the isolation valve of the fill port
- Remove the hose once the system is completely drained

To speed up the draining of the system, it is advised to fit an additional hose pipe to the top fill port. Opening the top fill port once the draining process has started will allow the water to complete drain from the system easier.

4.6 Electrical connections

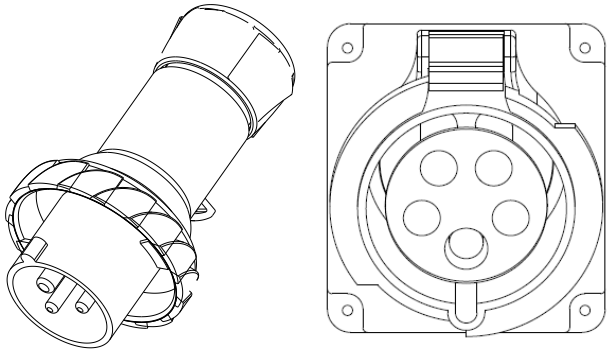
DANGER
All the electrical connections must be completed by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER
Before starting work, check that the unit is unplugged and that EPX Heater cannot start, even unintentionally.
Never operate this product with the Heater front panel removed.
It is essential that this equipment is earthed. Please follow all instructions in 4.6.2.
The EPX Heater operates at 400 Volt, 3 Phase, 50Hz.

DANGER
The user should familiarise themselves with how the EPX Heater is to be connected to the main supply and who is responsible for the operation of that supply disconnect device.

4.6.1 Mains Electrical connections

The EPX Heater requires a three phase 400V/3PH/50Hz supply. The electrical supply also needs a neutral as well as all three phases (L1,L2,L3) and Earth. The EPX Heater comes fitted with a 5-pin plug and a 3m length of semi-flexible armored cable. The male 5 pin plug will need to be connected into a three-phase supply with a matching 5 pin socket.



4.6.2 Mains Electrical Supply

DANGER

The Short Circuit Protection of the EPX Heater is 10kA (10,000 Amps). Do not use a mains supply which can deliver a supply greater than 10kA.

4.6.3 Earthing the EPX Heater

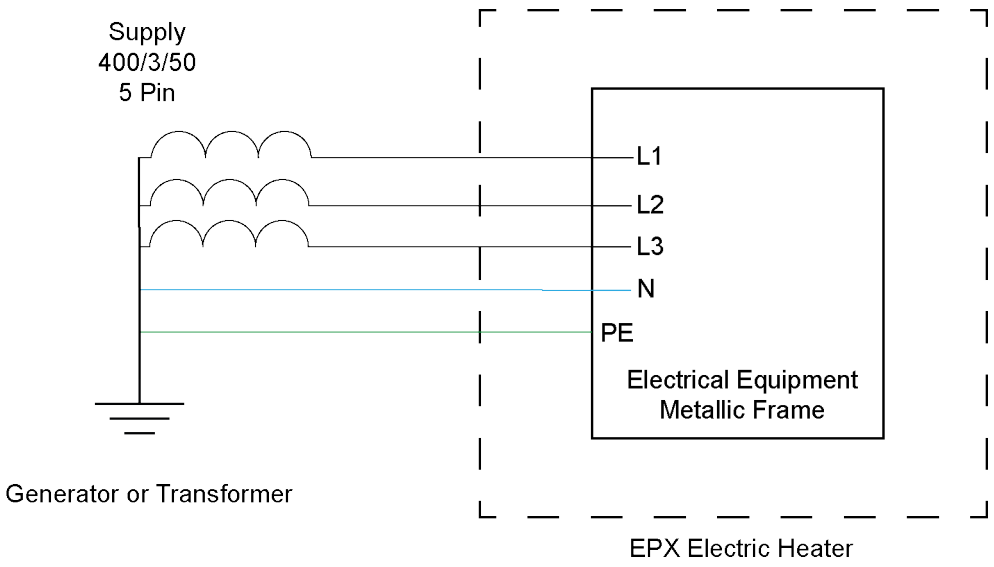
DANGER

Failure to suitably earth the EPX Heater could lead to serious injury or death in the event of an electrical fault.

The installer must check the source impedance when connecting to the supply on-site, to ensure that it is below the 1.44Ω limit of this machine

The EPX Heater must always be earthed. The installer / user should ensure that the power supply used for the EPX Heater includes an earth from the main protective bonding conductors within the building or the supply is fitted with an earth spike. Please ensure that that the ground connection is suitable for the power load of the Heater.

The recommended earth installation type for the EPX Heater is TN-S, where the earth connection is supplied by a generator or transformer. For more information on earthing systems, please refer to local wiring regulations for example: BS 7671:2018+A2:2022 Clause 2.4.3.



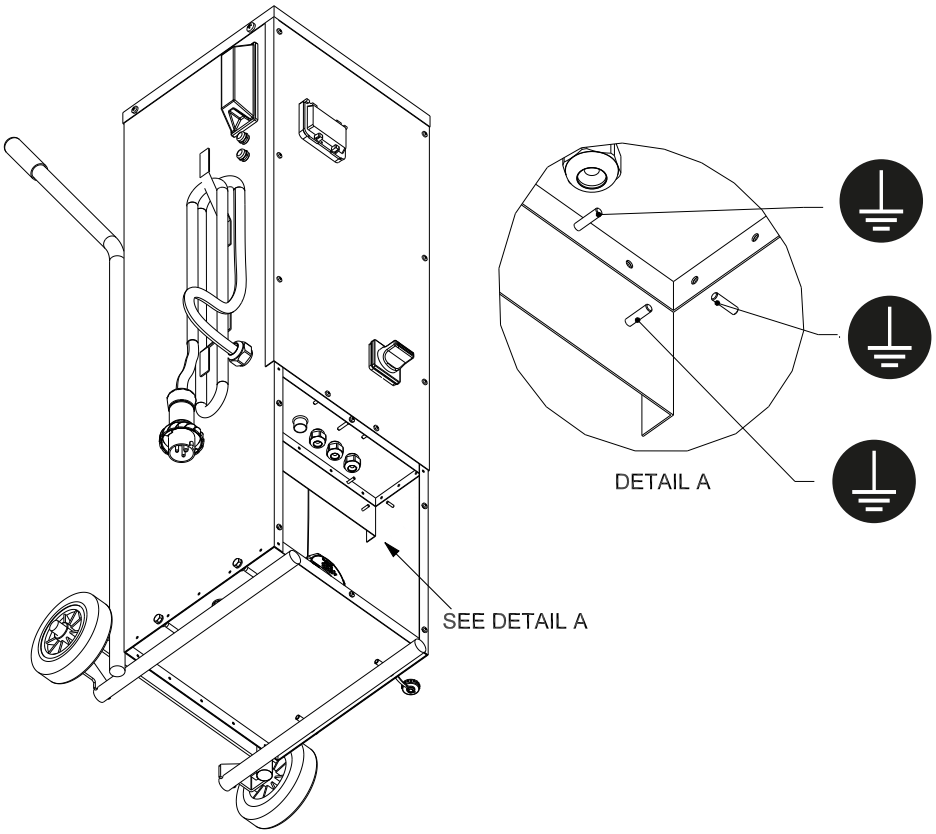
4.6.4 Earth Points within the EPX Heater

DANGER
Do not supply power to the EPX Heater if the earth bond connections are not made. Failure to do so could result in an electric shock in the event of an electrical fault.
Inspect the Earthing points before first use.

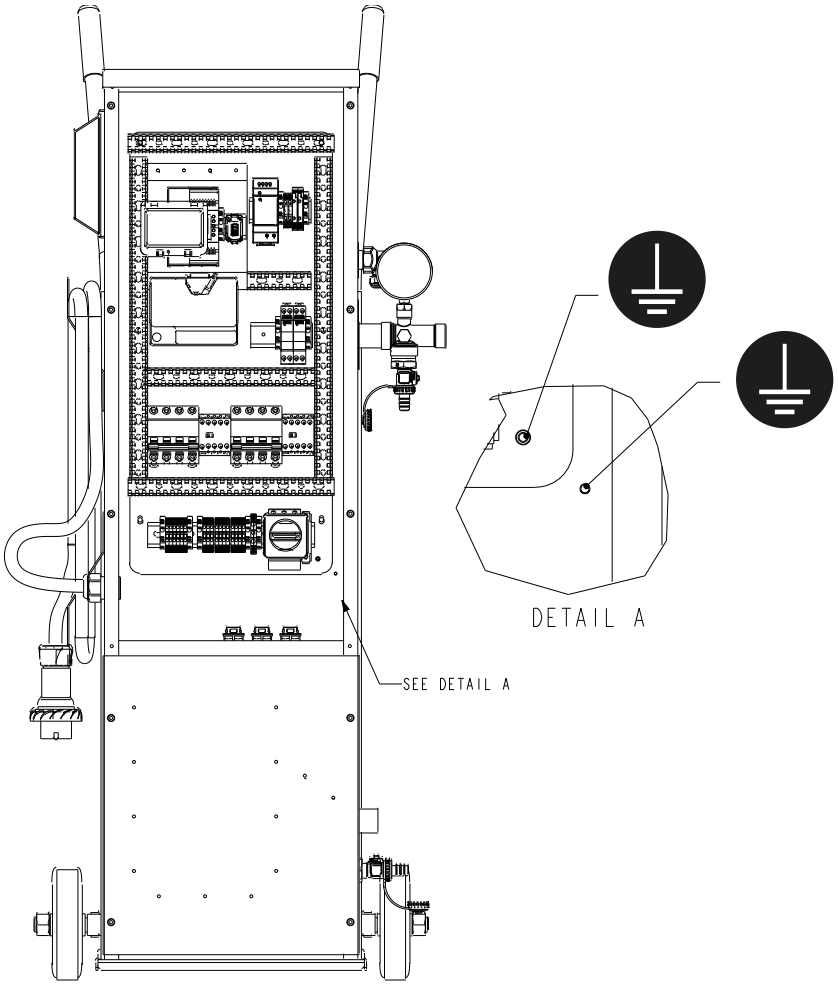
To ensure the electrical safety of the EPX Heater, there are several earth bonding points on the cabinet, electrical component tray and Heater manifold. You must ensure that all these connections are present and tight before operating the device. There will also be a label with the earth symbol next to each earth bonding point.

Do not attempt to supply power to the Heater without all earth bonding points present.

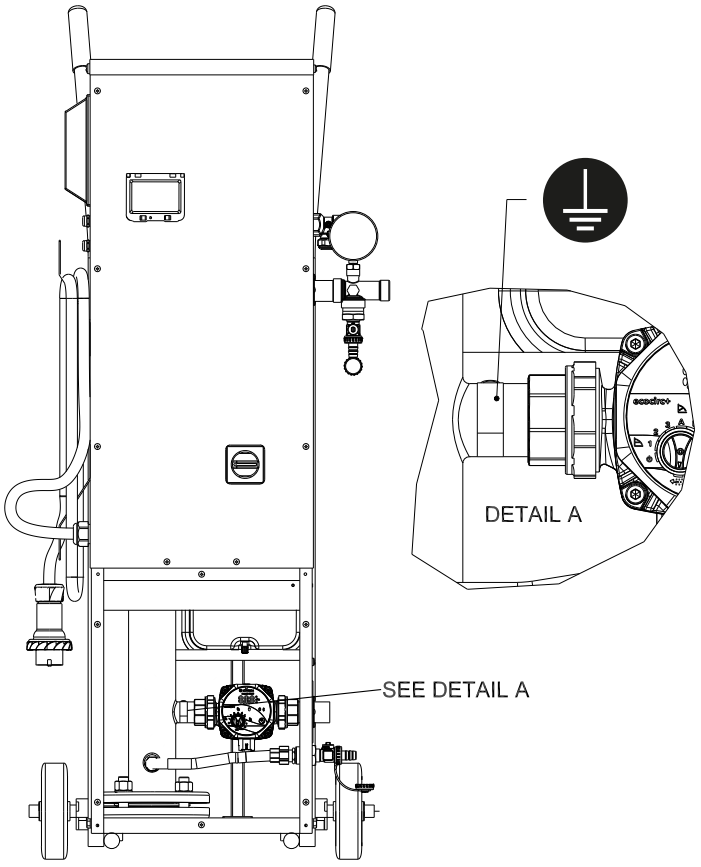
Bottom compartment Earth Bond locations



Electrical compartment Earth Bond locations



Earth Strap on manifold



4.6.5 RCD (Residual Current Device)

The EPX Heater is not fitted with a residual current device. The user / installer will need to ensure that the power source (be it a fixed or temporary installation) to the EPX Heater is fitted with an RCD.

4.6.6 Removing power to the Heater

Once the user has finished operating the EPX Heater, isolate the Heater using the switch on the front panel. Then once the unit has been isolated, turn off the power at the source. Only once this has been completed can the plug be removed from the power source and safety wrapped around the cable arms.

DANGER
Do not disconnect the Heater directly from the power supply without isolation.

