

A CLASS *BoilerMate SP SOL*

**A sealed system central heating
and mains pressure hot water
supply appliance with thermal
store designed specifically for use
with solar energy**

Design, Installation & Servicing Instructions Addendum

**These instructions must be read in conjunction with the
standard BoilerMate A-Class SP Design, installation and
servicing instructions before installation**

Model Numbers

BMA 200 SP-SOL
BMA 220 SP-SOL
BMA 240 SP-SOL
BMA 260 SP-SOL
BMA 280 SP-SOL
BMA 300 SP-SOL

**All models comply with the water heater manufacturers
specification for integrated thermal stores**

 **Gledhill**
The appliance of innovation

ISSUE 5: 06-08

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*The code of practice for the installation,
commissioning & servicing of central heating systems*

Building Regulations and Benchmark Commissioning

The Building Regulations (England & Wales) require that the installation of a heating appliance be notified to the relevant Local Authority Building Control Department. From 1st April 2005 this can be achieved via a Competent Person Self Certification Scheme as an option to notifying the Local Authority directly. Similar arrangements will follow for Scotland and will apply in Northern Ireland from 1st January 06.

CORGI operates a Self Certification Scheme for gas heating appliances.

These arrangements represent a change from the situation whereby compliance with the Building Regulations was accepted if the Benchmark Logbook was completed and this was then left on site with the customer).

With the introduction of a self certification scheme, the Benchmark Logbook is being replaced by a similar document in the form of a commissioning check list and a service interval record is included with all gas appliance manuals. However, the relevant Benchmark Logbook is still being included with all Thermal Storage products and unvented cylinders.

Gledhill fully supports the Benchmark aims to improve the standards of installation and commissioning of central heating systems in the UK and to encourage the regular servicing of all central heating systems to ensure safety and efficiency.

Building Regulations require that the heating installation should comply with the manufacturer's instructions. It is therefore important that the commissioning check list is completed by the competent installer. This check list only applies to installations in dwellings or some related structures.

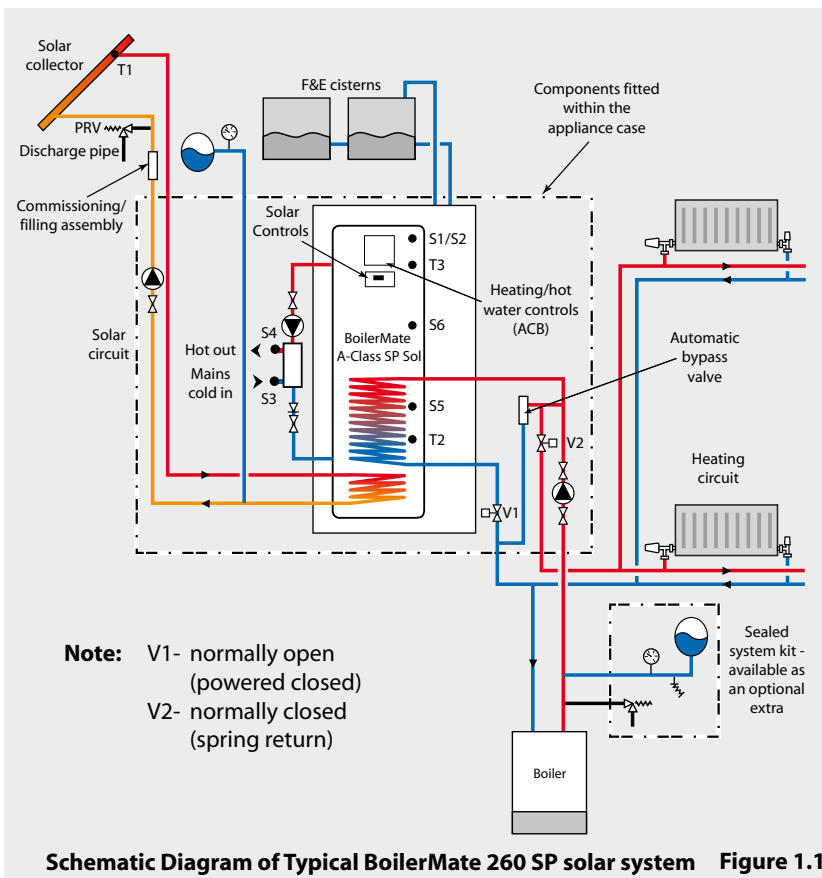
The Gledhill BoilerMate range is a WBS listed product and complies with the WMA Specification for integrated thermal storage products. The principle was developed in conjunction with British Gas. This product is manufactured under an ISO 9001:2000 Quality System audited by BSI.

Patents Pending

The Gledhill Group's first priority is to give a high quality service to our customers.

Quality is built into every Gledhill product and we hope you get satisfactory service from Gledhill.

If not please let us know.



The arrangement of a typical BoilerMate A-Class SP Solar installation is shown schematically below. The basic unit which is covered by these instructions incorporates the Danfoss SH - E01 solar controller.

The appliance generally follows the principles of the standard BoilerMate A-Class SP appliance but is fitted with a separate set of coils to allow it to accept the maximum amount of heat available from the solar panels/controls. This is then used to supplement the hot water system.

Because this product does not require a safety discharge from a temperature and pressure relief valve, any installations will be easy to incorporate into the building and will not suffer from the problems associated with using PVCu soil stacks to take the discharge from unvented cylinders.

The models 200 and 220 are supplied with a single F&E cistern. All four larger models are supplied with two F&E cisterns. The single cistern will fit within the cupboard in a typical storey height cupboard but when two cisterns are used, these will need to be located elsewhere.

The operation of the appliance/solar system is controlled by a number of sensors. The location and reference numbers of the various sensors is shown eg 2, S6.

Sensors S1/S2, S3, S4, S5 and S6 are connected to the appliance control PCB which operates all the heating and hot water functions as the basic BoilerMate appliance.

Sensors T1, T2 and T3 are connected to the Danfoss controller and operate all the solar functions.

Sensor T3 provides a high temperature interlock to de-activate the solar pump at a temperature of 90°C in the store.

Although sensors T3 and T2 are wired in to the solar controller the cable provided for Sensor T1 (3 metres long) may require to be extended by the installer dependant on the location of the solar panels/appliance. (2 x 0.75mm² double insulated cable) up to a maximum total length of 50 metres.

A safety device (pressure relief valve) to control the risk of over-pressure in system components should be fitted as shown on the Solar System diagram. A termination from a safety pressure device should minimise the risk of damage to persons or materials. Suitable locations are a high temperature receptacle, an internal

Model Selection Data Table/Weights								
Model Reference			BMA 200 SP SOL	BMA 220 SP SOL	BMA 240 SP SOL	BMA 260 SP SOL	BMA 280 SP SOL	BMA 300 SP SOL
Dwelling type	Bedrooms		2-3	2-4	3-5	3-5	4-5	5-6
	Bathrooms		1	2	2	2	2	3
	En-Suite		2	1	2	3	3	3
Max Floor Area		(m ²)	80	100	130	170	220	280
Weight	Empty	(kg)	73	79	96	104	112	120
	Full	(kg)	233	260	313	366	411	472
Volume	Total	(l)	160	181	217	262	299	352
	Solar	(l)	82	93	109	127	148	167

Note:

It is important that the maximum floor area is not exceeded to achieve compliance with the SAP regulations.

gully or else issue externally at ground level. High level termination from walls or on roofs could cause injury to people or animals below if the valve were to release scalding water and steam.

The pipe leading to the safety device and the collector should be of rigid and non-deformable construction, without any possibility of restriction or disclosure by any other fitted component.

In order to meet the Building Regulations requirement to reduce the rate of accumulation of scale in hard water areas, it is important that the installer checks the hardness of the incoming water supply.

If this exceeds 200ppm (mg/l), we recommend that the factory fitted scale inhibitor is ordered as an optional extra.

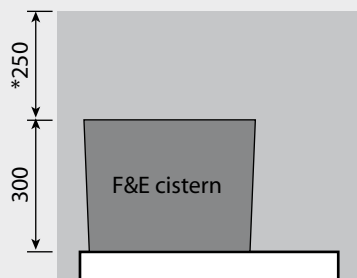
If it exceeds 300ppm (mg/l), we recommend the use of a polyphosphate type of scale inhibitor. This can also be ordered as an optional extra but will need fitting on site by the installer.

Note:

If the summer towel rail circuit is required, this will need to be a separate zoned circuit from the heating circuit complete with its own time and temperature controls.

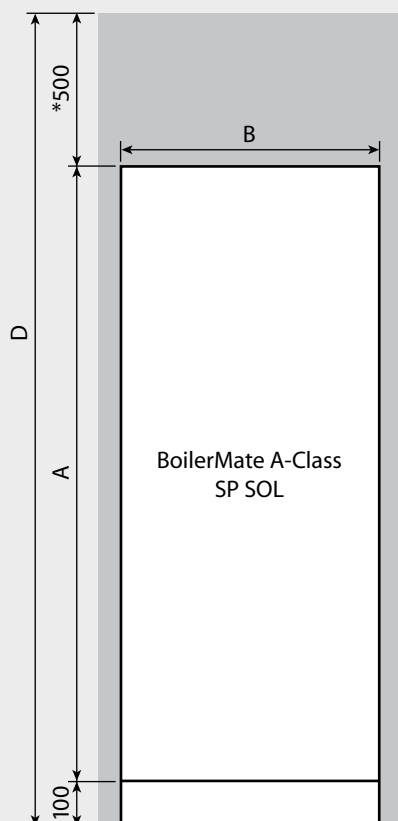
The standard manual fill model BoilerMate A-Class SP SOL appliance is shown. A ball valve and overflow are available as an optional extra at the time of order. If required, these should be fitted in the plain F&E cistern in a position to suit the individual site conditions.

