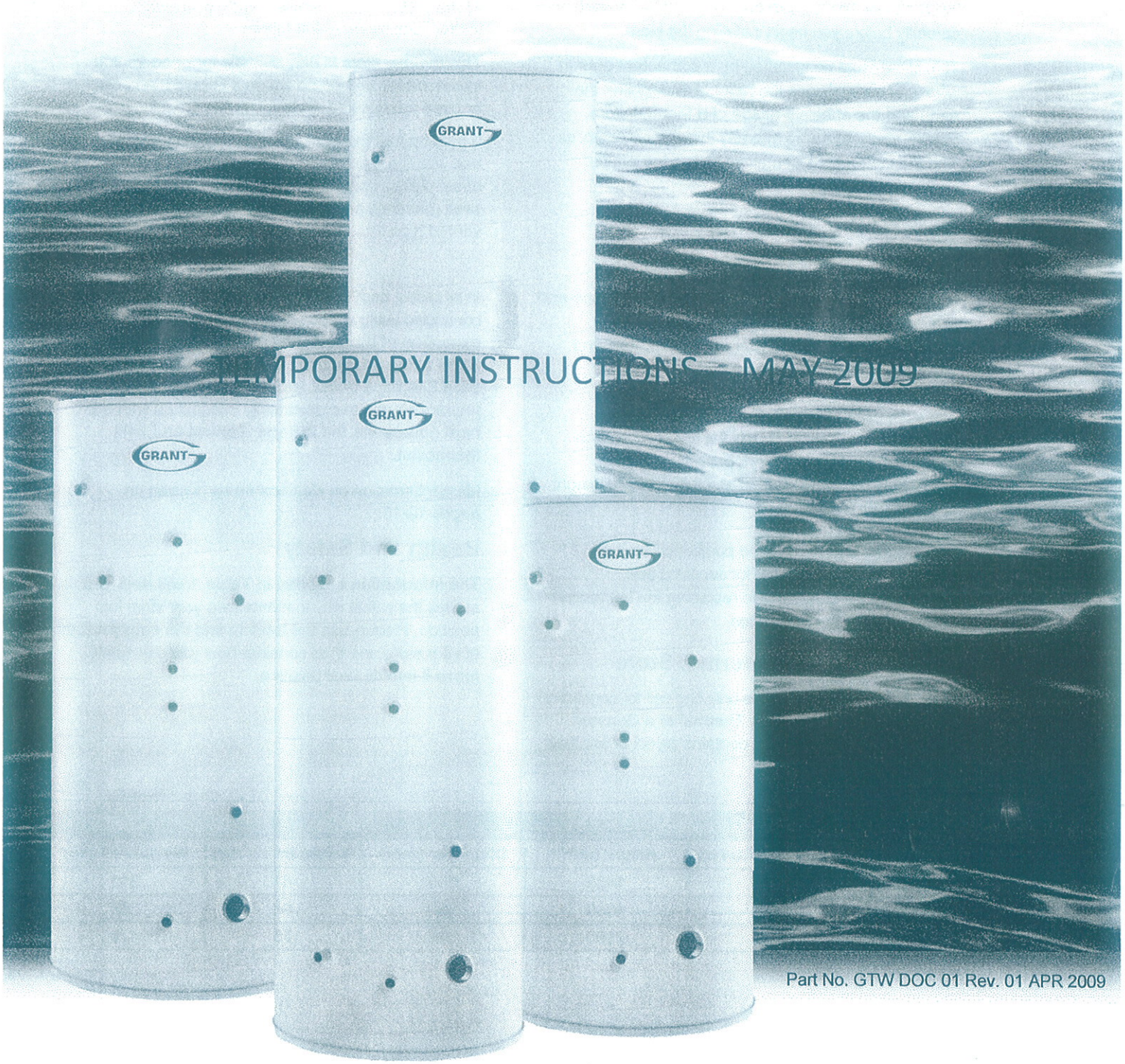
Installation & User Guide

ThermaWave System



TEMPORARY INSTRUCTIONS - MAY 2009

Part No. GTW DOC 01 Rev. 01 APR 2009

GRANT

EFFICIENT HEATING SOLUTIONS

Important Information

Thank you for purchasing a Grant thermal store from our Wave range. This installation manual must be read carefully before you begin installing the store.

This store must be installed by a competent person who fully understands the rational underlining the need and the effective usage of a thermal store. Please also make sure that any installation complies with the instructions contained in this installation instruction manual.

General Requirements

If the thermal store is not being installed immediately, it should remain sealed with all pipe-end protective caps in-situ to prevent damage. We recommend that the cylinder be transported and stored in an upright position.

The store must be installed in an upright (vertical) position and may stand on any flat and level surface without special preparation, provided that it is sufficiently robust to support the fully flooded weight of the store.

The thermal store should be positioned so that enough access is provided for servicing and maintaining the controls and replacing the immersion heater, should the need arise.

About your New Thermal Store

Your ThermaWave store has only one coil for connection to a source such as Solar Thermal or a Ground Source heat pump when it contains glycol or another liquid that should not be mixed with system water. Please refer to the manufacturer's installation instructions for more information.

This thermal store is only suitable for open-vented systems only and on no account should it be installed or used as a sealed system unit.

It may be that the appliances and circuits you wish to use with the store are already sealed system. In this case, please contact the appliance manufacturer to seek guidance on converting the appliance to an open-vented type.

In all cases, each input from an heat generator must be connected using a 2 port motorised valve (with the exception of the solar coil and the 28mm tappings when using an uncontrolled heat source eg: Aga, solid fuel back boiler, etc) to shut off the flow to the primary source and electrically interlocked with the heat source via the cylinder control and limit thermostat.

More information on electrical wiring is given on pages 12-15.

Health and Safety

The information supplied in Table 1 will help you assess the safest way to manoeuvre your store into position. Please use the table to find the empty weight of your store and then consider how you can safely move it into its final position.

