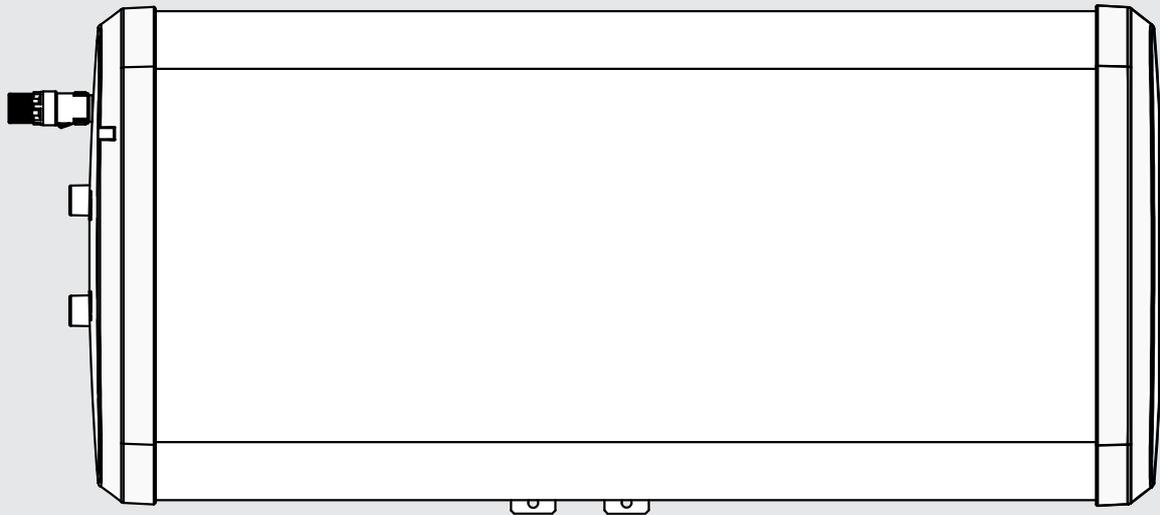


# HEATRAESADIA

SMARTER | CLEANER | WARMER

## Hotflo Horizontal 30 - 100 Litres Installation, operation and maintenance manual



# Contents

<b>1. Introduction</b> .....	<b>3</b>	<b>11. Warranty</b> .....	<b>20</b>
1.1 General.....	3	11.1 General.....	20
1.2 Symbols used.....	3	11.2 Warranty conditions.....	20
1.3 Abbreviations.....	3	11.3 Water supply requirements.....	20
1.4 Liabilities.....	3	11.4 Claims under warranty.....	20
<b>2. Safety</b> .....	<b>4</b>	11.5 Exclusions .....	20
2.1 General safety warnings.....	4	<b>12. Decommissioning</b> .....	<b>21</b>
2.2 Recommendations .....	4	12.1 Decommissioning procedure.....	21
2.3 Specific safety instructions .....	4	<b>13. Spare parts</b> .....	<b>22</b>
<b>3. Technical specifications</b> .....	<b>5</b>	13.1 Spare parts list .....	23
3.1 Technical data .....	5		
3.2 Dimensions and connections .....	6		
3.3 Electrical diagram(s).....	7		
<b>4. Description of the product</b> .....	<b>8</b>		
4.1 General description .....	8		
4.2 Operation principle .....	8		
4.3 Main components .....	8		
4.4 Standard delivery .....	8		
<b>5. Before installation</b> .....	<b>9</b>		
5.1 Installation regulations.....	9		
5.2 Installation requirements .....	9		
5.3 Choice of location.....	9		
5.4 Transport .....	9		
<b>6. Installation</b> .....	<b>10</b>		
6.1 General.....	10		
6.2 Water connections.....	10		
6.3 Electrical connections.....	15		
<b>7. Commissioning</b> .....	<b>15</b>		
7.1 General.....	15		
7.2 Checklist before commissioning.....	15		
7.3 Commissioning procedure.....	15		
7.4 Benchmark .....	15		
<b>8. Operation</b> .....	<b>16</b>		
8.1 General.....	16		
<b>9. Maintenance</b> .....	<b>17</b>		
9.1 General.....	17		
9.2 Standard inspection & maintenance operations..	17		
<b>10. Troubleshooting</b> .....	<b>19</b>		
10.1 Fault finding.....	19		



Benchmark<sup>™</sup> places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations and relevant electrical qualifications. The Benchmark<sup>™</sup> Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference. Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark<sup>™</sup> Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit [www.centralheating.co.uk](http://www.centralheating.co.uk) for more information. IMPORTANT NOTE TO USER: PLEASE REFER TO THE COMMISSIONING SECTION, PAGE 16 FOR IMPORTANT INFORMATION WITH RESPECT TO THE BENCHMARK SCHEME

# 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 Part G and L
- ▶ The Building Standards (Scotland) Regulations
- ▶ The Building Regulations (Northern Ireland)
- ▶ I.E.E Wiring Regulations
- ▶ UK Water 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 dangerous situation causing slight physical injury.



### CAUTION

Risk of material damage.



Signals important information.

## 1.3 Abbreviations

- ▶ T&P - Temperature & Pressure relief valve
- ▶ PRV - Pressure Reducing Valve
- ▶ Prv - Pressure relief valve

## 1.4 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 Building Regulations (part G, section G3).

In the interest of UK customers, we are continuously endeavouring to make improvements in 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 for using the appliance.
- ▶ Faulty or insufficient maintenance of the appliance.
- ▶ Failure to abide by the instructions for installing the appliance.

### Installer's liability

The installer is responsible for the installation and the commissioning of the appliance. The installer must respect 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 checks necessary.
- ▶ 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 the instruction manual to the user.
- ▶ Complete the warranty registration card.

### User's liability

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

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



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.



Water may drip from the discharge pipe of the pressure-relief device and this pipe

must be left open to the atmosphere; (see page 14 for more details)

The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked; (see page 14 for more details)

How hot water can be drained. (see page 11 for more details)

The type or characteristics of the pressure-relief device and how to connect it; (see Figure 1 for details and Figure 9, page 17 for exploded view)

A discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in frost free environment; (see page 14 for details)

Recommended minimum water pressure 0.08 MPa (0.8 bar). Max water pressure 1.6 MPa (16 bar) see table 1 page 5.



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

## 2. Safety

### 2.1 General safety warnings



#### DANGER

This appliance is unvented and as such becomes pressurised when in operation. The combination of pressurisation and hot water could lead to serious physical injury if the safety instructions in this manual are not adhered to.



#### WARNING

- ▶ Only competent persons having received adequate training are permitted to work on the appliance and the installation.
- ▶ Do not tamper with any of the safety valves or controls supplied with the cylinder.
- ▶ Before any work, switch off the mains supply to the appliance.



#### CAUTION

Do not operate immersion heater until the appliance has been filled with water.

### 2.2 Recommendations



#### WARNING

When handling the unit, take appropriate precautions for the weight of the unit. Weights can be found in section 3, p5.



#### CAUTION

Annual maintenance is recommended to be carried out by a competent person, see section 9, page 17.

### 2.3 Specific safety instructions



#### WARNING

- ▶ If water discharges from the Temperature/Pressure Relief Valve on the appliance, turn the water heater off. DO NOT turn off any water supply. Contact a competent installer for unvented water heaters to check the system.
- ▶ DO NOT tamper with any of the safety valves fitted to the system. If a fault is suspected contact a competent installer.
- ▶ DO NOT bypass the thermal cut-out in any circumstances.



#### WARNING

- ▶ This appliance is supplied with a factory temperature setting of 54 C for optimum energy efficiency. However, in some applications to aid in the control of legionella it may be necessary to reset this to a higher temperature. It is the responsibility of the installer and end user to ensure that where applicable the requirements of the "Approved Code of Practice L8": The control of legionella bacteria in water systems are met.