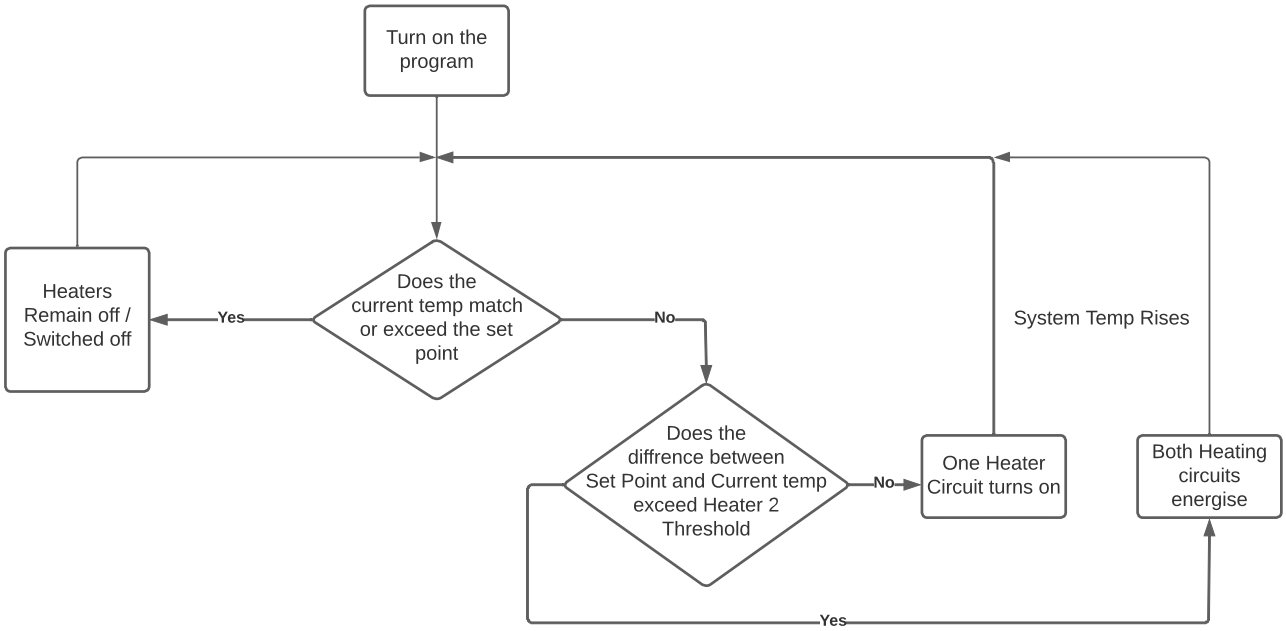
5. Use and Operation

5.1 Operation

WARNING:
Releasing the Hydraulic connections during operation or during the cooling process will expose the user to a risks burns or scalding from hot water.

5.1.1 Typical Operation

In standard operation, both Manual and in the Screed Heating mode, the PLC will energize the element circuits depending on the difference between the current temp and the set point. Please see below Process Flow chart for more information.



5.1.2 Safety Features – Physical and Software Protection

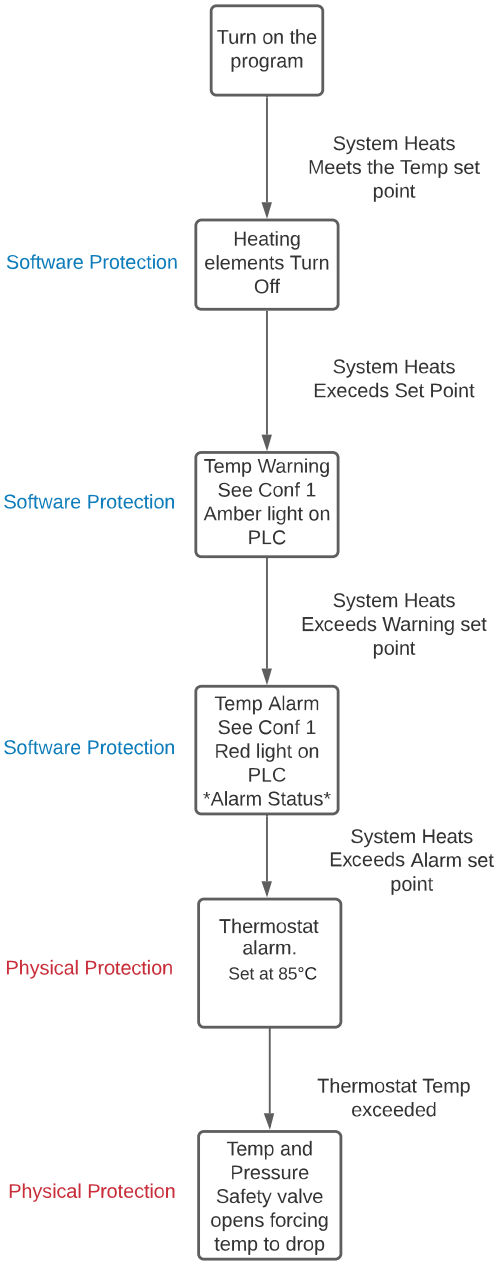
The EPX Heater has several different safety measures to protect the system from over temperature or over pressure situations. Although highly unlikely, these safety features have been added to protect the user and those in the environment from any harm by an over pressure / over temp situation.

Temperature safety
There are both physical and software safety features which protect against system overtemperature. In normal operation the EPX controller will turn off the Heater once the temperatures rise and meets the set point. Then turn back on the Heater once the system temperature drop. The over temperature safety features are designed to activate when the system temperature exceeds the set point and continues to rise.

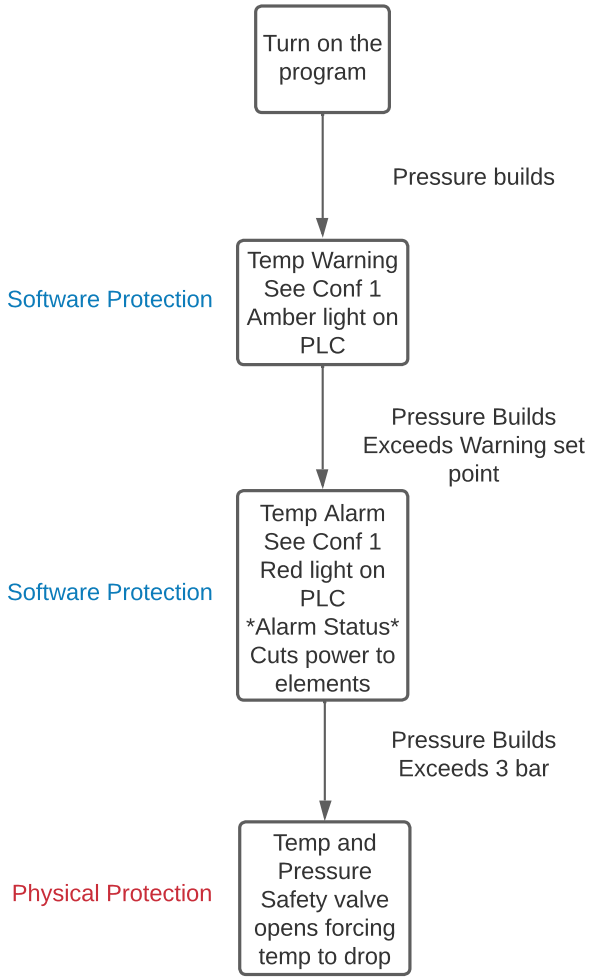
- The Temperature warning condition is designed to advise the user that the temperature has risen past the set point and that the system needs attention.
- The High temperature alarm condition, once met, sets the unit in alarm state and power cannot be restored to the elements unless the user resets the alarm.
- Regardless of the values entered for the temperature Warning and Alarm parameters, the Heater will enter High Temperature Alarm at 85°C. This is the maximum operating temperature for the Heater.

Please see the section **6.3 Trouble shooting with EPX Controller** for more information on temperature alarms.

The EPX Heater also has two physical temperature safety devices:
- There is a Thermostat in the Heater head which trips at 85°C cutting control circuit to the contactors. The Thermostat will need to be reset once tripped. Please see section **5.1.5 Resetting the Thermostat** for more information.
- The last line of protection for over temperature is the safety valve. This valve is set to open at 90°C. Please refer to section **4.5.1 Pressure and Temperature safety valve connections** for more information on the safety valve.



Pressure safety



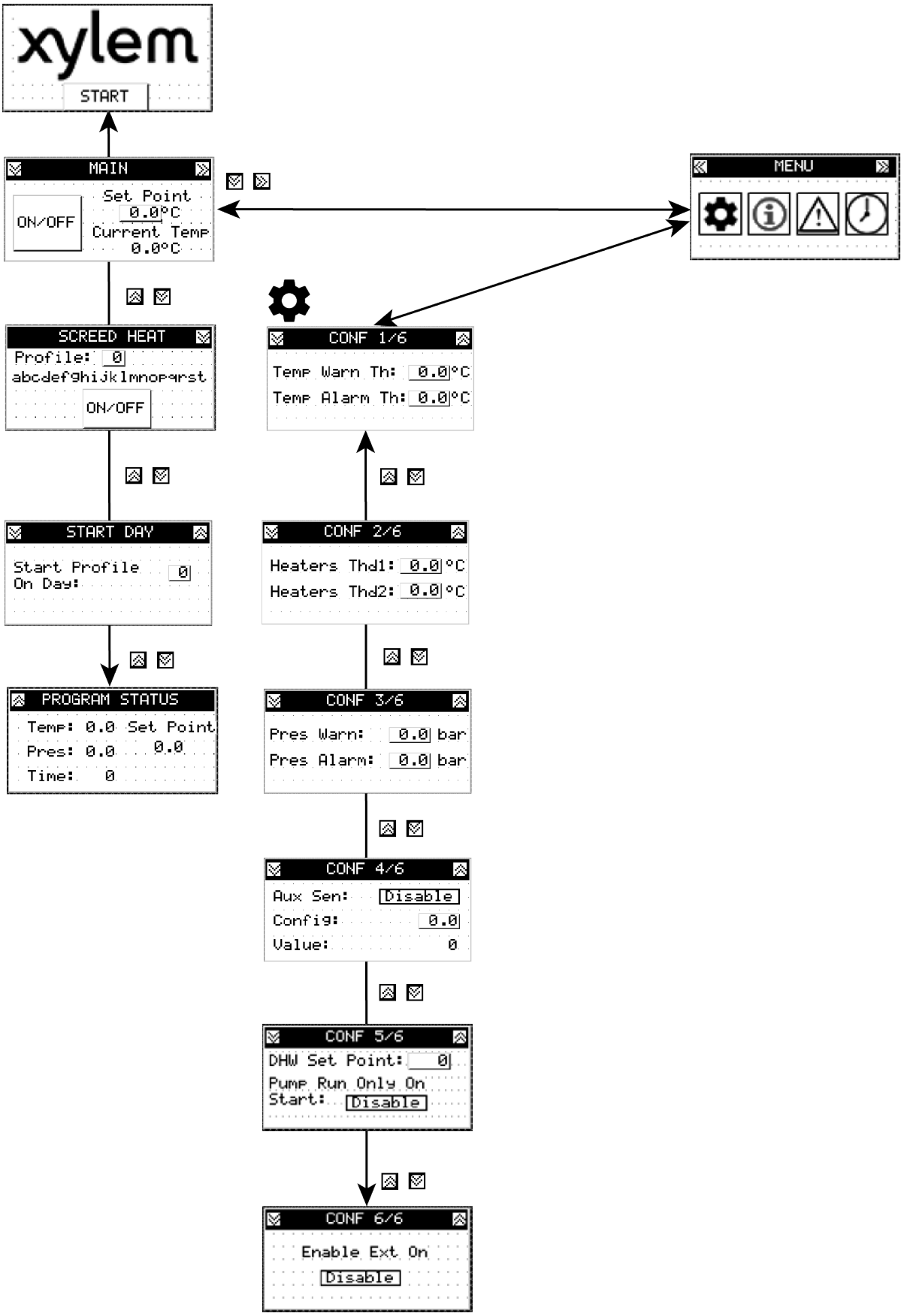
5.1.3 Pump Lock out on Low pressure / Dry run

To prevent the pump from Dry running (Running the unit without water in the system) the EPX Heater is programmed to “lock out” the pump on low pressure. Dry running can seriously harm the pumps internal components and lead to premature failure.

The PLC will only release the pump once pressure has exceeded 1 bar pressure. Pump lock out will occur when the system is first being commissioned or during operation if the pressure was to drop under 1 bar pressure. Please refer to trouble shooting in section **6.3 Trouble shooting with EPX Controller** for more information.

