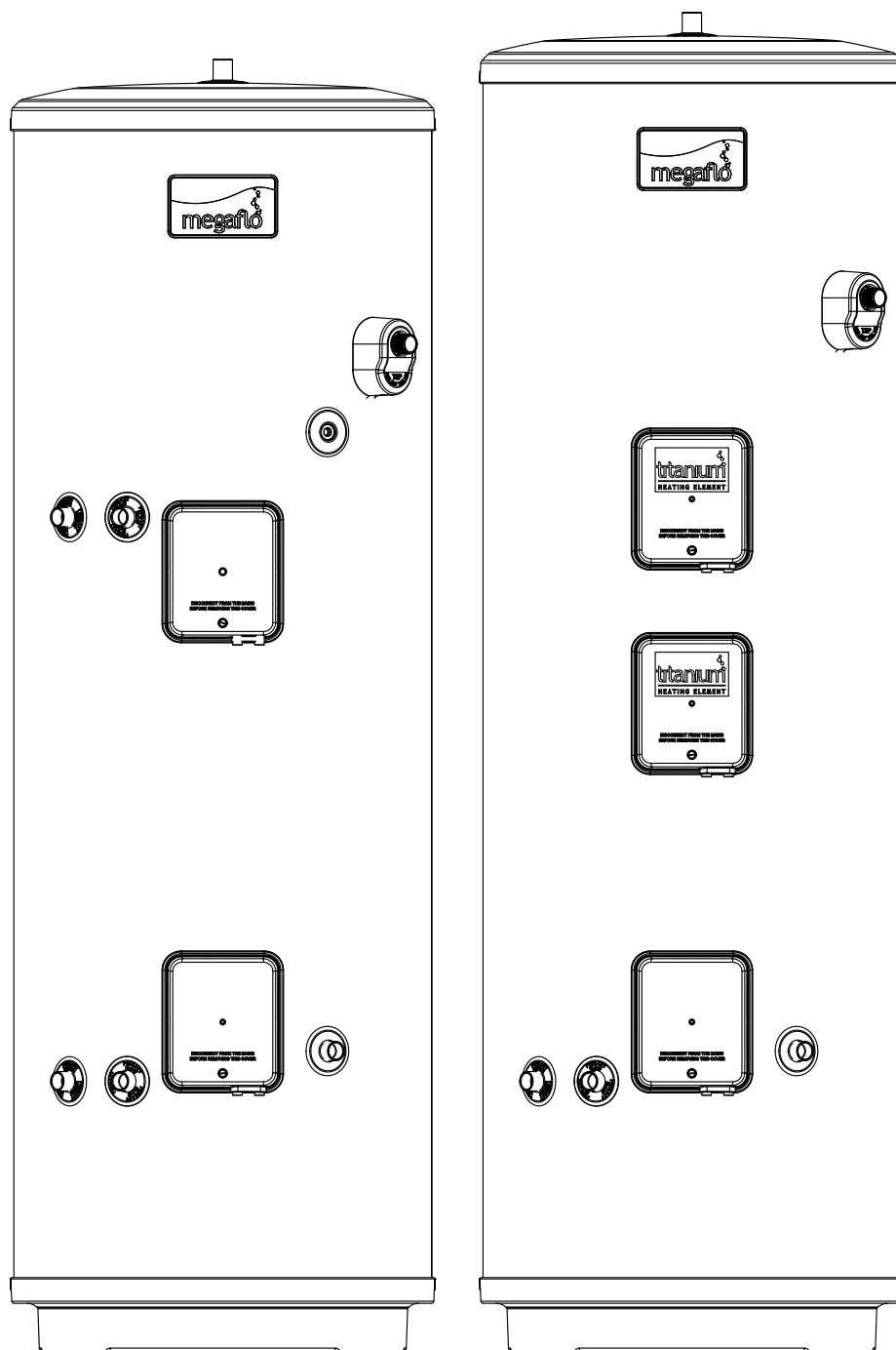




# MEGAFLO Eco

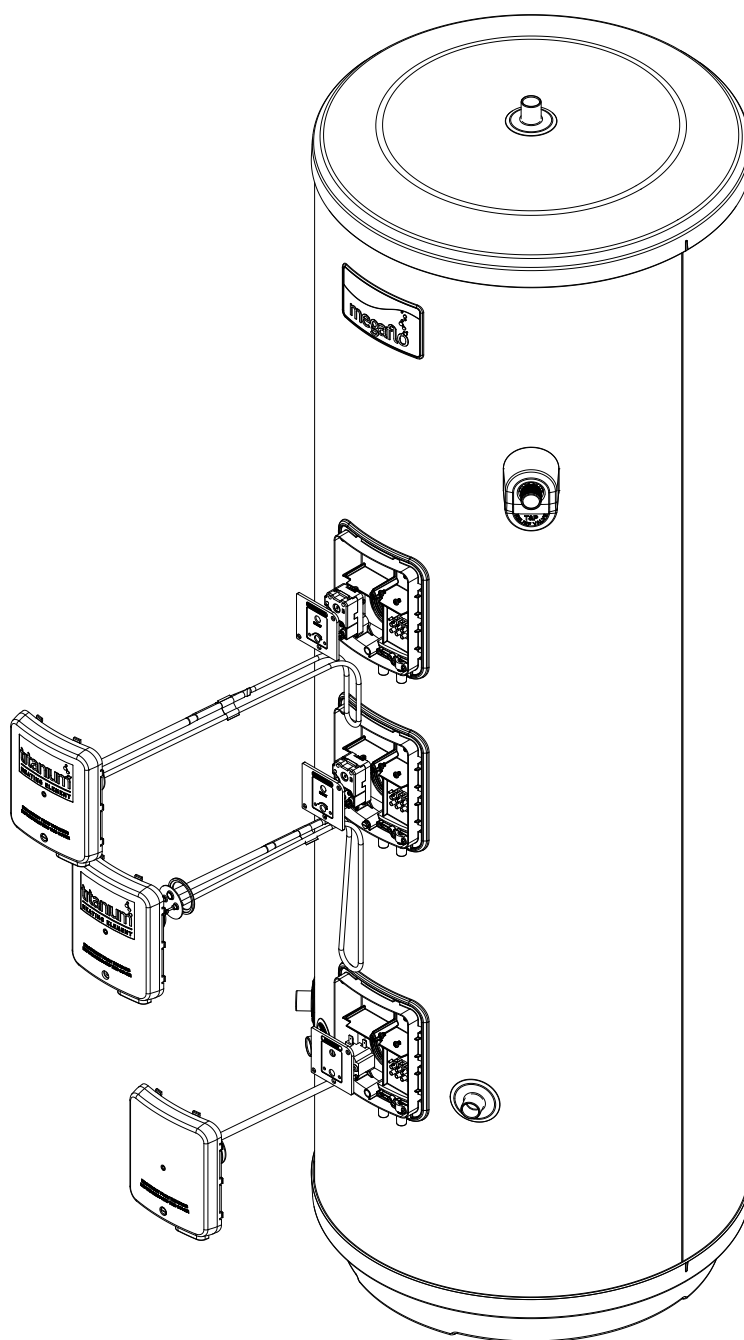
## Unvented Direct & Indirect Solar Hot Water Cylinders



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## THE BENCHMARK™ SCHEME

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](http://www.centralheating.co.uk) for more information.

**IMPORTANT NOTE TO USER: PLEASE REFER TO THE USER GUIDE SECTION ON PAGES 38 FOR IMPORTANT INFORMATION WITH RESPECT TO THE BENCHMARK SCHEME**

## Introduction

Congratulations on your purchase of a MEGAFLO **Eco** Solar unvented water heater. The MEGAFLO **Eco** Solar is manufactured in the UK from top quality materials and meets all the latest relevant safety and constructional standards. The high grade Duplex stainless steel cylinder offers exceptional strength and corrosion resistance which is backed by a Lifetime guarantee\*. Its performance and insulation levels exceed the latest requirements of Building Regulation Part L.

The MEGAFLO **Eco** Solar unvented water heater can be fed directly from the cold water mains supply to the property without the need for separate feed cisterns or vent pipes. It is supplied complete with all its necessary inlet and safety controls, electric immersion heater(s) and, for indirect units, a cylinder thermostat, thermal cut-out, 2-port motorised valve and wiring centre.

Generally its pressure and flowrate performance will far exceed that from a comparable vented system, thermal store, multipoint instantaneous gas heater, or combination boiler.