### 3. Technical specifications

#### 3.1 Technical data

Product Name	Hotflo 50L H 3kW	Hotflo 80L H 3kW	Hotflo 100L H 3kW
Product Code	7037030	7037032	7037034
Electrical rating	3.0kW @ 240V / 2.8kW @ 230V ~		
Max Inlet Pressure to PRV	1.6 MPa (16.0 bar)		
Weight Empty kg	21	26	30
Weight Full kg	71	106	130
Capacity (Litres)	50	80	100
Heat up time (min)	65	115	125
Operating pressure	0.35 MPa (3.5 bar)		
Maximum Design (Rated) pressure	0.6 MPa (6.0 bar)		
Minimum supply pressure	0.08 MPa (0.8 bar)		
Expansion vessel charge pressure	0.35 MPa (3.5 bar)		
Expansion relief valve setting	0.6 MPa (6.0 bar)		
Temperature/Pressure Relief Valve settings	90°C / 1.0MPa (10bar)		
Insulation thickness (min)	22mm	36mm	36mm

Table 1: Technical data

Product Name	Hotflo 50L H 3kW	Hotflo 80L H 3kW	Hotflo 100L H 3kW
Suppliers name or trade mark	Hotflo		
Supplier's model identifier	50L H 3kW	80L H 3kW	100L H 3kW
Storage volume V in litres	50	80	100
Mixed water at 40 °C V40 in litres	80	98	140
The declared load profile	M	M	M
The water heating energy efficiency class of the model	C	C	C
The water heating energy efficiency in %	37.9	37.8	37.7
The annual electricity consumption in kWh	1356	1357	1364
Daily fuel consumption $Q_{elec}$ in kWh	6.27	6.28	6.32
The thermostat temperature settings of the water heater, as placed on the market by the supplier	54°C		
Specific precautions that shall be taken when the water heater is assembled, installed or maintained and disposed of at end of life.	See pages 3 to 21		

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

Table 2: Technical fiche

### 3.2 Dimensions and connections

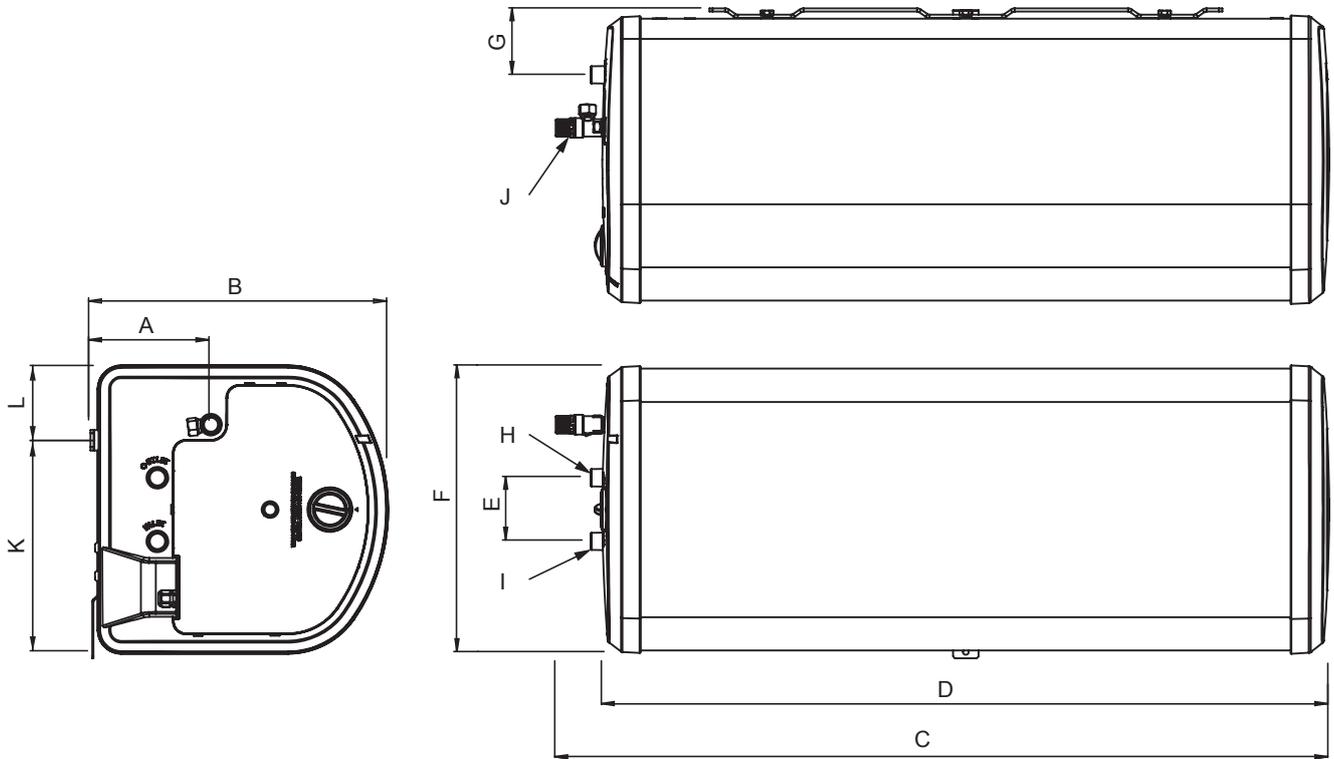


Figure 1: General dimensions

Item	50L H 3kW	80L H 3kW	100L H 3kW
A	148	188	188
B	369	465	465
C	1028	1084	1253
D	903	956	1134
E	100	100	100
F	371	451	451
G	95	105	105
H	OUTLET 22mm / 3/4"BSP (M)		
I	INLET 22mm / 3/4"BSP (M)		
J	TEMPERATURE / PRESSURE RELIEF VALVE. DISCHARGE PIPE CONNECTION 15mm COMPRESSION		
K	285	333	333
L	110	118	118

Table 3: General dimensions table

### 3.3 Electrical diagram(s)

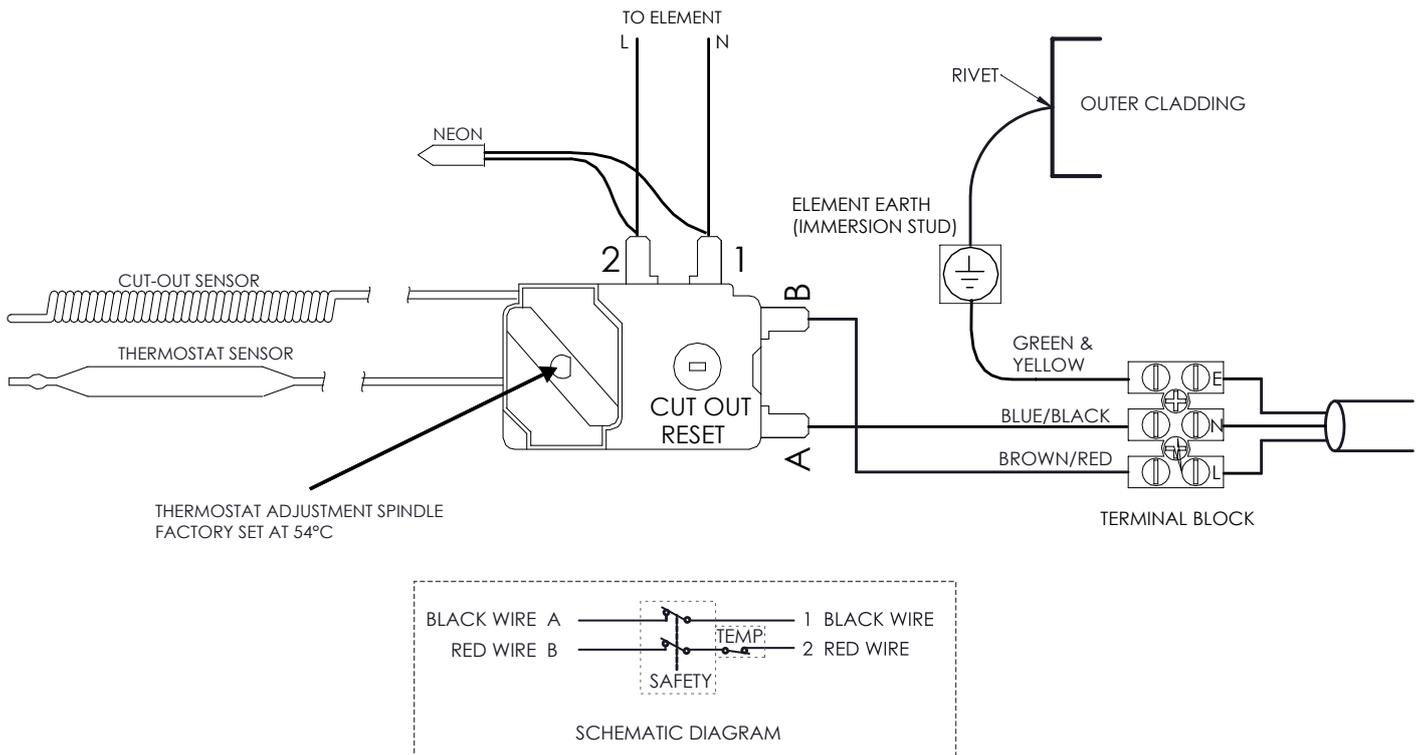


Figure 2: Wiring Diagram

## 4. Description of the product

### 4.1 General description

This appliance is a purpose designed unvented water heater. The water heater has a stainless steel inner vessel, which ensures an excellent standard of corrosion resistance. The outer casing is a combination of resilient thermoplastic mouldings and coated corrosion proofed steel sheet. All products are insulated with CFC free polyurethane foam to give good heat loss protection.

