Thermalstore 1.0 & 2.0 Installation Manual

joule
Manufacturing Excellence

benchmark
COLLECTIVE MARK
LICENSED INSTALLER FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS
www.centralheating.co.uk

hot water association
CHARTER MEMBER

Please register your product online at www.jouleuk.co.uk

Homeowner _____

Address _____

_____

_____

Contact Tel. _____

Contact Email _____

Product	Product Installed (Check)	Serial Number		Installation Date
Cylinder			Located in Cylinder badge	
Solar Thermal			Taken From Solar Controller	
Solar PV			One Ser. No. from String / Micro Inverter	
Air Source Heat Pump			Located on External Heat Pump Badge	
Integrated Heat Pump and Cylinder			Located on Cylinder Badge	
Underfloor Heating			Project Ref. on Supplied Schematic	
Direct Gas Fire Cylinder			Located on Cylinder Badge	

Installer _____

Address _____

_____

_____

Contact Tel. _____

Contact Email _____

Joule Advance Installer ☐

I accept the terms and conditions avilable to view on jouleuk's website ☐

Table of Contents

The instructions are an integral part of the appliance and must be given to the end user on completion of the installation in order to comply with the current regulation.

It is important to carefully read the manual to understand all the information to enable safe installation, use and servicing. These instructions consist of details for installation, servicing, fault finding and replacement of parts for the cylinder purchased.

JOULE will not accept any liability in the event of damage for not complying with the guidance in this instruction manual.

The instructions for this installation manual apply to the range of JOULE Cyclone Indirect Unvented Cylinders.

Safety is paramount when installing unvented hot water systems and the following instructions must be adhered to:

Only certified competant installers can install, commission and service the equipment supplied.
The cylinder must be used for potable hot water only. Any other applications will be considered incorrect use and JOULE will not be held liable for any losses resulting from such use.

All installation and maintenance instructions must be observed to ensure the correct operation of the equipment.

The electric immersion must not be switched on unless the cylinder is completely full of water.
Domestic hot water may be stored at temperatures exceeding 60°C. Preventative measures should be put in place to negate the possibility of scalding.

A maintenance schedule should be put in place with a competent person to service the equipment annually to comply with the warranty conditions.
When servicing the system the mains supply to the cylinder should be isolated.

Only genuine spare parts should be used. A full list of items with relevant codes can be found on page 13 .

The installation must be carried out by a person competent to install unvented hot water systems. The installation must be carried out in accordance with the following recommendations:

All current Building Regulations issued by the Department of the Environment, i.e. Approved Document L1 Building Standards (Scotland) (Consolidation) Regulations issued by the Scottish Development Department UK Water Regulations/Byelaws (Scotland)
Health & Safety Document No. 635 (The Electricity At Work Regulations 1989) The installation should also be in accordance with the following British Standard Codes of Practice:

BS 5449:1990 Forced circulation hot water systems
BS 5546:2000 Installation of hot water supplies for domestic purposes
BS 5918:1989 Solar heating systems for domestic hot water
BS 6700:2006 Design, installation, testing and maintenance of services supplying water.

Failure to install this appliance correctly could lead to prosecution and will invalidate the guarantee. It is in your own interest and that of safety to ensure that the law is complied with.

HANDLING

Care must be taken when transporting, storing and installing the equipment:

At least two people should lift the cylinder to prevent injuries.
The cylinder must be stored in a dry area and must never be set the cylinder down hard during handling.

Packaging should only be removed at the installation location.
The cylinder must be installed on a level floor with the required load bearing capability.
Installation, servicing, maintenance and repair must be carried out by a competent person.

All electrical wiring must be carried out by a qualified electrician and be installed in accordance with current I.E.E Wiring Regulations.
A lack of safety devices can lead to potentially fatal injuries, all necessary safety devices must be installed correctly in the system. The use of an electric immersion may lead to the build up of electrical potential in the water. This can in turn cause corrosion of the immersion. To prevent this, ensure the immersion heater, and the hot and cold pipework are correctly bonded and connected to the earth line.

If plastic pipes are used they must be approved temperature resistant to 95°C at a pressure of 10 Bar.

A thermostatic mixer should be installed in the system to prevent the risk of scalding. If there are leaks found in the system, shut off the cold water stop valve from the main supply and contact a competent person immediately.

WHAT IS BENCHMARK?

Benchmark 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.

The Benchmark 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 Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the scheme. Visit www.centralheating.co.uk

WATER SUPPLY

The performance of any unvented system is only as good as the mains water supply available. To this effect the maximum possible water demand should be assessed, with the knowledge that the mains supplies both hot and cold services simultaneously.

The water heater itself operates at a pressure of 3 bar, controlled by the inlet control set, and is capable of delivering over 50 litres per minute. The high quality inlet control set has been designed to make the most of the flow rates available.

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the local water authority regarding the likely pressure and flow rate availability.

Consideration should be given to upgrading existing ½" (15mm) cold mains pipework to a larger size if the recommended minimum pressure/flow rate is not being achieved. JOULE recommend that primary pipework used has a minimum diameter of 22mm to ensure low pressure loss.

Note: A high static (no flow) mains pressure is no guarantee of good flow availability. In a domestic installation 1.5 bar and 25 l/min. should be regarded as the minimum. The maximum mains pressure that the inlet control set can cope with is 10 bar.

CHANGE OF WATER SUPPLY

The changing or alternating from one water supply to another can have a detrimental effect on the operation and / or life expectation of the water heater storage cylinder, pressure temperature relief valve and heating unit.

Where there is a changeover from one water supply to another, e.g. a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought from the supplier or it should be tested to ensure the water supply meets the requirements given in these guidelines for the Joule warranty to apply.

WATER CHEMISTRY

This water heater must be installed in accordance with this advice to be covered by the Joule warranty. This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and / or life expectancy. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority. This water heater should only be connected to a water supply which complies with these guidelines for the JOULE warranty to apply.

WATER CHEMISTRY LEVELS AFFECTING WARRANTY

The JOULE warranty of this water heater will not cover resultant faults on components including the storage cylinder where water stored in the storage cylinder exceeds at any time any of the following levels:

Components	Maximum Permitted Levels
Total Dissolved Solids	600 mg/Litre
Total Hardness	200 mg/Litre
Chloride	300 mg/Litre
Magnesium	10 mg/Litre
Calcium	20 mg/Litre
Sodium	150 mg/Litre
Iron	1 mg/Litre
Maximum pH	9.5
Minimum pH	6.5

TOTAL DISSOLVED SOLIDS (TDS)

Some water analysis reports may state the conductivity of the water rather than the level of total dissolved solids. Conductivity, measured in microsiemens per centimetre (µS / cm), is directly proportional to the TDS content of the water. TDS, in mg/L, is approximately 70% of the conductivity in µS / cm.

The JOULE warranty will not cover resultant faults to the storage cylinder if this water heater is connected at anytime to a water supply where the TDS content of the water exceeds 600 mg/L. 16 In locations where TDS approaches 600 mg/L, e.g. due to sediment, we strongly recommend fitting an appropriate filter to ensure water entering or in the water heater does not exceed this level at any time i.e. due to sediment build up.

Code	Description
KCZMVI-0200LFC	200L Thermal Store 2.0
KCZMVS-0200LFC	200L Thermal Store 2.0 Solar
KCZMVI-0250LFC	250L Thermal Store 2.0
KCZMVS-0250LFC	250L Thermal Store 2.0 Solar
KCZMVI-0300LFC	300L Thermal Store 2.0
KCZMVIS-0300LFC	300L Thermal Store 2.0 Solar
KCZMVI-0400LFC	400L Thermal Store 2.0
KCZMVS-0400LFC	400L Thermal Store 2.0 Solar
KCZMVI-0500LFC	500L Thermal Store 2.0
KCZMVS-0500LFC	500L Thermal Store 2.0 Solar

SITING THE UNIT

This unit can supply outlets above it or at some distance from it but any outlets above the unit will reduce the available outlet pressure by 0.1 bar for every 1m of height difference. The maximum length of the "dead leg" should be as stated in the Water Supply (Water Fittings) Regulations 1999 G18.7, in particular to the area of most frequent use.

Particular attention is needed if sitting in a garage or outbuilding as the unit should be protected from frost. All exposed pipework must be insulated. The unit must be installed UPRIGHT on a flat base capable of supporting its weight when full (please see the technical specification section for weights).

Sufficient access to allow maintenance of the valves should be considered. In addition the immersion heaters are 400mm in length and this distance should be considered to allow withdrawal for servicing if required. The discharge pipework from the safety valves should fall continuously and terminate safely.

COLD MAINS PIPEWORK

Run the cold main through the building to the place where is to be installed. Take care not to run the cold pipe near hot water or heating pipe work so that the heat pick-up is minimized. Identify the cold water supply pipe and fit an isolating valve (not supplied). A 22mm BS1010 stopcock can typically be used but a 22mm quarter turn full bore valve would be better as it does not restrict the flow as much. Do not use "screwdriver slot" or similar valves.

Make the connection to the cold feed of the DHW coil cylinder and incorporate a drain valve. Ensure that the arrow points in the direction of the water flow. Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided. Use the flexible hose provided to connect to the inlet control group.

BALANCED COLD CONNECTION

If there are to be showers, bidets or monobloc taps in the installation then a balanced cold supply is necessary. There is a 22mm balanced connection on the inlet control set.

FITTING THE INLET CONTROL GROUP

Excess pressure can lead to the DHW coil bursting. Make sure that there is sufficient space for future maintenance and also for connection of the discharge pipe for the expansion relief valve.

It is essential that this connection is not covered or closed.

HOT WATER PIPEWORK

Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot draw-off pipework to a practical minimum so that the time taken for the hot water is as quick as possible.

Do not use monobloc mixer tap or showers if the balanced cold connection is not provided. Outlets of this type can back pressurise the unit and result in discharge.

EXPANSION VESSEL

The expansion vessel receives the increased water volume when expansion takes place as the system heats up and it maintains a positive pressure in the system. The expansion vessel contains a flexible diaphragm, which is initially charged on one side with nitrogen, but can be topped up with air when required.

The pipe connecting the expansion vessel to the system should have a diameter of not less than 15mm and must not contain any restrictions.

Prior to connecting the expansion vessel to the system the pipework should be flushed and tested. When the vessel is connected the system should be pressurised when cold. If the initial system water pressure is too high, the diaphragm will be displaced too far into the vessel. This will leave the vessel unable to accommodate the volume of expansion water. The result of this is an increase in system pressure and the safety valve will lift.

PRIMARY CONNECTIONS

The JOULE Thermalstore has 9 direct tappings for the integration of the heating system with the DHW, allowing for numerous heat sources to combine in an extremely efficient manner to generate DHW and space heating.

The boiler or boilers may be Gas, Electric, Oil, Solid Fuel, Biomass, Solar, or a combination of a number of these.

SECONDARY CIRCULATION

On larger installations long pipe runs to draw-off points can cause significant volumes of water to be drawn off before an acceptable temperature can be reached. Secondary pumped circulation using a stainless steel or a bronze pump, and combined with effective time and temperature controls can overcome this problem. Where secondary return circulation is required the pipework should be run in 15mm pipe. A suitable WRAS approved stainless steel or bronze circulation pump must be used. A check valve must also be installed to prevent backflow.

On large secondary circulation systems it may be necessary to incorporate an extra expansion vessel into the circuit to accommodate the increased system water volume. It should be noted that the use of a secondary circulation circuit can increase running costs as there will be circulation pipe losses. High levels of insulation on secondary pipework are required to keep energy losses to a minimum.

DEAD LEGS

The length of hot water draw off to taps and other outlets should be kept to a minimum to reduce the amount of cold water drawn off before the hot water arrives. The maximum recommended dead leg lengths are shown in figure 2.b. Where there is more than one size of pipe on a dead leg, the equivalent length and size should be estimated.

Where the dead leg length exceeds the recommended maximum, secondary circulation should be installed. It should be controlled by a time switch and incorporate a motorized valve that can prevent gravity circulation in the circuit.

Pipe Size (mm)	Maximum Length (m)
10, 12	20
15, 22	12
28	8
35 and above	3

SYSTEM NOISE

Noise in pipework may occur as a result of expansion of pipework over joists or where the pipe has been left touching other pipes or a part of the building structure. Care must be taken to ensure that the pipework is correctly bracketed, is not in tension or compression, and does not carry the weight of components such as a circulation pump.

SETTING THE STORE TEMPERATURE

The JOULE Thermalstore temperature is set on the dual thermostat by the competent person during the installation. The dual thermostat should be set to 70 ° C. If you are heating water in the cylinder for the first time, or if time controls have been fitted on the Thermalstore, the cylinder may take additional time to heat up.

Inappropriate adjustments can lead to the damages in the system. If any changes are made to the cylinder, the controls, the water and power supply lines or the expansion relief components there is a risk of steam escaping or rupture to the system.

Thermalstore 1.0	
Expansion Vessel	TV-P-000001L
Dual Stat	TZC-D-000000Z
T&P Relief Valve	TZG-3.0-0.75L
Immersion	TZ9-7.0-000.5
Mixing Valve	OZM-0000.75HP
Pressure Reducing Valve	TZH-3.0-0022M

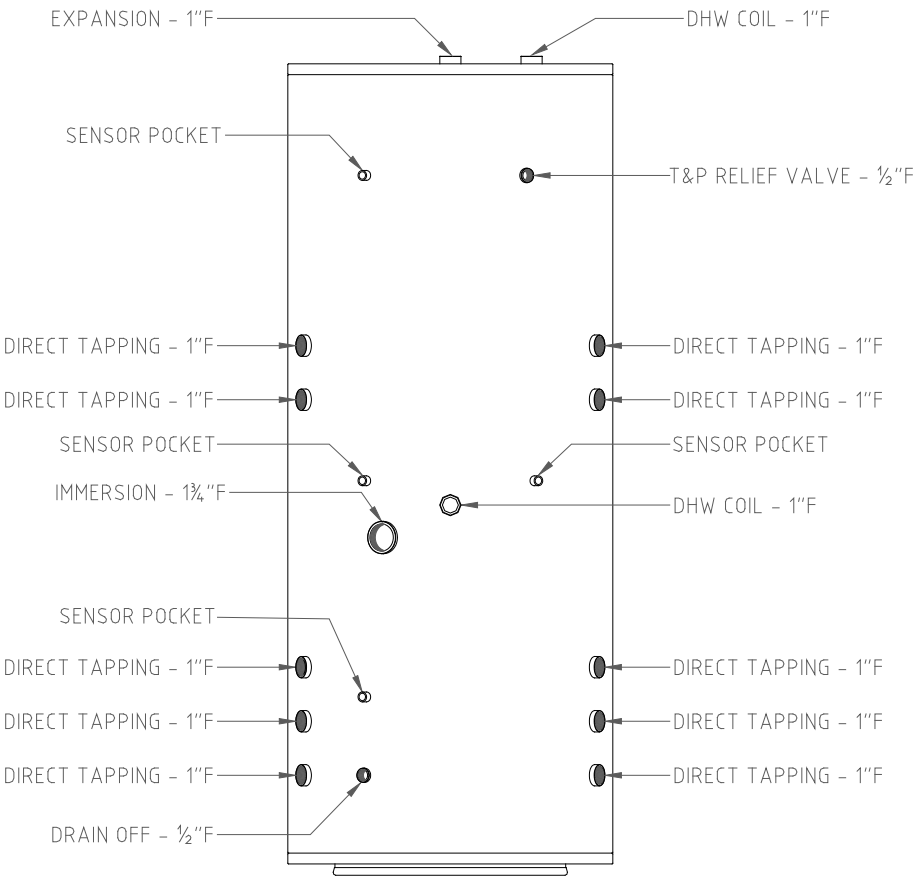
Thermalstore 1.0

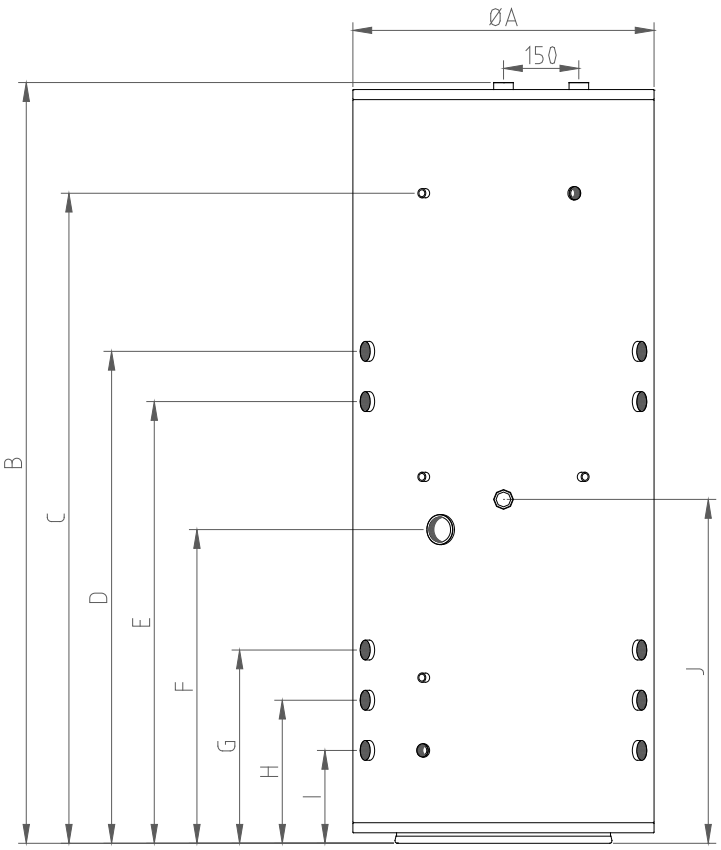
		200L	250L	250L	300L	400L	500L
	Dimensions (mm)	(1490x530)	(1400x600)	(1815x530)	(1600x600)	1570x710)	(1900x710)
Thermalstore 1.0 - No Solar	Hot Water Storage Tank Volume (L)	196	247	247	290	390	494
	Standing Loss	81	87	89	92	102	115
	Energy Efficiency Class	C	C	C	C	C	C
Thermalstore 1.0 - Solar	Hot Water Storage Tank Volume	193	244	244	287	387	492
	Standing Loss	83	89	91	96	102	115
	Energy Efficiency Class	C	C	C	C	C	C