**Please read and understand this product guide before starting work.**

**Please leave this product guide with the user following installation.**

## Component Checklist

Before commencing installation check that all the components for your MEGAFLO **Eco** Solar unit are contained in the package. The following components are supplied as standard with your MEGAFLO **Eco** Solar unit:

- Factory fitted immersion heater(s) and thermal controls
- Cold Water Inlet Control Kit, comprising of:
  - 3 Bar Pressure Reducing Valve (Fig 4) Page 12
  - 8 Bar Pressure Relief Valve (Fig 5) Page 13
  - Stop cock (Fig 6) Page 13
  - Expansion Vessel (including wall mounting bracket)
- Factory fitted Temperature / Pressure Relief Valve (set at 90°C / 1 Mpa (10bar))
- Tundish (included in Cold Water Combination Valve pack)
- Factory fitted Indirect Thermostat and Thermal cut-out (Indirect units only)
- T&P Relief Valve Insulation Set
- Drain Valve
- Wiring Centre (Indirect units only)
- 2-Port Motorised Valve (Indirect units only)
- Lifting handle

\* See Terms and Conditions of guarantee on page 37

## General Requirements

Important: Please read and understand this product guide before installing the MEGAFLO **Eco** Solar water heater. Incorrect installation may invalidate the guarantee. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of knowledge and experience, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. The MEGAFLO **Eco** Solar must be Installed (Section 2), Commissioned (Section 2) and Maintained (Section 3) by a competent installer in accordance with Building Regulation G3 (England and Wales), Technical Standard P3 (Scotland) or Building Regulation P5 (Northern Ireland) and the Water Fitting Regulations (England and Wales) or Water Byelaws (Scotland). Following Installation and Commissioning, the operation of the heater should be explained to the user (Section 4) and this product guide left with them for future reference.

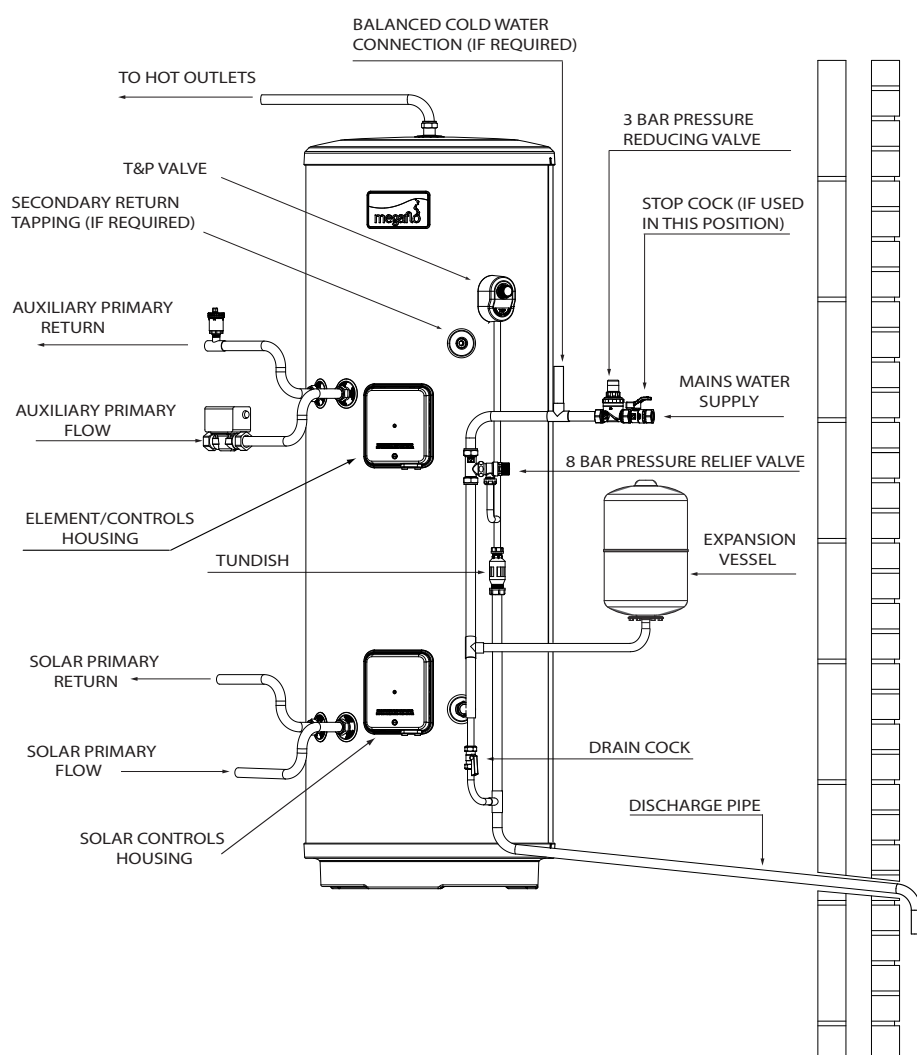
### Siting the MEGAFLO Eco (See Figure 1 below)

The MEGAFLO **Eco** Solar unit must be vertically floor mounted. It can be placed anywhere convenient provided the discharge pipe(s) from its safety valves can be correctly installed. Areas that are subject to freezing must be avoided. Ensure that the floor is of sufficient strength to support the "full" weight of the unit (refer to Tables 3 and 4 on page 9 for unit weights). Pipe runs should be kept as short as possible for maximum economy. Access to associated controls, immersion heaters and indirect controls should be possible for servicing and maintenance of the system.

