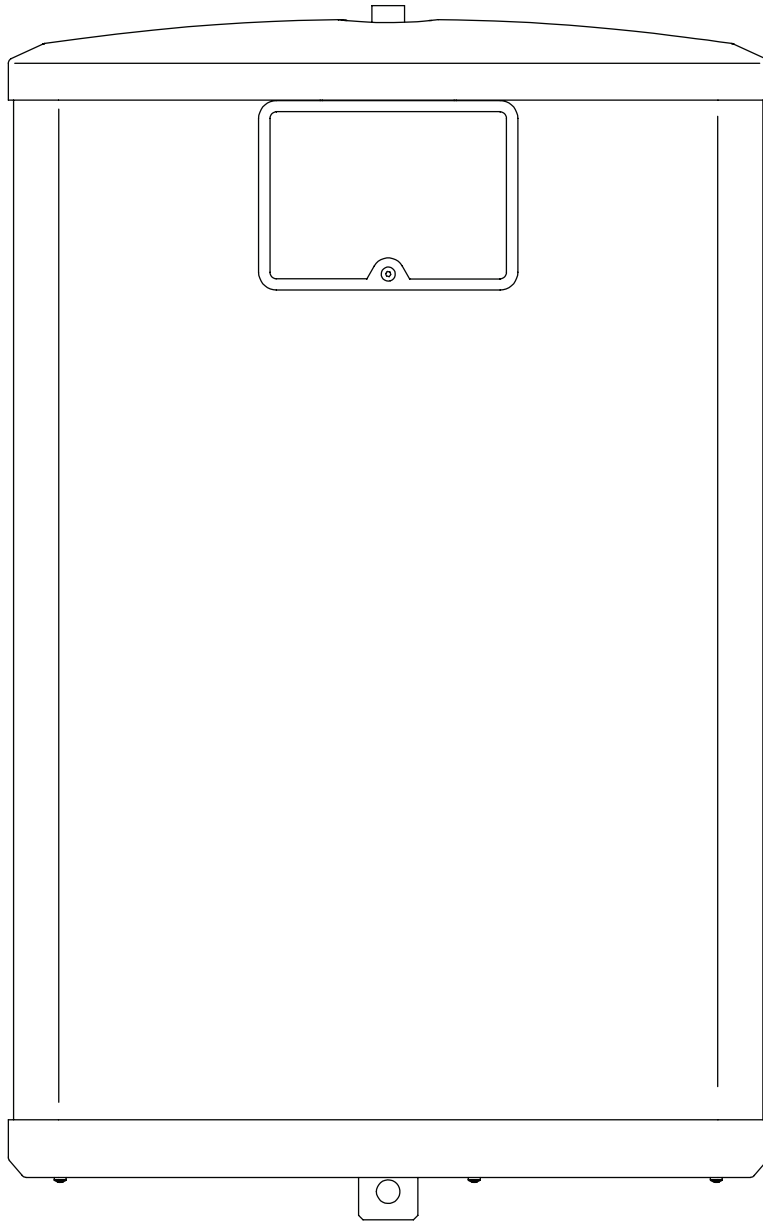


HEATSTORE



PACK CONTENTS

Heater, wall mounting, fixing bracket, fittings, breather pipe assembly & Installation and User Instructions.

WARNING

This water heater must only be installed by qualified persons.

Please read and understand these instructions before starting work.
Please leave this leaflet with the user following installation.

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1. Introduction

1.1 General

The following instructions are offered as a guide to the user and installer.

The installation must be carried out by a competent plumbing and electrical installer in accordance with Building Regulations, The Building Standards (Scotland) Regulations 1990, The Building Regulations (Northern Ireland), UK Water Regulations and IEE Electrical Regulations.

1.2 Symbols used

In these instructions, various risk levels are employed to draw the user's attention to particular information. In doing so we wish to safeguard the user, avoid hazards and guarantee the correct operation of the appliance.



DANGER

Risk of a dangerous situation causing serious physical injury.



WARNING

Risk of a dangerous situation causing slight physical injury.



CAUTION

Risk of material damage.

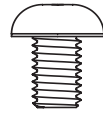


Signals important information.

1.3 Abbreviations

DHW - Domestic Hot Water
LED - Light Emitting Diode
ECO - Energy Cut Out
PCB - Printed Circuit Board

1.4 Tools required

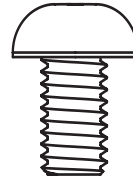


M5

(Security)

M5 security screw:
Torx Tamper Proof T25 bit

Used on base and sensor covers



M8

(Security)

M8 security screw:
Torx Tamper Proof T40 bit

Used on external brackets

1.5 Liabilities

Manufacturers liability

Our products are manufactured in compliance with the requirements of the various applicable European Directives.

This appliance complies with the requirements of the CE marking directive and is Kiwa approved to show compliance with Water and Building Regulations and Nemko approved for electrical safety. In the interest of customers, we try continually to improved product quality.

All the specifications stated in this document are therefore subject to change without notice. Our liability as the manufacturer may not be invoked in the following cases:

- ▶ Failure to abide by the instructions when using the appliance.
- ▶ Faulty or insufficient maintenance of the appliance.
- ▶ Failure to abide by the instructions when installing the product.

Installer's liability


The installer is responsible for the installation and the commissioning of the appliance. The installer must adhere to the following instructions:

- ▶ Read and follow the instructions given in the manuals provided with the appliance.
- ▶ Carry out installation in compliance with the prevailing legislation and standards.
- ▶ Perform the initial start up and carry out any necessary checks.
- ▶ Complete the commissioning checklist.
- ▶ Explain the installation to the user.
- ▶ If maintenance is necessary, warn the user of the obligation to check the appliance and maintain it in good working order.
- ▶ Give all the instruction manuals to the user.

Users liability

To guarantee optimum operation of the appliance, the user must adhere to the following instructions:

- ▶ Read and follow the instructions given in the manuals provided with the appliance.
- ▶ Call on qualified professionals to carry out installation and initial start up.
- ▶ Ask the installer to explain your installation to you.
- ▶ Have the required checks and services done.
- ▶ Keep the instruction manuals in good condition and close to the appliance.

 This appliance can be used by children aged from 8 years and above and persons with reduced physical sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Children must be supervised to ensure they do not play with the appliance.

2. Safety

2.1 General safety warnings



DANGER

The hot water contained could lead to serious physical injury if the safety instructions in this manual are not adhered to.



WARNING

- ▶ Only competent persons having received the appropriate training are permitted to work on the appliance and the installation
- ▶ Do not tamper with any of the controls supplied with the unit.
- ▶ Before any work, isolate the mains electrical and water supplies to the appliance.

2.2 Recommendations

- ▶ Regularly check the inlet water pressure in the installation (minimum dynamic pressure 0.5 bar, recommended pressure between 1 and 2 bar).
- ▶ Keep the product accessible at all times
- ▶ Never remove cover labels and rating plates affixed to the appliance.

A means for disconnecting the power supply must be incorporated in the fixed wiring in accordance with the latest version of BS 7671



WARNING

When handling the unit, take appropriate precautions for the weight of the unit. Weights can be found in section 3, table 1 page 6.



CAUTION

Annual maintenance is recommended by a competent person.

2.3 Specific safety instructions



CAUTION

- ▶ Ensure the drain valve is covered securely with the supplied cap to ensure accidental use does not occur.

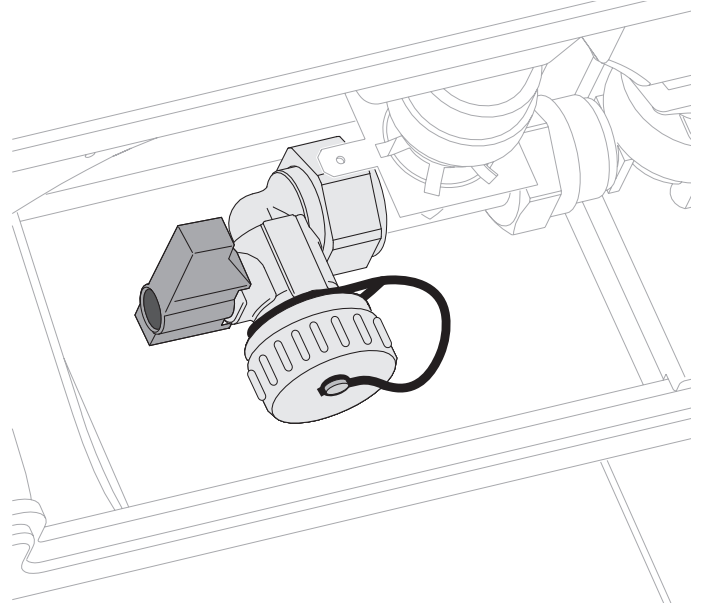


Figure 1: Drain valve found in base of unit

3. Technical specifications

3.1 Technical data

Product Name	HSR 25 3KW	HSR 45 3KW	HSR 70 3KW	HSR 120 3KW
Product Code	94040100	94040101	94040102	94040103
Electrical Rating	2.8kW at 230V 3.0kW at 240V	2.8kW at 230V 3.0kW at 240V	2.8kW at 230V 3.0kW at 240V	2.8kW at 230V 3.0kW at 240V
Maximum inlet pressure	1MPa (10bar) (145psi)	1MPa (10bar) (145psi)	1MPa (10bar) (145psi)	1MPa (10bar) (145psi)
Weight Empty kg	15	20	35	40
Weight Full kg	40	65	105	160
Capacity (Litres)	25	45	70	120
Heat up time (minutes)	30	50	80	135
Fill time (minutes)	3.5 at 7L/min	4 at 7L/min	6 at 12L/min	10 at 12L/min

Table 1: Technical data

Direct	Heatstore			
Suppliers name or trade mark	Heatstore			
Supplier's model identifier	25L (3kW)	45L (3kW)	70L (3kW)	120L (3kW)
Storage volume V in litres	25.0	45.0	70.0	120.0
Mixed water at 40 °C V40 in litres	35	60	95.7	165.6
The declared load profile	S	M	M	L
The water heating energy efficiency class of the model	D	D	D	C
The water heating energy efficiency in %	31.2	35	34	37
The annual electricity consumption in kWh	594	1471	1521	1401
Daily fuel consumption Q _{lec} in kWh	2.88	6.95	7.25	6.54
Heat Loss	0.56	0.84	1.12	1.27
The thermostat temperature settings of the water heater, as placed on the market by the supplier	60°C			
Specific precautions that shall be taken when the water heater is assembled, installed or maintained	See pages 7 to 27			

Table 2: Technical fiche

Technical parameters in accordance with European Commission regulations 814/2013 and 812/2013

3.2 Overall Dimensions

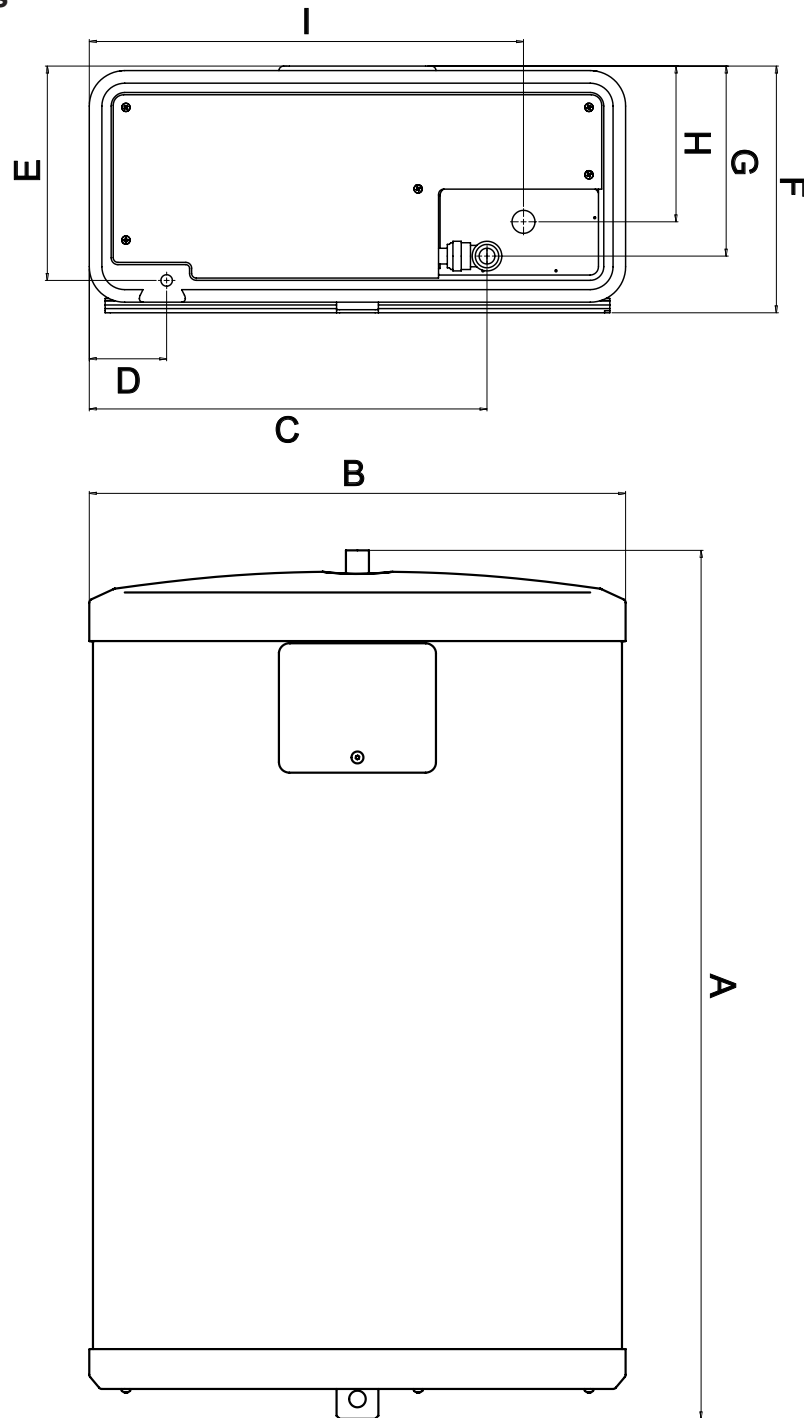


Figure 2: General dimensions

Item	25L	45L	70L	120L
A	830	882	1221	1021
B	510	609	609	660
C	380	425	425	457
D	74	76	76	76
E	204	245	245	396
F	235	276	276	429
G	180	220	220	362
H	148	188	188	325
I	415	463	463	562