BMA 200-220 SP SOL

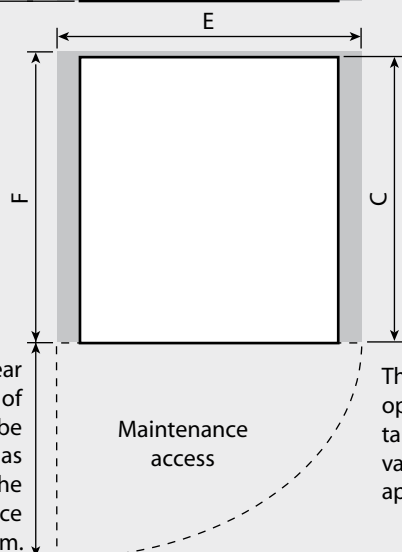


*If the F&E cistern is fitted with a ballvalve, this dimension will need to increase to 350mm to comply with the Water Regulations.

BMA 240-300 SP SOL



*Minimum access / maintenance access above the appliance case.



The minimum clear opening in front of the appliance to be at least the same as the depth of the appliance plus 50mm.

Maintenance access

The cupboard door opening will need to take into account the various sizes of appliances.

Figure 1.2

Appliance Dimensions

Model	Height (A)	Width (B)	Depth (C)
BMA 200-SP SOL	1330	560	620
BMA 220-SP SOL	1330	560	620
BMA 240-SP SOL	1575	560	620
BMA 260-SP SOL	1575	610	670
BMA 280-SP SOL	1575	640	700
BMA 300-SP SOL	1485	710	770

The above dimensions are for the appliance only and do not include the 100mm high installation base.

Minimum Cupboard Dimensions

Model	Height (D)	Width (E)	Depth (F)
BMA 200-SP SOL	1980	660	630
BMA 220-SP SOL	1980	660	630
BMA 240-SP SOL	2175	660	630
BMA 260-SP SOL	2175	710	680
BMA 280-SP SOL	2175	740	710
BMA 300-SP SOL	2085	810	780

The above dimensions include the 100mm high installation base and allow space for installation/maintenance of the appliance only. The height shown for the 200-220 models also allows for the installation of the F&E cistern (with no ballvalve) as shown opposite.

Note: With the 240-300 models, additional space will be required for two feed and expansion cisterns (each 280mm wide x 420mm deep x 300 high). This is NOT included in the minimum cupboard dimensions shown above. Access and maintenance space will also be required for these cisterns.

Options at Extra Cost

- Hot and cold water manifolds for use with plastic pipework.
- Scale inhibitor for mains water services with hardness levels above 200ppm (mg/l).
- Ballvalve/overflow connector for automatic fill model.
- Primary sealed system kit for fitting near boiler comprising:
 - Expansion vessel (size varies with model)
 - 15mm 3 bar pressure relief (safety) valve
 - Pressure gauge and filling loop

Connection Details/Dimensions - 200 model

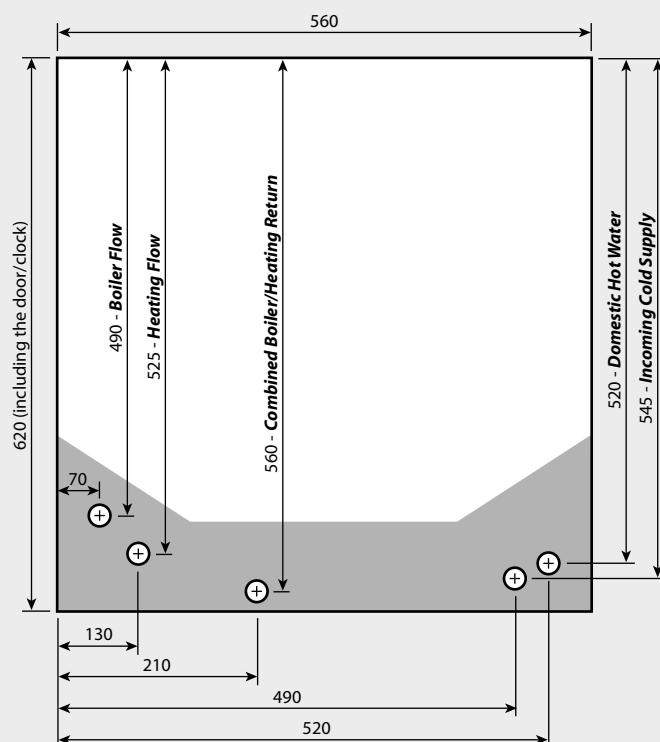


Figure 1.3

Connection Details/Dimensions

Diagrams opposite show the connection details and dimensions for the BoilerMate A-Class SP SOL appliance.

The BoilerMate A-Class SP SOL units are supplied on an installation base to allow the pipe runs to connect to the appliance from any direction. It is easier if all pipes protrude vertically in the cut out area shown. Compression or push fit connections can be used. All pipe positions are approximate and subject to a tolerance of ± 20 mm in any direction. A 15 mm cold water supply and a 22 mm warning/overflow pipe may also be required for the separate feed and expansion cisterns if these are located in the appliance cupboard.

Note: All dimensions are shown in mm and are to the centre line of pipework/gland.

Connection Details/Dimensions - 220 model

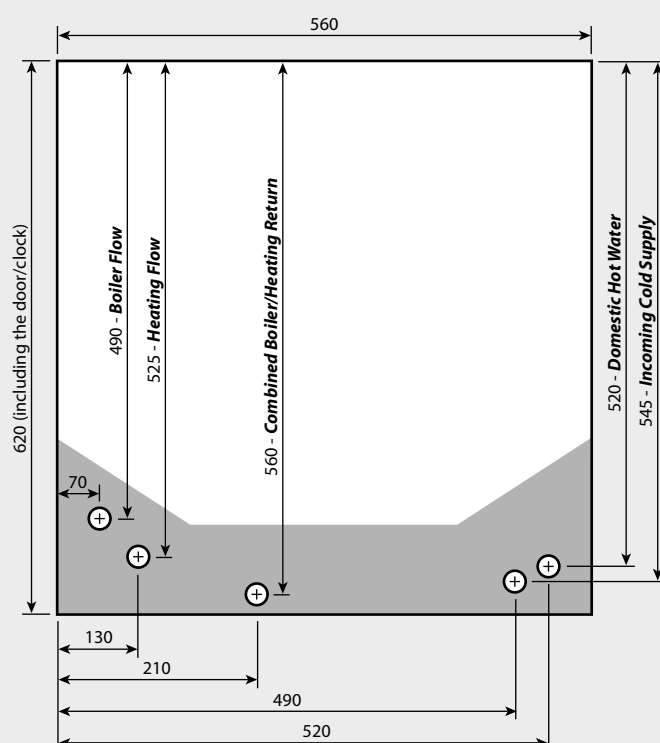


Figure 1.4

Connection Details/Dimensions - 240 model

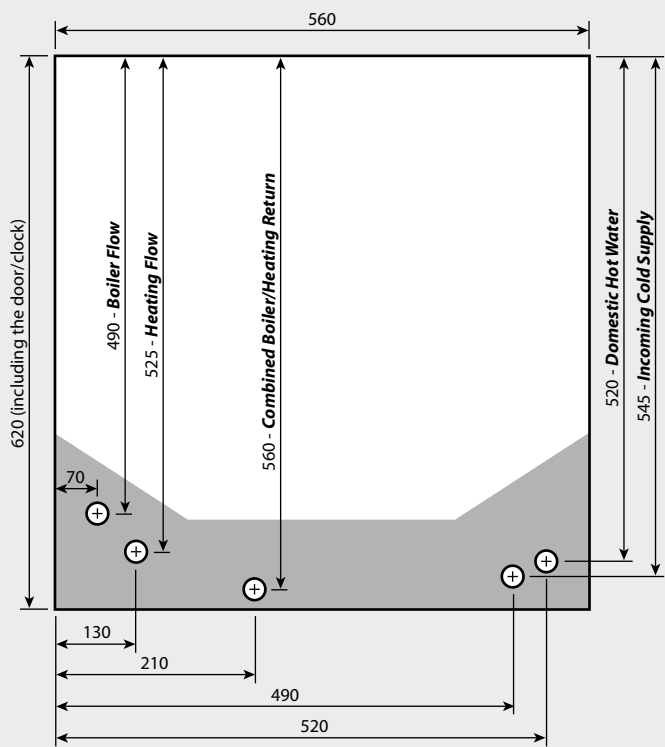


Figure 1.5

Connection Details/Dimensions - 260 model

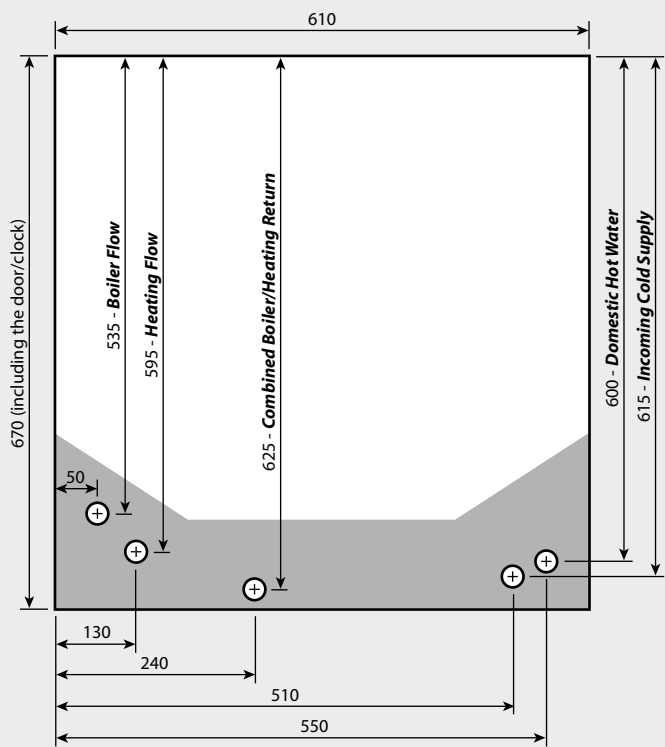


Figure 1.6

Connection Details/Dimensions

Diagrams opposite show the connection details and dimensions for the BoilerMate A-Class SP SOL appliance.