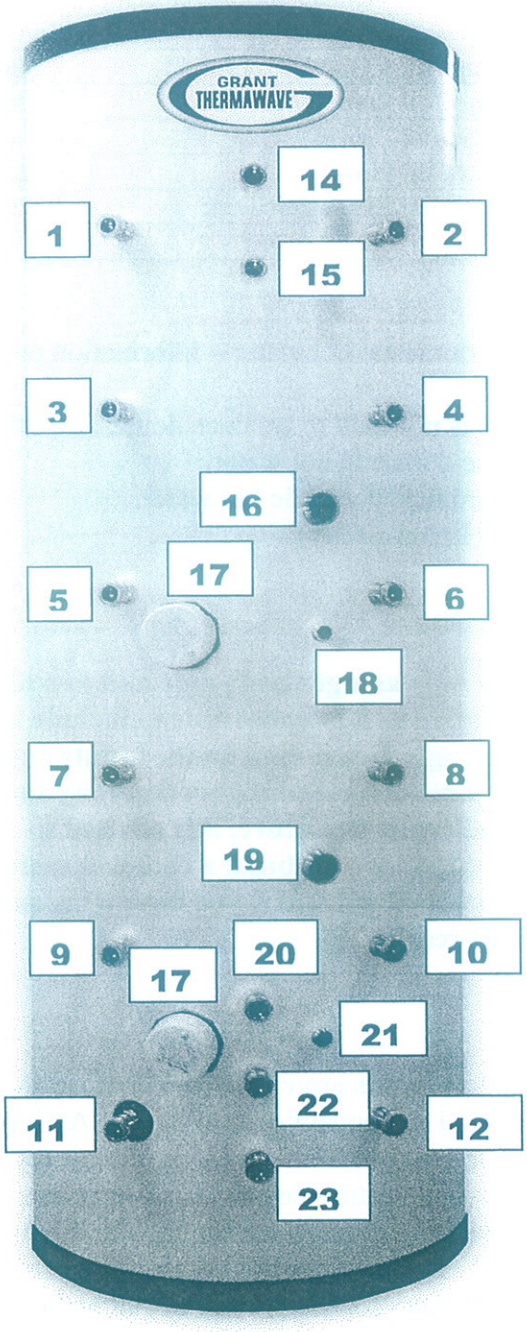
Dimensions and Weights Table 1

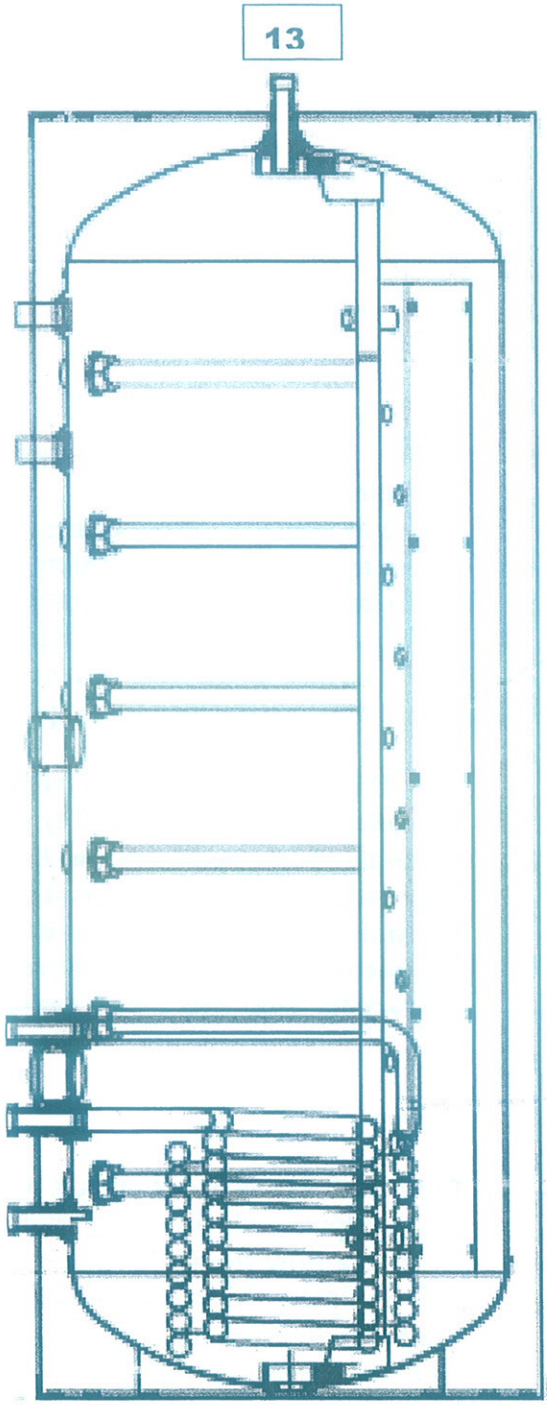
Model	Capacity (litres)	Height (mm)	Diameter (mm)	Weight Empty (kg)	Weight Full (kg)
GTW250	250	1425	580	61	311
GTW300	300	1680	580	66	366
GTW400	400	2190	580	78	478

. PLEASE LEAVE THIS MANUAL WITH THE HOUSEHOLDER AFTER INSTALLATION .

1 Technical Specification

1.1 Technical Specification





Technical Specification

Legend	Typical Usage	Tapping	Rating		Legend	Typical Usage	Tapping	Rating
1	Flow from Boiler (1)	22mm			13	OSV + Flow to Cyl or DHW Kit	22mm	
2	Flow to C.H. (2)	22mm			14	½" BSPF (not used) (7)	½" BSP	
3	Return to Boiler (3)	22mm			15	½" Sensor pocket	n/a	
4	Flow to C.H. (4) or Return to Boiler	22mm			16	Flow from Gravity source	28mm	
5	Return for DHW Kit	22mm			17	Immersion element and thermostat (7)	11/4"	3kW
6	Flow to U.F.H (5)	22mm			18	½" Sensor pocket	n/a	
7	Flow from Heat Pump	22mm			19	Return from Gravity source	28mm	
8	Flow to Boiler	22mm			20	Solar Coil Return	22mm	
9	Flow from C.H.	22mm			21	½" Sensor Pocket	n/a	
10	Flow to U.F.H (6)	22mm			22	Solar Coil Flow	22mm	
11	Flow from UHF	22mm			23	Feed from Expansion Tank	22mm	
12	Flow to Heat Pump	22mm						

Notes:
(1) Use as flow from boiler if using the store to produce domestic hot water – information on usage given later in this manual.
(2) Use as flow to Central heating (eg: radiators) if store is not used to produce domestic hot water.
(3) Use as flow from boiler if store is not used to produce domestic hot water.
(4) Use as flow to Central Heating if using the store to produce domestic hot water.
(5) Use as Flow to U.F.H if whole house is U.F.H (i.e.: High capacity)
(6) Use as flow to U.F.H if part house is U.F.H.
(7) Immersion elements can be upgraded to 6kW if desired.