Thermalstore 2.0

		200L	250L	250L	300L	400L	500L
	Dimensions (mm)	(1490x530)	(1400x600)	(1815x530)	(1600x600)	1570x710)	(1900x710)
Thermalstore 2.0 - No Solar	Hot Water Storage Tank Volume (L)	196	247	247	290	390	494
	Standing Loss	81	87	89	92	102	115
	Energy Efficiency Class	C	C	C	C	C	C
Thermalstore 2.0 - Solar	Hot Water Storage Tank Volume	193	244	244	287	387	492
	Standing Loss	83	89	91	96	102	115
	Energy Efficiency Class	C	C	C	C	C	C

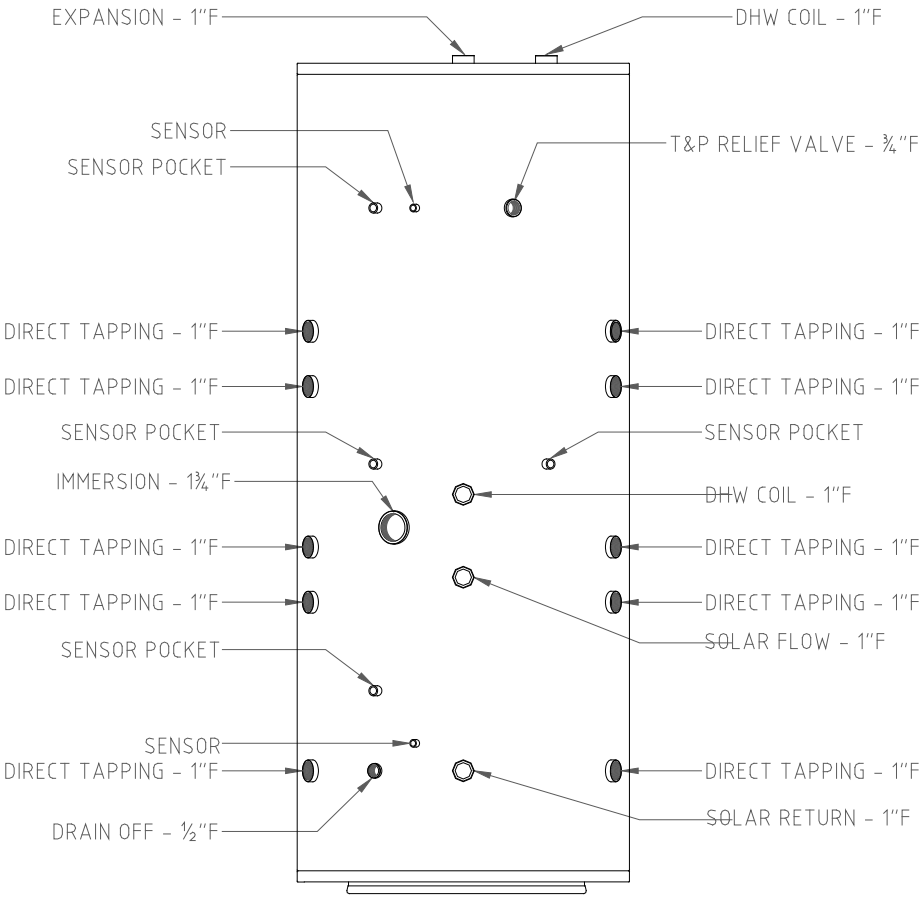
Thermalstore 1.0 - No Solar

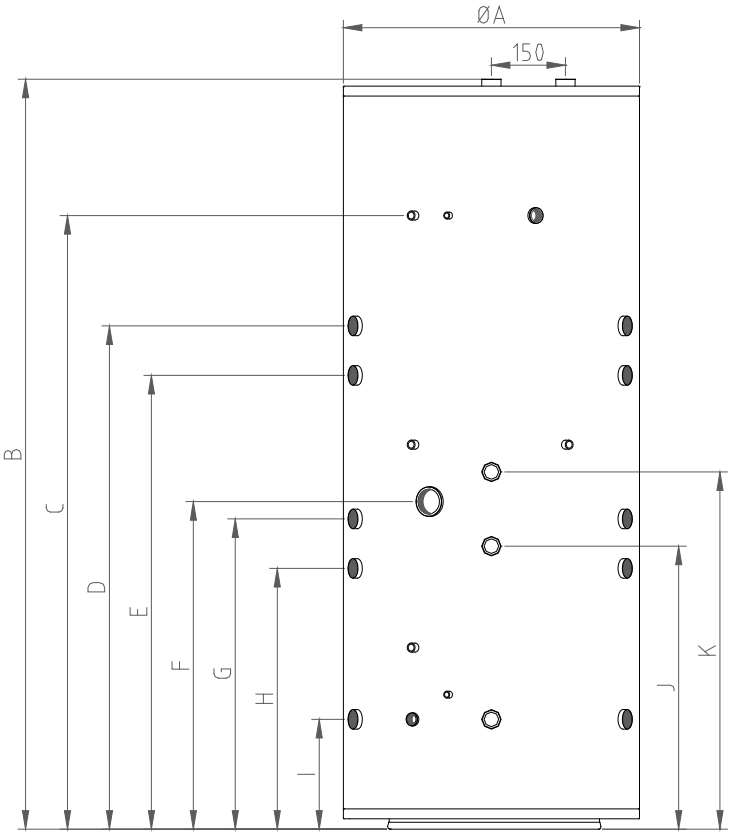




		200L	250L	250L	300L	400L	500L
Thermalstore 1.0	Ø A (mm)	530	530	600	600	710	710
	B (mm)	1490	1815	1400	1600	1570	1900
	C (mm)	1206	1526	1128	1328	1285	1635
	D (mm)	921	1138	889	1013	1020	1254
	E (mm)	821	1038	789	913	920	1154
	F (mm)	576	656	588	648	655	765
	G (mm)	396	396	418	418	425	425
	H (mm)	296	296	318	318	325	325
	I (mm)	196	196	218	218	225	225
	J (mm)	636	721	633	708	730	815

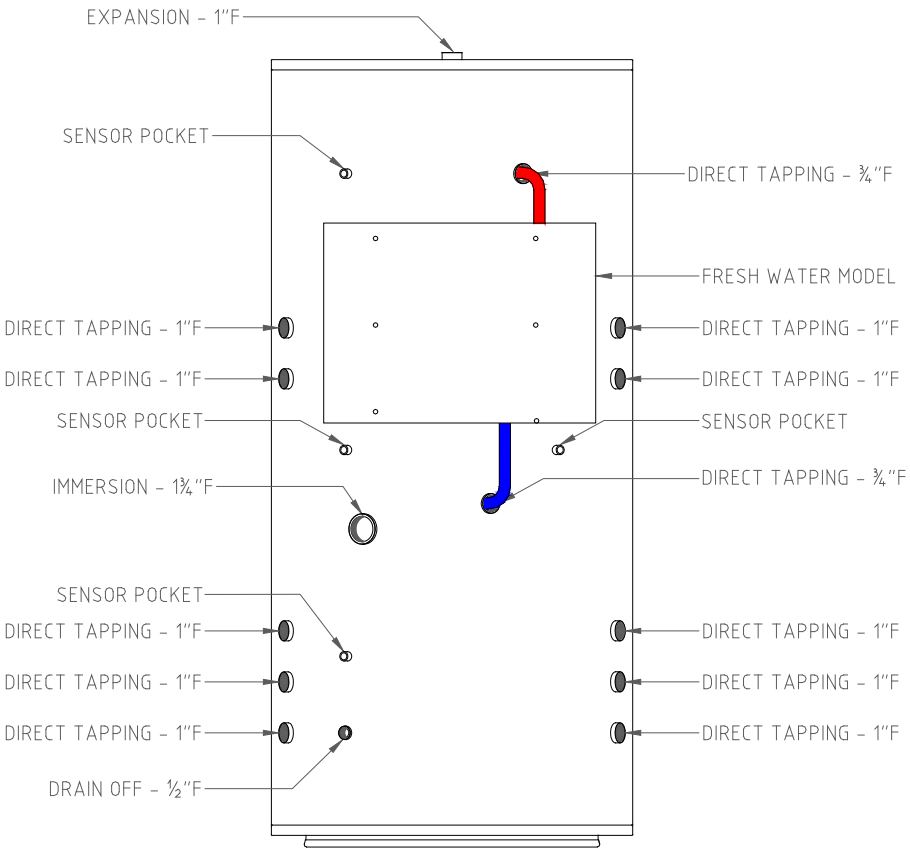
Thermalstore 1.0 - Solar

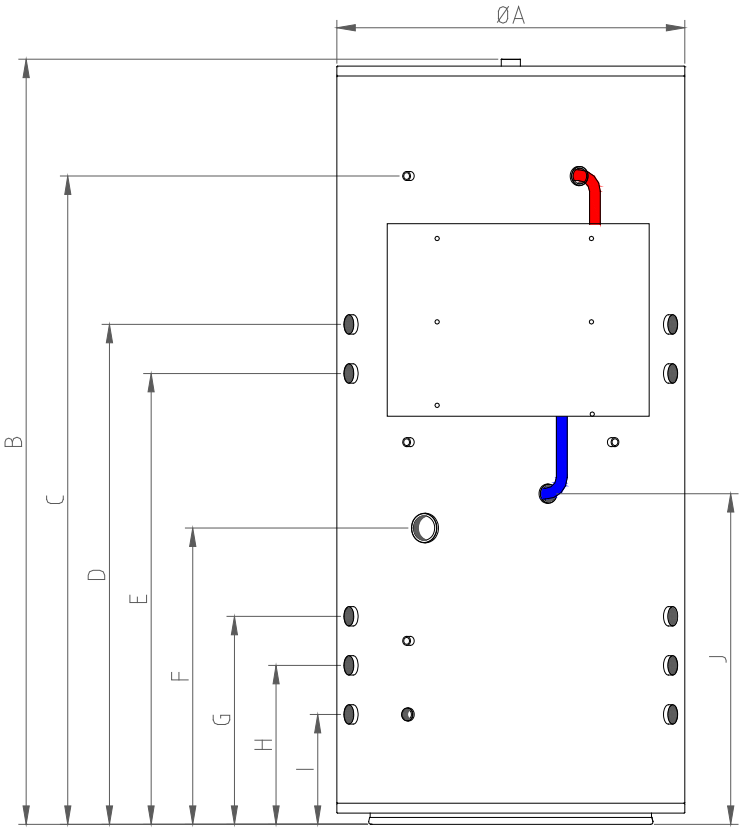




		200L	250L	250L	300L	400L	500L
Thermalstore 1.0 - Solar	Ø A (mm)	530	530	600	600	710	710
	B (mm)	1490	1815	1400	1600	1570	1900
	C (mm)	1206	1526	1128	1328	1285	1635
	D (mm)	921	1138	889	1013	1020	1254
	E (mm)	821	1038	789	913	920	1154
	F (mm)	576	656	588	648	655	765
	G (mm)	586	685	568	618	630	730
	H (mm)	486	584	468	518	530	630
	I (mm)	196	196	218	213	225	225
	J (mm)	526	606	548	563	575	675
	K (mm)	636	721	633	703	730	815

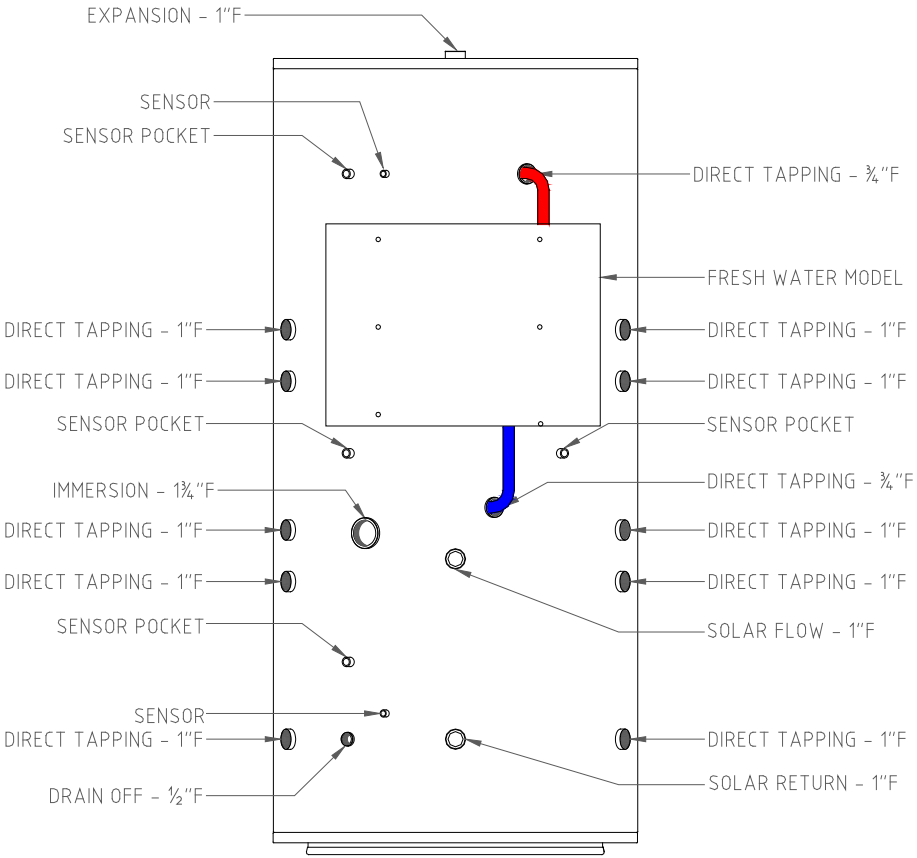
Thermalstore 2.0 - No Solar

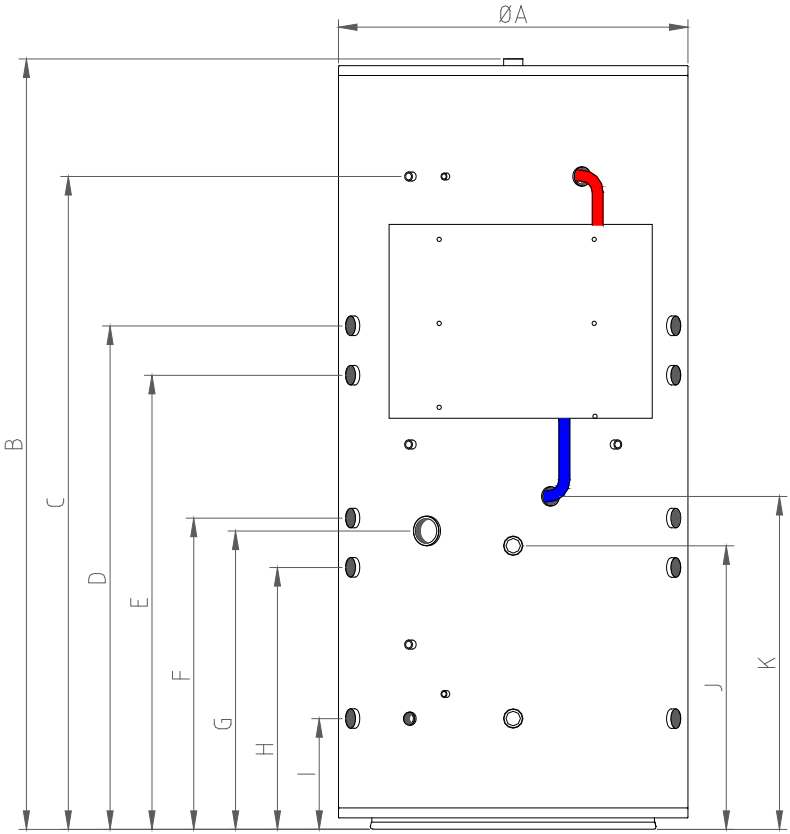




		200L	250L	300L	400L	500L
Thermalstore 2.0	Ø A (mm)	530	600	600	710	710
	B (mm)	1490	1400	1600	1570	1900
	C (mm)	1206	1128	1323	1275	1635
	D (mm)	921	889	1008	1020	1254
	E (mm)	821	789	908	920	1154
	F (mm)	576	508	643	655	765
	G (mm)	396	418	413	425	425
	H (mm)	296	318	313	325	325
	I (mm)	196	218	213	225	225
	J (mm)	606	653	653	655	815