The BoilerMate A-Class SP SOL units are supplied on an installation base to allow the pipe runs to connect to the appliance from any direction. It is easier if all pipes protrude vertically in the cut out area shown. Compression or push fit connections can be used. All pipe positions are approximate and subject to a tolerance of +/-20mm in any direction. A 15mm cold water supply and a 22mm warning/overflow pipe may also be required for the separate feed and expansion cisterns if these are located in the appliance cupboard.

Note: All dimensions are shown in mm and are to the centre line of pipework/gland.

Connection Details/Dimensions - 280 model

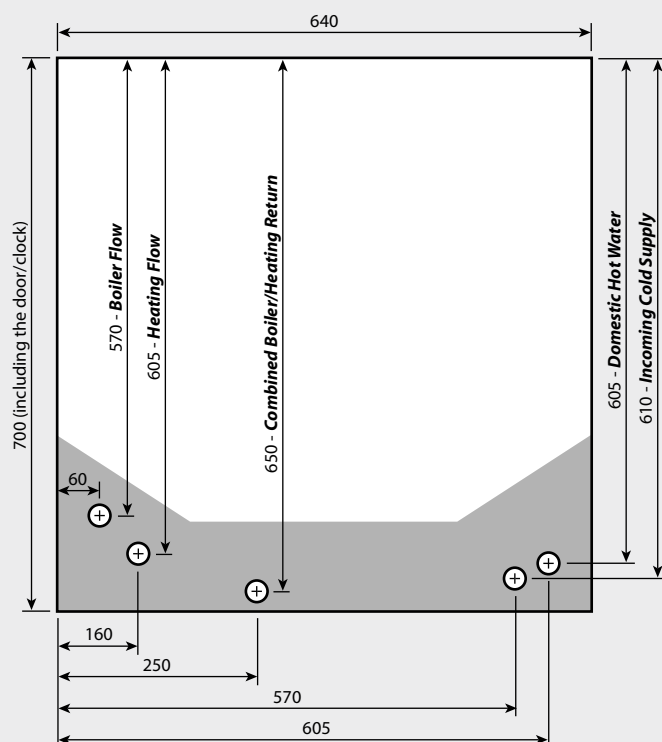


Figure 1.7

Connection Details/Dimensions

Diagrams opposite show the connection details and dimensions for the BoilerMate A-Class SP SOL appliance.

The BoilerMate A-Class SP SOL units are supplied on an installation base to allow the pipe runs to connect to the appliance from any direction. It is easier if all pipes protrude vertically in the cut out area shown. Compression or push fit connections can be used. All pipe positions are approximate and subject to a tolerance of ± 20 mm in any direction. A 15 mm cold water supply and a 22 mm warning/overflow pipe may also be required for the separate feed and expansion cisterns if these are located in the appliance cupboard.

Note: All dimensions are shown in mm and are to the centre line of pipework/gland.

Connection Details/Dimensions - 300 model

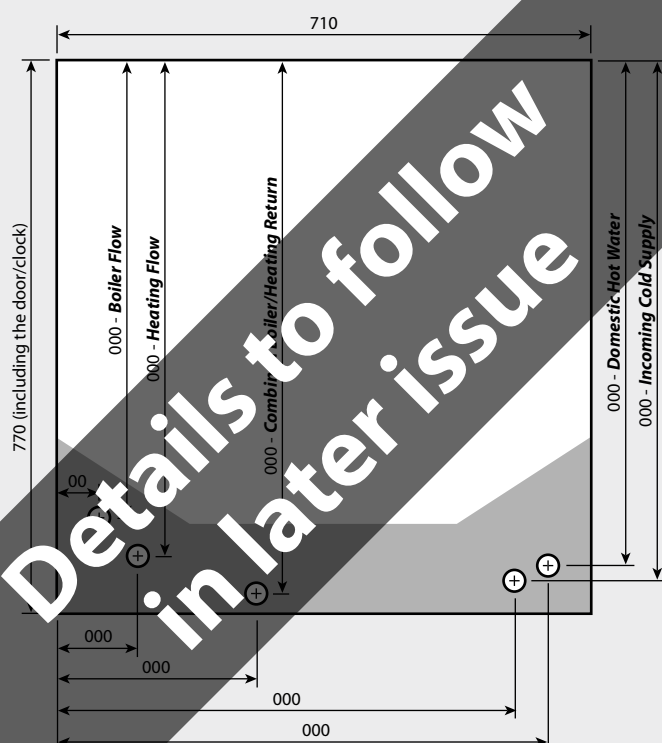


Figure 1.8

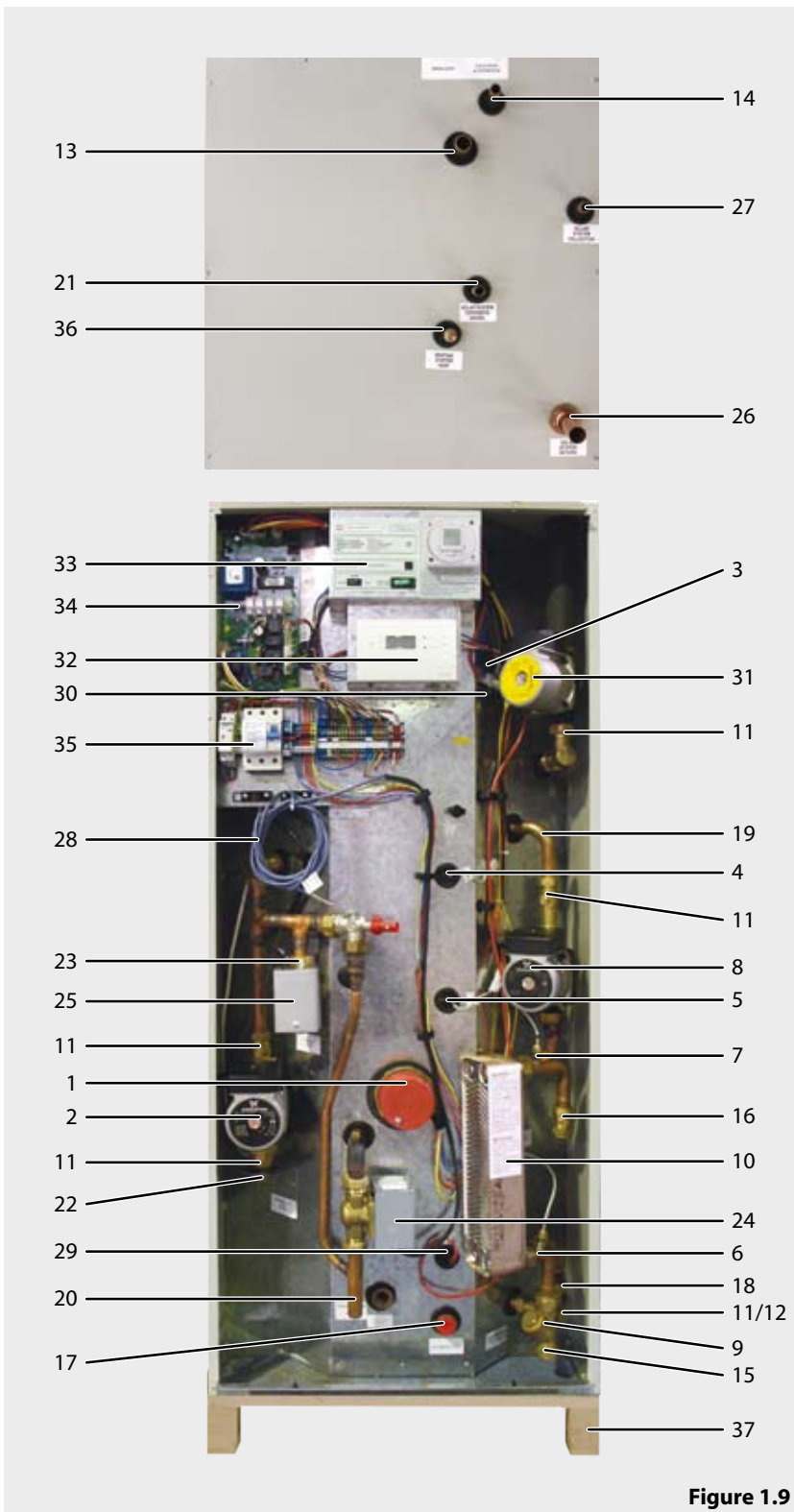


Figure 1.9

Note 1: All the panels, pipework and other components necessary for the installation of the remainder of the solar system can be supplied by Gledhill with the BMA SP SOL appliance. For further details please contact the Gledhill Technical Sales Dept.

Note 2: A single feed and expansion cistern will be supplied with the BMA 200 and 220 SP SOL appliances. Two feed and expansion cisterns will be supplied for other models.

Note 3: A solar commissioning/filling assembly is provided separately for fitting vertically on site (see diagram on page 9 for more detail).