IMPORTANT: The above information is given only as a general guide and as such, we cannot accept responsibility for the correct operation as it is impossible to include all outputs of all appliances and heat loads on all dwellings. Depending on the inputs and outputs you wish to connect, there may well be a more suitable configuration for your application. In order to assist you and other installers in the future, it is advised to complete and return the sheet enclosed in this manual so we may build a comprehensive library for your use. Please contact Grant's Technical department if you have a unique situation that you cannot resolve.

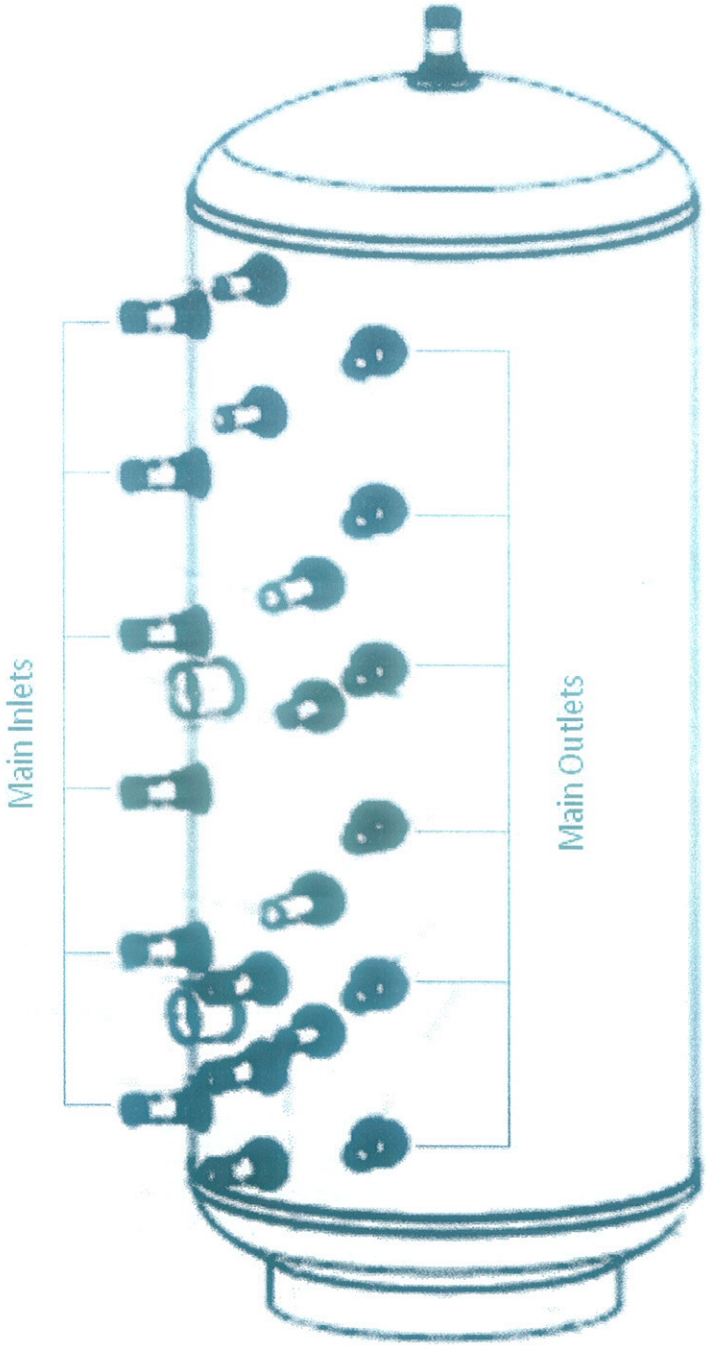
There are 9 inputs and 9 outputs available for connection to this store. Do not confuse these inputs/outputs with flows and returns that would be found in conventional systems. An input could be a flow from a heating source (eg: a boiler) or a return from a heating circuit (eg: a radiator circuit.) Similarly, an output could be the flow to a heating circuit (eg: U.F.H circuit) or a return to a heating source (eg: a heat pump). The only defined connections that have a fixed use are as follows: a) the OSV (open safety vent), b) feed from the expansion vessel, c) the coil connections as shown for Solar, d) the flow and return for the gravity circuit and e) the immersion elements.

1 Technical Specification

There are 6 main inlets and 6 main outlets which will require careful consideration before plumbing up to these connections.

Before deciding on what positions to use, it will be of benefit to understand how this store works.

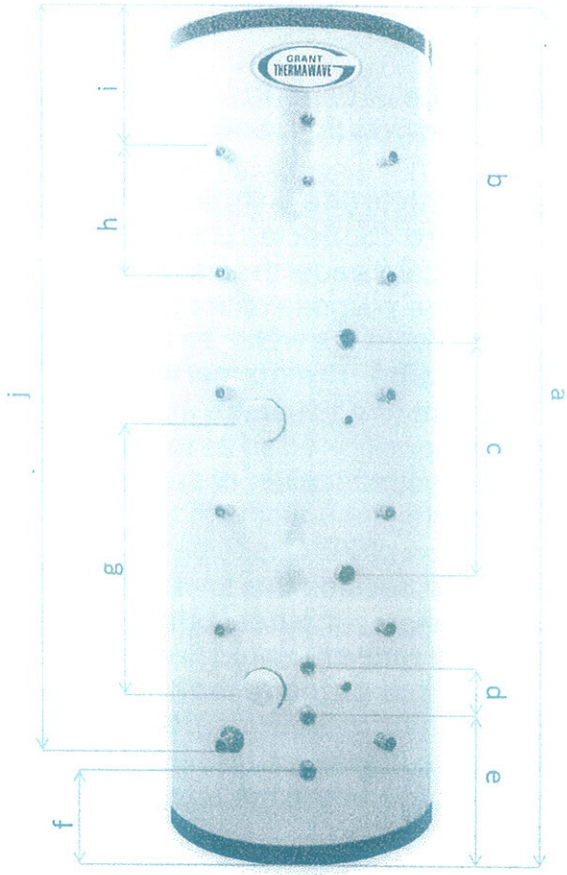
The main inlets (the 6 shown in the diagram) are connected via a tube into a vertical header that is about 4" square. The purpose of the header is to slow down the water as it enters the tube. The normal working temperature of each of the inlets should be positioned so as to assist the natural stratification of the store. For example, if a boiler with a nominal flow of 70°C is to be connected, position this towards the top of the store. If a heat pump was connected with a nominal flow of 50°C, position it around the middle. If the return from an underfloor heating circuit was, say, about 30°C, connect the return to the inlet about the bottom.
The internal header has holes throughout the length to allow the inlet water to pass through once the correct height has been found (relative to the temperature of the store.) For example, if the temperature 300mm from the top of the store is 65°C and the water entering connection 3 is only 40°C, the inlet water is less bouyant than the surrounding water and will therefore fall, till it meets water similar in temperature.



