

# The Astro Range of Boilers

the ultimate solution for central heating & hot water

## INSTALLATION & TECHNICAL MANUAL



**This Document MUST Be Left In The Possession Of The Property Owner On  
Completion Of Installation Of This Product**



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SCAN

ME I'M HERE TO HELP!

Commissioning

Warranty Registration

Service

Repair



We're here to help,  
tap your phone or scan  
here for more information



the electric heating company

For Additional Support Call 01698 820533

www.electric-heatingcompany.co.uk

## Need Help?

Scan the Tag on your Boiler via NFC or QR to access the following features to save time during Commissioning & Repair.


- > Boiler Commissioning
- > Warranty Registration
- > Service Log
- > Installation Manuals
- > Repair Videos
- > Spare Parts
- > Warranty Terms & Conditions
- > Extended Warranty


If you require any further assistance:  
Telephone: 01698 820533  
E-mail: [info@electric-heatingcompany.co.uk](mailto:info@electric-heatingcompany.co.uk)  
or visit our website [www.electric-heatingcompany.co.uk](http://www.electric-heatingcompany.co.uk)



## 1. SAFETY

### 1.1 SYMBOL KEY


 This symbol expresses the risk of serious personnel injury or death unless taking care of warnings.

 This symbol expresses the risks which can cause minor injuries or harms to the environment and goods.

### 1.2 SAFETY PRECAUTIONS

**Do not open the protective cover of the device.**

 Electric shock as a result of the contact with electrical items.

 Personnel injury like burnt as a result of contact with overheated surfaces or cut as a result of contact with sharp surfaces.

 **Do not remove the device from the place of mounting, do not disconnect the electrical or water connections. (Get in contact with an authorised engineer)**

 Electric shock as a result of the contact with electrical items.

Flood as a result of incorrect disconnection of water installation.

 **Protect the main electrical cable against damages.**

Electric shock danger as a result of contact with not isolated open wires.

 **Do not leave tools or other objects on the device.**

 Injury resulted from falling objects from device because of vibration.


Damage to the furniture or floor or animals resulted from falling objects from device because of vibration.

**Do not climb on the device.**

 Personal injury as a result of falling down with device or falling down of the device itself.

 Damage risk under device as a result of fall from the place installed.

 **Do not climb on unsteady objects like stool, chair or ladders for cleaning or maintenance.**


 Personal injury resulted from falling from height or cuts which can be caused from a rapid closing of the ladder.

 **Do not clean the device without firstly isolating the main power supply.**

Electric shock as a result of contact with electrical items.

 **Use the device for only heating the house and getting hot water.**

 Explosion and damage risk resulted from inappropriate use and overloading. Damage risk to the environment resulted from inappropriate use.

 **Do not allow children or adults who have limited physical or mental competence, or People lacking the knowledge about the operating instructions of the boiler to intervene with the device.**

Risk of damage to device resulted from misuse.

 Personal injury from burns, breathing smoke or poisoning.



**Pay attention as to not damage any electric cables and water pipes inside the wall while making holes on wall for boiler mounting plate.**



Electric shock as a result of the contact with electrical items.

Flood risk results from water pipe puncture.



Suitable cable types must be used in all electric connections.

Fire risk results from overheated cables due to incorrect type or size.

### **1.3 GENERAL EXPLANATIONS**

The Astro Electric Boiler provides wet central heating via conventional radiators or underfloor heating, the boiler also provides hot water via a plate heat exchanger. Installation and services must be in accordance with current standards and Regulations. The Electric Heating Company Ltd is not responsible for damages caused from incorrect installation and usage.

Make sure the boiler is operated only to comply with the intended use of the boiler. Any usage which does not comply with the boiler's intended use may cause serious injury, death or harms to the environment and goods.

**ATTENTION** ; Do not allow unauthorised persons to tamper with or adjust settings or components within this product.

### **1.4 C.O.S.H.H**

Materials used in the manufacture of this appliance are non-hazardous and no special precautions are required when fitting or servicing this appliance.

### **1.5 PREPARATION**

#### **1.5.1 Load Check**

A load check should be taken into consideration when installing high output boilers. In some situations it may be a requirement to contact the local DNO.

#### **1.5.2 Boiler Location**

The boiler must be installed on a wall that will provide an adequate fixing, and should be installed in a location that the boiler and pipe-work are not subject to frost and damp conditions.

#### **1.5.3 Central Heating Installation**

Detailed recommendations are given in EN 12828.

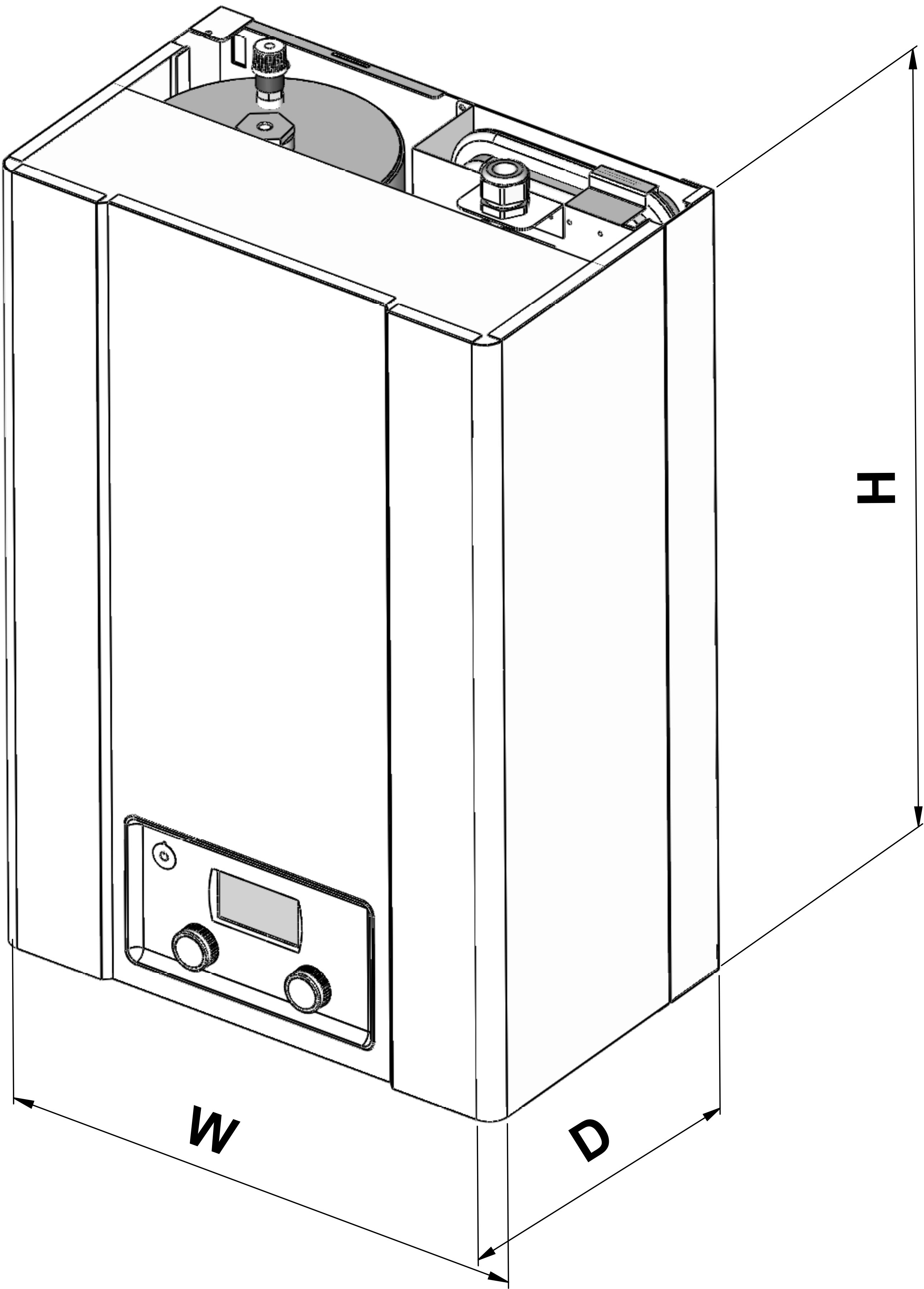
Pipes forming part of the useful heating surface should be insulated to prevent any potential heat loss or frost damage.

Drain valves should be fitted at the lowest point of the system pipe work in an accessible position.



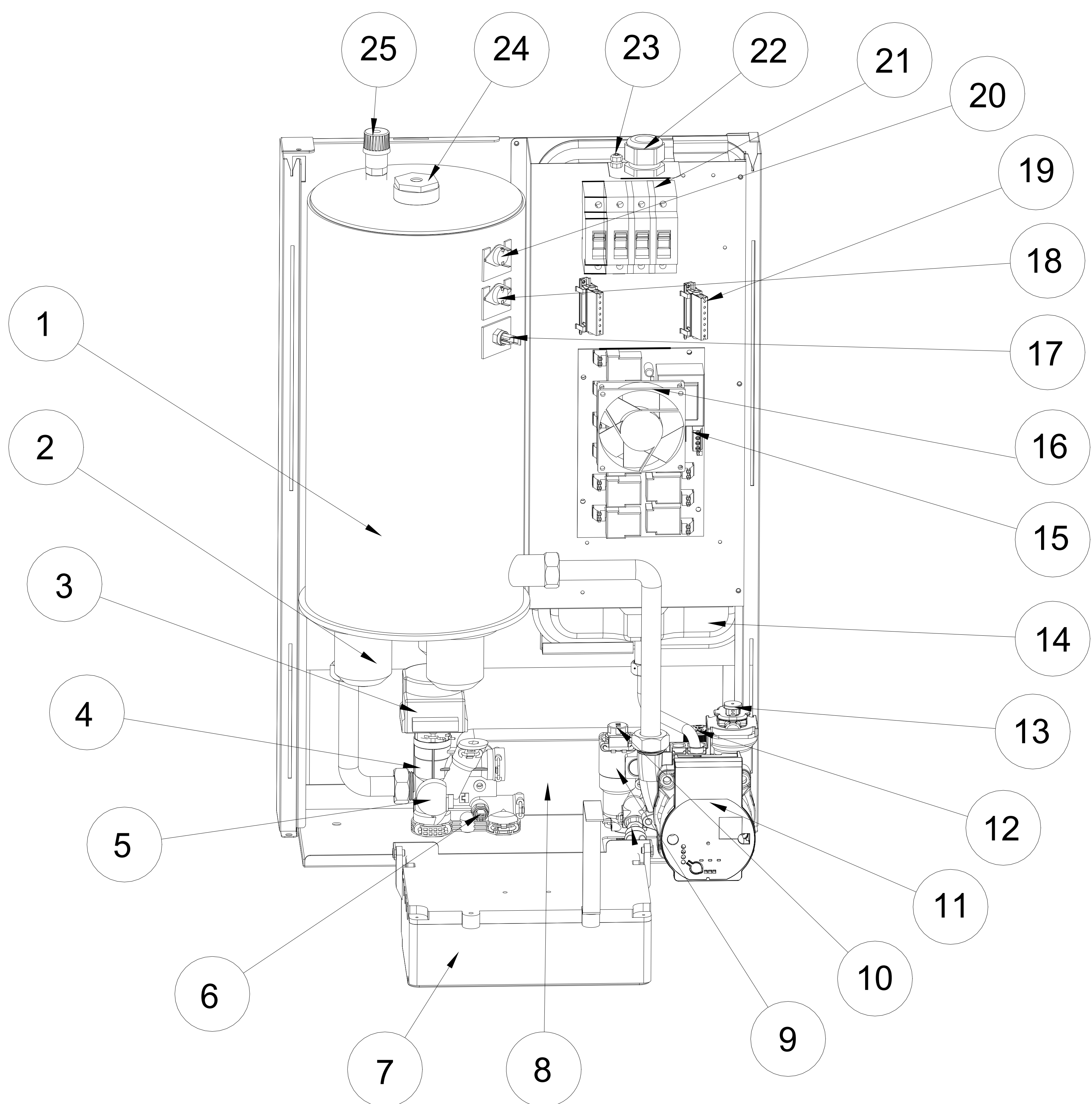
2. INTRODUCTION OF THE DEVICE

2.1 APPERANCE AND EXTERNAL DIMENSIONS



Model	W	D	H
12-30 kW	440	274	650

## 2.2 COMPONENTS OF THE BOILER



- |                                  |                                 |
|----------------------------------|---------------------------------|
| 1. Main heat exchanger           | 14. Expansion tank              |
| 2. Heating elements              | 15. Relay board                 |
| 3. 3-way valve actuator motor    | 16. Cooling fan for relay board |
| 4. Flow manifold                 | 17. CH temperature NTC sensor   |
| 5. Water pressure sensor         | 18. Safety thermostat           |
| 6. DHW temperature NTC sensor    | 19. Electric terminal           |
| 7. Control Panel and Mainboard   | 20. Limit thermostat            |
| 8. Plate heat exchanger          | 21. RCD Device                  |
| 9. Return manifold               | 22. Cable gland                 |
| 10. Electronic water flow sensor | 23. Earth connection            |
| 11. Circulation pump             | 24. Float water level sensor    |
| 12. 3 bar safety valve           | 25. Manual air vent             |
| 13. Automatic air vent           |                                 |

- Drawings are for illustration purposes. Number of heating elements and some components may vary in different capacities of boilers.
- The manufacturer reserves the right to make changes to the parts used in the boilers.



## 2.3 OPERATION PRINCIPLE OF THE DEVICE

The Astro Electric Combi Boiler provides central heating with the use of panel radiators or underfloor heating pipes. The primary heating circuit water is heated in the main heat exchanger with the heating elements. The hot water circulates the installation with the help of the circulation pump, delivering hot water to the radiators or underfloor heating pipes.

The boiler also produces domestic hot water to be used in sinks and showers in the house. The DHW is generated by the plate heat exchanger located inside the boiler.

Electric combi boiler senses the DHW demand when the water tap is opened and the 3-way valve actuator motor changes position to divert the hot water to the plate heat exchanger automatically in order to produce DHW. In winter mode operation, DHW supply is always prioritized.

The above mentioned combi model (heating + domestic hot water) is the standard production.

The Astro Combi Boiler features frost protection and Weather Compensation, an external temperature sensor is provided with the boiler.

**EHC offer an installation compliance pack which is sold separately. The compliance pack includes all the required components to ensure your boiler is installed to meet the requirements of this manual and industry regulations.**

### Pack Contents;

- Single Channel Programmer
- Wireless Room Thermostat
- HW Flow Limiter
- Filling Loop
- Boiler Valve Kit
- MagnaClean Pro 3 Sense Smart Filter
- Adey MC1+ Inhibitor
- Adey MC3 System Cleaner



**Part code: ASTRO-PACK**





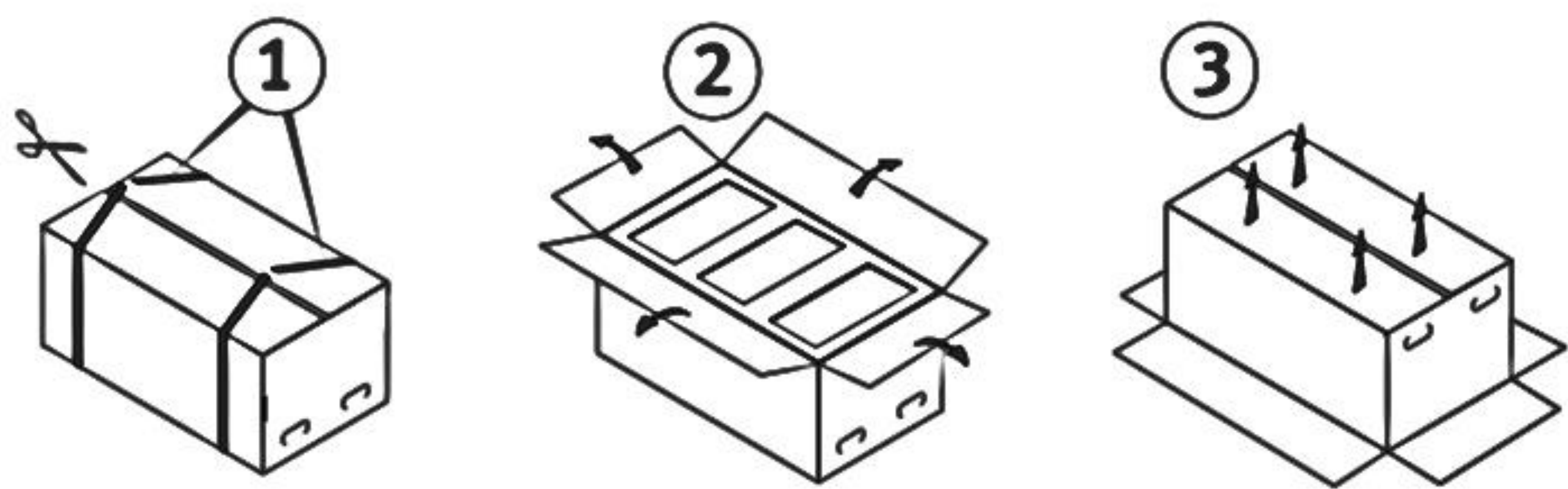
## 2.4 MAIN FEATURES OF THE BOILER

- The Astro Electric Combi Boiler uses ONLY electricity as fuel.
- Electricity as fuel for heating has no emissions and is 100% environment friendly.
- There is no heat loss in electric heating. Unlike combustion systems with fossil fuels, there is no exhaust therefore there is no heat loss from the exhaust with hot fumes.
- The Astro operates with 99% efficiency.
- With full automatic modulation, heating capacity of the boiler is adjusted according to the heating demand, ensuring maximum energy savings during operation.
- Mainboard with microprocessor and a large LCD screen enables enhanced control parameters and easy operation for the end user.
- Optional installation compliance pack provides a high level of automation, comfort and economy.
- Underfloor heating mode for safe and efficient underfloor heating applications.
- Adjustable maximum boiler capacity feature enables the boiler output to be adjusted on the LCD screen enabling the option to reduce the output of the boiler depending on climate or insulation levels of houses.
- Due to its quiet operation the boiler can be mounted in living areas easily.
- It offers an aesthetic look with its minimized dimensions and exterior design.
- Provides hot water for showers, sinks and baths (baths only supported by 3 phase models) in constant temperature at set value even with variable flow rates with the help of electronic water flow sensor.
- Heating system can quickly enter the regime and heat the house rapidly.
- Protection against high pressures with 3 bar safety valve.
- Water pressure sensor shows system water pressure on the LCD screen also providing protection for low and high pressures.
- Energy efficient circulation pump provides energy savings in line with ErP regulation.
- Float water level sensor ensures the main heat exchanger is full and heating elements are prevented from operating without water.
- RCD (short circuit relay) provides electrical protection and safe operation.
- Automatic by-pass system provides additional safety.
- Electronic water temperature control with NTC system assures precise temperatures.
- Double safety measures against overheating with limit thermostat and safety thermostat.
- Anti-jamming system for the circulation pump and 3.way valve actuator motor. Operate every 24 hours to prevent pump and actuator motor jamming.
- Automatic frost protection system.
- Wide capacity range, from 12kW upto 30kW.
- Weather Compensation via supplied outdoor temperature sensor. Outdoor temperature is displayed on boiler LCD screen and system temperature is automatically adjusted to reduce energy consumption.



3.MOUNTING AND INSTALLATION

3.1 UNPACKING



Open the box as seen in the above sketch. Place the box on the ground, arrows on the box pointing to the ground. Cut the cords or remove the staples, fold the lids of the box on each side and turn the box upside down. Pull the box upwards and remove it.

3.1.1 Delivery Content

12-30kW	
QTY	DESCRIPTION
1	Astro Combi Boiler
1	Wall Mounting Plate
1	Documents Pack
4	10x50 Wall Plug
4	M7x50 Screw
1	Outdoor Temp Sensor

3.2 INSTRUCTIONS FOR MOUNTING

Boiler should not be installed in humid places such as bathrooms and areas that may be affected by rain water or steam.

The boiler should be installed on strong walls that can carry it and perpendicular to the ground.

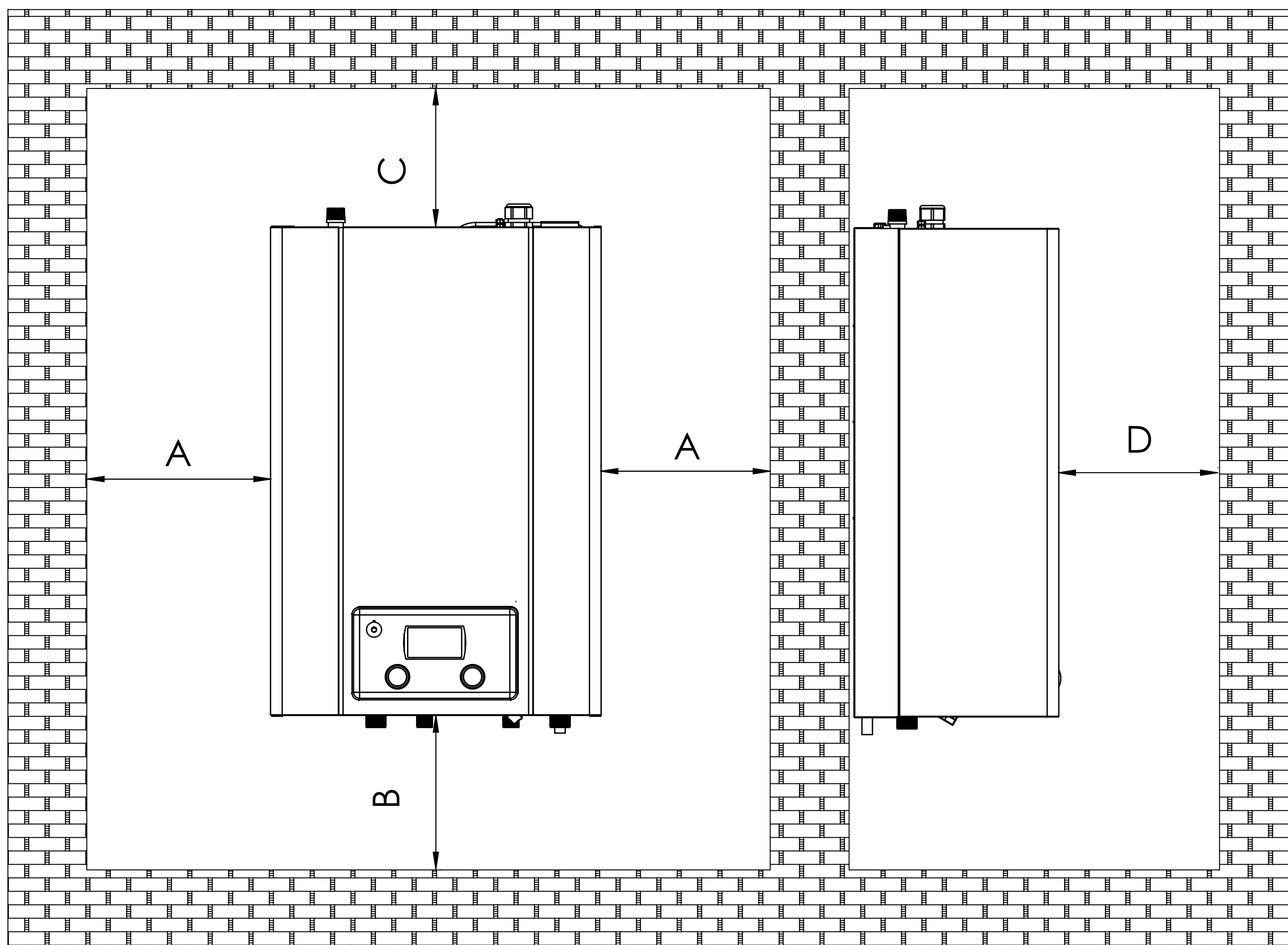
Sufficient space must be left around the boiler for an authorised engineer to intervene in the event of a technical breakdown or maintenance. You can find the minimum spaces required for installation in the below diagram.

Only use the wall plugs, screws and wall mounting plate supplied with the device during installation. The boiler must be installed vertically (upright position) and checked with a spirit level so that it can work properly after installation. Failure to do so will invalidate the warranty.

3.3 MINIMUM SPACES FOR INSTALLATION

At least the following space must be left in order to reach the internal parts of the device easily when a failure occurs or when maintenance is carried out.