Please do not install valves or pipework (except discharge pipe) within 50mm (2") of the T&P relief valve to allow your insulation set to be fitted. The insulation set is important to ensure heat and energy conservation. See page 16 for more information.

To aid installation, the MEGAFLO **Eco** Solar is provided with lifting points located in the base moulding and a lifting handle. The lifting handle should be fully threaded onto the outlet boss before use. Once the MEGAFLO **Eco** Solar is suitably positioned the lifting handle should be removed to allow connection of the outlet pipework. The weights of the units are noted in the Tables 3 and 4, (p 9).

Figure 1 - Schematic Installation Details



## Outlet / Terminal Fittings (Taps, Etc.)

The MEGAFLO **Eco** Solar can be used in conjunction with most types of terminal fittings. It is advantageous in many mixer showers to have balanced hot and cold water supplies, in these instances the balanced cold water supply should be teed off the supply to the MEGAFLO **Eco** Solar immediately after the Cold Water Combination Valve (See Figure 7 p.14). Branches to cold drinking outlets should be taken before the valve.

Outlets situated higher than the MEGAFLO **Eco** Solar unit will give outlet pressures lower than that at the heater, a 10m height difference will result in a 0.1 Mpa (1 bar) pressure reduction at the outlet fitting.

**NOTE: Accessories should have a rated operating pressure of at least 0.8 MPa (8 bar).**

## Limitations

The MEGAFLO **Eco** Solar unvented water heater should not be used in any of the following instances:

- Solid fuel boilers or any other boiler in which the energy input is not under effective thermostatic control unless additional and appropriate safety measures are installed.
- Gravity circulation primaries.
- Steam heating plant unless additional and appropriate safety devices are installed.
- Ascending spray type bidets or any other Class 5 back syphonage risk requiring that a Type AA, AB, AD or AG air gap be employed.
- Water supplies that have either inadequate pressure or where the supply may be intermittent.
- Situations where it is not possible to safely pipe away any discharge from the safety valves.
- Areas where the water consistently contains a high proportion of solids, eg. suspended matter that could block the strainer, unless adequate filtration can be ensured.
- The installation must be carried out in accordance with the relevant requirements of:
- The appropriate Building Regulations: either The Building Regulations (England), The Building Regulations (Scotland) or Building Regulations (Northern Ireland).
- The Water Fittings Regulations (England and Wales) or Water Byelaws (Scotland).

## Water Supply

Bear in mind that the mains water supply to the property will be supplying both the hot and cold water requirements simultaneously. It is recommended that the maximum water demand be assessed and the water supply checked to ensure this demand can be met.

**NOTE: A high mains water pressure will not always guarantee high flow rates.**

Wherever possible the main supply pipe should be in 22mm. The minimum mains water supply requirements should be 0.15 MPa (1.5 bar) working pressure and 20 litres per minute flowrate.

At these values outlet flowrates may be poor if several outlets are used simultaneously, the higher the available pressure and flowrate the better the system performance will be.

The MEGAFLO **Eco** Solar has an operating pressure of 3 bar which is controlled by the 3 Bar Pressure Reducing Valve. The 3 Bar Pressure Reducing Valve can be connected to a maximum mains supply pressure of 1.6 MPa (16 bar). The water supply must be of wholesome water quality (Fluid Category 1 as defined by the Water Supply Regulations 1999).

The MEGAFLO **Eco** is to be used for the storage of wholesome water (max. 250mg/l chloride).

## Electrical Supply

**WARNING: THIS APPLIANCE MUST BE EARTHED. IT IS SUITABLE FOR A.C. SUPPLY ONLY. ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A COMPETENT ELECTRICIAN AND BE IN ACCORDANCE WITH THE LATEST I.E.E. WIRING REGULATIONS.**

**ENSURE THE ELECTRICAL SUPPLY IS SWITCHED OFF BEFORE MAKING ANY CONNECTIONS TO THE MEGAFLO **Eco** SOLAR**

## The Environment

This product is made from many recyclable materials, therefore at the end of its useful life it should be disposed of at a Local Authority Recycling Centre in order to realise the full environmental benefits. Insulation is by means of an approved HCFC/CFC free polyurethane foam.

