Halstock - Stainless Steel Calorifier Range

Equipment For Commercial Portable Hot Water Installations.

INSTALLATION, COMMISSIONING AND SERVICING INSTRUCTIONS

IMPORTANT NOTE

THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT

Hamworthy

Customer After Sales Services

Telephone: **01202 662555** E-mail: **service@hamworthy-heating.com** Fax: **01202 662522**

Technical Enquiries

To supplement the detailed technical brochures, technical advice on the application and use of products in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

Site Assembly

Hamworthy offer a service of site assembly for many of our products where plant room access is restricted. Using our trained staff we offer a higher quality of build and assurance of a boiler built and tested by the manufacturer.

Commissioning

Commissioning of equipment by our own engineers, accredited agents or specialist sub-contractors will ensure the equipment is operating safely and efficiently.

Service Contracts

Regular routine servicing of equipment by Hamworthy service engineers inspects the safety and integrity of the plant, reducing the risk of failure and improving performance and efficiency. Service contracts enable you to plan and budget more efficiently.

Breakdown service, repair, replacement

Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents throughout the UK.

Spare Parts

We offer a comprehensive range of spare parts, providing replacement parts for both current and discontinued products. Delivery options are available to suit you. Please refer to our website for more details.

Halstock Stainless Steel Calorifiers and buffer vessels

Models HS305UV,
HS400/400UV,
HS500/500UV Twin Coil
HS810/810UV Twin Coil
HS965/965UV Twin Coil
HB300 Halstock Buffer
HB400 Halstock Buffer
HB500 Halstock Buffer
HB810 Halstock Buffer
HB965 Halstock Buffer

THE HALSTOCK CALORIFIER IS INTENDED FOR USE AS A COMMERCIAL APPLIANCE.

ENERGY CLASSIFICATION C/D IN ACCORDANCE WITH EU ECO DESIGN DIRECTIVE 2009/125/EC

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CONTENTS

1.1 INTRODUCTION

1.2 The Halstock range of vessels consists of five models of 305, 400, 500, 810, and 965 litres volume. 500l models and above are twin coil there are also a range of buffer vessels utilising the same storage sizes.

1.3 The Halstock calorifier is a high quality stainless steel cylinder which can provide hot water from a cold mains water supply of between 1 bar and 6 bar in both open vented and unvented variants. The buffers are suitable for use in heating or hot water solutions

The indirect heat exchanger surfaces are corrugated stainless steel, designed to provide rapid heat up The unit comes complete with all the necessary safety equipment to comply with legislation governing the installation of such systems.

Regulatory disposal and managed recycling of this product can prevent damage to the environment and health risks.

a) For the disposal of the product and the component parts, the services of an accredited waste disposal company should be used.

b) For more information on waste disposal/ management, contact the Local Authority responsible for waste management or the point of sales where the product was purchased.

For overall layout and outline dimensions refer to Figure No 2.1: Technical data.

1.4 The 305 model is only available in unvented specification and comes complete with the unvented kit , an immersion heater (3kW) and a motorized valve.

All other models are available as either open vented or unvented, which must be stated at the point of order. Optional immersion heaters are available for all models., refer to Figure No 2.2: Technical data.

1.5 The heat exchanger coil is designed to withstand a internal working pressure of 3 bar g. However, with suitable equipment fitted it can be used on sealed boiler systems up to 100°C primary temperature. On the secondary side drinking water can be stored up to a pressure of 6.0 bar at a maximum water temperature of 70°C. Refer to Figure No 2.2: Technical data.

1.6 The Halstock benefits from ;

- Duplex stainless steel
- Low heat loss for maximum economy
- No sacrificial anode - low maintenance
- The Halstock can work off supplementary heat sources - electricity (Economy 7)

The use of unvented systems has benefits over traditional open vented systems

- No tanks in the roof, no ball cocks to jam or leak
- All your water, hot and cold, direct from the mains

2.0 TECHNICAL DATA

2.1 Overall dimensions are shown in Figure No 2.1: General layout and dimensional data.

2.2 Figure No 2.2: Technical data, shows secondary output data based on the nominated primary flow- rates at 80°C into the Halstock unit with a secondary cold feed of 10°C & hot secondary discharge of 60°C.

2.3 The Halstock calorifier can provide an instant volume far higher than its continuous output. This is generally shown as the 10 minute peak output, see Figure No 2.2: Technical data. Example: A HS305 has a continuous output of 390 litres/h but can also supply an instantaneous output of 357 litres over a 10 minute period (assuming a full calorifier at the required temperature prior to flow being taken). This is equivalent to an output of 2150 litres/hour.

2.4 In order to establish an approximation of the boiler output power required for a Halstock application refer to Figure 2.2 Technical Data

To determine the necessary boiler power required for a Halstock application, the output power should be increased by 10% to take account of any system losses,

i.e. boiler power = 1.1 x 20= 22.kW.

If a central boiler house, which also provides space heating, heats the calorifier, the actual additional loading required could be less than that calculated above. This is due to the general space heating load requirements not normally being continuously rated.

3.0 GENERAL REQUIREMENTS

The installation of the calorifier must be in accordance to the relevant requirements of the Building Regulations, Building Standards (Scotland) Regulations, **IEE Regulations** Fire regulations and Water Supply (Water Fittings) regulations.

3.1 RELATED DOCUMENTS

It is strongly recommended that the installation conforms to **BS6700:- The Design, Installation, Testing and Maintenance of Services supplying water for domestic use within buildings**

Other important related documents:

Electrical Standards:- BS 3456 Part 201, EN 60335 Part 1,
CP 342 Centralised hot water supply - Part 2: Buildings other than individual dwellings.

The Control of Legionella in Health Care Premises

- Code of Practice:2006 Publication HTM 04-04

When installing this equipment, due regard must be given to the maximum working pressures and temperatures as given in Figure No 2.2: Technical data. Under **NO** circumstances must these values be ignored.

4.0 LOCATION

4.1 Refer to Figure No 2.1: General layout and dimensional data, for overall dimensions, weights and clearances required.

The location chosen must provide adequate space for servicing and inspection as required.

The calorifier must be installed on a level surface capable of adequately supporting its weight (when filled with water) and any ancillary equipment fitted. The insulation jacket's surface must not be subjected to direct heat or radiation and must be protected from contact with boiler flues, etc.

5.0 WATER CIRCULATION GENERAL

5.1 Refer to Section 3.1 **RELATED DOCUMENTS**

for detailed advice on water circuit installation.

Points of use mixing valves are recommended at each outlet to ensure high water temperatures are not discharged.

All circulation pipework must be lagged to prevent heat loss and possible freezing, especially where pipes run through roof spaces and ventilated cavities. Tanks situated in areas that may be exposed to freezing conditions should also be insulated.

Drain valves must be located in accessible positions to permit the draining of the complete secondary water storage system and pipework. Directly after installation, the complete system must be flushed through with a suitable disinfectant to thoroughly clean all materials in contact with the water. The calorifier should be flushed through several times to ensure removal of the disinfectant.

For schematic details of typical Domestic hot water systems see Figure No's 7.1, 7.2 and 7.3.

6.0 ELECTRICAL SUPPLY

6.1 WARNING: THIS APPLIANCE MUST BE EARTHED.

All wiring must be installed to comply with the relevant IEE Regulations. It must also be installed and checked by a suitably competent person.

Normal supply required is 230 volts 50Hz single phase - fused at 2 amps. A temperature limiter and thermostat are fitted inside the control box for temperature control purposes. Any voltage up to 230 volts AC can be used with external control systems. See Figure No's 6.1 to 6.2.

NOTE! Model HS305, immersion heaters are single phase 230v. Models HS400 & 500 can be single or three phase and models HS810 & 965 require 3 phase 415v.

NOTE! If the unit is controlled from a boiler with remote start/ stop control, it is imperative that the wiring of the Halstock twin thermostat is of the volt free configuration. It is advisable to utilize an external relay to control this type of boiler. See Figure No 6.3: Typical wiring of a Halstock calorifier to a boiler.

All wiring to the calorifier should be completed in heat resistant 1 mm^2. 3 core cable.

7.0 INSTALLATION

7.1 GENERAL. For typical Domestic hot water installation schematic diagrams see Figure No's. 7.1, to 7.3.

Overall dimension and connection details are shown in Figure No 2.1: General layout and dimensional data.

The installation should conform to the recommendations given in **BS6700** and any other relevant codes of practice.

The calorifier must be installed on a level concrete floor or plinth which is sufficient to support its weight when filled with water. See Figure No 2.2:

CLEARANCES

The unit can be enclosed and the enclosure MUST provide 100mm clearance all around the tank plus 500mm clearance in front of the tank to allow removal of the immersion heater and 200mm above the tank to allow removal of the T&P valve. Additional allowances MUST be provided if the expansion vessel is to be located within the enclosure - refer to figure 5.3 for expansion vessel sizes.

7.2 WATER CONNECTIONS Refer to Figure No 2.1: General layout and dimensional data.

7.2.1 VENTED APPLICATIONS Refer to Figure No 7.1: Hot water applications. The tank and water supply from it must be sized to ensure that the make -up water flow is equivalent to, or exceeds, the maximum draw off rate of the calorifier and any other system requirements.

The hot water flow pipe from the calorifier must be fitted with an open vent connection. The vent should be sized as follows and rise to discharge over the feed tank.