Table 3: General dimensions

3.3 Circuit Diagrams

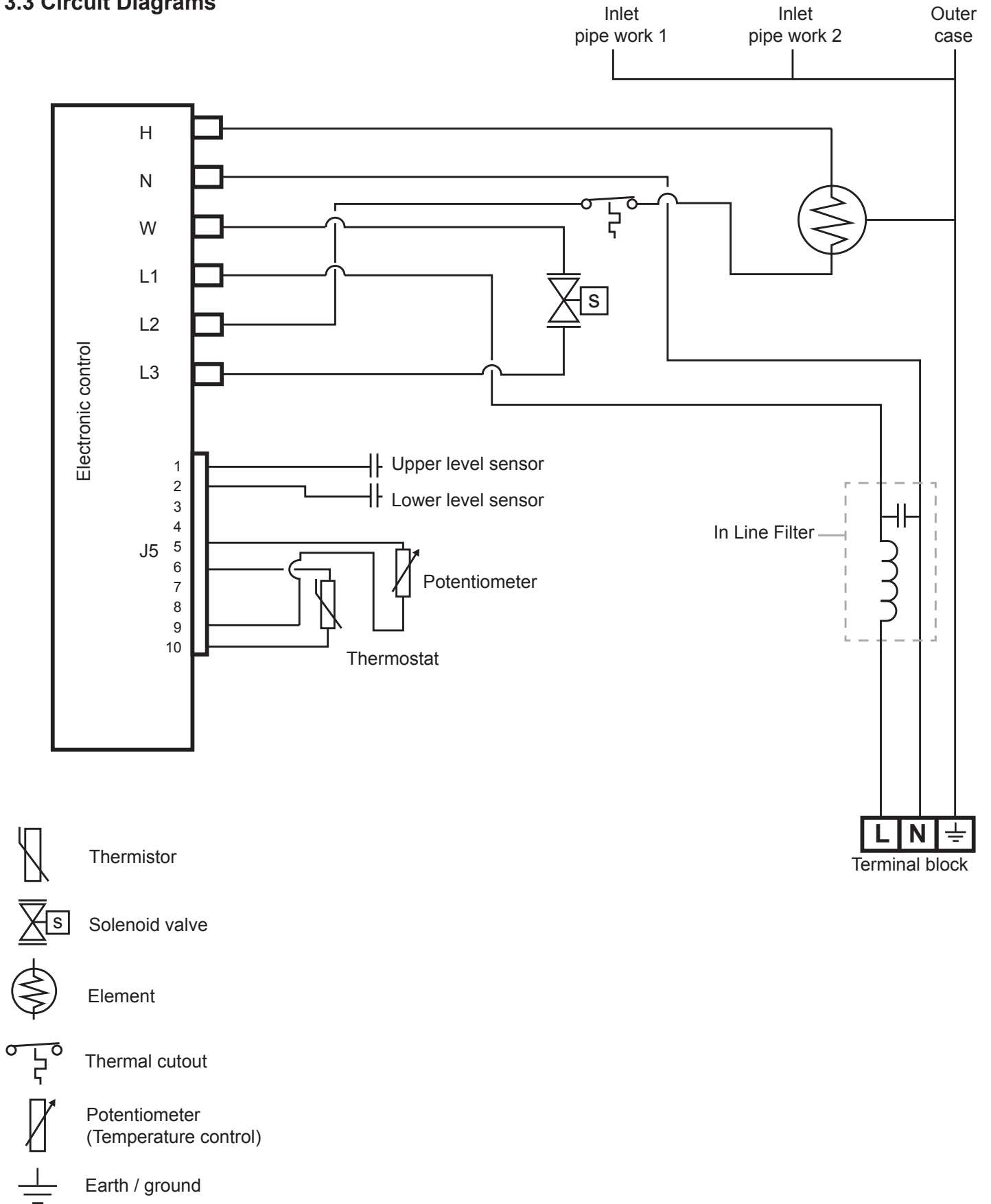


Figure 3: Circuit diagram

4. Description of the product

4.1 General description

These water heaters are a series of wall mounted units that store and produce domestic hot water efficiently. These vented units (unpressurized). mount securely to the wall. Where required additional pressure safety components may be added.

There are four models in the range:

- ▶ HSR 25
- ▶ HSR 45
- ▶ HSR 70
- ▶ HSR 120
- ▶

The unit is supplied complete with safety and control devices needed to allow connection to the cold water supply where the pressure is below 10 bar. All these components are preset and should not be tampered with. The unit is supplied with water connections that provide for easy installation of both the cold water supply and hot outlet connections. The unit also has a breather connection at the top that provides a visual

indication, via the tundish supplied, of overfilling should the unit fail. This must be vented to a suitable and safe location, preferably an outside wall.

4.2 Operation principle

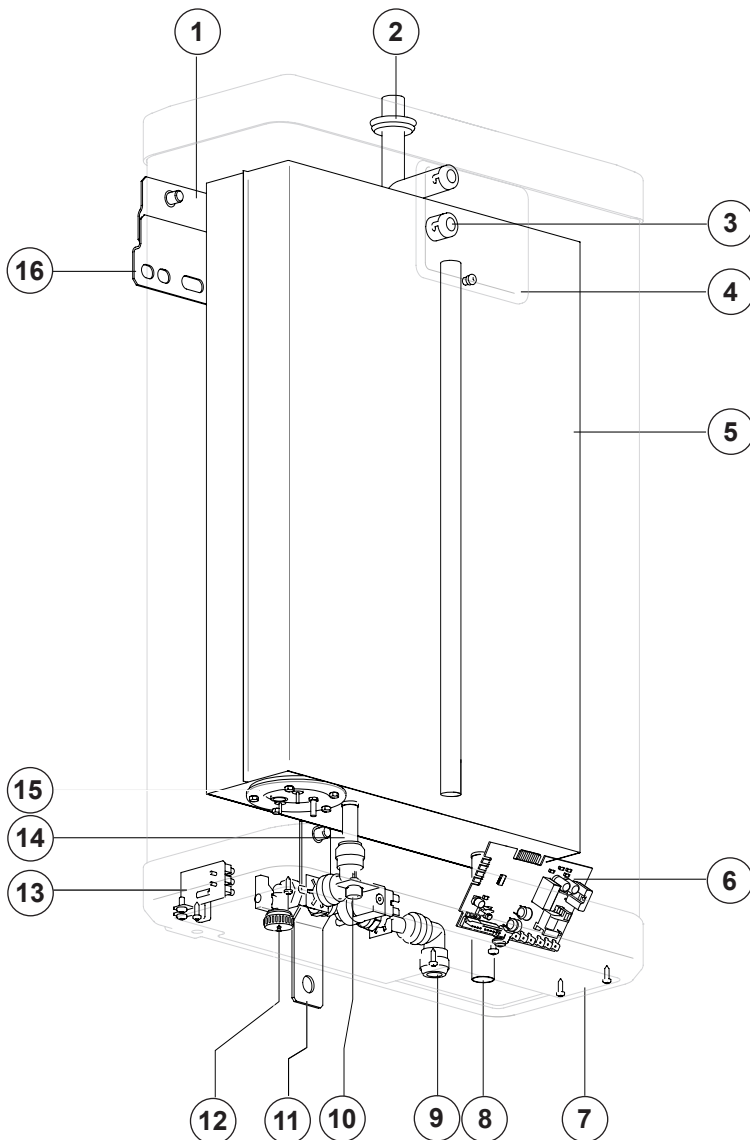
All the unit sizes produce DHW in the same way, by heating the potable water volume via an immersion heater. The hot water temperature programmed in the unit is factory set to 60 degrees centigrade, but can be adjusted to suit the installation requirements by adjusting the temperature control at the bottom of the unit under the access cover.

4.2.1 Temperature Control

The temperature of the stored water can be adjusted between 38 degrees centigrade and 78 degrees centigrade, this is achieved by adjusting the temperature control at the bottom of the unit under the access cover, see page 19.

4.2.2 Water inlet control

When hot water is drawn from the water heater, the unit will detect a change in water level automatically and request refill via a solenoid valve. The flow of potable



Number	Part description
1	Product bracket
2	Breather gasket
3	Level sensor assembly
4	Sensor cover
5	Tank assembly
6	Main electronic control
7	Base cover
8	22mm hot outlet pipe
9	15mm water inlet (push fit elbow)
10	Potentiometer
11	Securing bracket
12	Drain valve
13	Power cable clamp assembly
14	Inlet assembly
15	Immersion heater
16	Wall bracket

Table 4: Main components list

Figure 4: Main components diagram

water is controlled via a flow restrictor, this ensures that the heater returns to the correct level in a controlled manner.

4.2.3 Electronic Control

All heater functionality is controlled electronically which allows the following additional features to be supported:

- ▶ Automatic Water Level Control
- ▶ Real-time user access to the heater for setup and adjustment

4.2.3.1 Water Level

In normal operation the water heater manages the level of the stored water inside the unit automatically, maintaining the correct level and ensuring optimum performance from the heater. In the unlikely event of a system failure, the heater has safety features to ensure that it shuts down in a safe manner, see troubleshooting section on page 25.

4.2.3.2 Fault Condition Indication

In the unlikely event that a fault with the water heater develops an error code is displayed on the control PCB at the bottom of the unit. This is intended to aid fault analysis and helps to reduce the heater downtime whilst the fault is analysed. See the troubleshooting section of this document for further information. One of six error codes will be displayed using four LED,s should a fault develop, see page 25.

4.3 Standard delivery

The units are supplied to site in one package. Within the box there will be a set of fitting instructions wall mounting and fixing brackets, heater assembly and breather pipe assembly.

5. Before installation

5.1 Installation regulations



WARNING

Installation of the appliance must be carried out by a qualified engineer in accordance with prevailing and national regulations as listed below.

- ▶ Building Regulations
- ▶ The Building Standards (Scotland)
- ▶ The Building Regulations (Northern Ireland)
- ▶ I.E.E Electrical Regs
- ▶ UK Water Regulations

5.2 Installation requirements

The unit should not be used in association with any of the following:

- ▶ Water supplies that have either inadequate pressure or where the supply may be intermittent. (Minimum dynamic pressure 0.5 bar).
- ▶ In areas where the water consistently contains a high proportion of solids, e.g. suspended matter that could block the strainer, unless adequate filtration can be ensured.
- ▶ In areas where the water supply contains chloride levels that exceed 250mg/L.



The unit can be connected directly to the water supply source provided that a minimum dynamic pressure of 0.5 bar and maximum pressure of 10 bar. If the measured inlet pressure exceeds this value then a pressure reducing valve must be fitted, this is available through Heatrae Sadia's supply partners.

5.3 Transport and storage

If the unit has to be stored prior to installation, it must be in a secure area free from frost, excessive dampness and humidity.

5.4 Choice of location

The unit must be vertically wall mounted and the following points should be considered:

The unit should be sited to ensure minimum dead leg distances, particularly to the point of most frequent use. However there should be a minimum height between the hot water outlet and the highest draw off point, outlet tap, of 1.2 meters.

Avoid installations where extreme cold temperatures will be experienced. All exposed pipe work should be insulated.

The breather pipe work from the top of the unit should have a continuous fall, and ideally vent to an outside wall in a safe manner via the tundish supplied.

Access to associated controls must be available for the servicing and maintenance of the system, the heater requires access from the front and underside for this purpose, refer to figure 6 page 12. Ensure that the wall the unit is mounted on, is perpendicular and capable of permanently supporting the weight when it is full of water, see Table 1 on page 6 for the unit weights.



WARNING

- ▶ In the unlikely event that water from the unit should vent from this breather pipe then the water could be at an excessive temperature exceeding 95 degrees. Therefore it is essential that the breather pipe work selected is capable of withstanding this temperature and must have no obstruction and allow free and safe passage for this hot water.

5.5 Positioning and access

It is important that as much access available is provided around the unit as is practical. In the event of a component failure, full access to the front and underside of the unit is required for servicing. A minimum of 150mm above the top of the unit must be kept clear for access, refer to figure 6, page 12.

Access to all isolation valves and control valves in the water circuits, both hot and cold are also required for normal operation and servicing.



The breather pipe assembly at the top can be positioned on either the left or right.



CAUTION

- ▶ Ensure that the unit is correctly positioned. Consideration should be given to the access and space requirements for operating and servicing the unit.