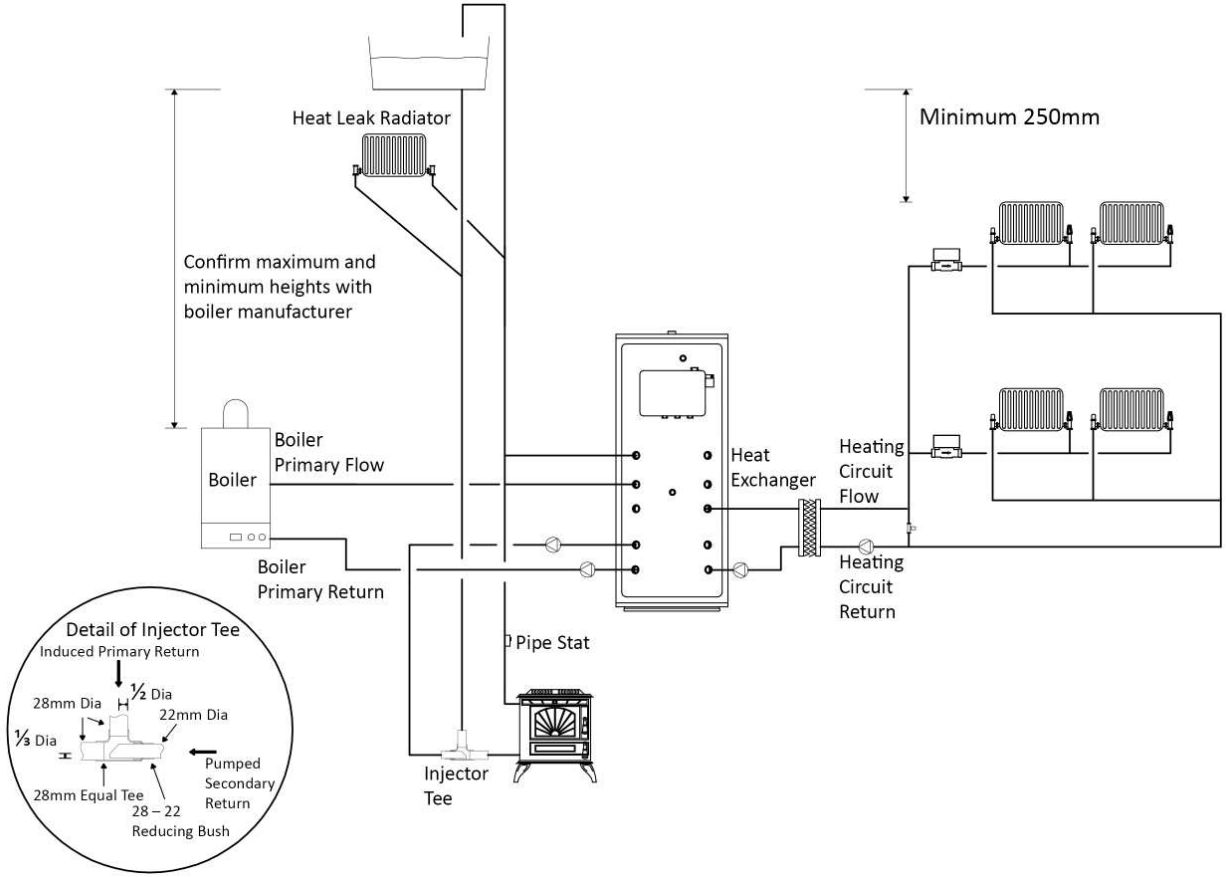
Thermalstore 2.0 - Solar

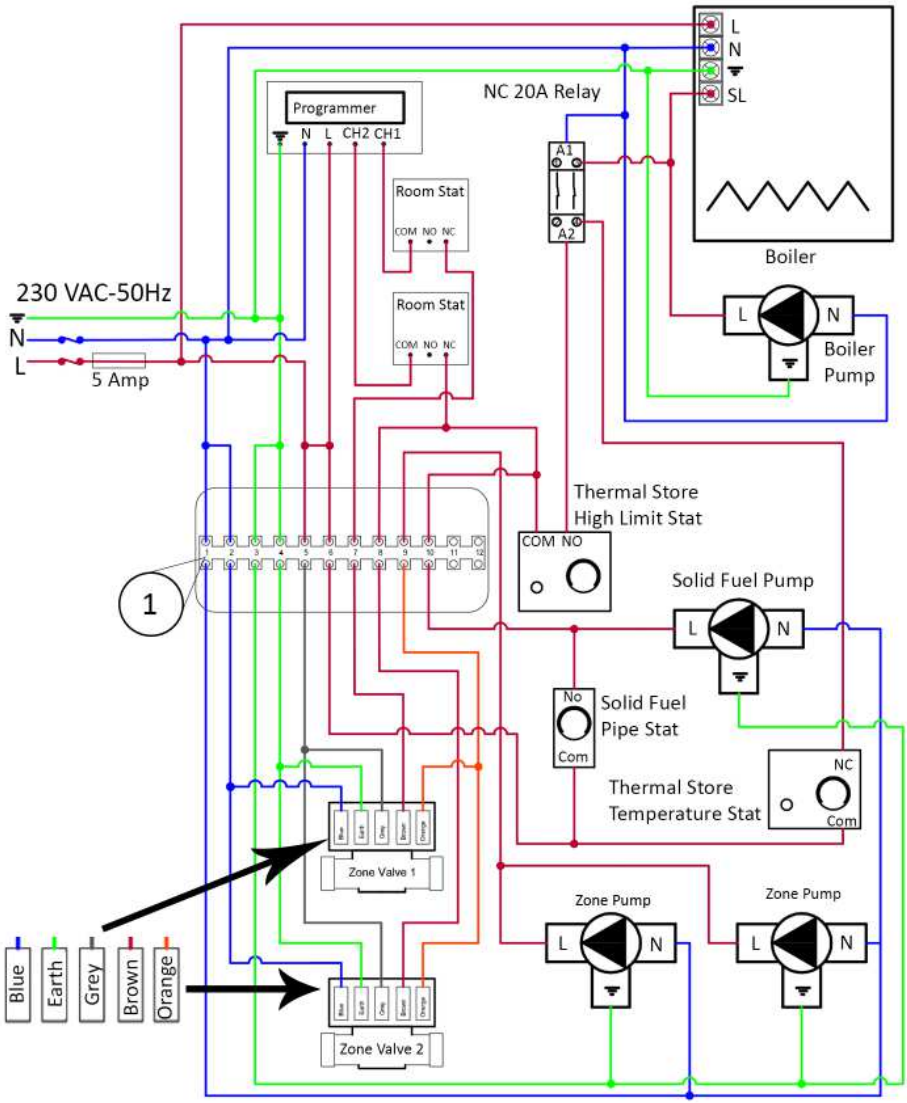




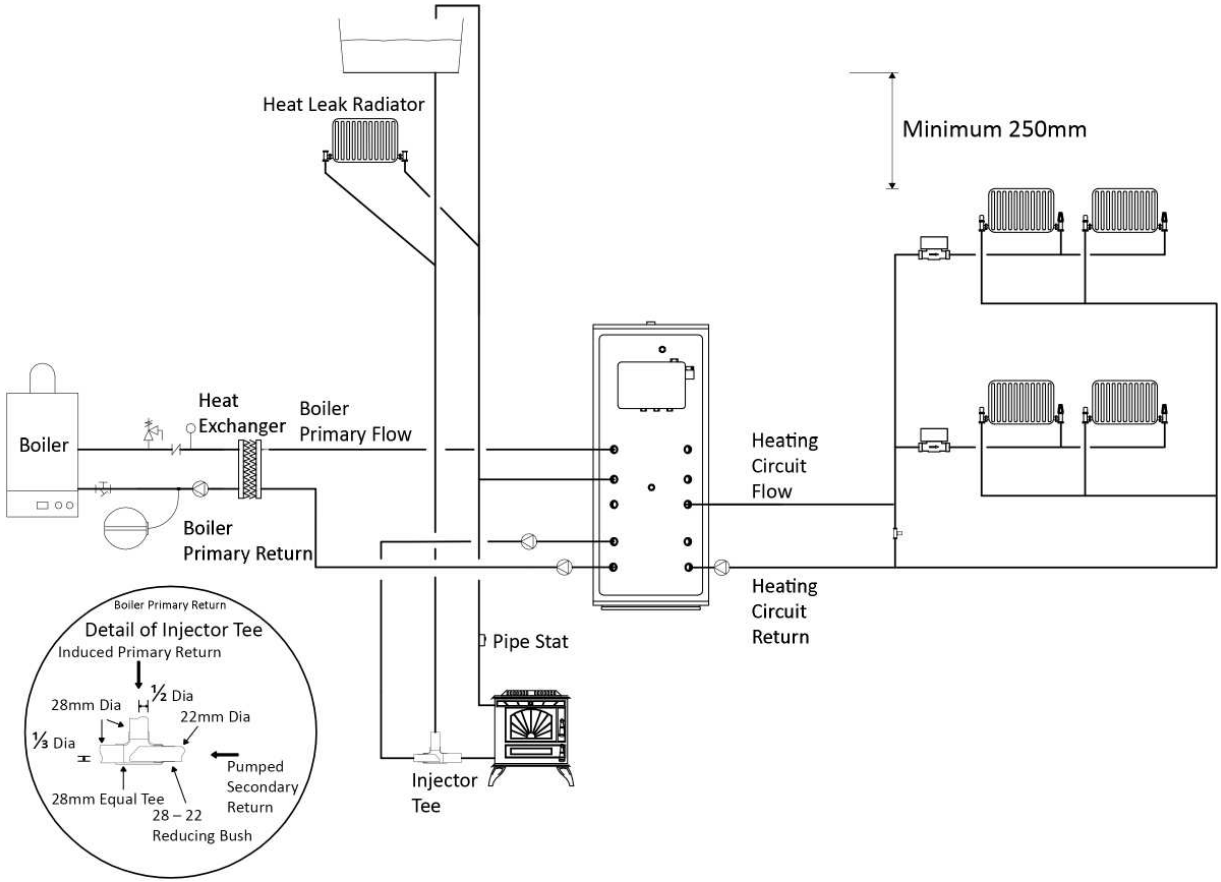
		200L	250L	300L	400L	500L
Thermalstore 2.0 - Solar	Ø A (mm)	530	600	600	710	710
	B (mm)	1490	1400	1600	1570	1900
	C (mm)	1206	1128	1323	1275	1635
	D (mm)	921	889	1008	1020	1254
	E (mm)	821	789	908	920	1154
	F (mm)	576	508	643	655	765
	G (mm)	586	568	618	630	730
	H (mm)	486	468	518	530	630
	I (mm)	196	218	213	225	225
	J (mm)	526	468	563	575	675
	K (mm)	606	558	653	655	815

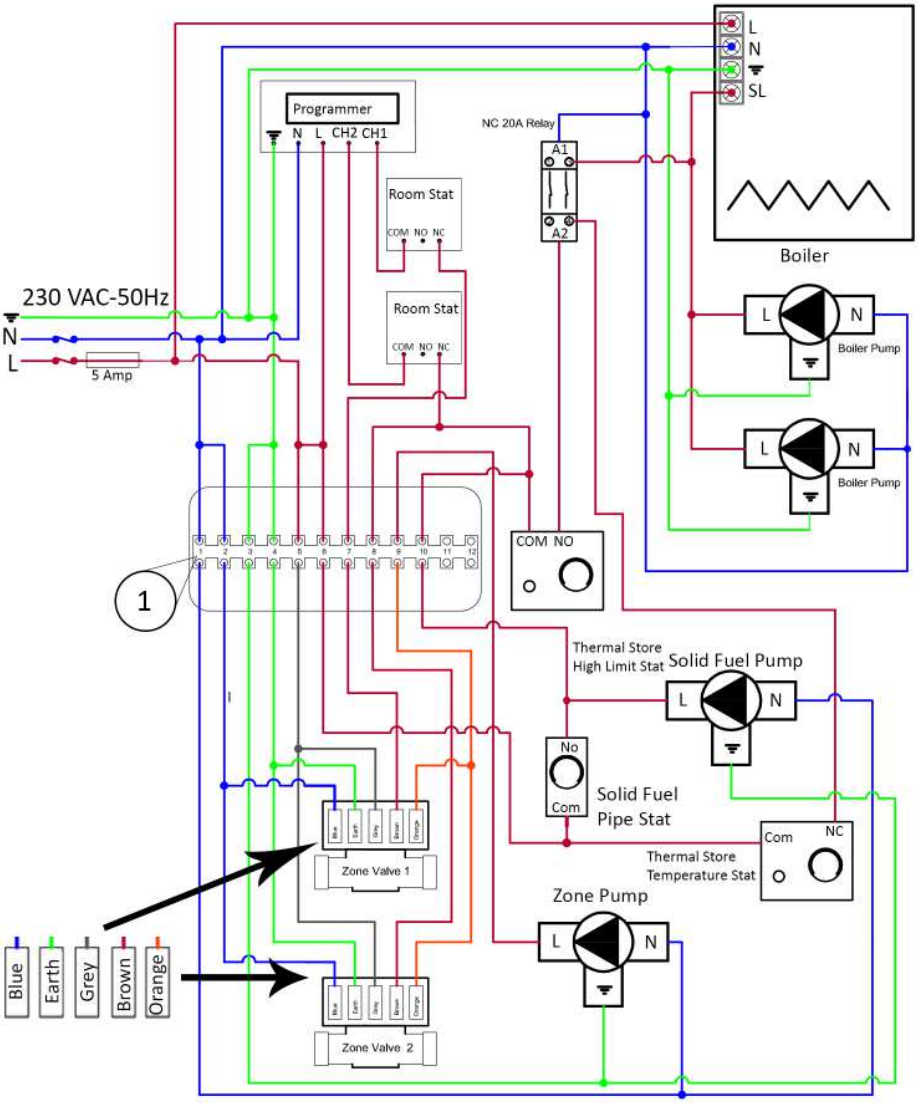
Open Vented Boiler, Solid Fuel Boiler, 2 Radiator Zones & Heat Exchanger



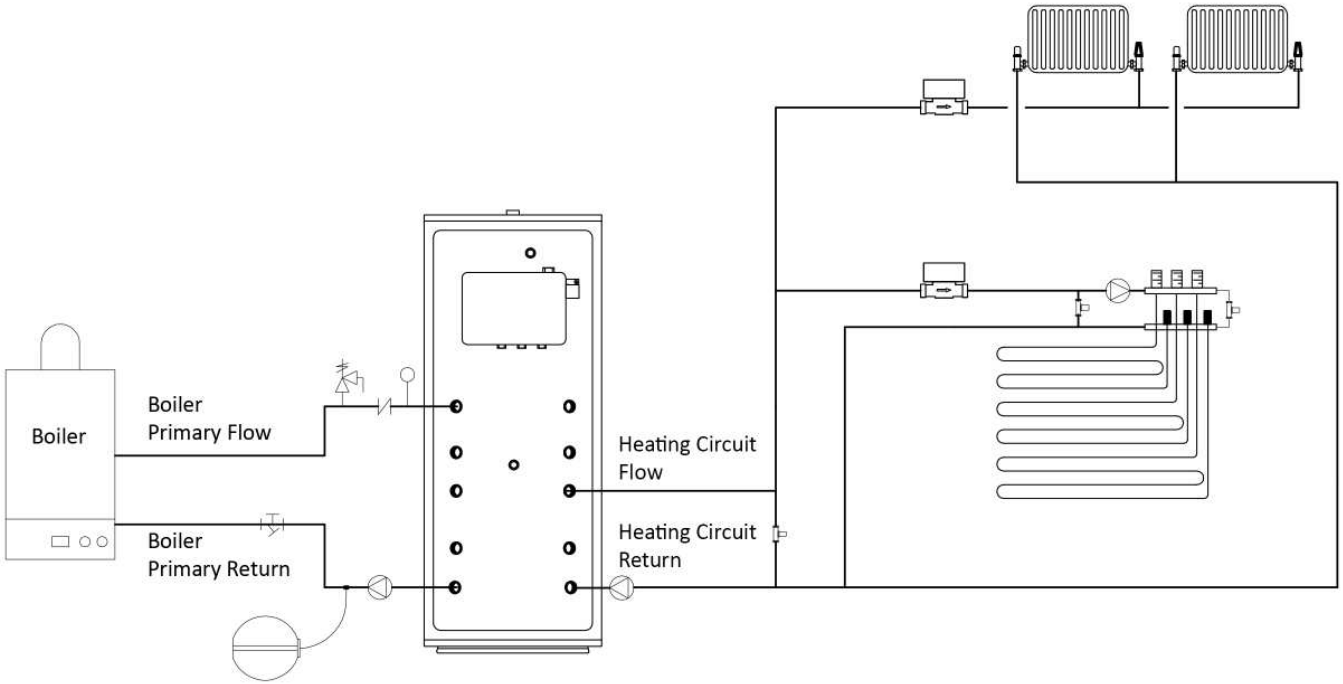

L
N
SL
Boiler
NC 20A Relay
A1
A2
Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
L
N
Boiler
Pump
Thermal Store
High Limit Stat
COM NO
1
Solid Fuel Pump
L
N
No
Com
Solid Fuel
Pipe Stat
NC
Com
Thermal Store
Temperature Stat
Zone Valve 1
Zone Pump
Zone Pump
L
N
L
N
Blue
Earth
Grey
Brown
Orange
Zone Valve 2