HS 400 to 500 > 26mm clear bore.
PS 810 to 965 > 32mm clear bore.

The vent pipe shall be protected against freezing where this might occur.

No isolating valves should be fitted between the calorifier hot water outlet and the connection point of the vent.

The maximum hot working head of the Halstock calorifier is 6 bar g. (60 metres).

Dead legs to water draw off points should be as short as possible and in no case should they exceed the lengths laid down in the water regulations guide. For example**:**

(i)	Pipes < 19mm I/D	Maximum dead leg = 12m
(ii)	Pipes 19-24mm I/D	Maximum dead leg = 7.6m
(iii)	Pipes > 25mm I/D	Maximum dead leg = 3m

7.2.3 UN-VENTED APPLICATIONS Refer to Figure No 7.2. & 7.3. Any un-vented installation must follow the essential safety requirements of the Buildings Regulations part G3 Section 2. This document further states that the system should be designed by appropriately qualified engineers and fitted by approved installers.

The cold feed un-vented kit(s) offered by Hamworthy Heating comprise a valve train assembly incorporating expansion relief valve, non-return valve, strainer and pressure reducing valve plus a suitably sized expansion vessel compatible with potable water and sized for the unit and local pipework. A temperature/pressure relief valve is also factory fitted which follows the sizing recommendations from the valve supplier. This ensures adequate protection even with low incoming water mains pressures.

Refer to Figure Nos 5.1 & 7.2.: Unvented applications for details and descriptions of kit contents.

For comprehensive recommendations on the design, installation and testing of water supply services, attention is drawn to the appropriate sections of BS 6700.
The maximum hot working head of the Halstock calorifier is 6 bar g. (60 metres).
Dead legs to water draw off points should be as short as possible and in no case should they exceed the lengths laid down in the water regulations guide.
For example refer to 7.2.1

7.2.3. UNVENTED CONTROLS.

7.2.3.1. SECONDARY HOT WATER SIDE. The pressure temperature relief valve fitted must not be tampered with, adjusted or removed. This will invalidate the warranty.
The installation of pipework from the P & T, relief valve outlet should conform to the recommendations given in BS6700 and any other relevant codes of practice.

7.2.3.2 COLD WATER FEED SIDE. For typical installation applications refer to Figures No's 7.2 and
7.3. The Hamworthy Heating valve train is sized to provide flow rates in excess of the maximum flow conditions for the tank and under the assumed conditions of 2 bar incoming mains water pressure and 1 bar static back pressure resulting from the highest distribution lines above the vessel and flow resistances of the system.
An expansion vessel that is pre-charged at 3.5 bar and sized to accept the water expansion volume from a Halstock and its local associated pipework is supplied with each un-vented Halstock.
If the water train is serving a large distribution system additional expansion vessels maybe required and the acceptance volume V2 can be calculated as follows:

$$V2 = \frac{e_t \times V1}{1 - \left(\frac{Pc}{Pw}\right)}$$

Where et is the expansion factor which for a 65°C rise = 0.02.
V1 is the volume of the entire system including the heater.
Pc is the absolute expansion vessel cushion pressure normally preset to 4.5 bar. Absolute = (3.5 bar gauge + 1 bar.)
Pw is the absolute working pressure and is the same value as that of the expansion relief valve setting 6 bar. Absolute = (5 bar gauge + 1 bar.)
V2 is the volume of the required expansion vessel.

7.2.3.3 The model 305 is supplied only in unvented form and comes supplied with a 3kW immersion heater for the secondary hot water side and a motorized 2 port isolating valve to prevent primary flow into the tank coil in the event of overheating.
To comply with regulations and to prevent the temperature reaching 100°C the thermal cut-out supplied must be fitted.
The thermal cut-out is wired in series to the cylinder thermostat. When the thermal cut-out senses an abnormal rise in temperature in the primary flow the electrical supply to the motorised valve will be cut and the valve will return to the closed position. This will cut-off the primary water from the boiler to the indirect coil in the cylinder, preventing the supply of heat.
If the thermal cut-out operates it must be reset manually. Check the cylinder stat and/or boiler stat.

All other models are not supplied with the 2 port motorized valves.

WARNING: SOLID FUEL OR WOOD BURNING BOILERS AND GRAVITY CIRCULATION SYSTEMS MUST NOT BE USED ON THE PRIMARY CIRCUIT OF AN UNVENTED HOT WATER SYSTEM.

The factory fitted temperature and pressure relief valve should not be removed from the cylinder or tampered with in any way. The valve is pre-calibrated to open at 7 bar or 90°C and any attempt to adjust it will invalidate the warranty and could affect the safety performance of the unit.

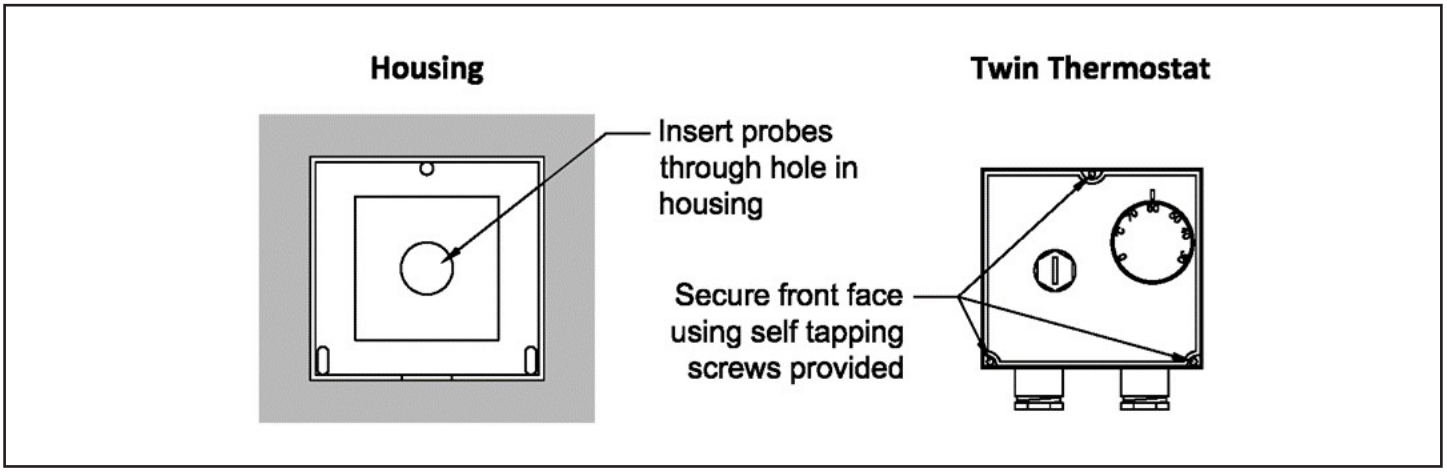
7.3 ELECTRICAL INSTALLATION.

NOTE: - The Halstock is **not** provided with a dedicated control panel. All external control wiring must interface with Terminals C, 1 & 2 (twin thermostat). **THESE CONTACTS ARE VOLT FREE!**

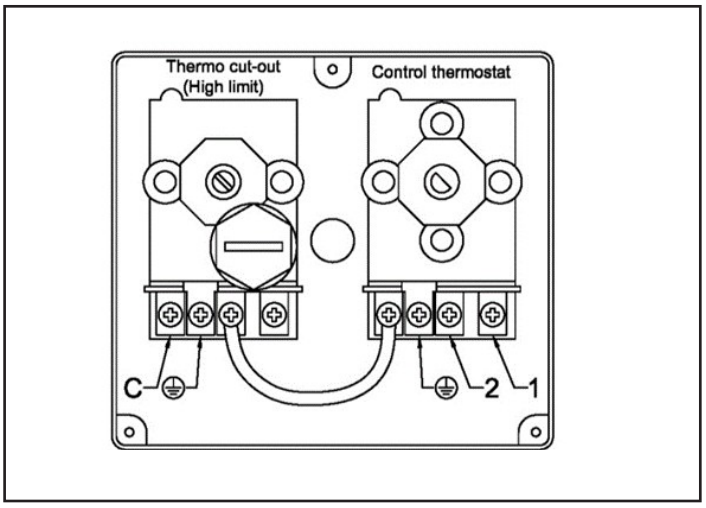
For all models, complete the necessary wiring using the appropriate wiring diagram (figures 6.3 and 6.4).

Note! Immersion heaters are supplied in the following voltages and sizes and screw directly into the appropriate connection on the tank.

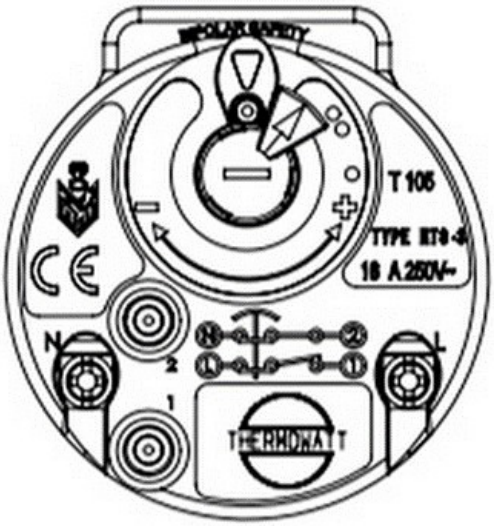
563901559 3kW 1ph	- factory fitted
563901556 6kW 1ph/3ph	- 15" long * 2 1/4" BSP
563901557 9kW 3ph	- 16" long * 2 1/4" BSP
563901558 12kW 3ph	- 16" long * 2 1/4" BSP



Twin Thermostat Housing



Twin Thermostat wiring



Immersion Heater Wiring

Immersion Heater Wiring

Approximate thermostat settings

Dial fully anti-clockwise - 65°C ±5

Dial full clockwise – 16C ±5

Any of the optional immersions can be fitted in the 810 or 965 models

7.4 INSTALLATION OF OPTIONAL KITS.

NOTE: - Model HS305 is fitted with an immersion heater and 2 port motorized valve as standard.