## Specifications and Dimensions

### Outline Specifications

Maximum mains water supply pressure (to 3 Bar Pressure )	1.6 MPa (16 bar)
Operating pressure (Pressure reducing valve set pressure – non adjustable)	0.3 MPa (3 bar)
Expansion relief valve set pressure	0.8 MPa (8 bar)
Temperature / Pressure Relief Valve set temp / pressure	90°C / 1MPa (10 bar)
Immersion heater rating (a.c. supply only)	3kW @ 240V 50Hz 2.8kW @ 230V 50Hz

### Outer casing:

White textured plastic coated corrosion resistant steel

### Water container:

Duplex stainless steel. 100% pressure tested to 1.5 MPa (15 bar).

### Thermal insulation:

CFC/HCFC free fire retardant expanded polyurethane foam with zero ozone depletion potential. It has a Global Warming Potential (GWP) of 3.1. Nominal thickness 60mm.

### Pipe connections:

All connections accept 22mm outside diameter pipe – compression nuts and olives supplied. Thread rate is  $\frac{3}{4}$ " BSP male parallel to accept standard  $\frac{3}{4}$ " BSP female fittings if required.

### Safety features:

Direct units –

Manually resettable thermal cut-out on each heating element

Factory fitted Temperature and Pressure Relief Valve

Indirect units –

Manually resettable thermal cut-out on heating element

Manually resettable thermal cut-out for primary heating. Must be wired in conjunction with 2-port motorised valve supplied

Factory fitted Temperature and Pressure Relief Valve

The pace of product development is such that we reserve the right to change product specifications without notice. We do, however, strive to ensure that all information in this leaflet is accurate at the time of publication.

**Table 1 - Standing Heat-loss**

NOMINAL CAPACITY (LITRES)	STANDING HEAT LOSS	
	PER DAY (kWh/24h)	PER YEAR (kWh/24h)
170	1.25	456.25
190	1.32	481.80
210	1.41	514.65
250	1.56	569.40
260	1.63	594.95
300	1.84	671.60

Table: Figures measured in accordance with KIWA Test Criteria for compliance with UK Building and Water Regulations