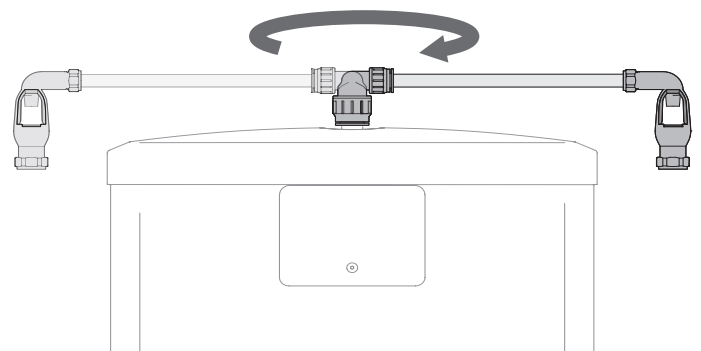


Figure 5: Breather pipe assembly

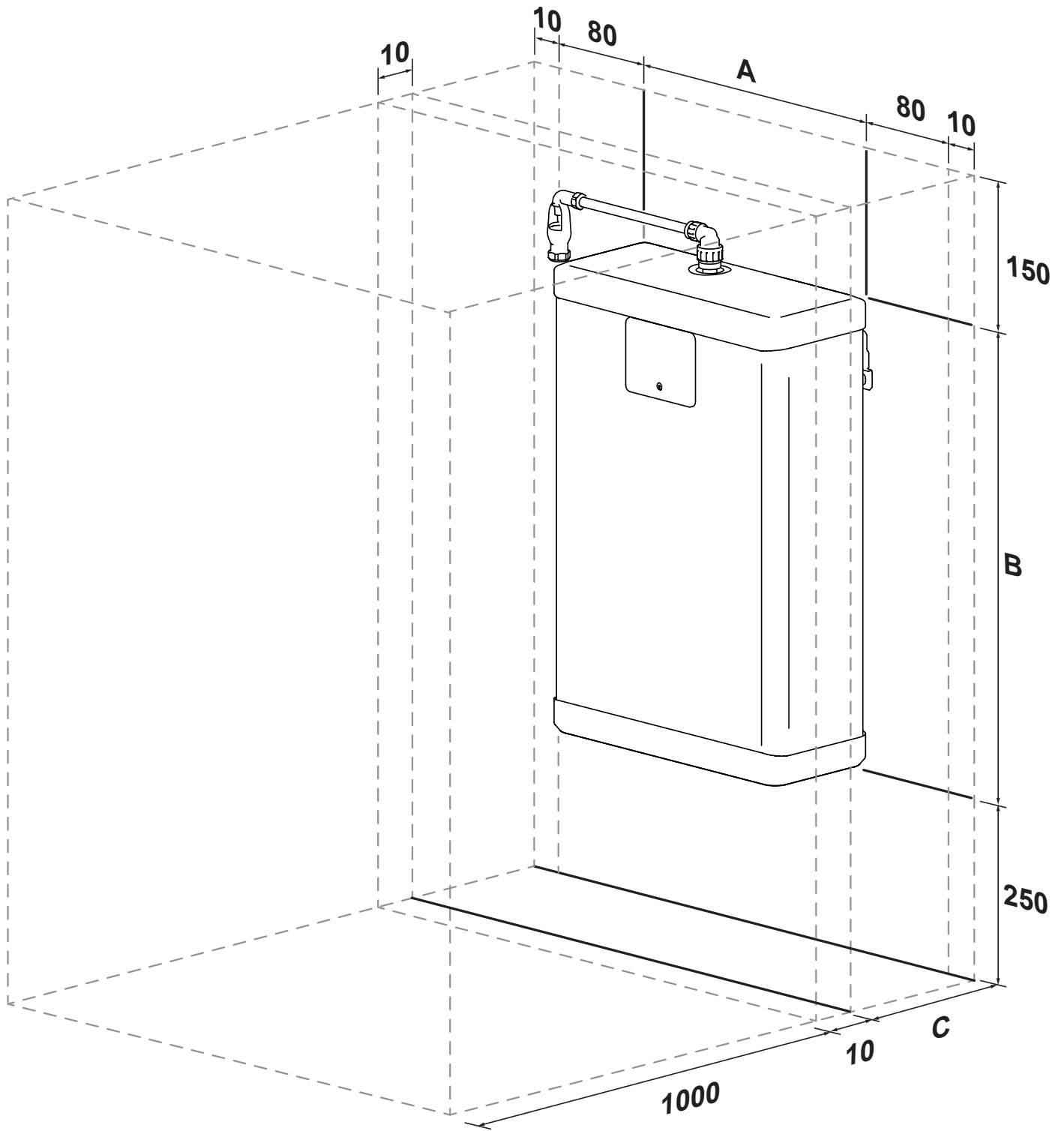


Figure 6: Clearance diagram

	HSR 25	HSR 45	HSR 70	HSR 120
A	510	609	609	660
B	830	882	1221	1020
C	235	275	275	429

Table 5: Clearance dimensions

6. Installation

6.1 General

After reading sections 1 - 5 in this booklet please install the unit paying attention to the following water connection, electrical and commissioning sections.

6.1.1 Siting of the unit

These water heaters are vented and can supply multiple hot water outlets. The units must be mounted higher than the taps they supply, refer to figure 7, due to gravity supplied hot water.

Ideally the heater should be fitted close to the point where hot water is required. In order to present the minimum resistance to flow we recommend that the outlet pipe work be 22mm for as much of its length as possible.

Sufficient space around the water heater must be provided for both installation and servicing, refer to figure 5, page 12 for the clearance dimensions.

6.1.2 Water Connections

The unit is supplied with the following connections:

- ▶ Cold water inlet – 15mm push fit connector
- ▶ Hot water outlet – 22mm open end pipe
- ▶ Breather pipe - 22mm open end pipe (Initial Breather Pipe with tundish supplied in kit)

A full bore isolating valve must be inserted into the 15mm cold water inlet pipe work as close as is practical to the water heater, this is to aid both the installation and servicing of the unit during its service life.



WARNING

If the unit is being installed for a hand wash only requirement then it is recommended that an appropriate low pressure blending valve is installed in the hot outlet pipe work close to the point of use outlet. This will allow the water in the heater to be stored at a higher temperature, water stored above 60°C not only gives more usable blended hot water output, it also considerably reduces the possibility of harbouring bacteria

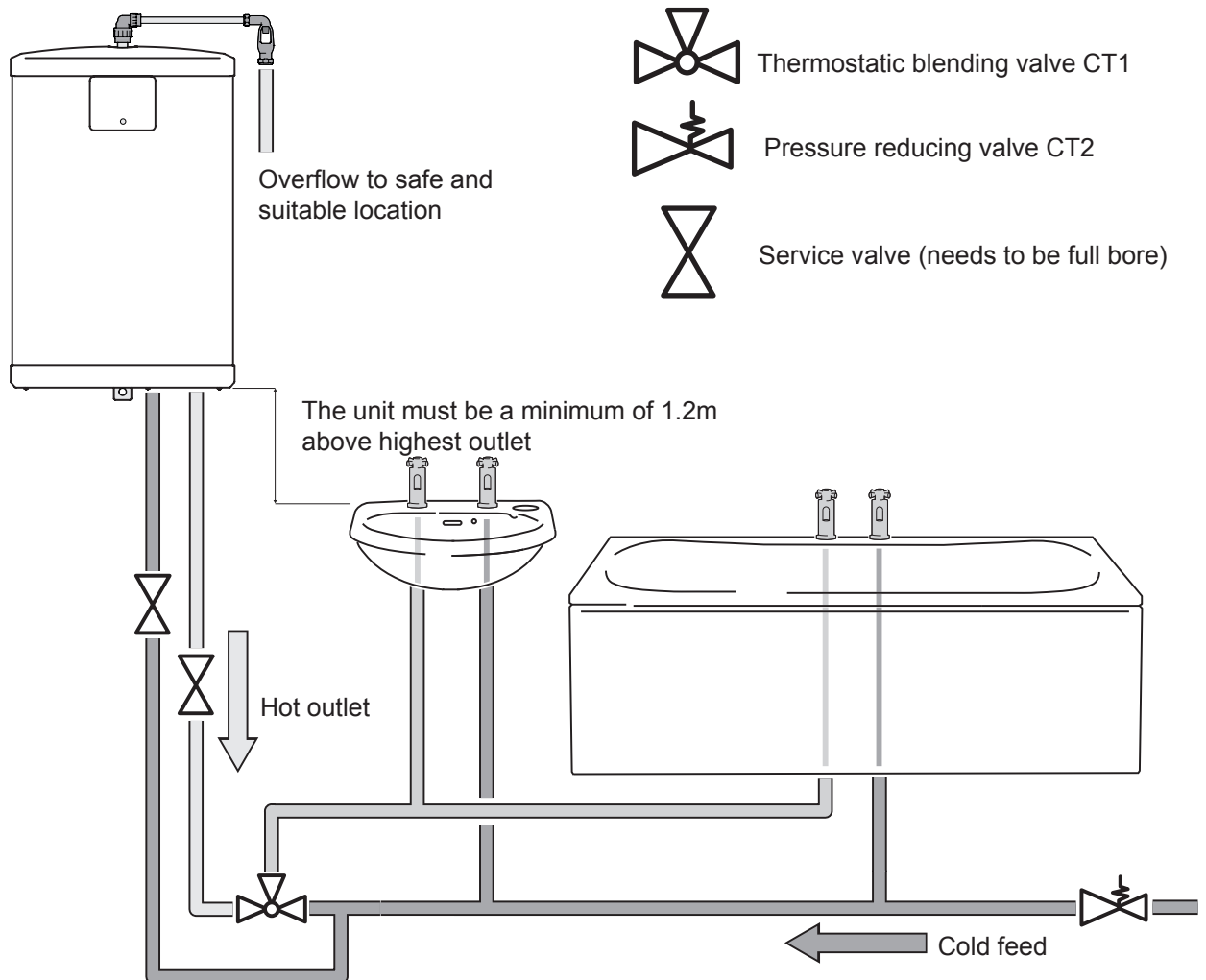


Figure 7: Example of typical installation (not to scale)

6.2 Wall fixing

The units' wall mounting is provided by two brackets, one supplied already fitted to the water heater, the second 'wall bracket' is provided within the kit.



When fitting the wall bracket ensure that the fixings used are suitable for the wall structure and the weight of the water heater when full of water, see specification table 1 on page 6 of this instruction manual.



CAUTION

The wall bracket is supplied within the packaging at the top.

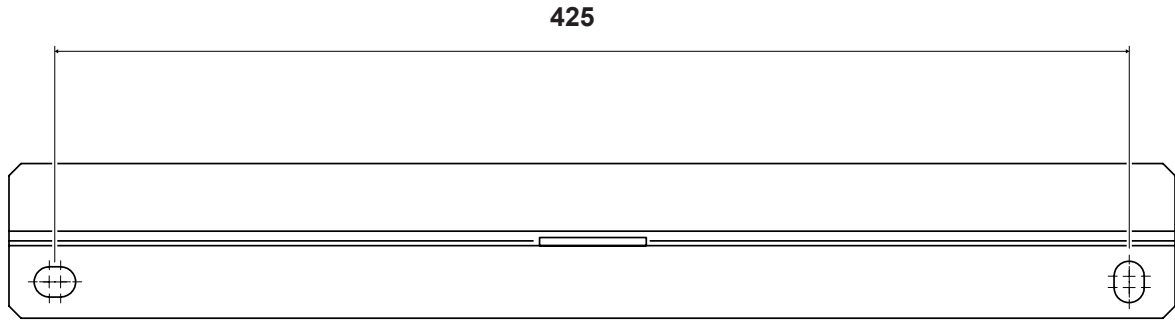


Figure 8: 25L wall bracket

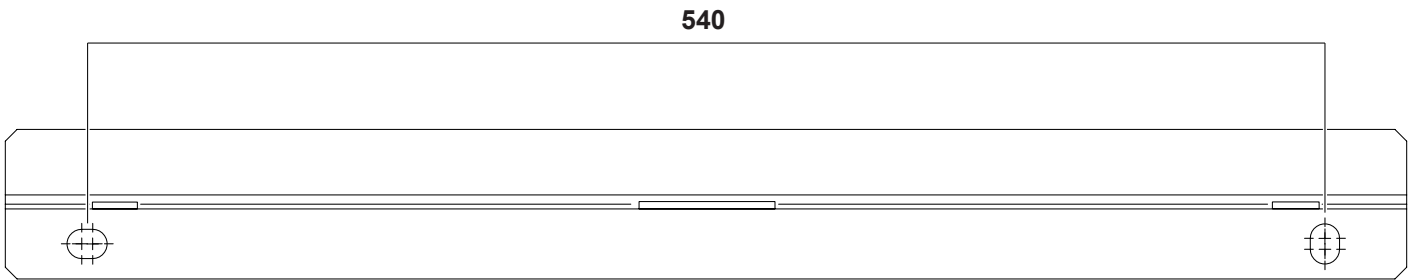


Figure 9: 45L, 70L and 120L wall bracket

6.2.1 Wall fixing procedure top bracket

To fit the unit follow the procedure detailed below.



WARNING

Before drilling ensure there are no services in the immediate area within the wall structure

- ▶ Mark the position of the bottom edge of the heater ensuring that this position is a minimum of 1.2 meters above the highest draw off point see figure 6, page 13.
- ▶ Mark the position of the centre line for the wall bracket mounting holes and mark the centre points for the fixings, see figure 8 for position.
- ▶ Drill appropriate holes for the fixings
- ▶ Secure the wall bracket to the wall using suitable fixings, ensuring that it is secure.

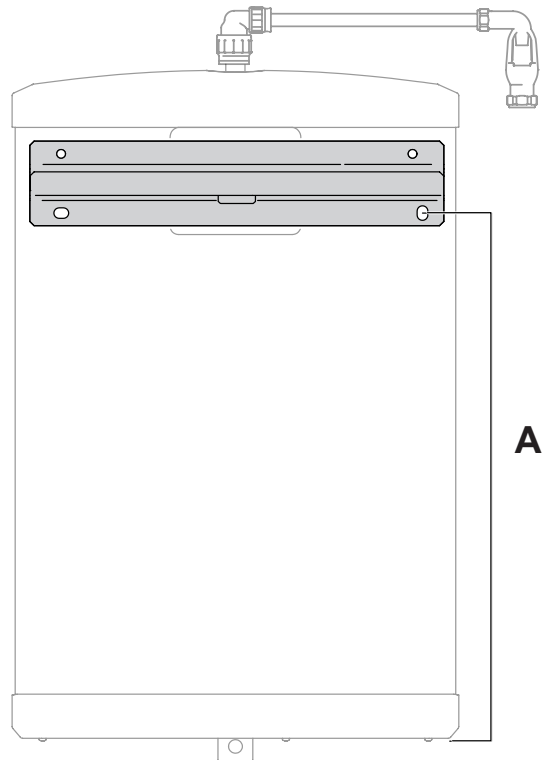


Figure 10: Fixing bracket dimension to bottom of unit

Product Size	25L	45L	70L	120L
Dimension A	621	679	1015	806

Table 6: Fixing bracket dimension to bottom of unit

6.2.2 Wall fixing procedure bottom bracket

- ▶ Supplied with the water heater as part of the kit is a fixing bracket with two screws and shake proof washers. The fixing bracket is required to be fitted to the water heater. Lay the water heater down on a flat surface, face down, ensuring that the heater is protected from any potential damage. Remove the bracket, screws and washers from the packaging and fit the bracket to back of the water heater as shown.

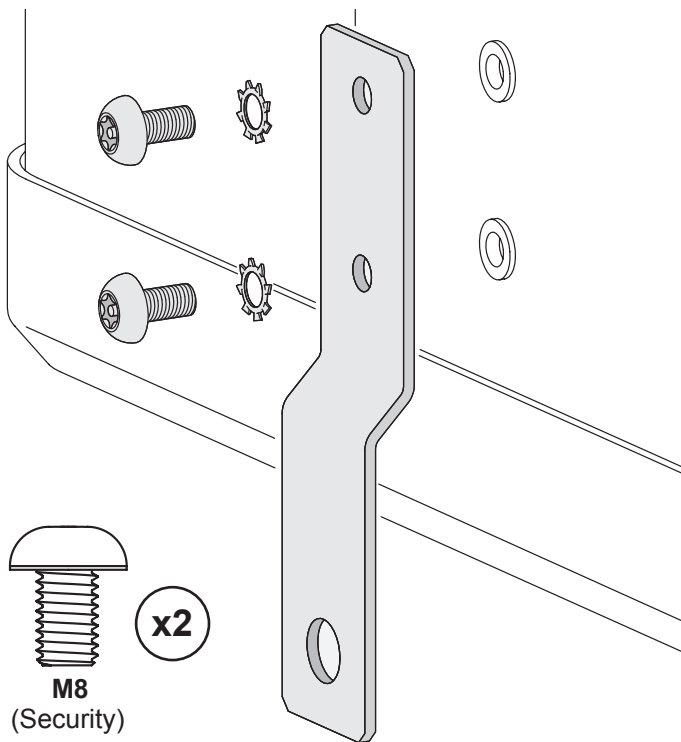


Figure 11: Fixing bracket assembly at bottom of unit

- ▶ Carefully stand the water heater upright, taking care not to damage the unit.