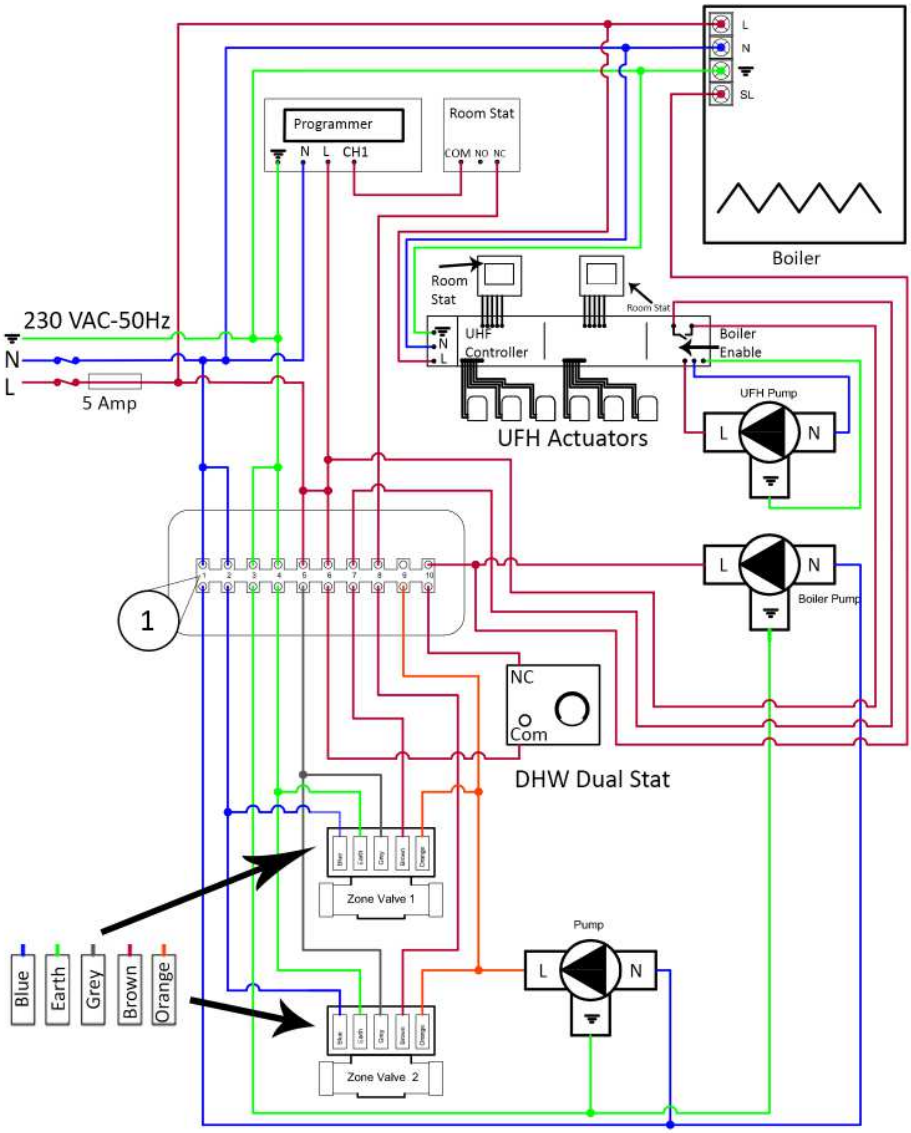
Thermalstore, Sealed Boiler, Solid Fuel Boiler, 2 Radiator Zones & Heat Exchanger



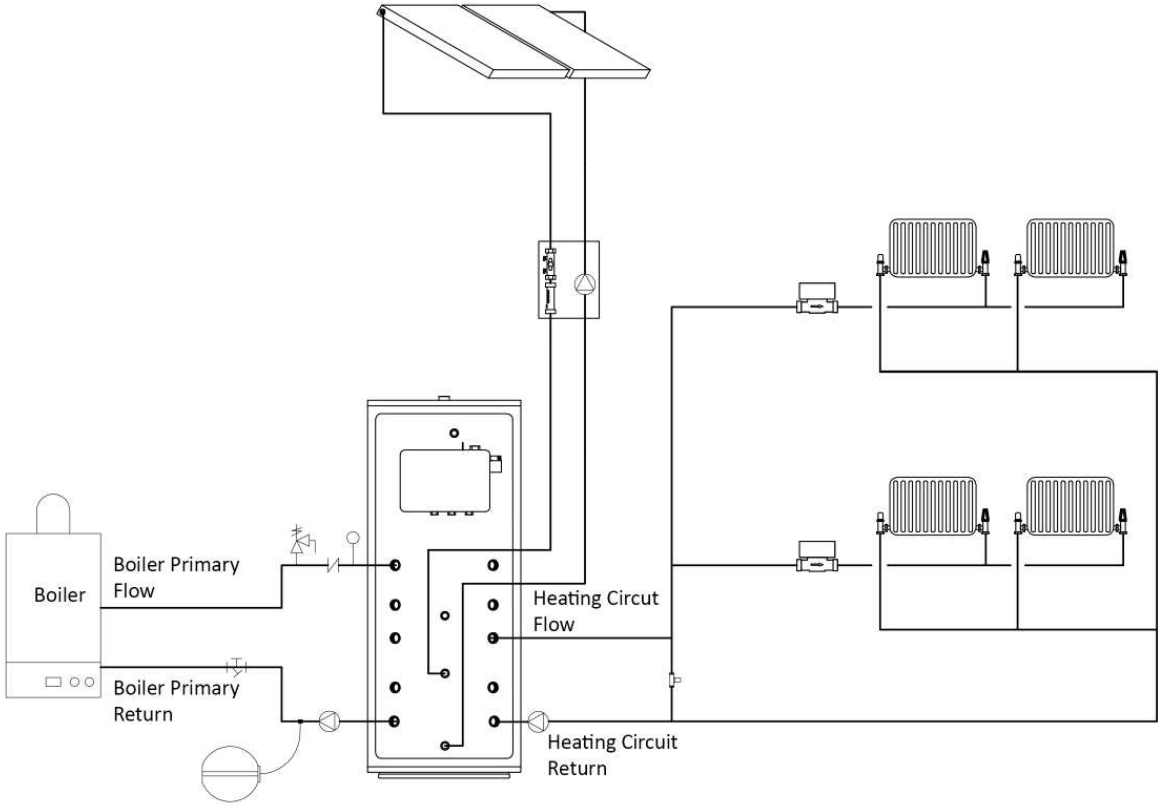

L
N
SL
Boiler
Programmer
N L CH2 CH1
NC 20A Relay
A1
A2
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
L
N
Boiler Pump
L
N
Boiler Pump
1
COM NO
Thermal Store
High Limit Stat
Solid Fuel Pump
L
N
No
Com
Solid Fuel
Pipe Stat
Com
NC
Thermal Store
Temperature Stat
Zone Pump
L
N
Zone Valve 1
Zone Valve 2
Blue
Earth
Grey
Brown
Orange

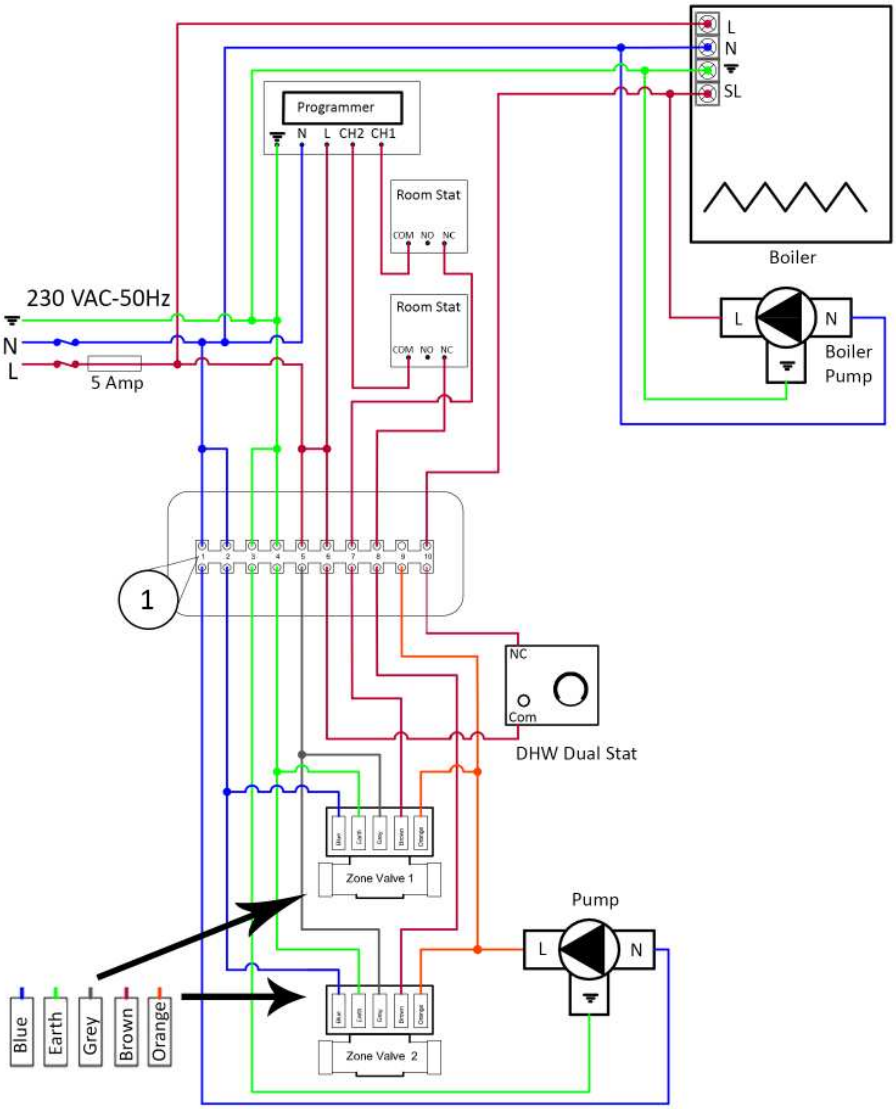
Thermalstore, Sealed Boiler, 1 Underfloor Heating Zone & Radiator Zone



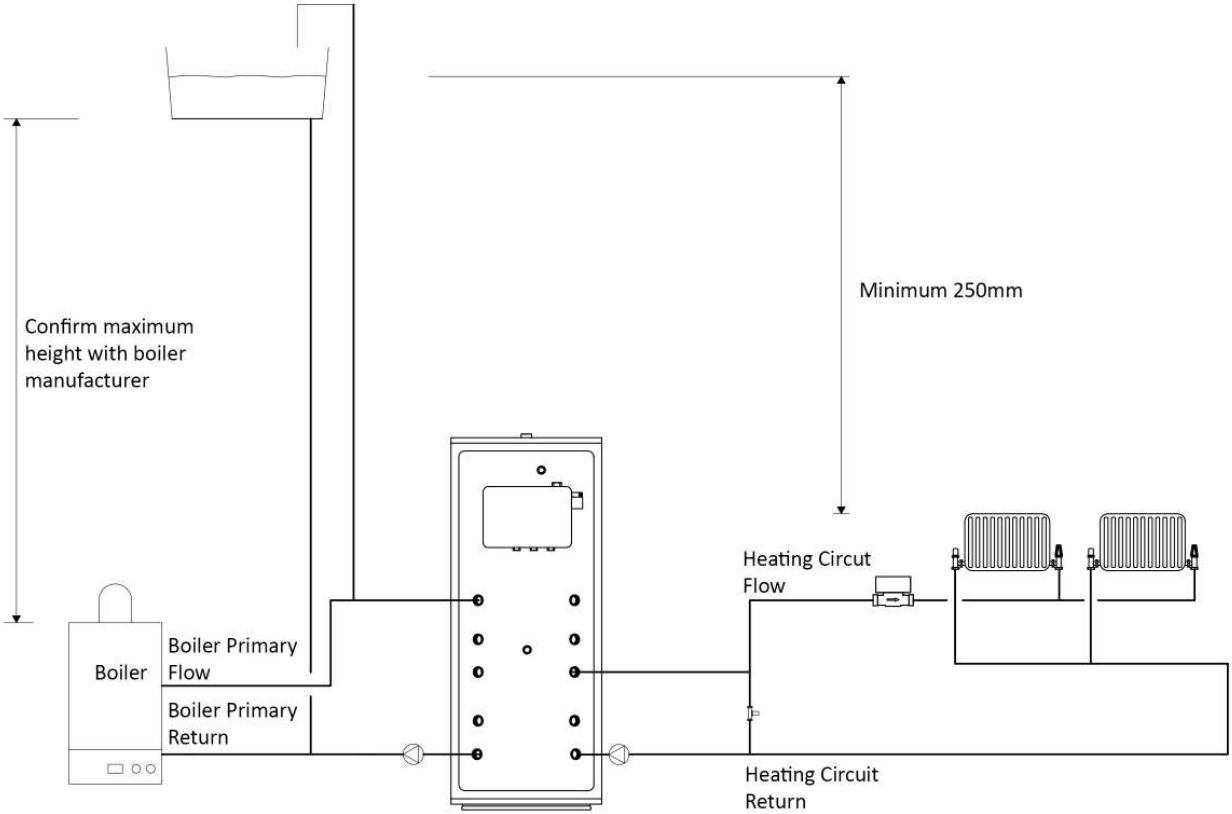

L
N
SL
Boiler
Programmer
N L CH1
Room Stat
COM NO NC
Room Stat
Room Stat
UHF Controller
N
L
Boiler Enable
230 VAC-50Hz
N
L
5 Amp
UFH Pump
L
N
UFH Actuators
1
L
N
Boiler Pump
NC
Com
DHW Dual Stat
Zone Valve 1
Pump
L
N
Blue
Earth
Grey
Brown
Orange
Zone Valve 2

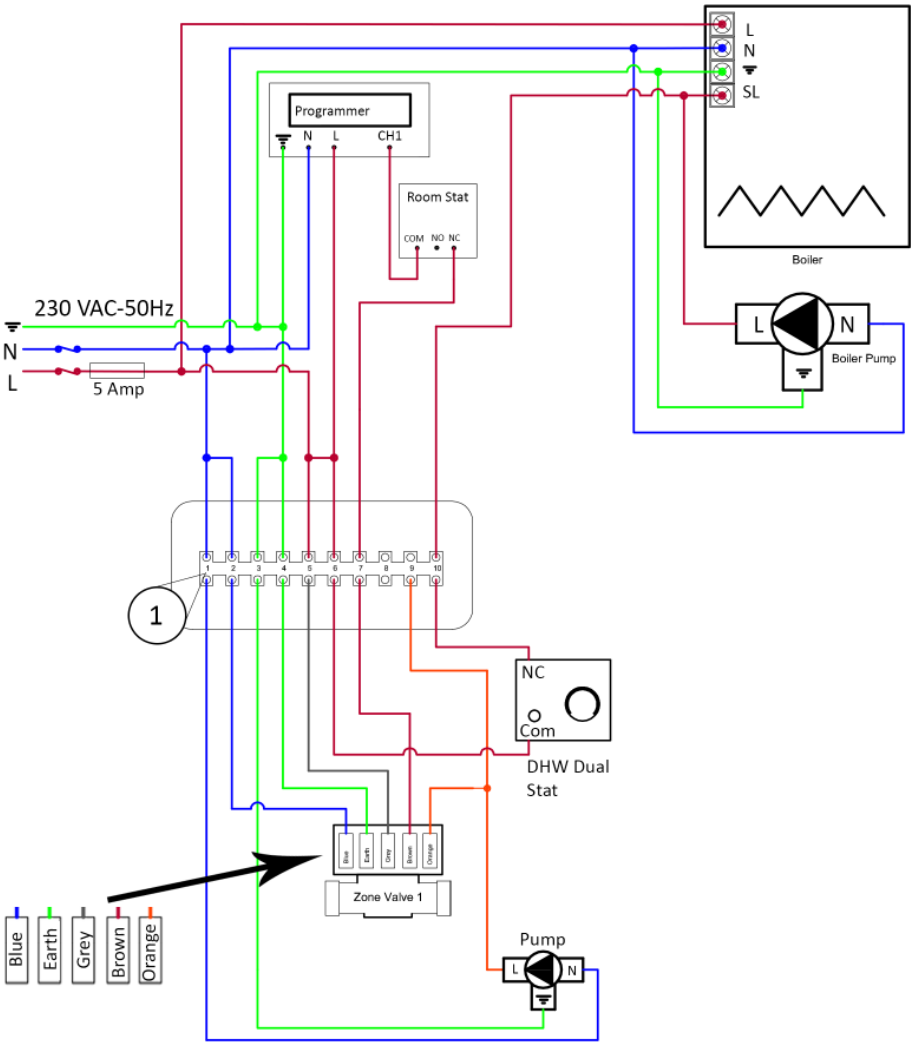
Thermalstore, Sealed Boiler, 2 Radiator Zones & Solar