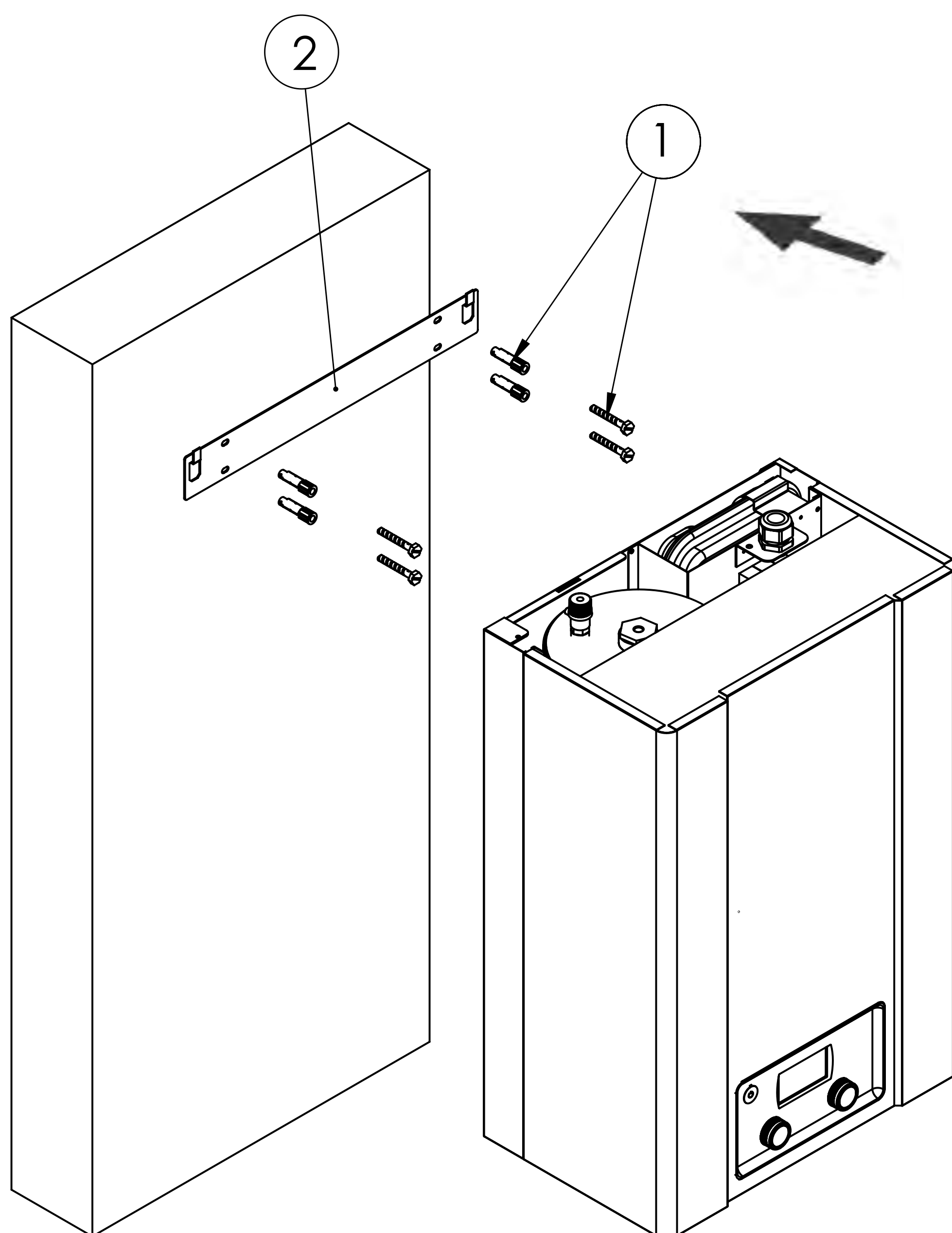
Suggested space is the minimum and it is favorable to leave more space depending on the situation.



**A: 150 mm**  
**B: 300 mm**

**C: 400 mm**  
**D: 450 mm**

### 3.4 WALL MOUNTING



- Place the mounting plate parallel to the floor. (Check with spirit level).
- Mark the holes on the wall.
- Drill on the marked spots and insert the wall plugs.
- Place the wall mounting plate and fix it on the wall using the screws.
- Hang the boiler on the mounting plate.

1. Screws and plugs
2. Mounting plate

**⚠ Beware of electric cables and water pipes when drilling holes on the wall.**



### 3.5 HEATING AND HOT WATER SYSTEM INSTALLATION CONNECTIONS

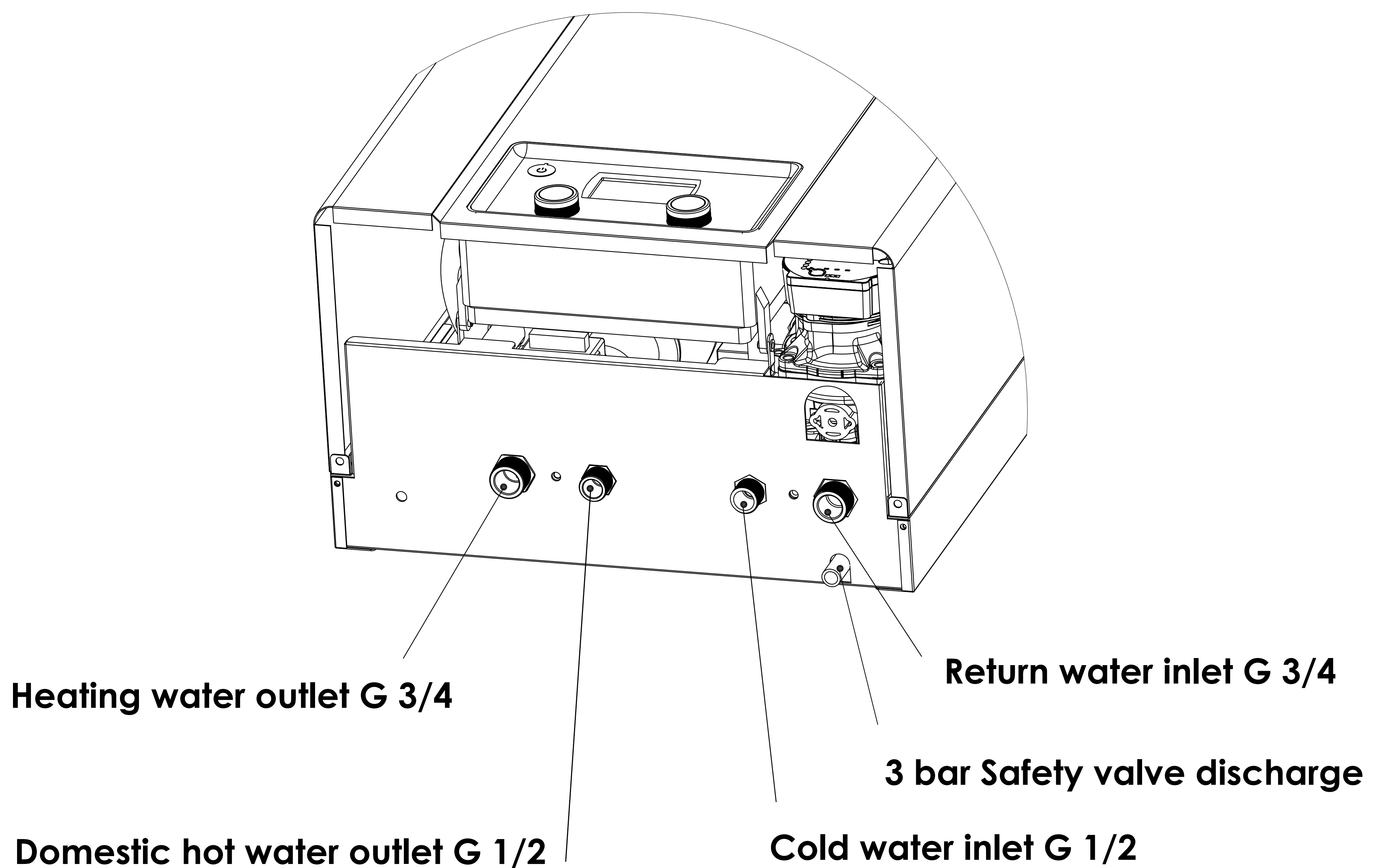
- DHW function, please make sure that the pressure of the property water supply on the cold water inlet side is not more than 6 Bars. If the water pressure is more than 6 Bars, a pressure regulator must be added. In order for the DHW system to run, the minimum pressure level of the water supply must be 0,8 Bar.
- In order to provide a good circulation throughout the heating system, installation pipe diameters must be selected properly to prevent flow restrictions. When selecting the pipe diameter, pipe resistance above the capacity of the pump must be avoided. You can see the pump capacities from the pump pressure curve.
- If the system becomes over pressurised, the 3 bar pressure relief valve operates in order to discharge water and decrease system pressure.
- With a conventional radiator system at least one bypass radiator should be installed, this would normally be the radiator installed within the same room as the room thermostat. Where all radiators are fitted with thermostatic valves an automatic bypass should be installed between the flow and return on the heating circuit.
- Insulation : We recommend that all pipework is insulated where practical. Especially the primary pipework within a boiler cupboard. This will reduce heat loss and protect the cupboard from high temperatures.
- Pipe Connections **MUST** only be made with the use of Full bore Swivel type isolation valves in order to isolate the boiler for future maintenance and repairs. EHC offer a valve kit which is sold separately (**Part Code: ASTRO-VS**), alternatively a universal swivel valve kit can be purchase via a local merchant. The use of female irons is not permitted.

**CAUTION !** : During installation ; A magnetic filter **MUST** be installed on the return pipework below the boiler. Failure to install and maintain a suitable filter will invalidate the boiler warranty.

**CAUTION !** : The primary circuit must be flushed to ensure that no debris is trapped in the system. Failure to do so may lead to boiler failure which will not be covered by manufacturer's warranty. Where existing radiators and pipework is used, a power flush must be carried out to remove debris. After flushing inhibitor **MUST** be added to the system as per the manufacturers instructions. For underfloor heating systems or systems operating below 55 Degrees biocide should also be added to the system.

- Central heating and domestic hot water pipe connections must be made according to the boiler installation diagrams in this manual. Make sure to remove the plastic caps before making the pipe connections. Inlets and outlets are clearly marked with blue and red caps on the bottom of the boiler.
- The water hardness in the central heating installation should be no more than 200ppm. Where the water hardness is greater than 200ppm a suitable scale reducer should be installed. Failures caused by improper water in the system are not covered by warranty.

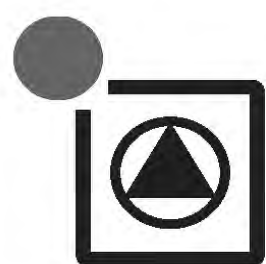




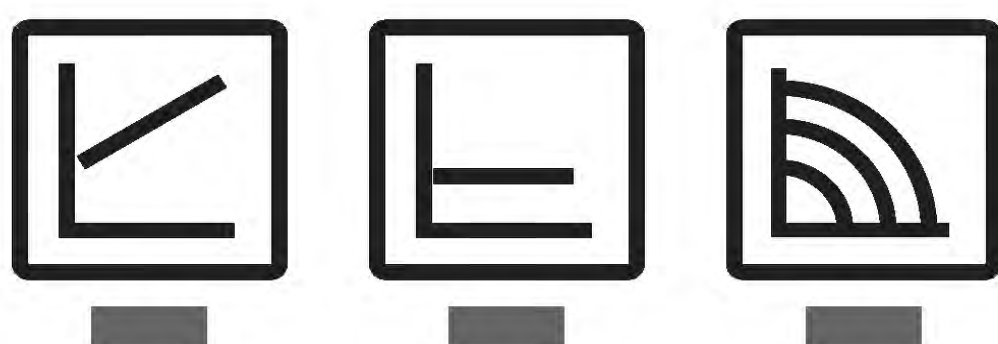
## 3.6 CIRCULATION PUMP INFORMATION

### 3.6.1 Energy Efficient Pump

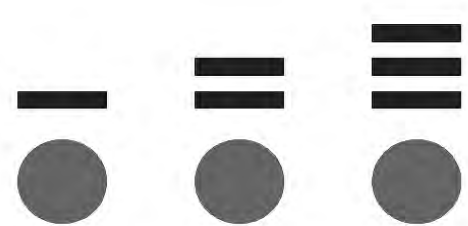
#### Indicator Lights (Leds)



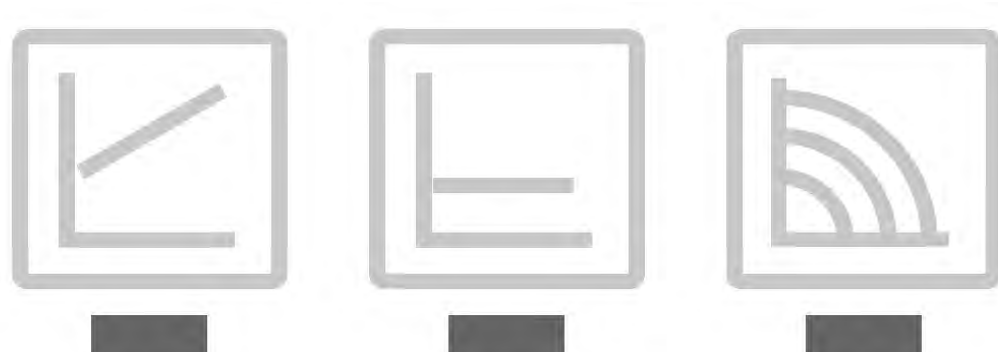
- Signal display
- LED is lit up in green in normal operation
- LED lights up/flashes in case of fault



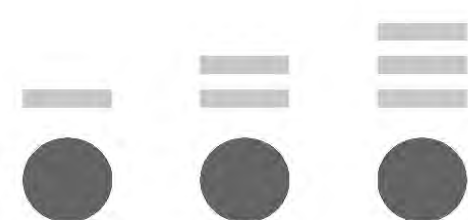
- Display of selected control mode  $\Delta p-v$ ,  $\Delta p-c$  and constant speed



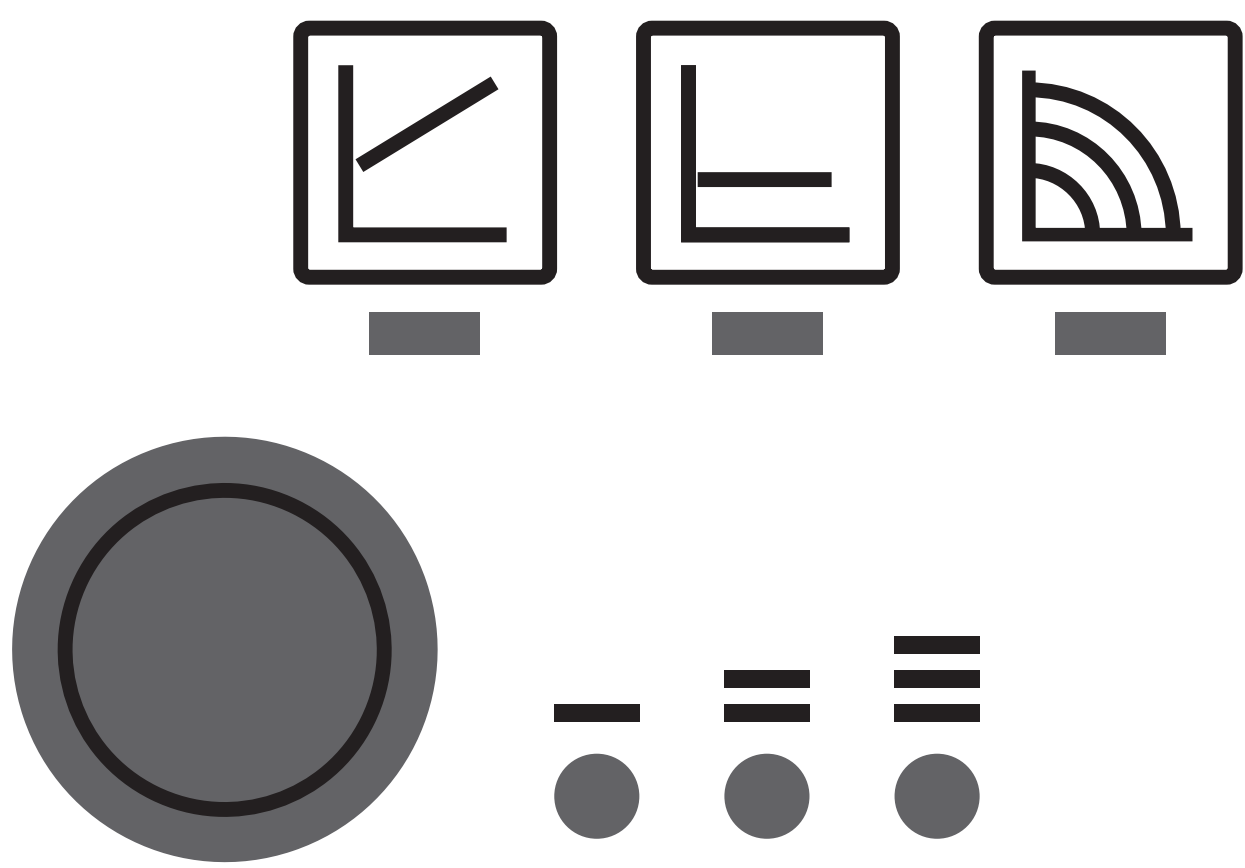
- Display of selected pump curve (I, II, III) within the control mode



- LED indicator combinations during pump venting function, manual restart and key lock



## Operating button



## Press

Select control mode

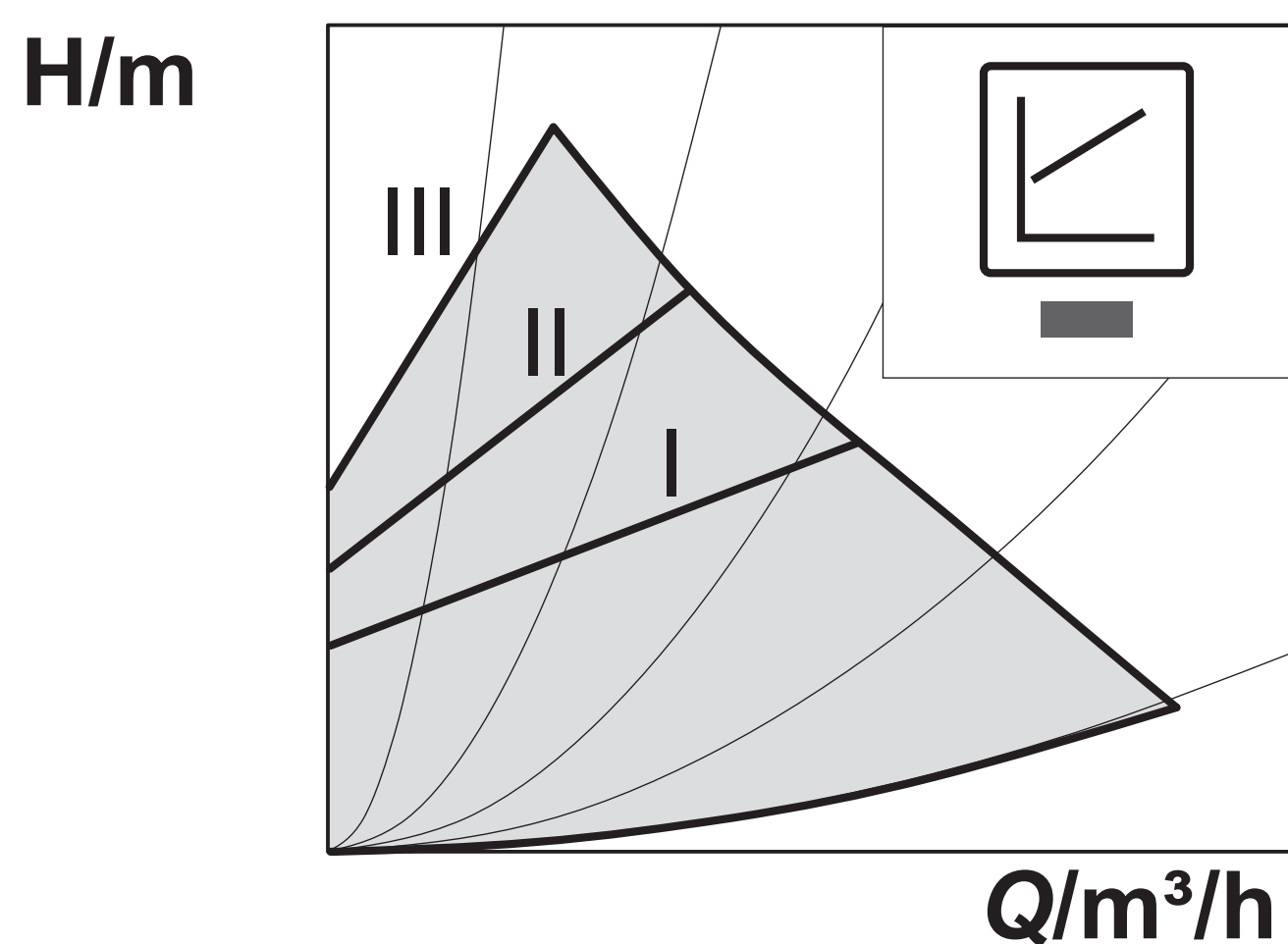
- Select pump curve (I, II, III) within the control mode

Press and hold

- Activate the pump venting function (press for 3 seconds)
- Activate manual restart (press for 5 seconds)
- Lock/unlock button (press for 8 seconds)

## Control modes and functions

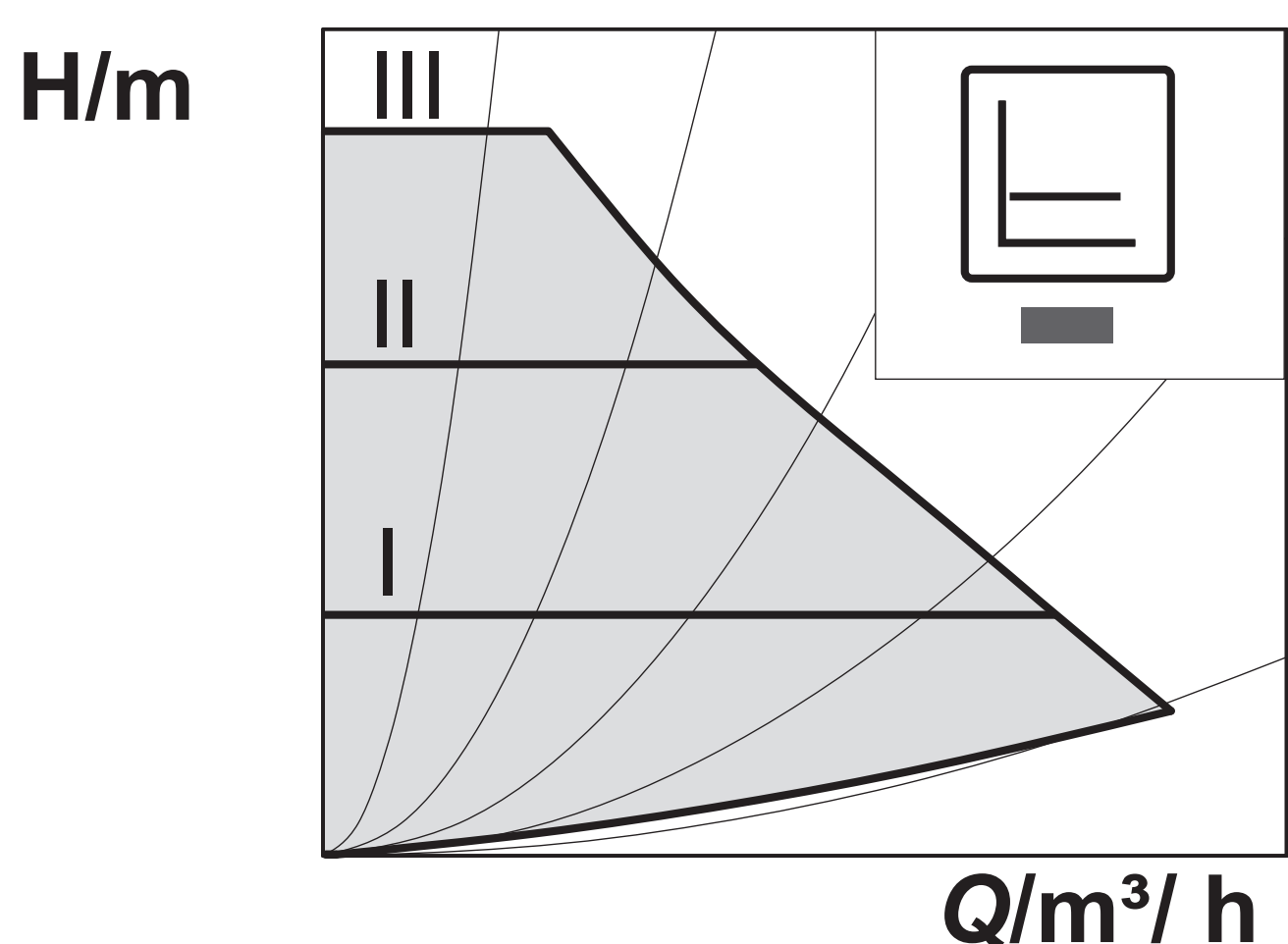
### Variable differential pressure $\Delta p-v$ (I, II, III)



Recommended for two-pipe heating systems with radiators to reduce the flow noise at thermostatic valves.

The pump reduces the delivery head to half in the case of decreasing volume flow in the pipe network. Electrical energy saving by adjusting the delivery head to the volume flow requirement and lower flow rates. There are three pre-defined pump curves (I, II, III) to choose from.