Standard Equipment

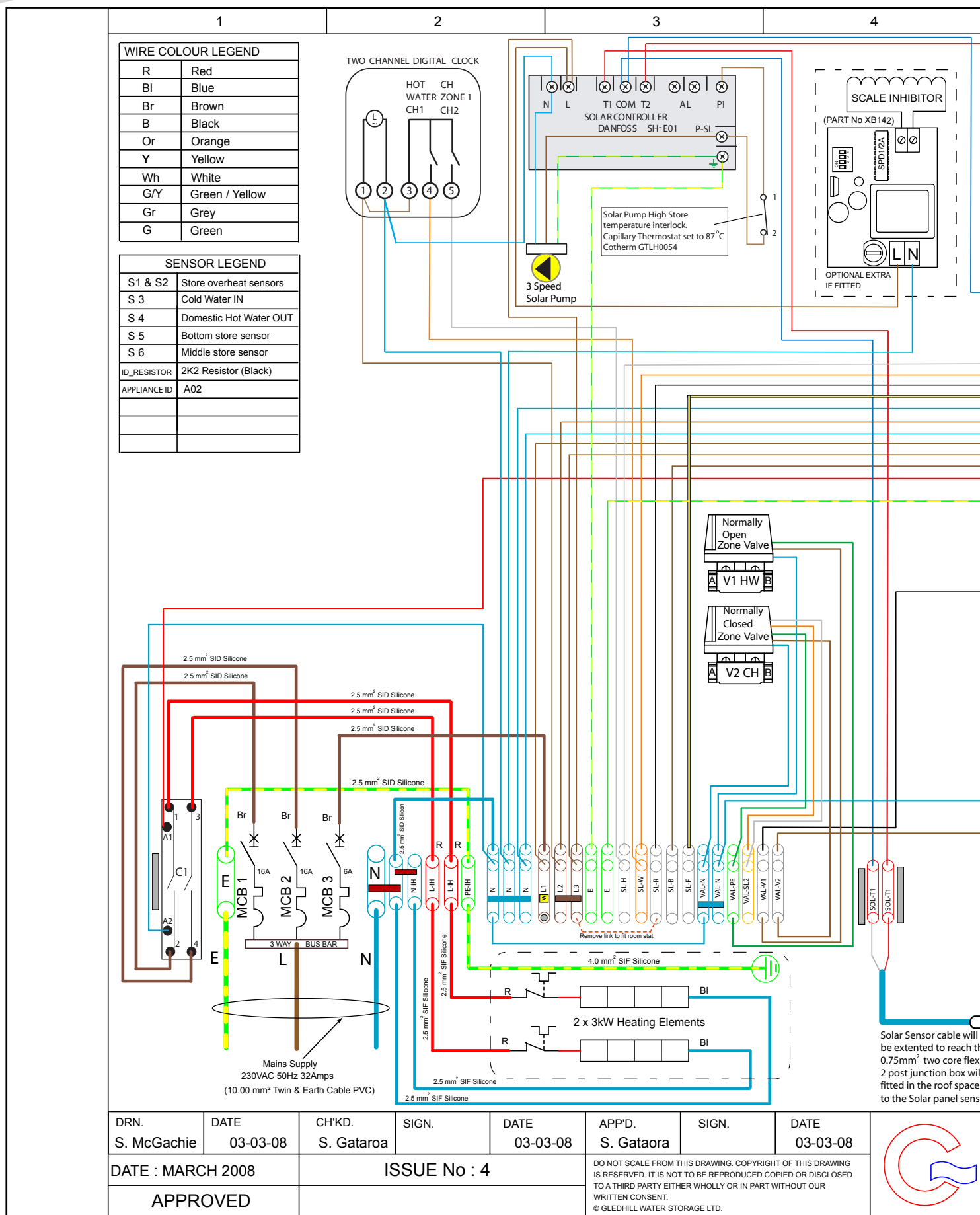
The standard configuration of the BoilerMate A-Class SP SOL is shown opposite. The Appliance Controllers mounted inside the appliance, control the operation of the complete system. These are pre-wired to a terminal strip where all electrical connections terminate. It is supplied with the following factory fitted equipment:-

- 1 Switch immersion heater (2 x 3kW elements & OHT's)
- 2 Grundfos UPR 15-50 (185 & 215 model) or 15-60 boiler/central heating pump
- 3 Overheat (top) sensor pocket (Sensor S1/S2)
- 4 Middle sensor pocket (Sensor S6)
- 5 Bottom sensor pocket (Sensor S5)
- 6 DHW (CW) inlet sensor, S3
- 7 DHW outlet sensor, S4
- 8 Grundfos UPR 15-50 PHE pump
- 9 Filter & flow regulator
- 10 Plate heat exchanger
- 11 Isolating valves
- 12 Non return valve
- 13 Open vent/safety connection
- 14 Cold feed/expansion connection
- 15 CW inlet connection
- 16 HW outlet connection
- 17 Thermal store drain tapping
- 18 Return from PHE to store
- 19 Flow from store to PHE
- 20 Combined boiler/heating return
- 21 Primary flow manual air vent
- 22 Boiler flow (from boiler)
- 23 CH flow
- 24 2 port valve V1 (boiler flow)
- 25 2 port valve V2 (CH flow)
- 26 Solar heat exchanger return connection to solar panel
- 27 Solar heat exchanger flow (collector) connection from panel
- 28 Remote solar panel sensor (T1) & cable
- 29 Solar return sensor (T2)
- 30 Solar overheat sensor (T3)
- 31 Solar circuit pump UPS 15-60 (high temp.)
- 32 Solar controller
- 33 User control panel/clock
- 34 Appliance control board
- 35 Electrical DIN rail
- 36 Solar expansion vessel connection (fitted with pressure gauge)
- 37 100mm high installation base

Optional Equipment

- Hot and cold water manifolds for use with plastic pipework (Set 1 or 2).
- Electronic scale inhibitor for mains water services with hardness levels above 200ppm (mg/l) fitted in the appliance.
- Polyphosphate scale and corrosion inhibitor for mains water services with hardness levels above 300ppm (mg/l) for fitting on site by the installer.

INSTALLATION



INSTALLATION



INSTALLATION

SOLAR PANEL TYPICAL CONNECTION DIAGRAM TO BOILERMATE SP SOL

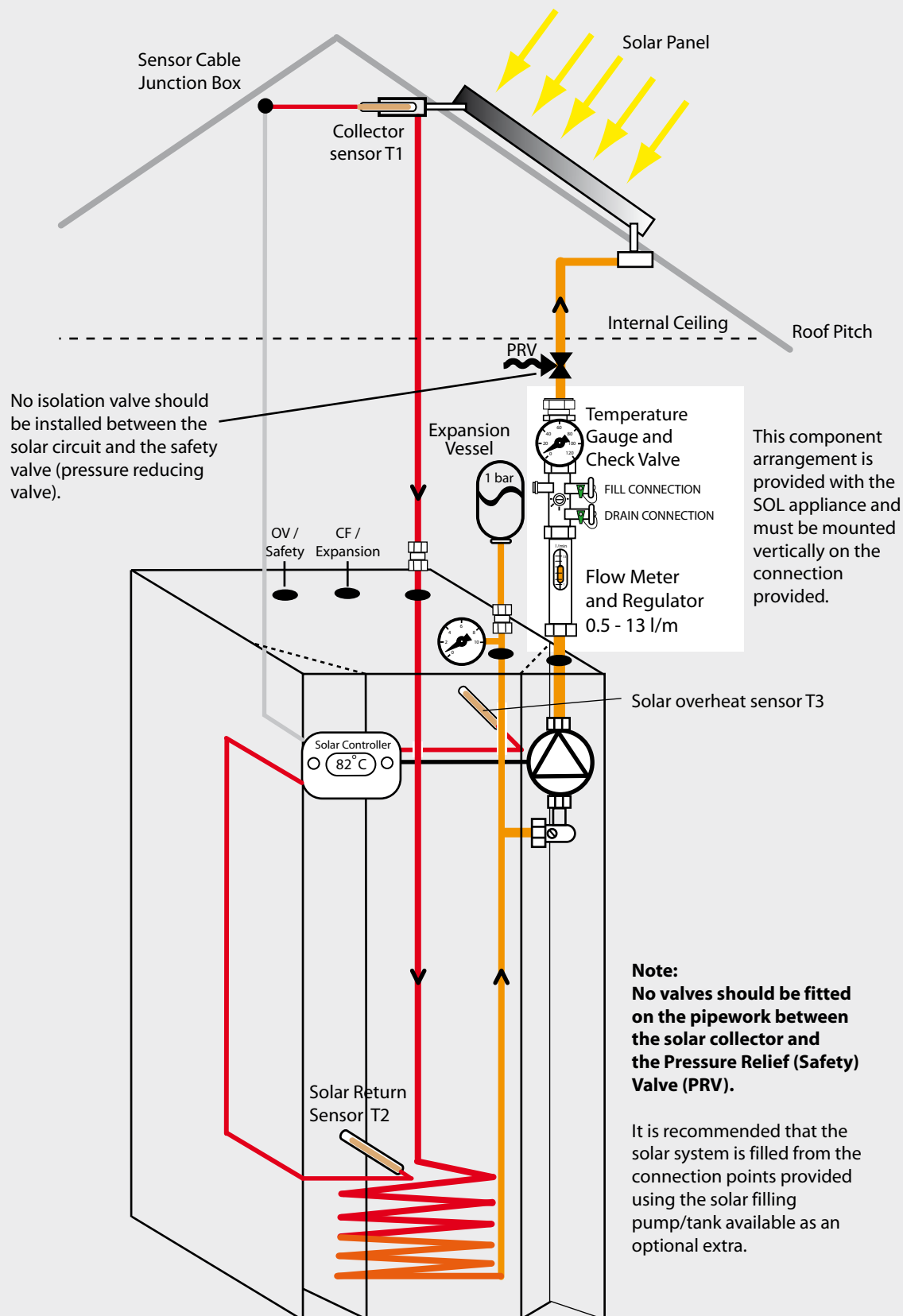


Figure 1.10

BoilerMate Heating/Hot Water Controls

The current BoilerMate A-Class SP Sol incorporates separate heating/hot water and solar control systems.