5.1.4 Safety Features – Changing the Software limits for pressure and temperature

The below navigation chart shows how to change the software limits for the EPX Heater. Please see section 5.4 Parameters for more information on each screen shown below:

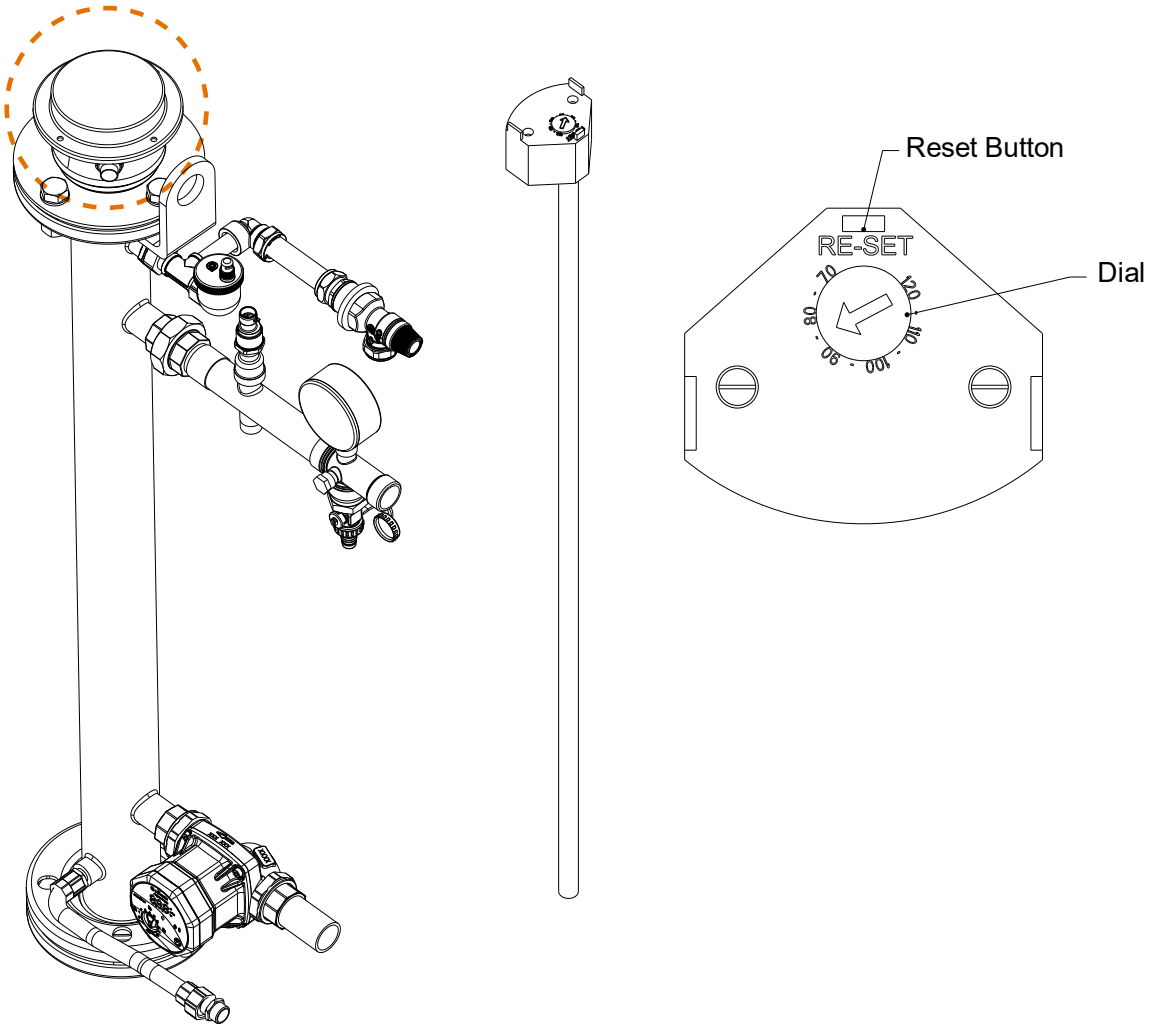


5.1.5 Resetting the Thermostat

Positioned inside of the Heater heat is the safety Thermostat. This device is used to cut the power to the Heater when the temperature inside the Heater reaches a certain level. The Thermostat is preset during manufacture at 85°C and recommended not to be altered. When the temperature rises above 85°C the circuit breaks and cuts the 24 volt control circuit to the Heater contactors. When this happens, the PLC will enter an alarm state until the thermostat is manually reset.

DANGER
Before accessing the Heater head, the power must be isolated or unplugged from the electrical supply. The resetting of the thermostat must be carried out by a trained engineer or technician.
Never access the internals of the Heater while live.

Once the heat has dropped under 85°C, the thermostat can be reset, removing the warning from the PLC. To reset the thermostat, press down the small black reset button. See the below diagram for the position of the reset button. If the thermostat has reached a lower temperature than 85°C, the button will remain in a depressed position. The alarm can then be cleared, and operation of the Heater can continue.



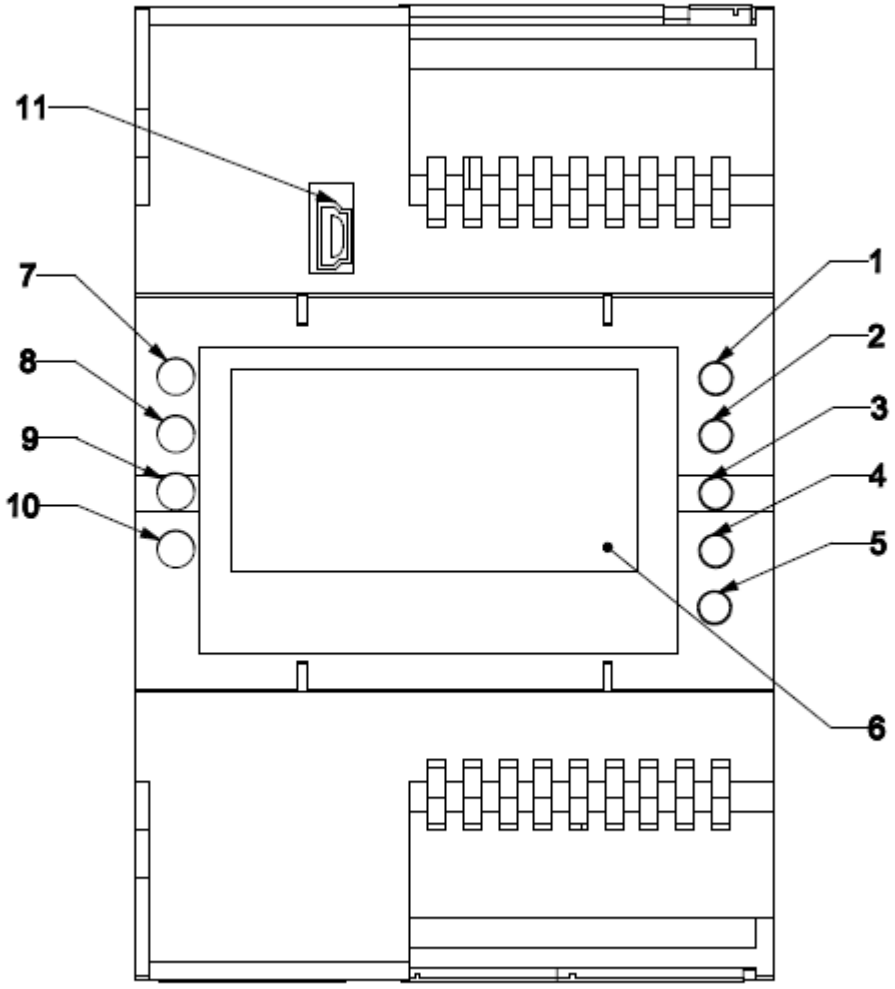
5.2 Commissioning

Commissioning of the EPX must be carried out by a technician or engineer possessing the technical-professional requirements outlined in the current regulations.

DANGER
Before commission the product, please familiarise yourself with the contents of the manual.

Please refer to the **“Quick Commissioning Guide – EPX Plus”** for full information on the first-time commissioning process.

5.3 HMI / Interacting with the PLC

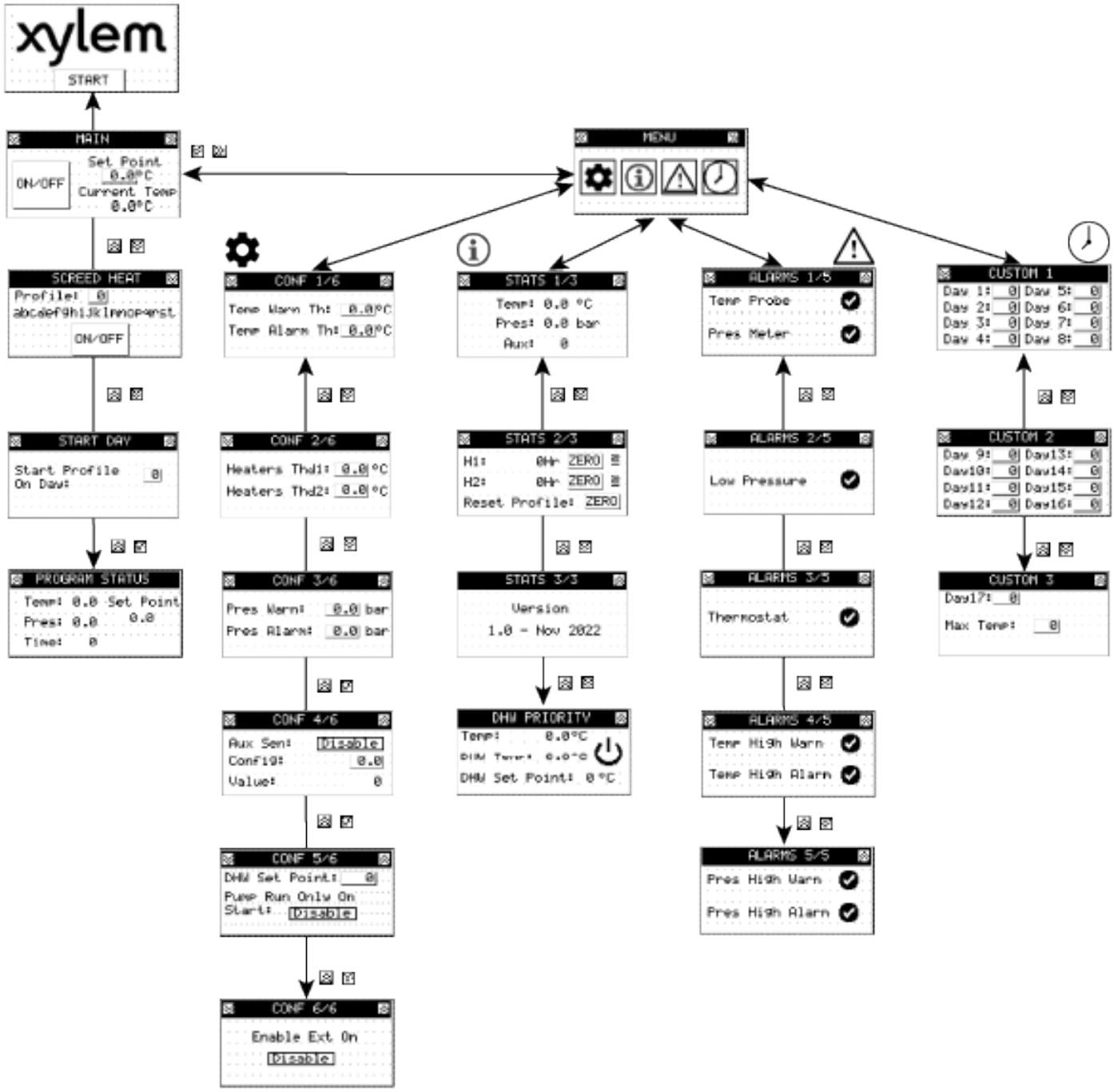


Position	Label	Description
1	Up Navigation Button	Button to navigate Up on the HMI / Increase value
2	Down Navigation Button	Button to navigate Down on the HMI / Decrease value
3	Right Navigation Button	Button to navigate Right on the HMI
4	Left Navigation Button	Button to navigate Left on the HMI
5	Ok / Accept Button	Button to accept / Toggle parameter
6	LCD Screen	Backlit LCD Screen
7	Green Power LED	LED Showing Power to the PLC
8	Yellow LED	LED Showing Warning condition
9	Red LED	LED Showing Alarm condition
10	Green Run LED	LED Showing Run condition
11	Mini USB port	Mini USB port to Update the device

5.4 Parameters

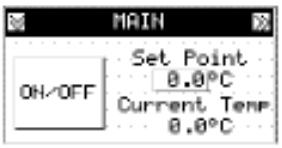
5.4.1 Navigating the PLC

Please see the below navigation chart for each of the menus available for the EPX Heater:

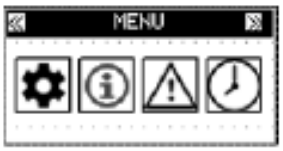


Please note:

At any time you can return to the "Main" and "Menu" screens by pressing and holding down:



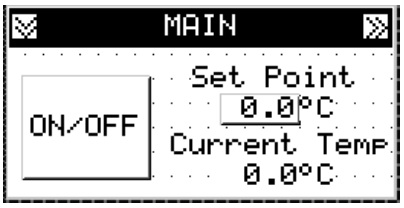
Hold Left for: "Main Screen"



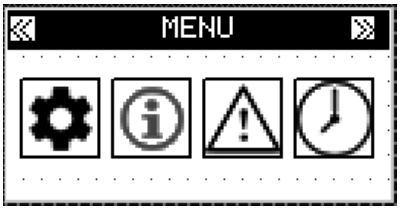
Hold Right for: "Menu Screen"

5.4.2 Detailed description of each menu

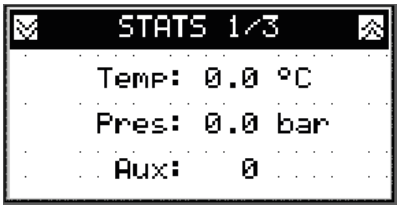
Start Screen
Using the navigation buttons, hover of the Start button and press Ok to enter the main menu.



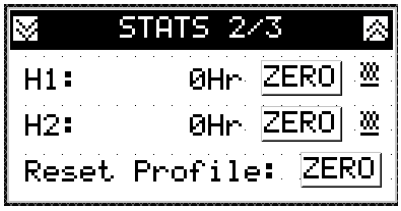
Main Screen
From this screen you can start the manual mode by hovering over the On/Off toggle switch and clicking enter. This starts the unit running at the Set Point entered on the right of the screen. Clicking On/Off Toggle button again turns the unit off. To Change the Temp set point hover of the set point value and press Ok. You can then adjust the value by pressing the up and down buttons on the PLC. The current temp is shown at the bottom of the menu Screen.



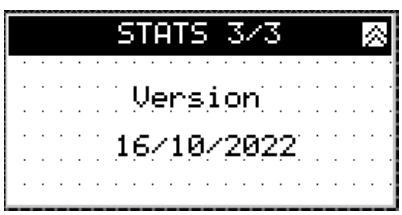
Menu Screen
This screen allows you to navigate to four Menus on the device. The Icons are (From left to right): Configuration Menu, Status Menu, Alarm Menu and Custom Screed heating. Hover over one of the icons to progress to the next menu. The Icon will change color once selected.