### Constant differential pressure $\Delta p-c$ (I, II, III)



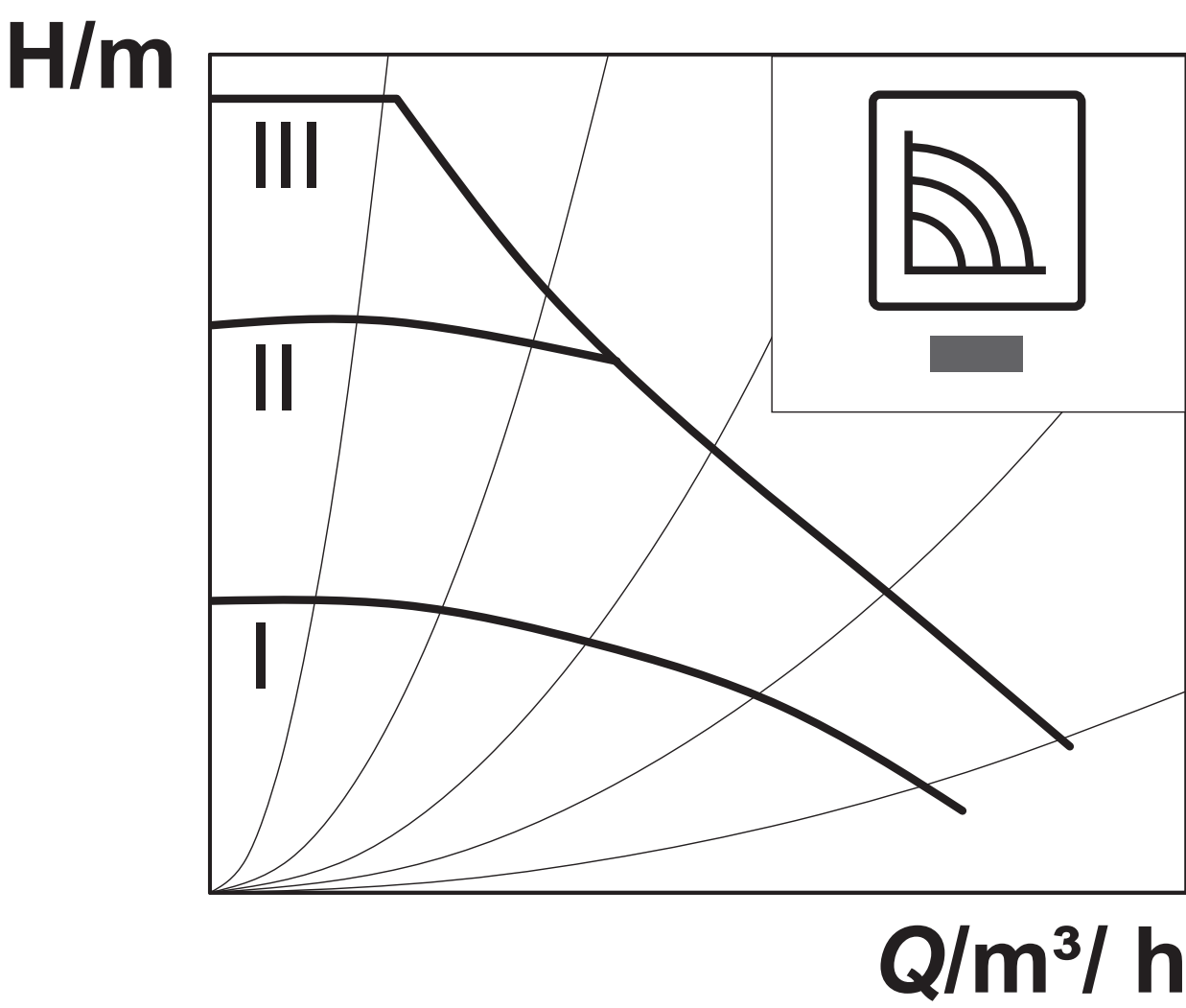
Recommended for underfloor heating or for large-sized pipes, applications without a variable pipe network curve (e.g. storage charge pumps) or single-pipe heating systems with radiators.

The control keeps the set delivery head constant irrespective of the pumped volume flow. There are three pre-defined pump curves (I, II, III) to choose from.

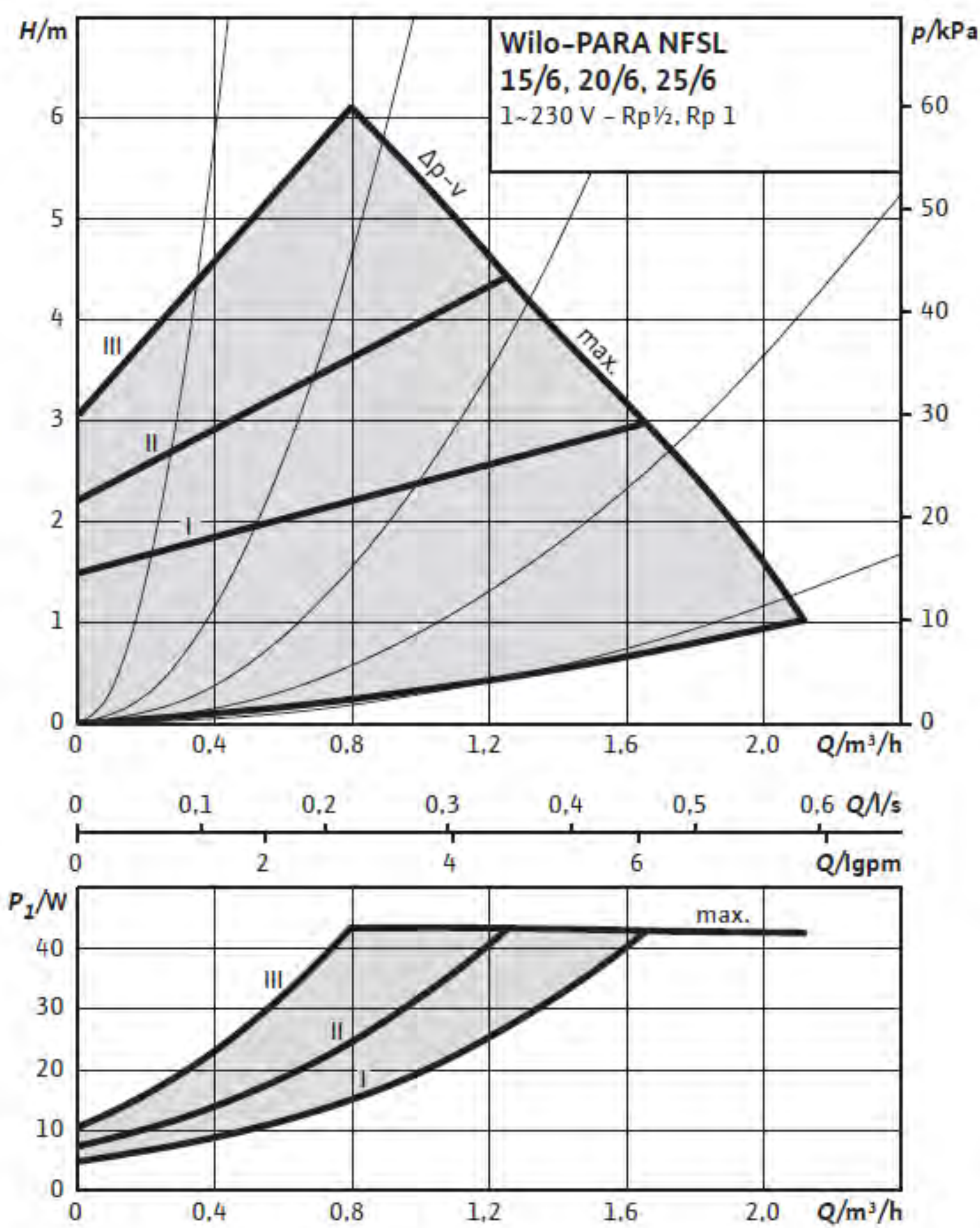
**If the Under Floor Heating Manifold has its own pump and/or there are multiple manifold pumps Hydraulic Separation is required between the boiler and secondary pumps.**



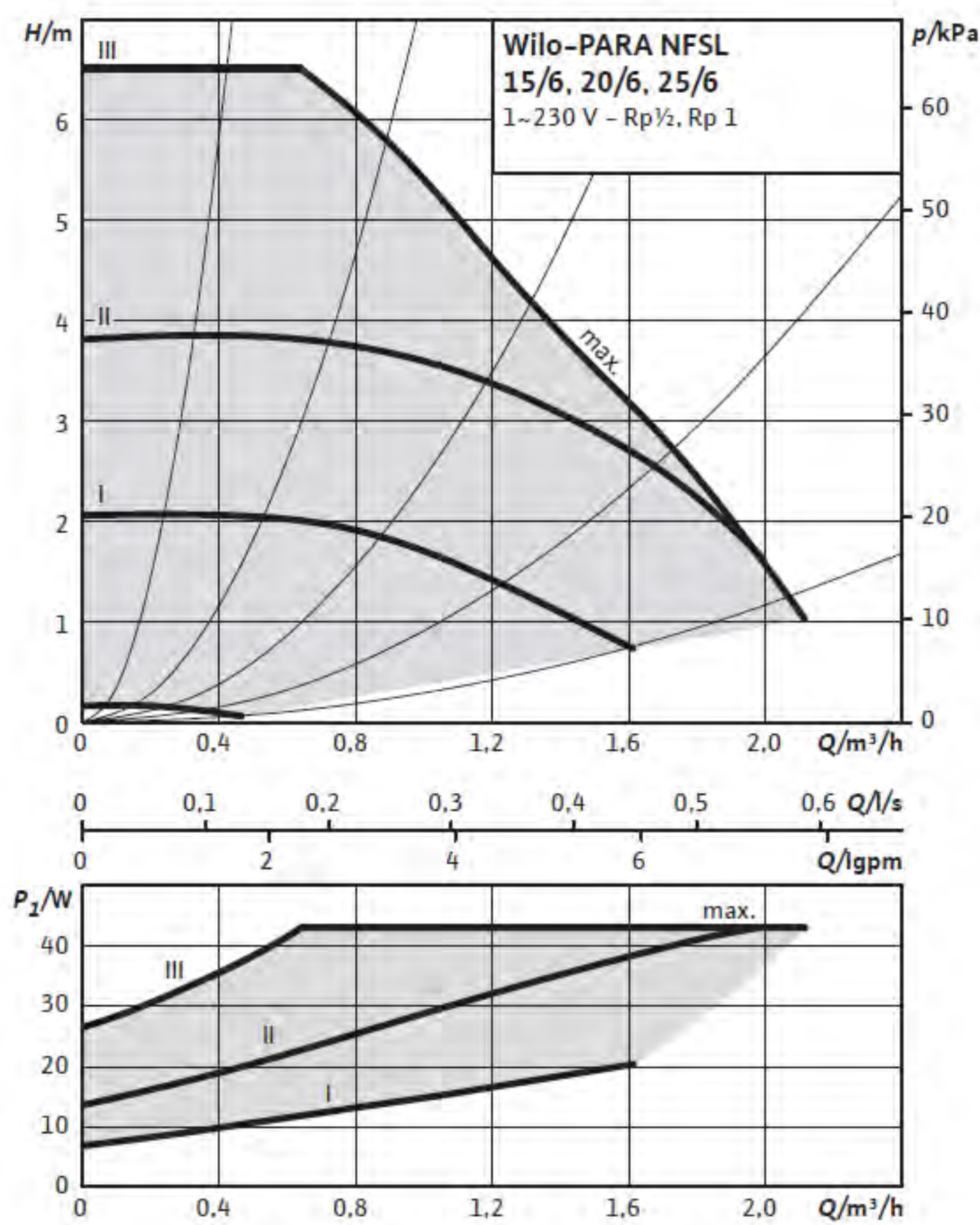
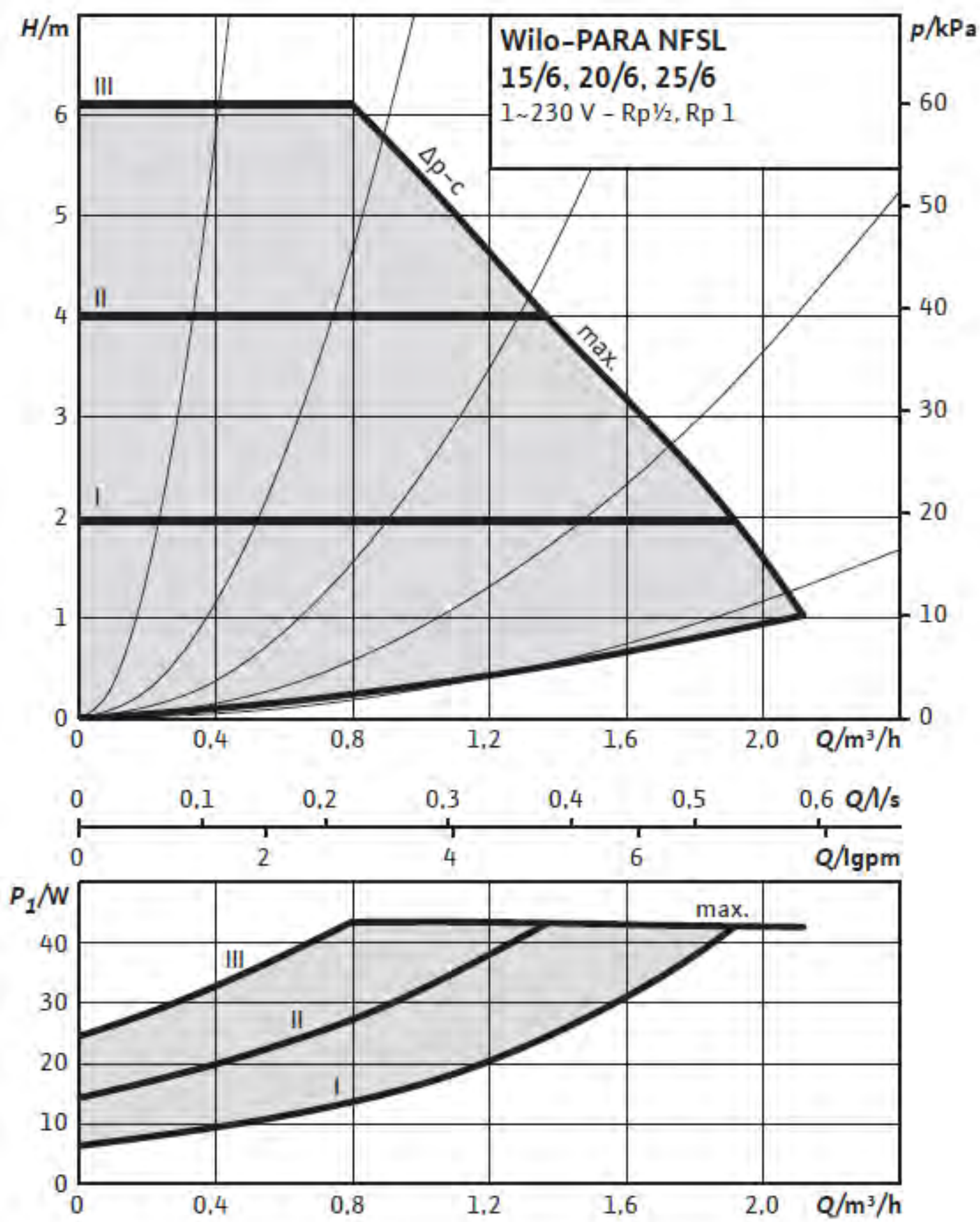
**Constant speed  
(I, II, III)**



Recommended for systems with fixed system resistance requiring a constant volume flow.  
The pump runs in three prescribed fixed speed stages (I, II, III).



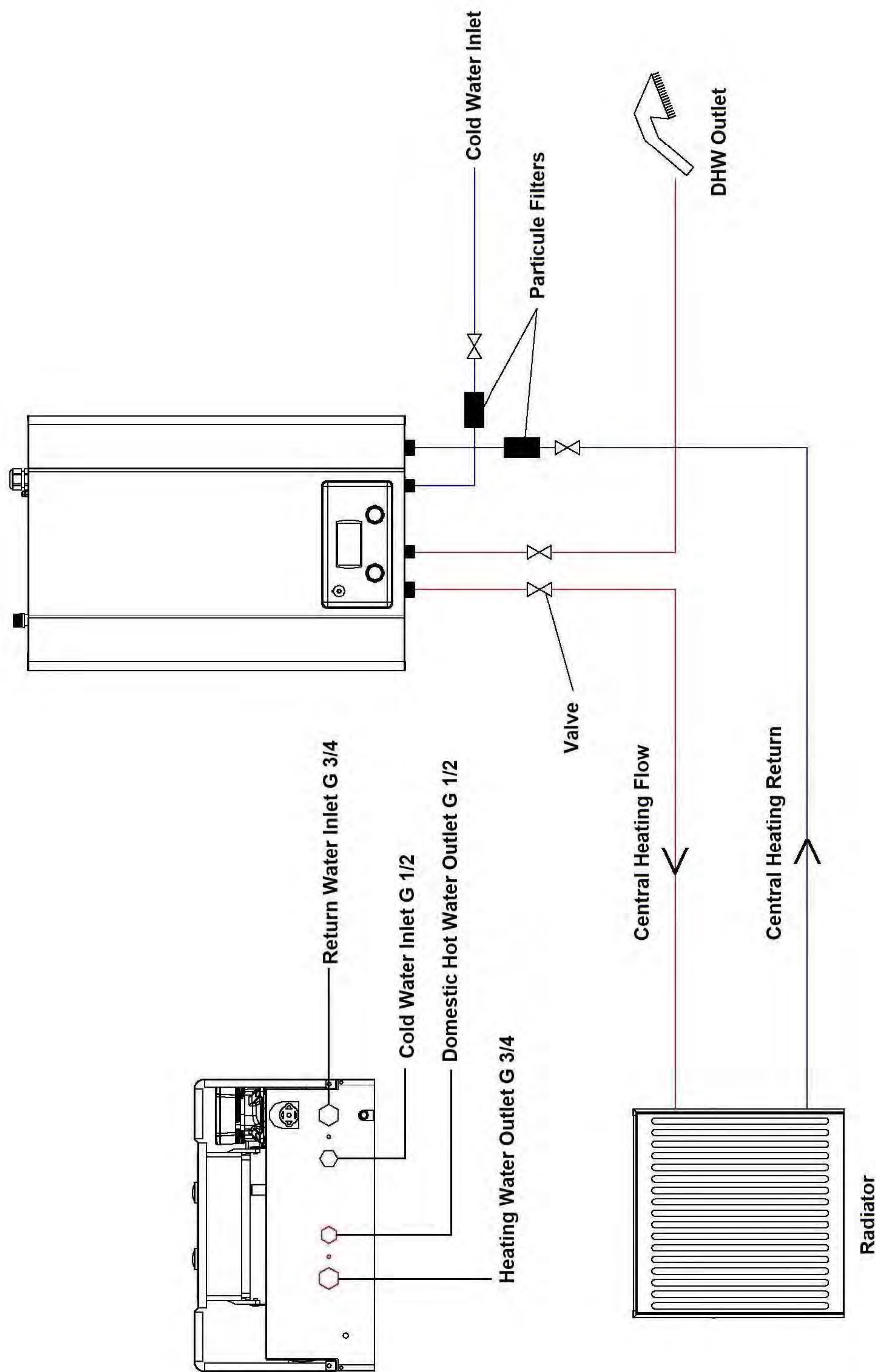






3.7 BOILER INSTALLATION DIAGRAMS

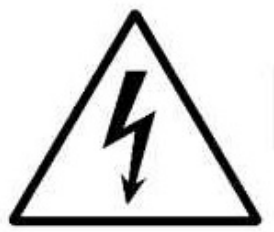
3.7.1 With DHW (Plate Heat Exchanger)





### 3.8 ELECTRIC CONNECTION

The electricity connection of the boiler must be made by a qualified electrician. Improper electrical connections made by unqualified people may cause failure of critical components of the boiler and will invalidate the warranty.



#### **DANGER ! Electric Shock Risk**

- Make sure to isolate the main energy supply before starting to work on the boiler.
- Secure the main energy supply to prevent from accidental switch on while working on the boiler.

#### **3.8.1 Electricity Connection Precautions**

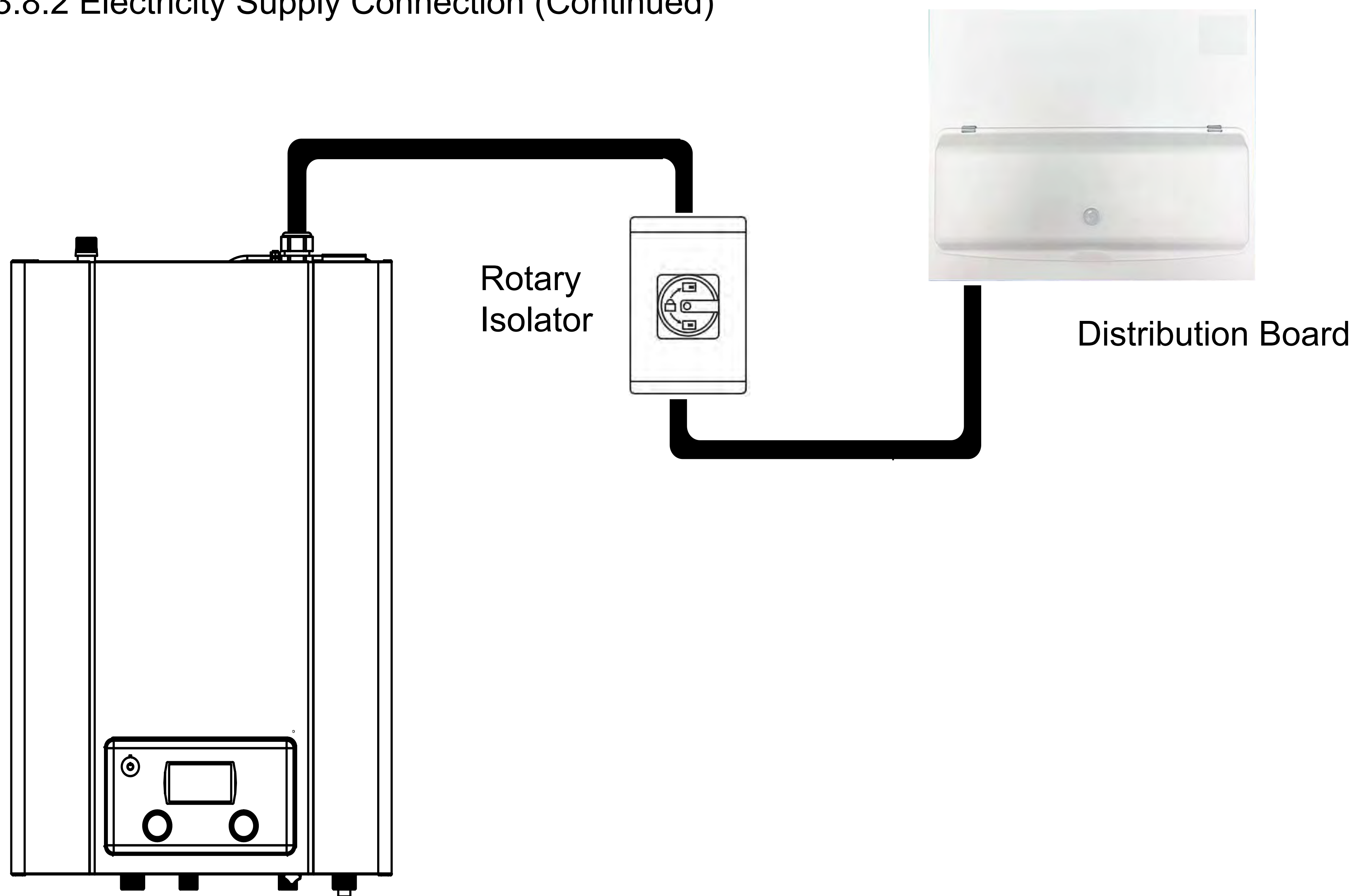
- All wiring must be carried out in accordance with current wiring regulations BS7671.
- All electrical connections must be made by a qualified electrician.
- We recommend that a load check is carried out when installing high power boilers. This must be done by a qualified electrician. Upgrading the main fuse of the property may be required.

- A proper earth connection must be made before operating the boiler.

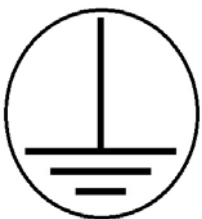
#### **3.8.2 Electricity Supply Connection**


- The main electrical cable supplying the boiler should be connected to the internal RCD device and main distribution board according to the below diagrams.
- Where possible it is recommended to supply the boiler and associated circuits from a dedicated distribution board to prevent overload of the current domestic distribution board.
- Electrical supply cable connection must be made according to the cable sizes indicated on the boiler technical label.
- If an electric shower is present we recommend that a Shower Sensor is installed within the system to each shower. This will cause an interrupt to the boilers control signal when the shower is in use. It will disable the boiler protecting the electrical system from overload. EHC part code is ESFS15C
- Local isolation is required to be installed adjacent to the boiler by means of a rotary isolator suitably rated for the boiler capacity.
- If the property is supplied by a rural power supply or prone to lightening strikes & power cuts it is recommended to install a suitable surge protection device to the boiler supply. This will reduce the risk of damage to the boiler electronics during these events.
- The boiler supply cable should be calculated by the means of a cable calculation in accordance with BS7671 by a suitably qualified electrician.

3.8.2 Electricity Supply Connection (Continued)



The cable connections are clearly marked on the cables to be connected to the RCD device.