The appliance is supplied complete with all the necessary safety and control devices needed to allow connection to the cold water mains. All these components are preset and should not be tampered with.

### 4.2 Operation principle

The appliance is used to heat and store hot water for use in domestic & commercial applications.

The water is heated directly using a factory fitted electric heating element and thermostatically controlled by an adjustable thermostat.

To provide pressure to the tap or shower an unvented water heater uses the incoming mains water pressure. To do this the water heater is sealed and not vented. However, when the volume of water is heated it expands and without any room for expansion could cause the water heater to rupture and fail. To allow expansion of this heated water it is important that an expansion vessel is used (supplied). This vessel is pressurised and gives the heated water room to expand.

### 4.3 Main components

See figure 3: Main components

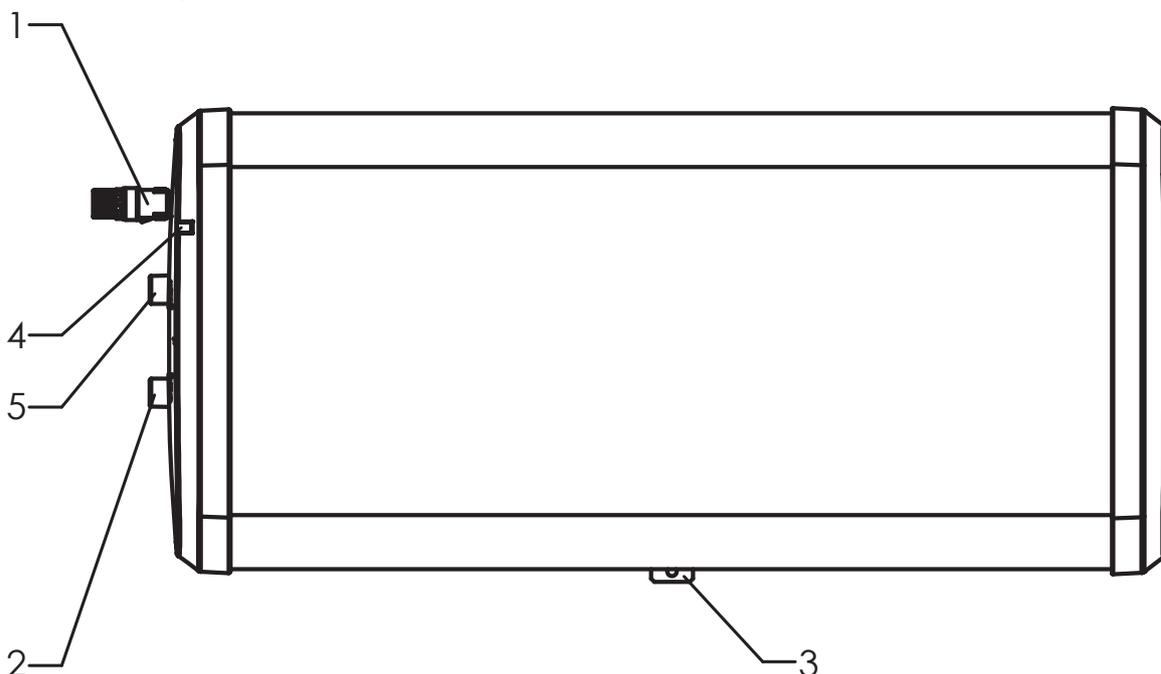


Figure 3: Main components

### 4.4 Standard delivery

The delivery includes:

- ▶ Water heater
- ▶ Wall mounting brackets
  
- ▶ Literature pack
  - ▶ Instructions
  - ▶ Warranty card
  
- ▶ Cold water control pack
  - ▶ Expansion vessel (inc bracket)
  - ▶ Tundish
  - ▶ Pressure reducing valve
  - ▶ Expansion (Pressure) relief valve
  - ▶ Check valve
  - ▶ Compression nuts
  - ▶ Copper olives

**Please check all components are supplied in the pack and advise your supplier if any are missing.**

Item	Description
1	Temperature and Pressure Relief Valve
2	Inlet
3	Wall Mounting Bracket (lower)
4	Neon Indicator
5	Outlet

Table 4: Main components table

## 5. Before installation

### 5.1 Installation regulations



#### WARNING

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

- ▶ Building Regulations G3
- ▶ The Building Standards (Scotland)
- ▶ The Building Regulations (Northern Ireland)
- ▶ I.E.E Electrical Regs
- ▶ UK Water Regulations

### 5.2 Installation requirements

#### Water supply

In an unvented system the pressure and flowrate is directly related to the incoming water supply. For this reason it is recommended that the maximum water demand is assessed and the water supply checked to ensure this demand can be satisfactorily met.

- ▶ We suggest the minimum supply requirements should be 0.08MPa (0.8 bar) pressure and 20 litres per minute flow rate. However, at these values outlet flow rates may be poor if several outlets are used simultaneously.
- ▶ A 22mm cold water supply is recommended, however, if a 15mm (1/2") supply exists, which provides sufficient flow, this may be used (although more flow noise may be experienced).
- ▶ The higher the available pressure and flow rate the better the system performance.
- ▶ The water heater has a maximum operating pressure of 0.35MPa (3.5 bar) which is controlled by the Pressure Reducing Valve (PRV).
- ▶ The Pressure Reducing Valve can be connected to a maximum mains pressure of 1.6MPa (16 bar).

#### Outlet/terminal fittings (taps, etc.)

- ▶ The appliance can be used with most types of terminal fittings.
- ▶ Outlets situated higher than the water heater will give outlet pressures lower than that at the heater, a 10m height difference will result in a 1 bar pressure reduction at the outlet.
- ▶ All fittings, pipework and connections must have a rated pressure of at least 0.6 Mpa (6 bar) at 80°C.

#### Limitations

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

- ▶ Ascending spray type bidets or any other class 1 back syphonage risk requiring that a type A air gap be employed.

- ▶ Situations where maintenance is likely to be neglected or safety devices tampered with.
- ▶ Water supplies that have either inadequate pressure or where the supply may be intermittent.
- ▶ Situations where it is not possible to safely pipe away any discharge from the safety valves.
- ▶ 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.

### 5.3 Choice of location

The appliance must be horizontally wall mounted. Although location is not critical, the following points should be considered:

- ▶ The appliance should be sited to ensure minimum dead leg distances, particularly to the point of most frequent use.
- ▶ Avoid siting where extreme cold temperatures will be experienced. All exposed pipe work should be insulated.
- ▶ The discharge pipework from the safety valves must have minimum fall of 1:200 from the appliance and terminate in a safe and visible position as per G3 requirements.
- ▶ Access to associated controls and immersion heaters must be available for the servicing and maintenance of the system.
- ▶ Clearance to the left hand side of the appliance should be at least 300 mm to allow removal of the cover and immersion heater.
- ▶ Ensure that the wall for the appliance is capable of permanently supporting the weight when full of water (see table 1, page 5 for weights).
- ▶ The tundish should be installed away from any electrical components.

### 5.4 Transport

Prior to installation the appliance should be stored and transported in an upright position in its original packaging in a dry area free from excessive damp, humidity or frost.

Please take care when handling a packaged appliance. The units are heavy and must only be moved manually using safe working practices. The package weights are displayed on the carton label. Once the packaging has been removed decide on a safe lifting method for the appliance again taking note of the weights noted in table 1, page 5. DO NOT use the Temperature/Pressure Relief Valve to lift or manoeuvre the appliance.

## 6. Installation

### 6.1 General

After reading the previous sections in this booklet and choosing a suitable location for the appliance please install, paying attention to the following water, electrical and commissioning sections.