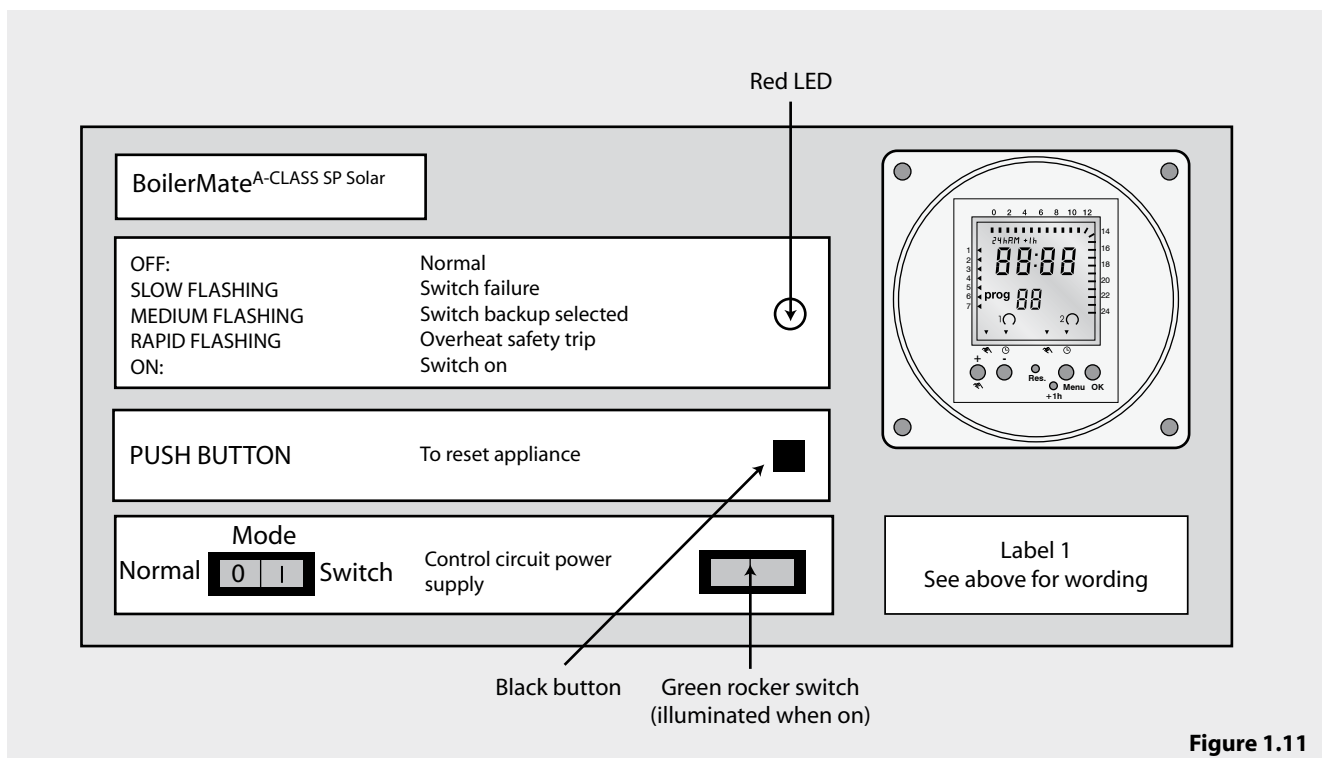
The BoilerMate A-Class SP Sol heating and hot water controls operate in the same way as the basic BoilerMate appliances but the single channel clock and the two rocker switches have been replaced by a two channel digital clock. (Channel 1 controls the gas boiler /hot water and Channel 2 the heating.) Details of how to set the clock are shown in the user instructions which are provided in the plastic wallet fixed at the bottom of the front panel. Recommendations regarding the setting of Channel 1 are provided on the label adjacent to the front panel controls (see below). Channel 2 should be set as normal to control the heating on/off times required.

Label 1 - Channel 1 of this digital clock is dedicated to heating of the hot water. This can be set to hold off the boiler during periods of potential high solar gain periods eg 10.00 am to 16.00 pm allowing maximum solar contribution to the thermal store. Central heating channel 2 will not be affected by holding off the boiler and operates independently of channel 1.

If a high hot water demand is expected or the appliance runs out of hot water due to poor solar gains, the setting of Channel 1 can be overridden which will bring on the boiler and ensure hot water is made available. Dependant on use/weather, the 'off' times suggested above can be adjusted as necessary to ensure adequate amounts of hot water are available.

The Switch 6kW electrical emergency back up system is fitted to this appliance. This is switched on by moving the 'mode' rocker switch from normal to switch and is used in the event of boiler failure. It is unlikely to be needed in Summer but can be used in Winter as required to provide some heating and hot water in conjunction with the solar input until the problem can be resolved.

It is an emergency only system and must not be used if the main system is working correctly.



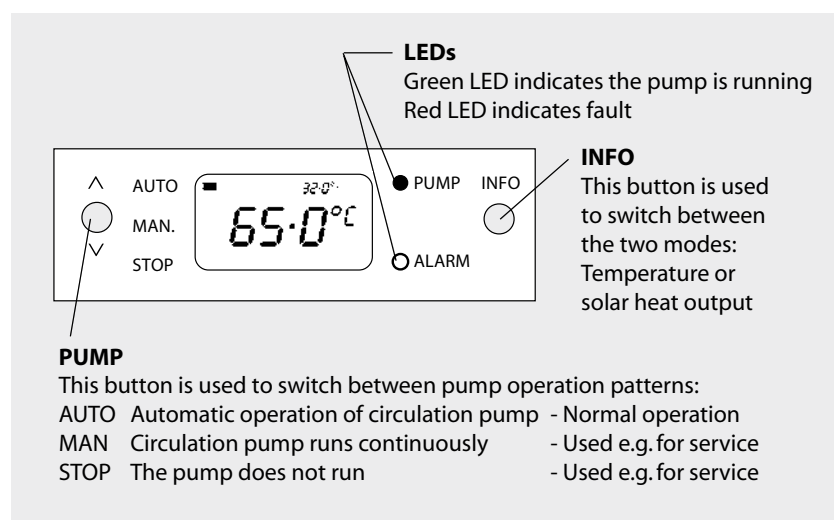
INSTALLATION

Solar Controls

The BoilerMate A-Class SP Sol appliance is supplied with a Danfoss electronic Solar Heat Regulator ref SH-EO1 built into the appliance and the necessary temperature sensors ref NTC 100k.

Description of function

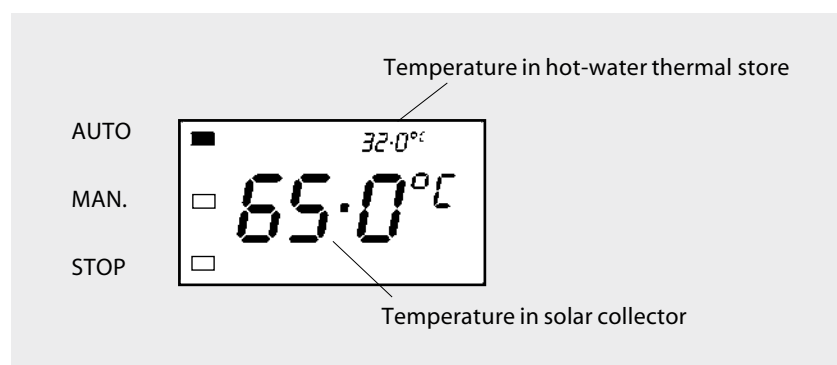
The regulator controls the heat transmitted from the solar collector to the thermal store using the temperature differential between the sensors fitted adjacent to the solar collector and in the lower part of the thermal store.



Note: The pump must always be left set on AUTO

Temperature display

The display shows either temperature or solar heat output. Select by pressing the INFO button. If temperature is displayed, the temperature is given at both the solar collector and the bottom of the thermal store.

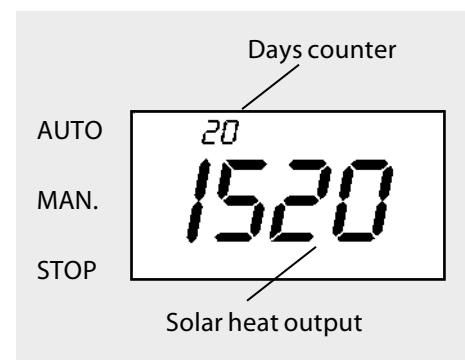


The solar heat circuit circulation pump is controlled by the differential temperature between the solar collector and the store bottom. If the differential temperature is higher than the preset start-up temperature differential, the circulation pump will run.

To avoid unnecessary pump operation the temperature of the solar collector has to be higher than 15°C before the pump starts operating. The controller has been pre-set to start on a temperature differential of 5°C and the pump will run until the temperature differential is below 2°C.

The controller will also exercise the pump for 1 minute every 14 days to help stop it sticking if it has not been used.

Solar Heat Output



Gives the performance of the solar heat installation. The figure is calculated on the basis of the difference between the temperature in the solar collector and the temperature in the tank, as well as the time in which the pump is running in AUTO.

Max display value is 2999.

Days Counter

Gives the number of days for which the solar heat output has been calculated. The max. calculation covers 30 days.

Automatic reset of SOLAR HEAT OUTPUT and DAYS COUNTER is effected when the days counter reaches 30. A manual reset can be made by pressing the INFO button for 3 seconds.

INSTALLATION

Function Test

The regulator is ready for operation when connected to the mains. The display becomes active and current temperatures are shown. Display updates once per minute. By pressing INFO button display updates immediately.