- Monophase    L   N
- 3-phase        L1 L2 L3 N
- Earth connection is marked with 



**WARNING**

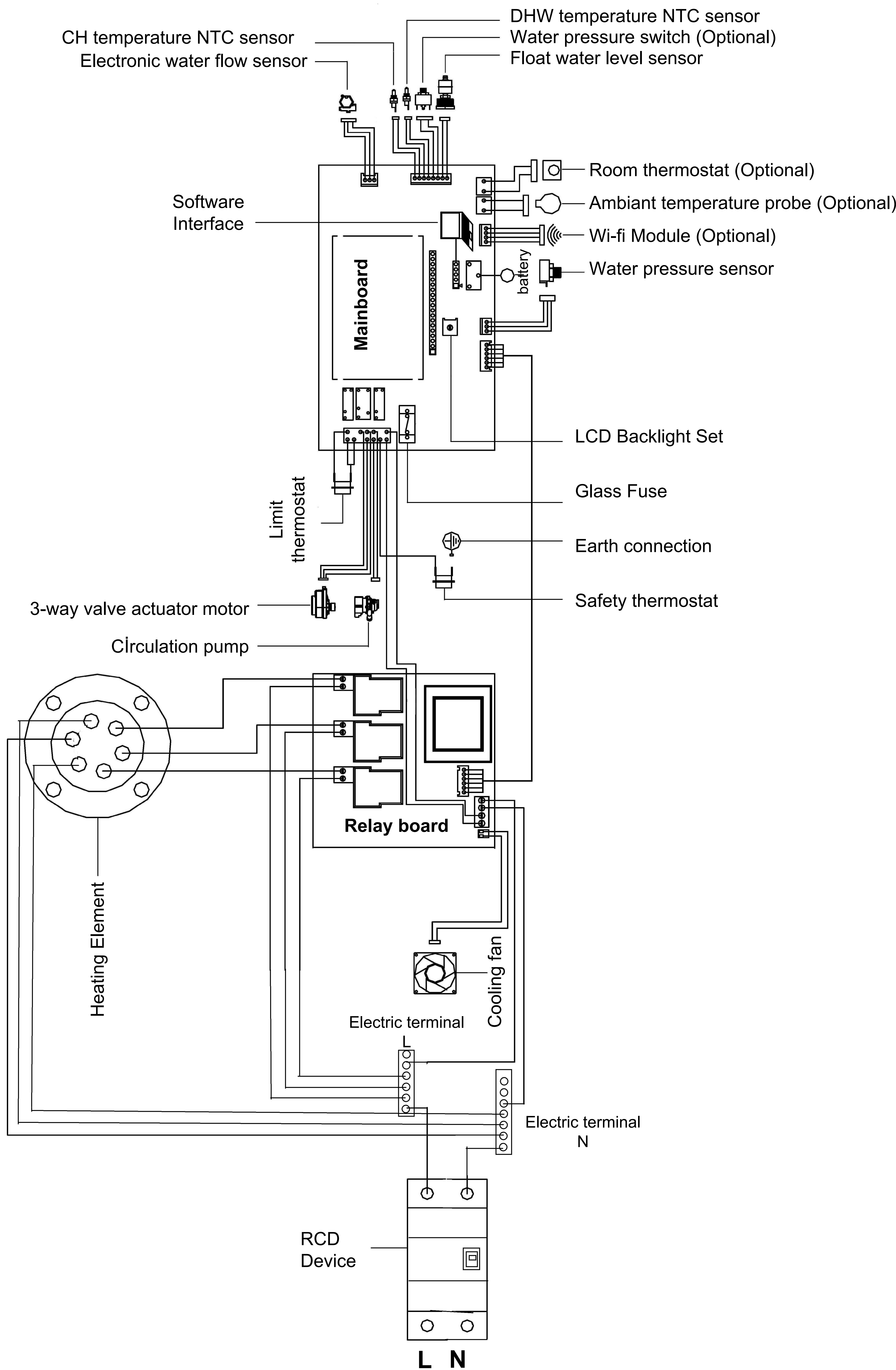
- Make sure that the cable terminations are fixed tightly (with 2.8 -3.5 Nm torque) onto the RCD device. Loose connections may generate sparks and may cause fire risk.
- Do not operate the boiler without proper earth connection. Fix a proper size earth cable tightly to the ring cable clip and tighten the screw to the boiler chassis.
- Use the cable glands provided on the boiler to secure the electrical supply cable.

3.8.3 ELECTRICITY CONNECTION PARAMETERS

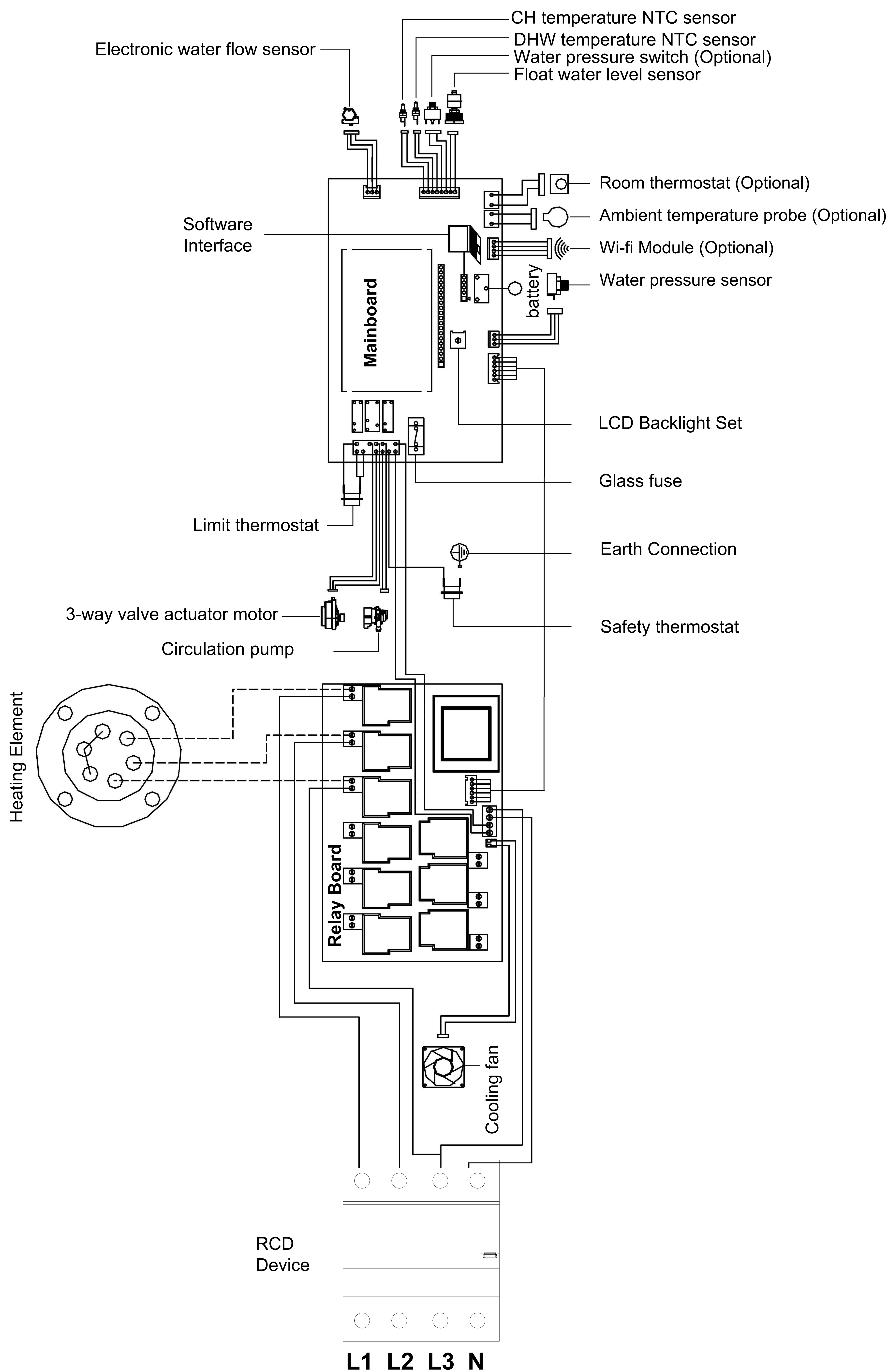
Heating Power	kW	12	15	24	30 ...
Minimum Cable Diameter 1 Phase	pcs./mm2	16	16	...	
Minimum Cable Diameter 3 Phase	pcs./mm2	...		5 x 10	5 x 10
RCD 1 Phase	A/mA	63 / 30	80 / 30	...	...
RCD 3 Phase	A/mA	...		40 / 30	63 / 30
Main Breaker 1 Phase	A	63	80	...	...
Main Breaker 3 Phase	A			40	63
Electric Isolation Degree	IP	X4D	X4D	X4D	X4D



3.8.4 Electrical Connection Diagram 230V (Monophase) (12-15kW Models)



3.8.5 Electrical Connection Diagram 400V (3-phase) (18-30kW Models)



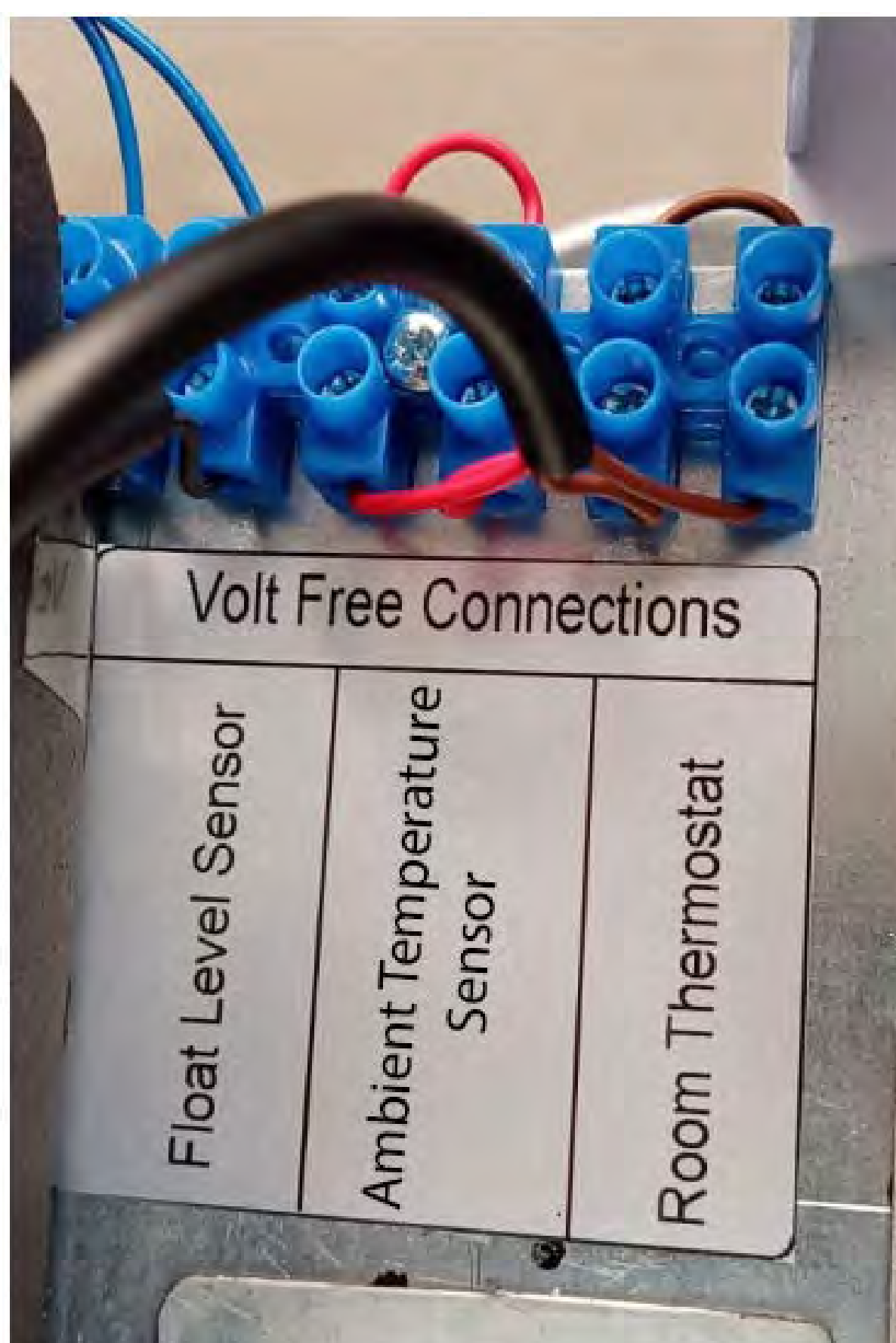
### 3.9 External Controls

A set of terminal are mounted at the top center of the boiler for easy connection of your external controls i.e. Room thermostat and Outside Temperature Sensor. You can see this terminal in the below picture.

Remove the jumper cable and connect the room thermostat volt free cables and Outside Temperature Sensor cables to their respective terminals.

The ambient temperature sensor should be located on an external **North** facing wall and never installed in an area of direct sunlight.

After connecting the Ambient Temperature Sensor the Weather Compensation feature will require to be activated within the Service Menu. Once activated the correct temperature curve Coefficient will need to be selected within the Weather Compensation menu.



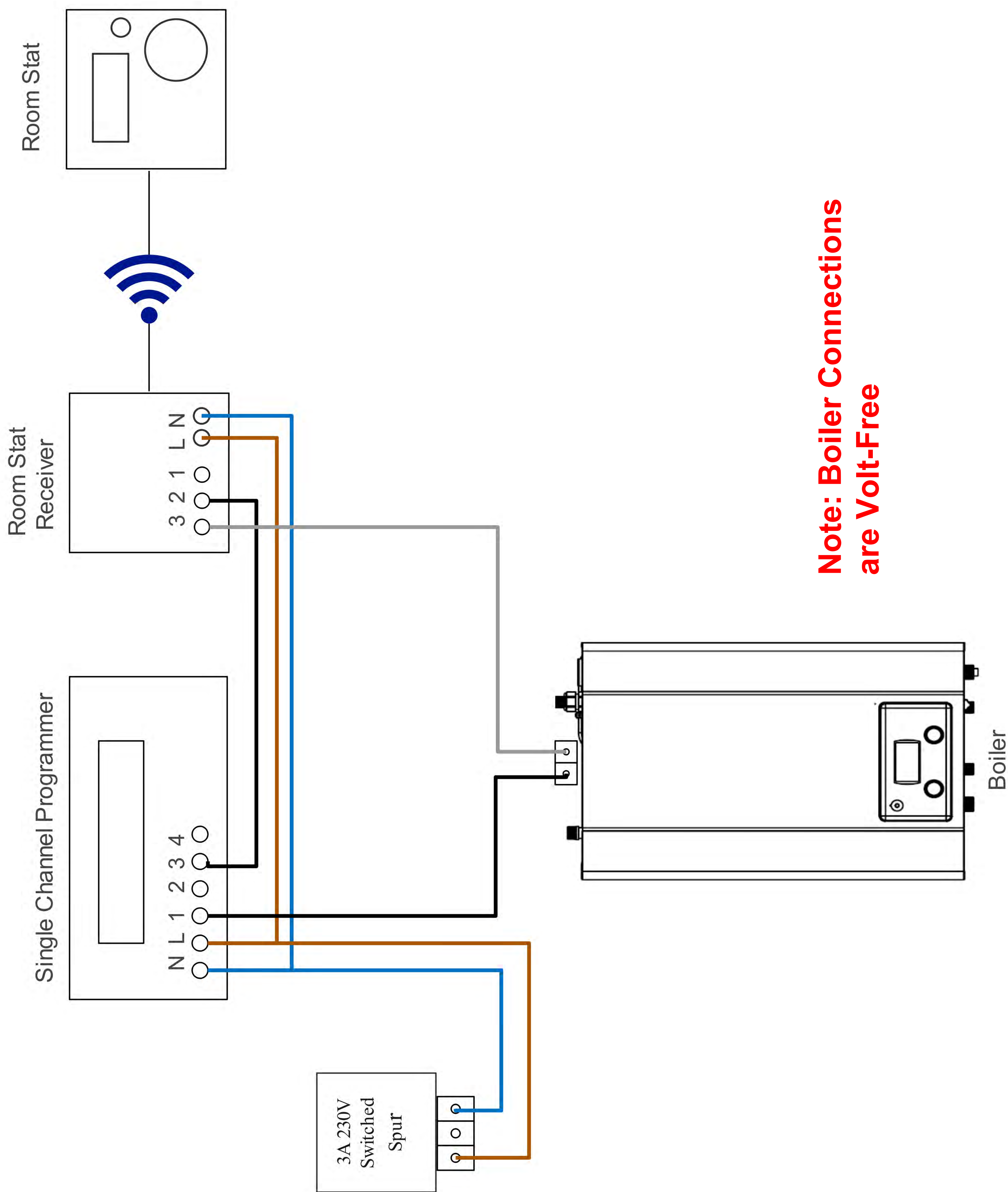
#### **WARNING!**

- **Do not connect any voltage to these terminals as this will damage the boiler and invalidate the warranty.**
- In cases where a wireless room thermostat or programmer requires a line (230V) connection, a separate supply must be connected to the thermostat from an independent 3Amp Connection Unit (Spur). Do not make a connection from the boiler's electrical supply. This may damage the boiler and invalidate the warranty.



3.9.1 External Control Wiring

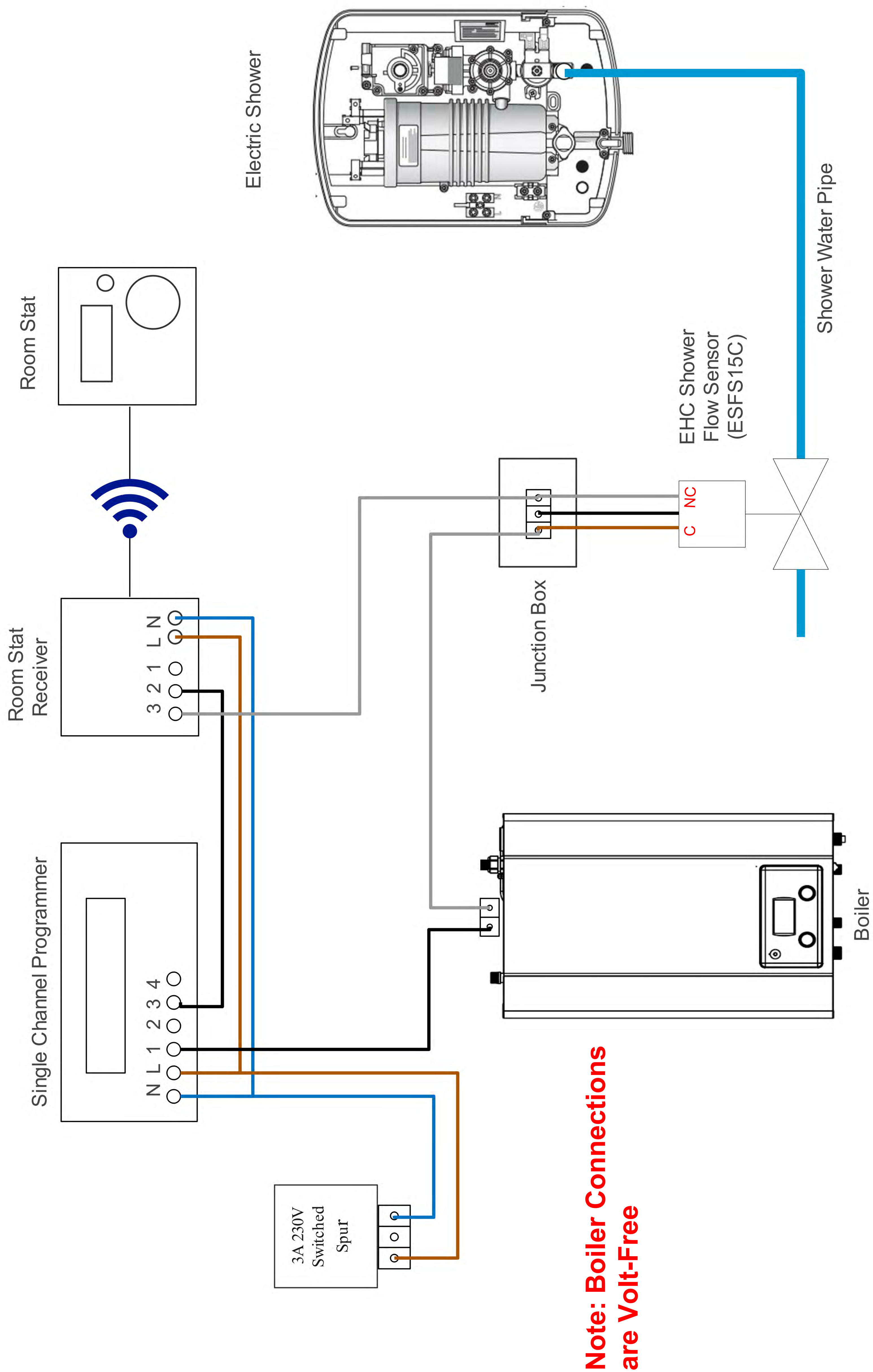
The below diagram details how to wire the external controls which are supplied with the Astro Installation Compliance Pack. (ASTRO-PACK)



**Note: Boiler Connections  
are Volt-Free**

3.9.2 External Control Wiring Wish Shower Interrupter

The below diagram details how to wire the external controls which are supplied with the Astro Installation Compliance Pack (ASTRO-PACK) along with the EHC Shower Flow Sensor (ESFS15C).



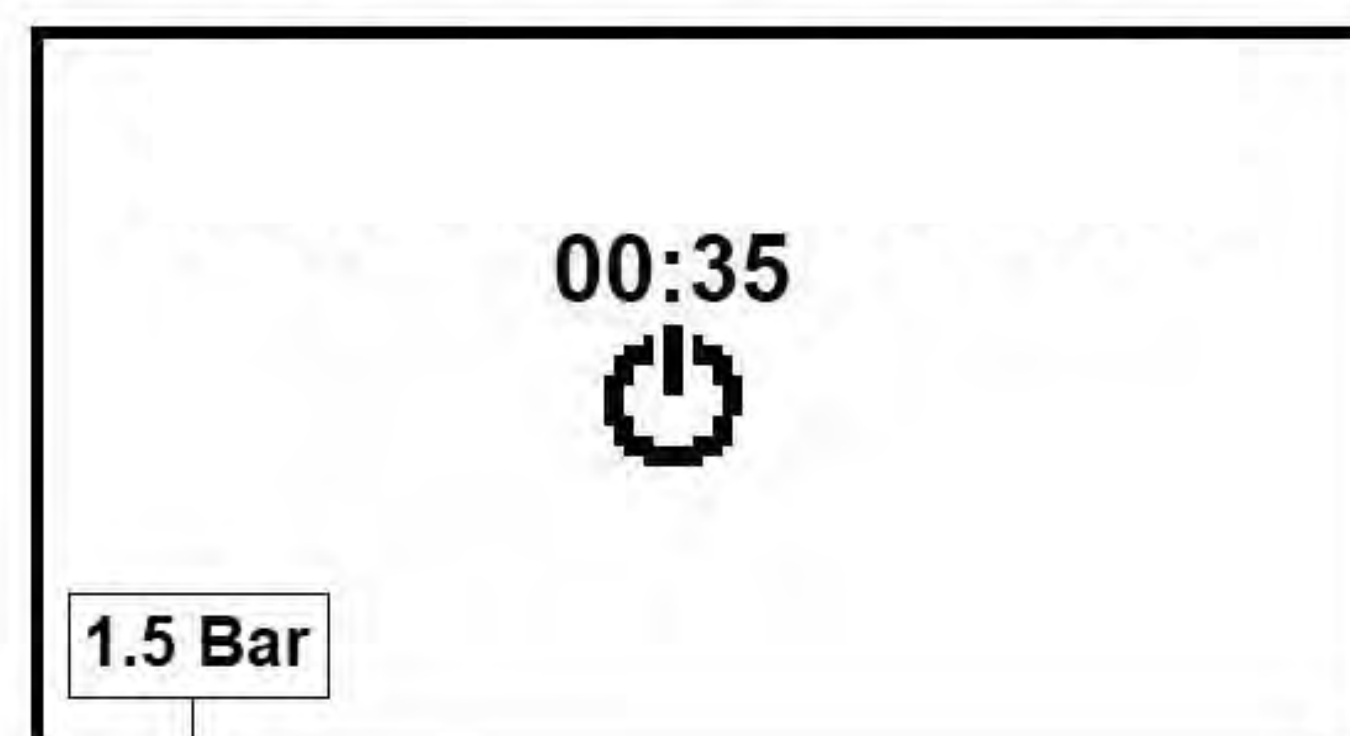
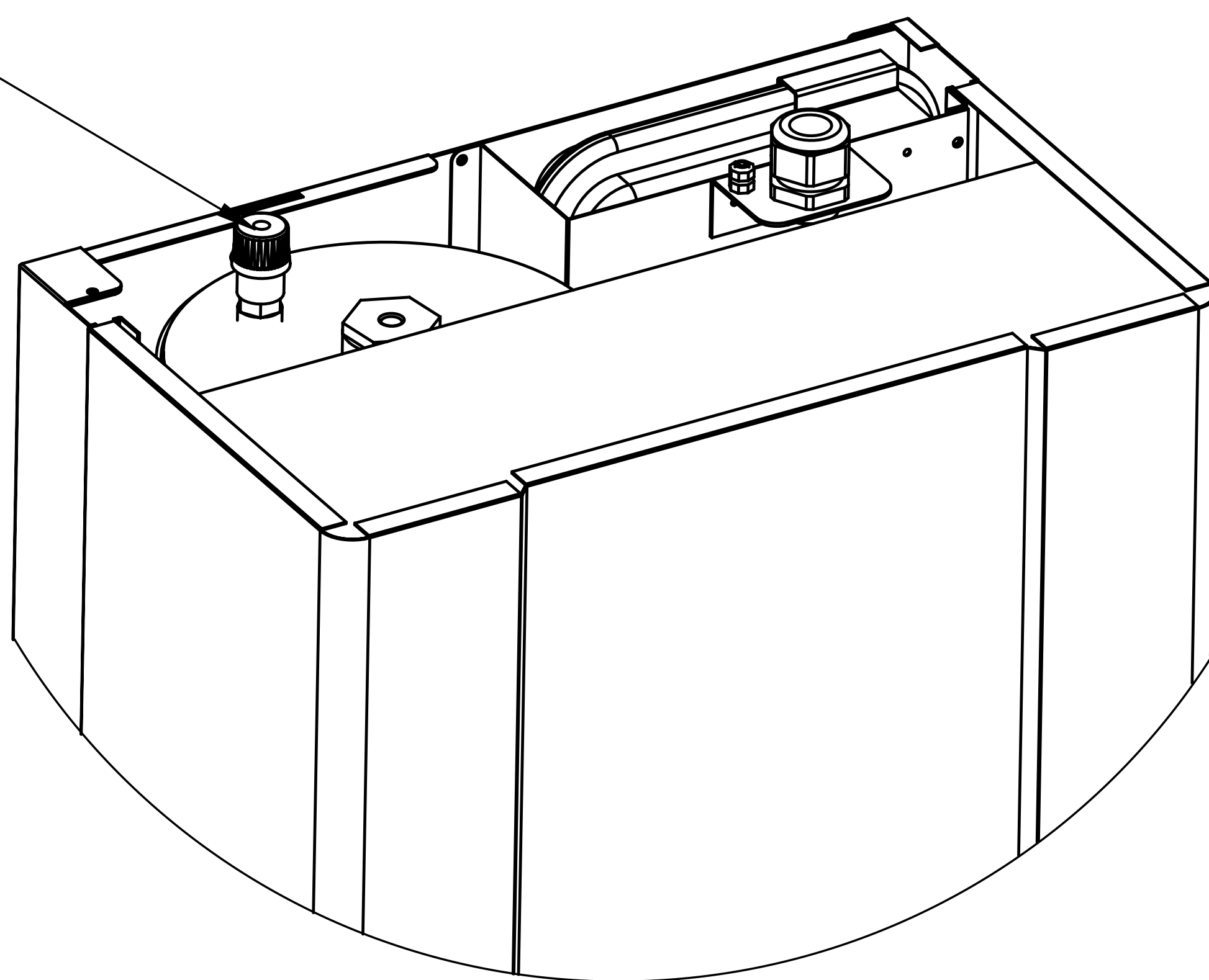


## 4. COMMISSIONING

### 4.1 FILLING WATER TO THE SYSTEM

- Make sure that the automatic air vent valve on the circulation pump is loose.
- Turn on the filling valve and fill water until the pressure reaches 1.5 bars on the LCD screen.
- Use the manual air vent on top of the boiler to extract the air trapped inside the heat exchanger. Close the manual air vent when bubble free water comes out of the drain hose.
- Vent the air inside each radiator until bubble free water comes out, using the air vents on the radiators.
- Check the water pressure on the LCD screen. If it decreased, open the filling valve to reach 1.5bars.
- Repeat steps c,d and e until there is no air left in the system and the 1.5 bar is shown on the LCD screen.
- Once the system has been visually inspected and confirmed to have no leaks a quality inhibitor should be added to the system and dosed correctly. EHC recommends Adey MC1 + inhibitor.