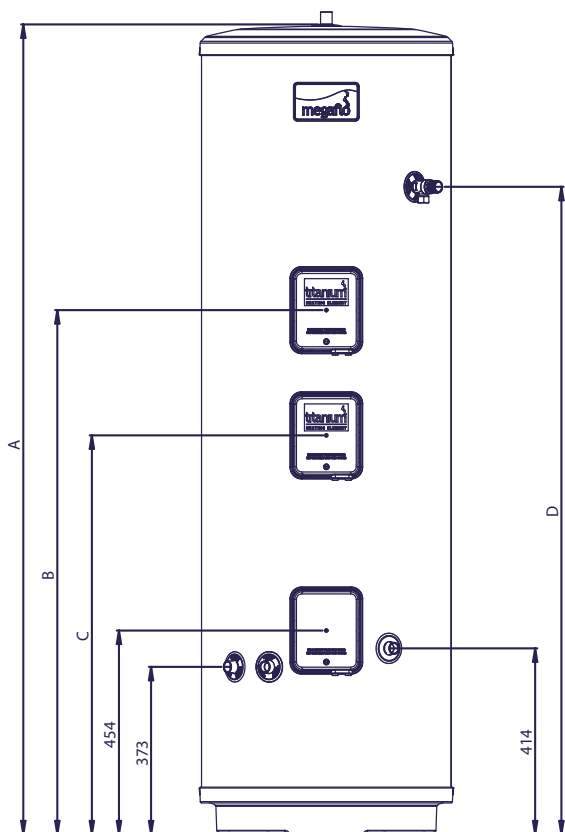


Fig 2 - Megaflo eco Solar Direct

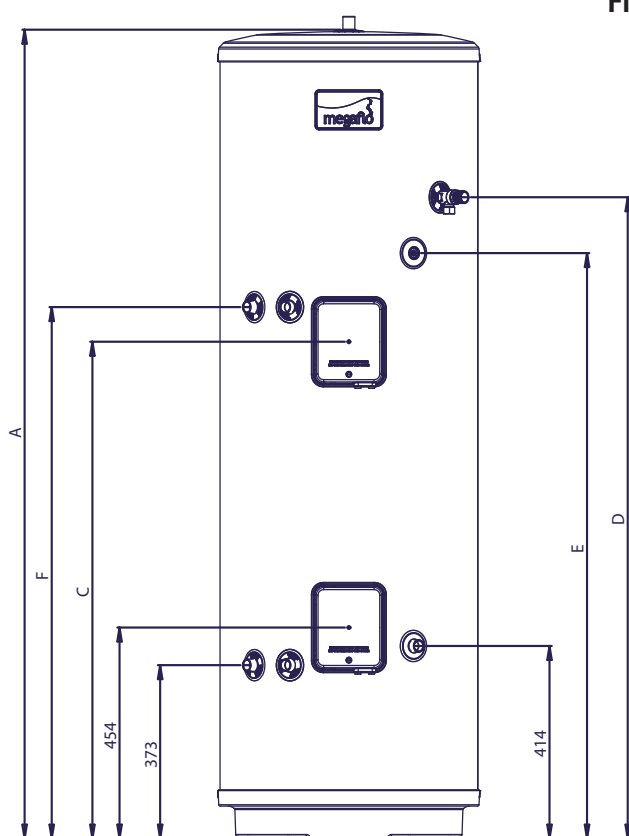
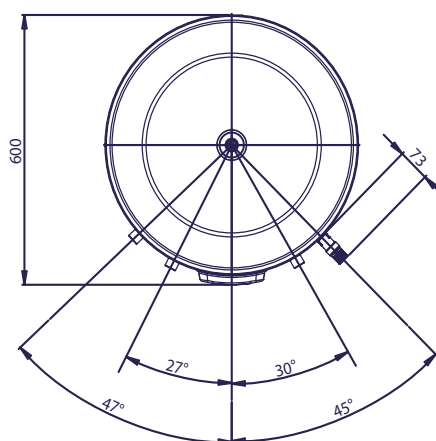


Fig 3 - Megaflo eco Solar Indirect

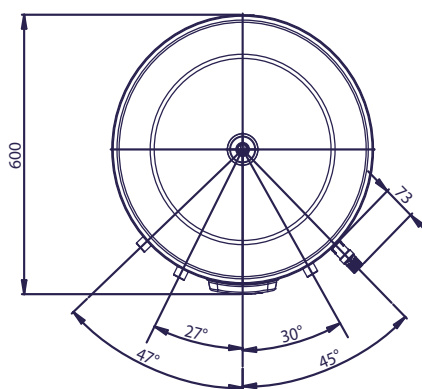




TABLE 2 - DIMENSIONS

SIZE	TYPE	DIMENSIONS (mm)					
		A	B	C	D	E	F
170	Direct	1229	-	794	925	-	-
190	Indirect	1387	-	814	1020	925	735
210	Direct	1489	1103	829	1184	-	-
210	Indirect	1489	-	949	1184	1095	1039
260	Direct	1802	1167	888	1441	-	-
250	Indirect	1738	-	1068	1378	1258	1142
300	Direct	2053	1444	983	1693	-	-
300	Indirect	2053	-	1255	1693	1573	1438

TABLE 3 - DIRECT

SIZE	UNIT WEIGHT (kg)		AUXILLARY VOLUME (L)	HEAT UP TIMES (mins)		
	EMPTY	FULL		LOWER (3kW)	UPPER + LOWER (6kW)	UPPER BOOST (3kW)
170	37.8	207.8	120	126	N/A	N/A
210	42.5	252.5	140	150	75	60
260	47.3	307.3	170	178	89	60
300	61.5	361.5	200	220	110	60

TABLE 4 - INDIRECT

SIZE	UNIT WEIGHT (kg)		AUXILLARY VOLUME (L)	AUXILLARY COIL SPECIFICATIONS			
	EMPTY	FULL		SURFACE (sqm)	HEAT UP (mins)	RECOVERY (mins)	RATING (kW)
190	45.5	235.5	120	0.61	21	14.5	18.0
210	47.5	257.5	120	0.68	21	14.5	18.0
250	56.5	306.5	145	0.73	24.5	20	18.7
300	66.5	366.5	175	0.79	22.5	19	24.5