WARNING

Be aware that with the fixing bracket attached the water heater will not sit flat to the floor and therefore will be unstable. Care must be taken not to allow the heater to topple over.

- ▶ Refer to table 1, page 6 for the weight of the water heater empty, using an appropriate lifting method lift the water heater up and position the bottom edge of the water heater bracket over the top edge of the wall bracket, position the unit towards the wall and then lower, see figure 12.



CAUTION

Please note that the water heater bracket has a location spigot that sits lower than the visual edge. This needs to be taken into consideration when positioning the unit above the wall bracket.

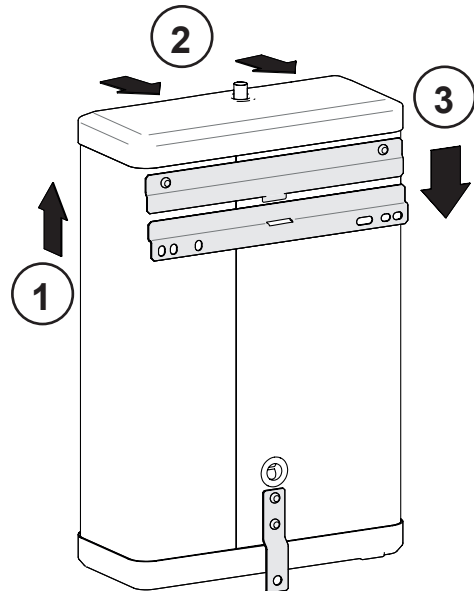


Figure 12: Bracket lifting procedure

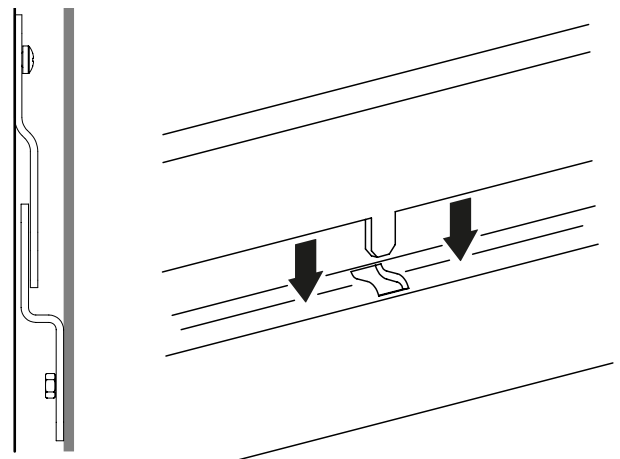


Figure 13: Top bracket locating procedure

- ▶ Once the water heater is located correctly on the wall bracket, slide either left or right to locate the spigot in the slot, see figure 13 above.
- ▶ Using an appropriate fixing, secure the water heater to the wall with the fixing bracket at the bottom of the heater.

6.3 Water connections



WARNING

Do not use chrome or stainless steel pipe work on push fittings on this unit.



WARNING

A minimum dynamic pressure of 0.5 bar and maximum pressure of 10 bar is required. If the measured inlet pressure exceeds this value then a pressure reducing valve must be fitted.



WARNING

All pipe work must be installed by a competent Installer and must comply with the following.

- ▶ The appropriate Water Supply (Water Fittings) Regulations 1999, Water Byelaws 2000 Scotland and the Water regulations Northern Ireland must be adhered to.
- ▶ The above regulations require the following;
- ▶ A full bore servicing valve shall be installed on the inlet pipe Schedule 2 - Section 16(2).
- ▶ A full bore servicing valve shall be installed on the outlet pipe Schedule 2 - Section 16(3).
- ▶ All fittings used must be WRAS approved

6.3.1 Water (Inlet)



WARNING

If this unit is cistern fed there needs to be a minimum of 5m from the cistern to the top of the unit, to ensure a dynamic pressure of 0.5 bar.



Each installation can differ in requirement see figure 6, page 13 for a typical installation.

- ▶ Before work commences ensure the water supply is isolated at the main stopcock.
- ▶ Fit a full bore isolating valve is inserted into the inlet feed pipe as close as is practical to the water heater.
- ▶ Connect the inlet feed pipe to the 15mm inlet push fit connector on the underside of the water heater, see figure 4, page 9.

6.3.2 Hot Water Outlet

- ▶ An open ended 22mm pipe is provided at the bottom of the water heater for connection of the hot water outlet. Using a compression fitting connect this outlet pipe to the hot water feed to the service points. Ensure that a full bore isolating valve is installed in this outlet pipe work as close to the water heater as practical.



CAUTION

Do not use a solder fitting as this will invalidate the unit warranty



CAUTION

Back flow precautions may be require when using a mixer tap

6.3.3 Breather Pipe

The water heater is provided with a breather pipe assembly which consists of a short section of 15mm pipe with a Tundish fitted at one end and a push fit 90 degree reducer at the other end.

- ▶ Push this assembly onto the 22mm pipe at the top of the water heater. This assembly is designed to swivel either to the left or the right of the unit. Decide which side is to be used for the location of the pipe. This breather pipe must be laid in a continuous fall and terminate to a safe and visible location. If a breather pipe already exists move the assembly to the correct side of the water heater.
- ▶ Once installed connect the breather pipe to the 22mm compression fitting on the Tundish, ensure connection is tight, secure all pipe work in the appropriate manner.

6.4 Electrical Installation



WARNING

It is suitable for A.C. supply only.



WARNING

Electrical installation must be carried out by a competent electrician and be in accordance with the latest I.E.E wiring regulations, ensure the electrical supply is switched off before making any connections to the unit.



WARNING


The water heater must be connected to a 230/240V a.c. Electrical supply using a double pole isolating switch fused at 13A, with a minimum 3mm contact separation in both poles. The supply cable must be 3 core and each core must have a minimum cross sectional area of 1.5mm².



WARNING

This appliance must be earthed.

- ▶ Using an appropriate tool, remove the bottom access panel, retain the screws and panel, place in a safe location.
- ▶ The supply cable must be routed through the cable entry point at the bottom of the heater and must be fed through the cable grip provided with the outer sheath of the cable firmly secured by tightening the screws on the cable grip in accordance with the latest version of BS 7671
- ▶ The cores of the supply cable must be connected to the terminal block provided, in the following manner ensuring that each connection is tight:

Earth (coloured green/yellow or green) to Earth Terminal E 

Neutral (coloured blue or black) to termination marked N.

Live (coloured brown or red) to termination marked L.



If twin and earth cable is used the bare Earth conductor must be sleeved.

7. Commissioning

7.1 General

After the initial installation is complete instigate the following commission process.



WARNING

The water heater cannot be filled with water without power applied, therefore it is essential that the following checklist is completed.

7.2 Checklist before commissioning

- ▶ Turn the water supply back on and then the installed water inlet isolation valve.
- ▶ Perform a pipe work flush
- ▶ Check the inlet water connections for leaks and rectify as necessary.
- ▶ Check all other pipe work is installed correctly, see section 6.3, page 16.
- ▶ Turn the hot outlet isolation valve on.
- ▶ Open a hot tap at the point of use
- ▶ Check all wiring is correct and connections are secure in the terminals.
- ▶ Check that all pipe work has been earth bonded.
- ▶ Ensure the power supply to the water heater is switched on at source.



WARNING

If during the following commissioning process an error is indicated on the display then refer to the troubleshooting section for analysis, section 10, page 25.

7.3 Commissioning procedure

- ▶ Switch on the power to the water heater at the fused spur
- ▶ After approximately 10 seconds the heater will switch the solenoid valve on and allow water to flow into the heater. If this does not happen refer to section 10, page 25, Troubleshooting.
- ▶ Check all pipe work and the water heater for leaks during the water fill process.
- ▶ Close the hot water tap once water starts flowing.
- ▶ Once water has reached the correct level in the tank, the solenoid will automatically switch off.
- ▶ The water heater will now turn on the immersion heater automatically. See section 3, page 6 Technical Specification for the heat up time.



WARNING

If this does not happen and the water heater continues to fill and water is seen in the Tundish, turn off the water supply and the electrical power immediately, refer to section 10, troubleshoot page 25.



During this initial commission cycle only, the water heater will raise the temperature automatically to 60°C, this will pasteurize the water heater.

- ▶ To set the desired set point temperature refer to section 8, page 19.

8. Operation

8.1 General



Please note that this product has been designed to make the operation of the unit and its subsequent generation of hot water as simple for the end user as possible. The factory settings that the unit is delivered with are suitable for most installations.



DANGER

Always disconnect the electrical supply before opening the cover.

8.2 Overview

- ▶ Refer to section 4, page 9, for an overview of the product and a list of the main components.
- ▶ The heaters function is managed by a micro controller on the control PCB.

8.3 Temperature adjustment



DANGER

Setting the stored water temperature above 40°C will increase the risk of scalding, for hand washing, it is essential that a suitable low pressure water tempering valve is fitted in the hot water supply circuit. The installer must ensure that this is carried out during installation. As an end user, if you are unsure about your installation then consult a competent engineer before making any changes.

- ▶ Refer to section 4, page 9, for an overview of the product and a list of the main components.
- ▶ The heaters function is managed by a micro controller on the control PCB.



CAUTION

The temperature set point is the thermostat temperature and therefore may be lower than the temperature at the top of the tank where hot water is drawn off. That water temperature will be at the set point temperature +2°C.

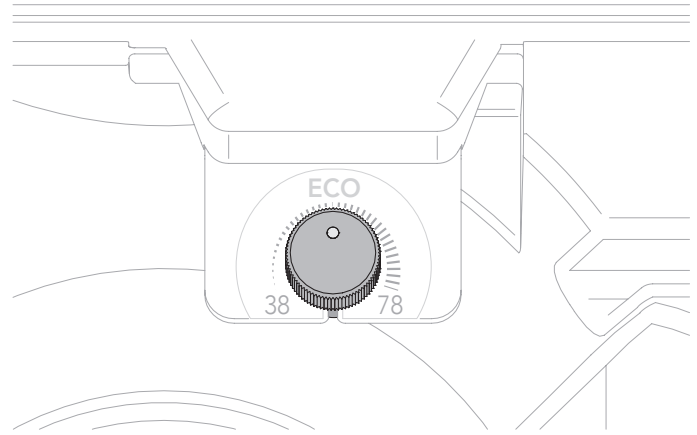


Figure 14: Temperature control

To adjust the temperature refer to manual figure 14 and carry out the following.

- ▶ The temperature control pointer position defines the units temperature set point.
- ▶ Turn the dial anti-clockwise to decrease the temperature and clockwise for to increase.
- ▶ The maximum temperature of 78°C and the minimum of 38°C are the two stop points of the temperature control at each end of the indicated scale.



Eco mode is the optimum temperature set point (approximately 60°C) and should be sufficient for most uses.

9. Maintenance

9.1 General

9.1.1 Maintenance requirements

The unit will require an annual maintenance requirement in order to ensure safe working and optimum performance. This is of greater importance in hard water areas or where the water supply contains particulate matter. Note: If the water is particularly hard or where there are high concentrations of particulates, then more frequent maintenance may be required.

The maintenance checks described below should be carried out annually or as required by a competent person.

9.2 Routine inspection & maintenance operations – Water Heater Draining



WARNING

Any metalwork and exposed pipes may be hot.



WARNING

Before commencing any servicing or maintenance including removal of the access panel at the bottom of the unit ensure that the electrical power supply and the domestic hot and cold water connections are all isolated.



DANGER

The water that is drained from the water heater could be very hot, up to 100°C, extreme care must be taken to prevent risk of scalding.

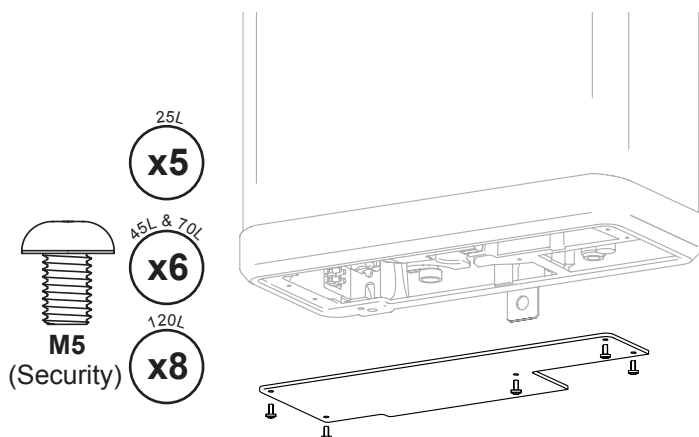


Figure 15: Access cover removal

- ▶ Remove the access panel from the bottom of the heater.
- ▶ Ensure that the drain tap is closed, remove the cap from the drain valve
- ▶ Using a ¼ BSP female hose adaptor fitted to a suitable length of hose, connect to the drain valve.
- ▶ Ensure that the other end of the hose is positioned and secured in a sink, basin or suitable waste water drain.
- ▶ Open the drain valve and empty the water out of the heater.
- ▶ Once the water heater is empty, the servicing can commence.

9.3 Routine inspection & maintenance operations – Filter Inspection

There are two filters that require inspection, one in the breather pipe at the top of the water heater and a second in the water inlet pipe work.

9.3.1 Breather Pipe Filter Inspection

- ▶ Carefully disconnect the Tundish from the breather pipe by unscrewing the small nut on the 15mm pipe side of the Tundish.
- ▶ Carefully split the connection between the 15mm pipe and the Tundish, once apart this will reveal the mesh filter in the end of the 15mm pipe.

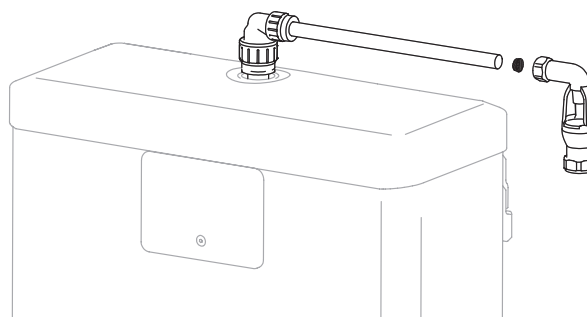


Figure 16: Breather pipe filter removal

- ▶ Using a torch, inspect the filter for any debris, if debris is present remove it. If the debris cannot be removed then the filter must be replaced, see spares list, page 29, spare 13.

9.3.1.1 Breather Pipe Filter Replacement

- ▶ To replace the mesh filter, the 15mm breather pipe must be removed from the water heater, once removed, using an appropriate tool, push the filter from the end of the pipe. Fit the replacement filter by pushing into the end of the pipe nearest the Tundish. Refit the pipe and the Tundish.

9.3.2 Inlet Pipe Filter Inspection



WARNING

Ensure unit is drained.