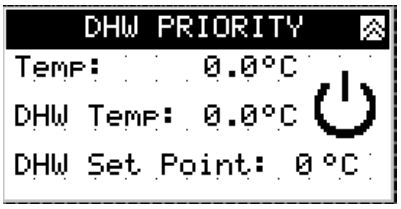
Status Screen 1/3
This screen shows the current system temp (In °C), the current system pressure (In bar) and the value that the Auxiliary 4-20ma sensor is outputting. There are no Configurable parameters on this screen.



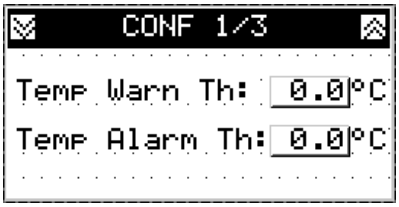
Status Screen 2/3
From this Screen you can see how many hours each Heater has been running for (Total duration). To reset the counter to Zero hours, hover over the ZERO button and press Ok. You will need to do this for each element. On the right side of the screen, a small icon will appear (a horizontal line with three rippled lines above) when each Heater is active.
The reset profile button resets the day counter when running the heater in Screed heating profile mode



Status Screen 3/3
This screen shows the software version. You may be asked to check the version ref on this screen when trouble shooting with a Xylem engineer. The Version will either be displayed as a date or a build number.

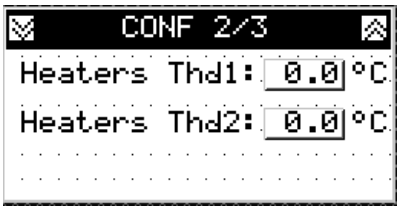


DHW Priority Mode
In this screen, the user can view the status of the Domestic Hot Water Priority valve. The “ON” icon will appear to the right when the Priority valve is active. Please see the **“DHW Application Guide”** for more information on this feature.

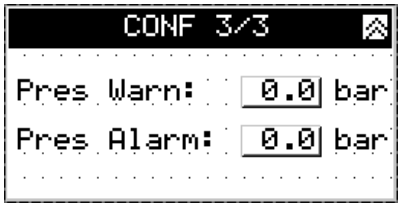


Configuration screen 1/5
This screen allows you to set the temperature warning and alarm for the unit. The Alarm and Warning will trigger when the value entered in these two fields **rises above the operating set point**. This alarm is used to advise the user that the heat is building up past the set point indicating a system issue.

For example:
If the Heater set point is set to 45°C. Temperature warning is set to 5°C and Temperature Alarm is set to 10°C.
The Temperature Warning will trigger once the system temperature reaches 50°C (5°C above set point).
The Temperature Alarm will trigger once the system temperature reaches 55°C (10°C above set point).

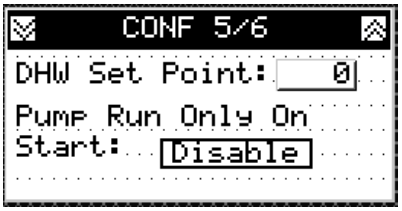


Configuration screen 2/5
On this screen you can change the threshold for Heater 1 and 2. The threshold is the difference between the current temp and the set point temp. Ideally threshold 1 should be shorter than threshold 2 to allow for stepped heating. Reducing the value between the two allows for a quicker heat up time from cold. Increase the threshold allows for a smoother, gradual heat up of the system.

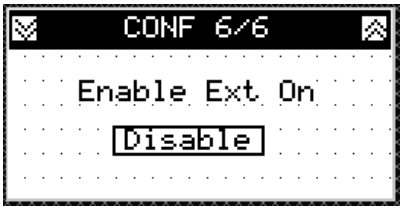


Configuration Screen 3/5
This screen allows you to set the Pressure warning and alarm for the unit.
The Heater will display a warning when the value in the warning field on the right is reached.
The Heater will turn of the element when the value of the alarm field is reached.
To set the alarm and warning pressures, hover over the field, press ok, then adjust the value by pressing up and down.

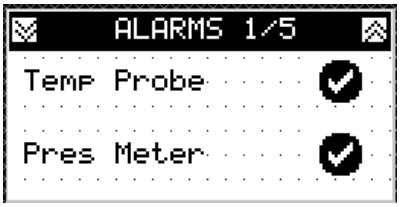
Configuration Screen 4/5
This screen allows the user to switch to using a secondary (Auxiliary) temperature probe to control the PLC rather than the standard sensor in the Heater assembly. This feature is commonly used in domestic heating applications where the Heater is activated from a sensor positioned away from the Heater unit.



Configuration Screen 5/6
In this screen, the user can set the Domestic Hot Water target temperature for applications where the Heater is used as a temporary domestic boiler. Please see the **“DHW Application Guide”** for more information
Also shown on the screen is the option to only have the pump run when the heating mode is activated. By default, the pump is always enabled regardless of the mode of the Heater. However, some application may require the pump to only run when the Heater is active.

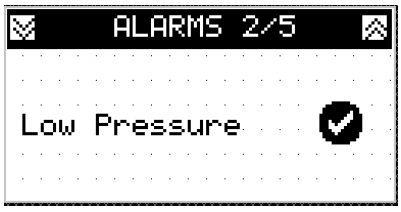


Configuration Screen 6/6
This screen allows the user to turn on the Enable Ext On feature. When activated, an external signal can be sent to the Heater to change to mode to “RUN”. The signal is non latching so will require a constant power to the terminals to keep the unit in the manual “RUN”. Removing the power will change the condition back to manual “STOP”. This feature is set to disabled as standard.

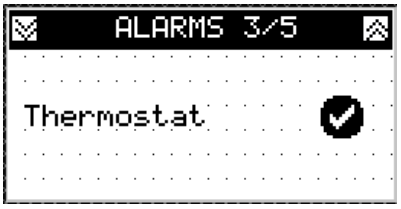


Alarm Screen 1/5
The alarm screen will show the user the current status of any Alarms on the Heater. A tick icon will appear on the right if the Heater is working within the set parameters.

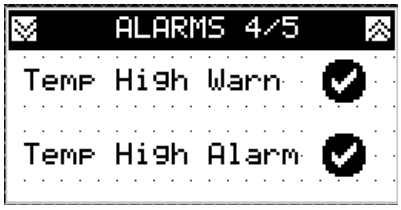
Temp probe: Shows the status of the physical temperature thermostat in the Heater head.
Pressure Meter: Shows the status of the physical pressure transducer on the manifold.



Alarm Screen 2/5
Low Pressure: Shows if the pressure of the system is under the minimum pressure limit. When this alarm is triggered, the PLC will also cut power to the circulation pump.

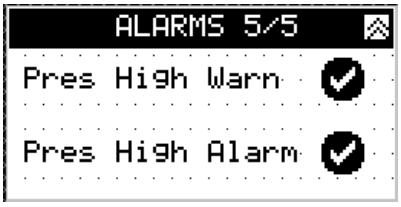


Alarm Screen 3/5
Thermostat: Show if the Thermostat inside the Heater is head is within temp. If the temp exceeds the temperature setting (set on the physical dial) the thermostat will break the circuit, cutting power to the Heaters via the PLC alarm.



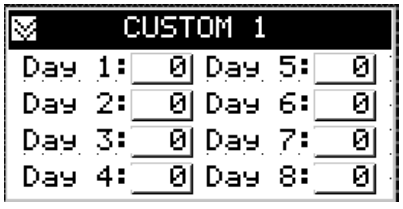
Alarm Screen 4/5
Temp High Warning: Shows if temperature of the system is under the Temp High Warning value. This parameter is set on in the config screen.

Temp High Alarm: Shows if temperature of the system is under the Temp High Alarm value. This parameter is set on in the config screen.

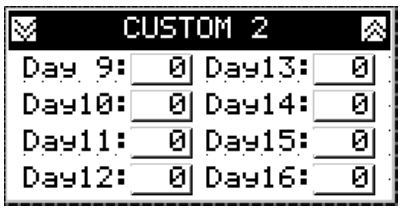


Alarm Screen 5/5
Pressure High Warning: Shows if pressure of the system is under the Pressure High Warning value. This parameter is set on in the config screen.

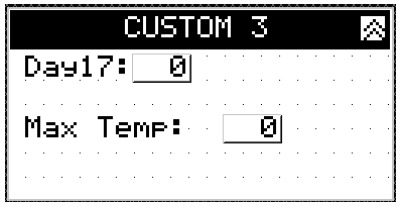
Pressure High Alarm: Shows if Pressure of the system is under the Pressure High Alarm value. This parameter is set on in the config screen.



Custom Screed Heating Screen 1
Allows the user to set the temperatures for the Heater to sustain when running the Screed Heating Mode in the Custom profile. The temperature for day 1 to 8 can be set on this screen.



Custom Screed Heating Screen 2
Allows the user to set the temperatures for the Heater to sustain when running the Screed Heating Mode in the Custom profile. The temperature for day 9 to 16 can be set on this screen.

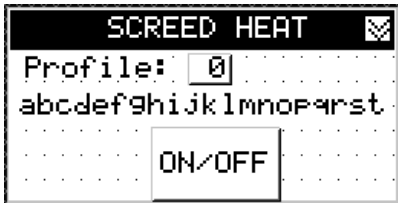


Custom Screed Heating Screen 3
Allows the user to set the temperatures for the Heater to sustain when running the Screed Heating Mode in the Custom profile. The temperature for day 17 can be set on this screen.

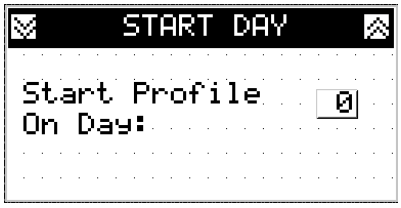
The user can also set the high temp limits for this profile

5.5 Screed Heating Profile Program

The EPX Heater has 11 preprogramed Screed heating profiles which allows the user to set and leave the unit for the full 17 days duration of the heat cycle. The temperature set point will automatically adjust depending on the run time (In days). As in the manual mode, the element will energize depending on the difference between the temperature set point and the Heater threshold. The pressure and temperature warning and alarms will carry over to what had already been set in the “Config” Screens.

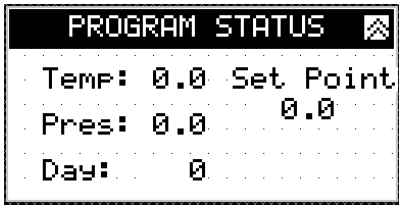


In the “Screed Heat” screen, the user can select one of the 11 preprogrammed profiles depending on the manufacturer and type of screed being used. When the profile is selected, the name of the Screed type or Manufacture is displayed in the center of the screen. Hover over and toggle the “On/Off” button to start the process.



On the “Start Day” screen, the user can change the day that the profile starts in the schedule.

For example, setting the day to “5” will start the heater to run from day 5 on the selected profile, till the end of the schedule



On the program status screen, it shows:
Temp: Current temperature of the circuit.
Pressure: Current pressure in the circuit.
Set Point: The current temperature set point determined by the profile setting and time elapsed.
Day: The elapsed time in days.

5.5.1 Custom Screed heating Profile

In addition to the 11 preprogrammed screed heating profiles, the user can set their own custom profile within the PLC. As described in Section **5.4.2 Detailed description of each menu**, the user can set the temperature for each day over a 17-day period in the Custom Screed heating screens.

To activate this mode, select Profile “0” from the Screed Heat Menu. The name of the Profile will be “Custom Profile”.

5.5.2 Screed heating profiles

EPX Heating Program Number	1	2	3	4	5	6	7	8	9	10	11
Profile Name	Bekotec-Therm	Anhydrite CAF 50mm	Anhydrite CAF 70mm	Thermorapid	Concrete Screed 70mm	Concrete Screed 70mm v2	CAF C30-F5	Creed-Quick-Cement	DIN EN 1264 Concrete	DIN EN 1264 Anhydrite	DIN EN 1264 Gush Asphalt
Manufacturer	Schlüter	Weber	Weber	Chemotechnik			Weber	Weber	DIN EN 1264-4	DIN EN 1264-4	DIN EN 1264-4
Concrete screed	Bekotec-Therm	Anhydrite (calcium sulphate) screed	Anhydrite (calcium sulphate) screed	Thermorapid	Concrete screed	Concrete screed	Anhydrite (calcium sulphate) screed	Concrete screed Creed-Quick-Cement	Concrete screed	Anhydrite (calcium sulphate) screed	Gush asphalt screed
	(CAF)		Flies estrich (CAF)				CAF C30-F5 quick				
Screed thickness	n/a	50 mm	70 mm	n/a	70 mm	70 mm	n/a	n/a	n/a	n/a	n/a
	occupational heating (Heating up for readiness for covering)	occupational heating (Heating up for readiness for covering)	occupational heating (Heating up for readiness for covering)	Funktional heating (Initial heat up)	Funktional heating (Initial heat up)	occupational heating (Heating up for readiness for covering)	n/a	n/a	Funktional heating (Initial heat up)	Funktional heating (Initial heat up)	Funktional heating (Initial heat up)
Permitted maximum temperature	55	55	55	55	55	55	55	55	55	55	45
	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]	Systemtemperature [°C]
Laying duration unheated [unheated days drying time]	min. 7 days	min. 7 days	min. 7 days	min. 3 days	min. 21 days	min. 28 days (including initial heat up)	min. 5 days	min. 3 days	min. 21 days	min. 7 days	1 day
Heating day 1	25	25	25	25	25	40	25	25	25	25	25
Heating day 2	27	30	30	25	25	40	25	25	25	25	25
Heating day 3	29	35	35	25	25	40	25	25	25	25	25
Heating day 4	31	40	40	35	45	40	20	45	45	45	40
Heating day 5	33	45	45	45	45	40	20	45	45	45	40
Heating day 6	35	50	50	45	45	40	20	45	45	45	40
Heating day 7	35	55	55	45	45	40	20	45	45	45	40
Heating day 8	35	55	55	45	35	40	20	25	25	25	25
Heating day 9	25	55	55	35	20	20	20	20	20	20	20
Heating day 10	20	55	55	25	20	20	20	20	20	20	20
Heating day 11	20	55	55	20	20	20	20	20	20	20	20
Heating day 12	20	45	55	20	20	20	20	20	20	20	20
Heating day 13	20	35	55	20	20	20	20	20	20	20	20
Heating day 14	20	25	45	20	20	20	20	20	20	20	20
Heating day 15	20	20	35	20	20	20	20	20	20	20	20
Heating day 16	20	20	25	20	20	20	20	20	20	20	20
Heating day 17	20	20	20	20	20	20	20	20	20	20	20

After finishing "heating up" : The permanent temperature should be at least 20°C to avoid freezing. Until the device is set differently or switched off.