#### Mounting the water heater

The water heater should be mounted using the brackets supplied and in the steps stated below:

- ▶ The top bracket bolts (3 off) require mounting to the unit. Note the location of the bolt holes used for the vertical units as well as which way up the unit should be mounted.
- ▶ The top bracket bolts should be screwed all the way into the hole until they stop and stick out 8mm as shown in figure 4.
- ▶ Secure the top bracket to the wall using appropriate fixings. Ensure it is fitted the correct way up.
- ▶ Locate the appliance top bracket bolts (3 off) in the corresponding slots in the wall bracket. Ensure they are fully engaged and seat correctly (figure 4).
- ▶ Secure the lower bracket to the wall.

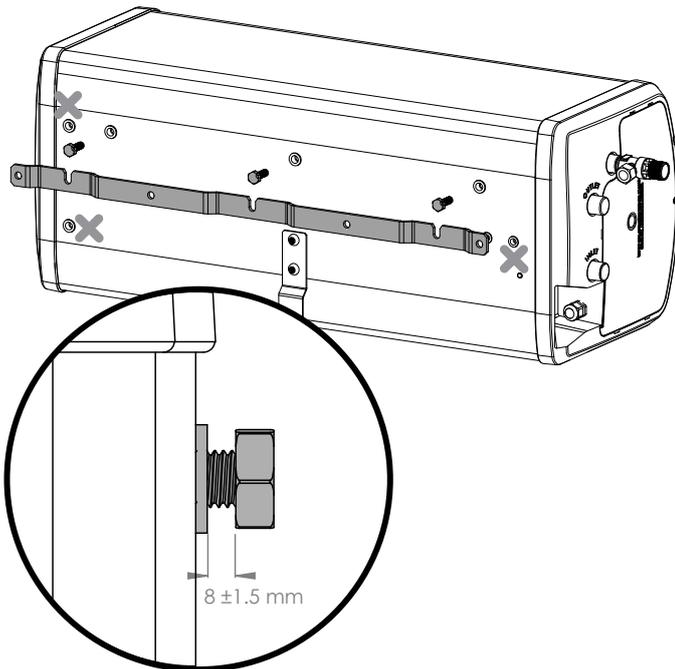


Figure 4: Top Bracket

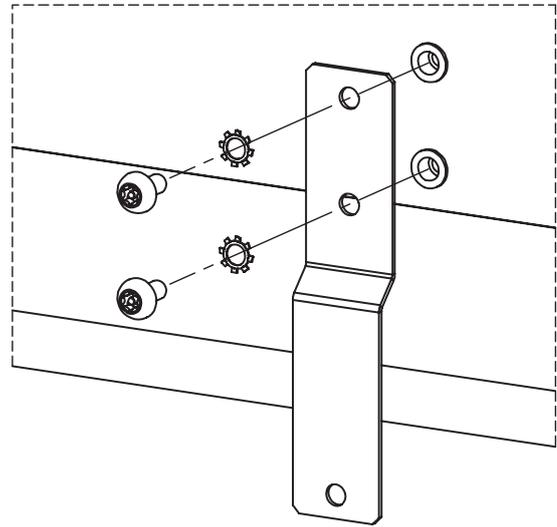


Figure 5: Lower Bracket

### 6.2 Water connections



#### WARNING

- ▶ Under no circumstances should the factory fitted Temperature/Pressure Relief Valve be removed other than by a competent person. To do so will invalidate any warranty claim.
- ▶ The cold water controls supplied **MUST** be fitted on the mains water supply to the appliance.
- ▶ No control or safety valves should be tampered with or used for any other purpose.
- ▶ The discharge pipe should not be blocked or used for any other purpose.
- ▶ The tundish should not be located adjacent to any electrical components.

Refer to the installation schematic (figure 6, page 11) for details on the pipework layout. Specific details for the discharge pipework layout is also provided in figure 7 on page 14.

- ▶ The appliance is supplied with a Pressure Reducing Valve, Check Valve, Expansion vessel and Expansion (Pressure) Relief Valve.
- ▶ All pipe fittings are made via 22mm compression fittings directly to the water heater. Fittings are threaded 3/4" BSP male parallel.
- ▶ A stopcock or servicing valve must be incorporated into the cold water supply to enable the water heater and its associated controls to be isolated and serviced. See figure 6 for position.
- ▶ The expansion vessel must be connected between the check valve and the appliance.
- ▶ The location of the expansion vessel should allow access to recharge the pressure as and when necessary (see page 18). See figure 6 page 11 for positioning.
- ▶ An expansion vessel wall mounting bracket is

supplied and should be fitted.

- ▶ A suitable draining tap should be installed in the cold water supply to the water heater between the Expansion (Pressure) Valve and the appliance at as low a level as possible.
- ▶ It is recommended that the outlet point of the drain pipework be at least 1 metre below the level of the base of the appliance (this can be achieved by attaching a hose to the drain tap outlet spigot).
- ▶ Hot water distribution pipework should be 22mm pipe with short runs of 15mm pipe to terminal fittings such as sinks and basins. Pipe sizes may vary due to system design.

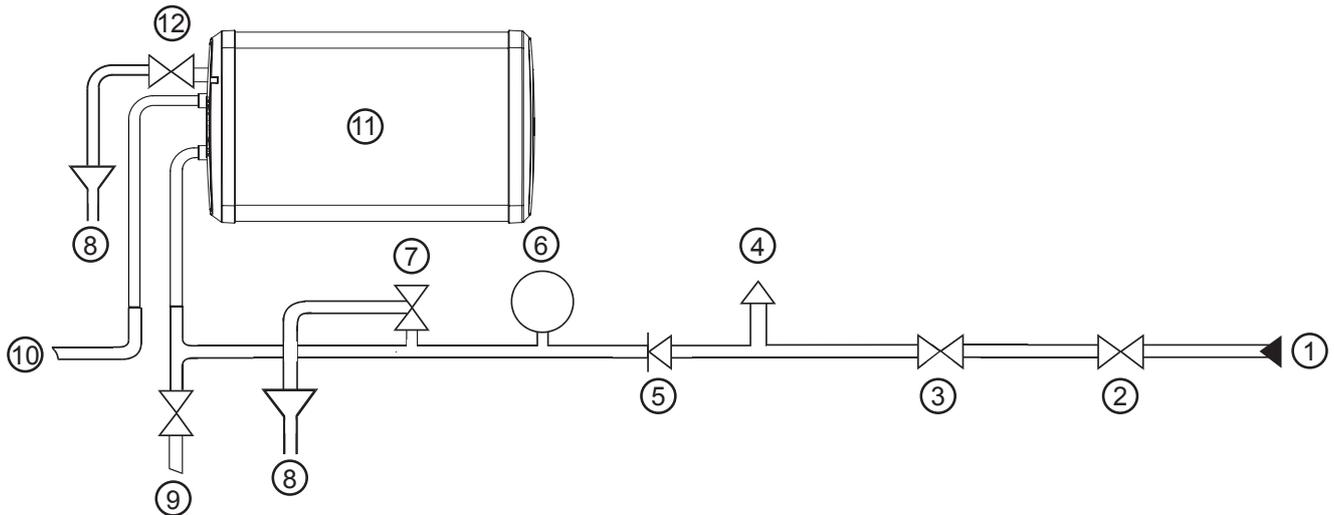


Figure 6: Typical installation - schematic (not to scale)

Item	Description
1	Cold Water Mains in
2	Service Valve (not supplied)
3	Pressure Reducing Valve
4	Balanced Cold Water Draw Off
5	Check Valve
6	Expansion Vessel
7	Expansion (Pressure) Relief Valve
8	Tundish
9	To Drain (Waste)
10	Hot out
11	Water heater
12	Temperature and Pressure Relief Valve

Table 5: Typical installation table

## Discharge

It is a requirement of Building Regulation G3 that any discharge from an unvented system is conveyed to where it is visible, but will not cause danger to persons in or about the building. The tundish and discharge pipes should be fitted in accordance with the requirements and guidance notes of Building Regulation G3. The G3 Requirements and Guidance section 3.50 - 3.63 are reproduced in the following sections of this manual. For discharge pipe arrangements not covered by G3 Guidance advice should be sought from your local Building Control Officer. Any discharge pipe connected to the pressure relief devices (expansion valve and temperature/pressure relief valve) must be installed in a continuously downward direction and in a frost free environment.

Water may drip from the discharge pipe of the pressure relief device. This pipe must be left open to the atmosphere. The pressure relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.