The 2 port motorised valve is rated at; 240v/50Hz-5W, failure mode normally closed, max temperature 88°C, connections 22mm.

7.4.1 IMMERSION HEATER KITS

A kit for an immersion element is available with fitting instructions.

HHL Part No. 563901559 HS305 Model (standard)
HHL Part No. 563901556 HS400-500 Models (optional)

HHL Part No. 563901557 HS810 Model (optional)
HHL Part No. 563901558 HS965 Model (optional)

Note: temperatures between the two settings are in proportion to the dial position.

7.4.2 SECONDARY RETURN (where applicable) Halstock cylinders are fitted with a secondary return connection. Secondary circuit connections must be made to the cylinder in accordance with the recommended installation diagram. A drain cock (not supplied) should be fitted in the cold water inlet to facilitate draining of the cylinder (see Figure Nos 3 & 4). A swept tee* is needed for all models if secondary circulation is required and is fitted in accordance with figures 7.1, 7.2 & 7.3

A non-return valve* must also be fitted to prevent backflow. A pump* will be required to circulate the hot water. The return feed is in 15mm pipe and all work can be done on site. *not supplied

IMPORTANT: IF A SECONDARY CIRCULATION CIRCUIT IS INSTALLED THEN A LARGER EXPANSION VESSEL MAY BE REQUIRED TO HANDLE THE INCREASE IN WATER VOLUME. CALCULATE THE ADDITIONAL WATER VOLUME AND CONTACT OUR CUSTOMER SERVICES DEPARTMENT REGARDING SUITABLE VESSEL SIZES.

8.1 COMMISSIONING AND TESTING

8.2 Once all installation work has been completed the unit should be filled with water to check for leaks.

For the calorifiers do this on both primary & secondary sides.

Calorifiers should be thoroughly flushed through to remove debris from vessels / pipework, etc. Refer to section **5.0 WATER CIRCULATION GENERAL** and

the relevant standard or code of practice for correct procedure. The system should be chemically cleaned with an approved disinfectant before use.

Switch on the boiler or heat source and ensure flow-rates are correct as per Figure No 2.2 Technical data.

SCALE

In hard water areas lower water temperatures can result in less scale being deposited.

The drinking water inspectorate defines water hardness as follows (mg/l of calcium carbonate or mineral equivalents):

Slightly hard 101 – 150 mg/l

Moderately Hard 151-200 mg/l

Hard: 201 – 300 mg/l

Hamworthy recommend using a water softener in the 151 and above range (moderately hard).

If a water softener is used it should be capable of flows of approximately 50l/min, this will maintain maximum performance of the Halstock unit.

If no descaler or softener is used then the heating element(s) and surfaces will need descaling periodically for maximum efficiency and to prevent damage.

Note! Calorifier performance is directly affected by changes in primary flows and temperatures.

Check for the correct operation of the thermostat depending on the control system used, see Figure No's

6.1 and 6.2. If controlling a diverter valve, check that when

the calorifier reaches the desired set point the valve fully shuts off the calorifier and opens the by-pass loop.

This should be checked without secondary water flowing through the calorifier, thus keeping the time required for checking this operation to a minimum.

9.0 USER INSTRUCTIONS

Your Halstock hot water cylinder has been designed to give many years of trouble free service and is made from hygienic, high grade stainless steel.

Where applicable, it may include an electric immersion heater which heats the water to 60°C.

The flow temperature of the hot water can be set to your requirements on the immersion heater (ideally 60°C maximum). Higher temperatures can cause tripping of the high limit thermostat and introduce more energy loss from the cylinder.

When a hot tap is turned on there may be a short surge of water, this is quite normal with unvented systems and does not mean there is a fault.

When you first fill a basin the water may sometimes appear milky. This is due to very tiny air bubbles in the water which will clear very quickly.

WARNING: IF COLD/WARM WATER EXITS FROM THE TEMPERATURE AND PRESSURE RELIEF VALVE (TPV) OR FROM THE PRESSURE RELIEF VALVE (PRV) CALL YOUR INSTALLER OR HAMWORTHY CUSTOMER SERVICE CENTRE. IF VERY HOT WATER EXITS FROM EITHER VALVE SWITCH OFF THE HEAT SOURCE IMMEDIATELY AND ISOLATE THE ELECTRICITY SUPPLY TO THE CYLINDER AND SEPARATE HEAT SOURCE.

IF THE HOT WATER RUNS COOL IT MAY BE NECESSARY TO MANUALLY SWITCH ON THE IMMERSION TO HEAT THE WATER – PLEASE SEE THE RELEVANT INSTRUCTIONS FOR YOUR ALTERNATIVE ENERGY DEVICE.

10.0 SERVICING AND SPARES

10.1 The calorifier should be regularly checked for correct operation.

IMPORTANT: Due to the variable chemical nature of distributed water supplies, it is recommended that in addition to the annual inspection cleaning, this appliance is inspected for calcium deposition in the bottom of the tank, within a maximum of three months following initial commissioning and the frequency of subsequent inspections adjusted accordingly.

Failure to install in accordance with the relevant **Hamworthy Heating Installers Guides** and to carry out the above recommendations may compromise appliance warranties.

WARNING: Before proceeding with any maintenance, isolate the electrical supply to the calorifier being serviced.

10.2. DRAINING THE CALORIFIER

Isolate the cold feed, hot flow and circulation connections. Connect a ¾" nominal bore hose to the drain cock connection at the bottom of the calorifier, run the hose to a convenient drainage point, open the calorifier drain cock and drain the cylinder.

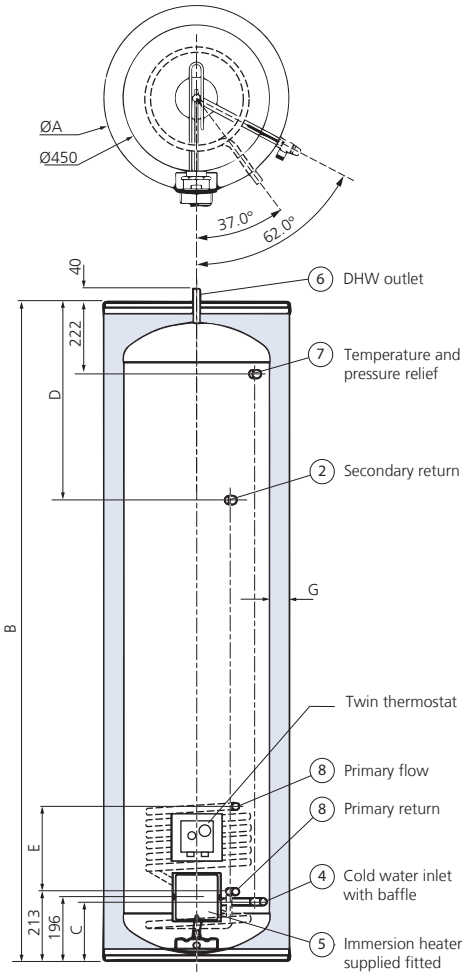
To check for the presence of scale formation in the bottom of the tank, remove the immersion heater element and visually check using a mirror and torch.

If scale is present, then a thorough descaling of the tank (and immersion heater element) will be required using a suitable descaling solution and taking care to thoroughly flush the tank after descaling through the drain valve on the calorifier.

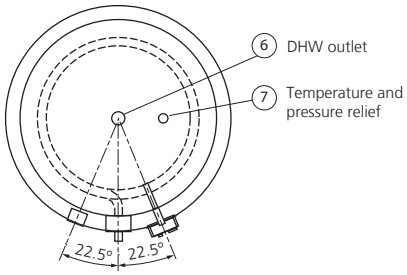
10.3 RECOMMENDED SPARES.