- ▶ To inspect this filter, the inlet control assembly must be removed from the water heater.
- ▶ Disconnect the two earth wires that are connected to the copper pipe work

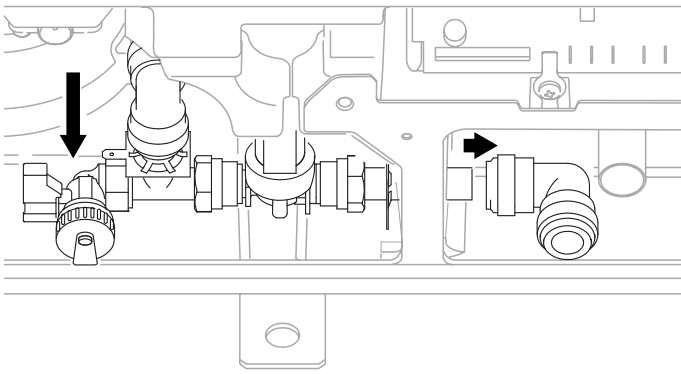


Figure 17: Inlet assembly removal

- ▶ Disconnect the two solenoid power connectors, red and black wires
- ▶ At either end of the inlet control assembly are two 15mm push fit connectors. Remove the inlet control assembly by releasing the two push fit connectors, one from the internal tank and the other from the cold water feed pipe, see figure 18. Move the inlet assembly to the left to clear the support bracket and pull the assembly down and out to clear the unit.
- ▶ The mesh filter can be found in the end of the 15mm pipe on the input side of the solenoid pipe.

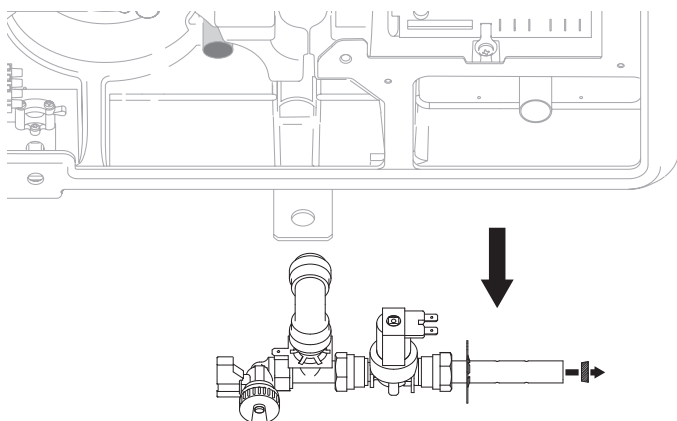


Figure 18: Inlet assembly filter removal

- ▶ Using a torch, inspect the filter for any debris, if debris is present remove it. If the debris cannot be removed then the filter must be replaced, see spares list, page 29, spare 13.

9.3.2.1 Inlet Pipe Filter replacement

i If the mesh filter requires replacement, the inlet control pipe may have to be replaced, item 28 in the spares list page 29.

- ▶ To refit the inlet control assembly firstly make sure the assembly is complete, then engage the 15mm push fit on the inlet feed pipe.
- ▶ Push the other push fit connection onto the internal tank, ensure the 15mm push fit connectors are now correctly engaged.
- ▶ Re-connect the two solenoid power connectors, red and black wires.
- ▶ Re-connect the two earth wires that are connected

to the copper pipe work.

- ▶ Carryout final inspections to check that all parts removed are correctly fitted and all electrical wires are re-instated.

9.4 Routine inspection & maintenance operations – Water Sensor Inspection



WARNING

Due to a build up of scale and the temperature of the tank the sensors may be difficult to remove. If necessary the sensors can be eased out of their housings by using a pair of nylon faced pipe pliers and by applying gentle outward pressure through the pliers

- ▶ Ensuring the unit is drained, use an appropriate tool, remove the sensor cover.

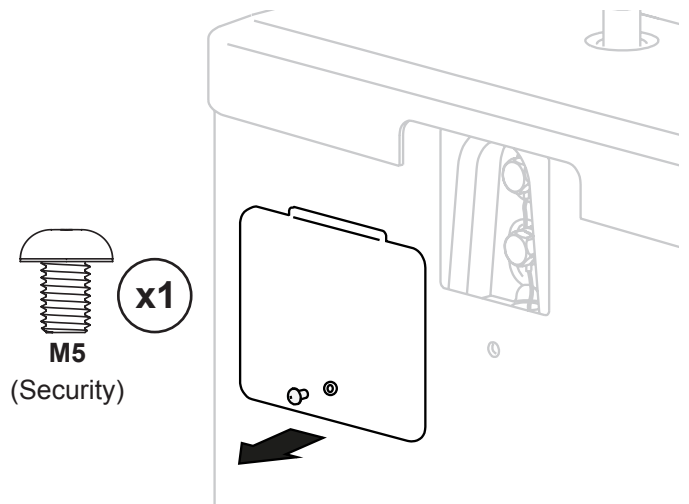


Figure 19: Sensor cover removal

- ▶ Ensuring the unit is drained, use an appropriate tool, remove the sensor cover, see figure 19 above. Underneath the cover are two sensor assemblies, they are the water level sensor, lower bolt and the tank overflow sensor, upper bolt.
- ▶ In turn, remove the sensors and inspect for a build-up of scale.

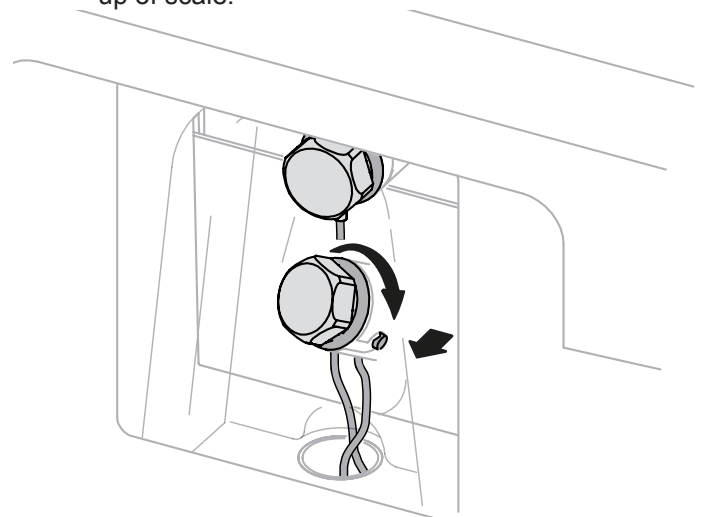


Figure 20: Sensor removal

- ▶ Turn the sensor clockwise until it cannot move any further, now pull the sensor out of its housing. If this is difficult to do, it may be necessary to exert a little more force as detailed at the start of this section.
- ▶ Once removed, inspect the end of the stainless steel bolt that is on the water side. Carefully remove any build-up of scale using the tip of a flat blade screwdriver.
- ▶ Lightly lubricate the O rings with WRAS approved silicone grease. Apply silicone grease sparingly to the inside face of the sensor housing.
- ▶ Refit the sensor into its housing, taking care to ensure the O rings do not get caught in the housing, then twist the sensor anti-clockwise as far as it will go
- ▶ Repeat the above process for the tank overflow sensor, top.

or washers must be kept safe for reuse later.

- ▶ Remove the thermistor out of its stat tube, smallest, see figure 22.



There is no requirement to remove the electronic cut out, ECO, from the immersion pocket.



Figure 22: Thermostat removal

9.5 Routine inspection & maintenance operations – Immersion Heater Inspection

- ▶ Remove all wiring that is connected to the immersion, see drawings below, any screws, nuts



DANGER

The immersion heater could be hot, care must be taken when handling the heater.

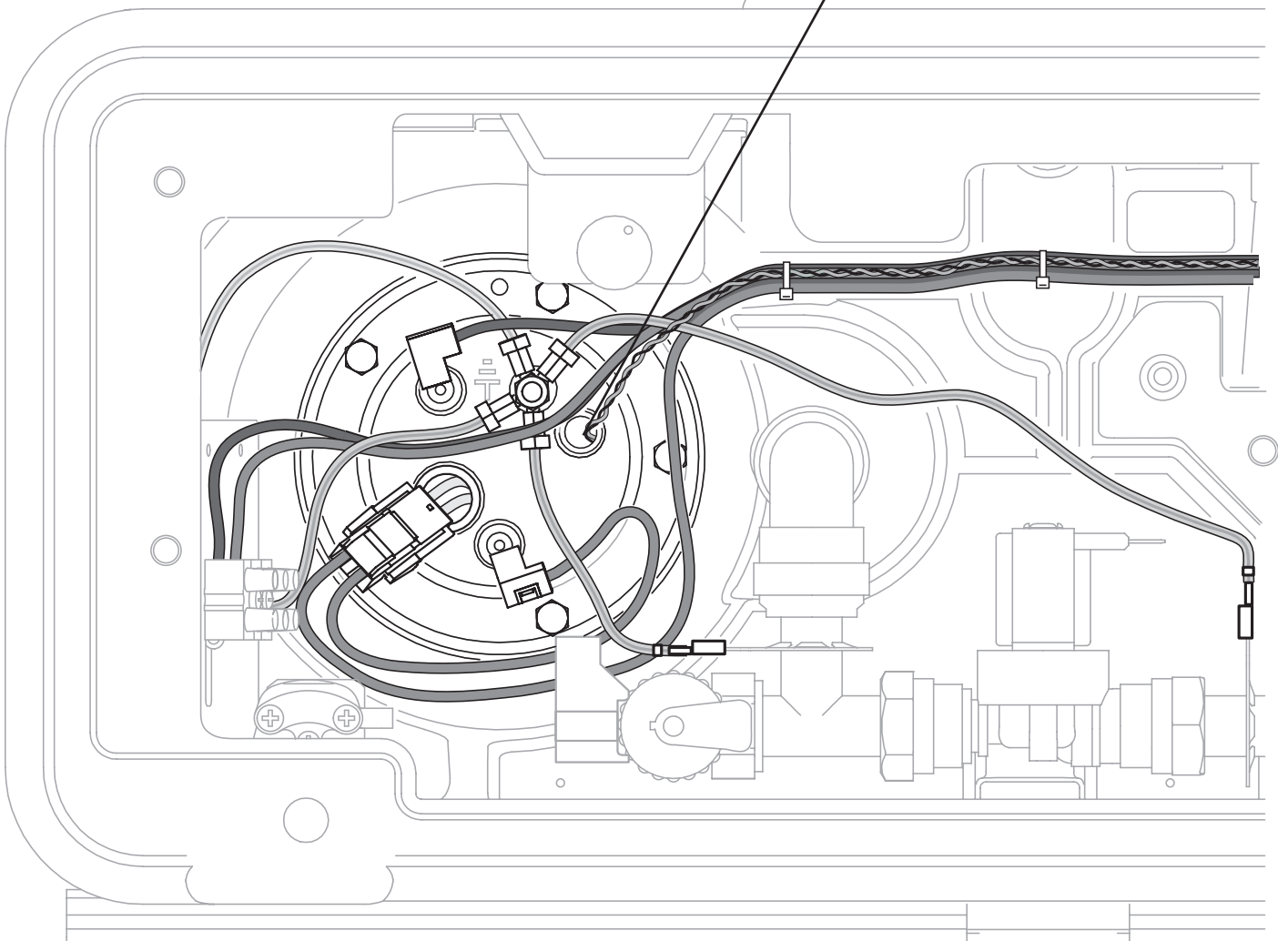


Figure 21: Base view

- ▶ Remove the earth wires from the immersion heater plate being careful not to lose nuts and washers, retain these in a safe location for reuse.

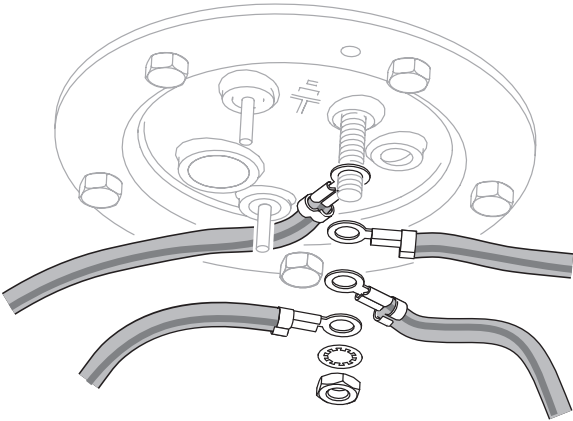


Figure 23: Immersion heater earth wires

- ▶ Remove the live and neutral wires which should slide off the immersion heaters terminal tags.

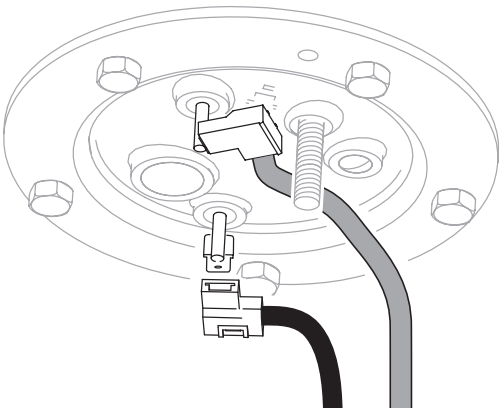


Figure 24: Immersion heater live and neutral

- ▶ Disconnect the Electronic Cut Out, ECO, sensor at the connector point of the clip connection close to the immersion heater itself.

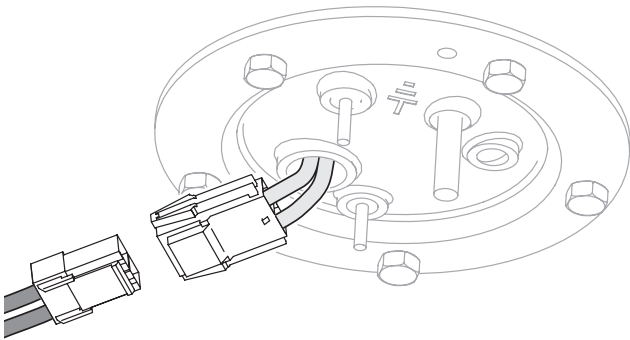


Figure 25: ECO sensor connection



WARNING

When removing the immersion heater there will be a small amount of water still inside the tank, during removal of the immersion heater this water will escape. Care should be taken to ensure no water gets into the electrical connections or wiring. If this happens the wiring must be allowed to dry before applying power.

- ▶ Remove fixing bolts as shown in figure 26.
- ▶ Gently loosen the immersion heater from its housing.
- ▶ Once loose, remove the immersion by twisting the immersion in an arc and then vertically pull down, see figures 27 and 28.