Before setting the function " Screed heating" text note (or something else);

The temperature of the screed and the temperature of the room shall not fall below 5 °C.For all screed materials, the specifications of the manufacturer and actual Standards (DIN EN 1264 and others) shall be followed.

5.6 Xylem Avensor – Cloud connection

The EPX Heater comes equipped with Xylems latest Cloud based control technology which allows the user to remotely monitor the Heaters status and parameters. The CCD401 modem is already fitted with the power supply and communication cable to the PLC. The PLC is also preprogramed to output a signal to the Xylem Avensor software out of the box.

When you first commission the Heater, you will need to log onto the Xylem Avensor software (either by Mobile app or Web Browser) and create an account. A full list of instructions can be found in the "**Xylem Avensor Quick start guide**" supplied with this Heater.

For more information on the benefits and features of Xylem Avensor, please contact your local Xylem Sales office or Technical Representative.

5.7 Operation and commissioning of the Lowara Ecocirc Pump

For the full instructions on how to commission and service your Ecocirc Circulator pump, it is recommended to consult the "Ecocirc" IOM supplied with this Heater.

WARNING
When operating the circulation pump, please be careful to avoid hot surfaces.
Please see section **4.2.1 Installation Considerations – Hot surfaces** for more information.

6. Troubleshooting

6.1 General fault-finding guide

Issue	Possible causes	Remedy
Heating cools down	• No mains voltage	• Check RCD on site • Check supply line • Check MCBs in the device and in the on-site distributor • Check whether the system is switched on.
	• System pressure too low or too high. (Pressure should be at least 1 bar, maximum pressure 3 bar)	• At low pressure - top up with water • If the pressure is too high - drain off water
	• Air in the system	• Bleed system
	• No circulation	• Check pump for function. Is there a fault? • Check isolation valves on the flow and return pipework (Gate valves) • Check to see if the "Low pressure Alarm" is active. This will restrict power to the pump
	• Incorrect temperature set	• Check to see if the set point entered on the main screen (when running in manual mode) is correct • Check the Element threshold. Is element two threshold too high? Refer to parameters section of this Manual
	• Over temperature / Over pressure	• Check to see if the thermostat has tripped inside the head of the element. • Check to see if there are any errors or warnings on the PLC screen • Check the size of the system. Over pressure may occur when the system volume is too great. Over Temperature may occur when the system volume is too small

Heating too warm	• Error message on Pump or Controller	• For troubleshooting, check the error list of the respective device
	• Checking the temperature settings on the controller	• Set temperature
RCD cannot be switched on	• MCB has triggered • MCB defective • Heating Element defective	• Reset the MCB • Check or replace MCB • Check or replace heating elements

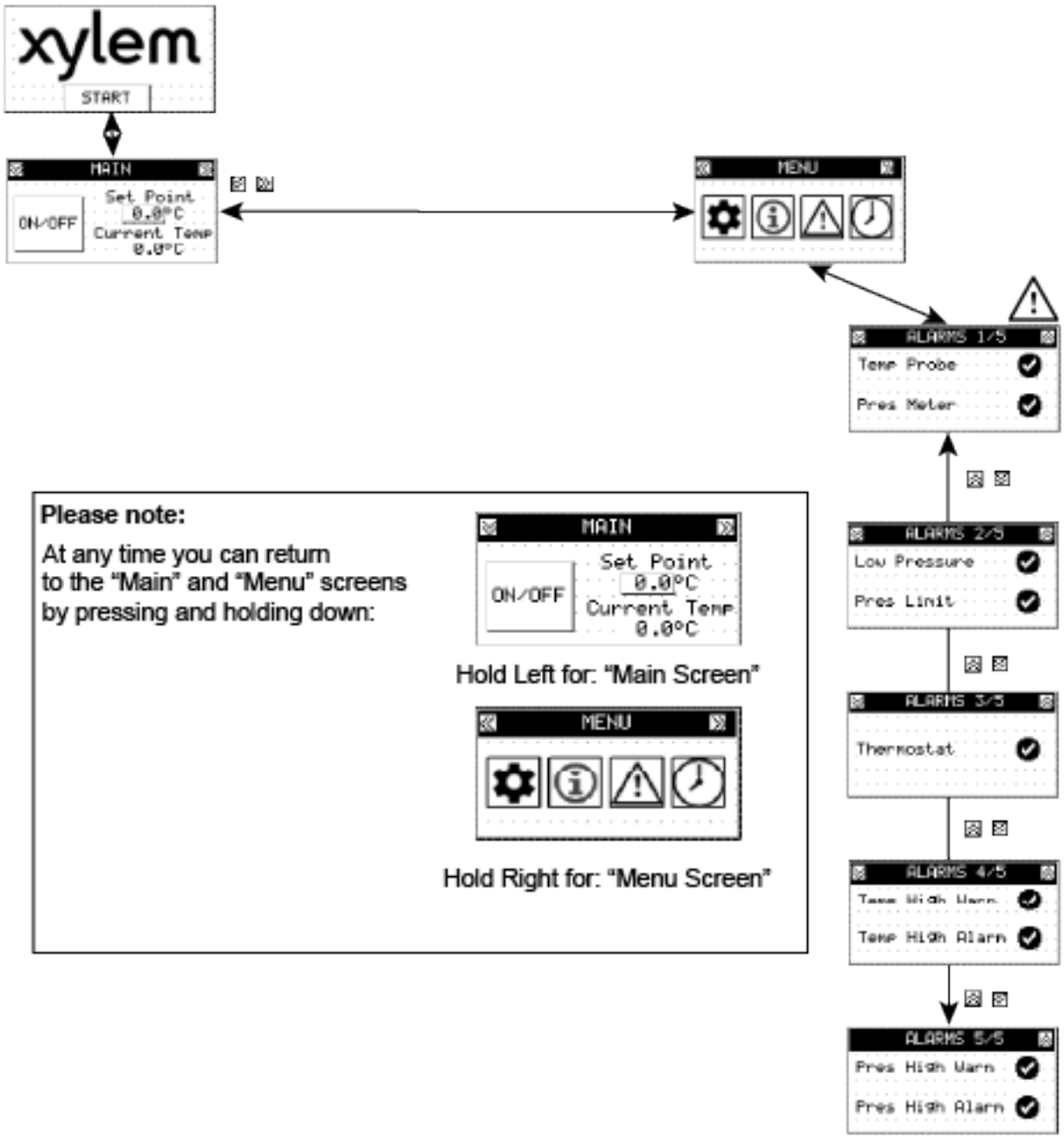
6.2 Errors shown on the Controller Screen

To prevent serious damage to the EPX Heater, System or the installation environment, the EPX Heater controller can be set to monitor and cut out the unit in the event of an error. For more information on the configuration of these alarms, please revisit sections "**5.1.2 Safety Features – Physical and Software Protection"** and **"5.4.2 Detailed description of each menu**".

If the PLC controller shows a red flashing light, then an alarm has been tripped and needs to be cancelled before the Heater will resume operation. From the main menu screen, navigate to the alarm section and cycle through the different menus until you find what has cause the alarm condition.

Once resolved the issue, you will need to press the Ok button to change the "Warning" Icon to a "Tick"
An example of the "Tick" and "Warning" icons can be seen above. For more information on how to navigate the menus, please re-visit "5.3 HMI / Interacting with the PLC".

6.2.1 Navigating to the Alarm Screen



6.3 Trouble shooting with EPX Controller

Alarm shown on display	Causes	Remedy
 Pressure Sensor not responding	• Pressure transducer is not connected	• Check the wiring of the pressure transducer. Is the plug firmly connected? • Is the wiring to the PLC controller correct?
 Temperature Sensor not responding	• Temperature sensor is not connected	• Check the wiring of the PT1000 Temp Sensor • Is the Temp Sensor damaged? • Is the wiring to the PLC controller correct?
 Thermostat Tripped	• Over Temperature on the Physical protection • This is due to the temp limit being exceeded past the factory setting.	• Turn the unit allowing the system to cool down • Press down on the small black reset switch on the thermostat. See Section **5.1.5 Resetting the Thermostat** for more information
 High Pressure Alarm	• High pressure in the system • This could be caused by Air in the system	• Check to see if there is air in the system and bleed / vent where possible
	• Faulty pressure vessel	• Turn the Heater and drain down the system. Check the vessel pressure is at least 0.8 bar

 High Pressure Warning	• Pressure in the system is past the Pressure Warning Set point. The set point is set by the user.	• Monitor the pressure level in the system
 High Temp Alarm	• System is too small (Volume)	• Increase the volume of water in the system or switch off on circuit of the Heater
	• Isolation valve on the flow / return is closed	• Check isolation valves
	• Pump is not circulating water around the system	• Check to see if pump is running. If not, follow the pump trouble shooting guide
 High Temp Warning	• Pressure in the system is past the Temp Warning Set point. The set point is set by the user.	• Monitor the temperature levels in the system
 Low Pressure Alarm	• Insufficient pressure in the system. Less than 0.9 bar pressure monitored. • See Section **5.1.3** for more information	• Possible leak in the system. • Repressurise the system above 0.9 bar pressure

6.4 Trouble shooting with Ecocirc Circulation pump

Disruption	Possible cause	Correction
Insufficient heat. green light on pump	Inadequate performance levels by the unit	• Increase head by increasing the speed and wait for the system to become fully operational • Or Select a different operating mode and wait for the system to become fully operational
Insufficient heat flashing Red Light	Dry Running Detected	• Check that the system is free of Air • Checked that the pump liquid pressure conforms to the working limits • Check that the unit is installed according to the instructions in the manual • Initiate the degassing process
Unit not functioning with LED light on flashing Yellow Light	Control knob set to standby	• Select an operating mode from 1, 2, 3, A, B, C, I, II, or III
Unit not functioning with LED light on red Solid Light – **Error Code: E02**	Motor Overcurrent	• Reset the error, if the problem persists, replace the unit
Unit not functioning with LED light on red Solid Light – **Error Code: E03**	Supply Voltage too high	• Check the grid voltage confirms to the related valves. Then Reset the error
Unit not functioning with LED light on red Solid Light – **Error Code: E03** or **E06**	Regeneration effect due to water flow generated by other equipment	• Remove the source of the flow Then Reset the error
Unit not functioning with LED light on red Solid Light – **Error Code: E04**	Motor Stalled, Rotor blocked or loss of speed	The unit automatically carries out several high-torque startup attempts If the problem continues: • Check that the pumped liquid conforms with the working limits • Clean the system • Reset the error If the problem persists, replace the unit
Unit not functioning with LED light on red Solid Light – **Error Code: E05**	Motor control error	• Reset the error, if the problem persists, replace the unit
Unit not functioning with LED light on red Solid Light – **Error Code: E06**	Supply voltage too low	• Check that the grid voltage confirms to the rated values. Then reset the error
Unit not functioning with LED light on red Solid Light – **Error Code: E07**	Motor overload	• Disconnect the power supply • Wait for the unit to cool down • Check that the pumped liquids conform with the working limits • Activate the power supply
Unit not functioning with LED light on red Solid Light – **Error Code: E08**	Overheating	• Disconnect the power supply • Wait for the unit to cool down • Check that the ambient and pumped liquid temps confirm to

		the working limits • Check that the unit is installed according to the instructions in the manual • Activate the power supply
Unit not functioning with LED light on red Solid Light – **Error Code: E09**	Motor electrical failure	• Reset the error, if the problem persists, replace the unit
Unit not functioning with LED light on red Solid Light - **Error Code: E10**	Protection against dry running	Reset the error, if the problem persists, replace the unit
Unit not functioning with LED light off	Tripping of electric safety devices in the electrical panel. Please refer the **EPX wiring Diagram**	Restore the electric safety devices; replace the fuse for the system and set to the on position
	Power supply disconnected	Activate the power after verifying that the power plug and lead is connected to the pump
	Incorrect wiring	Check the power plug for any breakages or miss wiring
	Unit faulty	Replace the unit
Noise coming from the system (EPX unit or pipework) with Flashing green light	Degassing active	Select an operating mode from 1, 2, 3, A, B, C, I, II, or III, and wait for the degassing process to complete (Approximately 3 mins)
Noise coming from the system (EPX unit or pipework) with Solid green light	Air in the system	• Vent the system and initiate the degassing process • Wait for the degassing process to complete. (Approximately 3 mins)
	Flow rate too high	• Select a different operating mode, or • Decrease head by reducing speed
	System feature.	• Check for kinks in the pipework, isolation valve closed or any obstruction in the pipework
Noise coming from the pump with Solid green light	Degassing active	• Select an operating mode from 1, 2, 3, A, B, C, I, II, or III, and wait for the degassing process to complete (Approximately 3 mins)
Noise coming from the pump with Solid green light	Air in the Unit	• Initiate the degassing process wait for the degassing process to complete (Approximately 3 mins) • Make sure the EPX unit is standing up right and not on the back of the sack truck
	Cavitation	Try one of the following: • Increase system pressure within the working limits • Select a different operating mode • Decrease head by reducing

		speed
	Foreign bodies in the unit	• Clean the system; If the problem persists, replace the unit
Power to the controller but no power to the pump	Controller is preventing the pump from running through “Pump Lock out”. See section 5.1.3	• Increase the system pressure

7. Maintenance

7.1 Precautions

Before starting the works, make sure that the instructions shown in Introduction and Safety on page 5 have been fully read and understood.