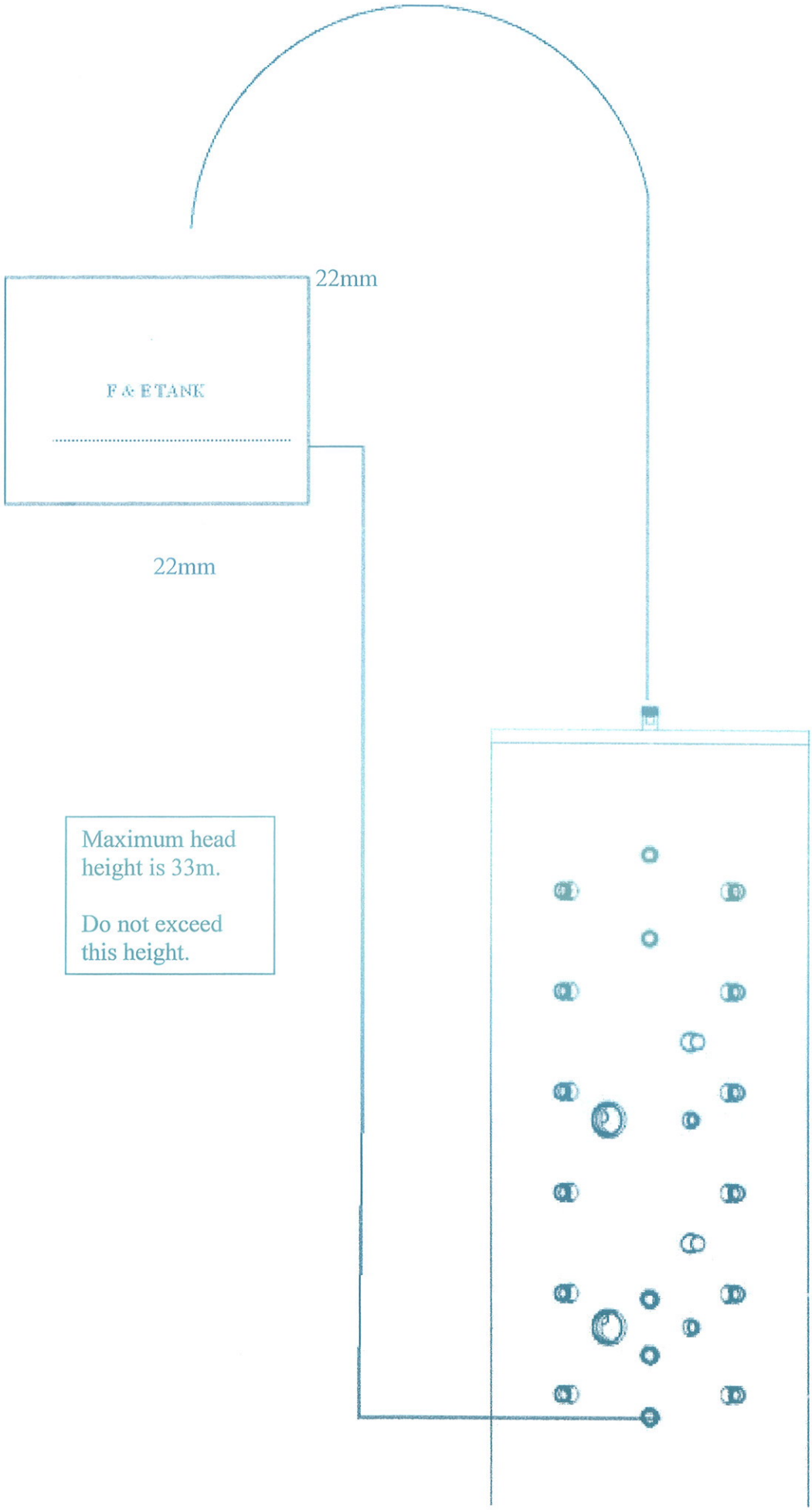
The outlets are connected directly into the main body of water. (i.e.: no tube and no header) As a result, any water pumped 'into' these outlets would negate all stratification and a fully mixed store of one temperature would result. It is possible to pump 'from' these connections, but extensive testing has found that it is preferable to pump 'into' the inlets. Therefore, you will pump on the 'flow' of appliances (boilers, heat pumps, etc) into inlets, and pump on the return from heating circuits into the inlets. (UHF and radiators.)

As the feed, expansion and OSV takes place at the store, there will be no issue in pumping over and drawing in oxygenated water into the system(s).

	250	300	400
a	1425	1680	2190
b	558	635	788
c	360	462	666
d	100	100	100
e	307	307	307
f	197	197	197
g	370	523	829
h	180	231	333
i	288	288	288
j	1188	1443	1953



Model	Coil Pipe				
	Length	Pipe Diameter	Surface Area	Recovery Rate*	Coil rating
GDW250	14m	22mm	0.97m^2	28mins	15.4kW
GDW300	16m	22mm	1.11m^2	27mins	17.6kW
GDW400	22m	22mm	1.52m^2	35mins	24.2kW


22mm
F & E TANK
22mm
Maximum head height is 33m.
Do not exceed this height.

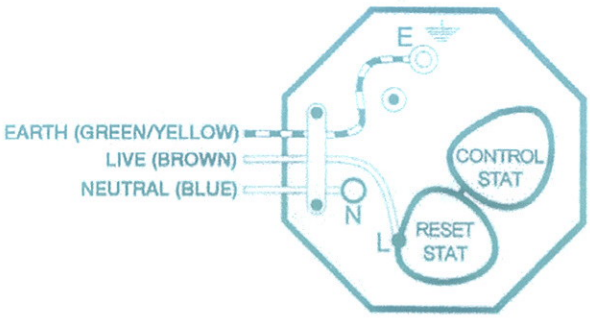
6 Electrical Installation

6.1 Immersion Heaters

All units are fitted with two immersion heaters.