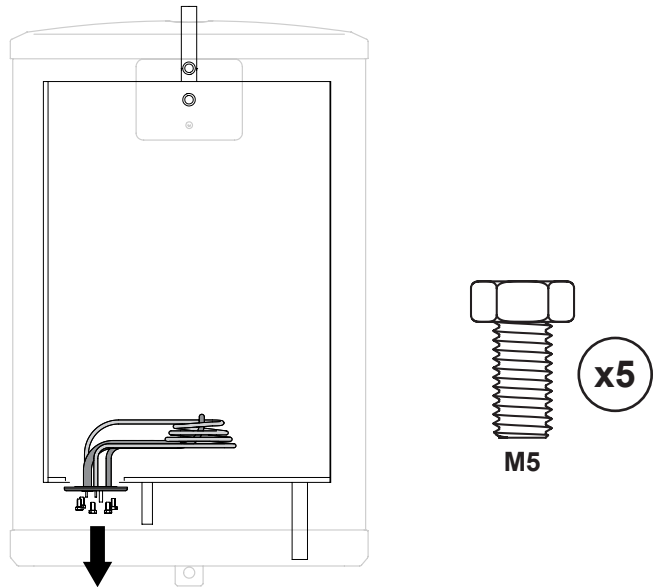


Figure 26: Immersion heater removal step 1

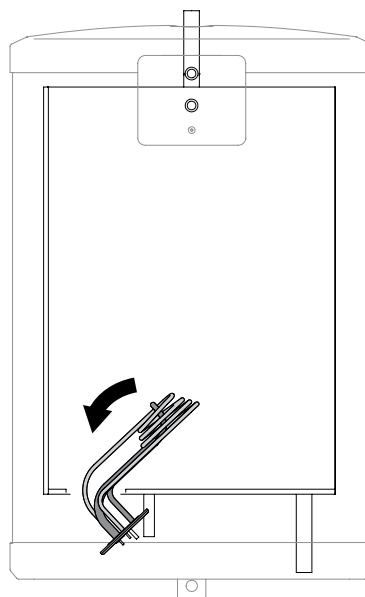


Figure 27: Immersion heater removal step 2

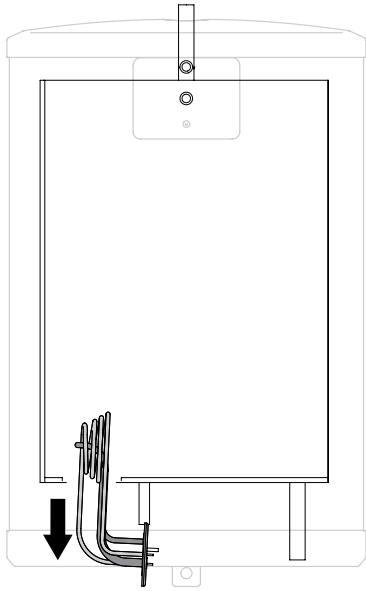


Figure 28: Immersion heater removal step 3



WARNING

Do not use sharp objects or implements to remove scale, this could permanently damage the immersion heater.

- ▶ Inspect the immersion heater for excess build-up of scale, all coils should be free of scale build-up between them and there should be no build-up of scale between the stat pockets and the immersion element. If scale in these areas exists carefully remove. If in any doubt about the condition of the immersion heater, then it must be replaced, see section 12, page 30, spare 30.
- ▶ Reach up into the water tank opening and carefully remove any excess build-up of scale in the immediate area, this should be put into a suitable container for disposal.

thermistor has been reinserted in its stat pocket, smallest tube and that of the ECO is correctly fully inserted in its stat tube, largest pocket using Dow Corning heatsink compound 340 or suitable alternative.

9.6 Routine inspection & maintenance



CAUTION

It is important that any work carried out on this unit is done by a competent engineer who is familiar with and understands the design of the system.

operations – System Overview

- ▶ The engineer must now check the entire water heater for obvious signs of overheating, water contamination, corrosion etc. If all is good then the water heater can be re-commissioned.
- ▶ Refit the bottom access panel using the screws that were kept safe.
- ▶ Re-commission the water heater in accordance with section 7, page 18 and adjust the water temperature set point in accordance with section 8.3, page 19.

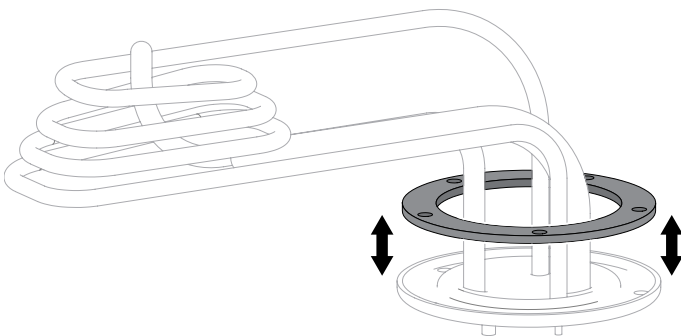



Figure 29: Immersion heater gasket removal

- ▶ Remove and discard the immersion plate seal, then fit a new replacement part see figure 29. For part number see spares list page 30, spares number 29.
- ▶ Refitting of the immersion heater is the reverse of the removal.
- ▶ Once the immersion has been reinstated, check that all wiring has been correctly fitted and that the

10. Troubleshooting

10.1 Fault Finding

The fault finding table below will enable operational faults to be identified and their possible causes rectified.

 If a fault code is displayed on the controller refer to the fault codes in table 8 on pages 26 and 27 for details.

Fault	Possible cause	Remedy
No hot water flow	No cold water supply	Check that there is cold water to the property
	Cold water supply off	Check and open stop cock
	Hot water Isolating valve turned off	Turn on the isolating valve.
	Cold water control valves incorrectly fitted	Check and refit as required
	Water heater water level dropped below the hot outlet pipe inside the tank	Check level sensor connections and remove any build-up of scale
	Solenoid valve non operational	Check electrical connections
Water appears in the tundish	Water sensing inside the water heater has failed, both the level and overflow sensing.	Check the sensor wiring
		Check the control PCB, if the PCB is suspected as being faulty replace and then check operation
	Solenoid valve has failed in the open state	Replace the solenoid valve
	Scale build up	Remove scale
Water leaking from the water heater	Corrosion causing internal damage	Turn off the power, turn off the water supply, drain unit and investigate the fault
	Leaking pipe work	Turn off the power, turn off the water supply, drain unit and investigate the fault
	Leaking immersion seal	Turn off the power, turn off the water supply, drain the unit, remove the immersion and replace the seal
Steam rising from the tundish	Water heater temperature set point set to maximum	Verify that this is the required temperature, if not, return set point to required level
	Thermostat failure	Replace the thermistor
	Electronic cut out failure	Replace the cut out
Water heater fails to power up	Power supply failure	Check the supply to the fused spur
		Check the fuse in the spur
		Check the wiring and connections
		Check the control PCB
	Overheating electrical connections	Ensure electrical connections are tight, replace any damaged connections
	Overheating on control PCB	Turn power off, Investigate fault
Replace PCB if required		

Table 7: Fault finding table

10.2 Fault codes

i All Error Codes are only cleared once the problem has been resolved and the water heater has been powered off for at least 30 seconds and power then reapplied. If the error code reappears it is likely that the fault was not resolved

i In all error conditions listed below the water heater will shut down into a safe condition, will not open the solenoid valve or apply voltage to the immersion heater. However, the water heater will remain with power applied.

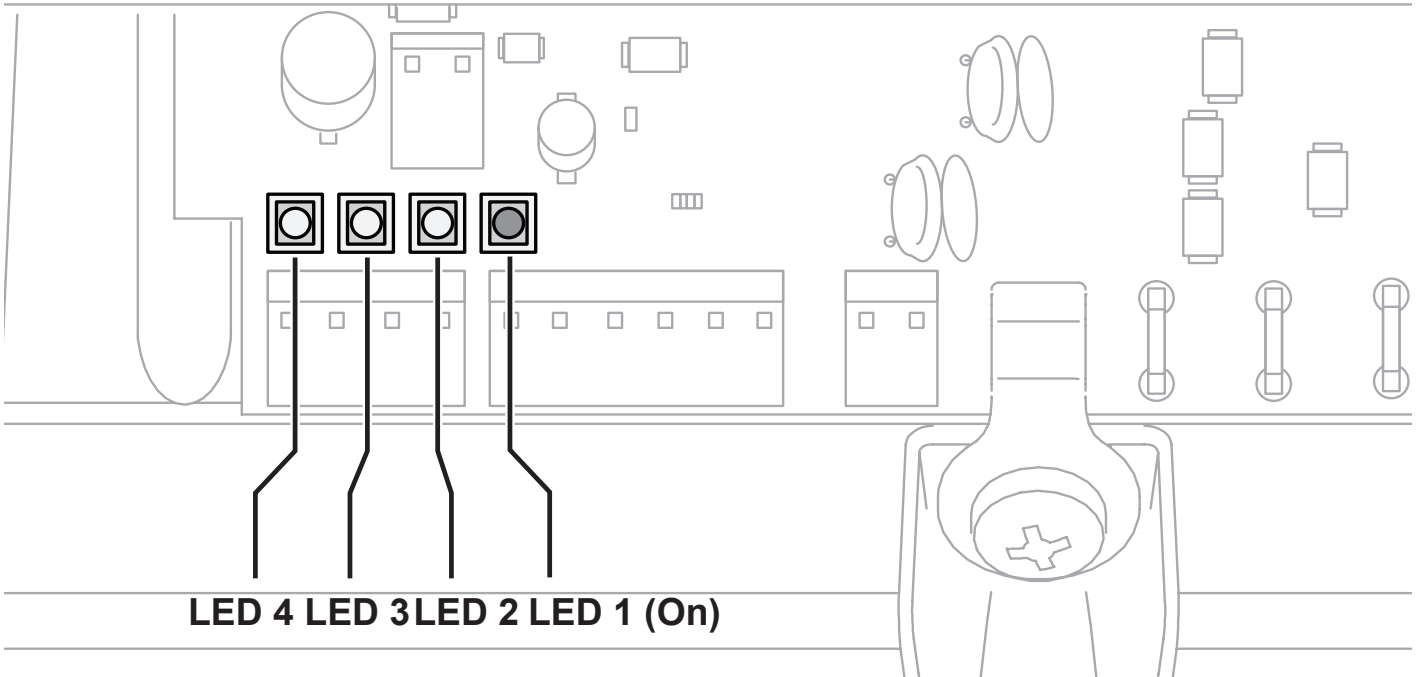


Figure 30: LED's close up

Fault / error code	Fault	Cause of fault	Remedy
	E1 Indicates that a fault has been detected by the Controller linked to the thermistor	The thermistor is Open Circuit	Replace the thermistor
	E2 Indicates that a fault has been detected by the Controller linked to the thermistor	The thermistor, is Short Circuit	Replace the thermistor
i	The top water level sensor, is used to indicate that the water heater has over filled. If this is triggered, it indicates there is a fault with the heater solenoid valve or the bottom level sensor. A fault condition where the water levels cannot be controlled correctly, as a result the water heater will shut down.		

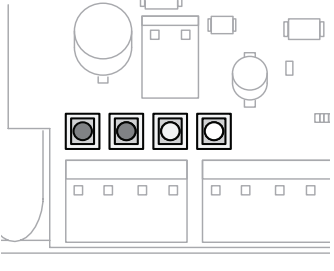
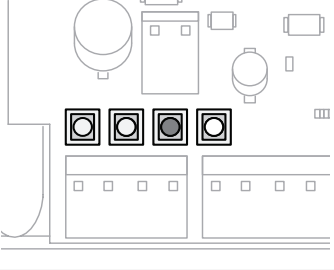
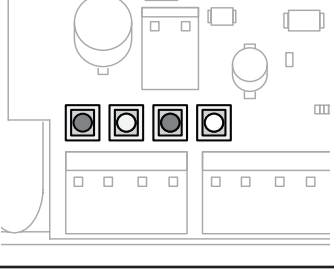
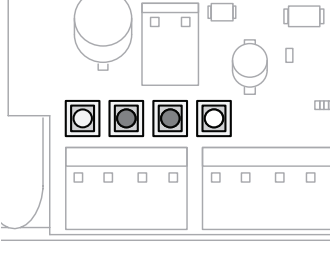
Fault / error code	Fault	Cause of fault	Remedy
	E3 indicates that the lower water level sensor is not indicating water present, but the upper sensor is indicating water present	Lower water sensor is contaminated with scale build up	Remove and clean sensor in accordance with section 9.4, page 21
		Solenoid valve is permanently letting water through	Replace solenoid
		Lower sensor wiring fault	Check wiring connections at either end of sensor wire
	E4 indicates that the lower water level sensor is indicating water present and the upper sensor is indicating water present	Top water sensor has shorted	Check wiring at either end of the sensor wire and at control board
		Upper and Lower sensor wiring fault	Check wiring connections at either end of sensor wires
	E5 indicates that the solenoid valve has been open for more than 20 minutes, during this period the lower level sensor has not detected water	No water supply	Check water inlet feed
		Filter blocked	Check the condition of the filter in accordance with section 9, page 21
		Solenoid valve is faulty	Replace solenoid
		There is a fault with the main control PCB	Replace main control PCB
	E6 indicates that the water heater is taking too long to heat	Point of use hot tap has been left open	Shut off the tap
		Check that the electronic cut out has not been tripped due to a fault	Turn off the water heater for a minimum of 30 second and then reapply the power, this will reset the cut out
		Immersion heater is faulty	Replace immersion heater
		There is a fault with the main control PCB	Replace main control PCB

Table 8: Error code table



Once the error code has been investigated carry out the following reset procedure.

- ▶ Turn the power off to the unit at the fuse spur, leave power off for minimum of 30 seconds, reapply the power.
- ▶ If the fault has been rectified the unit will re initialise and then run normally.