#### Manual Air Vent



Water Pressure Indicator



#### CAUTION!

**The primary circuit must be flushed in accordance to BS 7593.** The primary circuit must be flushed to remove all particles inside the installation to prevent damage the boiler during operation. EHC recommends Adey MC3 cleaner for use on new systems, after application the system should be thoroughly flushed through with clean water to remove all traces of cleaner chemical. When connecting the boiler to an existing system the system should under go a full power flush prior to connecting the boiler to the primary circuit. Any failures and damages to the boiler caused by dirt in the primary circuit installation is out of manufacturer's warranty.

**A Magnetic Filter Must Be Fitted To This Boiler, Failure To Protect The System Will Invalidate the Manufacturer's Warranty.**



## 4.2 STARTING UP

First time operation of the boiler must be done by a Competent Installer in order to validate the guarantee of the boiler and to ensure the boiler runs efficiently and safely for many years.

The Competent Installer is responsible for completing the commissioning form located within this manual or electronically via the badge located on the front of the boiler.

The following steps will be taken to put the boiler into operation:

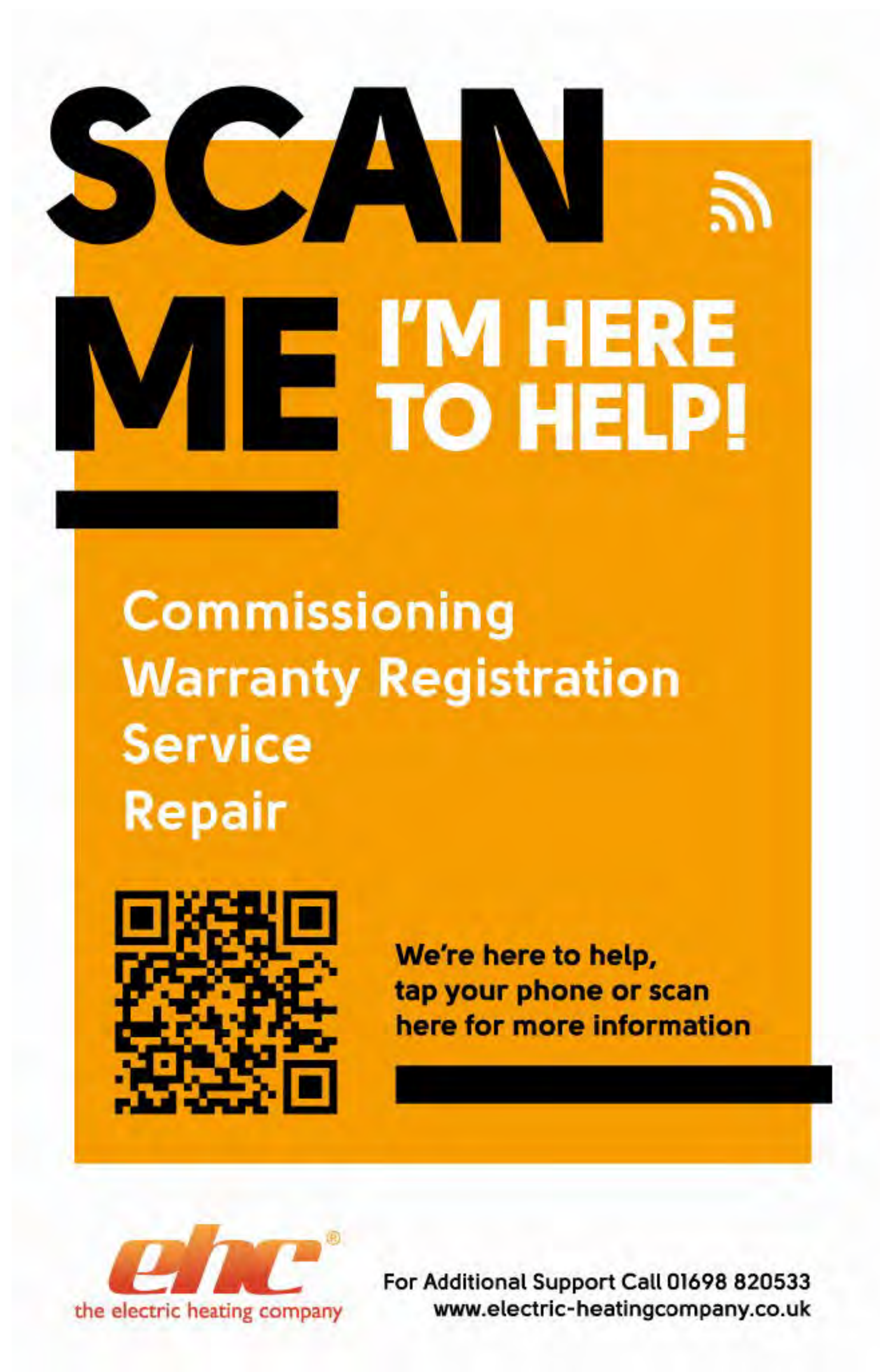
- a) Check that the main circuit breaker and RCD device switches are on.
- b) Check that the valves of the heating circuit and DHW installation are open.
- c) Make sure water is filled to the system as explained in the previous section and all air inside the system is vented correctly. Pressure shown on the LCD screen should be 1.5 bar.
- d) Press the on/off button and turn on the boiler. Adjust the central heating temperature with P1 knob and domestic hot water temperature with P2 knob. The adjusted temperature will flash on the LCD screen and then the instantaneous temperature values for both central heating and domestic hot water will be shown on the LCD screen during operation of the boiler. If the ambient temperature sensor is connected navigate to the Weather Compensation Menu to activate the feature and select the correct Coefficient Curve Value.
- e) Set the programmer to on and turn up the room thermostat, the boiler will start to operate according to the adjustments made on the control panel. Detailed explanation about making operation adjustments are given in section 5, user instructions.
- f) Open the hot water outlet at the kitchen sink, the boiler will switch to hot water mode. Using a flow-cup measure the flow rate at the outlet and adjust the stop valve on the boilers cold water feed to restrict the flow rate as per the max flow rate value found in the technical table. If a preset flow restricter of the correct value has been installed no manual restriction will be required.



## 4.2 STARTING UP

### IMPORTANT!

Once the boiler is operational scan the Smart Tag on the front of the boiler with your Phone or Tablet via NFC or QR to Complete the Commissioning Records and register the Boiler Warranty.



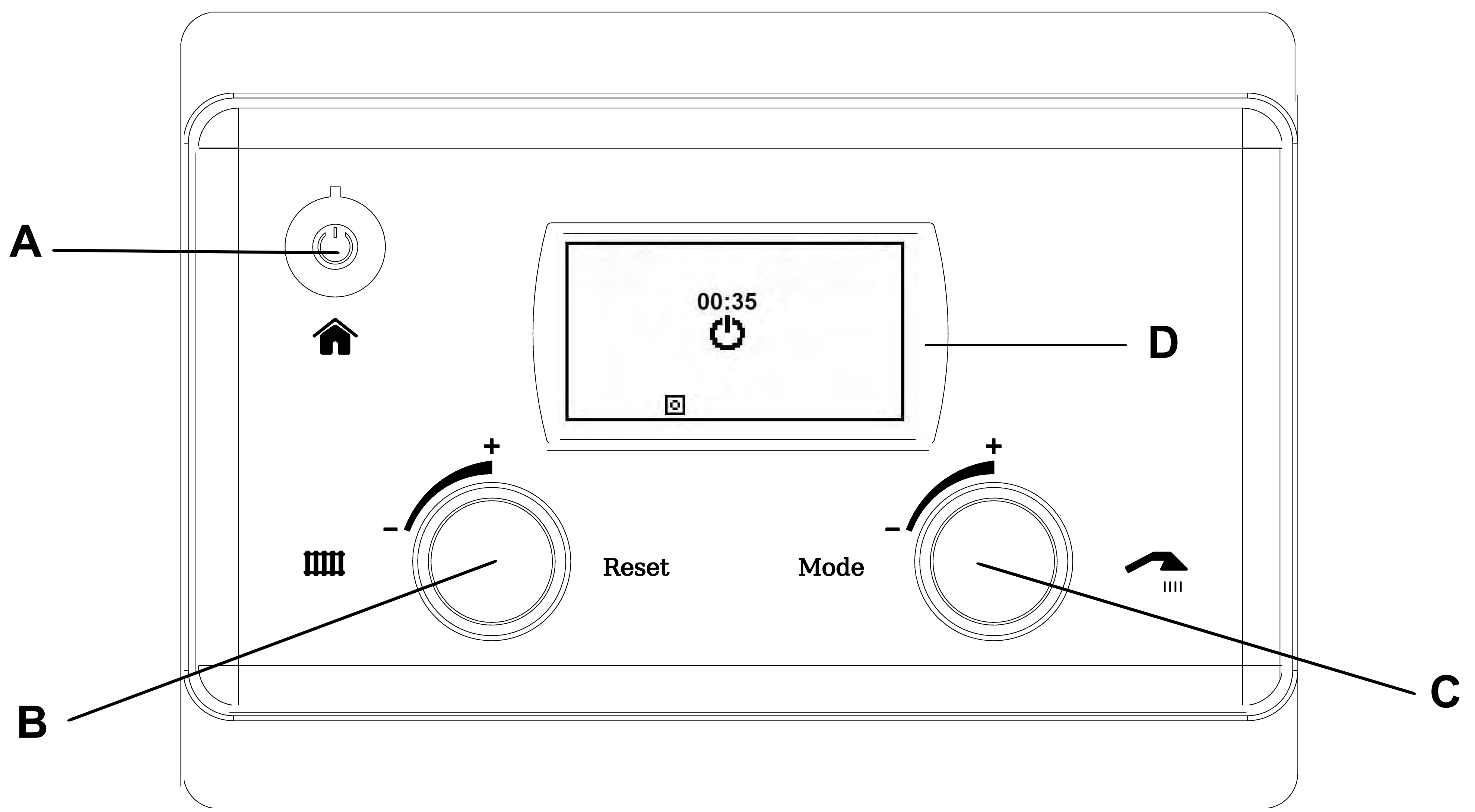
The Boiler Smart Tag also provides the following support features for the User and Maintenance Engineer;

- > Boiler Commissioning
- > Warranty Registration
- > Service Log
- > Installation Manuals
- > Repair Videos
- > Spare Parts
- > Warranty Terms & Conditions
- > Extended Warranty



## 5. USER INSTRUCTIONS

### 5.1 CONTROL PANEL



All functions required to run the boiler is done via two adjustment knobs and the on/off button on the control panel. All operation parameters and adjustments can be followed on the LCD screen. All failure reports are shown on the LCD screen with codes and explanations.

#### A. ON/OFF - HOME SCREEN BUTTON:

This is the on/off button for the boiler. Returns to the main screen whilst pressed inside a menu.

#### B. P1 KNOB :

On the operation screen, turn this knob to adjust the central heating water temperature between 30-80°C. Press on this knob to enter the main menu. You can turn this knob to scroll through the sub menus and press on the knob again to enter in the selected sub menu.

In case of a failure that requires a manual reset, pressing on P1 knob will perform the manual reset.

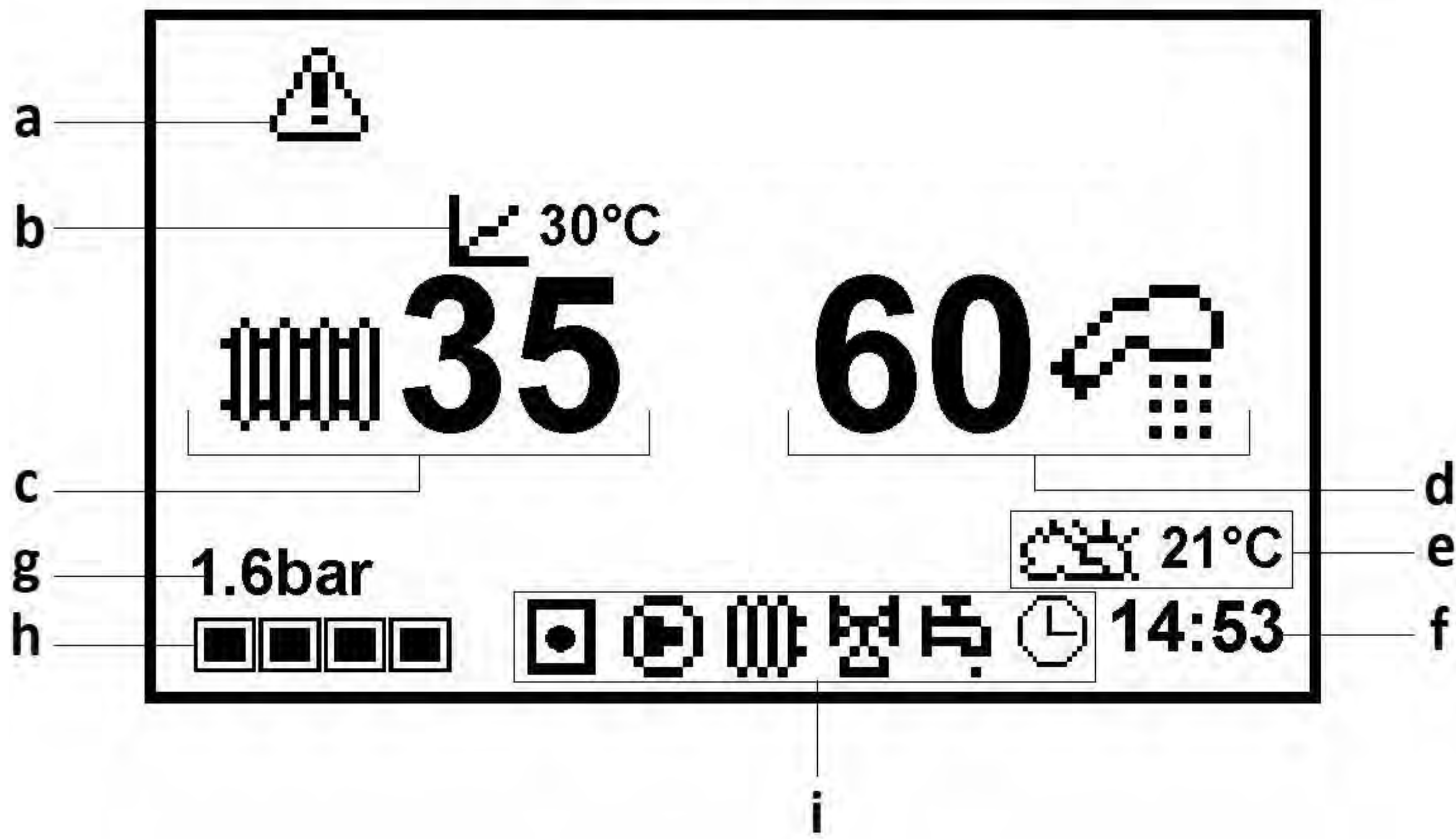
#### C.P2 KNOB:




On the operation screen, turn this knob to adjust the domestic hot water temperature between 30-60°C. Inside the settings menus, adjustment of desired values and parameters are done by turning this knob.

P2 knob is also used as a shortcut to change the boiler operation mode. Press and hold for 3 seconds on P2 knob to switch the boiler operation mode between; only heating, winter mode (heating + DHW) or summer mode (only DHW).

## D. LCD SCREEN

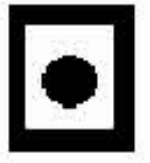
All operation parameters are shown with icons on the LCD screen. The definitions of the icons are explained below.



- a) Error Icon:** Shows that there is an ongoing failure.
- b) Ambient Temperature Operation Curve:** Shows the automatic operation curve when the ambient temperature sensor is connected. Detailed information regarding automatic operation according to ambient temperature is given in section 5.2.3.4 of this manual.
- c) Central Heating Temperature:** Central heating temperature adjusted with P1 knob is shown here. Adjusted value will flash for 5 seconds and save. Central heating circuit instantaneous temperature value is shown on screen during operation. When the boiler is operating in central heating mode,  icon will be flashing on the screen.
- d) Domestic Hot Water Temperature:** Domestic hot water temperature adjusted with P2 knob is shown here. Adjusted value will flash for 5 seconds and save. DHW instantaneous temperature value is shown on screen during operation. When the boiler is operating in DHW mode,  icon is animated on the LCD screen.
- e) Ambient Temperature Icon:** When the ambient temperature sensor is connected to the boiler, the measured outside weather temperature is shown in this section.. If the user disables automatic operation with ambient temperature function, only  icon is displayed, reminding the user the sensor is still connected.
- f) Clock:** Time set by the user is shown on the LCD screen.
- g) Water Pressure Indicator:** Closed circuit water pressure is shown in this section.
- h) Modulation Indicator:** Shows which elements are currently in operation.



### i) Operation Indicators:



- **Room Thermostat Icon:** Where a room thermostat is connected (optional equipment) this icon indicates that the room reached the adjusted temperature and boiler operation is stopped by the room thermostat.

**NOTE:** In case of a room thermostat failure, this icon will be shown on the LCD screen constantly and the boiler will not start. Contact a competent engineer for a repair of the room thermostat or for checking the connections.



- **Pump Icon:** Indicates that the pump is working.



- **Central Heating Icon:** Shows that the boiler is operating in central heating mode.



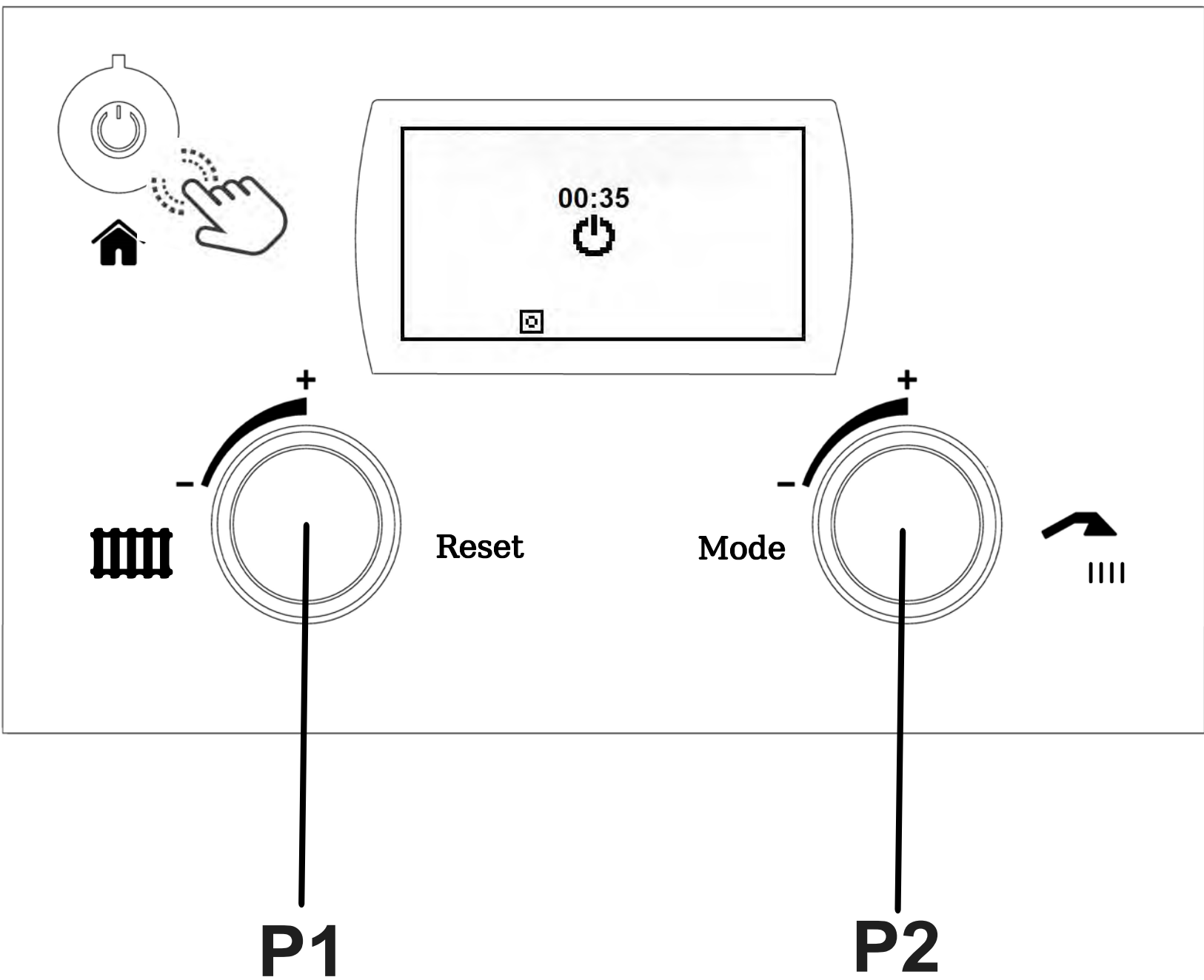
- **3-way Valve Motor Icon:** Indicates that the actuator motor changed position.



- **Domestic Hot Water Icon:** Indicates that a hot water tap is opened and the boiler is operating in domestic hot water mode.

5.2 OPERATION INSTRUCTIONS


5.2.1 TURNING ON THE BOILER



Press the ON/OFF (home) button to turn on the boiler. Adjust the central heating and domestic hot water temperatures shown on the LCD screen to your desired values and the boiler will operate according to your adjustments.

Turn the P1 knob to adjust the central heating temperature. The adjusted value will flash on the screen for 5 seconds and save. The screen will show the central heating water temperature during operation.

You can set the domestic hot water temperature in the same way, using the P2 knob.

To turn off the boiler, press the on/off button whilst on the operation screen.  icon will appear on the screen and boiler will be in stand-by mode. In stand-by mode, frost protection, pump and 3-way valve actuator motor anti-jamming functions are active.

**NOTE:** For the protection systems such as frost protection, pump and actuator motor anti -jamming functions to operate properly, The electrical supply should be on and all the valves on the installation should be open. Any damage or breakdown occurring while the electricity is off or if the valves are kept closed is not covered by warranty.

**⚠ CAUTION!** Frost damage which may occur in cases where the electricity is off or the installation valves are kept closed is not covered by warranty.

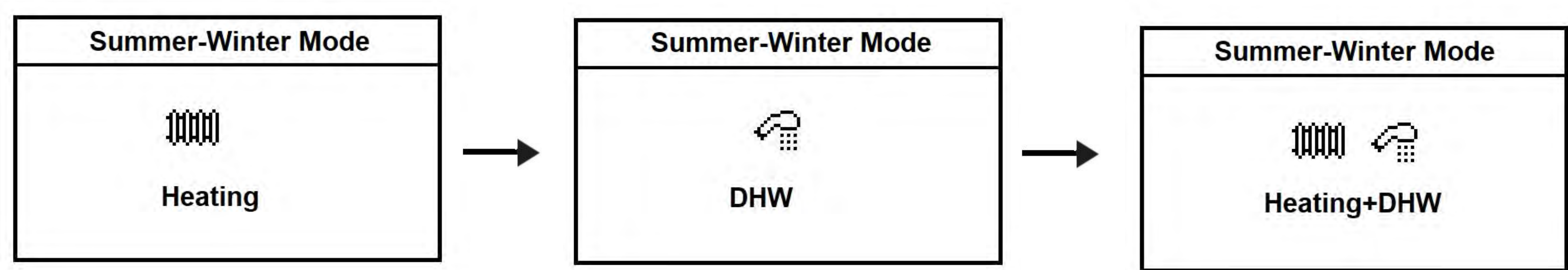
5.2.2 BOILER OPERATION MODE SELECTION:

Press on the P1 knob to enter the main menu. Turn the P1 knob to scroll through the sub menus inside the main menu. Select the summer-winter mode tab by pressing P1 knob on it.





Inside this menu, you can select the desired operation mode by turning P2 knob. When you complete your selection, you can press on P1 to return to the main menu or press the home (on/off) button to return to operation screen.