WARNING:
Always wear personal protective equipment.

WARNING:
Maintenance must be done by a technician possessing the technical-professional requirements outlined in the current regulations, only when the EPX Heater is cold.

WARNING:
Always use suitable working tools.

WARNING:
In the case of liquids that are excessively hot or cold, pay attention to the risk of injury.

DANGER: Electrical hazard.
Before starting work, check that the electric power supply is disconnected and locked out, to avoid unintentional restart of the unit, the control panel and the auxiliary control circuit.

DANGER: Electrical hazard.
After every service and maintenance procedure, ensure that a ground bond test is carried out and that the resistance is less than 100 mΩ

7.2 Considerations for maintenance environment

When carrying out servicing and maintained on the EPX Heater it is advised to have the unit positioned on a work bench above floor level to prevent muscle stress or strain to the engineer.

7.3 Recommendations for Regular Maintenance

The EPX Heater is characterised by its robust construction and its service life. However, it is important to carry out maintenance from time to time. How often this maintenance must be carried out depends mainly on the water hardness of the previously heated systems; in the case of high water hardness and/or predominantly use in new systems with fresh water, the intervals should be shorter; in the case of low water hardness, they may be correspondingly longer.

Procedure	**Time scale**
Clean the product. Rising internals with a clean water flush	After every use
Check the Temperature and pressure safety valve still opens. Carry out manual opening by turning Red dial head	After every use
Check and ensure the pre-charge pressure of the vessel is 0.8 bar.	After every use
Descale the unit. (Please see section 7.4 Recommendation for descaling)	Between 3-7 uses
Remove element to clean and check condition	Every 3 months
Have the unit serviced	Every 12 months

7.4 Recommendation for descaling

We recommend descaling the SOS mobile Heater after it has been used 3-7 times. Commercially available descaling agents may be used, provided they do not attack metal, EPDM or silicone.

Caution
Do not use de-scaler that contains chlorine. Using a chlorine based descaler may damage the heating element, leading to premature failure.

Below are instructions on recommended steps for the decaling process:

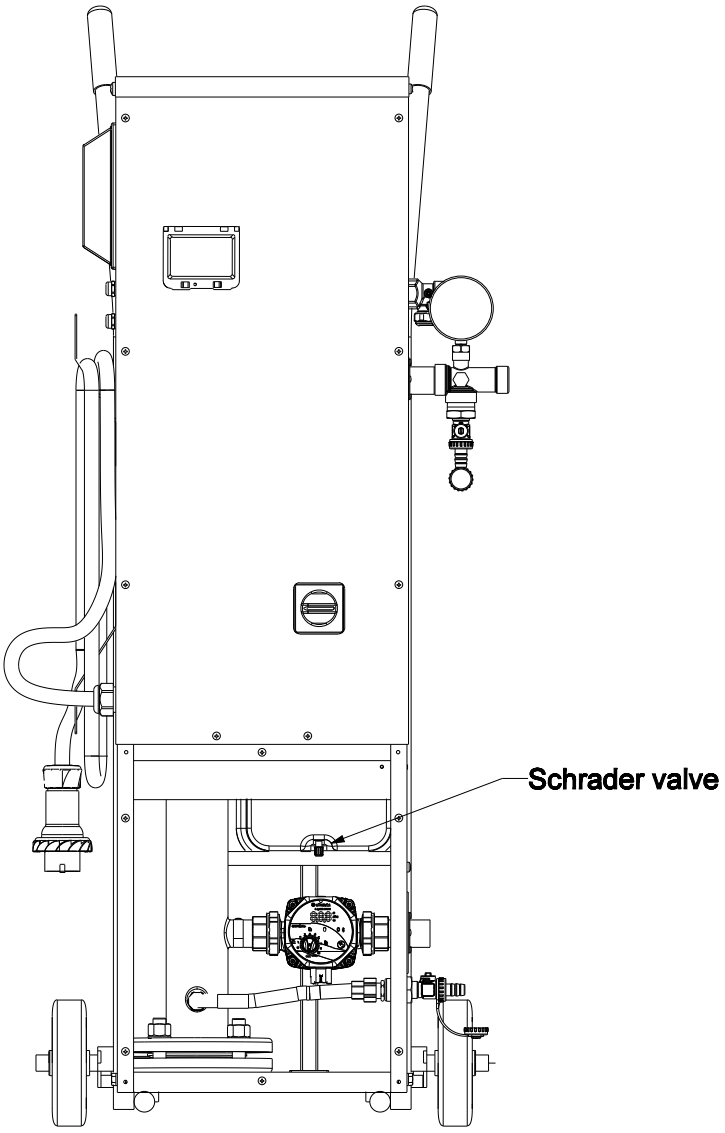
1. Create a small circulation loop to allow the descaler solution to flow around the Heater. Connect a small run of pipework between the flow and return ports of the Heater. This run of pipework only need to be between 3-4 meters. Ensure that the material of the pipework is suitable for use with the descaler solution.
2. Close the bottom fill port.
3. Using the top fill port, connect a small length of ½" pipework. You will need to fill the Heater from this port with the declarer solution. Its recommended to use a funnel to channel the descaler solution to avoid any spills.
4. Once the Heater and pipework run are filled, turn the fill port valve to the closed position and supply power to the Heater.
5. Do not turn on the Heater. It is not recommended to turn on the Heater in manual or screed heating mode. The fluid must remain cold.
6. Turn the dial on the pump to a fixed speed mode I. The solution will circulate through the Heater.
7. Once finished the process defined by the manufacture of the descaler, turn off the pump.
8. Open the bottom fill valve to drain the Heater.
9. Once the Heater is completely drained, repeat the process with cold clean water to ensure that the descaler solution is completely flushed from the Heater.

Caution
The descaler solution must be left inside the Heater for long period of time. One finishing the descaling process, flush the Heater with cold clean water before storage.

7.5 Maintaining the pressure vessel

At the end of each use, it is recommended to check the charge of the pressure vessel and ensure that the pressure is set to 0.8 bar. If the pressure is under 0.8 bar, the vessel will need to be topped up using a foot pump or compressor.

The Schrader valve, used to top up the pressure of the vessel, can be accessed through the bottom door.
See the below diagram

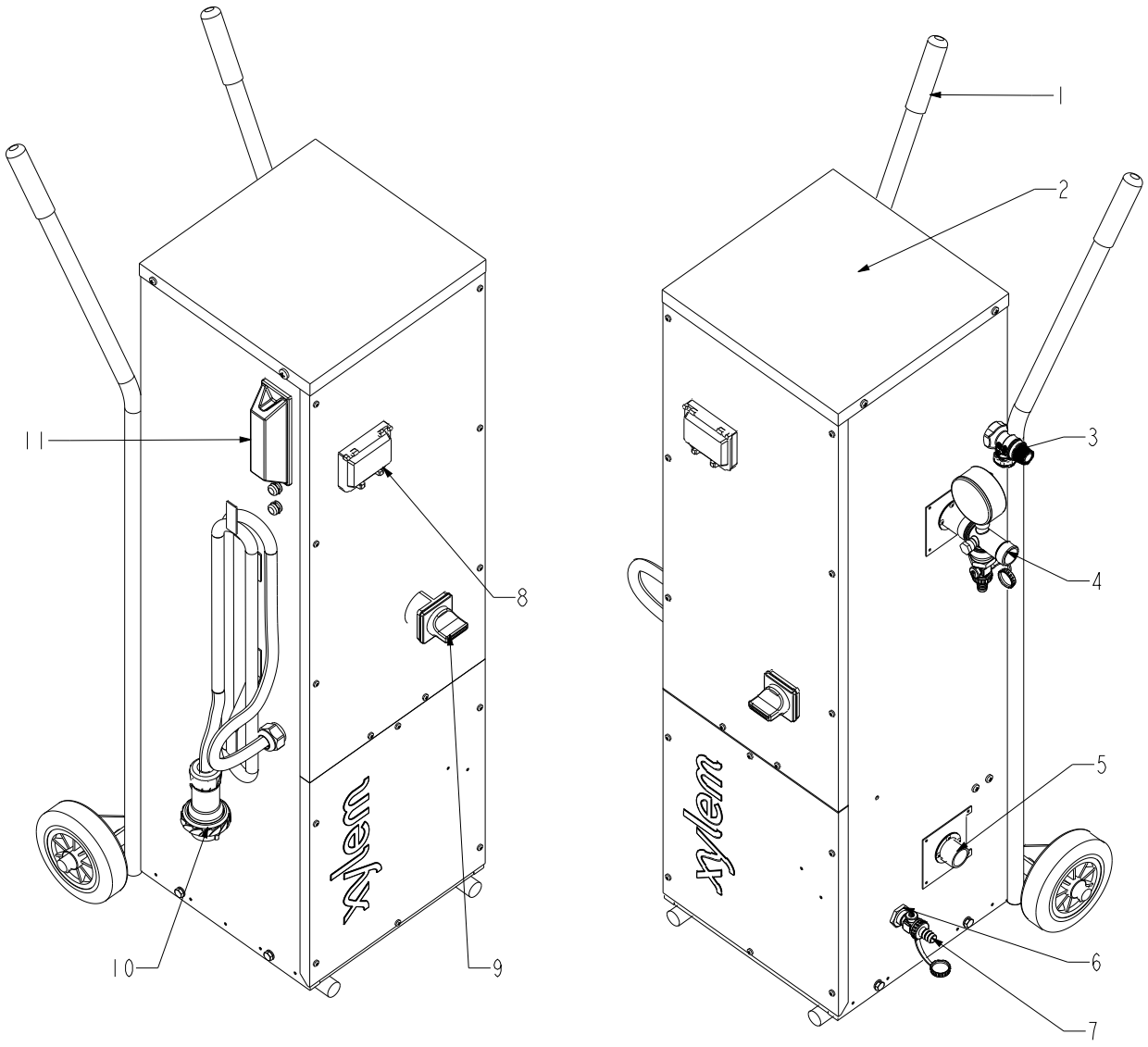


7.6 Spare parts

Spare parts for the EPX Heater are available to purchase from your local Xylem sales office or distributor.

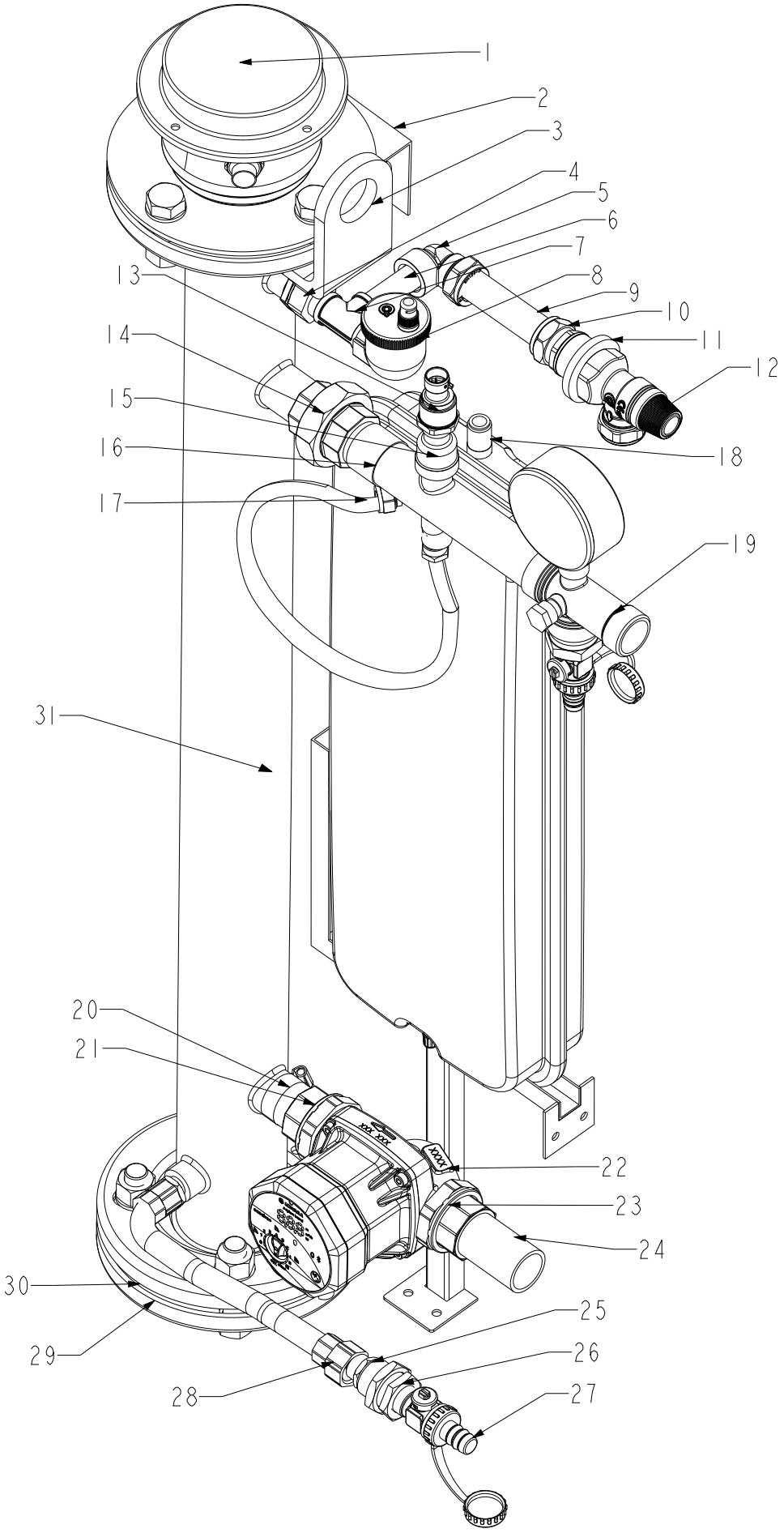
7.7 Exploded parts and electrical diagram