## NOTE

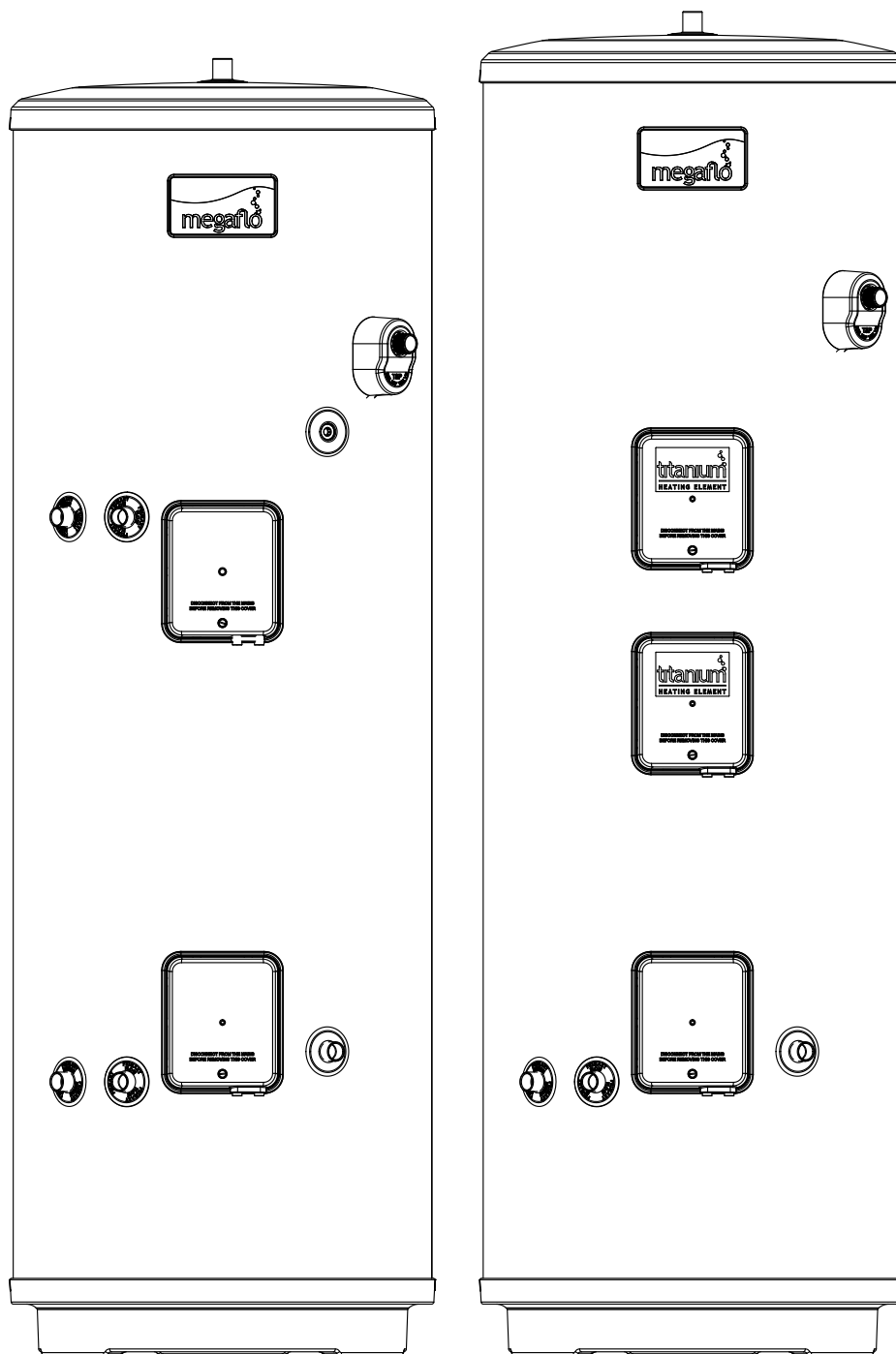
Auxiliary coil heating performance based on a primary flow rate of 15L/min at 80°C.

Temperature rise is from 15°C to 60°C. Heating times using the solar primary circuit will depend on the amount of solar radiation, sunshine hours, collector panel type, size and orientation so will be variable.