Wiring instructions for the immersion heater is located on the reverse side of the lower lid. Follow the wiring instructions connecting the live, neutral and earth as indicated. The electrical connection to the immersion heater must conform to current IEE wiring regulations. The unit must be permanently connected to the electrical supply through a double-pole linked switch with a minimum break capacity of 13 amp. All internal wiring is factory fitted. Each immersion heater has a working thermostat adjustable between 45°C - 75°C. A safety cut-out is also incorporated within the thermostat and will operate at 85°C ± 3°C. Should this happen, press the reset button.

Important:
Before resetting the safety cut-out or altering the thermostat setting, isolate electrical supply to the unit prior to removal of the lid. Ensure the cover to the immersion element is replaced correctly and the retaining nut is fitted.



WARNING: THIS APPLIANCE MUST BE EARTHED

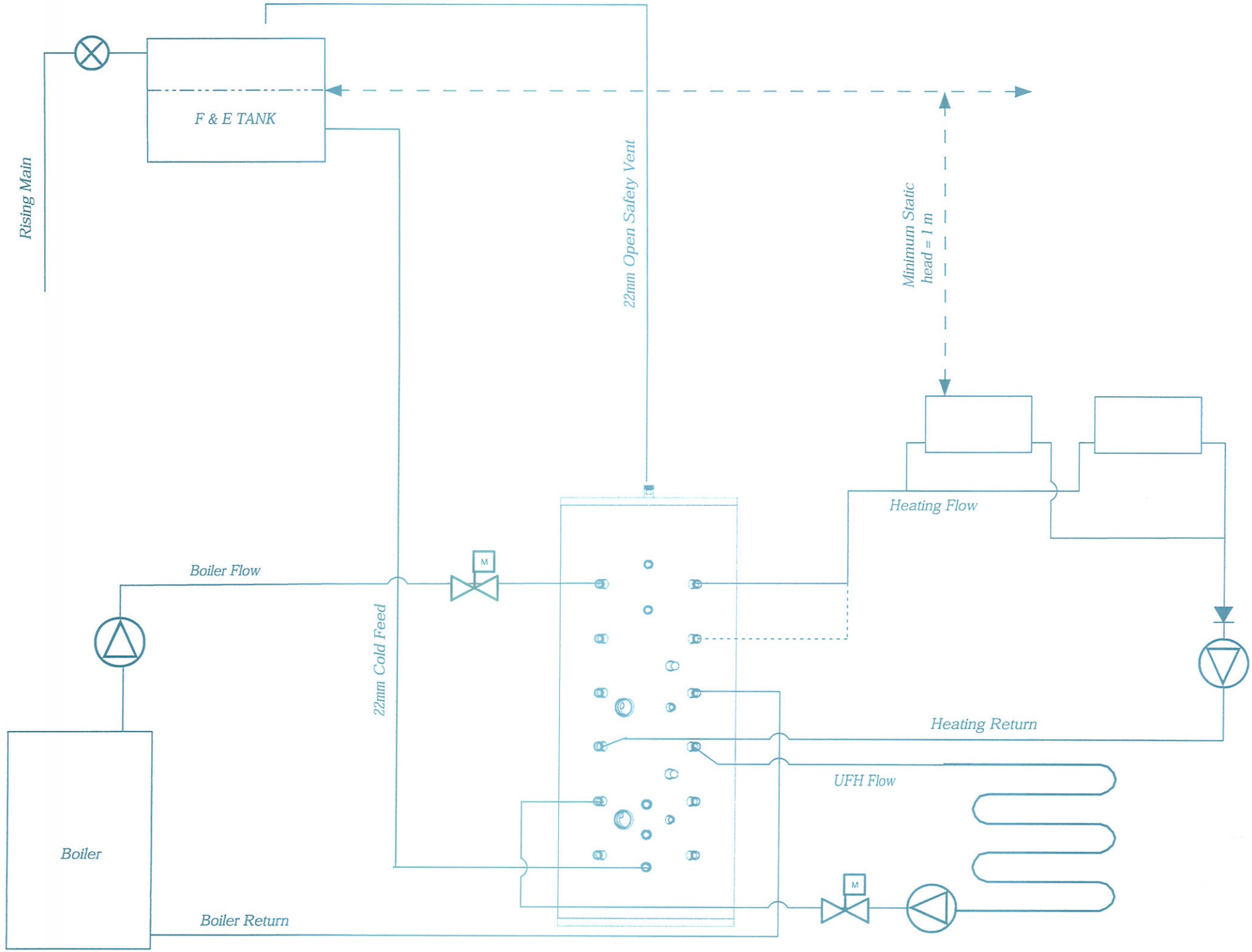
Figure 7. Store Thermostat Located in Electrical Box

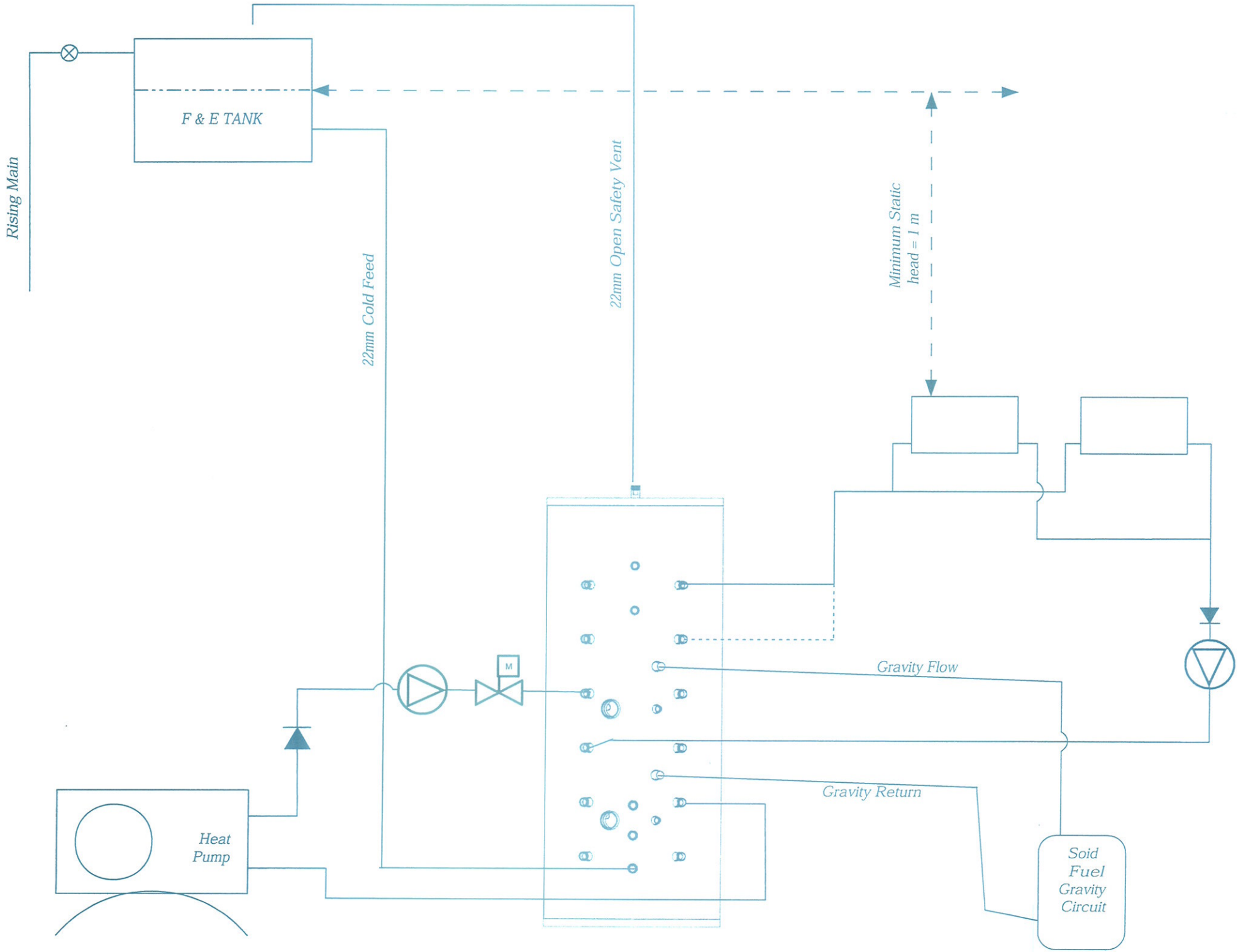
Electrical spare parts:	
Immersion Heater c/w Thermostat	GCS13
Thermostat for Immersion Heater	GCS15