Boiler only works in CH mode to heat the radiators or the underfloor heating installation.

Summer mode only delivers domestic hot water for Taps and showers. Space heating is disabled.

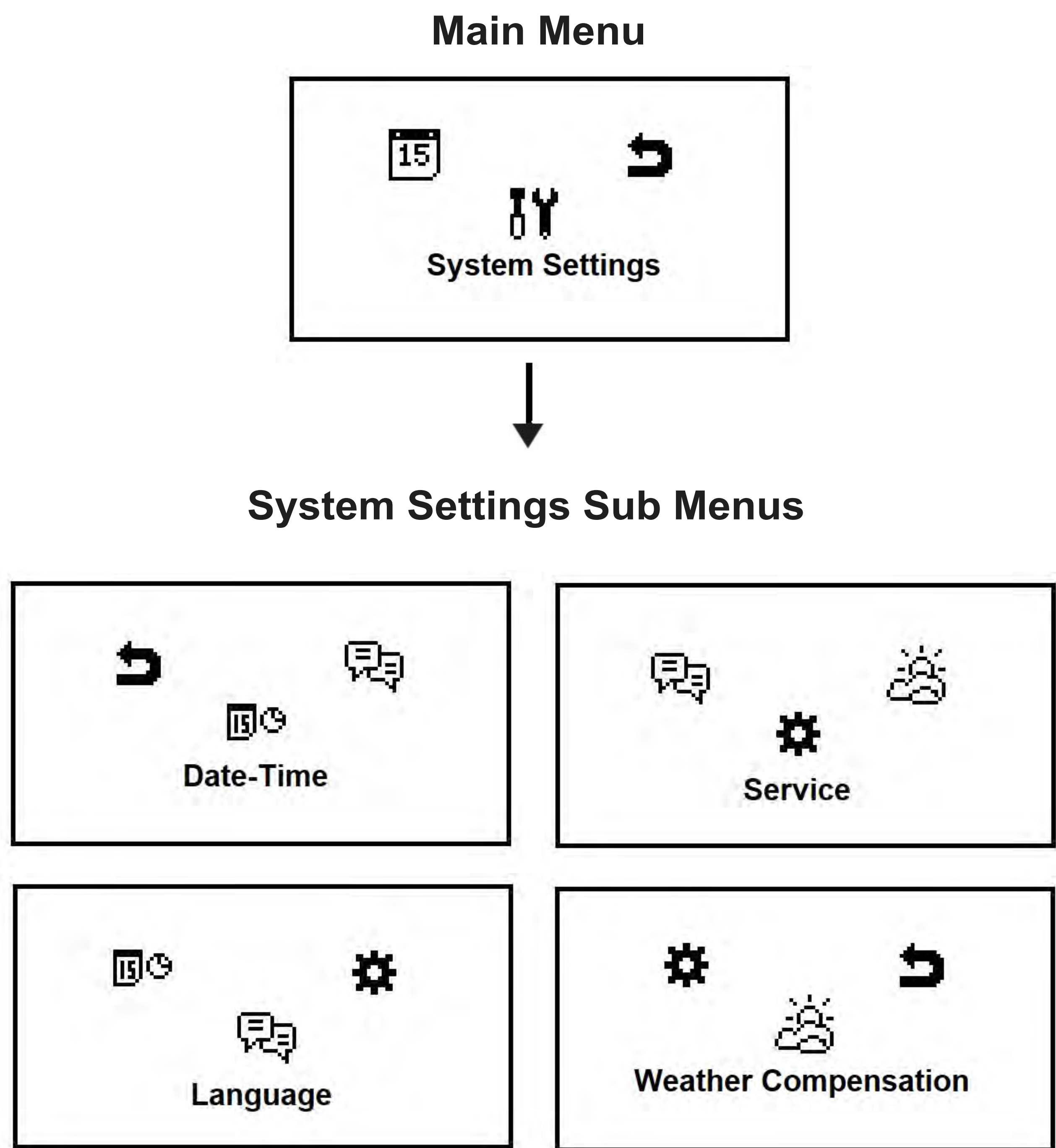
Standard operation mode of the boiler. Supplies hot water both for space heating (CH) and DHW.

∞ While the boiler is in operation screen you can switch between operation modes by pressing on and holding the P2 knob for 3 seconds as a shortcut.

**NOTE:** In Heating+DHW mode, the DHW supply is prioritised.

**5.2.3 SYSTEM SETTINGS:**

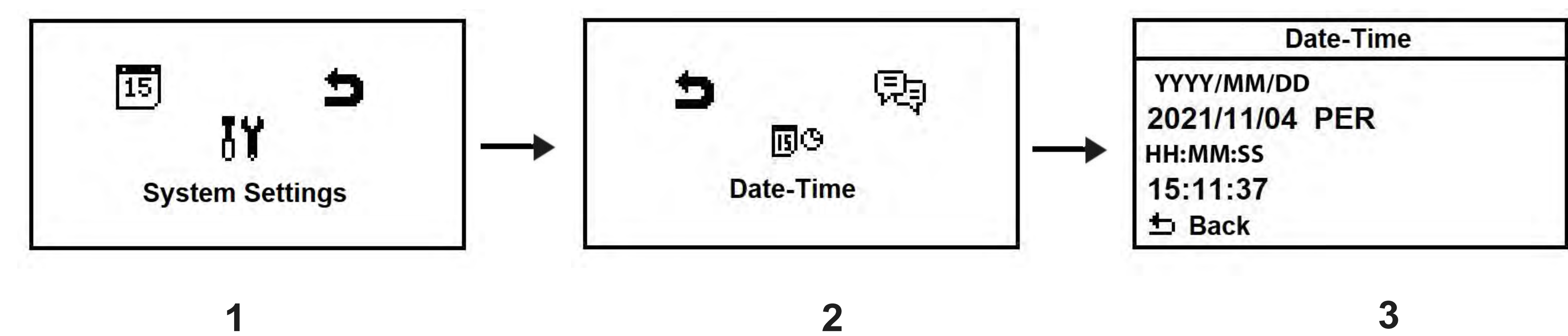
Press the P1 knob to enter to main menu. Scroll to system settings tab by turning P1 and press P1 to enter into system settings menu. Below shown sub menus are present in system settings menu.



5.2.3.1 Date - Time Setting

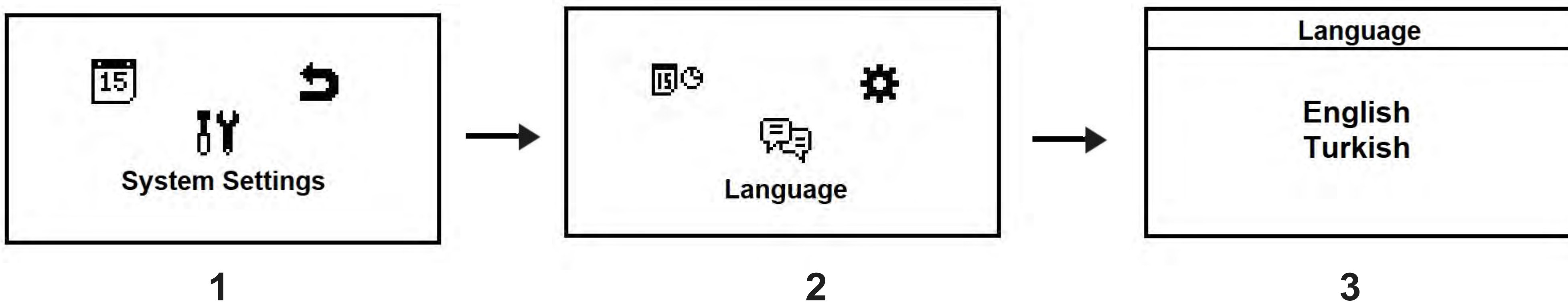
Select the Date -Time setting menu with P1 knob. Turn P1 to scroll through units, turn P2 knob to adjust the desired values for selected units. When the adjustment is complete scroll to back icon and press P1 to return to system settings menu.

**CAUTION!** Date-Time setting must be made accurately in order to be able to use the weekly timer function. If the adjusted date and time setting is incorrect, the boiler will not operate in week timer mode correctly.



5.2.3.2 Language Selection

You can choose the LCD screen text language in language selection tab inside the system settings menu.





5.2.3.4 WEEKLY TIMER SCHEDULE

The Astro boiler's weekly schedule function enables you to set automatic operation time intervals for each day of the week directly from the boiler control panel.

Press P1 knob to enter the main menu and scroll to the Week Timer menu and select by pressing P1. Inside the weekly timer menu, there is a schedule which can be set separately for each day of the week. When the selection cursor is on the DAY tab, you can choose the day you want to make a setting for by turning the P2 knob. Once you get to the desired day, press P1 to activate the schedule for that day. Active box will be filled.

Turn the P1 knob to scroll the cursor though the schedule. Mark the time "On" intervals by pressing on P1. Your boiler will operate automatically in the marked time intervals for that day. Once you finish setting for that day, use P1 knob to scroll back to the DAY tab and choose the other day you want to set the schedule by turning P2. Press P1 to activate the schedule for that day and adjust the operation time intervals as instructed.

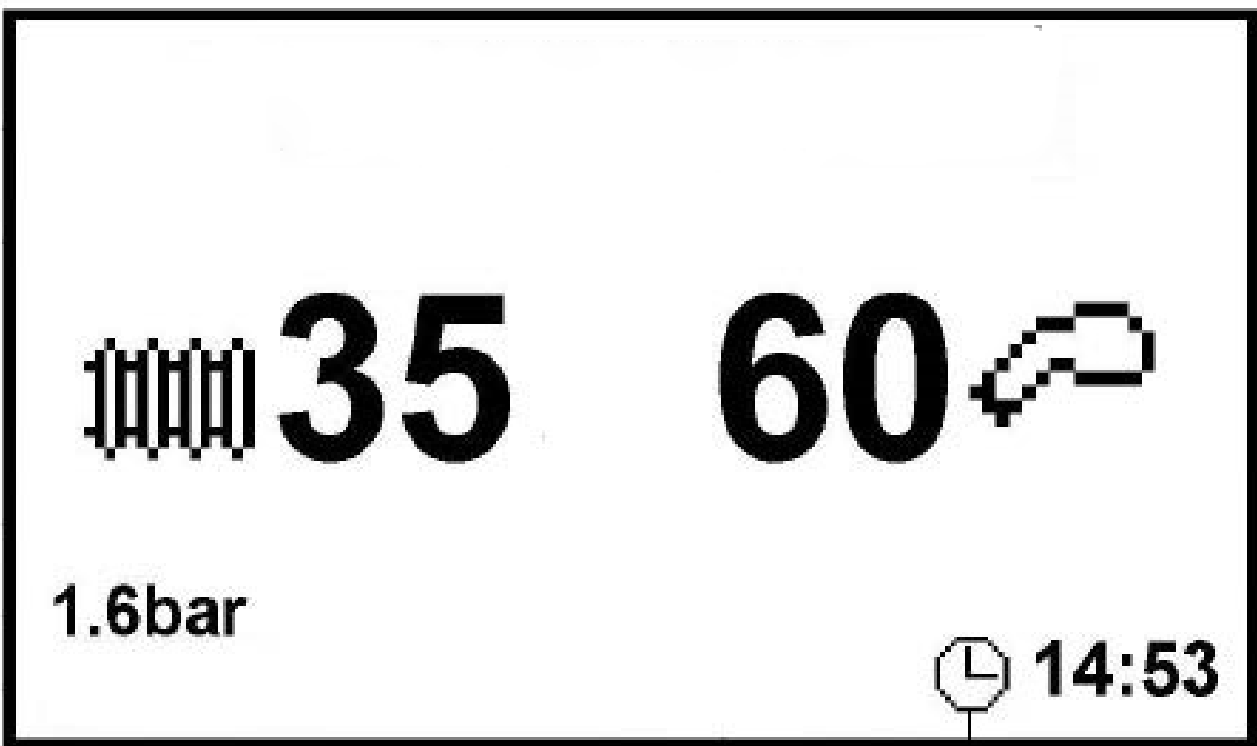
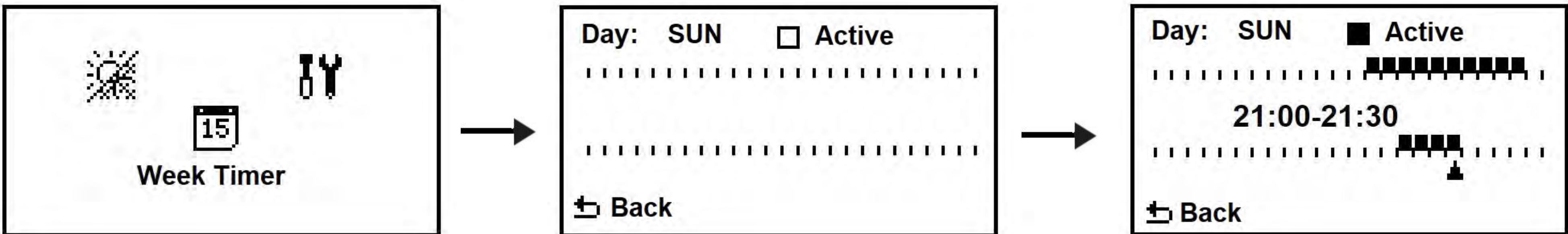
Once you finish all the adjustments, move the cursor to back tab and press P1 to return to the main menu. Your adjustments will be saved.

When your boiler is set to operate automatically with weekly schedule function,  icon is shown on the LCD screen on the days selected within the weekly schedule.

During automatic operation of the weekly schedule, the boiler will operate at the set temperature values on the control panel. The schedule will instruct the boiler to turn and off according to the settings.

**CAUTION!** : In weekly schedule function, when the active box is filled for a day, the boiler will only operate in the adjusted time intervals for that day.

If you activate the schedule, tick the active box but do not make any operation interval markings, the boiler will not work for that day. Make sure to make the time interval settings accurately or deactivate the weekly schedule feature.

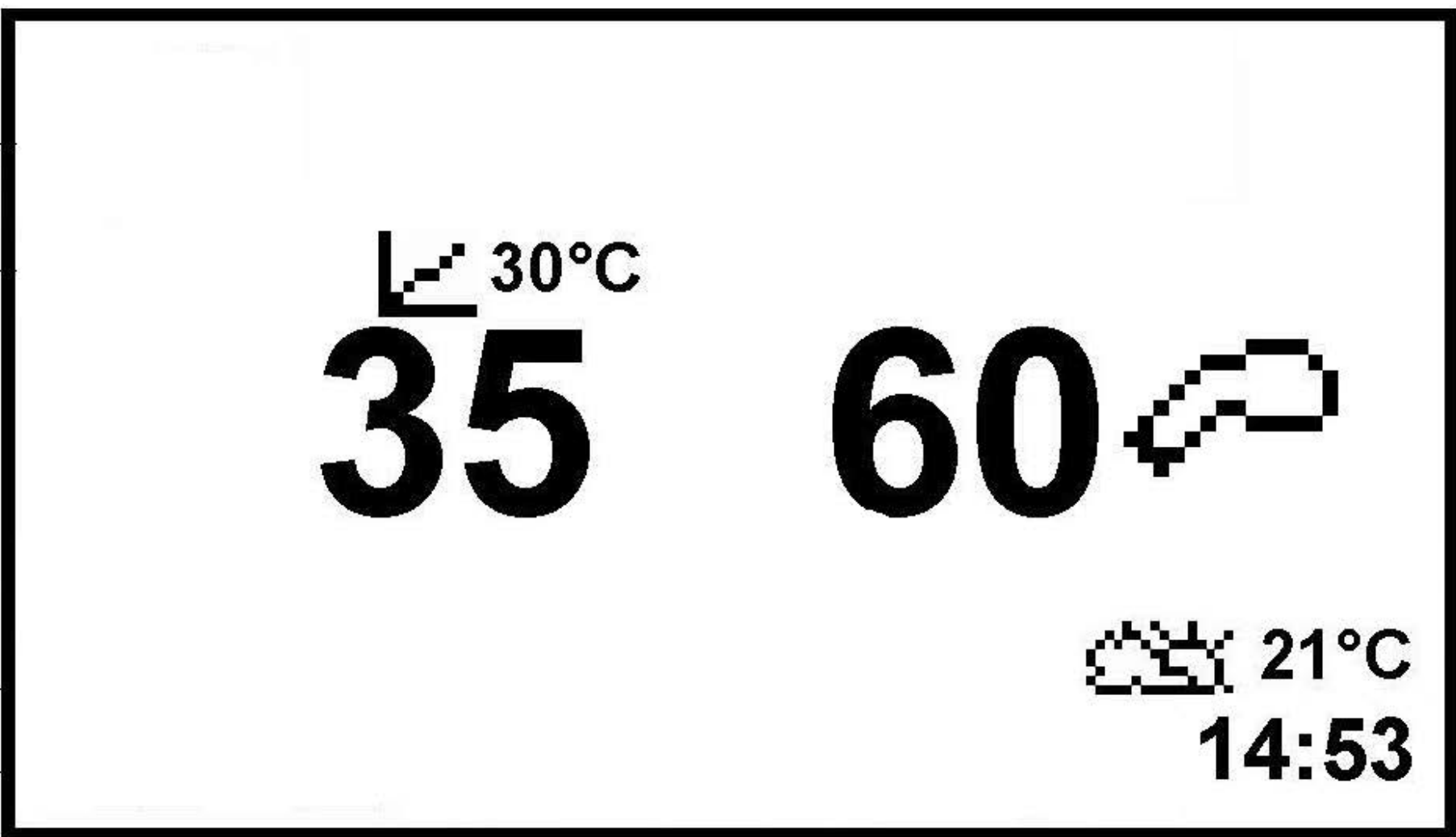


Weekly Schedule active

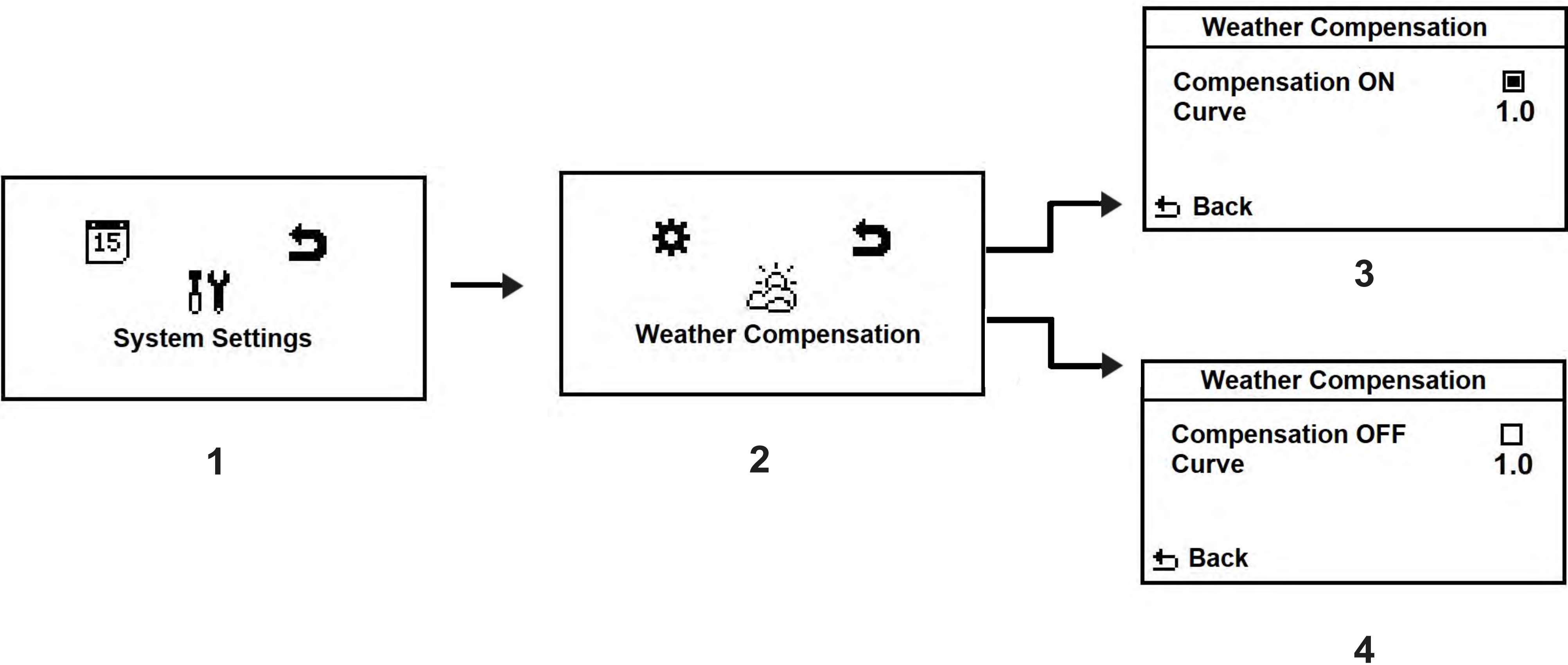


5.2.4 Weather Compensation

The Astro boiler has an automatic operation feature with weather compensation when an optional ambient temperature sensor is connected. When this sensor is installed to your boiler by a Competent Installer, the ambient temperature icon, ambient temperature value and weather compensation coefficient curve icon will be shown on the LCD screen.

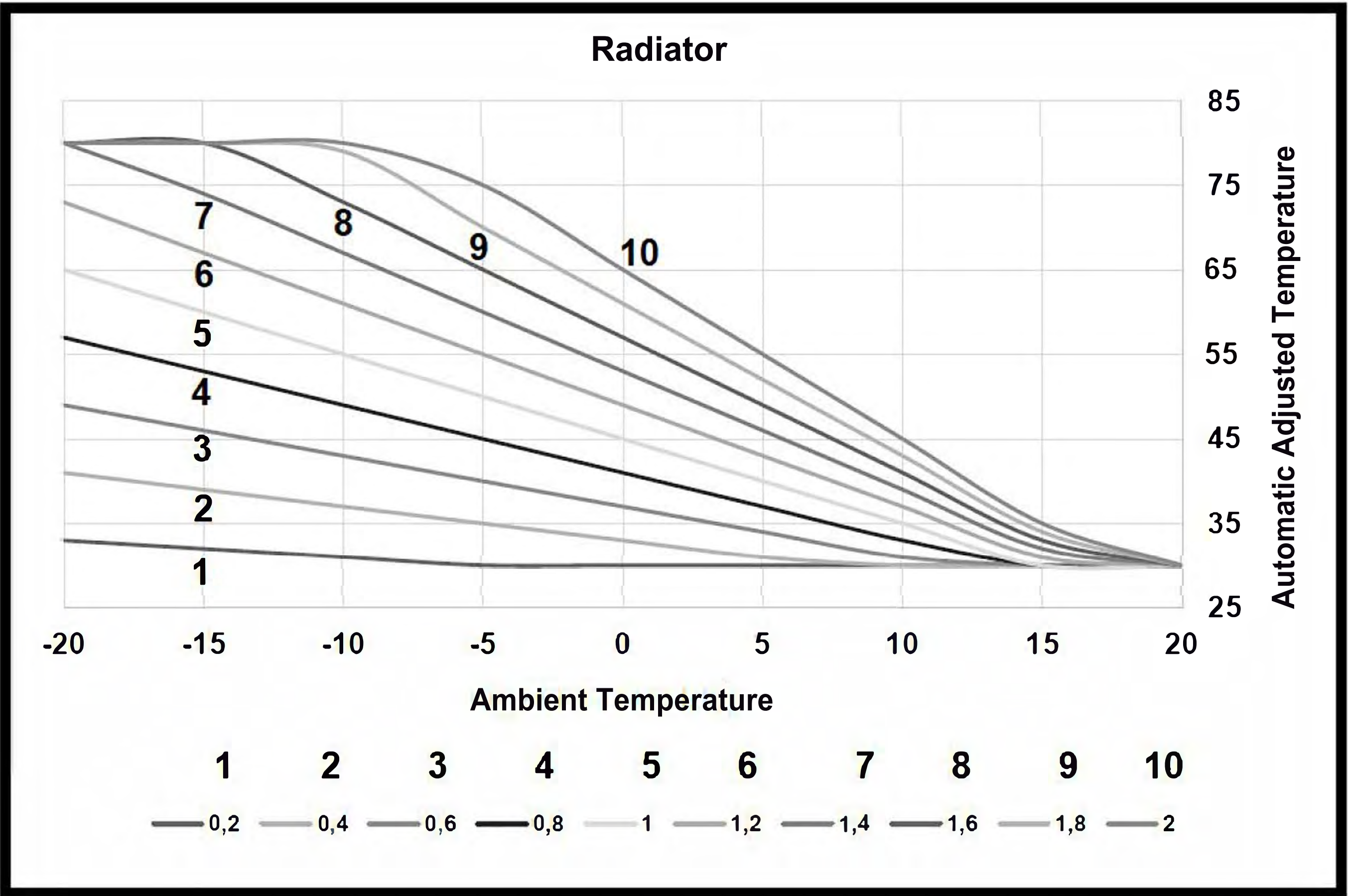


When the ambient temperature sensor is connected, weather compensation menu will be activated inside the system settings menu. In this menu you can enable or disable the automatic operation with weather compensation function. When disabled, the boiler will resume operation according to the adjustments made on the control panel. Only ambient temperature icon (will not show the ambient temperature value) will be present on the LCD screen when weather compensation is disabled. Also in this menu you can change the weather compensation curve coefficient. This curve coefficient is used to increase or decrease the heating capacity of the boiler in automatic mode, depending on the insulation level of your home, Geographic location or your comfort preferences. Weather compensation curves and corresponding boiler water temperatures are given on page 38.