11. Decommissioning

11.1 Decommissioning procedure

- ▶ Isolate electrical supplies and make safe
- ▶ Disconnect all wiring
- ▶ Isolate the water supply
- ▶ Drain the unit
- ▶ Disconnect the unit
- ▶ Remove the unit
- ▶ Cap pipe work

12. Spares

Key	Description	Part Number
1	M5 x 10mm security screw	7034209
2	Sensor cover	7034218
3	M12 x 60mm hex head bolt	7034224
4	M12 x 20mm hex head bolt	7034153
5	M12 shake-proof washer	7034154
6	Sensor Assembly	7034170
7	Unit bracket 25L	7034179
	Unit bracket 45L, 70L and 120L	7034181
8	Wall bracket 25L	7034219
	Wall bracket 45L, 70L and 120L	7034220
9	M8 shake proof washer	7034210
10	M8 security bolt x 16mm BZP hex head	7034211
11	22mm to 15mm John Guest elbow	7034208
12	15mm breather pipe 25L	7034204
	15mm breather pipe 45L/70L	7034205
	15mm breather pipe 120L	7034206
13	Screen vent	7034183
14	Tundish 90 assembly	7034207
15	Bottom fixing bracket	7034212
16	Main PCB Flatback OEM	7034221
17	PCB clip	7034163
18	M5 x 10mm screw	7034189
19	Base shield 25L (white)	7034167
	Base shield 45L/70L (white)	7034168
	Base shield 120L (white)	7034169
20	Terminal block 3 port 10mm CRS	7034185
21	Screw No6 x 16mm	7034215
22	Push fit elbow 15mm	7034213
23	15mm pipe earthing grab ring	7034203
24	15mm x 3/4 w/mc angle valve w/cap	7034186
25	15mm inlet tee pipe 25L	7034176
	15mm inlet tee pipe 45L/70L	7034177
	15mm inlet tee pipe 120L	7034178
26	Washer 1/2" NBR	7034187
27	Solenoid valve	7034184
28	Inlet flow control pipe assembly 7L/min (25L)	7034174
	Inlet flow control pipe assembly 12L/min (45L, 70L and 120L)	7034175
29	Inlet assembly 25L	7034171
	Inlet assembly 45L	7034172
	Inlet assembly 70L	7034217
	Inlet assembly 120L	7034173

Table 9: Spares list

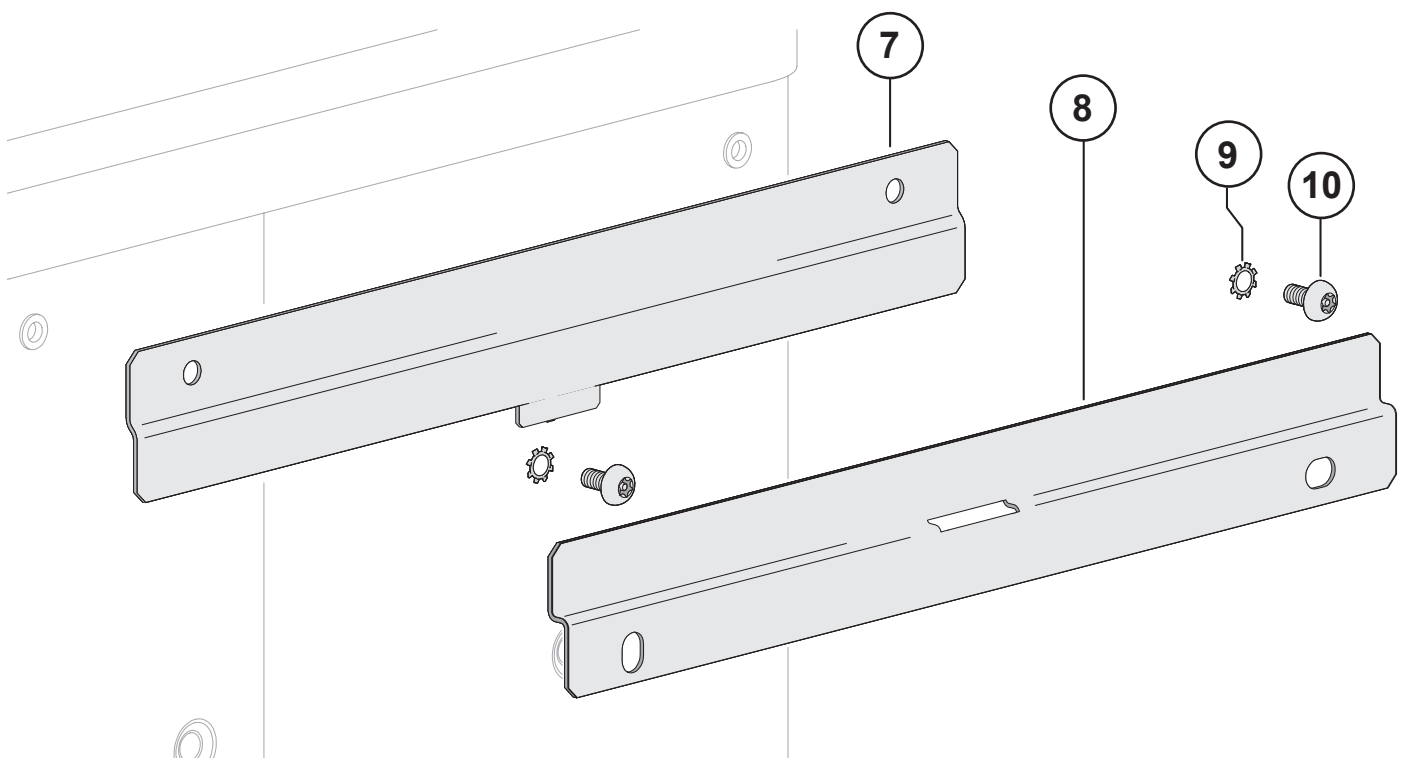
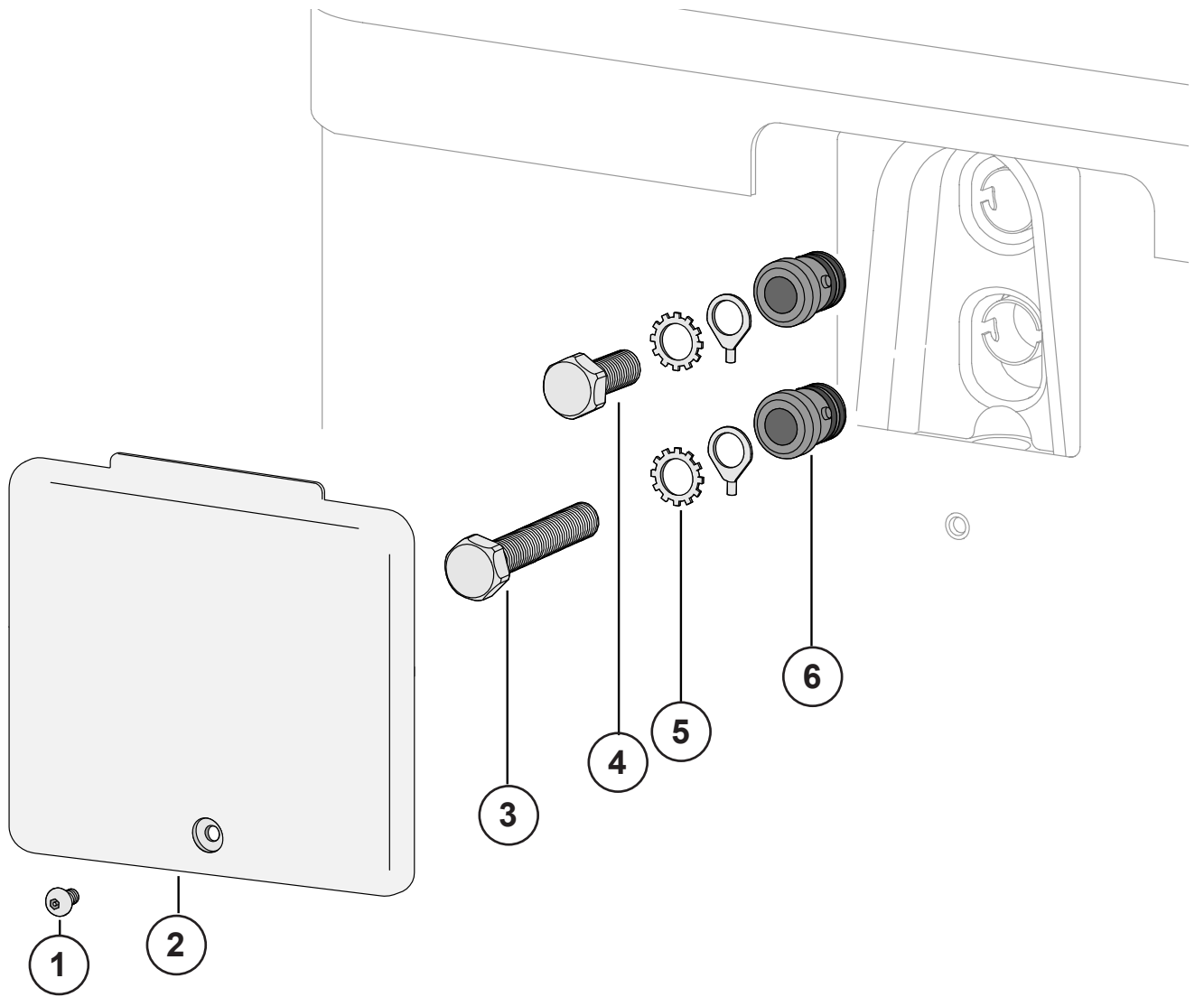
Key	Description	Part Number
30	EPA Gasket	7034214
31	EPA incoloy 3kW Flatback	7034152
32	M5 hex head bolt	7034188
33	Thermistor 25L wiring	7034200
	Thermistor 45L/70 wiring	7034201
	Thermistor 120L wiring	7034202
34	ECO sensor	7034199
35	Wiring loom 25L	7034194
	Wiring loom 45L/70L	7034195
	Wiring loom 120L	7034196

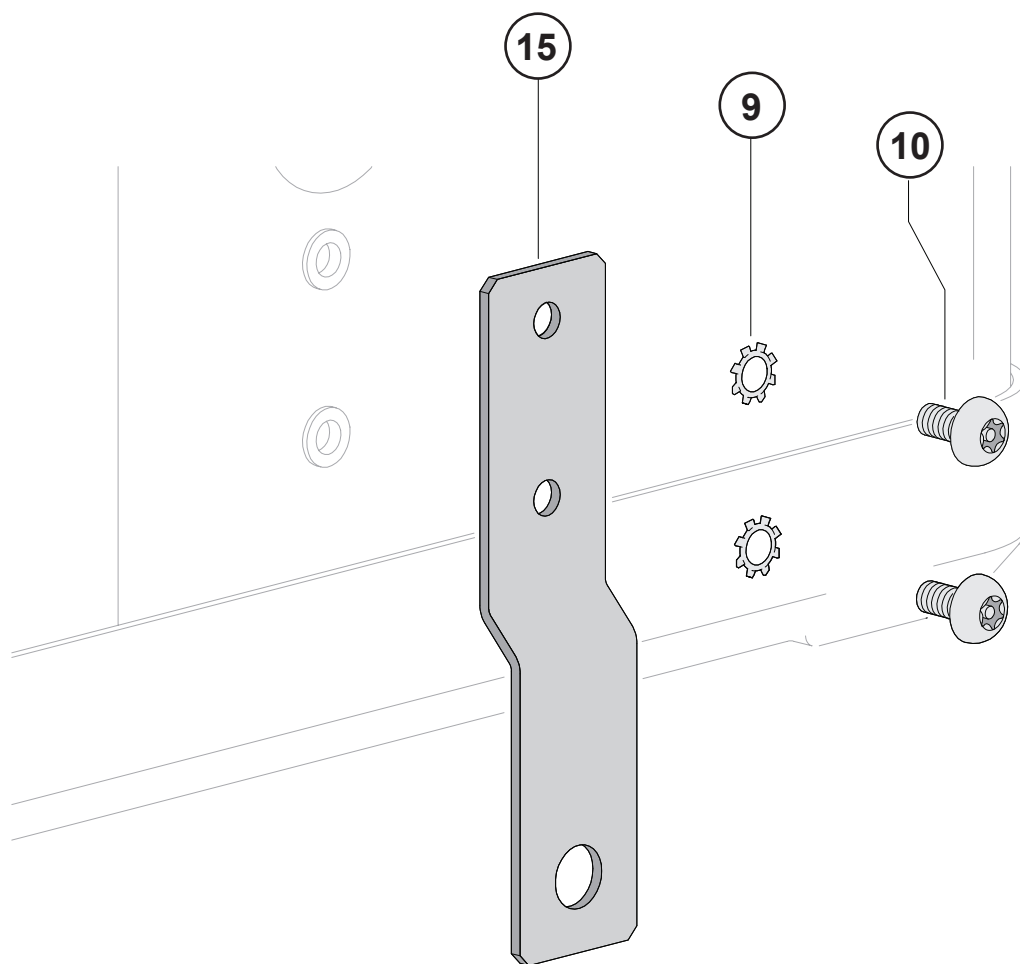
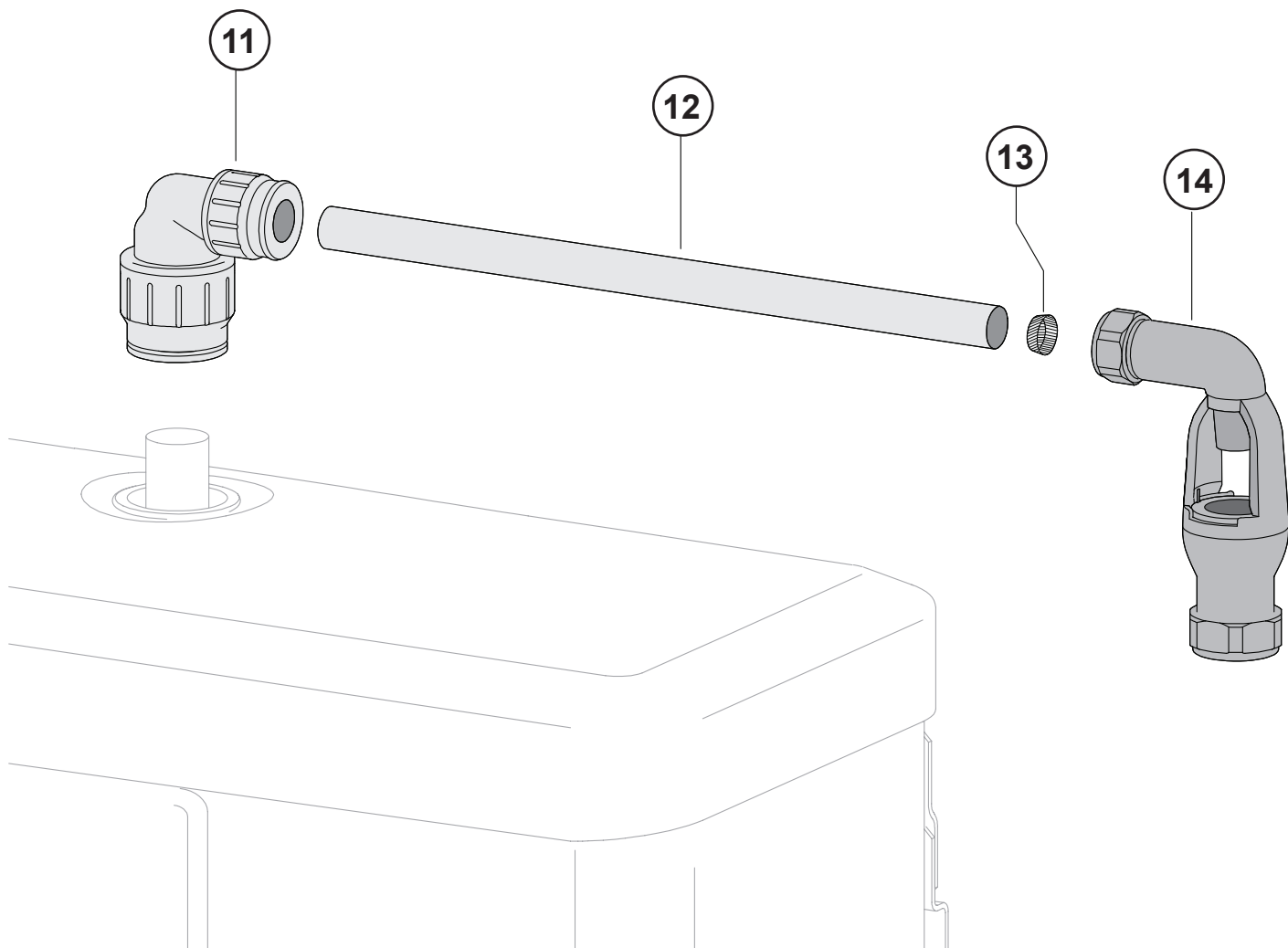
Table 9: Spares list continued