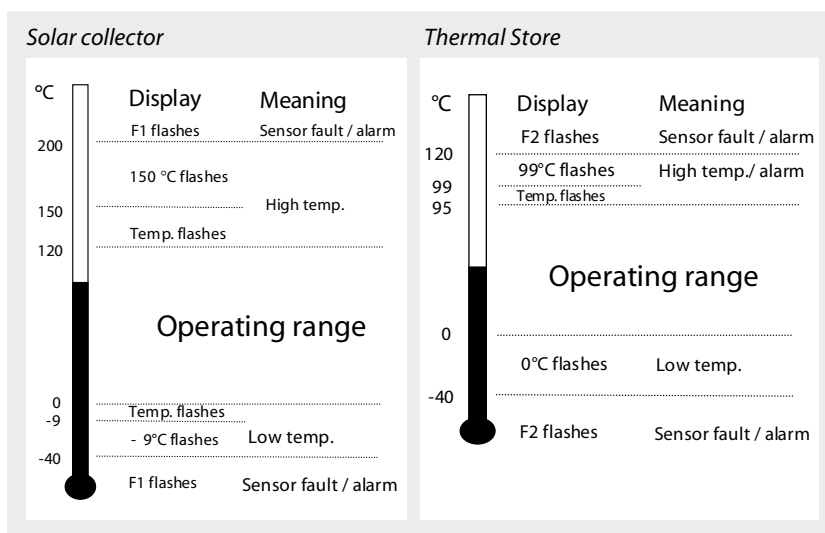
Regulator Fault Display

If the temperature sensors have a fault, this is shown by the red LED being lit and F1 or F2 flashing.

Call in the installer.

If the red LED is lit and the store temperature flashes at the same time, the temperature of the hot water tank may be too high. If this state continues, call in the installer.

Temperature Indicator



Power failure

In case of power failure, the regulator remembers the accumulated solar heat output and the day counter for 24 hours. The pump mode setting is also retained.

Trouble shooting		
Display	Cause	Remedy
No display	230V supply off	Check supply/connections
Red LED lit Display flashes "F1"	Fault sensor 1 (collector)	Check connections/sensor
Red LED lit Display flashes "F2"	Fault at sensor 2 (tank)	Check connections/sensor
Red LED lit Tank temp >95°	Pump does not run Pump cannot "keep up"	Check pump model/ connections Set speed higher
No alarm, temperature flashes	Pump runs, indicates high temperature Pump does not run	Set speed higher Pump or pump output defective

For any further technical information/assistance regarding this product please ring the Gledhill Technical helpline on 08449 310000.

Annual Servicing

No annual servicing of the BoilerMate A-Class SP SOL appliance is necessary.

However, if required, the operation of the controls and a hot water performance test can be carried out when servicing the boiler to prove the appliance is working satisfactorily and within its specification.

At the same time, a check should be made of the solar system pressure/expansion vessel charge pressure along with a visual check of the solar panels.

It is recommended that after five years, the concentration/quality of the solar system antifreeze solution is checked and, if necessary, replaced.

INSTALLATION

Filling/Commissioning The Solar System Using A Solar Filling Tank/Pump

- Make sure all solar connections are fully tightened and all electrical connections are sound.
- Make sure the BoilerMate A-Class SP SOL appliance has been commissioned and is working correctly.
- Check the air side of the solar expansion vessel is set to the correct pressure (normally 1bar) and top up if necessary.
- Ensure controller display on the BoilerMate A-Class SP SOL is illuminated and that no error messages are present.
- Close the regulating valve between the fill and drain connections on the fill and flush valve using a flat blade screwdriver.
- Connect the hoses to the connections provided on the fill and flush valve on the top of the appliance ensuring the flow pipe from the pump is connected to the filling connection (nearest the temperature gauge) and the return pipe is connected to the flush/drain connection.
- Close the quarter turn regulating valve, sited below the filling tank on the return to the pump.
- Fill the pumping station tank with at least 30 litres of the antifreeze solution¹.
- Ensure the switch on the pump is in the OFF position.
- Connect the pump to an available electrical supply. Make sure you use an RCD safety device. (IF THE FILLING PUMP IS IN A POSITION AWAY FROM THE FILL AND FLUSH VALVE, IT MUST BE CONTROLLED VIA AN EXTENSION LEAD AND RCD CIRCUIT BREAKER. THIS IS SO THE POWER TO THE FILLING PUMP CAN BE ISOLATED SAFELY LOCAL TO THE FILLING POINT).
- Open both the quarter turn valve handles on the fill and flush valve fully.
- Fully open the quarter turn isolation valve on the return pipe on the top of the fill tank.
- Slightly open the quarter turn isolation valve on the feed to the pump.
- Slightly loosen the connection on the expansion vessel.
- Turn on the filling pump - checking all the connections you have made.
- Now wait for the antifreeze solution to slowly vent from the loosened expansion vessel connection, closing the connection when venting is complete.
- Visually inspect all connections you have made for leakage.
- You should see bubbles appearing from the return pipe into the filling tank from the flush/drain connection point.
- Occasionally you will have to vent air from the system until the antifreeze solution is evident.
- As the bubbles lessen you will need to open the quarter turn valve on the feed to the pump more, but only slightly. This is a continuous process that needs to be done as the bubbling decreases.
- When all bubbles have stopped, (WHICH WILL NORMALLY TAKE OVER AN HOUR) you need to turn off the return isolation tap on the filling pump and pressure the system to 4 bar (WATCHING THE LEVEL OF FLUID IN YOUR BOTTLE) and adding more antifreeze solution if required.
- When a pressure of 4 bar is achieved close the filling point on the fill and flush valve at the SAME time switch off the power at the RCD safety device.
- Now leave the system under this pressure for at least 30 minutes. Check the system for leaks, including the roof connections.
- If after 30 minutes the pressure has not dropped and there are no leaks evident, slowly drop the pressure in the system to 1 bar.
- Repeat the above operations identified by the grey background.
- You will now see bubbles in your bottle again (this is because you left the system at rest and the air has settled).
- Continue until the bubbles stop. Stop the pump on the filling tank and open the regulating point on the fill and flush valve with a screw driver. Set the solar pump on the Gledhill Sol appliance running.
- Leave this running for approximately 10 minutes (venting any air as required).
- Re-set the system pressure to the expansion vessel calculation.
- The system is now commissioned and will operate automatically under control of the solar controller fitted to the BoilerMate A-Class SP SOL appliance.

NB: THE MINIMUM SYSTEM PRESSURE SHOULD BE SET AT NO LESS THAN 1.3 BAR THE EXPANSION VESSEL PRESET PRESSURE SHOULD BE SET AT NO LESS THAN 1.0 BAR.

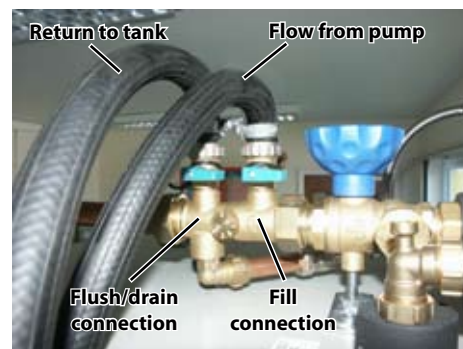


Figure 1.12



Figure 1.13

¹ Note: You should only fill the collector when there is no direct irradiation from the sun (or cover the collectors). You must only use the correct antifreeze for the type of panel/collector being installed (Premixed FS10 for the ORET evacuated tube collectors and FS10 antifreeze mixed 40% antifreeze/60% water (-24°C) for the IRCP and ORCP flat plate collectors. As it may not be possible to fully empty the panels/collectors once they have been filled. We would recommend that any collector arrays likely to be exposed to frost should only be filled with the correct antifreeze at the right strength even for pressure/function tests.

The method of filling/commissioning the solar system is relevant to the Gledhill Solar Package and is based on the use of filling tank/pump which is available as an optional extra.

Although the previously described method of filling is recommended, other methods can be used if required. A connection is provided on the fill and flush valve (opposite the fill connection), to allow a temporary filling loop to be fitted to allow the system to be repressurised back to system pressure without the need for the filling tank/pump during subsequent maintenance visits.

INSTALLATION

Key No.	Description	Supplier/Components	Stock Code No.	Models	Gas Council No.
1	PHE pump	Grundfos UPR 15-50 (modulating)	GT089	All	
2	Plate heat exchanger (PHE)	SWEP 24 Plate heat exchanger	GT017	All	
3	PHE pump isolating valve - straight	Vemco	GT133	All	
4	PHE pump isolating valve - bent	Vemco	GT135	All	
5	CW inlet Y-line strainer		XB314	AI	
6	DHW in/out sensor	Tasseron	GT198	All	
7	Boiler/Central heating pump	Grundfos, UPS 15-50	XB004	200-240	
		Grundfos, UPS 15-60	XB241	260-300	
8	Boiler/Central heating pump isolating valves	Vemco, Inlet & Outlet	XB121	200-240	
		Vemco, Inlet & Outlet	XB122	260-300	
9	Boiler return/central heating zone valves	Honeywell 28mm 2 port valve n/o (boiler return)	XB165	260-300	
		Honeywell 28mm 2 port valve n/c (central heating flow)	XG012	260-300	
		Honeywell 22mm 2 port valve n/o (boiler return)	XB164	200-240	
		Honeywell 22mm 2 port valve n/c (central heating flow)	XG083	200-240	
10	F&E cistern ball valve	Vemco	FT206	All	
11	1 x 6 kW switch immersion heater	Wardtec	XB468	All	
12	Bottom store sensor	Tasseron	GT198	All	
13	Middle store sensor	Tasseron	GT198	All	
14	Top (OHT) store sensor	Tasseron	GT199	All	
15	Main PCB controller	Argus Vision	XB442	All	
16	Front panel user membrane			All	
17	Internal fuses/circuit protection	MCB Single Pole 6A x 1	XB449	All	
		MCB Single Pole 16A x 2	XB450	All	
18	Switch contactor	Telemecanique	XB014	All	
19	DIN rail terminals	Wago	NSI	All	
20	Complete DIN rail assembly	Wago	XB466	All	
21	On-Off rocker switch	Arcoelectric	CA006	All	
22	2 channel digital programmer	Grasslin	XB218	All	
23	Solar pump	Grundfos, UPR 15-60 (modulating)		All	
24	Solar pump inlet valve		GT135	All	
25	Flow meter	Sonnenkraft		All	
26	Solar fill/flush valve	Sonnenkraft	XB160	All	
27	Solar anti gravity check valve	Sonnenkraft	XB161	All	
28	Solar temperature gauge	Sonnenkraft	XB162	All	
29	Solar pressure gauge	Sonnenkraft	XB163	All	
30	Solar collector sensor (T1)	Tasseron		All	
31	Solar store return sensor (T2)	Tasseron		All	
32	Solar overheat sensor (T3)	Tasseron		All	
33	Solar heat regulator	Danfoss		All	
34	Solar heating controller	Danfoss	XB445	All	