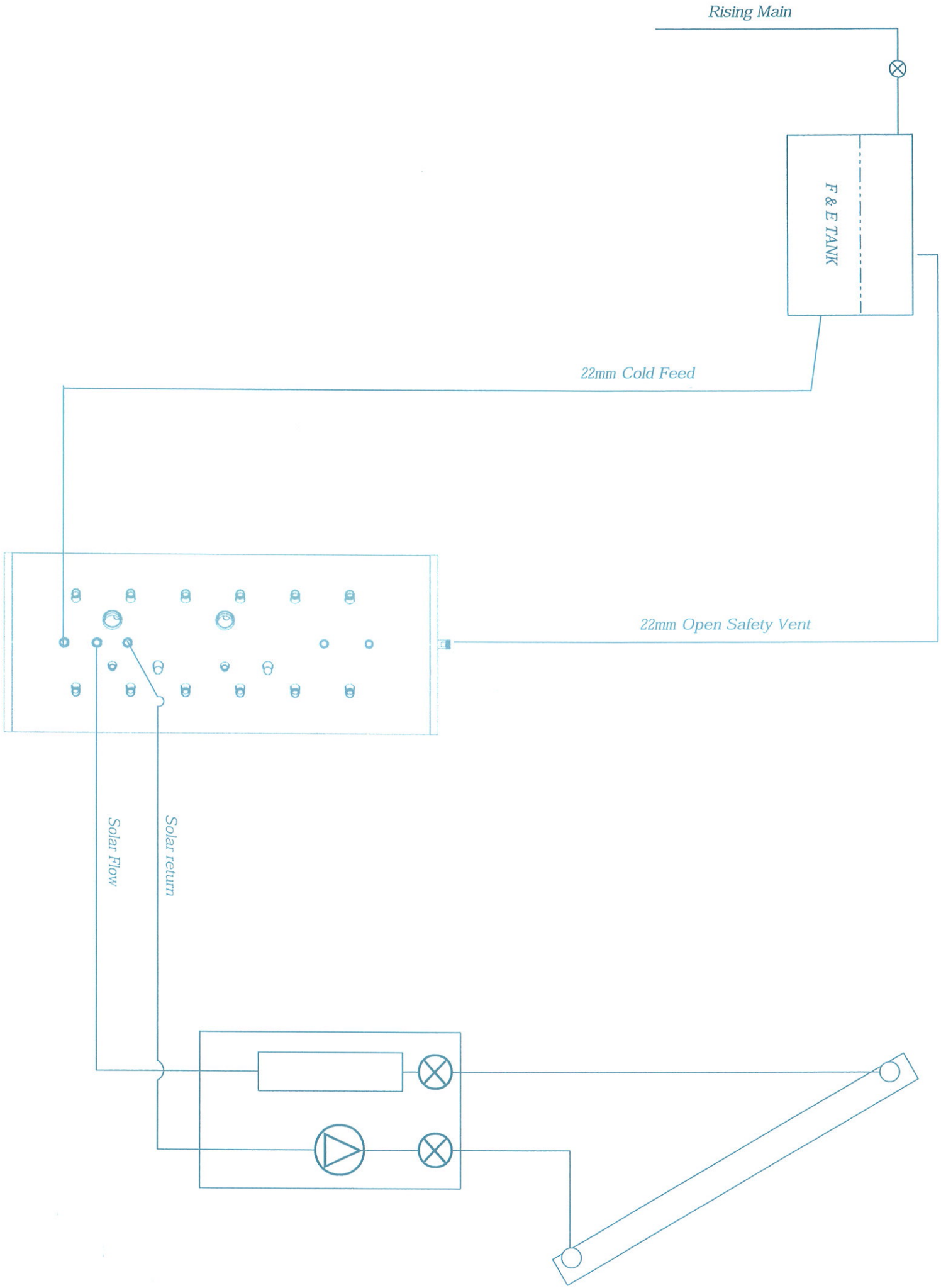
Examples of hydraulic circuits that could be applied to the Grant ThermaWave Thermal Store.