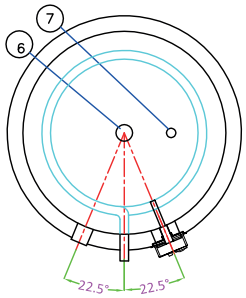
Description	Part Number
Expansion Vessel:	
24 Litre (HS305)	224083
35 Litre (HS400/500)	224087
50 Litre (HS810)	224092
80 Litre (HS965)	224093
¾" combined SRV/PRV (HS305UV)	224082
1" combined SRV/PRV (HS400/500UV)	224086
1½" PRV (HS810/965UV)	224089
1½" SRV (HS810/965UV)	224090
11½" NRV (HS810/965UV)	224091
¾" T&P valve 7 bar 90°C	531905025
15 - 22mm straight tundish	224084
22mm 2-port motorised valve	533901799
Twin thermostat	531040017
Flexible hose 1000mm (expansion vessel)	532403450
Immersion heater replacement kit (305)	563901559
Immersion heater replacement kit (400/500)	563901556
Immersion heater replacement kit (810)	563901557
Immersion heater replacement kit (965)	563901558

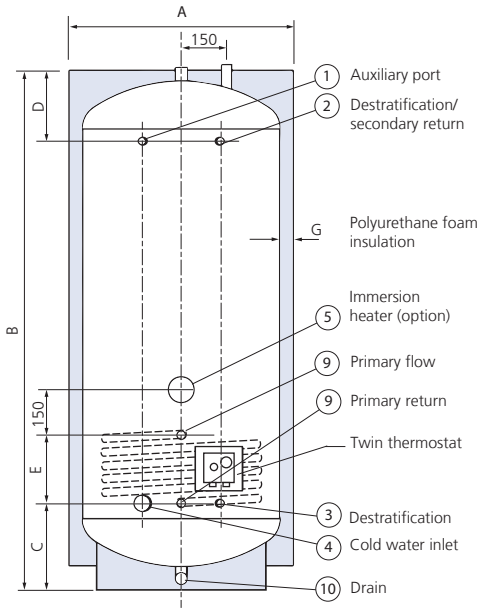
Parameter	Units	Single Coil Model (open vented / unvented)		Twin Coil Model (open vented / unvented)		
		HS305UV	HS400 / HS400UV	HS500 / HS500UV	HS810 / HS810UV	HS965 / HS965UV
Capacity nominal /with coil	litres	305/298	400/396	500/496	810/803	965/958
Continuous output @ 44°CΔT	litres/hr	390	527	1843	1843	2106
Continuous output @ 50°CΔT	litres/hr	344	464	1622	1622	1853
Lower Coil output	kW	20	27	67.5	67.5	81
Heat up time (lower coil only)	mins	54	53	26	42	42
Upper Coil output	kW	NA	NA	27	27	27
Heat up time (upper coil only)	mins	NA	NA	66	105	126
Heat up time (combined coils)	mins	NA	NA	19	31	31
10 min peak output	litres	361	481	770	1080	1274
Coil max operating temp/ pressure	°C/bar	100/3	100/3	100/3	100/3	100/3
Coil tube dia.	DN	DN20	DN25	DN25	DN25	DN25
Coil surface area (bottom coil)	m^2	0.75	1	2.5	2.5	3
Coil surface area (top coil)	m^2	NA	NA	1	1	1
Standby loss	kW/ hr/24hr	1.77	2.35	2.74	3.29	3.43
ErP category		C	C	C	Compliant	Compliant
Maximum working pressure - tank	bar	6	6	6	6	6
Hydraulic test pressure	bar	9	9	9	9	9
Immersion heater option power	kW / phase	3/ 1ph	6/ 3ph/1ph	6/ 3ph/1ph	9/ 3ph	12/ 3ph
Heat up time immersion only	hrs	5.8	3.9	4.9	5.3	4.7
Recovery time immersion only	hrs	4.1	2.7	3.4	3.7	3.3
Recovery time coils only (70% of volume @50°C)	mins	38	36	13	21	22
Expansion vessel size	litres	24	35	35	50	80
Weight empty/full	kg	75/379	105/505	115/615	140/950	180/1145



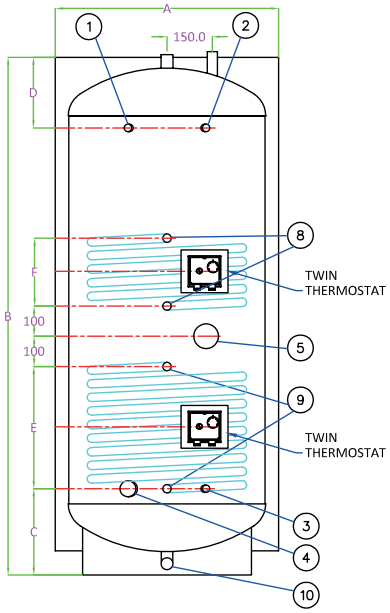
HS305UV





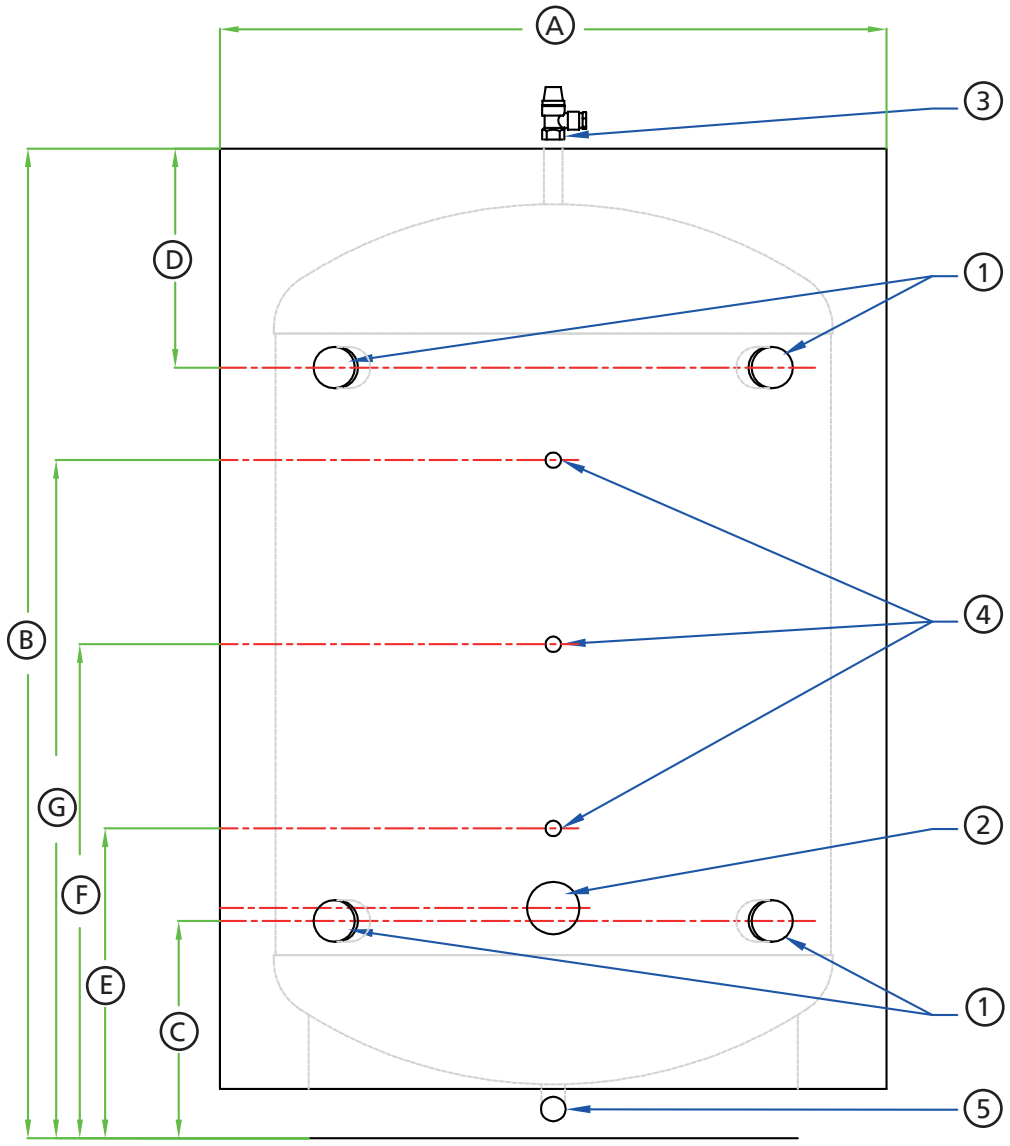


HS400 & HS400UV



HS5002CO & HS500UV2CO
HS8102CO & HS810UV2CO
HS9652CO & HS965UV2CO

Calorifiers																
Models	Dimensions mm							Connections (BSP Female)								
	A	B	C	D	E	F	G	1	2 & 3	4	5	6	7	8	9	10
	Dia	Height	Inlet	2nd Return	Bottom coil centres	Top coil centres	Insulation	Aux port input	De Strat	Inlet	Immersion	Outlet	T&P	Top Coil Ø	Bottom Coil Ø	Drain
305	570	2028	182	610	262.5	NA	60	½"	22mm Stub	22mm	1¾"	22mm	½"	NA	22mm Stub	None
400	750	1430	286	234	225	NA	50	½"	22mm Stub	1"	2¼"	1"	¾"	NA	28mm Stub	1
500	750	1715	286	234	495	225	50	½"	22mm Stub	1"	2¼"	1"	¾"	28mm Stub	28mm Stub	1
810	1080	1604	341	341	315	135	90	½"	22mm Stub	1"	2¼"	1"	¾"	28mm Stub	28mm Stub	1
965	1080	1850	341	341	405	135	90	½"	22mm Stub	1½"	2¼"	1½"	¾"	28mm Stub	28mm Stub	1



Heating Buffers (Stainless Steel)													
Models	Dimensions mm								Connections (BSP Female)				
	A	B	C	D	E	F	G		1	2	3	4	5
	Dia	Height	Bottom Inlet	Top inlet	Bottom sensor pocket	Middle Sensor pocket	Top sensor pocket	Insulation	Top/ Bottom inlet	Immersion	T&P	Sensor pockets	Drain
300	570	2028	185	222	355	1029	1653	60	28mm stub	1¾"	¾"	½"	None
400	750	1430	295	254	445	736	1027	50	2"	2¼"	¾"	½"	1"
500	750	1715	295	254	445	878	1312	50	2"	2¼"	¾"	½"	1"
810	1080	1604	352	355	502	800.5	1098	90	2"	2¼"	¾"	½"	1"
965	1080	1850	352	355	502	923	1345	90	2"	2¼"	¾"	½"	1"