SHORT PARTS LIST

INSTALLATION



Gledhill (Water Storage) Ltd

AMD, JUNE 2008

CONDITIONS OF SALE & GUARANTEE TERMS

1. Gledhill (Water Storage) Ltd ("We" or "Gledhills") only do business upon the Conditions which appear below and no other. Unless we so agree in writing these Conditions shall apply in full to any supply of goods by us to the exclusion of any Conditions or terms sought to be imposed by any purchaser. These Conditions of Sale and Warranty Terms override those which are contained on the Invoice Forms and all Sales are now subject to these Conditions of Sale and Warranty terms only.

2. PRICE

Once an order or call off has been accepted the price will be held for three months **but if delivery is extended beyond that period at the customer's request, then we reserve the right to amend the price when necessary.** The company reviews its pricing annually to adjust for changes in our cost base. We reserve the right to alter prices at any time for severe movements in raw materials (mainly copper and steel). If there is to be a change we will give customers at least four weeks notice but anything delivered after that date will be at the revised price. An order may not be cancelled or varied after acceptance without the written consent of the company. Such cancellation or variation shall be subject to such reasonable charges as may be appropriate.

3. SPECIFICATION

The goods are supplied in accordance with the Specifications (if any) submitted to the Purchaser and any additions and alterations shall be the subject of an extra charge. Any goods not so specified shall be in accordance with our printed literature or the literature of any of our component suppliers (subject to any modifications made since publication). If we adopt any changes in construction or design of the goods, or in the specification printed in our literature, the Purchaser shall accept the goods so changed in fulfilment of the order.

4. PAYMENT

The invoice price of goods shall be payable within 30 days of despatch by us of our invoice for the goods or such longer time as may be stated by our quotation or invoice. If we receive payment in full on or before the due date we will allow an appropriate settlement discount except where we have quoted a special net price. If payment is not received in full on or before the due date we shall be entitled in addition to the invoice price to:

- (i) payment of a sum equal to any increase in the copper price supplement applicable to the particular goods sold between the date of receipt of order and the date of receipt of payment in full; and
- (ii) interest on any part of the invoice price unpaid after the due date at the rate of 3% per annum over the base rate for the time being of HSBC Bank plc.

5. TIME

We give estimates of delivery dates in good faith and time of delivery is not nor shall be made of the essence of any contract nor shall we be liable for any loss or damage occasioned by delay in delivery.

6. DELIVERY

We deliver free normally by our own vehicles within 25 miles of any of our manufacturing depots. Delivery to any place more than 25 miles from one of our manufacturing depots may be subject to our quoted delivery charges. We reserve the right to make delivery of goods contained in one order by more than one consignment and at different times. Where a period is agreed for delivery and such period is not extended by our Agreement, the Purchaser shall take delivery within that period. If the Purchaser fails to take delivery, we shall be entitled at the Purchaser's risk and expense to store the goods at the Purchaser's premises or elsewhere and to demand payment as if they had been despatched. Off loading at point of delivery shall be the responsibility of and be undertaken by the Purchaser.

7. SHORTAGES OR DAMAGE

Goods must be inspected before signature of delivery note and any damage, shortage or discrepancy noted on the delivery note and the goods returned on the same vehicle. The buyer must also give us immediate written notice of the damage, shortage or discrepancy so that we may prompt investigation.

8. RETURN OF GOODS

Goods may not be returned to the Company except by prior written permission of an authorised officer of the Company and such return shall be subject to payment by the Purchaser of handling and re-stocking charges, transport and all other costs incurred by the Company.

9. COMPANY LIABILITY AND GUARANTEE

- 9.1. Subject to the terms of these Conditions of Sale and Guarantee Terms Gledhills provide Guarantees in respect of specific products as set out in this clause.
- 9.2. Each Guarantee is strictly conditional upon the following:-
 - 9.2.1. Complaints must be given to us immediately, before any action is taken, as responsibility cannot be accepted if repairs or renewals are attempted on site without our written approval.
 - 9.2.2. The unit has been installed in accordance with our installation and service instructions and all relevant codes of practice and regulations in force at the time of installation.
 - 9.2.3. All necessary inlet controls and safety valves have been fitted correctly.
 - 9.2.4. The unit has only been used for the storage of potable water supplied from the public mains.
 - 9.2.5. Where appropriate the unit has been regularly maintained as detailed in the installation and service instructions
 - 9.2.6. Defects caused by corrosion or scale deposits are not covered by any Guarantee.
 - 9.2.7. Where we agree to rectify any defect we reserve the right to undertake the work on our own premises.
- 9.3. Guarantees are provided in respect of specified goods supplied by Gledhills as follows:-

(a) Domestic and Commercial Open Vented Cylinders and Tanks.

The copper storage vessel is guaranteed for ten years and if it proves to be defective either in materials or workmanship, we will either repair or supply replacement at our option with the closest substitute in the case of any obsolete product to any address in Great Britain.

- (i) free of all charge during the first year after delivery by us.
- (ii) thereafter at a charge of one-tenth of the then current list price and any copper price supplement and delivery charge during the second year after delivery by us and increasing by a further one-tenth on the second and subsequent anniversary of delivery by us.

(b) Domestic Mains Fed Products (Primary Stores)

The copper storage vessel is guaranteed for five years and if it or any integral pipework as part of the storage vessel assembly proves to be defective either in materials or workmanship, we reserve the right to either repair or supply replacements or the closest possible substitute in the case of any obsolete product and will collect and deliver to any address in England, Wales and Scotland (excluding all Scottish Islands).

- (i) free of all charge during the first year after delivery by us.
- (ii) thereafter at a charge of one-fifth of the then current list price or any copper price supplement and delivery charge during the second year after delivery by us increasing by a further one-fifth on the second and subsequent anniversary of delivery by us.

(c) Integrated Boiler and Storage Vessel Products and Stand Alone Boilers

In the case of the GulfStream range of products and the Gledhill boiler range of products, Gledhill guarantees the heat exchanger (boiler) for material and construction faults for two years. THE RESPONSIBILITY FOR THE EXECUTION OF THIS GUARANTEE LIES WITH THE INSTALLER.

The guarantee becomes null and void if the appliance is used incorrectly, or in the event of proven negligence or incorrectly implemented repairs **OR FAILURE TO CARRY OUT THE RECOMMENDED INSPECTION/ MAINTENANCE.** The guarantee also becomes null and void if changes are made to the appliance without our knowledge, or if the serial number on the appliance is removed or made illegible.

The annual service must be carried out by a competent installer in accordance with the advice given by Gledhill and using Gledhill approved parts.

(d) Stainless Steel Unvented Cylinders

Gledhill guarantee the components including controls, valves and electrical parts for two years from the date of purchase. IT SHOULD BE NOTED THAT THE FACTORY FITTED TEMPERATURE AND PRESSURE RELIEF VALVE MUST NOT BE REMOVED OR ALTERED IN ANY WAY OR THE GUARANTEE WILL NOT BE VALID. GLEDHILL WILL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL LOSS OR DAMAGE HOWEVER IT IS CAUSED.

The guarantee for the stainless steel vessel is for twenty five years if the original unit is returned to us **AND PROVIDED THAT:**

- (i) It has been installed as per the Design, Installation & Servicing Instructions, relevant standards, regulations and codes of practice.
- (ii) It has not been modified, other than by Gledhill.
- (iii) It has not been subjected to wrong or improper use or left uncared for.
- (iv) It has only been used for the storage of potable water.
- (v) It has not been subjected to frost damage.
- (vi) The benchmark log book is completed after each annual service.
- (vii) The unit has been serviced annually.

It should be noted that the guarantee does not cover:

- the effects of scale build up
- any labour charges associated with replacing the unit or parts.

If the stainless steel vessel proves to be defective either in materials or workmanship we reserve the right to either repair or supply replacements or the closest possible substitute in the case of any obsolete product and will collect and deliver to any address in England, Scotland and Wales (excluding all islands):

- (i) free of charge during the first year after delivery by us.
- (ii) thereafter at a charge of one twenty fifth of the then current list price during the second year after delivery by us and increasing by a further one twenty fifth on the second and subsequent anniversary of delivery by us.

ACTION IN THE EVENT OF FAILURE

If the stainless steel cylinder develops a leak we will ask for a deposit against the supply of a new one. This will be refunded if the failure is within the terms of the warranty when it has been examined by us.

(e) Solar Panels and ancillary equipment

Gledhill provides a five year warranty for defects in the collectors (except broken glass and collector accessories eg metal edgings). If the collector demonstrably fails to meet one of the requirements of the standard DIN 4757 part 3 we will replace it free of charge based on the date of invoice. We can not be responsible for damage caused by mechanical stress and/or changes caused by weather related influences. The warranty excludes minor surface damage that does not affect performance or malfunction due to improper assembly or installation.