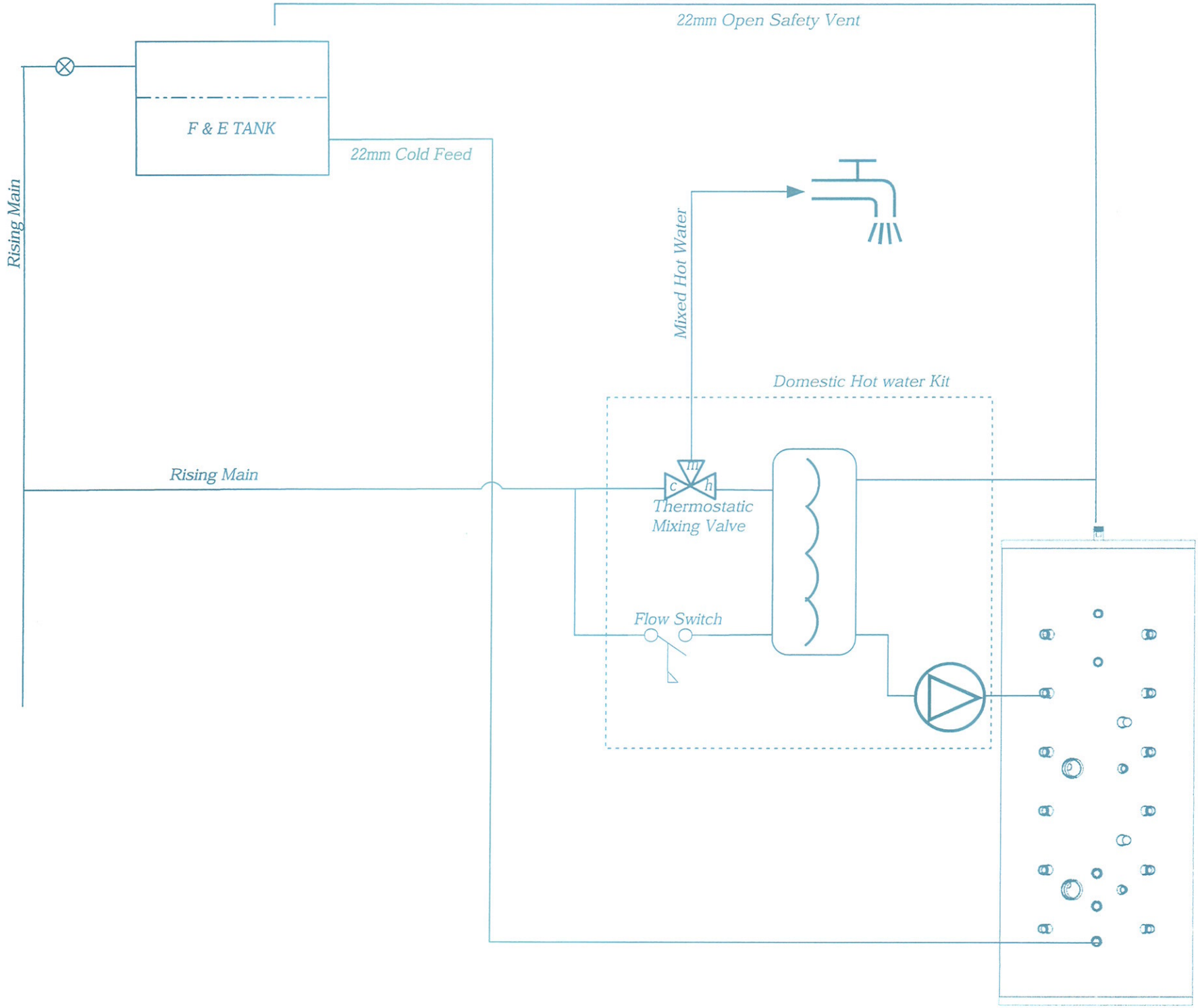
The following pages contain examples of hydraulic circuits that could be used for your system(s). If you have any questions relating to the possible variations of connections, please complete the fax-back page inside the back cover and send it to the Technical Department. The more information you are able to give, the more accurate the advice we will be able to give.

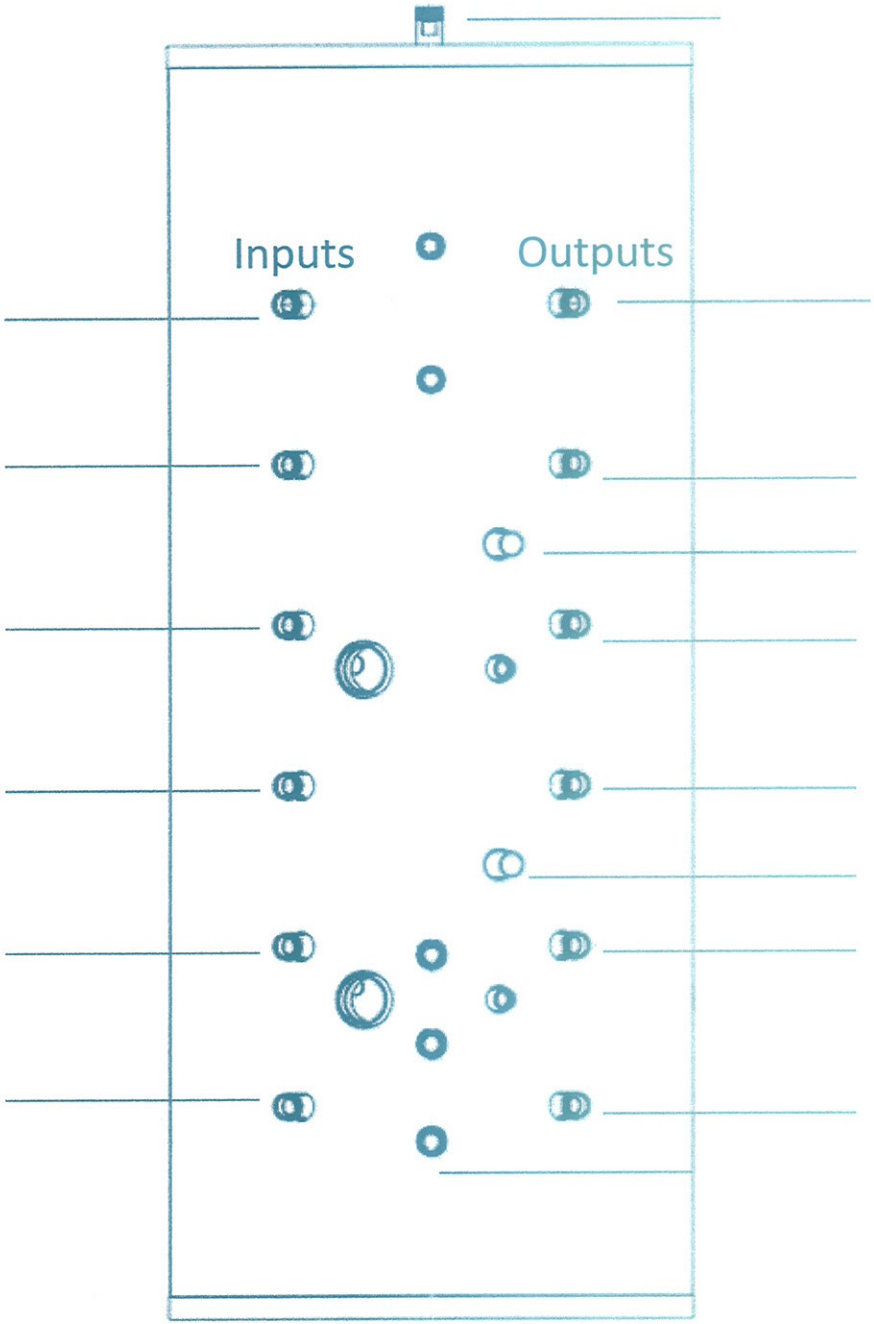
Please note that a Domestic Hot Water kit is not available at this time, but we hope to offer it as an option in the near future.