7.7.1 EPX – Compete unit



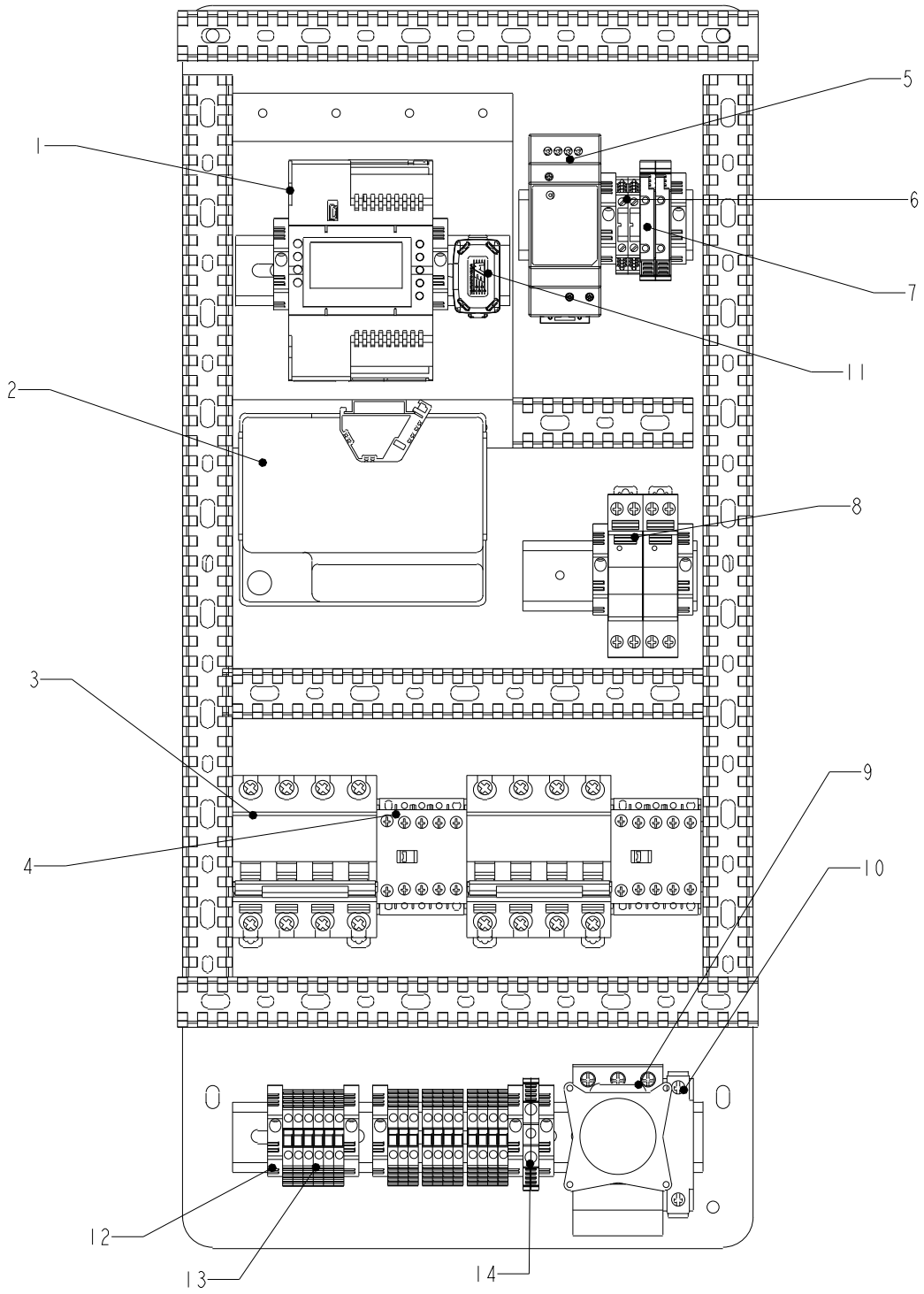
Drawing Ref	Description	Part Number	Quantity Per Unit	Recommended spare
1	EPX Plus Sack Truck	137Y03001-R1	1	
2	EPX Plus Cabinet	137Y02007-R1	1	
3	Pressure and Temp Valve	139H02023	1	
4	EPX Filler Valve	137Z03001	1	
5	Extension Piece	139H02018	1	
6	Fill port	UKAL538400	1	
7	Bulkhead adaptor	139H02022	1	
8	PLC Protective Cover	UKSENSYVA274MA	1	
9	Isolator	139H02020	1	
10	EPX Power Cable	137Z03002	1	
11	CCD401 Antenna	851065	1	

7.7.2 EPX – Wetted parts and external components



Drawing Ref	Description	Part Number	Quantity Per Unit	Recommended spare
1	Heater Assembly	137Z03003	1	Yes
2	Manifold Bracket	139H02045	1	
3	Lifting Bracket	161443070	1	
4	1/2" Union	139H02055	1	
5	1/2" to 22mm Elbow	UK17696	1	
6	60mm 1/2" Nipple	139H02029	1	
7	1/2" Equal Tee	139H02003	1	
8	Auto Air vent	UKAL504401	1	Yes
9	22mm Copper pipe	UKCT22	1	
10	22mm Compression Adapt	On Request	1	
11	Nylon Washer	139H02050	1	
12	Pressure and Temp Valve	139H02023	1	Yes
13	Pressure Transducer	13FH01001	1	
14	1" Union	139H02007	1	
15	Reducer Coupling	139H02008	1	
16	Return manifold	UK139H02016	1	
17	Pressure vessel Fleixble	UK8103	1	
18	Pressure Vessel	139N01003	1	Yes
19	EPX Filler Valve	137Z03001	1	
20	Earth Strap	139H02036	1	
21 / 23	Pump Union	139H02014	2	
22	EPX Ecocirc	137Z03005	1	
24	Extension Piece	139H02018	1	
25	1/2" Nipple	UK14408	1	
26	Bulkhead adaptor	139H02022	1	
27	Fill port	UKAL538400	1	
28	1/2" Flexible connector	UK14863	1	
29	Blind Flange	UK139H02017	1	
30	Fibre Gasket	139H02013	1	
31	Manifold	UK139H02015	1	

7.7.3 EPX – Electrical Components



Drawing Ref	Description	Part Number	Quantity Per Unit	Recommended spare
1	PLC	UKSETM172ODM	1	
2	CCD401 Modem	8457500	1	
3	16 Amp MCB	UKSEM9F11416	2	Yes
4	Contactor	UKSELP1K1200	2	Yes
5	24 VDC transformer	139H02009	1	
6	DIN rail disconnect	UKRS8113854	2	
7	Fused terminal	UKRS425263	2	
8	Fuse Holder	UKSEA9N15646	2	
9	Isolator	139H02020	1	
10	Neutral Isolator	139H02021	1	

11	Ferrite Core	UKRS3675297	1	
12	End stop	UKRS8787556	12	
13	Terminal	UKRS8787487	17	
14	Earth Terminal (6mm2)	UKRS193130	1	

7.7.4 Replacement of Fuses & MCB

In the event of a fuse or MCB failure, replacement components can be sourced via a third party. The components must meet the following specification to ensure adequate protection and functionality of the Heater.

Item	Diagram Ref	Description	Function	Manufacturer, Model	Current rating / Protection
3	MCB1 / MCB2	MCB	Element overload and short circuit protection	Schneider Electric, M9F11416	16 Amp
8.1	F1	Fuse	Pump overload and short circuit protection	Eaton, KTK-2	2 Amp
8.2	F2	Fuse	24 Volt transformer overload and short circuit protection	Eaton, KTK-2	2 Amp
7.1	CF1	Fuse	PLC overload and short circuit protection	RS Components, 563-558A	1 Amp
7.2	CF2	Fuse	CCD401 overload and short circuit protection	Eaton, 5371385	500 mA

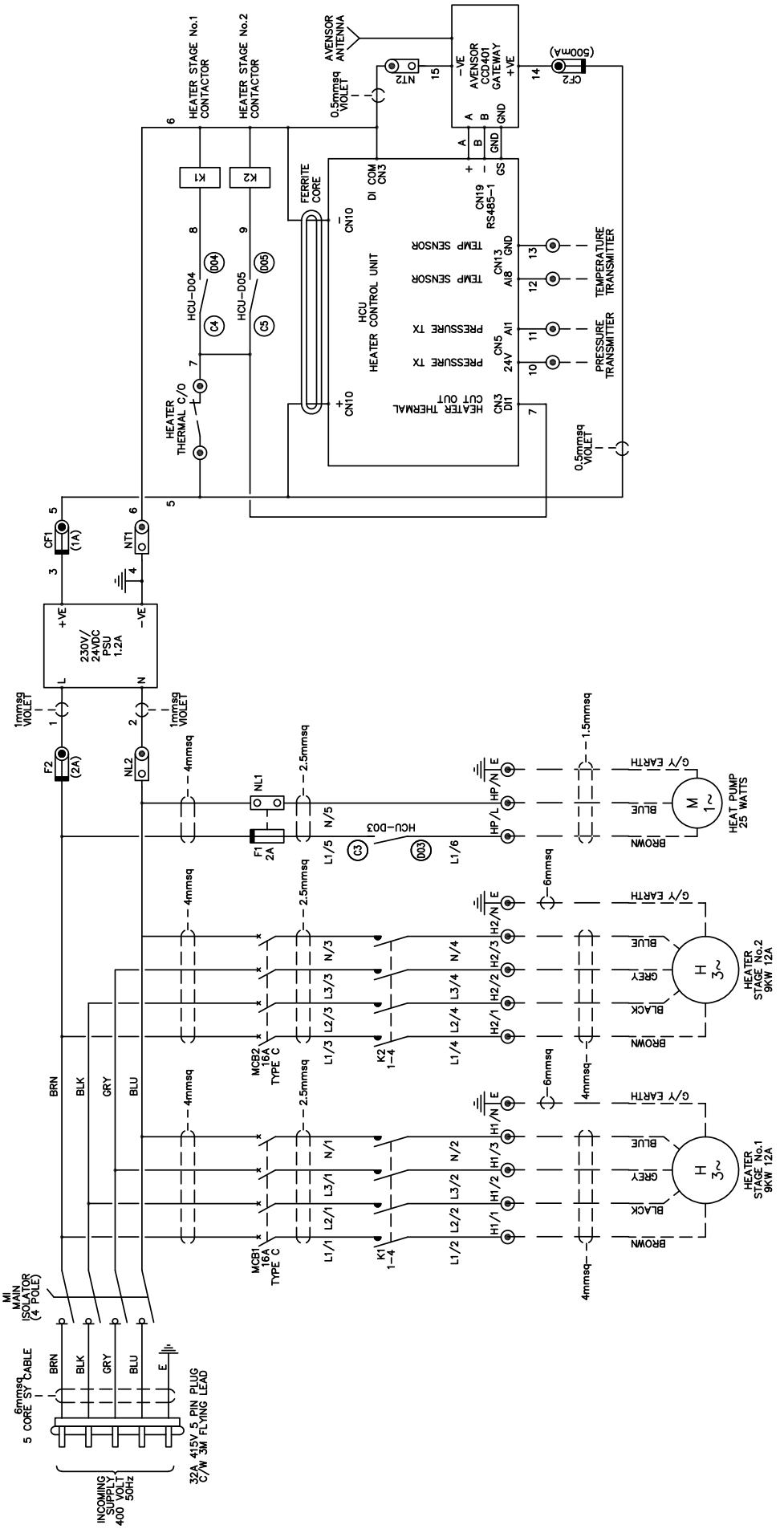
7.7.5 Replacing Electrical components

Warning

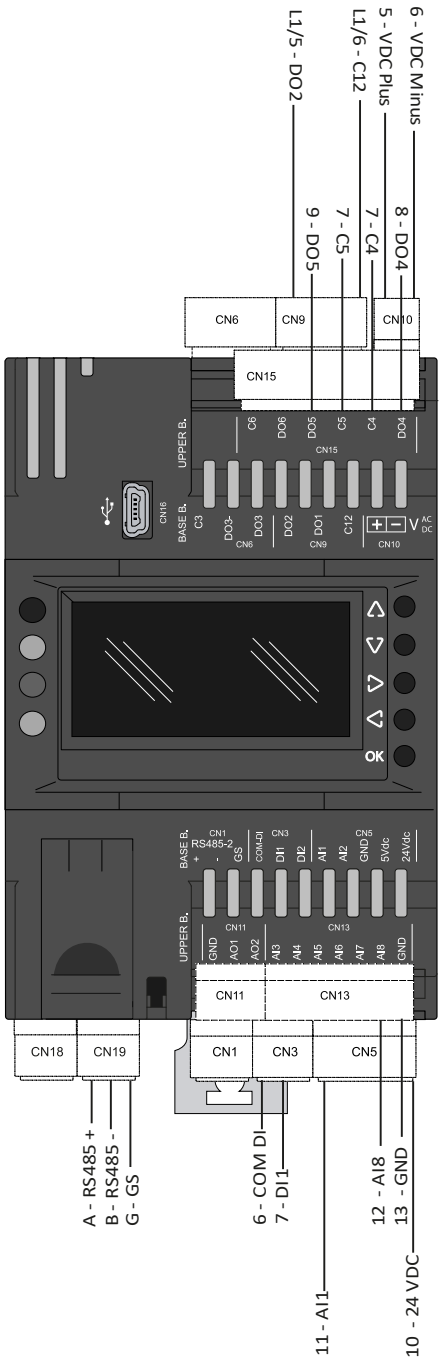
During the life of the product, it is likely that electrical components such as fuses, MCBs and contactors may fail. These components have been sized and installed for the electrical loads of this product. Its strongly advised, when replacing an electrical component, to use the same manufacturer and specification as the original part. Using an alternative product with a different specification may cause damage to the product and / or endanger the user.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