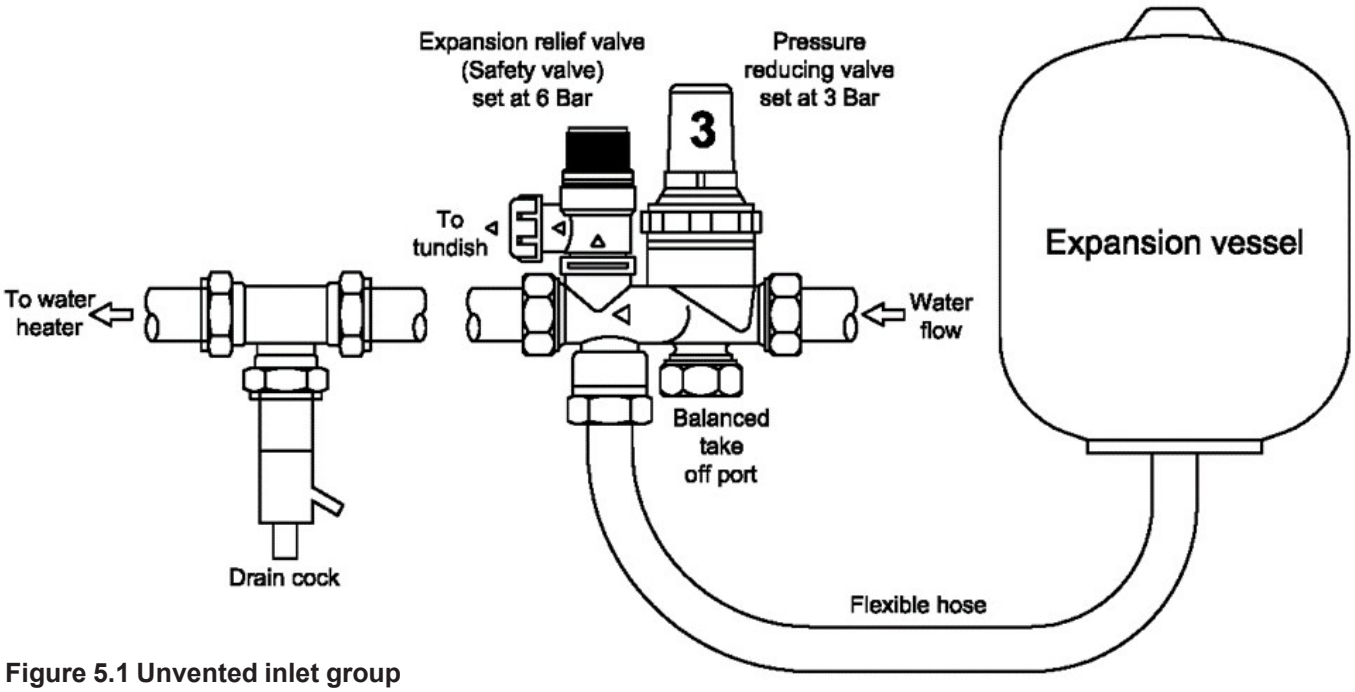


Figure 5.1 Unvented inlet group

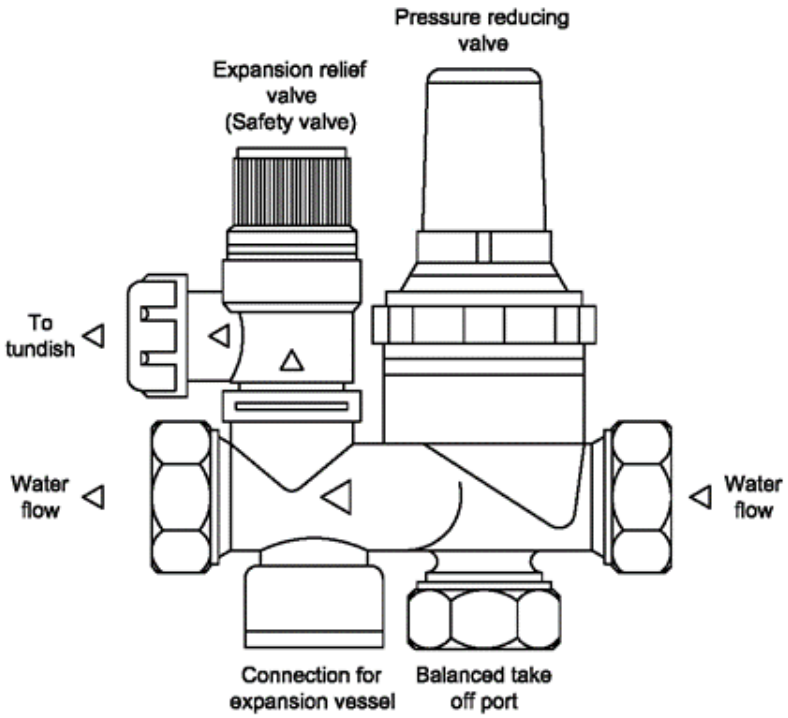


Figure 5.2 Combination valve

Calorifier Model	Capacity litres	Water connection BSP	Diameter
HS305UV	24	3/4”	280
HS400/500 UV	35	3/4”	365
HS810UV	50	3/4”	365
HS965UV	80	1”	410

Figure 5.3 - Expansion vessel dimensions

NOTE: - The Halstock is <u>not</u> provided with a dedicated control panel. All external control wiring must interface with Terminals C, 1 & 2 (twin thermostat). THESE CONTACTS ARE VOLT FREE!