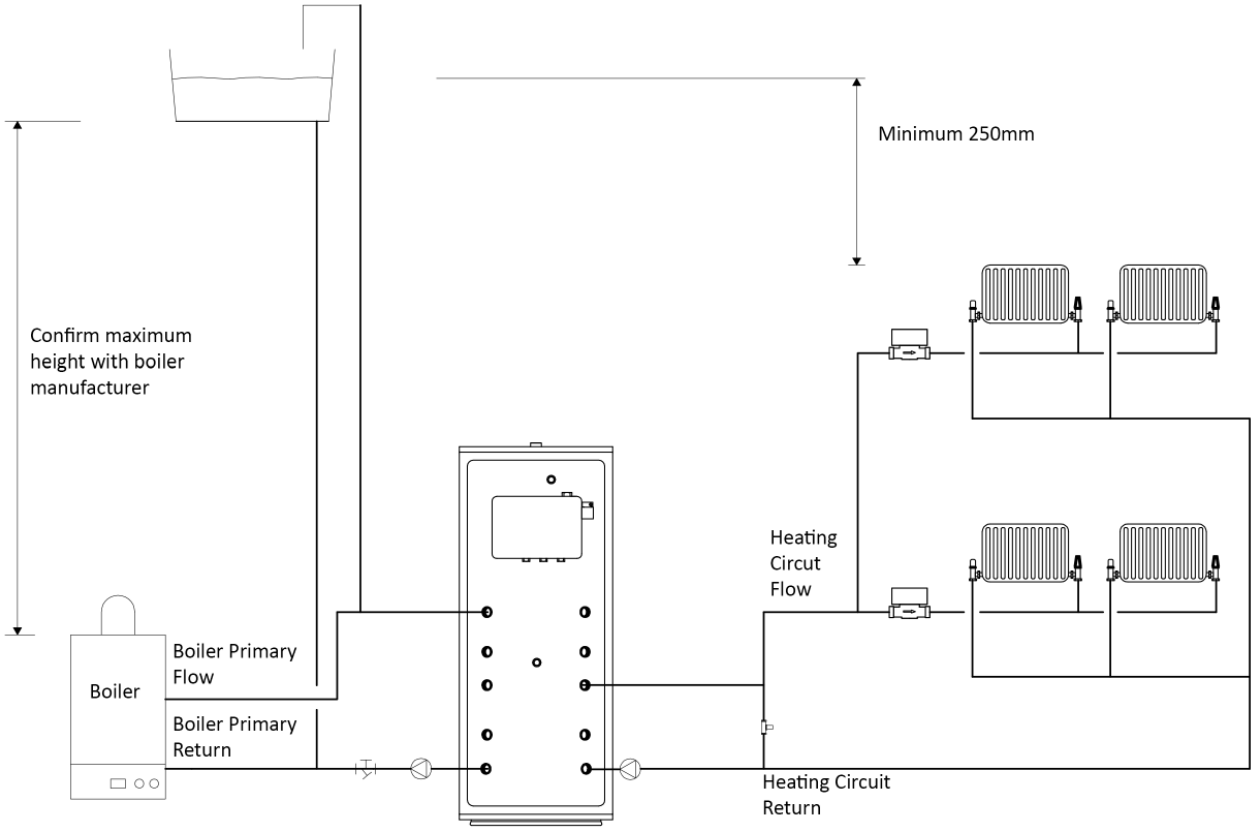

L
N
SL
Boiler
Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
L
N
Boiler
Pump
1
NC
Com
DHW Dual Stat
Zone Valve 1
Pump
L
N
Blue
Earth
Grey
Brown
Orange
Zone Valve 2

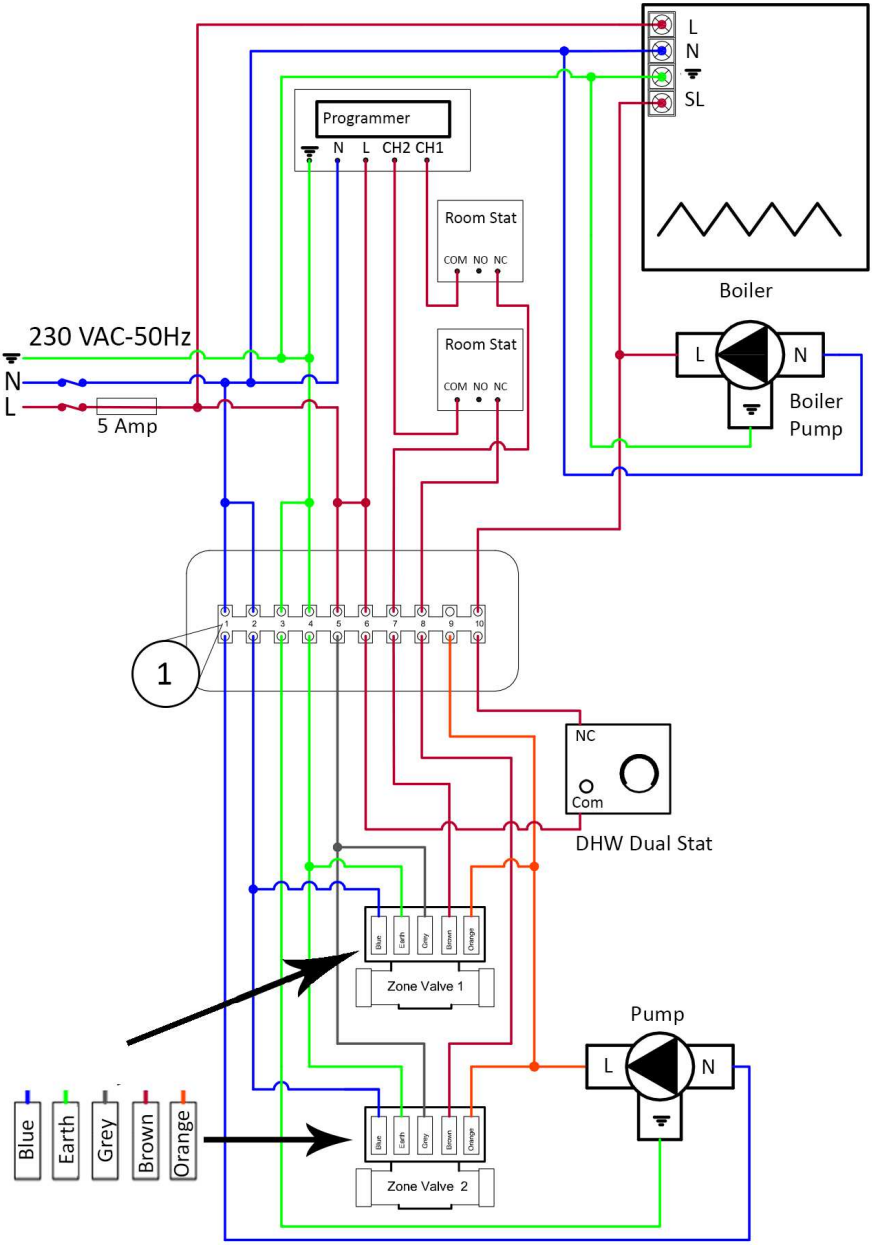
Thermalstore, Open Vent Boiler & 1 Radiator Zones



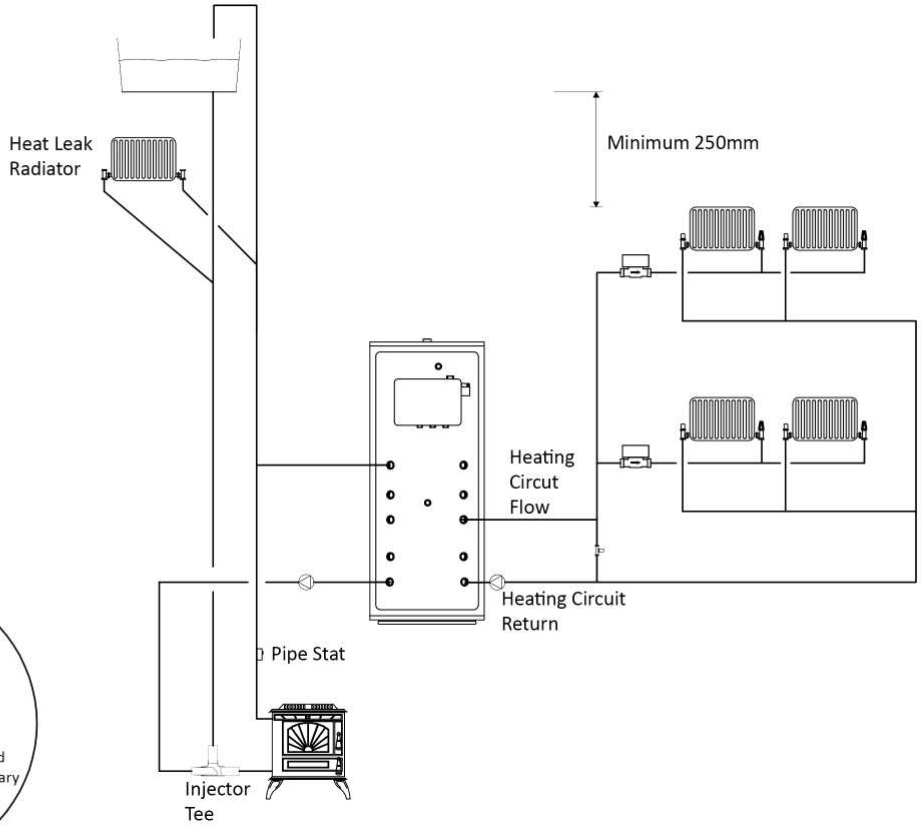

L
N
SL
Boiler
Programmer
N
L
CH1
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
L
N
Boiler Pump
1
NC
Com
DHW Dual
Stat
Zone Valve 1
Blue
Earth
Grey
Brown
Orange
Pump
L
N

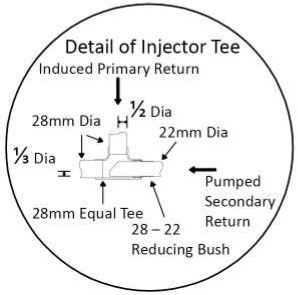
Thermalstore, Open Vent Boiler & 2 Radiator Zones

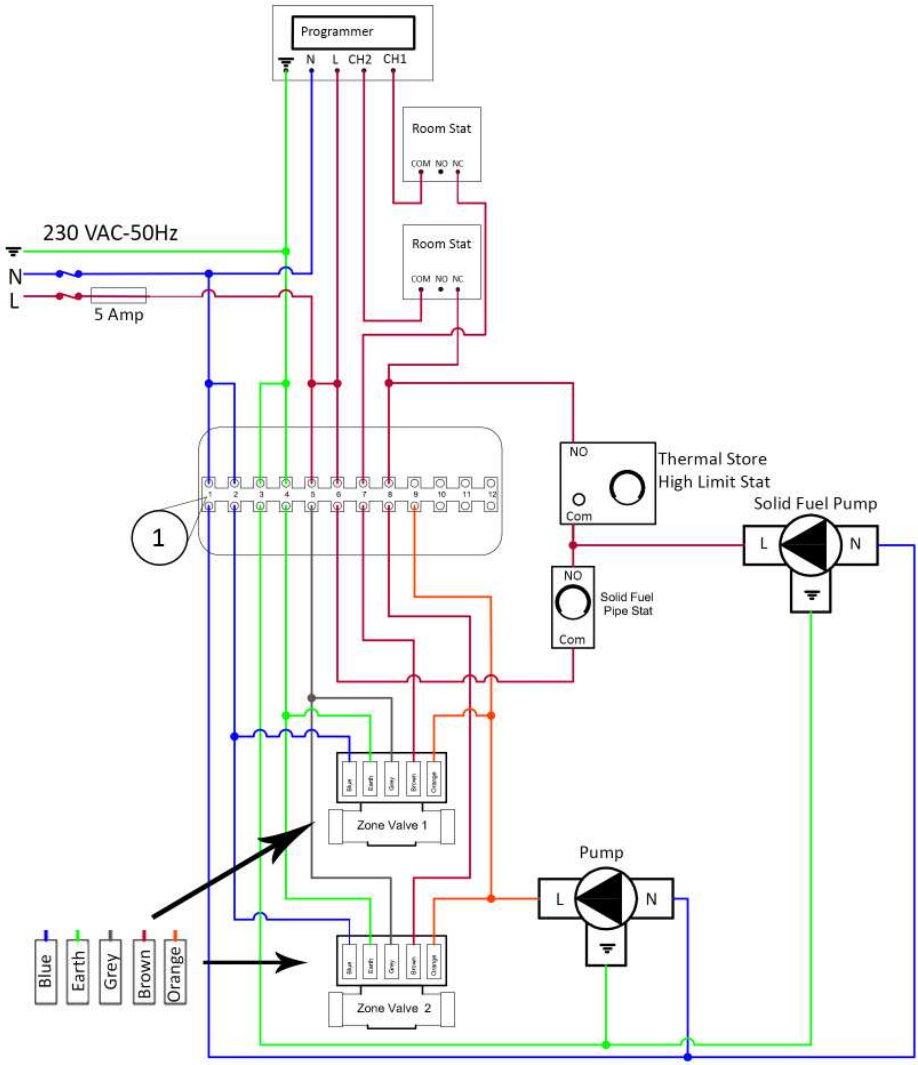



L
N
SL
Boiler
Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
L
N
Boiler
Pump
1
NC
Com
DHW Dual Stat
Blue
Earth
Grey
Brown
Orange
Zone Valve 1
Pump
L
N
Blue
Earth
Grey
Brown
Orange
Zone Valve 2

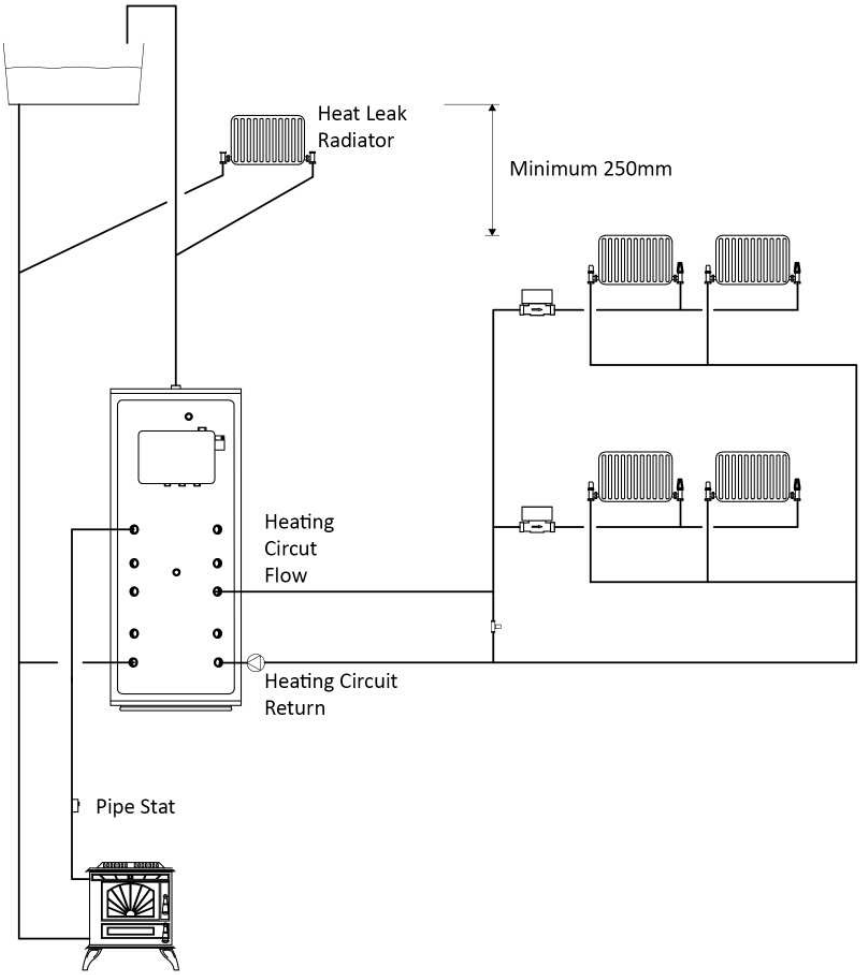
Thermalstore, Solid Fuel Boiler & 2 Radiator Zones