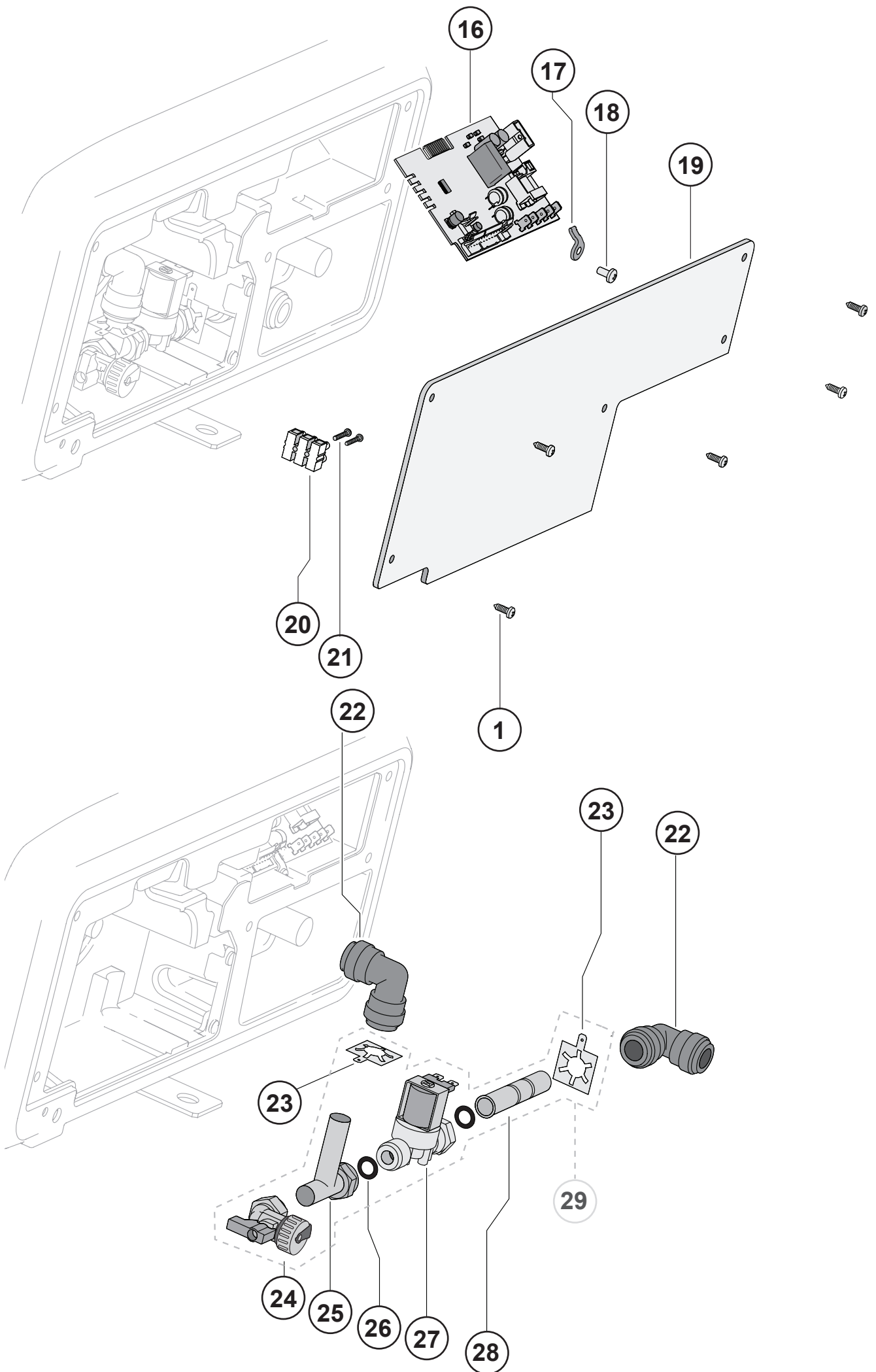
12.2 Accessories

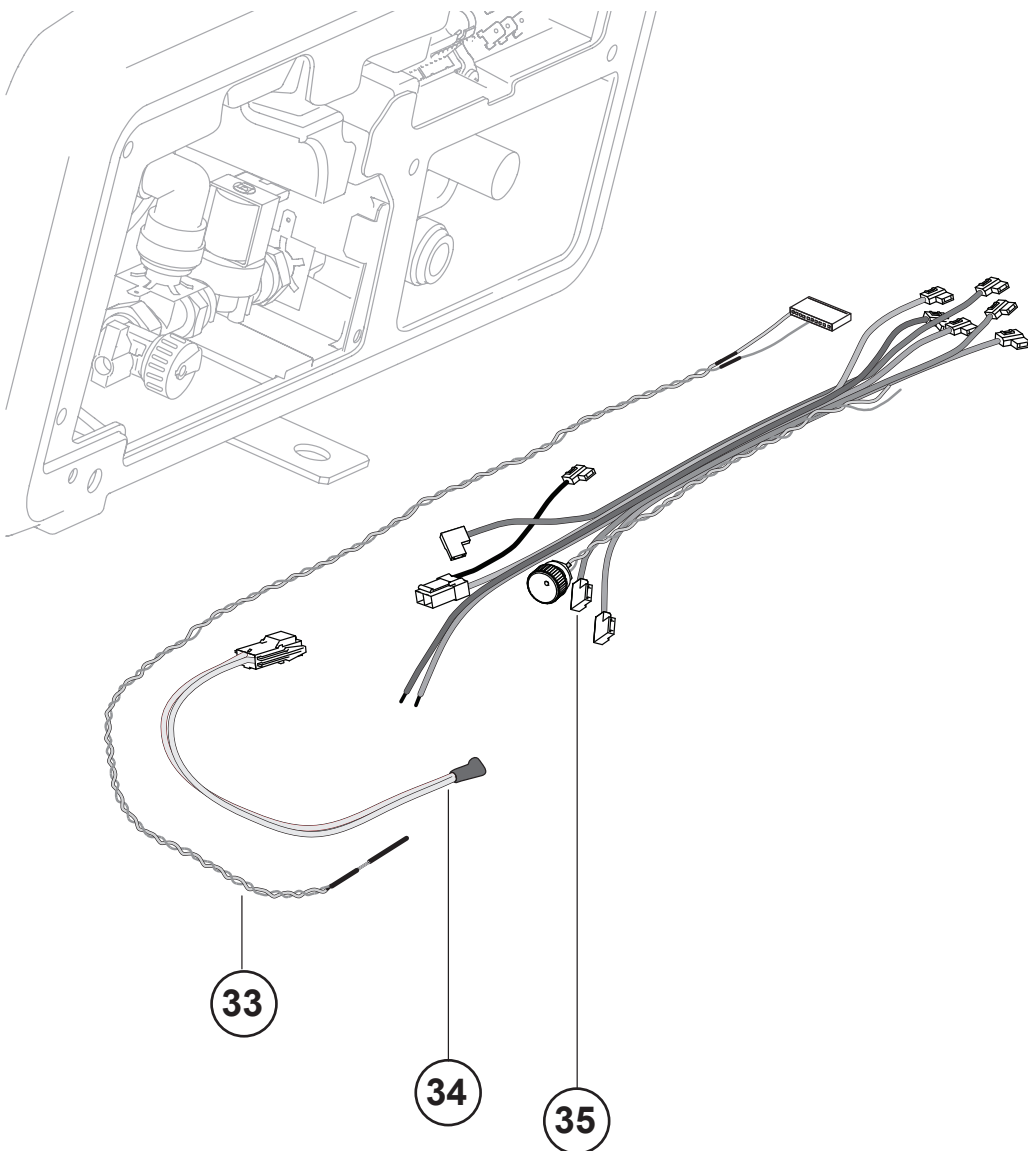
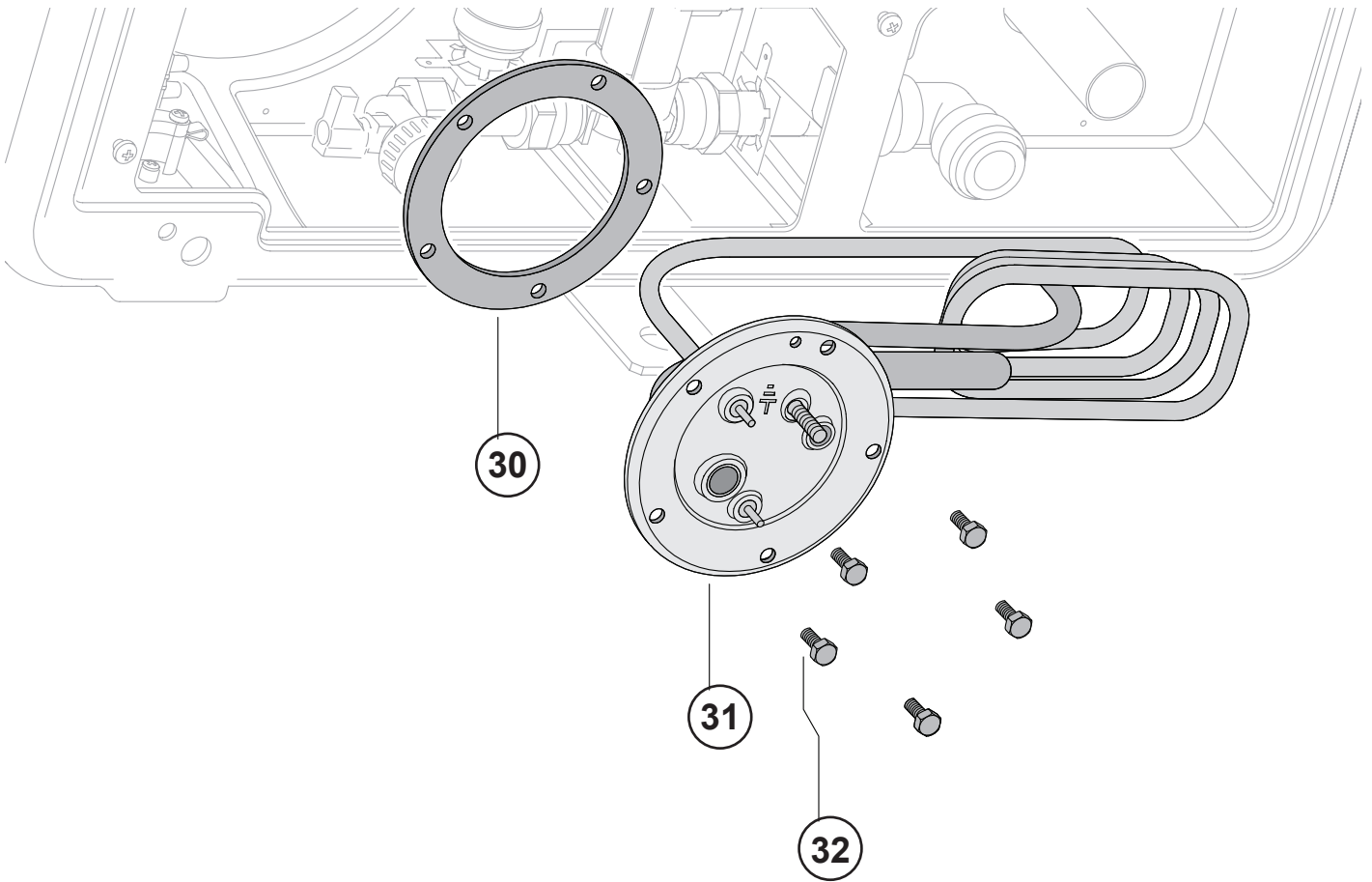
Description	Part Number
Pack CT1 - Water tempering kit (TMV2/3)	95970357
Pack CT2 - Pressure Reducing Valve kit	95970358

Table 10: Accessories list









13. Guarantee

Heatstore guarantees the Heatstore RECTANGULAR 3kW product against faulty manufacture or materials for a period of two years from the date of purchase including parts and labour.

These warranties are valid provided that:

The Heatstore RECTANGULAR 3 kW product has been correctly installed by a competent installer and as per the instructions contained in the Product Guide and all relevant Codes of Practice and Regulations in force at the time of installation.

It has only been used for the storage of category 1 or 2 water, refer to water regulations.

The water heater is not guaranteed against damage by frost and excessive scale build up

The installed unit is not in areas where the water supply contains chloride levels exceed 250mg/L.

Within 60 days of installation the user completes and returns the certificate supplied along with the proof of purchase to register the product.

The Heatstore RECTANGULAR 3kW product has not been modified in any way other than by Heatstore or Heatstore approved engineers.

The Heatstore RECTANGULAR 3kW product has not been subjected to frost, scaling, nor has it been tampered with or been subjected to misuse or neglect.

No factory-fitted parts have been removed for unauthorised repair or replacement.

Regular maintenance has been carried out by a competent person in accordance with the requirements set out in the maintenance section of the Product Guide and any replacement parts used should be authorised Heatstore spare parts.

Evidence of purchase and date of supply must be submitted upon making a claim.

This warranty is not valid for installations outside the United Kingdom.

This warranty does not affect your statutory rights.

The policy of Heatstore is that of continuous improvements and development, therefore the right is reserved to change specification without notice.

14. Environmental Information

Heatstore products are manufactured from many recyclable materials.
At the end of their useful life they should be disposed of at a Local Authority Recycling Centre in order to realise the full environmental benefits.
Insulation is by means of CFC-free polyurethane foam.

KEEP THIS LEAFLET IN A SAFE PLACE FOR FUTURE REFERENCE

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