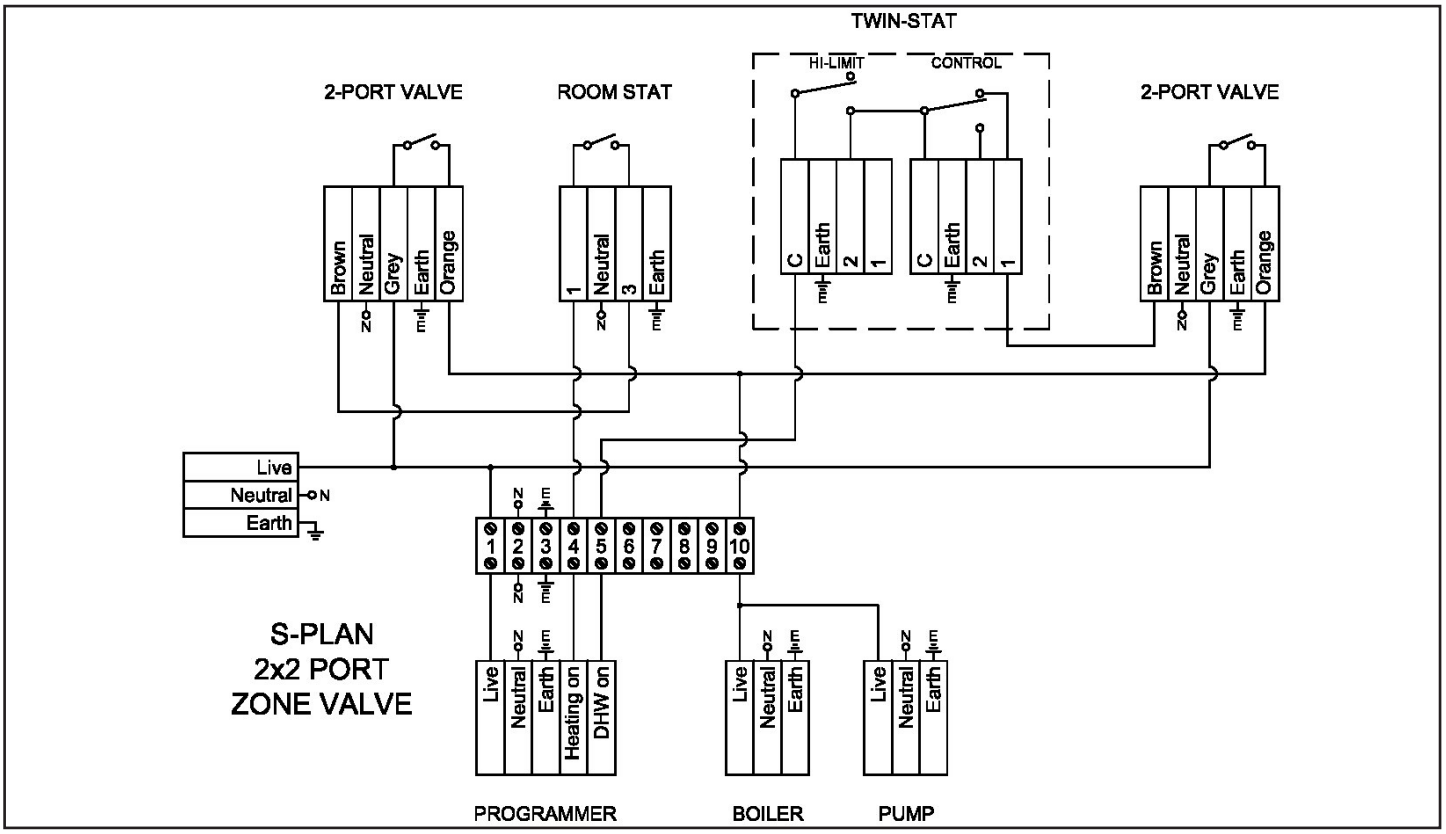


Figure 6.1 Example of S Plan Wiring Diagram

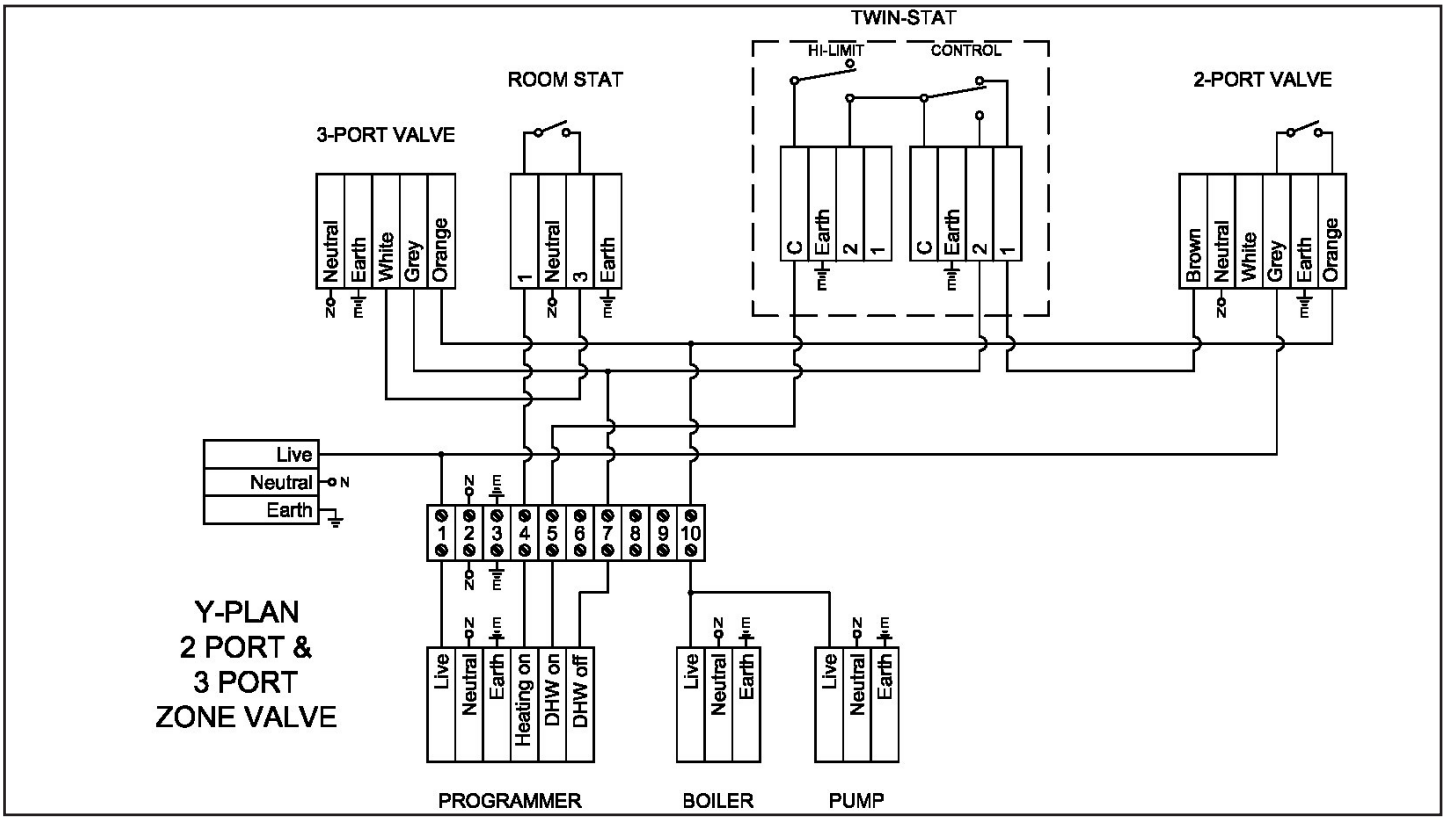


Figure 6.2 Example of Y Plan Wiring Diagram

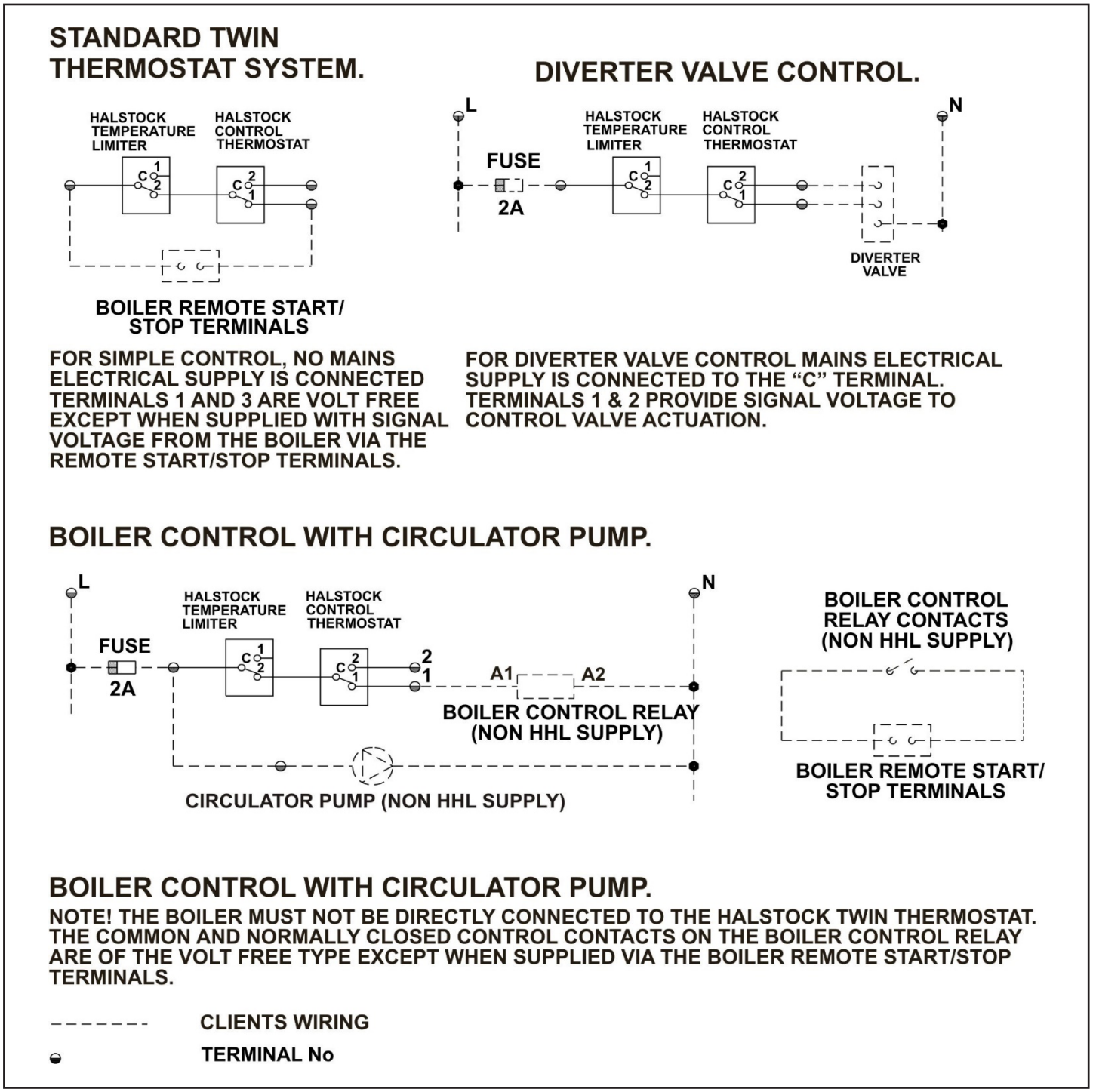


Figure 6.3 Typical wiring of a Halstock calorifier to a boiler.