### G3 REQUIREMENT

*“...there shall be precautions...to ensure that the hot water discharged from safety devices is safely conveyed to where it is visible but will not cause danger to persons in or about the building.”*

*The following extract is taken from the latest G3 Regulations*

#### *Discharge pipes from safety devices*

##### *Discharge pipe D1*

*3.50 Each of the temperature relief valves or combined temperature and pressure relief valves specified in 3.13 or 3.17 should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a tundish.*

*3.51 The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the temperature relief valve.*

*3.52 Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.*

*3.53 Where valves other than the temperature and pressure relief valve from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the hot water storage system water heater or package.*

##### *Tundish*

*3.54 The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than,*

*the valve, with no more than 600mm of pipe between the valve outlet and the tundish (see Fig 7).*

*Note: To comply with the Water Supply (Water Fittings) Regulations, the tundish should incorporate a suitable air gap.*

*3.55 Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.*

##### *Discharge pipe D2*

*3.56 The discharge pipe (D2) from the tundish should:*

- (a) have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework (see Fig. 7); and*
- (b) be installed with a continuous fall thereafter of at least 1 in 200.*

*3.57 The discharge pipe (D2) should be made of:*

- (a) metal; or*
- (b) other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291).*

*3.58 The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. for discharge pipes between 9m and 18m the equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance. See Fig 11, Table 3 and the worked example.*

*Note: An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of BS 6700:2006 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.*

*3.59 Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.*

*3.60 The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should:*

- (a) contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated*

through the tundish;

(b) be a separate branch pipe with no sanitary appliances connected to it;

(c) if plastic pipes are used as branch pipes carrying discharge from a safety device they should be either polybutylene (PB) to Class S of BS 7291-2:2006 or cross linked polyethylene (PE-X) to Class S of BS 7291-3:2006; and

(d) be continuously marked with a warning that no sanitary appliances should be connected to the pipe.

Note:

1. Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1.

2. Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack.

#### Termination of discharge pipe

3.61 The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.

3.62 Examples of acceptable discharge arrangements are:

(a) to a trapped gully with the end of the pipe below a fixed grating and above the water seal;

(b) downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and

(c) discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering system that would collect such discharges.

3.63 The discharge would consist of high temperature water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

#### Worked example of discharge pipe sizing

Fig. 7: shows a G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

From Table 6:

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is 9.0m.

Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m

Therefore the permitted length equates to: 5.8m

5.8m is less than the actual length of 7m therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valves equates to 18m.

Subtract the resistance of 4 No. 28mm elbows at 1.0m each = 4.0m

Therefore the maximum permitted length equates to: 14m

As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Valve Outlet Size	Minimum Size Of Discharge Pipe D1	Minimum Size Of Discharge Pipe D2 From Tundish	Maximum Resistance Allowed, Expressed As A Length Of Straight Pipe (I.E. No Elbows Or Bends)	Resistance Created By Each Elbow Or Bend
G1/2	15mm	22mm 28mm 35mm	up to 9m up to 18m up to 27m	0.8m 1.0m 1.4m
G3/4	22mm	28mm 35mm 42mm	up to 9m up to 18m up to 27m	1.0m 1.4m 1.7m
G1	28mm	35mm 42mm 54mm	up to 9m up to 18m up to 27m	1.4m 1.7m 2.3m

Table 6: Sizing of copper discharge pipe (D2) for common temperature relief valve outlet sizes

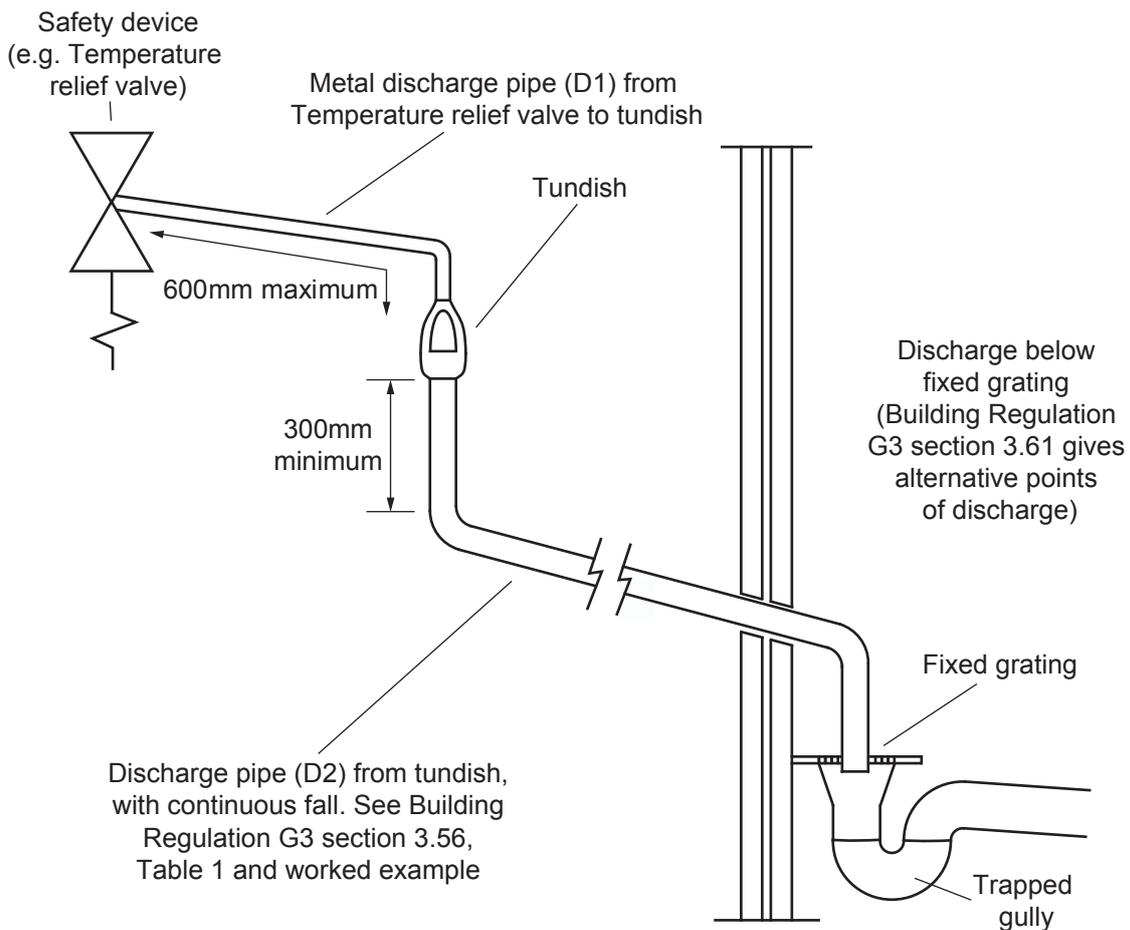


Figure 7: Typical discharge pipe arrangement (extract from Building Regulation G3 Guidance Section 3.50)

## 6.3 Electrical connections



### WARNING

- ▶ Disconnect from the mains electrical supply before removing any covers.
- ▶ Never attempt to replace the immersion heater other than with the recommended immersion heater.
- ▶ DO NOT bypass the thermal cut-out(s) in any circumstances. Ensure the two spade terminations on the wires from the thermostat and thermal cut-out are pushed firmly onto the corresponding terminations on the element plate assembly.
- ▶ All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E Wiring Regulations.
- ▶ Each circuit must be protected by a suitable fuse and double pole isolating switch with a contact separation of at least 3mm in both poles.
- ▶ DO NOT operate the immersion heater until the appliance has been filled with water.

- ▶ Check that the electrical supply is of sufficient current rating and voltage, see Technical Data page 5.
- ▶ A 2 metre length of flexible cable is supplied factory fitted. The cable specification is H05VV-F 3G 2.5mm<sup>2</sup>. If replacing or extending the same specification of cable should be used.
- ▶ The flexible cable must be wired into an appropriately fused switched spur.
- ▶ The wires are colour coded as follows:

Green and Yellow	EARTH	
Brown	LIVE	(L)
Blue	NEUTRAL	(N)

In case of difficulty contact service support; contact details are available on page 28 of this booklet.

## 7. Commissioning

### 7.1 General



### WARNING

DO NOT operate the immersion until the water heater has been filled with water.