Please note:

- Installation must have been carried out by a licensed specialized company (heating contractor or plumber) following the version of installation instructions in force.
- Gledhill or its representative was given the opportunity to check complaints on site immediately after any defect occurred.
- Confirmation exists that the system was commissioned properly and that the system was checked and maintenance was performed annually by a specialised company licensed for this purpose.

(f) Components of our products other than Storage Vessels and Integral Pipework.

We will either extend to the purchaser the same terms of warranty as we are given by the manufacturer of the component or if the manufacturer does not give any warranty, replace free of charge any component which becomes defective within two years after the date of the delivery by us and is returned to us at the purchaser's expense but we shall not meet the cost of removal or shipping or return of the component or any other cost charges or damages incurred by the purchaser.

If the appliance manufactured by Gledhill incorporates a factory fitted scale inhibitor then during the period

of three years from the date of delivery Gledhill will replace, free of charge, any plate heat exchanger fitted in the appliance as original equipment in which scale formation occurs that materially reduces the effectiveness of the plate heat exchanger. This guarantee does not extend to any other component installed within the Gledhill appliance or elsewhere in the Purchasers domestic water system.

9.4.

9.4.1. In respect of goods supplied by us and in respect of any installation work carried out by or on our behalf, our entire liability and the purchaser's sole remedies (subject to the Guarantees) shall be as follows:-

- (a) We accept liability for death or personal injury to the extent that it results from our negligence or that of our employees
- (b) Subject to the other provisions of this clause 9 we accept liability for direct physical damage to tangible property to the extent that such damage is caused by our negligence or that of our employees, agents or subcontractors.
- (c) Our total liability to the purchaser over and above any liability to replace under the Guarantees (whether in contract or in tort including negligence) in respect of any one cause of loss or damage claimed to result from any breach of our obligations hereunder, shall be limited to actual money damages which shall not exceed £20,000 provided that such monetary limit shall not apply to any liability on the part of ourselves referred to in paragraph (a) above
- (d) Except as provided in paragraph (a) above but otherwise not withstanding any provision herein contained in no event shall we be liable for the following loss or damage howsoever caused and even if foreseeable by us or in our contemplation:-
 - (i) economic loss which shall include loss of profits, business revenue, goodwill or anticipated savings
 - (ii) damages in respect of special indirect or consequential loss or damage (other than death, personal injury and damage to tangible property)
 - (iii) any claim made against the purchaser by any other party (save as expressly provided in paragraph (b) above)
- (e) Except in respect of our liability referred to in paragraph (a) above no claim may be made or action brought (whether in contract or in tort including negligence) by the purchaser in respect of any goods supplied by us more than one year after the date of the invoice for the relevant goods.
- (f) Without prejudice to any other term we shall not be liable for any water damage caused directly or indirectly as a result of any leak or other defect in the goods. We cannot control the conditions of use of the goods or the time or manner or location in which they will be installed and the purchaser agrees to be fully responsible for testing and checking all works which include the goods at all relevant times (up to, including and after commissioning) and for taking all necessary steps to identify any leaks and prevent any damage being caused thereby.
- (g) Nothing in these Conditions shall confer on the purchaser any rights or remedies to which the purchaser would not otherwise be legally entitled

10. LOSS OR INJURY

Notwithstanding any other provision contained herein the purchaser's hereby agree to fully indemnify us against any damages losses costs claims or expenses incurred by us in respect of any claim brought against us by any third party for:-

- (a) any loss injury or damage wholly or partly caused by any goods supplied by us or their use.
- (b) any loss injury or damage wholly or partly caused by the defective installation or substandard workmanship or materials used in the installation of any goods supplied by us.
- (c) any loss injury or damage in any way connected with the performance of this contract.
- (d) any loss resulting from any failure by the purchaser to comply with its obligations under these terms as to install and/or check works correctly.

PROVIDED that this paragraph will not require the purchaser to indemnify us against any liability for our own acts of negligence or those of our employees agents or sub-contractors

FURTHER in the case of goods supplied by us which are re-sold and installed by a third party by the purchaser it will be the sole responsibility of the purchaser to test the goods immediately after their installation to ensure that inter alia they are correctly installed and in proper working order free from leaks and are not likely to cause any loss injury or damage to any person or property.

11. VARIATION OF WARRANTY AND EXCLUSION

Should our warranty and exclusion be unacceptable we are prepared to negotiate for variation in their terms but only on the basis of an increase in the price to allow for any additional liability or risk which may result from the variation.

Purchasers are advised to insure against any risk or liability which they may incur and which is not covered by our warranty.

12. RISK AND RETENTION OF TITLE

- (a) goods supplied by us shall be at the Purchaser's risk immediately upon delivery to the Purchaser or into custody on the Purchaser's behalf or to the Purchaser's Order. The Purchaser shall effect adequate insurance of the goods against all risks to the full invoice value of the goods, such insurance to be effective from the time of delivery until property in the goods shall pass to the Purchaser as hereinafter provided.
- (b) property in the goods supplied hereunder will pass to the Purchaser when full payment has been made by the Purchaser to us for :-
 - (i) the goods of the subject of this contract.
 - (ii) all other goods the subject to of any other contract between the Purchaser and us which, at the time of payment of the full price of the goods sold under this contract, have been delivered to the Purchaser but not paid for in full.
- (c) until property in the goods supplied hereunder passes to the Purchaser in accordance with paragraph (2) above.
 - (i) the Purchaser shall hold the goods in a fiduciary capacity for us and shall store the same separately from any other goods in the Purchaser's possession and in a manner which enables them to be identified as our goods.
 - (ii) the Purchaser shall immediately return the goods to us should our authorised representative so request. All the necessary incidents associated with a fiduciary relationship shall apply.
- (d) the Purchaser's right to possess the goods shall cease forthwith upon the happening of any of the following events, namely :-
 - (i) if the Purchaser fails to make payment in full for the goods within the time stipulated in clause 4 hereof.
 - (ii) if the Purchaser, not being a company, commits any act of bankruptcy, makes a proposal to his or her creditors for a compromise or does anything which would entitle a petition for a Bankruptcy Order to be presented.
 - (iii) if the Purchaser, being a company, does anything or fails to do anything which would entitle an administrator or an administrative receiver or a receiver to take possession of any assets or which would entitle any person to present a petition for winding up or to apply for an administration order.
- (e) the Purchaser hereby grants to us an irrevocable licence to enter at any time any vehicle or premises owned or occupied by the Purchaser or in the possession of the Purchaser for the purposes of repossessing and

recovering any such goods the property in which has remained in us under paragraph (2) above. We shall not be responsible for and the Purchaser will indemnify us against liability in respect of damage caused to any vehicle or premises in such repossession and removal being damaged which it was not reasonably practicable to avoid.

- (f) notwithstanding paragraph (3) hereof and subject to paragraph (7) hereof, the Purchaser shall be permitted to sell the goods to third parties in the normal course of business. In this respect the Purchaser shall act in the capacity of our commission agent and the proceeds of such sale :-
 - (i) shall be held in trust for us in a manner which enables such proceeds to be identified as such, and ;
 - (ii) shall not be mixed with other monies nor paid into an overdrawn bank account.
- We, as principal, shall remunerate the Purchaser as commission agent a commission depending upon the surplus which the Purchaser can obtain over and above the sum, stipulated in this contract of supply which will satisfy us.
- (g) in the event that the Purchaser shall sell any of the goods pursuant to clause (6) hereof, the Purchaser shall forthwith inform us in writing of such sale and of the identity and address of the third party to whom the goods have been sold.
- (h) if, before property in the goods passes to the Purchaser under paragraph (2) above the goods are or become affixed to any land or building owned by the Purchaser it is hereby agreed and declared that such affixation shall not have the effect of passing property in the goods to the Purchaser. Furthermore if, before property in the goods shall pass to the Purchaser under paragraph (2) hereof, the goods are or become affixed to any land or building (whether or not owned by the Purchaser), the Purchaser shall:-
 - (i) ensure that the goods are capable of being removed without material injury to such land or building.
 - (ii) take all necessary steps to prevent title to the goods from passing to the landlord of such land or building.
 - (iii) forthwith inform us in writing of such affixation and of the address of the land or building concerned.
- The Purchaser warrants to repair and make good any damage caused by the affixation of the goods to or their removal from any land or building and to indemnify us against all loss damage or liability we may incur or sustain as a result of affixation or removal.
- (i) in the event that, before property in the goods has passed to the Purchaser under paragraph (2) hereof, the goods or any of them are lost, stolen, damaged or destroyed :-
- (ii) the Purchaser shall forthwith inform us in writing of the fact and circumstances of such loss, theft, damage or destruction.
- (iii) the Purchaser shall assign to us the benefit of any insurance claim in respect of the goods so lost, stolen, damaged or destroyed.

13. NON-PAYMENT

If the Purchaser shall fail to make full payment for the goods supplied hereunder within the time stipulated in clause 4 hereof or be in default of payment for any other reason then, without prejudice to any of our other rights hereunder, we shall be entitled to stop all deliveries of goods and materials to the Purchaser, including deliveries or further deliveries of goods under this contract. In addition we shall be entitled to terminate all outstanding orders.

14. VALUE ADDED TAX

All prices quoted are exclusive of Value Added Tax which will be charged at the rate ruling at the date of despatch of invoice.

15. TRADE SALES ONLY

We are only prepared to deal with those who are not consumers within the terms of the Unfair Contract Terms Act 1977, the Sale of Goods Act 1979 and the Supply of Goods and Services Act 1982. Accordingly any person who purchases from us shall be deemed to have represented that he is not a consumer by so purchasing.

16. JURISDICTION

The agreement is subject to English law for products delivered in England and Scottish law for products delivered in Scotland and any dispute hereunder shall be settled in accordance therewith dependent upon the location.



*The code of practice for the installation,
commissioning & servicing of central heating systems*



Gledhill

The appliance of innovation