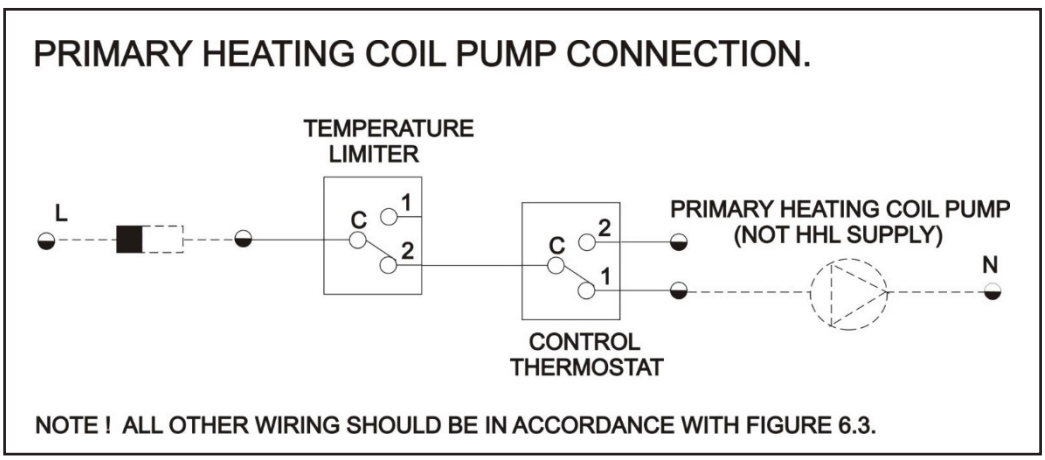
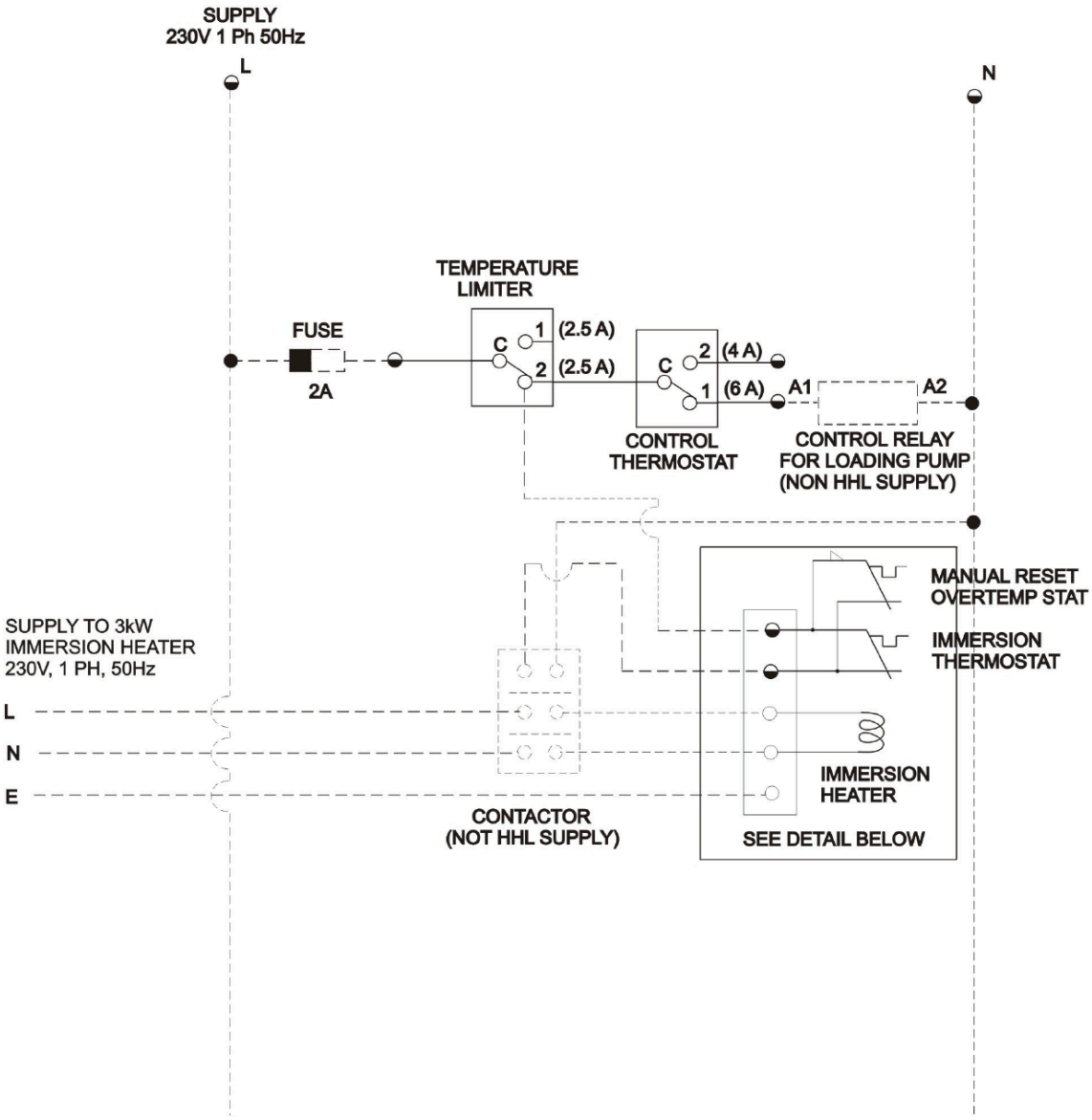


Figure 6.4 Wiring Schematic For Switching A Pump On The Primary Heating Coil Of The Calorifier.

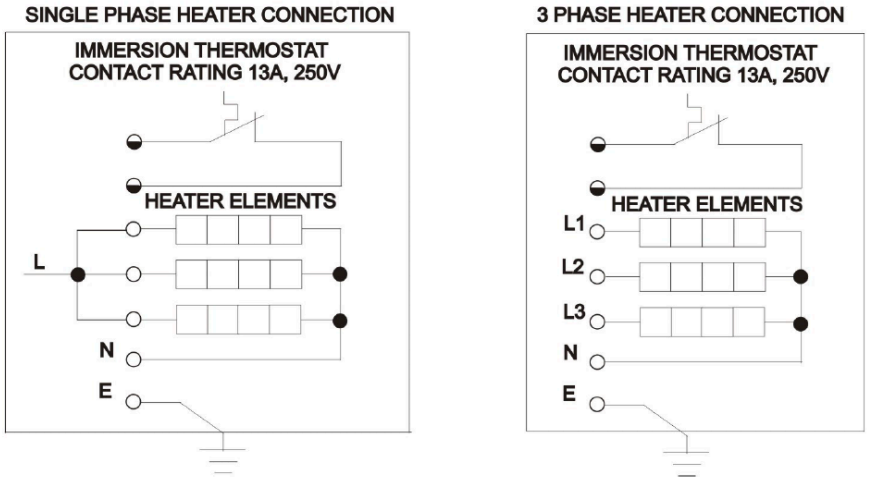
IMMERSION HEATER CONTROL SYSTEM.

Figure 6.5 - Immersion Heater wiring



NOTE !
WIRING CONNECTIONS FROM TERMINAL 3 TO IMMERSION HEATER TERMINALS SHOULD BE MADE USING SUITABLY RATED CABLE.
IF AN OPTIONAL IMMERSION HEATER IS FITTED, A SEPARATE POWER SUPPLY & APPROPRIATE CONTROL MUST BE PROVIDED.

IMMERSION HEATER WIRING CONNECTION.



		MINIMUM CONTACTOR CURRENT (A)	
IMMERSION HEATER RATING (kW)	HHL PART NUMBER	SINGLE PHASE	3 PHASE
3	563901559	16	-
6	563901556	32	16
9	563901557	-	25
12	563901558	-	32

Figure 6.6 - Table Of Minimum Contactor Current When Immersion Heaters Are Wired For Single & 3 Phase Supply