### 7.2 Checklist before commissioning

- ▶ Check that all installation and discharge pipe requirements have been met.
- ▶ Check expansion vessel pre-charge pressure. The vessel is supplied precharged to 0.35MPa (3.5 bar) to match the control pressure of the Pressure Reducing Valve. The pre-charge pressure is checked using a car tyre gauge by unscrewing the plastic cap opposite the water connection.
- ▶ Check all water connections are tight.
- ▶ Check all electrical connections are tight.
- ▶ Check all earth bonding links are connected, tight and un-damaged.
- ▶ Check earth continuity, short circuits, polarity and resistance to earth.

### 7.3 Commissioning procedure

- ▶ Open a hot tap furthest from the water heater and turn on the water supply to the water heater.
- ▶ Allow water heater to fill and leave hot tap running for a short while to purge any air and flush out the pipework.
- ▶ Open successive hot taps to purge the system of air.
- ▶ Check all water connections for leaks and rectify as necessary.
- ▶ Turn off mains water supply.
- ▶ Remove the Pressure Reducing Valve head work to access the strainer mesh, clean and re-fit (see figure 9, page 17)
- ▶ Turn the water supply back on.
- ▶ Manually open, for a few seconds, each relief valve in turn, checking that water is discharged and runs freely through the tundish and out at the discharge point.
- ▶ Ensure that the valve(s) reseat satisfactorily.
- ▶ If necessary set the temperature control knob to the desired setting. Factory setting is 54°C.
- ▶ Switch on the electrical supply. The indicator light will illuminate during heating. When the set temperature is reached the indicator light will go out.
- ▶ The set temperature can be adjusted by rotating the control knob. This can be set to give temperatures in the range 10°C to 70°C (see figure 8, page 16). In hard water areas it is advised that the maximum temperature is restricted to prevent build up of scale. Temperatures above 55°C can scald so consideration should be given to blending at the point of use to a safe user temperature.

## 7.4 Benchmark

The appliance is covered by the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council. For more information visit [www.centralheating.co.uk](http://www.centralheating.co.uk).

Please ensure that the installer has fully completed the Benchmark Checklist (see page 34) of this manual and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England & Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service. The Benchmark Checklist may be required in the event of any warranty work.

## 8. Operation

### 8.1 General



#### WARNING

- ▶ If water discharges from the temperature/pressure relief valve on the appliance, turn the appliance off. DO NOT turn off any water supply. Contact a competent installer for unvented water heaters to check the system.
- ▶ DO NOT tamper with any of the safety valves fitted to the system. If a fault is suspected contact a competent installer.
- ▶ DO NOT bypass the thermal cut-out in any circumstances.

- ▶ The appliance stores water at the temperature set on the internal adjustable thermostat. This can be set to give temperatures in the range 10°C to 70°C. The factory set temperature is set at 54°C.
- ▶ The temperature control is underneath the cover, please see figure 10, page 18 on how to remove.
- ▶ Turn the adjustment knob clockwise to set hotter, or counterclockwise to set cooler.

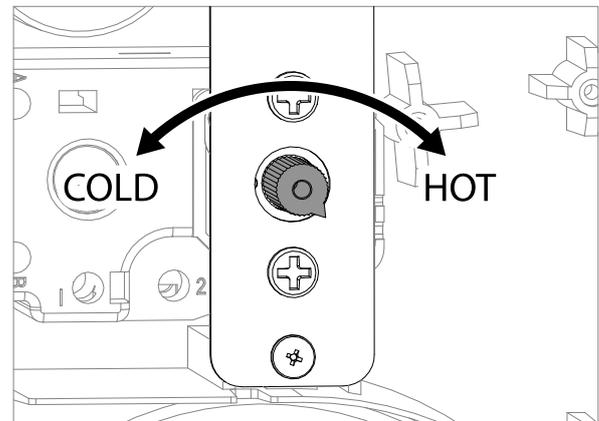


Figure 8: Temperature control



#### WARNING

- ▶ If the appliance is to be left unused following installation and commissioning e.g. unoccupied properties, the appliance should be drained or regularly flushed through with fresh mains water once a week.
- ▶ When placing the appliance into service, the procedure for filling the appliance and the system checks detailed above should be carried out.

- ▶ In hard water areas it is advised that the maximum temperature is restricted to prevent build up of scale. Temperatures above 55°C can scald so consideration should be given to blending at the point of use to a safe user temperature.
- ▶ To avoid risk of freezing when the heater is not in use for long periods during the winter months, do not switch off the electrical supply and set the thermostat to its minimum position. N.B. This will not protect other system pipework.
- ▶ The indicator light will be illuminated when the appliance is heating.
- ▶ To ensure the appliance continues to operate at its optimum performance it should be periodically maintained in accordance with the instructions given under the section headed MAINTENANCE.

## 9. Maintenance

### 9.1 General

#### Maintenance requirements

Unvented hot water systems have a continuing maintenance requirement in order to ensure safe working and optimum performance. It is essential that the relief valve(s) are periodically inspected and manually opened to ensure no blockage has occurred in the valves or discharge pipework.

Similarly cleaning of the strainer, element and replacement of the air in the expansion vessel will help to prevent possible operational faults.

The maintenance checks described below should be performed by a competent person on a regular basis.

### 9.2 Standard inspection & maintenance operations

#### Inspection

The immersion heater boss can be used as an access for inspecting the water heater internally.

#### Safety valve operation



#### CAUTION

Water discharged may be very hot!

- ▶ Manually operate the Temperature/Pressure Relief Valve for a few seconds.
- ▶ Check water is discharged and that it flows freely through the tundish and discharge pipework.
- ▶ Check valve reseats correctly when released.
- ▶ Repeat the above procedure for the Expansion Relief Valve.

#### Strainer

- ▶ Turn off the cold water supply and power supply.
- ▶ The lowest hot water tap should then be opened to de-pressurise the system.
- ▶ Remove the pressure reducing cartridge to access the strainer mesh.
- ▶ Wash any particulate matter from the strainer under clean water.
- ▶ Re-assemble ensuring the seal is correctly fitted. DO NOT use any other type of sealant.

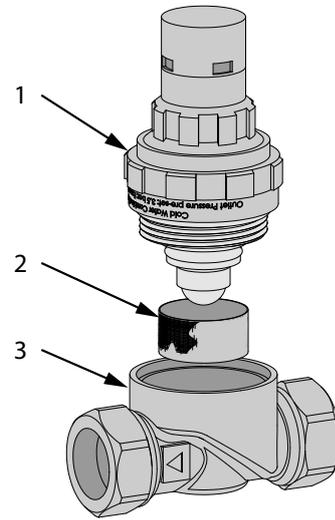


Figure 9: Pressure Reducing Valve assembly

Item	Description
1	Pressure Reducing Cartridge
2	Strainer mesh
3	Pressure Reducing Valve body

Table 7: Pressure Reducing Valve parts

## Descaling immersion heater



### CAUTION

Be careful when removing the immersion heater as some water will be left in bottom of appliance.

DO NOT use a sharp implement as damage to the element surface could be caused.

DO NOT scrape element clean.

- ▶ Turn off the mains water supply and isolate the electrical supply to the appliance.
- ▶ Attach a hosepipe to the drain cock having sufficient length to take water to a suitable discharge point below the level of the appliance.
- ▶ Open a hot tap close to the appliance and open drain cock to drain the appliance.
- ▶ When empty, open the cover to the immersion heater housing. Remove the securing screw then release the cover by carefully inserting a flat bladed screwdriver into the slots around the cover and gently levering outwards until the catches release (see figure 10 page, 18).
- ▶ Disconnect wiring from immersion heater terminals.
- ▶ Carefully remove the thermostat and thermal cut-out capillary sensors from the pocket on the immersion heater.
- ▶ Place a suitable receptacle beneath the immersion heater to collect any water left in the appliance.
- ▶ Unscrew immersion heater bolts and remove immersion heater from the water heater.

NOTE: Over time the immersion heater gasket may become stuck to the mating surface. To break the seal there is a separate threaded hole in the plate. Screw one of the removed bolts into this hole to help remove element.

- ▶ Carefully remove any scale from the surface of the element. Remove any loose scale from the appliance interior.
- ▶ Ensure sealing surfaces are clean and seals are undamaged, if in doubt fit a new gasket.
- ▶ Replace immersion heater ensuring correct orientation. One of the bolt holes uses a larger bolt to ensure the correct orientation.
- ▶ Tighten bolts.
- ▶ Replace thermostat and thermal cut-out capillary sensors into the top pocket on the immersion heater, ensure that the thermostat is inserted first followed by the cut-out (see figure 2, page 7 to identify). Ensure they are pushed fully into the pocket and the capillary tubes are not kinked or damaged.
- ▶ Reconnect wires from the thermostat onto element, ensuring that the terminals are correctly engaged.
- ▶ Reconnect the earth wires to the earth stud.