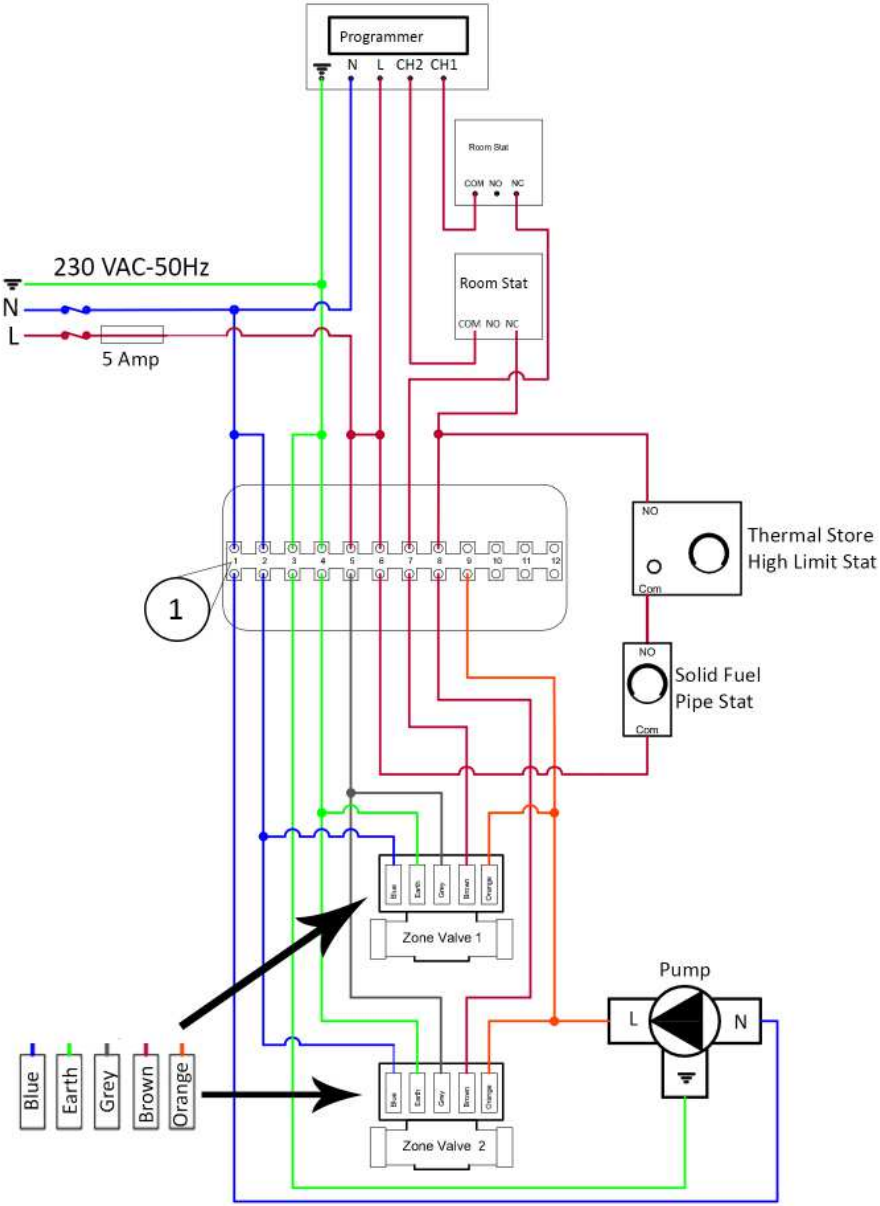




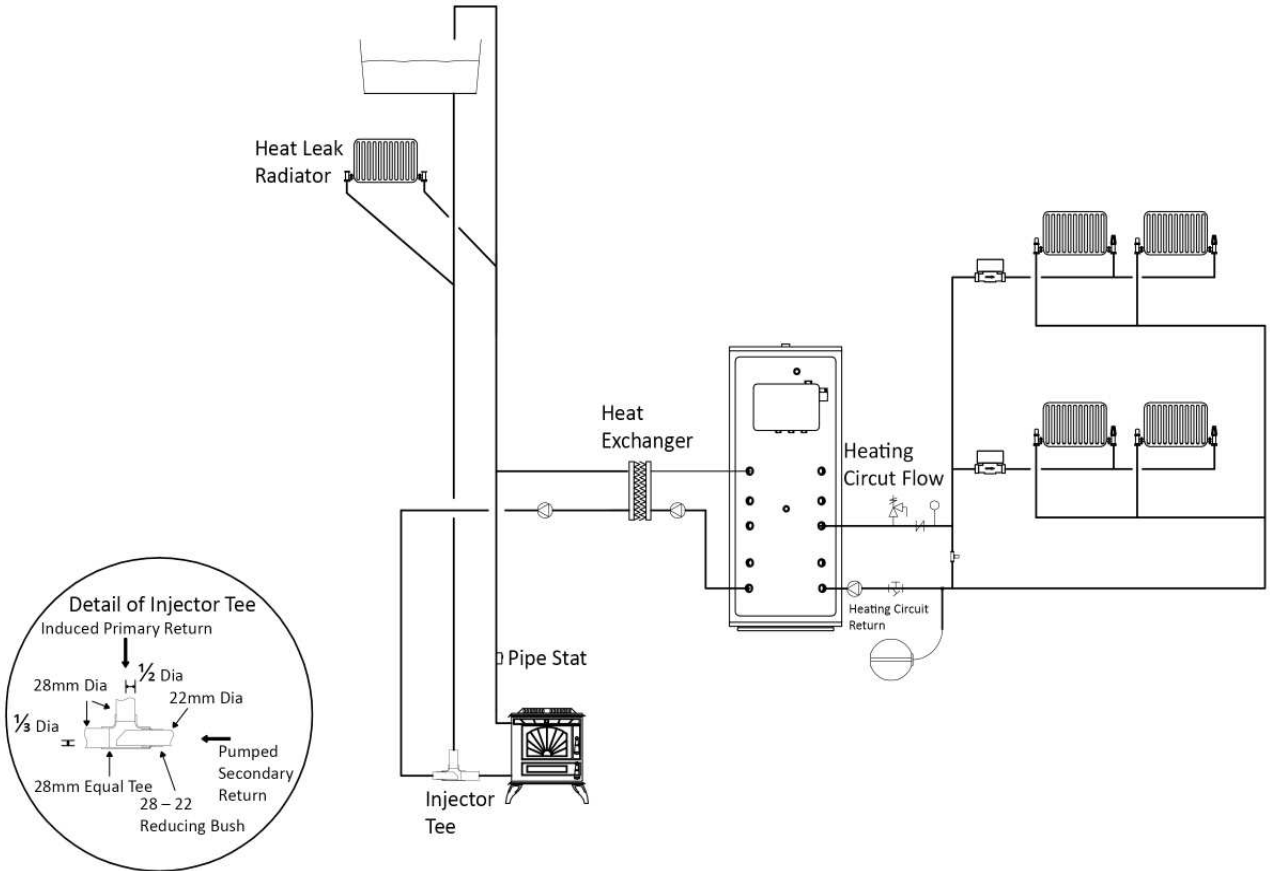

Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
1
NO
Com
Thermal Store
High Limit Stat
Solid Fuel Pump
L
N
NO
Com
Solid Fuel
Pipe Stat
Zone Valve 1
Pump
L
N
Zone Valve 2
Blue
Earth
Grey
Brown
Orange

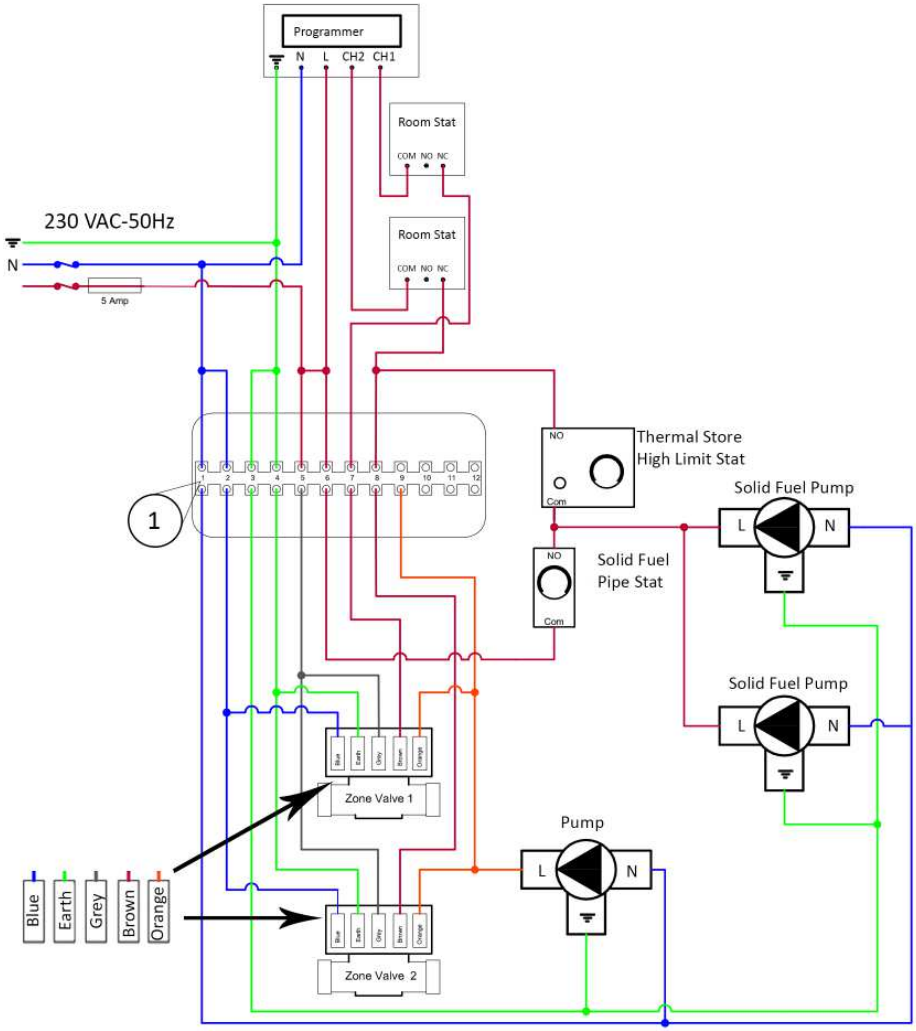
Thermalstore, Solid Fuel Boiler & 2 Radiator Zones



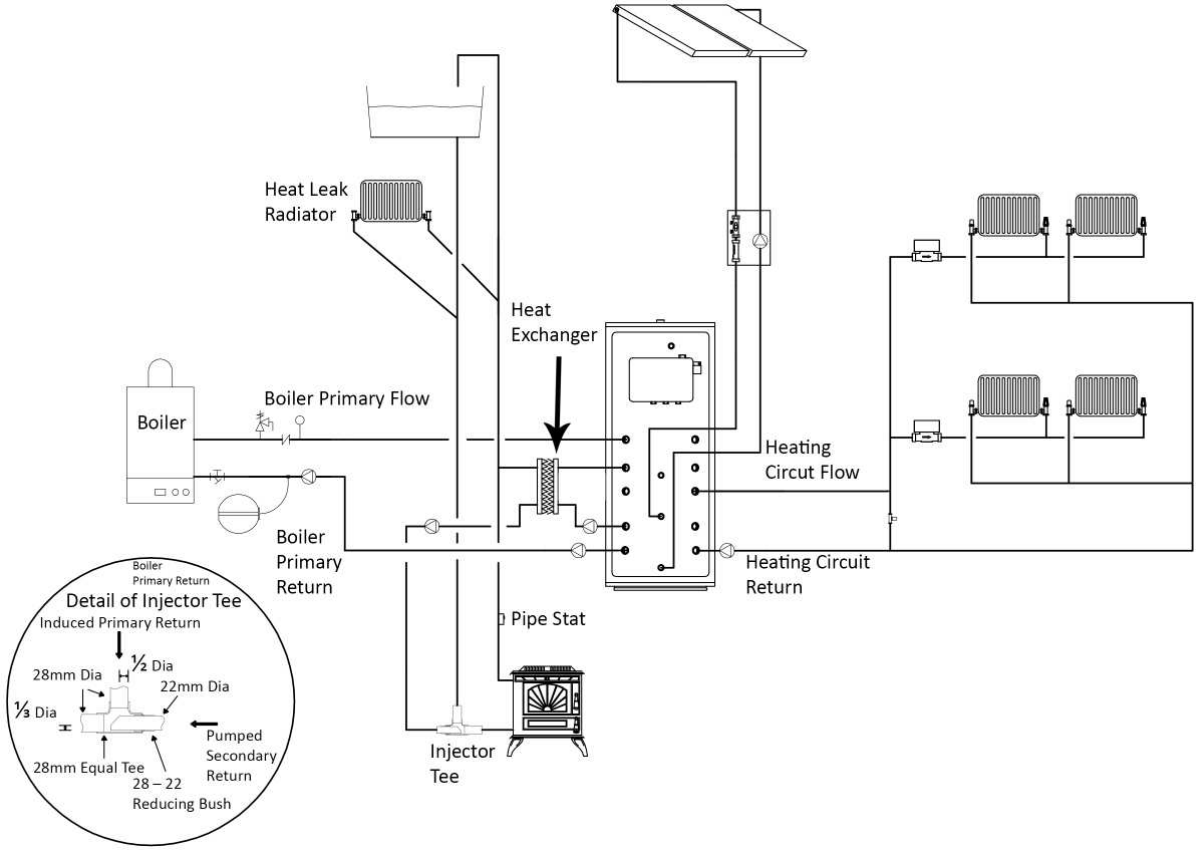

Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
1
NO
Com
Thermal Store
High Limit Stat
NO
Com
Solid Fuel
Pipe Stat
Zone Valve 1
Pump
L
N
Zone Valve 2
Blue
Earth
Grey
Brown
Orange

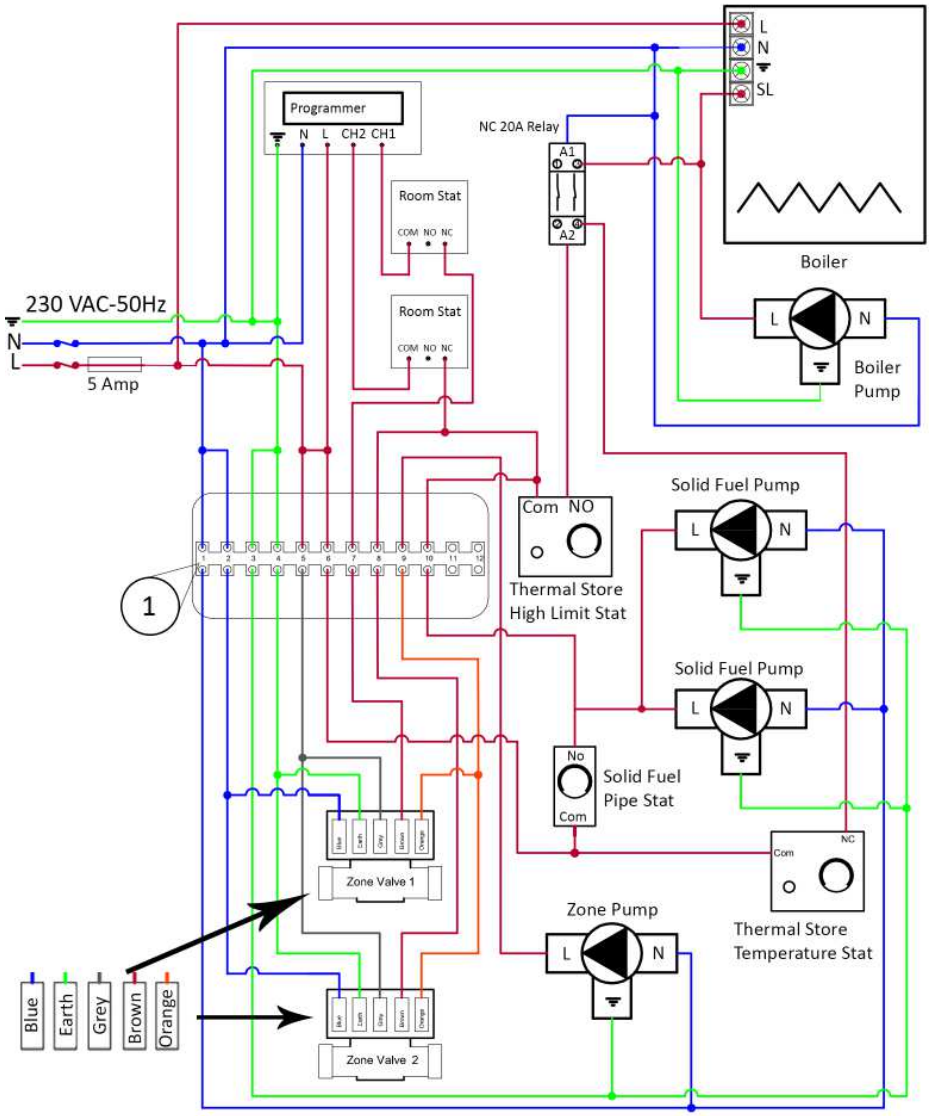
Thermalstore, Solid Fuel Boiler, 2 Radiator Zones, Heat Exchanger & Sealed Heating System