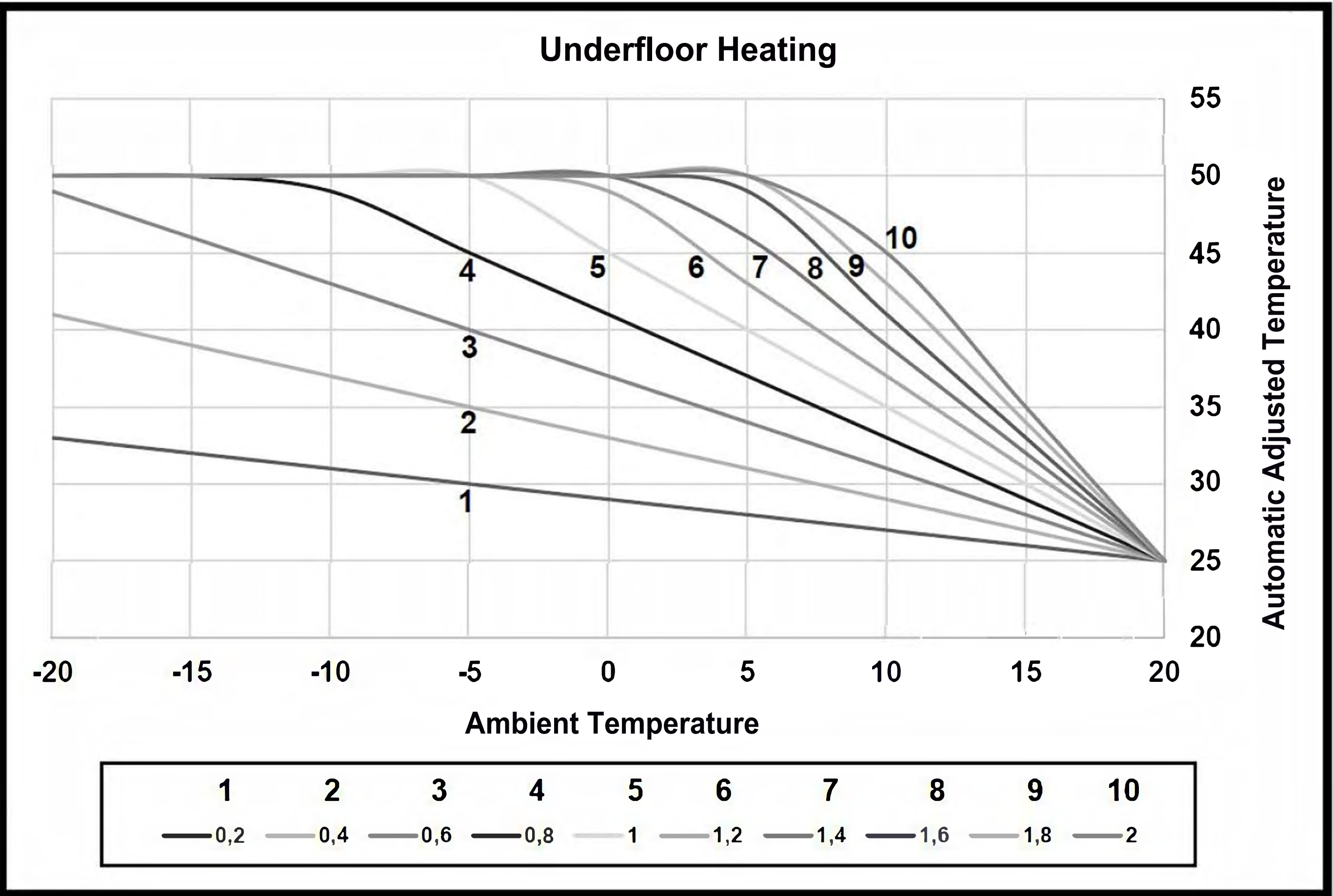


EHC strongly recommends the use of Weather Compensation to increase system efficiency and reduce energy consumption.





Heating Curve Coefficient		0,2	0,4	0,6	0,8	1	1,2	1,4	1,6	1,8	2
Outside Temperature	-20	33	41	49	57	65	73	80	80	80	80
	-15	32	39	46	53	60	67	74	80	80	80
	-10	31	37	43	49	55	61	67	73	79	80
	-5	30	35	40	45	50	55	60	65	70	75
	0	30	33	37	41	45	49	53	57	61	65
	5	30	31	34	37	40	43	46	49	52	55
	10	30	30	31	33	35	37	39	41	43	45
	15	30	30	30	30	30	31	32	33	34	35
	20	30	30	30	30	30	30	30	30	30	30

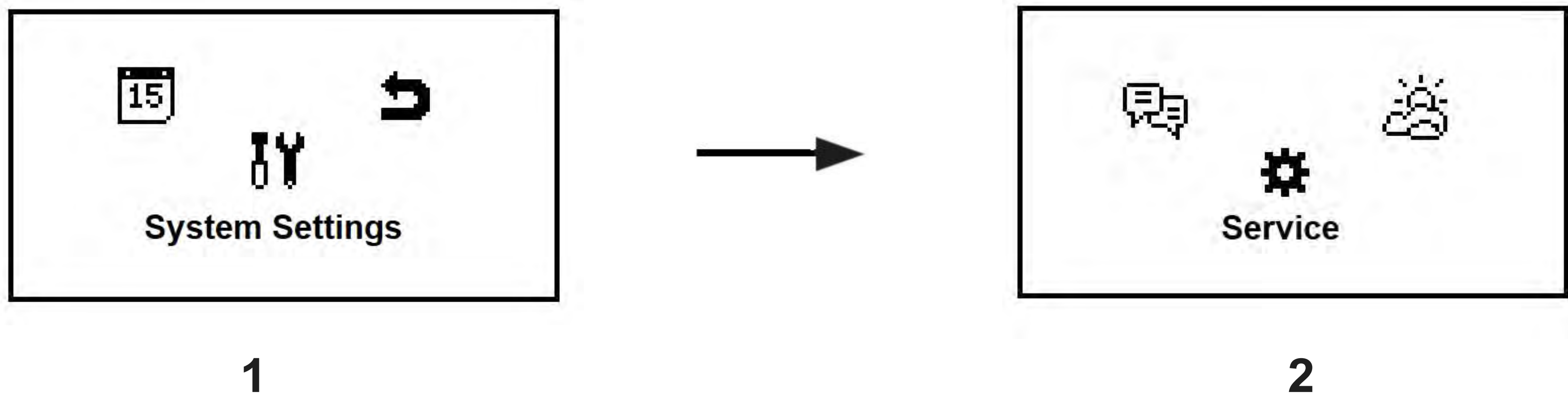


Heating Curve Coefficient		0,2	0,4	0,6	0,8	1	1,2	1,4	1,6	1,8	2
Outside Temperature	-15	32	39	46	50	50	50	50	50	50	50
	-10	31	37	43	49	50	50	50	50	50	50
	-5	30	35	40	45	50	50	50	50	50	50
	0	29	33	37	41	45	49	50	50	50	50
	5	28	31	34	37	40	43	46	49	50	50
	10	27	29	31	33	35	37	39	41	43	45
	15	26	27	28	29	30	31	32	33	34	35
	20	25	25	25	25	25	25	25	25	25	25
	25	24	23	22	21	20	20	20	20	20	20

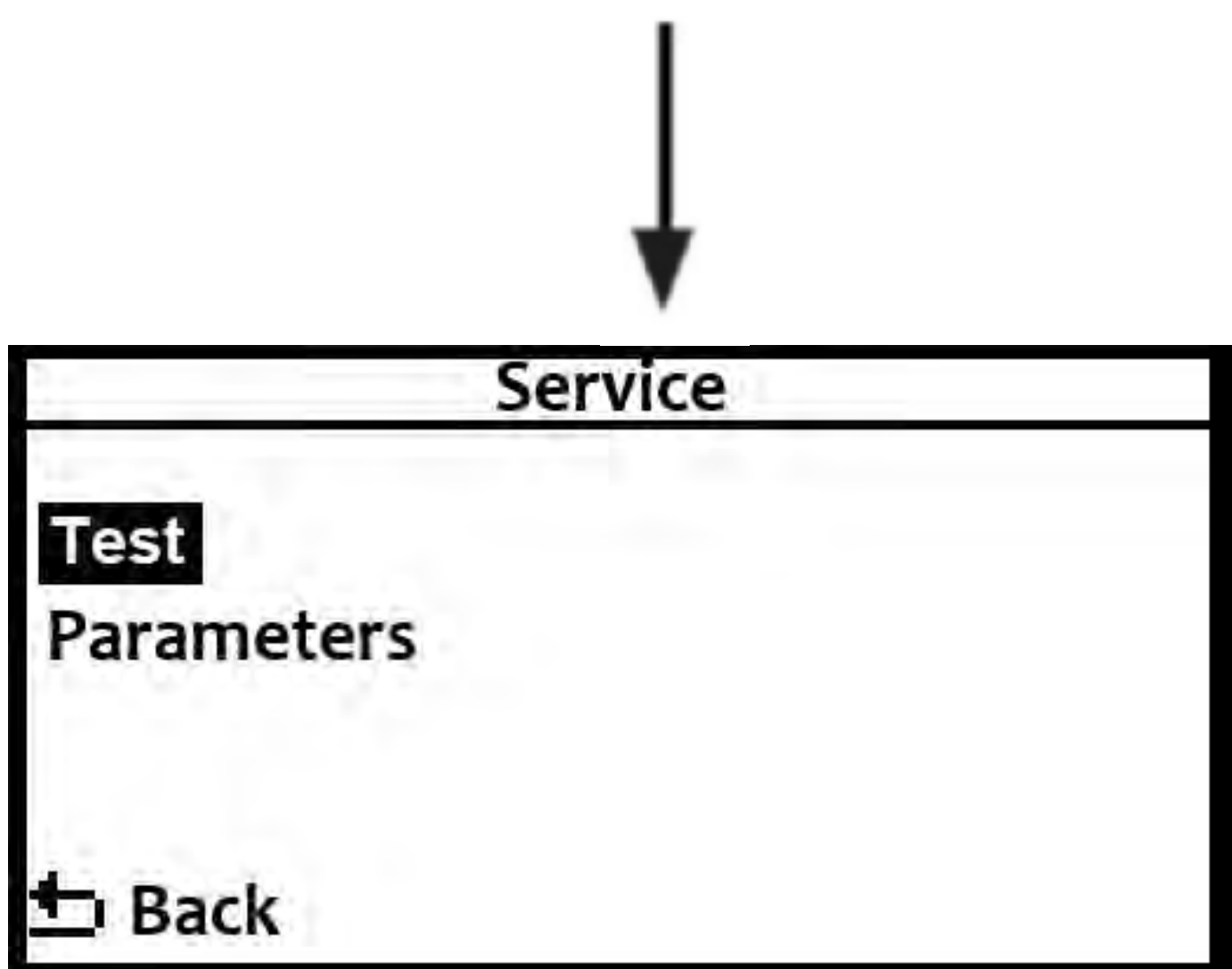
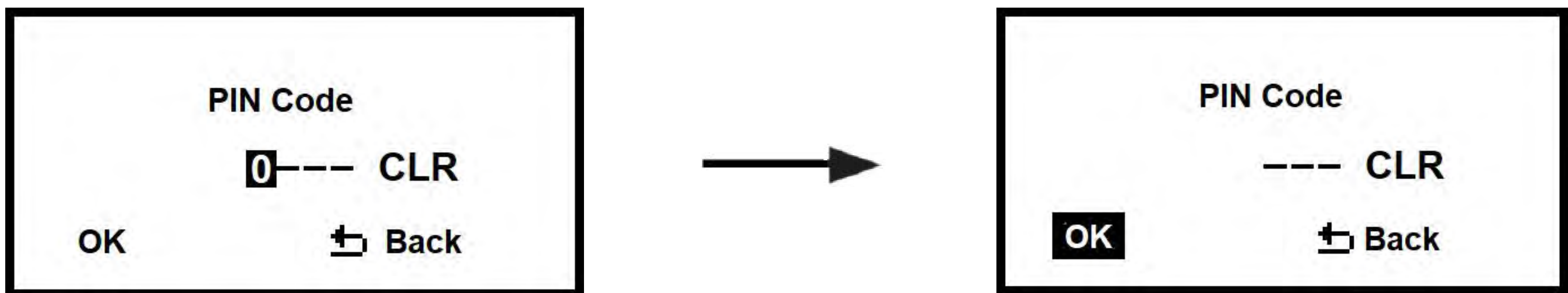


### 5.3 Advanced Service Settings Menu

This menu contains settings and parameters for authorized service personnel to use during first start up and maintenance of the boiler. Access to these adjustable parameters of the boiler is restricted to only authorized engineers.

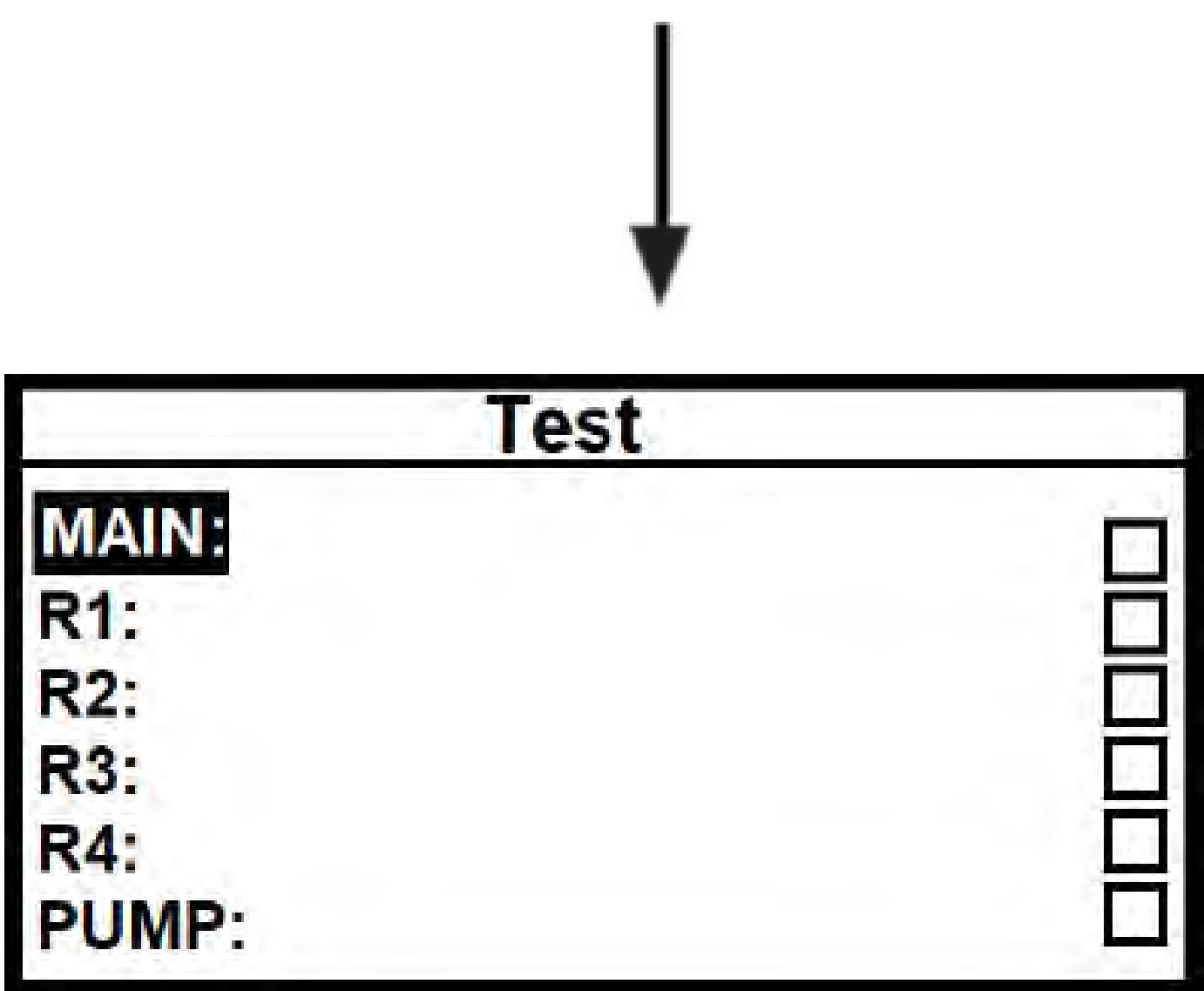


Enter PIN code **1977** to access the service menu



Test and Parameters sub menus are accessible in the service section. The test sub menu enables the service to make a diagnostic check and perform a functional test for components of the boiler individually.

Parameters sub menu is used to change the parameters of the main board according to type and intended use of the boiler. By changing the parameters a universal mainboard can be used in all capacities and types of Omega LCD boilers.



You can perform function test for the listed components by ticking the box and activating the part to start working.

**Main:** test contactor relay in models which have a contactor

**R1-2-3-4 :** Test the operation of each heating element separately.

**Pump:** Tests the circulation pump operation.



Test	
<b>VALV:</b>	<input type="checkbox"/>
T1 CH Temp. Sensor	50°C
T2 DHW Temp. Sensor	32°C
T3 Ambient Temp. Sensor	25°C
Flow Sensor	<input type="checkbox"/>



Test	
STB1 Limit Thermostat	<input type="checkbox"/>
STB2 Safety Thermostat	<input type="checkbox"/>
PSW Water Pressure Switch	<input type="checkbox"/>
FSW Float Level Sensor	<input type="checkbox"/>
Roomstat	<input type="checkbox"/>
Back	

**VALV:** Test the 3 way valve motor operation

**T1:** actual CH water temperature

**T2:** actual DHW water temperature

**T3:** Actual ambient temperature (when an ambient temperature probe is installed)

**Flow sensor:** Tests the operation of the flow sensor signal

**STB1:** Test limit thermostat function

**STB2:** Test safety thermostat function

**PSW:** Test water pressure sensor function

**FSW:** Test float level sensor function

**Roomstat:** Test the room thermostat operation

In the parameters sub menu you can configure the main board to fit a specific boiler.

Service	
Test	
<b>Parameters</b>	
Back	

**R1-R2-R3-R4 activation:** By ticking these boxes you can choose how many elements are in use at the boiler. So you can configure the main board to fit from single heating element models to 4 heating element models.

Alternatively, you can disable a failed element and continue operating the boiler until the element can be replaced.

Parameters	
R1 active	<input checked="" type="checkbox"/>
R2 active	<input checked="" type="checkbox"/>
R3 active	<input checked="" type="checkbox"/>
R4 active	<input type="checkbox"/>
Floor heating	<input type="checkbox"/>
Without DHW	<input type="checkbox"/>

**Floor Heating:** Floor heating mode can be enabled here to limit the max. CH temperature of the boiler to 50C so it can be used safely in underfloor heating installations.

Parameters	
Classic mode	<input checked="" type="checkbox"/>
External DHW	<input type="checkbox"/>
Pressure sensor	<input type="checkbox"/>
Logo	<input checked="" type="checkbox"/>
Weather comp. Active	<input type="checkbox"/>
Back	

**Heating Mode Selection:** Boiler operation mode can be selected as without DHW(heating only), classic mode(combi) Heating & Hot Water

**Pressure sensor:** Activates pressure sensor for models equipped with one.

**Logo:** Activates the company logo on the screen

**Weather comp. active:** When an ambient temperature probe is installed, operation with weather compensation is activated here.



5.4 ERROR CODES AND TROUBLESHOOTING

Error Code	Explanation	Reason	Solution
H1	CH Temperature Sensor Error	<ul style="list-style-type: none"><li>∞ Disconnected sensor cable</li><li>∞ NTC sensor failure</li><li>∞ Mainboard failure</li></ul>	<ul style="list-style-type: none"><li>❖ Check the cable and socket</li><li>❖ Replace the NTC sensor</li><li>❖ Replace the mainboard</li></ul>
H2	DHW Temperature Sensor Error	<ul style="list-style-type: none"><li>∞ Disconnected sensor cable</li><li>∞ NTC sensor failure</li><li>∞ Mainboard failure</li></ul>	<ul style="list-style-type: none"><li>❖ Check the cable and socket</li><li>❖ Replace the NTC sensor</li><li>❖ Replace the mainboard</li></ul>
H3	CH Circuit Low Water Pressure Error	<ul style="list-style-type: none"><li>∞ Air trapped in the system</li><li>∞ Water leakage from boiler or installation</li><li>∞ Expansion tank failure</li></ul>	<ul style="list-style-type: none"><li>✓ Vent the air from boiler and radiators then fill system upto 1.5 bars.</li><li>✓ Check all piping and connections for leakage</li><li>❖ Check the counter pressure of the expansion tank. Pressurize the tank upto 1.1 bars with nitrogen. If membrane is damaged replace the tank.</li></ul>
H4	Safety Thermostat Error Boiler temp >=95°C	<ul style="list-style-type: none"><li>∞ Air trapped inside the system</li><li>∞ Valves on the installation may be closed</li><li>∞ Thermostat failure</li><li>∞ Particule filters may be clogged.</li><li>∞ Circulation pump failure</li><li>∞ Mainboard failure</li></ul>	<ul style="list-style-type: none"><li>✓ Vent the air from boiler and radiators then fill system upto 1.5 bars.</li><li>✓ Make sure all the valves are open</li><li>❖ Check the thermostat connections, replace thermostat if necessary.</li><li>❖ Clean the filters.</li><li>❖ Turn the rotor manually, check pump electric connection, replace pump if needed.</li><li>❖ Replace the mainboard.</li></ul>
H5	Limit Thermostat Error Boiler temp >=93°C	<ul style="list-style-type: none"><li>∞ Air trapped inside the system</li><li>∞ Valves on the installation may be closed</li><li>∞ Thermostat failure</li><li>∞ Particule filters may be clogged.</li><li>∞ Circulation pump failure</li><li>∞ Mainboard failure</li></ul>	<ul style="list-style-type: none"><li>✓ Vent the air from boiler and radiators then fill system upto 1.5 bars.</li><li>✓ Make sure all the valves are open</li><li>❖ Check the thermostat connections, replace thermostat if necessary.</li><li>❖ Clean the filters.</li><li>❖ Turn the rotor manually, check pump electric connection, replace pump if needed.</li><li>❖ Replace the mainboard.</li></ul>
H6	Main Heat Exchanger Water Level Error	<ul style="list-style-type: none"><li>∞ Air trapped in main heat exchanger</li><li>∞ Float water level sensor failure</li></ul>	<ul style="list-style-type: none"><li>✓ Vent the air inside the mani heat exchanger using the manual air vent. Fill the system upto 1.5 bar.</li><li>❖ Check the cable of folat water level sensor</li><li>❖ Check if the folater is stuck, clean the part so the floater moves freely. Replace the float water level sensor if neccessary.</li></ul>
H7	CH Circuit High Water Pressure Error	<ul style="list-style-type: none"><li>∞ Filling valve malfunction</li><li>∞ Expansion tank failure</li><li>∞ Plate heat exchanger failure</li><li>∞ Return manifold failure</li></ul>	<ul style="list-style-type: none"><li>✓ Drain the excess water prom the drain valve on the installation to reduce pressure.</li><li>✓ Check if the filling valve tightly closed.</li><li>❖ Replace the filling valve if its leaking.</li><li>❖ Check the counter pressure of the expansion tank. Pressurize the tank upto 1.1 bars with nitrogen. If membrane is damaged replace the tank.</li><li>❖ Replace the palte heat exchanger.</li><li>❖ Replace the return manifold.</li></ul>
H8	Ambient Temperature Sensor Error	<ul style="list-style-type: none"><li>∞ Disconnected or damaged sensor cable</li><li>∞ Temperature sensor malfunction</li></ul>	<ul style="list-style-type: none"><li>❖ Check the cable and connection.</li><li>❖ Replace the ambient temperature sensor.</li></ul>
<ul style="list-style-type: none"><li>❖ These solutions can only be performed by AUTHORIZED SERVICE PERSONNEL.</li><li>✓ These solution steps can be performed by end users.</li></ul>			



## 6. SAFETY SYSTEM OF THE DEVICE

**The Astro Electric Combi Boiler** has the following safety features in order to ensure the highest level of safety and highest technology.

### 6.1 RCD DEVICE (SHORT CIRCUIT RELAY)

In case of short circuit, the relay shuts off the electricity connection and prevents any possibility of electrocution, protecting human health and safety. For the RCD device to work properly, an earth connection with proper dimension and ground resistance must be connected to the boiler by a certified electrician. Failure to do so will cause the RCD device to malfunction. In such a case, the manufacturer is not responsible for any harm to people or environment.

### 6.2 HEATING TANK FLOAT WATER LEVEL SENSOR (H6)

This sensor prevents the boiler from running without sufficient water inside the heating tank therefore avoids any damage to the heating elements. In case of low water level, H06 is displayed on the device's screen. The air trapped must be completely removed from the air vent valve which is placed on top of the device. If the water pressure drops after the air is taken, the display shows H03. In this case, water should be added from the filling valve.

### 6.3 LOW / HIGH WATER PRESSURE

If the pressure in the heating circuit is below 0.7 bar, the boiler will not operate and the H3 warning code will appear on the digital display, preventing damage caused from running without sufficient water.

**What to Do:** The heating system pressure is increased by adding water up to the desired level by the filling valve. You can view the pressure of the water filled on the LCD screen.

Also if the water pressure increases beyond 2.7bars, H7 high water pressure error is shown on the display. The pressure should be dropped by discharging water from the drain valve to continue operation. In the event of repeat high pressure the boilers expansion vessel pressure should be checked by a competent engineer. On larger systems greater than 70 litres an additional expansion vessel may be required on the primary heating circuit.

### 6.4 OVERHEAT LIMIT THERMOSTAT

If the water temperature at the heating system is above 93°C, the system energy is cut off by the main board and H5 warning code is shown on the LCD screen.

**What to Do:** When the water temperature of heating system drops down to 60°C, the boiler will start working again. If this failure occurs two times consequently, please turn off the boiler and call an authorized service engineer.