7.7.6 EPX Plus – Wiring Diagram



7.7.7 EPX Plus – PLC Wiring Diagram



Component	Channel	Terminal	Cable Number	Description
HCU M172 PLC	CN13	AI8	12	PT1000 Signal
HCU M172 PLC	CN13	GND	13	Ground PT1000
HCU M172 PLC	CN5	24VDC	10	Power Transducer
HCU M172 PLC	CN5	AI1	11	Signal Transducer
HCU M172 PLC	CN3	COM-DI	6	Common Thermostat
HCU M172 PLC	CN3	DI1	7	Signal Thermostat
HCU M172 PLC	CN19	+	A	RS485 +
HCU M172 PLC	CN19	-	B	RS485 -
HCU M172 PLC	CN19	GS	G	RS485 Ground
HCU M172 PLC	CN15	DO4	8	Heater 1
HCU M172 PLC	CN15	C4	7	Heater 1 Common
HCU M172 PLC	CN15	C5	7	Heater 2 Common
HCU M172 PLC	CN15	DO5	9	Heater 2
HCU M172 PLC	CN10	Plus VDC	5	Power 24V DC +
HCU M172 PLC	CN10	Minus VDC	6	Power 24V DC -
HCU M172 PLC	CN9	C12	L1/6	Pump Cut out Common
HCU M172 PLC	CN9	DO2	L1/5	Pump Cut out

8. Technical Information

8.1. Operating Environment

8.1.1 Maximum Altitude
The maximum altitude for operating the EPX Heater is 1000m.

8.1.2 Humidity limits
Product only to be used in a relative air humidity < 50% at 40°C.

8.1.3 Ambient temperature limits
Product only to be used in an ambient temperature between 5°C and 40°C.

8.2 Pumped fluid
The product must only be filled with cold clean water. Do not use any other fluid with the EPX Heater

8.2.1 Fluid Temperature
The temperature range for the fluid used with the EPX Heater is between 5°C and 85°C. Running the Heater using a fluid outside of these temperature range will cause damage to the product. The safety valve on the side of the unit will open if temperature reaches 90°C to prevent danger to the product and users.

8.2.2 Operating Pressure
The pressure range for the medium used with the EPX Heater is between 1 and 2.8 bar. System pressure under 1 bar will result in a low-pressure alarm and pump lock out. Exceeding 2.8 bar will cause the EPX Heater to enter High pressure alarm condition, removing power to the element. The safety valve on the side of the unit will open if pressure reaches 3 bar to prevent danger to the product and users.

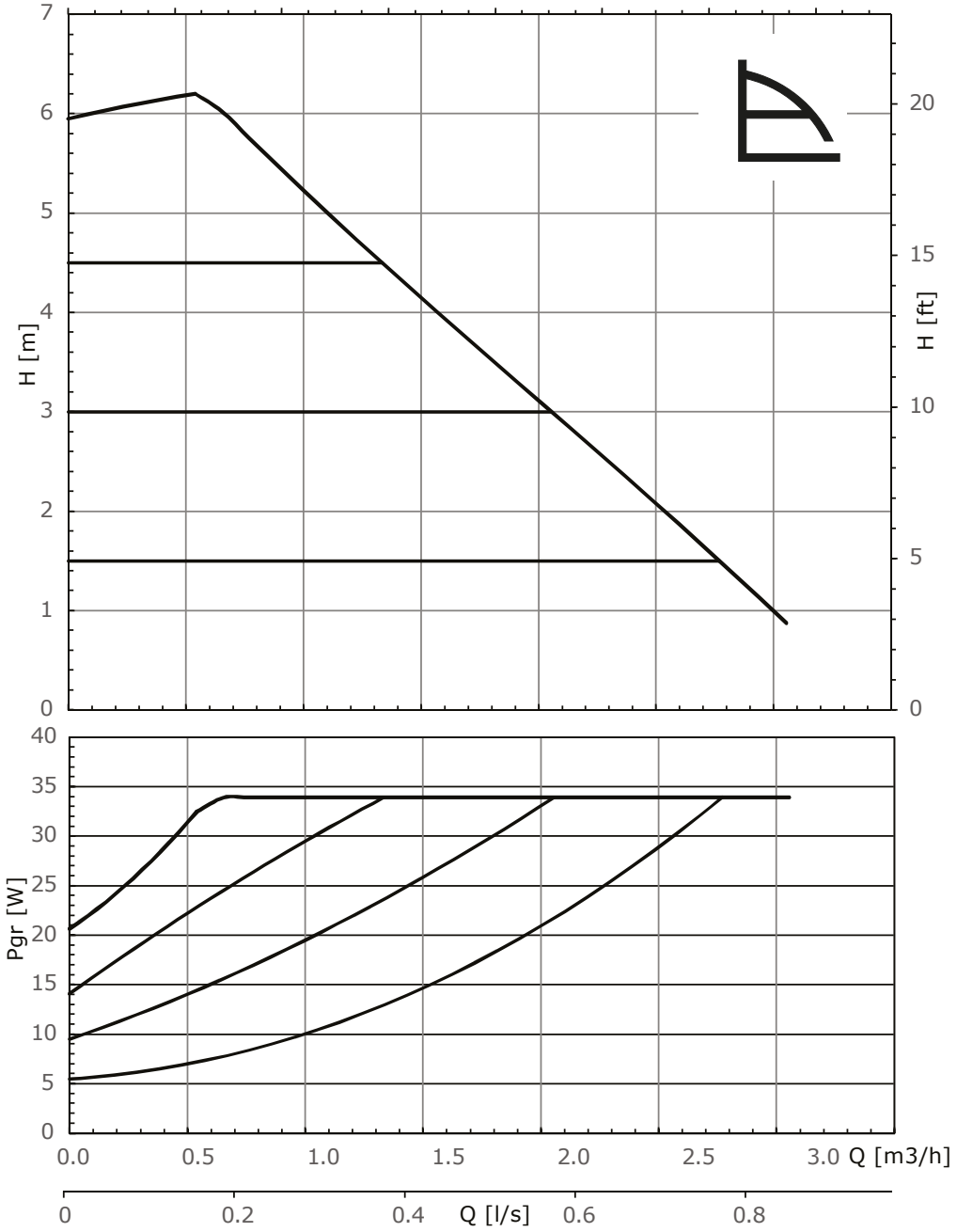
8.3 Ingress protection
The EPX Heater has an Ingress Protection of IP44. As previously stated in section **4 Installation** the Heater must not be kept and operated outdoors. The product is intended for indoor use only.

8.4 Materials in contact with the water
Please refer to the exploded parts diagram **7.7.2 EPX – Wetted parts and external components** for more information on the internal components of the Heater.

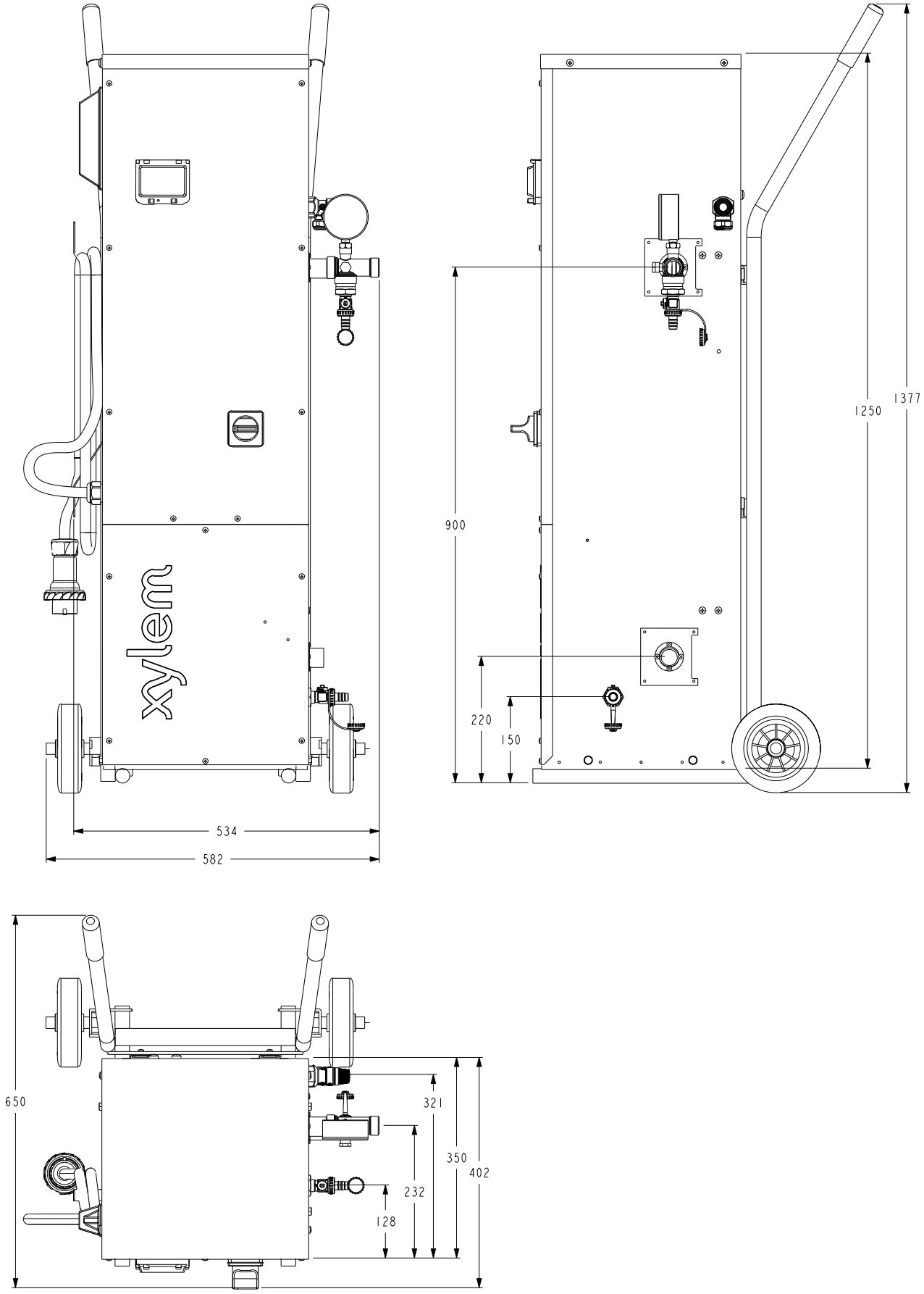
Description	Material In contact with the water
Heater Assembly	Stainless steel (Heating rods)
1/2" Nipple	Stainless steel
1/2" to 22mm Elbow	Brass
1/2" Equal Tee	Stainless steel
Auto Air vent	Brass
22mm Copper pipe	Copper
22mm Compression Adapt	Brass
Pressure and Temp Valve	Brass
Pressure Transducer	Stainless steel
EPX Filler Valve	Brass
Pressure Vessel	Mild steel
Extension Piece	Stainless steel
Fill port	Brass
Bulkhead adaptor	Stainless steel
1/2" Nipple	Stainless steel
1/2" Flexible connector	Stainless steel
EPX Ecocirc Body	Cast Iron
Pump Union	Brass
Pressure vessel Flexi	Stainless steel
Pressure transducer socket	Stainless steel
Return manifold	Stainless steel
1" Union	Stainless steel
Manifold	Stainless steel

8.5 Performance / Pump Curves

Ecocirc M+ 25-6 130
Shown in fixed speed mode



8.6 Dimensions of the EPX Plus



8.7 Electrical specification

Model	Pump Used	Part Number	Electrical Supply	Element size (kW)	Full Load Current (amps)
EPX PLUS R1 18KW 400-3-50	Ecocirc M+ 25-6	137Y01001-R1	400V/3PH/50Hz	18	24

8.8 Sound output

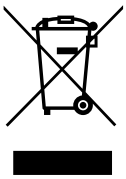
Less than 50 db. The noise is measured one meter away from the unit.

9. Disposal

9.1 Precautions

Warning
The unit must be disposed of through approved companies specialised in the identification of different types of materials (steel, copper, plastic, etc.) It is prohibited to dispose of lubricating fluids and other hazardous substances in the environment.

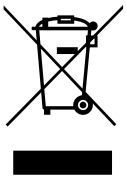
9.2 WEEE (EU/EEA)



INFORMATION TO USERS pursuant to art. 14 of the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re- use and / or recycling of the materials it is composed of the equipment.

WEEE other than WEEE from private households: The separate collection of this equipment at the end of its life is organized and managed by the producer. The user who wants to get rid of this equipment can then contact the producer and follow the system that it has adopted to allow the separate collection of equipment at the end of life or select a supply chain independently authorized to manage.

9.2 WEEE (UK)



INFORMATION TO USERS pursuant to art. 44 of the Waste Electrical and Electronic Equipment Regulations 2013 (S. I. 2013 No. 3113). The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste. Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favours the re-use and / or recycling of the materials it is composed of the equipment.

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Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com

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