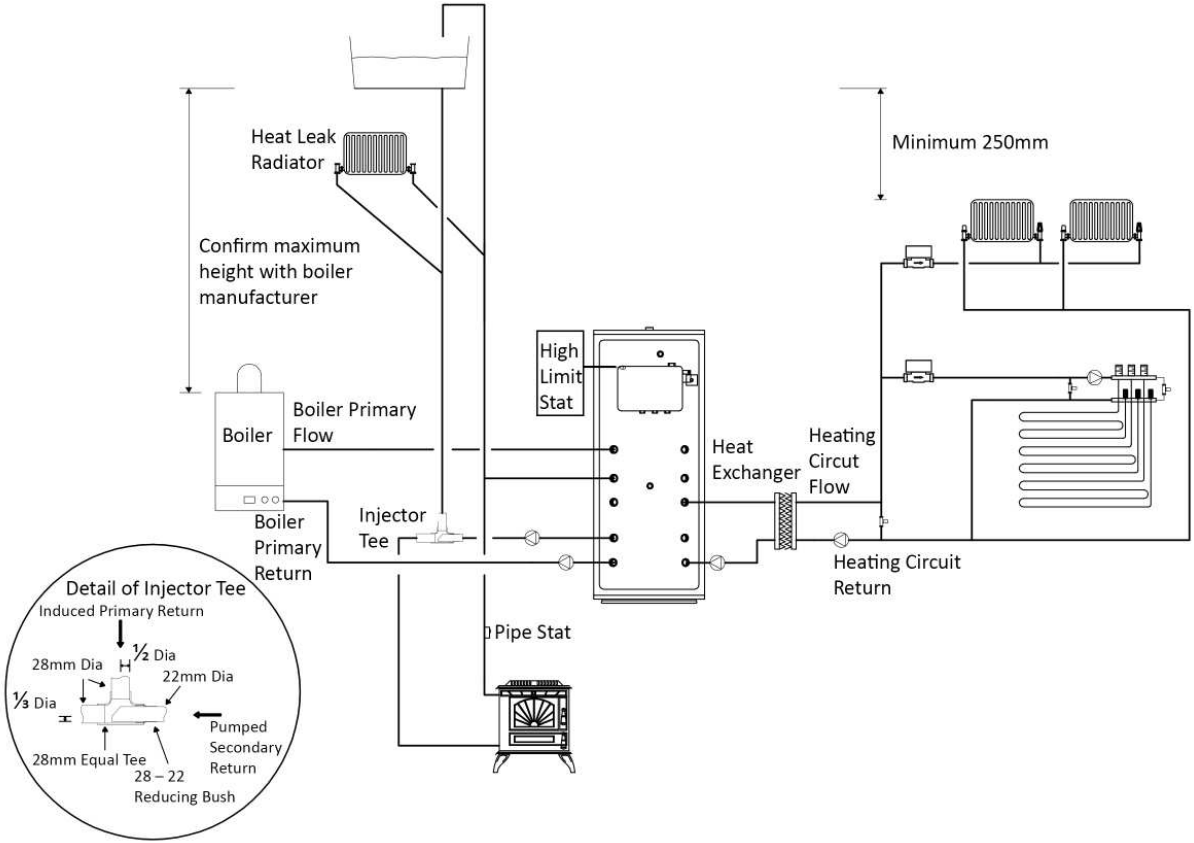

Programmer
N
L
CH2
CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
5 Amp
1
NO
Com
Thermal Store
High Limit Stat
Solid Fuel Pump
L
N
NO
Com
Solid Fuel
Pipe Stat
Solid Fuel Pump
L
N
Zone Valve 1
Pump
L
N
Blue
Earth
Grey
Brown
Orange
Zone Valve 2

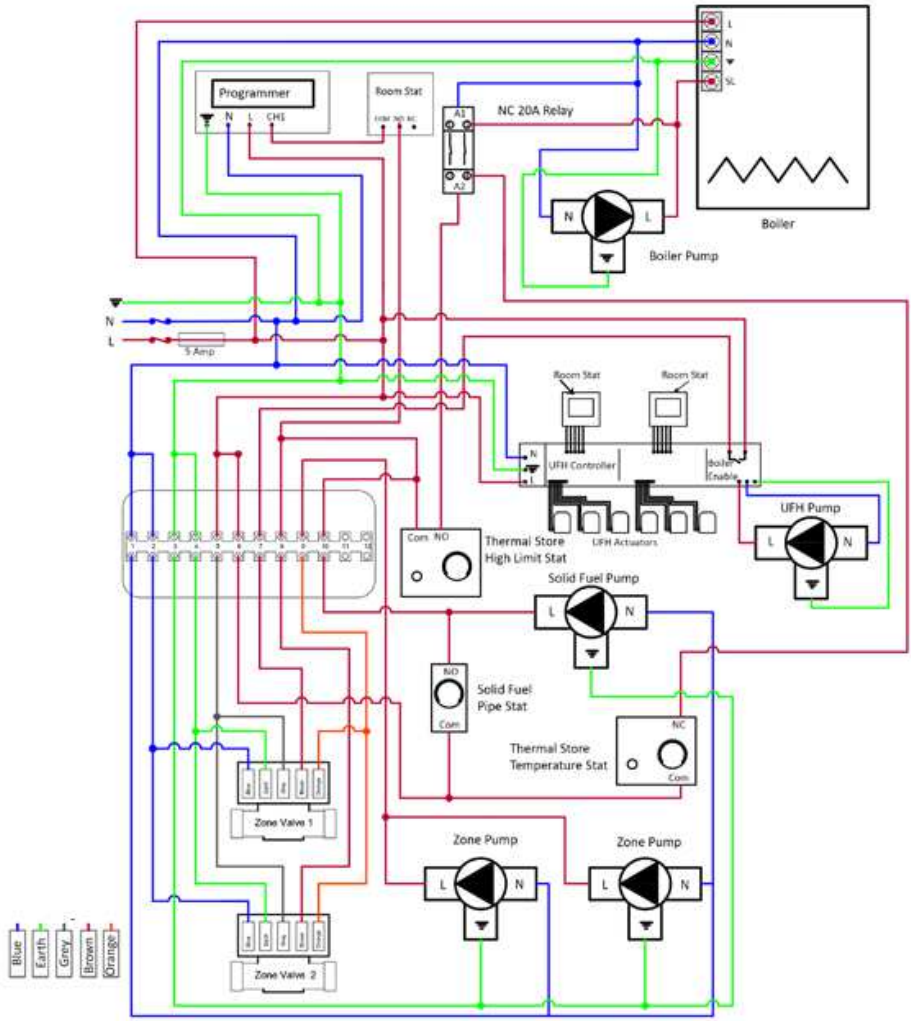
Thermalstore, Sealed Boiler, Solid Fuel Boiler, 2 Radiator Zones, Heat Exchanger, Sealed Heating System & Solar Thermal



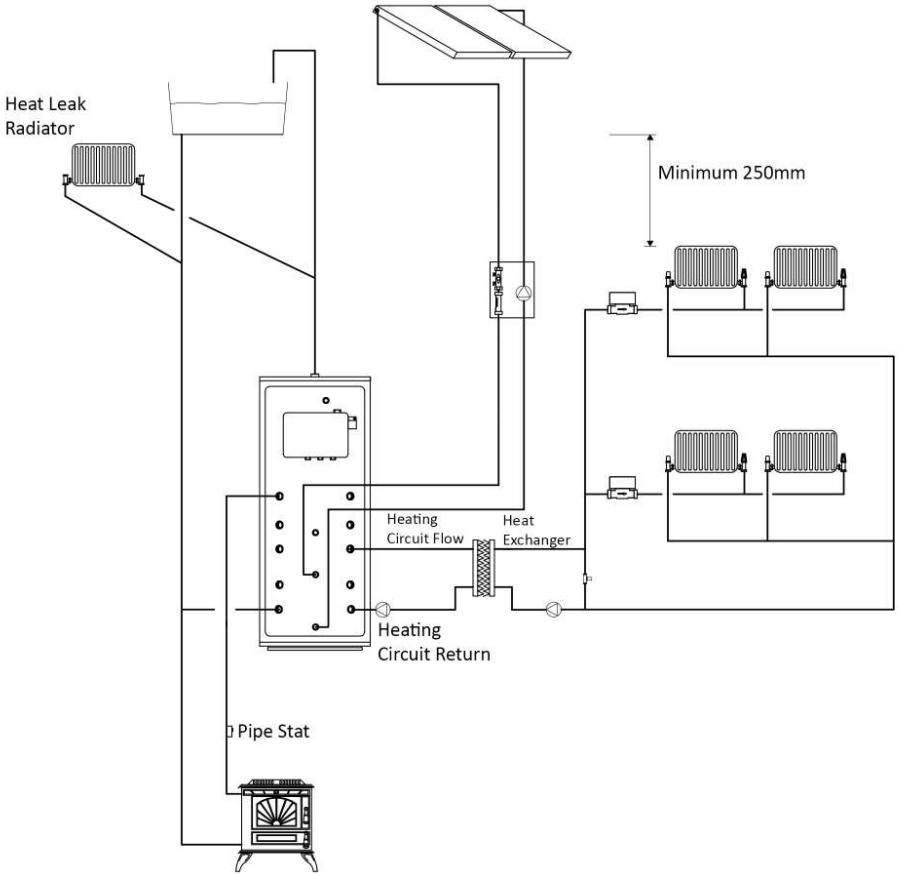

L
N
SL
Programmer
N L CH2 CH1
NC 20A Relay
A1
A2
Room Stat
COM NO NC
Room Stat
COM NO NC
Boiler
L
N
Boiler
Pump
230 VAC-50Hz
N
L
5 Amp
1
Com NO
Thermal Store
High Limit Stat
Solid Fuel Pump
L
N
Solid Fuel Pump
L
N
No
Com
Solid Fuel
Pipe Stat
Zone Valve 1
Zone Valve 2
Zone Pump
L
N
Com
NC
Thermal Store
Temperature Stat
Blue
Earth
Grey
Brown
Orange

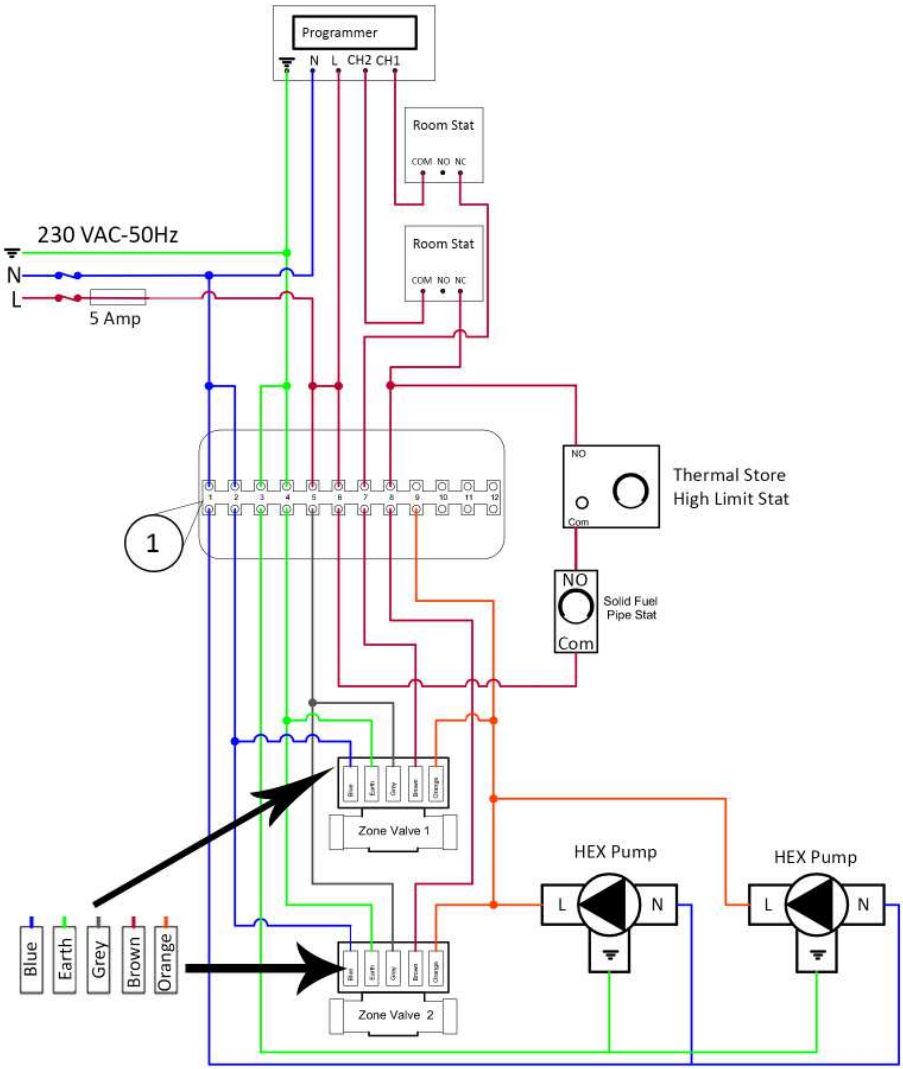
Thermalstore, Open Vent Boiler, Solid Fuel Boiler, 1 Underfloor Heating Zone, 1 Radiator Zone & Heat Exchanger




Programmer
N
L
CH1
Room Stat
A1
A2
NC 20A Relay
L
N
SL
Boiler
N
L
Boiler Pump
N
L
5 Amp
Room Stat
Room Stat
N
L
UFH Controller
Boiler Enable
UFH Actuators
UFH Pump
L
N
Com
NO
Thermal Store
High Limit Stat
Solid Fuel Pump
L
N
NO
Com
Solid Fuel
Pipe Stat
NC
Com
Thermal Store
Temperature Stat
Zone Valve 1
Zone Pump
L
N
Zone Pump
L
N
Zone Valve 2
Blue
Earth
Grey
Brown
Orange

Thermalstore, Solid Fuel Boiler, 2 Radiator Zone, Heat Exchanger & Solar Thermal




Programmer
N L CH2 CH1
Room Stat
COM NO NC
Room Stat
COM NO NC
230 VAC-50Hz
N
L
5 Amp
1
NO
Com
Thermal Store
High Limit Stat
NO
Com
Solid Fuel
Pipe Stat
Zone Valve 1
Zone Valve 2
HEX Pump
L
N
HEX Pump
L
N
Blue
Earth
Grey
Brown
Orange

Setting The Freshwater Module

To set the flow rate on the Freshwater Module on the Thermalstore 2.0, complete the following steps;

- With the Thermalstore 2.0 hot, set the pump speed of the circulation pump (02) to speed 3.
- Set the Thermostatic Mixing Valve (04) to its maximum setting by lifting the head of the valve and turning.
- Set the Thermostatic Head Valve (01) to its lowest value.
- Close the Bypass Valve (03) fully and then open the valve by a quarter turn.
- Open a hot tap. Ensure that there is circulation through the Bypass Valve (03) as it provides protection to the circulation pump in the event of the Thermostatic Head Valve closing. If necessary adjust the Bypass Valve until you hear a trickle of water pass through it.
- Set the Thermostatic Head Valve (01) to a desired maximum flow temperature on the primary circuit. If a lower setpoint is chosen, there will be a greater volume of available hot water.
- Take a temperature measurement at the kitchen tap by running the kitchen tap half open.
- Adjust the delivered temperature at the tap by adjusting the setting on the Thermostatic Mixing Valve (04) until the desired temperature is achieved.

Thermal Store Temp	Sanitary Capacity		Thermal Return	Water System	DHW	Power
(C)	(ltr/min)	(ltr/hour)	(C)	(C)	(C)	(kW)
60	12.5	750	42	15	50	30
60	16.7	1000	36	15	49	40
60	25.0	1500	33	15	45	52
60	29.2	1750	27	15	44	59
70	12.5	750	47	15	50	30
70	16.7	1000	40	15	50	41
70	25.0	1500	29	15	49	59
70	33	2000	27	15	44	67

The JOULE Thermalstore is designed to provide mains pressure domestic water water, regardless of whether the heating system is installed as a sealed system or as an open vent system. As there is a small volume of domestic water within the coil, the domestic water can be pressurised even when there is an uncontrolled heat source connected to the cylinder. Domestic water connections should be installed as per G3 regulations.

The JOULE Thermalstore 1.0 should be maintained at temperature of 70°C to provide DHW temperature of 60°C leaving the coil. When installing a JOULE Thermalstore 1.0, a thermostatic mixing valve should be installed. Its function is to act as an anti scald protection. The thermostatic mixer is to be set to a temperature of between 30°C and 60°C and is supplied by in the unvented kit.

The Joule Thermalstore 1.0 is capable of delivering up to 22L/min at a pressure of 2 bar mains pressure. Calculations of water demand should be made based on this flow rate as in applications where there is a larger continuous demand for hot water the Thermalstore may not have sufficient flow capacity to meet the demand.

Refer to the table on the previous page for details on setting flowrates on the Thermalstore 2.0.

HARD WATER

If the Joule Thermalstore is to be installed in areas with hard water and where there is a prevalence of limescale, JOULE reccomend installing the Thermalstore 2.0. This comes with an external heat exchanger built into the Freshwater Module, allowing for easy replacement in the event of excessive limescale buildup.
It is also recommended to install an inline scale reducer to prolong the lifespan of DHW coil in the Thermalstore 1.0 or the heat exchanger in the Thermalstore 2.0.