## 6.5 SAFETY THERMOSTAT

This is a secondary safety measure to prevent overheating in the boiler. If the limit thermostat does not function and the boiler temperature reaches 96°C, the safety thermostat shorts neutral to the boiler chassis and the RCD device shuts off the electricity supply. Proper earth connection is required for the safety thermostat to work properly.

## 6.6 FROST PROTECTION

When the temperature in the heating system drops down to 5°C, there is security system that automatically activates the heating elements. When the water temperature reaches 30°C, the heating elements are stopped. This system prevents the water inside the boiler from freezing and subsequent damage to the components.

In order for this system to work, the main switch to which the device is connected must be turned on and the valves on the installation should be open. Malfunctions and damages caused by frost when the electricity is off or if the valves are closed are not covered by warranty.

## 6.7 DOMESTIC HOT WATER NTC SENSOR

The Astro boiler, temperature control is done with precise NTC sensors. When a sensor failure occurs in the hot water system, H2 warning code appears on LCD screen.

## 6.8 CENTRAL HEATING NTC SENSOR

When a sensor failure occurs in central heating system. H1 warning code appears on the LCD screen

## 6.9 HIGH WATER PRESSURE PROTECTION

When there is over pressure in the heating system, the 3 bar safety valve discharges water and decreases the pressure.

## 6.10 CIRCULATION PUMP ANTI-JAMMING SYSTEM

When the boiler is in the OFF position, the pump is operated in every 24 hours by the control card for a certain period of time to prevent locking and jamming of the pump.

## 6.11 3-WAY VALVE ACTUATOR MOTOR SAFETY

When the boiler is in the OFF position, the 3-way valve is operated in every 24 hours by the control card for a certain period of time. The motorized valve returns to its previous position after a certain period of time after changing the position.



### CAUTION!

- The stand-by safety systems of the boiler; such as frost protection, pump lock protection and 3-way valve actuator motor safety are only active if the electricity connection of the boiler is on. The valves on the installation should not be closed.
- Especially during winter, when the ambient temperature decreases below 0°C there is a risk of freezing and the system water must be drained if the electrical connection of the device is interrupted during these periods.



7. TECHNICAL TABLE

Capacity					
Heating Power	kW	12	15	24	30
Output	BTU	40945	51182	81891	109188
Maximum Working Pressure (Heating)	Bar	3	3	3	3
Internal Expansion Vessel	Ltr	8	8	8	8
Maximum Working Pressure (DHW)	Bar	6	6	6	6
Heating Circuit Temperature Range	°C	30-80	30-80	30-80	30-80
Hot Water Temperature Range	°C	30-60	30-60	30-60	30-60
Hot Water Output (ΔT= 30°C)	L/min	5	6	11	13
Dimentions					
Height	mm	650	650	650	650
Width	mm	440	440	440	440
Depth	mm	274	274	274	274
Net Weight	Kg	38	38	38	38
Gross Weight	Kg	42	42	42	42
Electrical					
Supply Type		1Ph	1Ph	3Ph	3Ph
Minimum Cable Size	mm²	16	16	5x10	5x10
RCD Specification	A/mA	63/30	80/30	40/30	63/30
Circuit Protective Device	Amps	63	80	40	63
Voltage/Frequency	V~Hz	230/50	230/50	400/50	400/50
Load Current	Amps	52	65	35	47
Element Resistance	ohms	13	33	20	23
Impedance Zmax	ohms	0.37	0.22	0.22	
Hydraulic					
Heating Circuit Pipe Connections	inch	3/4"	3/4"	3/4"	3/4"
DHW Pipe Connections	inch	1/2"	1/2"	1/2"	1/2"

## 8. MAINTENANCE

**The following checks should be carried out annually by a competent engineer and recorded By Scanning the Boiler Smart Tag;**

- 1- Check for leaks in the water circuit and, if necessary, replace the joints to ensure water tightness.
- 2- Check the status of the device visually.
- 3- Check the safety system of the heating system are working properly. Activate the test button on the internal RCD (Short Circuit Relay)
- 4- Check all electrical connections of the device. Fasten any loosened cables.
- 5- Clean the Magnetic Filter
- 6- Check the hot water production flow rate and temperature.
- 7- Check the general operation of the device.
- 8- Check & adjust the expansion vessel pre-charge pressure to 1.5 bar
- 9- In accordance with Part L of the building regulations check system water condition and inhibitor strength levels. EHC recommends the use of Adey Pro Check for this task.

## 9. GUARANTEE CONDITIONS

This guarantee starts at the boiler's invoice date and continues to the period of time stated in guarantee certificate. In order for this guarantee to be valid, the commissioning certificate must be completed and warranty registration submitted. First installation and periodical maintenance must be performed by a Competent Engineer in your area.

**ATTENTION!:** The selection of the area where the boiler is installed, must be in conformity with all relevant directives and laws of the country.

The Electric Heating Company cannot be held liable for any adverse situation as a result of non conformance or incorrect installation.

The guarantee of the boiler is not valid under these circumstances:

- 1- Improper installation, improper electrical connection. Please check the installation manual and boiler startup request form for installation requirements.
- 2- Damages arising from the installation of the device in places with humidity or water contact.
- 3- The assembling of non authentic and non approved parts to the boiler.
- 4- Extreme high or low temperature of the working environment.
- 5- Damages that occur as a result of inappropriate storing.
- 6- Damages which are results of damaged parts during transport.
- 7- Damages caused by hard water (lime scale) in hot water circulation (ideal water hardness will be less than 200ppm)
- 8- Failure to install a magnetic filter on the primary circuit return.
- 9- Damages as a result of installation and maintenance that are not in conformance with relevant directives and rules.



- 10- Use of the boiler for purposes other than the device is designed for.
- 11- Boilers that are kept inappropriately, as showroom items for a long time.
- 12- Unavailability of the commissioning, servicing and warranty registration documents  
The user must keep these documents at all times.
- 13- Boilers with damaged or modified serial numbers.
- 14- When the temperature of the water drops below 0°C there is a risk of freezing and the system water must be drained if the electrical connection of the device is not connected.  
Otherwise damages that occur because of freezing are not covered by the warranty.
- 15- Damages to the relay board or the main board because of high voltage or surges from the electric grid.
- 16- Damages caused by dirty closed circuit water in old installations. The installation must be cleaned and flushed before installing the boiler and operating on the closed circuit.
- 17- Damages that may occur when the electrical connection and valves on the installation are kept closed in standby mode disabling the stand-by safety systems.
- 18- In cases where the boiler is taken out of the box and hung on the wall but not commissioned, damages that may occur because of the adverse conditions.
- 19- Damages to the boiler during mounting and installation.
- 20- Damages to the boiler because of unsuitable and dirty water in the closed circulation circuit. Make sure the system pipework is clean even if the installation is new.
- 21- If there is a risk of freezing in the boiler location before the system is made fully operational, the water in the system should be discharged after the system is tested for leakage by the installer. If water is left inside the boiler prior to full commissioning and normal system operation, the damages that may occur because of freezing are not covered by manufacturer's warranty.
- 22- Failure to carry out annual maintenance tasks detailed within this manual.

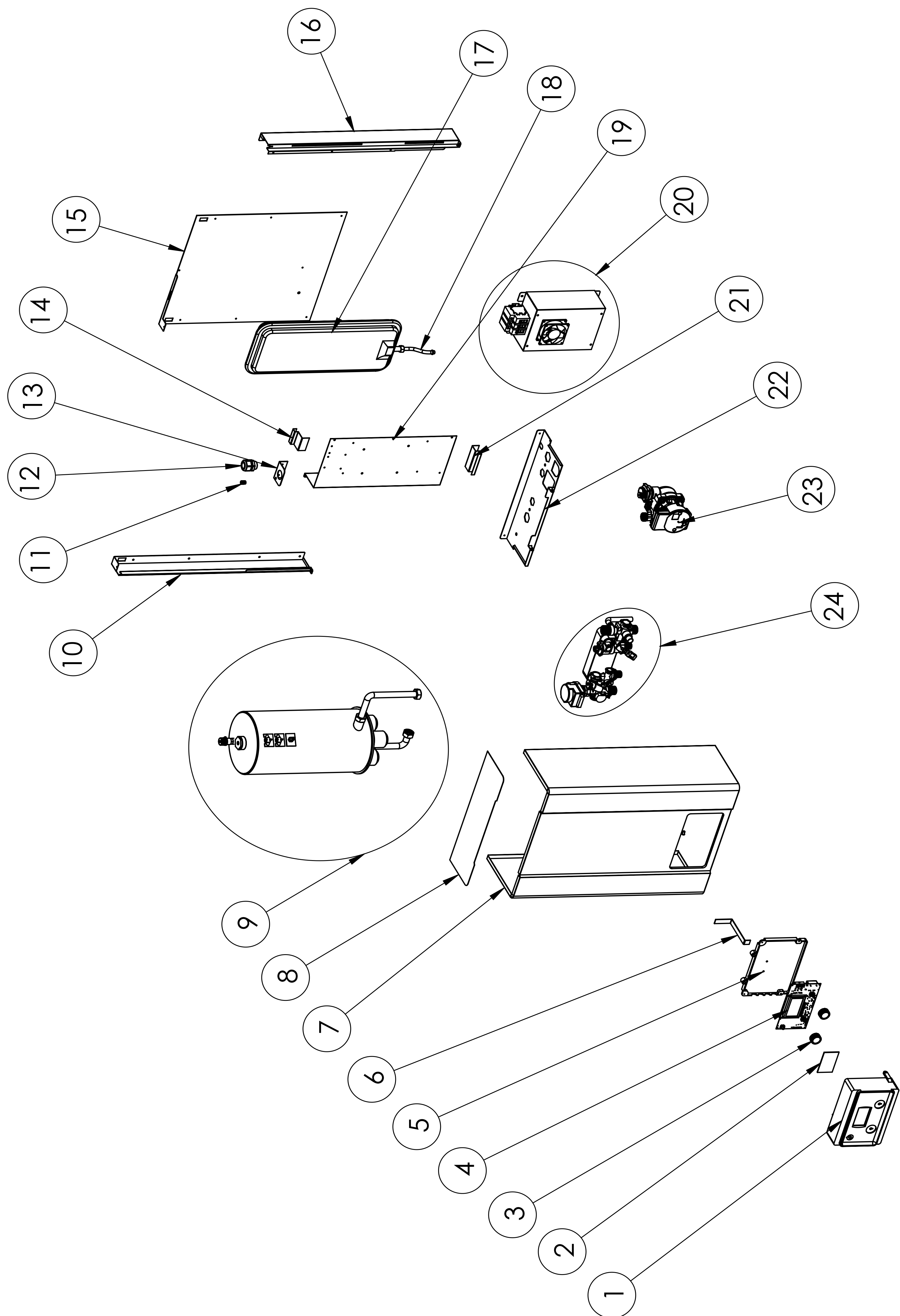
Further guidance on The Electric Heating Company's General Warranty Terms in addition to the above can be viewed at the following web address;

[www.electric-heatingcompany.co.uk/warranty-terms-conditions](http://www.electric-heatingcompany.co.uk/warranty-terms-conditions)

10. EXPLODED VIEW (12-30 kW MODELS)

Below drawing belongs to 24kW model.

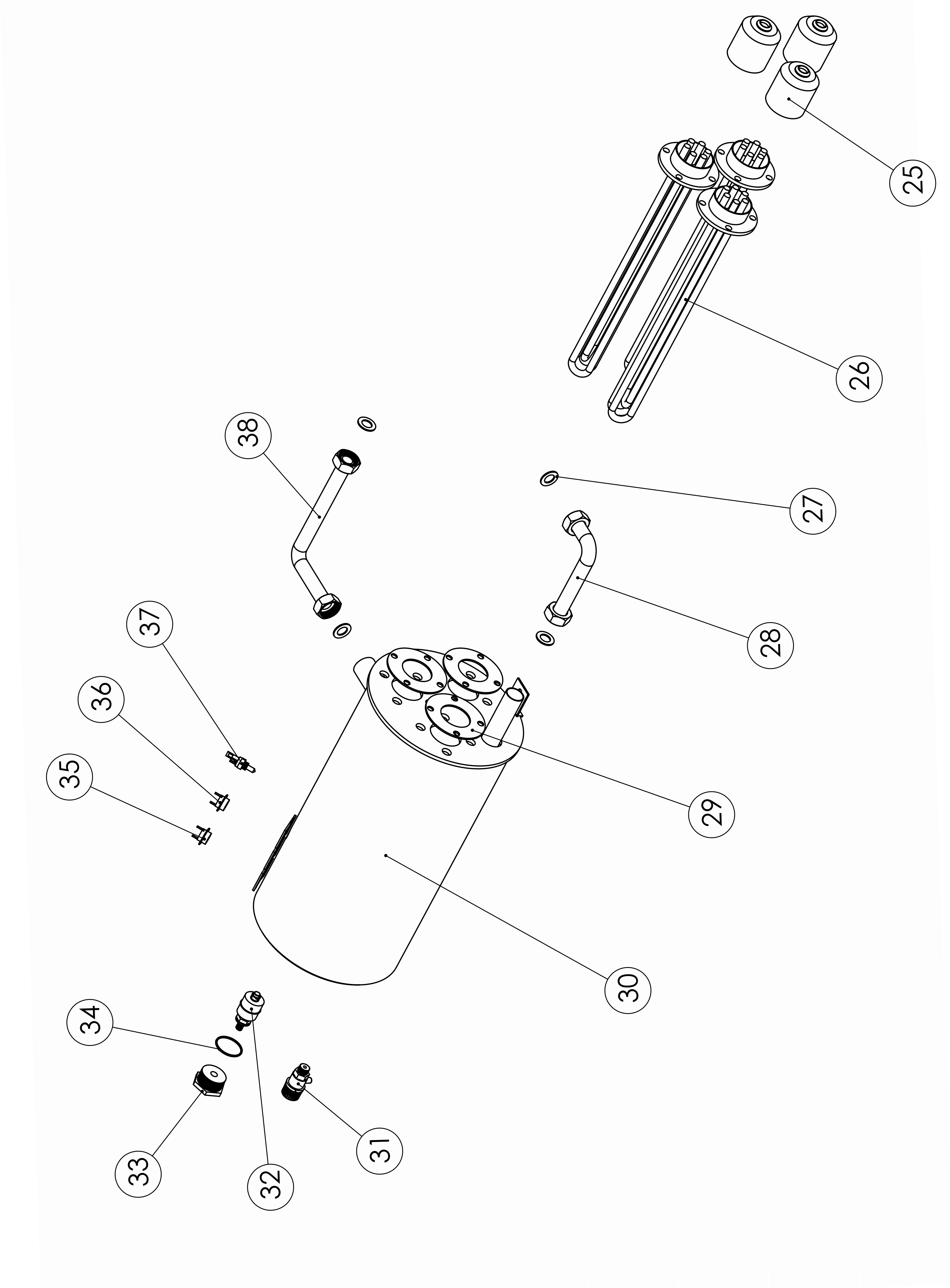
- ∞ 12 kW models have a single heating element.
- ∞ 15, 24 and 30 kW models have 3 heating elements.



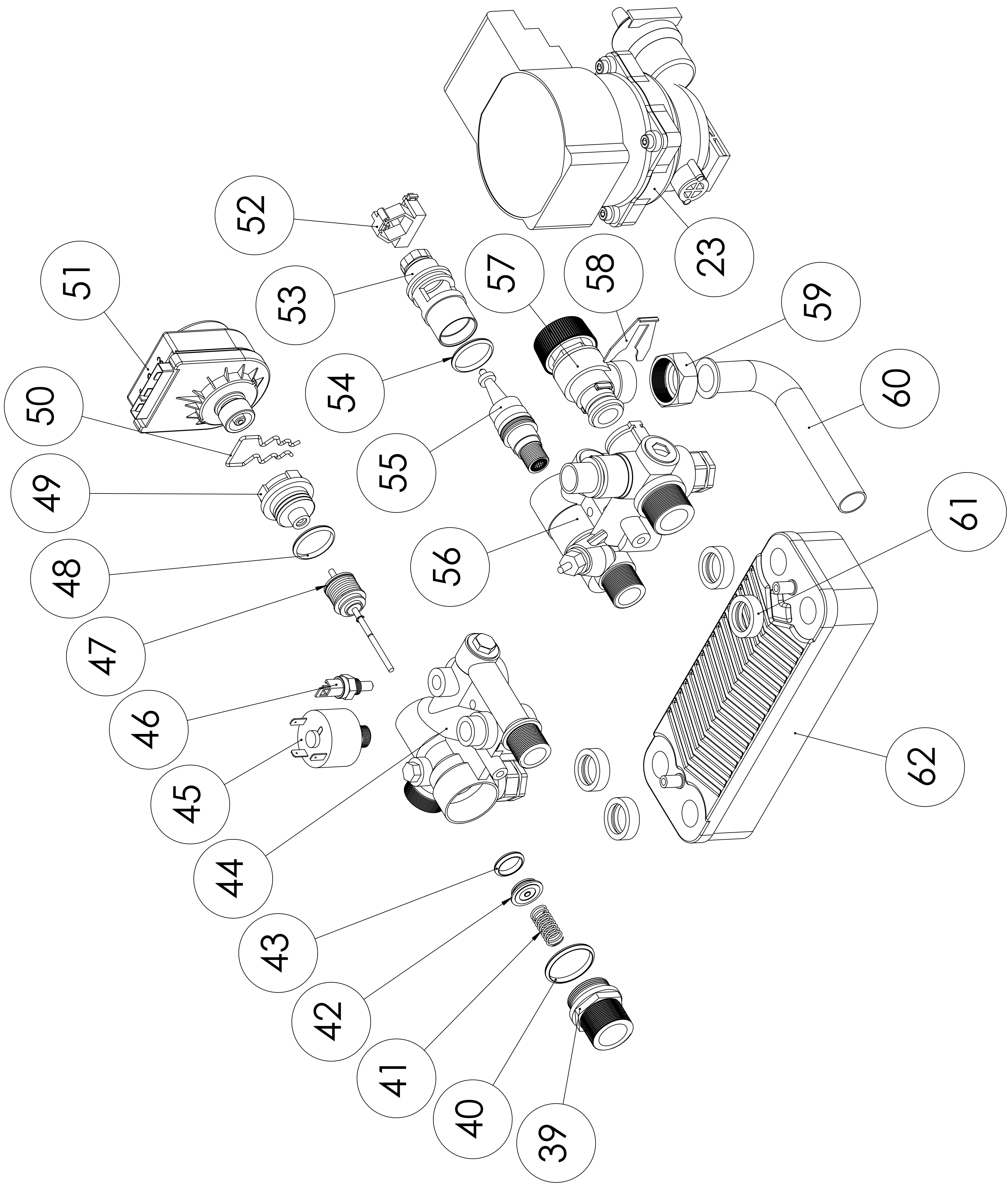
❖ The manufacturer reserves the right to make changes to the parts and design of the boiler.



10.1 MAIN HEAT EXCHANGER GROUP DETAIL (12-30kW MODELS)

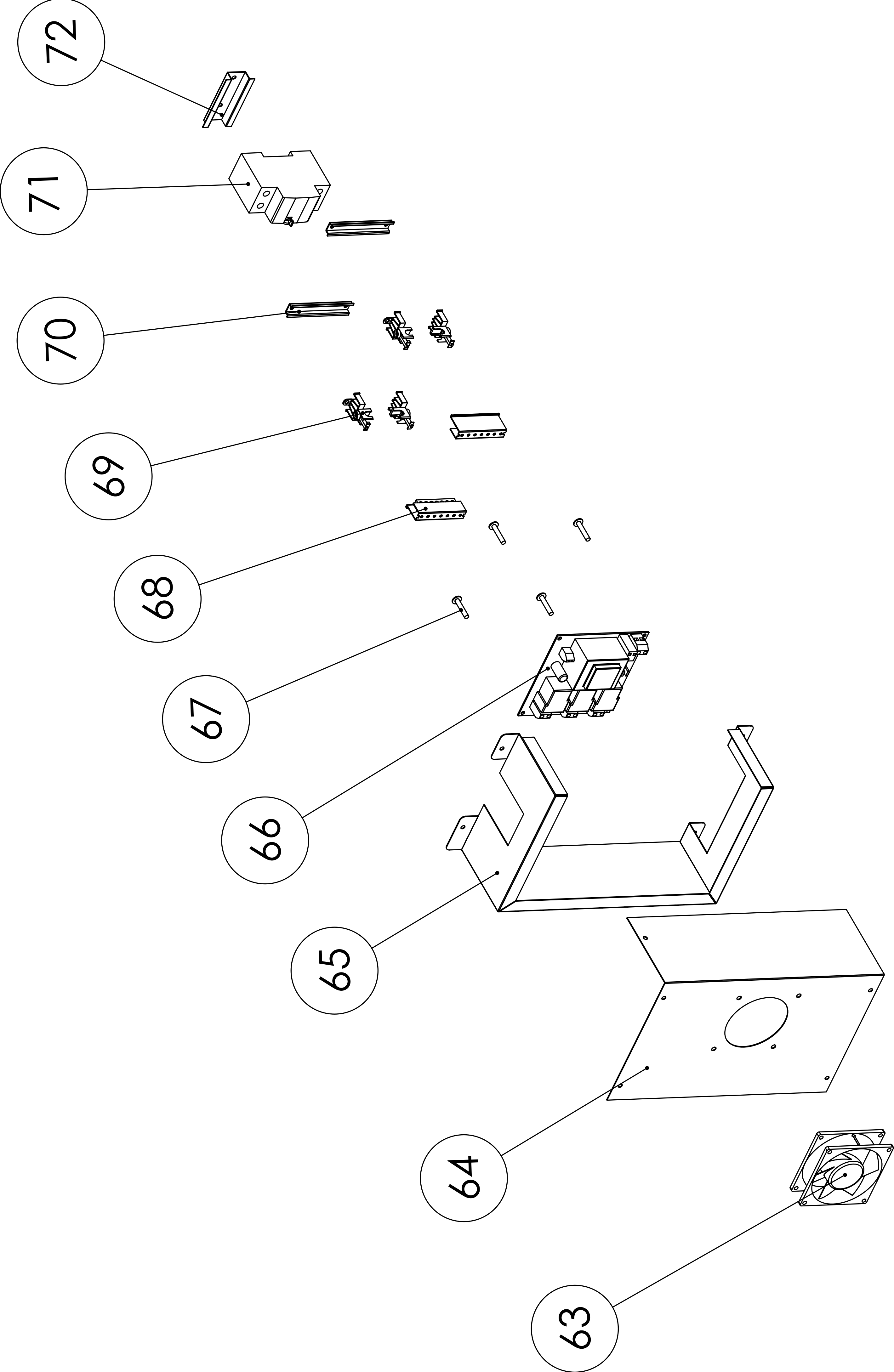


10.2 HYDROLIC GROUP DETAIL (12-30 kW MODELS)





10.3 RELAY BOARD GROUP DETAIL (12-30kW MODELS)



## 10.4 EXPLODED VIEW PARTS LIST (12-30kW MODELS)

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| 1. Control panel                   | 40. Flow manifold outlet o-ring     |
| 2. LCD screen glass                | 41. Flow manifold pressure spring   |
| 3. Control knobs                   | 42. Pressure spring retainer        |
| 4. Mainboard                       | 43. Pressure spring retainer o-ring |
| 5. Control panel rear cover        | 44. Flow manifold                   |
| 6. Panel fixing plate              | 45. Water pressure sensor           |
| 7. Front boiler cover              | 46. DHW temperature NTC sensor      |
| 8. Top boiler cover                | 47. 3-way valve spring rod          |
| 9. Main heat exchanger group       | 48. 3-way valve motor seat o-ring   |
| 10. Left chassis                   | 49. 3-way valve motor seat          |
| 11. Earth connection               | 50. 3-way valve motor clips         |
| 12. Cable gland                    | 51. 3-way valve actuator motor      |
| 13. Cable fixing plate             | 52. Electronic flow sensor          |
| 14. Expansion tank top fixer       | 53. Flow sensor housing             |
| 15. Boiler main chassis            | 54. Flow sensor o-ring              |
| 16. Right chassis                  | 55. Flow sensor interior set        |
| 17. Expansion tank                 | 56. Return manifold                 |
| 18. Expansion tank copper pipe     | 57. 3bar safety valve               |
| 19. Relay board mounting plate     | 58. Safety valve clips              |
| 20. Relay board group              | 59. 1/2" fitting                    |
| 21. Expansion tank bottom fixer    | 60. Safety valve outlet copper pipe |
| 22. Hydraulic group mounting plate | 61. Plate heat exchanger o-ring     |
| 23. Circulation pump               | 62. Plate heat exchanger            |
| 24. Hydraulic group                | 63. Cooling fan for relay board     |
| 25. Insulator caps                 | 64. Relay board top cover           |
| 26. Heating elements               | 65. Relay board side cover          |
| 27. 3/4" gasket                    | 66. Relay board                     |
| 28. Copper flow pipe               | 67. Plastic spacers                 |
| 29. Heating element gasket         | 68. Electric terminals              |
| 30. Main heat exchanger            | 69. Terminal fixers                 |
| 31. Manuel air vent                | 70. Terminal rails                  |
| 32. Float water level sensor       | 71. RCD device                      |
| 33. Float sensor connector         | 72. RCD fixing rail                 |
| 34. Float sensor o-ring            |                                     |
| 35. Limit thermostat               |                                     |
| 36. Safety thermostat              |                                     |
| 37. CH temperature NTC sensor      |                                     |
| 38. Copper return pipe             |                                     |
| 39. R 3/4" flow outlet             |                                     |



Notes;

Notes;





(Waste Electrical & Electronic Equipment)

**(Applicable in the European Union and other European countries with separate collection systems).**

This marking shown on the product or its literature, indicates that it should not be disposed of with other household wastes at the end of its working life.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