- ▶ Refill the appliance. When water issues from the hot tap allow to run for a short while to purge any air and flush through the pipework. Open successive hot taps served by the appliance to purge any air. With all hot outlets closed check all joints for leaks.
- ▶ Close immersion heater housing cover ensuring the catches are pushed fully home until they "snap" into place. Secure by replacing the screw previously removed.

## Expansion vessel charge pressure



### CAUTION

DO NOT OVER-CHARGE EXPANSION VESSEL

- ▶ Remove the dust cap on top of the vessel.
- ▶ De-pressurise the system by turning the mains supply off and then opening a hot tap served by the appliance.
- ▶ Check the charge pressure using a tyre pressure gauge. The pressure (with system de-pressurised) should be 0.35MPa (3.5 bar).
- ▶ If it is lower than the required setting it should be re-charged using a tyre pump (Schrader valve type).
- ▶ Re-check the pressure and when correct replace the dust cap.

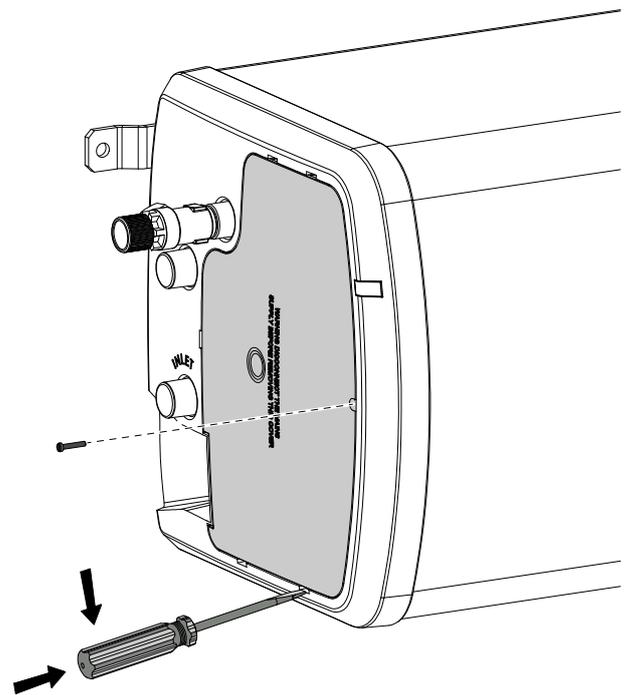


Figure 10: Cover Removal

## 10. Troubleshooting



### WARNING

DO NOT tamper with any of the safety valves or controls supplied with the water heater as this will invalidate any warranty.

Water contained in the water heater may be very hot, especially following a thermal control failure. Caution must be taken when drawing water from the water heater.

## 10.1 Fault finding

### Important

- ▶ Servicing should only be carried out by competent persons in the installation and maintenance of unvented water heating systems.
- ▶ Any spare parts used MUST be authorised parts.
- ▶ Disconnect the electrical supply before removing any electrical equipment covers.
- ▶ NEVER bypass any thermal controls or operate system without the necessary safety valves.
- ▶ The Fault Finding Chart (table 8, below) will enable operational faults to be identified and their possible causes rectified. Any work carried out on the unvented appliance and its associated controls MUST be carried out by a competent installer for unvented water heating systems. In case of doubt contact service support (see contact details on page 28).

Fault	Possible cause	Remedy
Water not heating	Electrical supply fault.	Check electrical supply.
	Thermal cut out tripped.	Check cut out. If operated then reset. Check thermostat & replace if necessary.
	Thermostat setting too low or faulty.	Check and adjust setting if required. Replace if necessary.
	Element Failure.	Replace EPA.
Discharge of water from Expansion (pressure) relief valve (continuously).	Excessive mains water pressure.	Check pressure from Pressure reducing valve. Replace if greater than 0.35MPa (3.5bar / 51psi)
	Expansion (pressure) relief valve fault.	Replace Expansion (pressure) relief valve.
Discharge of water from Expansion (pressure) relief valve (intermittently).	Loss of pressure from expansion vessel.	Check and if necessary recharge expansion vessel precharge pressure.
Discharge of water from temperature/pressure relief valve and/or water/steam from pressure relief valve	Thermostat and thermal cut out fault.	Replace combined thermostat & thermal cut out.
No water flow	Product incorrectly installed.	Check inlet & outlet connections are correct. Check valves are installed in accordance with flow direction marks.
	Mains water supply not turned on.	Check mains water supply is turned on.
	Blockage in mains water supply.	Check mains water supply for obstructions. Check strainer in pressure reducing valve.
"Milky water"	Oxygenated water	Water from a pressurised system releases oxygen bubbles when flowing. The milkiness will disappear after a short while.

Table 8: Fault finding chart

### Spare Parts

A full range of spare parts are available for the appliance range (table 9, page 23). Refer to the technical data label on the appliance to identify the model installed and ensure the correct part is ordered. You will need to quote the serial number, which is printed on the data label.

# 11. Warranty

## 11.1 General

The Hotflo warranty provides a high level of customer support and peace of mind in the unlikely event that a problem arises from a manufacturing defect. It is supported by a nationwide team of field-based engineers and our own call centre.

The warranty covers Hotflo appliances installed in domestic and commercial properties for the following periods:

- ▶ Stainless steel storage vessel and connections - 5 years
- ▶ Cold water control valves supplied with the appliance - 2 years
- ▶ Expansion vessel supplied with the appliance - 2 years
- ▶ Immersion heater assembly - 2 years
- ▶ Electrical controls as factory fitted to the appliance - 2 years

The warranty periods apply from the date of purchase and include both parts (where supplied by Heatrae Sadia) and labour.

This warranty is valid for installations within the United Kingdom. For installations in the Republic of Ireland please contact Potterton Myson (Ireland) Limited on +353 (0) 1 4590870 for warranty terms and conditions applicable. For installations outside of the United Kingdom and the ROI please contact Heatrae Sadia Export on +44 1603 420271 for warranty terms and conditions applicable.

This warranty does not affect your statutory rights.

## 11.2 Warranty conditions

The warranty is given provided that the following conditions have been met:

- ▶ The appliance has been installed by a competent installer in accordance with the instructions contained in this manual and in compliance with all relevant laws, guidance, codes of practice and regulations in force at the time of installation.
- ▶ The appliance has not been modified or tampered with in any way, other than by Heatrae Sadia or authorised engineers.
- ▶ The appliance or any part or parts of the appliance (whether factory fitted or otherwise) have not been repaired or replaced other than by a Heatrae Sadia authorised engineer and any replacement parts used on the appliance are authorised Heatrae Sadia spare parts.
- ▶ The factory fitted Temperature & Pressure Relief Valve has not been tampered with or removed.
- ▶ The appliance has not been subject to damage caused by the build up of scale.
- ▶ The appliance has not been subjected to frost or freezing temperatures.

- ▶ The appliance has not been subjected to misuse or neglect.
- ▶ The appliance has not been subject to wilful or accidental damage caused by your negligence.
- ▶ Regular maintenance has been carried out by a competent person or a Heatrae Sadia authorised engineer in accordance with the maintenance requirements set out in this manual.
- ▶ The appliance is registered within 60 days of purchase. This can be done by telephone, online or by using the registration form supplied with the appliance.
- ▶ The appliance has not been affected by any cause beyond our reasonable control including, without limitation: an act of God, explosion, flood, fire or accident; war or civil disturbance; strike, industrial action or stoppages of work; any form of government intervention; a third party act or omission including theft or malicious damage; failure by you to give us a correct delivery address or notify us of any change of address.

## 11.3 Water supply requirements

This appliance must only be used for the storage of wholesome water. The storage of water from supplies not meeting the requirements of the Water Supply (Water Quality) Regulations will invalidate the warranty. Any disinfection procedure must be carried out in accordance with BS EN 806 and the complete system be thoroughly flushed following application of any disinfection solution.