HEATING SYSTEM DESIGN

The 10 N0. 1" tappings on the body of the JOULE Thermalstore are used for heating system integration. The lowest tappings should be used for return pipework tot he heating system and heat sources with the highest tappings used for the primary flows from th heat generators. To maximimse DHW volume, use the middle tappings in the Thermalstore for secondary flow to the heating zones. This ensures that DHW is prioritised over the space heating and that the space heating demand will not reduce the DHW capacity.

When installing an open vent heating system, it is recommended to use copper pipe with a minimum diameter of 22mm on standard boilers and a minimum of 28mm copper pipe on solid fuel boilers. Temperatures in the vent pipe from the open vent systems can exceed 90°C so ensure that the pipework used is suitable for high temperature applications. It is recommended to use copper floats, brass ball valves, metal overflow tanks and copper pipework in all open vent applications. When installing a solid fuel appliance a heat leak radiator on the gravity circuit of the pipework should be installed.

A high limit stat should also be fitted to automatically turn on a zone valve and corresponding circulating pump. This should be set to 85°C. Provide a system lock out where a second heat source is installed to prevent both appliances from delivering excess heat into the Thermalstore. Details can be found in the installation schematics of this manual to show how this can be achieved.

When Installing An Immersion Heater

Where an immersion heater is fitted, always check the immersion for signs of leakage before wiring commences.

The immersion heater must be completely submerged in water with a minimum of 200mm of water above the top of the immersion.

Warning: do not operate the immersion heaters until the cylinder has been filled with water

Wire the immersion through a double pole fused spur. The contact separation must be no less than 3mm with a minimum breaking capacity of 16A.
Install the immersion using rigid cable, 2m long max, with 2.5 mm^2 cross-section and a temperature resistance of at least 85°C.

The Cable should be rubber insulated HOFR sheathed, complying with BS6141 Table 8. It must be fully earthed. Ensure all terminal connections are securely made. Do not however use excessive force when tightening the terminal screws.

Ensure that the power supply is disconnected prior to making any electrical connections. Provide 90mm length of cable for each of the Live and Neutral cables with 8mm of bare cable for connection to the Immersion terminals.

Provide 110mm length of cable for the Earth cable with 20mm of bare cable for connection to the Earth stud. Make a circle with the bare Earth cable and tighten securely using the washer to the Earth stud. Fit the Live and Neutral cables to the Immersion thermostat. Ensure all terminal connections are properly tightened prior to commissioning.

For installations with high water demands, or areas with hard water, Titanium immersions should be fitted. The thermostat should be set so that the water is heated to a temperature between 60°C and 65°C. The immersion stat has an integrated high limit stat which If the primary thermostat fails the limit thermostat takes over and shuts the element off before the water can boil in the cylinder.

TESTING

If there is no heat source active, and if there is no hot water you can carry out several tests with your multimeter to decide which component is faulty. First remove the cover for the wiring and then check for voltage across the live and neutral terminals on the element. If you get a reading the element is faulty (power going through thermostat so stat is working).
Next, check whether the thermostat is working by connecting your multimeter to the live out of the thermostat, if there is no reading the thermostat is faulty.

NOTE: IF THE WATER IS GETTING EXTREMELY HOT THEN THE THERMOSTAT IS STUCK IN THE "ON" POSITION AND WILL NEED TO BE REPLACED.

SAFETY

Disconnect the immersion from the mains electrical supply before removing any covers. Do not attempt to replace the immersion heater(s) with alternatives to those recommended by JOULE.Do not bypass the Thermal Cut-Out(s) in any circumstances.

REPLACING THE IMMERSION

First task is to isolate the power. Immersion heaters are rated at 3kW and require their own 20amp double pole isolation switch. Turn off the power from the isolation switch and remove the fuse. Next turn off the water to the tank. Drain the water from the tank via the drain cock using a hose. Remove the immersion using an immersion spanner. Thread in the replacement immersion heater creating the seal using a rubber o-ring or fibre washer. Slot the immersion heater into the hole with the washer and make sure the threads are lined up correctly. Tighten with which-ever spanner you are using, taking care not to over tighten and risk damaging the cylinder.

Open the taps up and turn the cold water supply back on. When water starts to come out of the taps shut them off and check for leaks. If all is good wire up the immersion heater, checking that your connections are good. Fit the cap on the immersion and turn the power back on.
If the immersion is connected to a booster switch turn it on and check that it heats up. Economy 7 immersion heaters will only turn on at set times during the night and cannot be altered so check the following morning to see if the water has heated up properly.

FILLING

First you must ensure that the pressure in the dhw expansion vessel is the same as the setting of the pressure reducing valve i.e. 3 bar (45PSI). The valve is of the Schrader car tyre type. Check all the connections for water tightness including any factory made connections such as the immersion heater and the temperature and pressure relief valve. Prior to filling, open the hot tap furthest away from the cylinder to expel air. Open the cold main isolation valve and allow the unit to fill. Once the cylinder has been fully commissioned it should be heated to its normal operating temperature. Draw off secondary hot water to each outlet and allow hot water to flow from each outlet for at least 30 seconds to remove any flux residue from the pipe work within the secondary hot water system. Then fully drain the coil and re-fill to ensure that all flux residues is removed from the system.

GENERAL

Servicing should only be carried out by competent installers and any spare parts used must be purchased from JOULE.

NEVER bypass any safety devices or operate the unit without them being fully operational.

DRAINING

Switch the electrical power off (important to avoid damage to element). Isolate boiler from the unit. Turn off the cold water supply valve. Open hot water tap.

Open the drain valve. The unit will drain.

Warning: Water drained off may be very hot

ANNUAL MAINTENANCE

The water heaters require annual servicing in order to ensure safe working and optimum performance. It is essential that the following checks are performed by a competent installer on an annual basis. This is commonly done at the same time as the annual boiler service.

Twist the cap of the expansion relief valve on the inlet control set and allow water to flow for 5 seconds. Release and make sure it resets correctly.

Repeat with the pressure / temperature relief valve. In both cases check that the discharge pipework is carrying the water away adequately. If not, check for blockages etc. and clear. Check that any immersion heaters fitted are working correctly and that they are controlling the water at a temperature between 55°C and 65°C.

Check the pressure in the expansion vessel is charged to 3 bar. Turn off the water supply to the unit and open a hot tap first. The air valve on expansion vessel is a Schrader (car tyre) type.

Air or CO2 may be used to charge the expansion vessel. Unscrew the head on the inlet control set and clean the mesh filter within. The Service Log Book supplied with this unit should be updated at each service.

YOUR GUARANTEE MAY BE VOID IF YOU CANNOT PRODUCE PROOF OF ANNUAL SERVICING

IMMERSION HEATER REPLACEMENT

If the thermal cut out on the Immersion heater operates contact a competent installer. If the thermal cut out fault occurs again the immersion will need to be replaced. Prior to installing the replacement Immersion, ensure the o-ring is correctly positioned on the head of the Immersion and lubricate the threads before fitting. Thread the Immersion by hand until it is hand tight and then tighten gently to allow the o-rings to create a water tight seal.

INSPECTION

Where internal inspection of the cylinder is required an endoscope can be used. Inspection can be carried out by draining down the cylinder and removing a component that is fitted to a wet connection in the cylinder.

SAFETY VALVE CHECKS

Any sign of water coming from either the temperature/pressure relief valve or the expansion relief valve indicates a problem.

Check your discharge pipework is free from debris and is carrying water away to waste effectively. Next hold both of these safety valves open, allowing as much water as possible to flow through the tundish. Release the valves and check that they reseat correctly.

Completion of the Benchmark checklist on pages 32 – 33 MUST be adhered to by the installer.

Taking The Cylinder Out Of Use

SHUTTING DOWN

Ensure the cold water supply is isolated and at least two hot water draw off points are open prior to draining the cylinder.

One of the hot water draw off points should be as close as possible to the height of cylinder in draw off terms.
Where applicable use the drain valve at the cold water inlet to drain the contents of the cylinder.
Isolate the coil from the main heating system. If necessary blow out the coil prior to moving the cylinder.

RECYCLING AND DISPOSAL

The cylinder or any of its components must not be disposed of in domestic rubbish. The material in the cylinder, packaging and components contain recyclable materials and they should be disposed of properly and in accordance with national regulations.

GUIDANCE IN THE EVENT OF A PROBLEM

If you have a problem in the first year, contact the plumber who fitted the unit. Thereafter contact the plumber who carries out the annual servicing for you. If your cylinder develops a leak we will supply you with a new one. We ask for a nominal upfront payment to prevent fraud and we will require the original unit to be returned to us for inspection along with a copy of your Service Log Book. If it is confirmed that it has failed within the terms of the guarantee your upfront payment will be refunded.
If a component part fails within the guarantee period, we will send you a new one without any upfront charge. Credit card details may be taken to prevent fraud. We ask you to post the faulty part back to us within one month by recorded delivery. If you do not return the part we will charge you for it and for the postage and packing. If your part fails after the guarantee period, we will ask for upfront payment.

LOG BOOK

The installer must comply with all of the installation instructions contained within this installation manual. On completion of the initial installation and after each subsequent annual service the Benchmark Log Book must be completed and signed by the competent person who has worked the unit.

The purpose of Benchmark is to ensure that customers have the correct equipment for their requirements installed in accordance with the manufacturer's installation instructions. The equipment must be installed by installers who have completed an accredited competent person's scheme and who install, commission and service the equipment in accordance with the manufacturer's instructions.

All installations must comply with the appropriate Building Regulations and the Benchmark Log Book should be provided to the customer. The Benchmark Log Book can also be used to show that all equipment is installed in accordance with the relevant Building Regulations.

Troubleshooting

Your stainless system is automatic in normal use and requires only annual servicing. You should employ a competent installer to perform the annual servicing. Normally this is timed to coincide with the annual boiler service.

IF WATER IS FLOWING FROM THE SAFETY VALVES THROUGH THE TUNDISH THIS INDICATES A FAULT CONDITION AND ACTION IS NEEDED.

If this water is hot, turn the boiler and / or the immersion heater off. Do not turn off the water until the discharge runs cool. The discharge may also stop.

CALL OUT A COMPETENT PLUMBER TO SERVICE THE UNIT.

Tell them you have a fault on an unvented cylinder. We stock all the spare parts they may need and JOULE can be contacted via telephone numbers on back page.

Fault	Possible Cause	Solution
Water escaping from the case unit.	Compression fitting on hot - draw off not sealing.	Check / remake joint sealing paste.
Cold water at hot tops.	Immersion heater not switched on or cutout has triggered.	Check / reset.
	Indirect - Boiler not working.	Check boiler - consult boiler manufactures' instructions.
	Indirect - motorized valve fault.	Check plumbing / wiring motorized valve.
	Indirect - cutout in dual stat has operated.	Check outlet pressure from inlet control set is 3 bar.
Water discharges from expansion relief valve	If continual - pressure reducing valve (part of inlet control set) mayno tbe operating correctly.	Check outlet pressure from inlet control set is 3 bar.
	If continual - expansion relief valve seat may be damaged.	Remove cartridge - check seat and renew if necessary.
	If intermittent - expansion vessel charge may have reduced / bladder perished.	Check pressure in expansion bessel. Recharge to 3 bar if necessary. If bladder perished replace vessel.
	Unit is being back pressurized.	With cylinder cold check pressure in cylinder. If this is the same as the incoming mains pressure then you are getting backfeed. Install a balanced cold supply.
Water discharges from temperature & pressure relief valve	Unit has overheated - thermal controls have failed.	Switched off power to boiler and immersion heaters. Leave water supply on. Wait until discharges stops. Isolate water supply and replace if faulty.
Milky / cloudy water	Oxygenated Water.	Water from any pressurized system will release oxygen bubbles when flowing. The bubbles will settle out.
No hot water flow	Cold main off.	Check and open stopcock.
	Strainer blocked in pressure reducing valve.	Isolate water supply and clean.
	Inlet control set may be fitted incorrectly.	Check and refit required.
Noise during hot water draw off - typically worse in the morning	Loose airing cupboard pipework.	Install extra clips.
Hot or warm water from cold tap	If tap runs cold after a minute or so the pipe is picking up heat from heating pipework.	Insulate/re-route.

CYCLONE GUARANTEE – CC/001 – 13/10/15

Joule Cyclone

The JOULE Cyclone stainless steel vessel carries a fully transferable 25-year guarantee against faulty materials or manufacture provided that:

- It has been installed in the United Kingdom or the Republic of Ireland as per the instructions provided in the installation manual provided with the cylinder and in accordance with all of the relevant standards, regulations and codes of practice in force at the time.
- It has not been modified in any way, other than by JOULE
- It has not been misused, tampered with or subjected to neglect.
- The system is fed from the public mains water supply.
- It has only been used for the storage of potable water.
- It has not been subjected to frost damage.
- The unit has been serviced annually.
- The Service Log Book has been completed after each annual service.

Exclusions

The guarantee does not cover cylinders affected by the following;

- The effects of scale build up on the cylinder.
- Any labour charges associated with replacing the unit or its parts.
- Any consequential losses caused by the failure or malfunction of the unit.
- Please note that invoices for servicing may be requested to prove that the unit has been serviced annually.

Unvented Kit

The expansion vessel and cold water controls supplied with JOULE models carry a 2-year guarantee. All other components that are fitted to, or supplied, with the unit carry a 2-year guarantee.

Joule Wellmaster

The JOULE Wellmaster stainless steel vessel carries a fully transferable 20-year guarantee against faulty materials or manufacture provided that:

- It has been installed in the United Kingdom or the Republic of Ireland as per the instructions provided in the installation manual provided with the cylinder and in accordance with all of the relevant standards, regulations and codes of practice in force at the time.
- It has not been modified in any way, other than by JOULE.
- It has not been misused, tampered with or subjected to neglect.
- It has only been used for the storage of potable water.

- The sacrificial anode is removed for inspection within 3 months of the cylinder installation. If there are signs of corrosion on the anode it must be replaced.
- A replacement schedule for the anode must be put in place based on the findings of the initial 3 month inspection.
- Maximum interval between anode inspections is 22 months.
- The Service Log Book has been completed after each annual service.

Exclusions

The guarantee does not cover cylinders affected by the following;

- Wellmaster cylinders where the anode has not been routinely maintained.
- Any labour charges associated with replacing the unit or its parts.
- Any consequential losses caused by the failure or malfunction of the unit.
- Please note that invoices for servicing may be requested to prove that the unit has been serviced annually.

Joule fully endorse the Benchmark scheme and the code of practice can be obtained from www.centralheating.co.uk

info@jouleuk.co.uk

Tel: 02523552094

Registration can be made by logging online to www.jouleuk.co.uk / www.joule.ie

Notes

Notes

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____

Address _____

Cylinder Make and Model _____

Cylinder Serial Number

Commissioned by *(print name)* _____ Registered Operative ID Number _____

Company Name _____ Telephone Number _____

Company Address _____

_____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number *(if applicable)* _____

ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)

Is the primary circuit a sealed or open vented system?	Sealed ☐	Open ☐	
What is the maximum primary flow temperature?			°C

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system?				*bar*
Has a strainer been cleaned of installation debris (if fitted)?	Yes ☐	No ☐		
Is the installation in a hard water area (above 200ppm)?	Yes ☐	No ☐		
If yes, has a water scale reducer been fitted?	Yes ☐	No ☐		
What type of scale reducer has been fitted?				
What is the hot water thermostat set temperature?				°C
What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)?				*l/min*
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?			Yes ☐	
Type of control system (if applicable)	Y Plan ☐	S Plan ☐	Other ☐	
Is the cylinder solar (or other renewable) compatible?	Yes ☐	No ☐		
What is the hot water temperature at the nearest outlet?				°C
All appropriate pipes have been insulated up to 1 metre or the point where they become concealed			Yes ☐	

UNVENTED SYSTEMS ONLY

Where is the pressure reducing valve situated (if fitted)?			
What is the pressure reducing valve setting?			*bar*
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes ☐	No ☐	
The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations		Yes ☐	
Are all energy sources fitted with a cut out device?	Yes ☐	No ☐	
Has the expansion vessel or internal air space been checked?	Yes ☐	No ☐	

THERMAL STORES ONLY

What store temperature is achievable?		°C
What is the maximum hot water temperature?		°C

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations	Yes ☐
The system has been installed and commissioned in accordance with the manufacturer's instructions	Yes ☐
The system controls have been demonstrated to and understood by the customer	Yes ☐
The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer	Yes ☐

Commissioning Engineer's Signature

Customer's Signature

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

benchmark COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

www.centralheating.co.uk

SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

Service Provider
Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

SERVICE 1 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 2 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 3 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 4 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 5 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 6 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 7 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 8 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 9 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

SERVICE 10 Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

JOULE IE

mail Kylemore Park West, Ballyfermot, Dublin 10
tel +353 (1) 623 7080
fax +353 (1) 626 9337
eml info@joule.ie
web www.joule.ie

JOULE UK

mail Unit 17C&D Power Road, Plantation Bus. Pk.
Bromborough, Wirral, CH62 3RN
tel +44 (0) 1513 551 094
fax +44 (0) 1513 568 336
eml info@jouleuk.co.uk
web www.jouleuk.co.uk

JOULE PL

mail 23-200 Kraśnik, ul. Towarowa 34.
tel +48 (0) 128811171
fax +48 (0) 814709046
eml biuro@joule-pl.pl
web www.joule-pl.pl