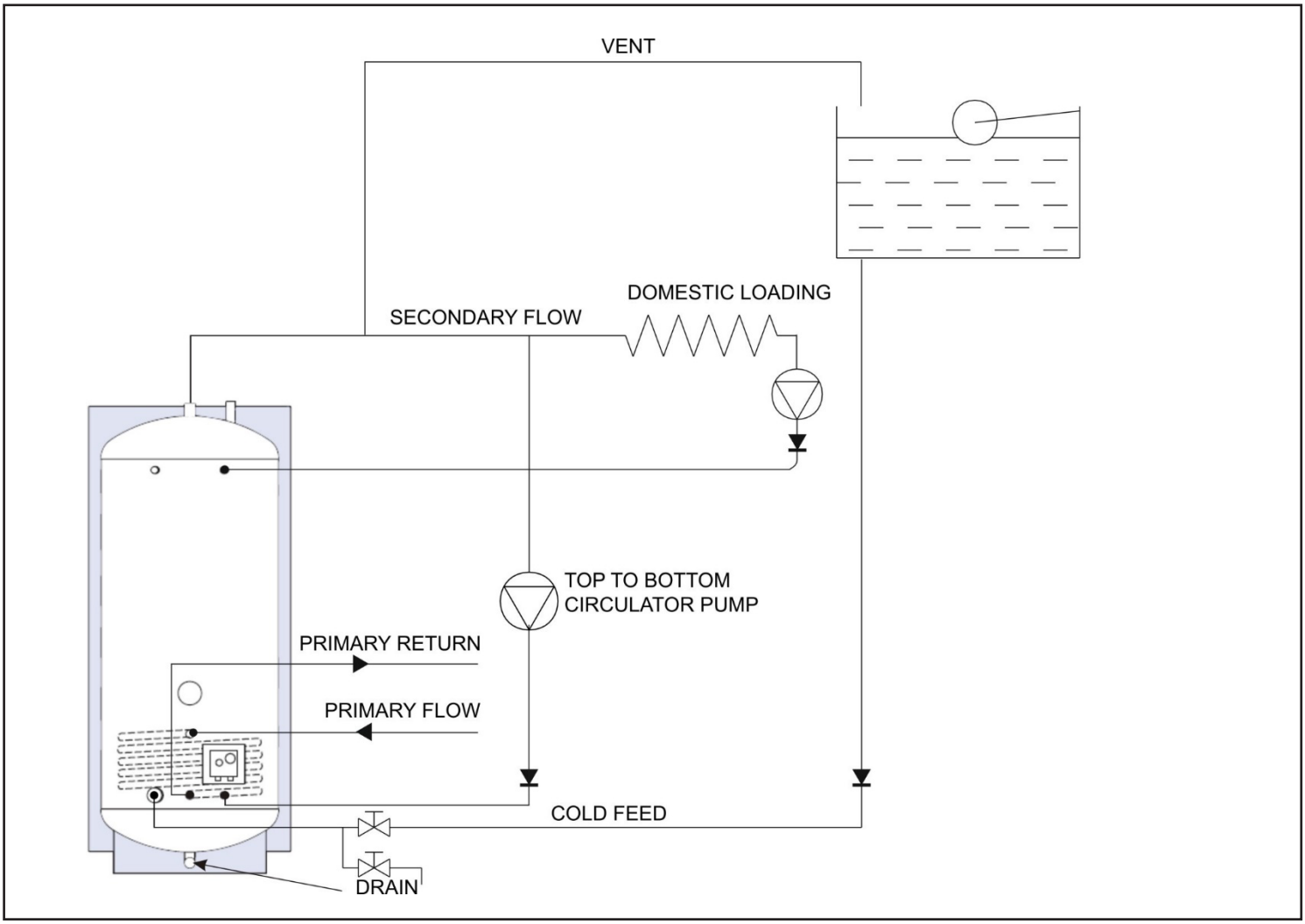


Figure 7.1 - Open Vented Application

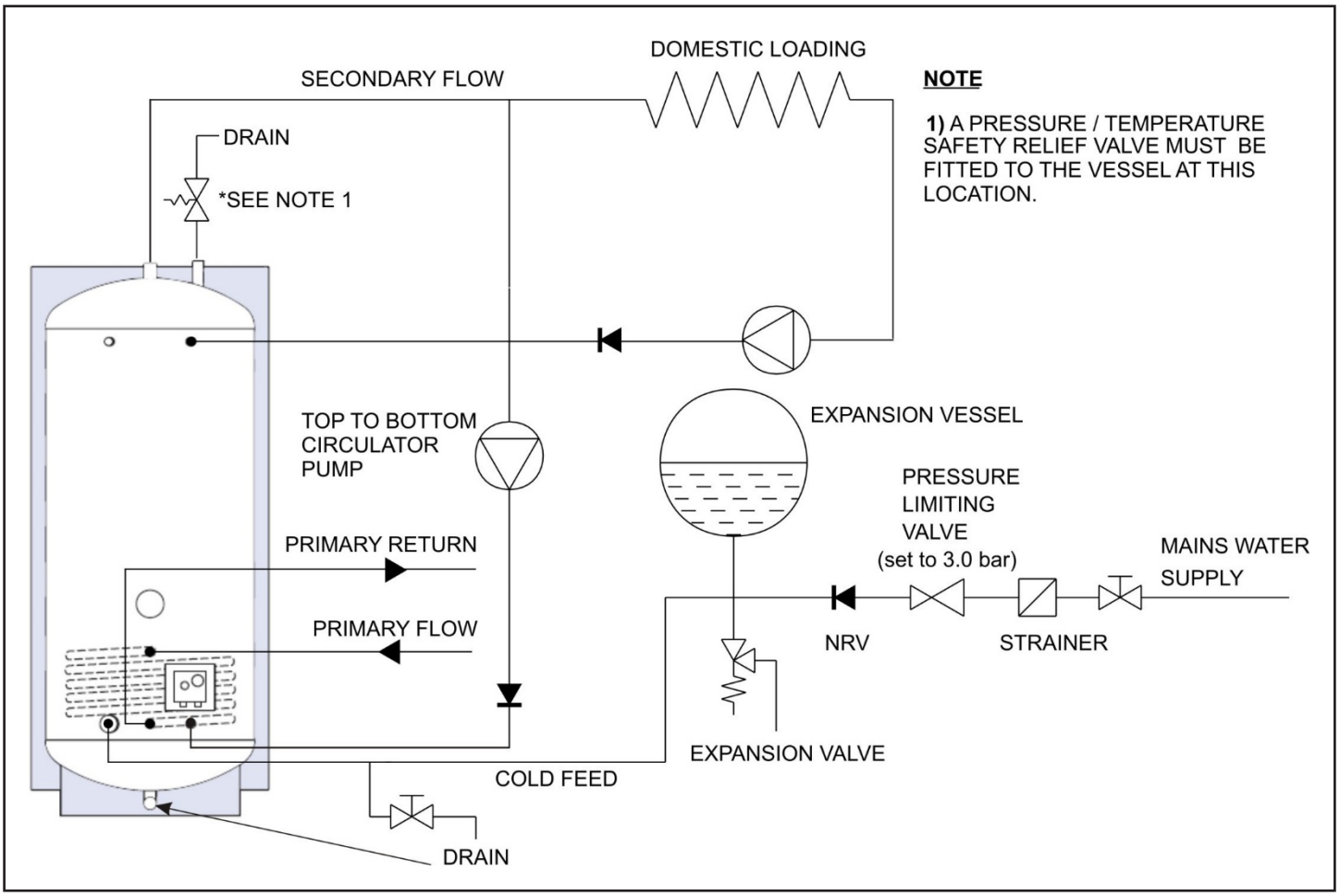


Figure 7.2 - Un - Vented Application

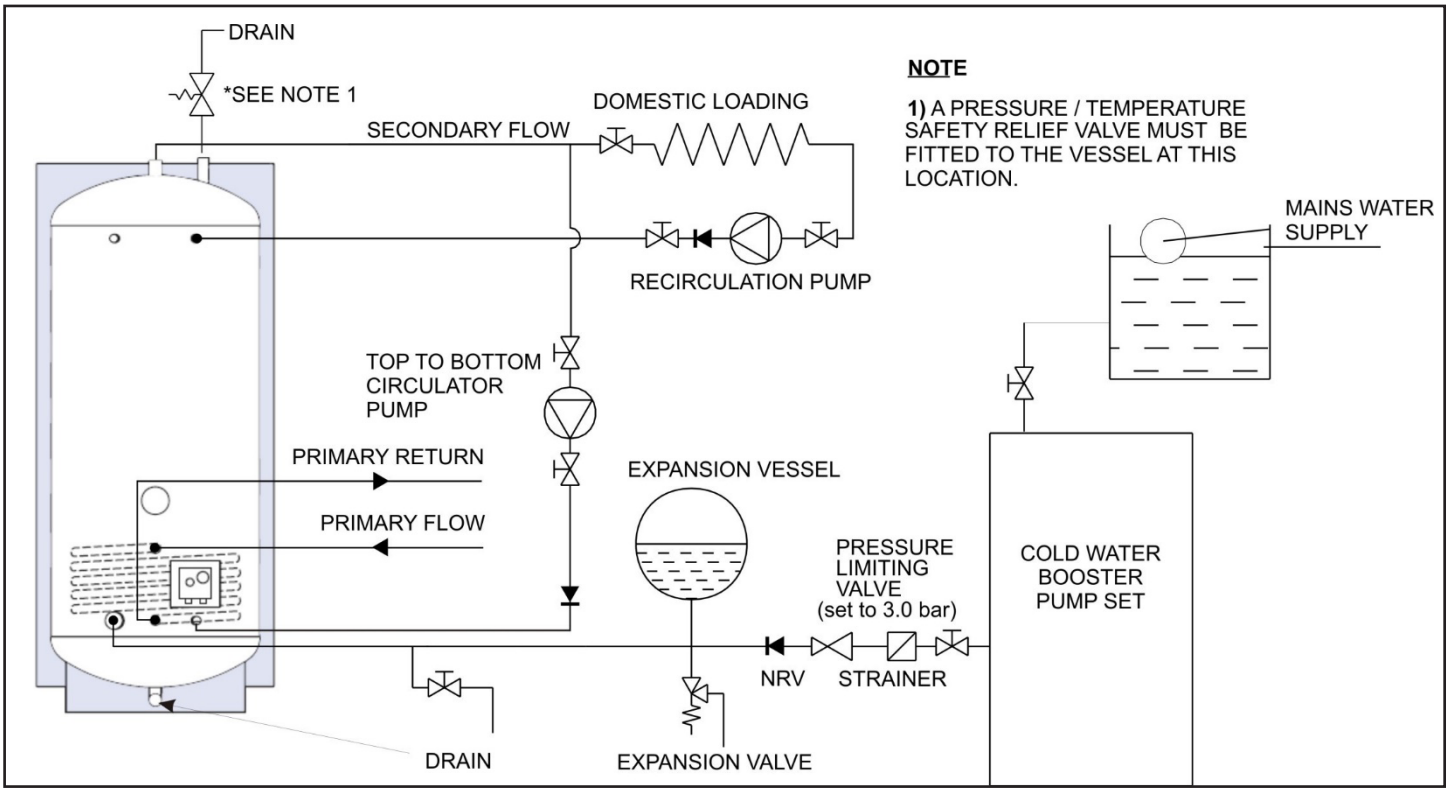


Figure 7.3 - Un - Vented, Boosted Supply Application

USEFUL USER INFORMATION

INSTALLER	SITE ADDRESS

BOILER TYPE	BOILER SIZE(S)	UNIT NO(S).	SERIAL NO(S).	FLUE

NOTES:

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email: info@hevac.ie

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