## 11.4 Claims under warranty

In order to claim against the warranty the following should be noted:

- ▶ Defects should be reported to Heatrae Sadia as soon as you are aware of them. Please report any defect to Heatrae Sadia by contacting 0344 871 1535.
- ▶ Evidence of purchase (for example a receipt or delivery note) and date of supply is submitted when making a claim.
- ▶ Access should be available, at reasonable times and upon reasonable notice, to the appliance to allow any inspection, repair or replacement.
- ▶ The appliance should not be removed from its place of installation so a Heatrae Sadia authorised engineer can assess the complete installation.

## 11.5 Exclusions

The following exclusions apply:

- ▶ Any third party repair or replacement costs, unless those costs have been agreed and authorised by Heatrae Sadia in writing prior to incurring those costs, will not be met.
- ▶ Heatrae Sadia accepts no liability for any third party damage, any indirect and consequential losses and any loss of earnings, loss of business, or losses in relation to stress and inconvenience, howsoever caused.

## 12. Decommissioning

### 12.1 Decommissioning procedure

- ▶ Isolate electrical supplies and make safe
- ▶ Isolate the water supply
- ▶ Drain the appliance
- ▶ Remove appliance
- ▶ Cap pipework

#### Environmental information

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 an approved CFC/HCFC free polyurethane foam with an ozone depletion factor of zero.

#### WEEE Declaration

Disposal of Waste Equipment by Users in Private Households in the European Union.



This symbol on the product indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the company where this product was purchased.

## 13. Spare parts

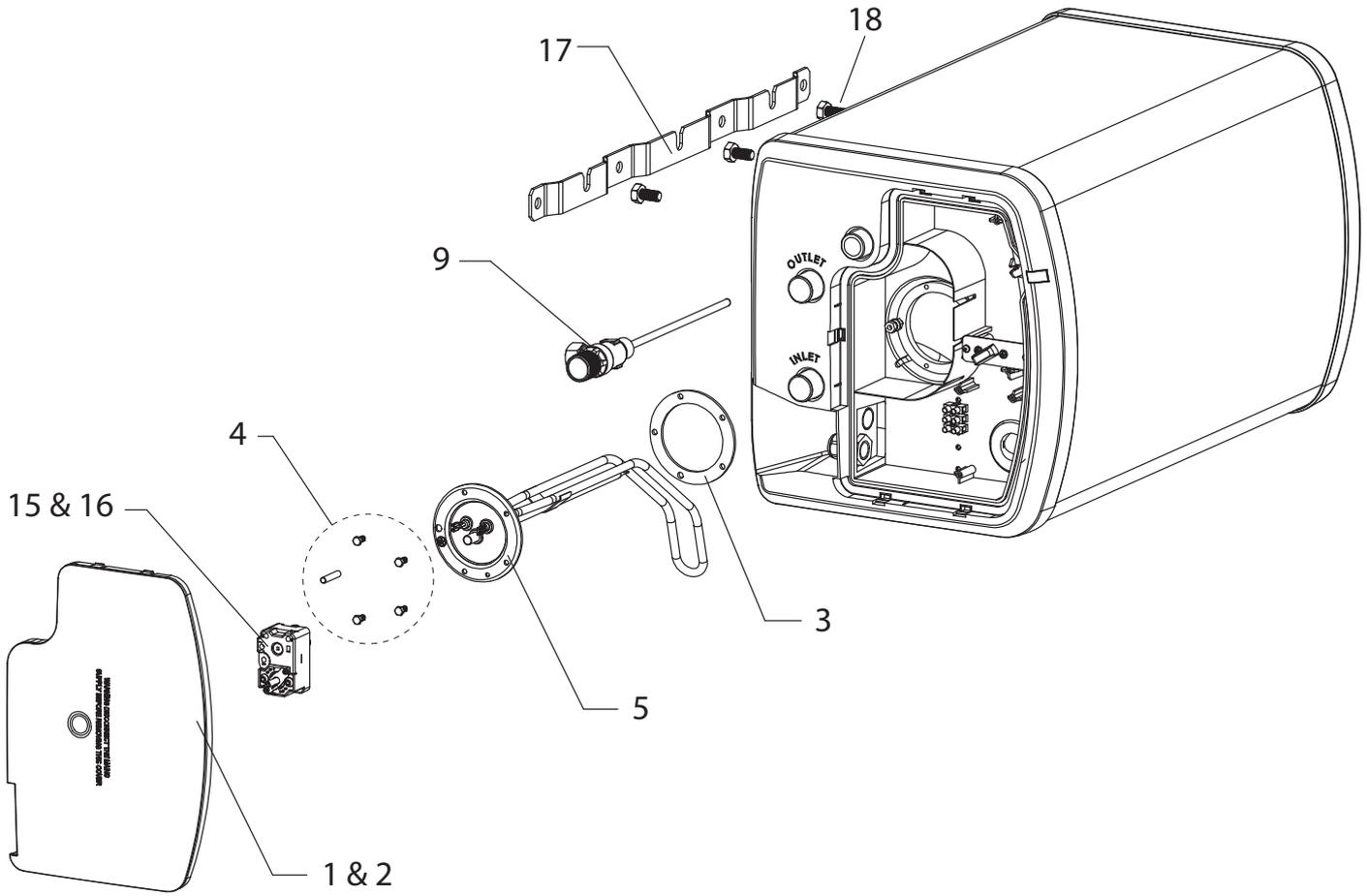


Figure 11: Spare parts

### 13.1 Spare parts list

Item	Description	Part Number
1	Electrical cover white small (50)	7037705
2	Electrical cover white large (80 & 100L)	7037706
3	Immersion heater gasket	95611708
4	Immersion heater fixings	7037707
5	Immersion heater assembly H - 3.0kW 240V~	7037710
6	Expansion vessel 8 litre (not shown)	95607675
7	Expansion vessel 12 litre (not shown)	95607863
8	Expansion vessel bracket 8 & 12 litre (not shown)	95607313
9	T&P relief valve	95605084
10	Pressure (expansion) relief valve 0.6 Mpa (6 bar) (not shown)	95607986
11	Pressure reducing valve (not shown)	95605082
12	Tundish (not shown)	95605838
13	Non return valve 22mm (not shown)	7037720
14	Indicator light/neon BBSC (not shown)	7037724
15	Thermostat / thermal cut out bbsc 30/50	7037739
16	Thermostat / thermal cut out bbsc 80/100	7037740
17	Wall bracket top horizontal (no bolts)	7037735
18	Top bracket fixing bolt kit (unit side only)	7037737
19	Wall bracket, bottom (not shown)	7034212
20	M8 ext tooth lock washer A2 SS (for bottom bracket, not shown)	7034210
21	Bolt security torx M8x16 (for bottom bracket, not shown)	7034211
22	Compression nuts & olives (not shown)	95607253

Table 9: Spares table









# HEATRAESADIA

SMARTER | CLEANER | WARMER

## Electric Water Heating Co.

2 Horsecroft Place  
Pinnacles  
Harlow  
Essex CM19 5BT  
Tel: 0845 0553811  
E-Mail: sales@ewh.co.uk

## SPD

Special Product Division  
Units 9 & 10  
Hexagon Business Centre  
Springfield Road  
Hayes  
Middlesex UB4 0TY  
Tel: 020 8606 3567

## Parts Center

Tel: 0344 292 7057  
www.partscenter.co.uk

## Newey & Eyre

Unit 3-5 Wassage Way  
Hampton Lovett Ind. Estate  
Droitwich, Worcestershire  
WR9 0NX  
Tel: 01905 791500  
Fax: 01905 791501

## UK Spares Ltd

Unit 1155  
Aztec West  
Almondsbury  
Bristol BS32 4TF  
Tel: 01454 620500

Alternatively contact your  
local supplying merchant  
or wholesale branch or use  
our online stockist finder at  
www.interpartspares.co.uk

Please follow us online:



## SPECIFICATION ADVICE HOTLINE

t | 01603 420220 e | specifier@heatraesadia.com

## AFTER SALES SERVICE

t | 0344 871 1535 e | customer.support@heatraesadia.com

w | heatraesadia.com



## OUR NATIONWIDE NETWORK OF CUSTOMER SUPPORT ENGINEERS

Heatrae Sadia has its very own dedicated nationwide network of highly trained customer support engineers so you can have peace of mind that we're always here to help.

## PRODUCT RANGE

Full specification details on all our products are available to download from our website.

To support our corporate responsibility and sustainability charters and reduce our printed material we encourage you to download product brochures from our website.

In designing these files we have taken into account the need to access data on screen.

If you would like to receive a printed copy of our full product catalogue please call our literature hotline on 01603 420127.

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