F & E TANK
Rising Main
22mm Open Safety Vent
Minimum Static
head = 1 m
Heating Flow
Boiler Flow
M
22mm Cold Feed
Heating Return
UFH Flow
Boiler
M
Boiler Return


Rising Main
F & E TANK
22mm Cold Feed
22mm Open Safety Vent
Minimum Static head = 1 m
M
Gravity Flow
Gravity Return
Heat Pump
Soid Fuel Gravity Circuit


Rising Main
F & E TANK
22mm Cold Feed
22mm Open Safety Vent
Solar Flow
Solar return


22mm Open Safety Vent
F & E TANK
22mm Cold Feed
Rising Main
Mixed Hot Water
Domestic Hot water Kit
Rising Main
m
c
h
Thermostatic
Mixing Valve
Flow Switch



What are the pumped 'Inputs'?
a)
b)
c)
d)

What is the 'gravity' input?
a)

What are the 'outputs?
a)
b)
c)

Will there be a DHW draw off in the future? If so, expected volume at what temperature?
No
Yes.....l/min @ °C

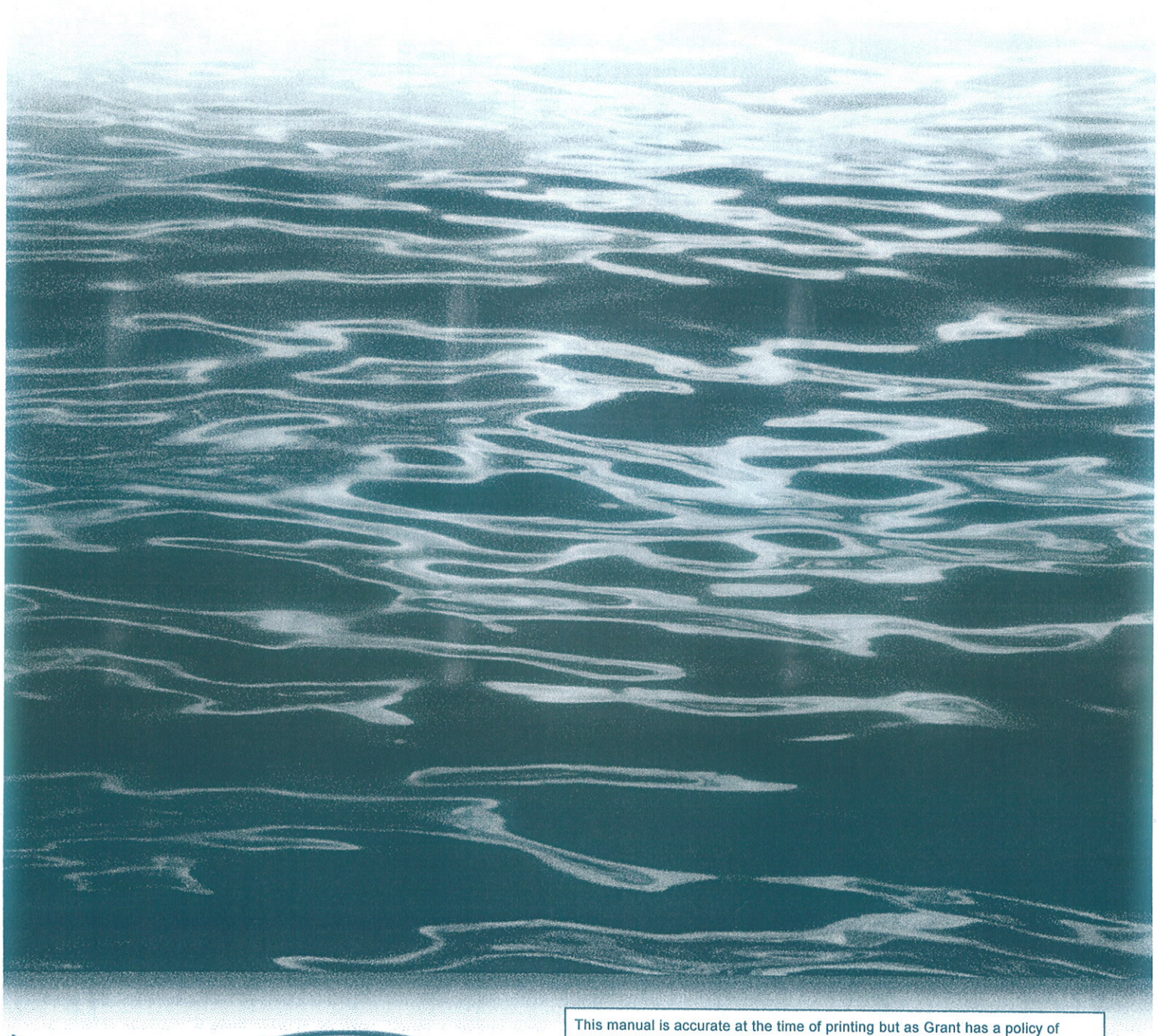
How many Radiators? .....
Total demand of the radiators? .....kW
Is there an underfloor circuit(s)? .....kW

What additional input/output could be expected to be connected in the future?

Other information:

Name:
Company:
Fax Number:

Fax Back to Grant Engineering Technical Department 01380 736991



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EFFICIENT HEATING SOLUTIONS

This manual is accurate at the time of printing but as Grant has a policy of continual improvement it may be superseded. We reserve the right to amend specifications without prior notice. The statutory rights of the consumer are not affected.

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