Direct				
Supplier's name or trade mark	Megafluo Eco Solar			
Supplier's model identifier	170SDD	210SDD	260SDD	300SDD
Storage volume V in litres	170.0	210.0	260.0	300.0
Mixed water at 40 °C V40 in litres	213.0	208.0	271.0	309.3
The declared load profile	L	XL	XL	XL
The water heating energy efficiency class of the model	C	C	C	C
The water heating energy efficiency in %	38.6	38.6	38.3	38.2
The annual electricity consumption in kWh	2654	4338	4377	4386
Daily fuel consumption Q fuel in kWh	12.200	19.960	20.190	20.240
The thermostat temperature settings of the water heater, as placed on the market by the supplier	60°C			
Specific precautions that shall be taken when the water heater is assembled, installed or maintained and disposed of at end of life	See page 5 to 31			

Indirect				
Model(s)	190Si	210Si	250Si	300Si
Energy efficiency class	C	C	C	C
Standing loss in W	65.0	72.0	80.0	88.0
Storage volume V in litres	190.0	210.0	250.0	300.0

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



- General Installation
- Indirect Model
- Direct Model
- Commissioning

## General Installation

### Pipe Fittings

All pipe connections to the MEGAFLO **Eco** Solar are made via 22mm compression fittings directly to the unit (nuts and olives supplied). The fittings are also threaded  $\frac{3}{4}$ " BSP male parallel should threaded pipe connections be required.

### Cold Water Supply

A 22mm cold water supply is recommended, however, if a 15mm ( $\frac{1}{2}$ " supply exists which provides sufficient flow (see Section 1 p.6 "Water Supply") this may be used. More flow noise may be experienced from small bore pipes due to the increased water velocity through them.

The Cold Water Inlet Control kit supplied with the MEGAFLO **Eco** Solar incorporates a full flow isolating valve which will enable the MEGAFLO **Eco** Solar to be isolated from the mains supply for maintenance or servicing. To close the valve the blue handle should be turned so that it lies at 90° to the direction of flow. To open, turn the handle so that it lies parallel to the direction of flow.

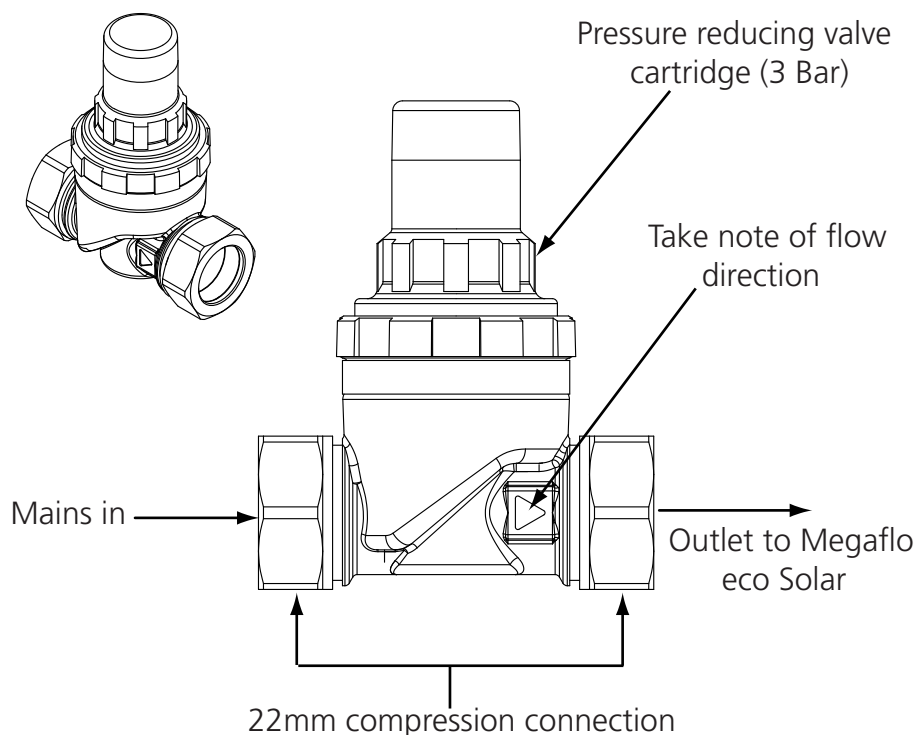
### 3 Bar Pressure Reducing Valve (See Figure 4 below)

The 3 Bar Pressure Reducing Valve can be connected anywhere on the cold water mains supply prior to the MEGAFLO **Eco** Solar unit. There is no requirement to site it close to the unit, it can be located at a point where the mains supply enters the premises if this is more convenient but you must install a non-return valve just after the reducing valve for ease of maintenance.

The 3 Bar Pressure Reducing Valve can be installed as a complete one-piece unit or incorporating the stopcock (see Figure 6, p. 13). The valve incorporates a factory set, non-adjustable Pressure Reducer and Strainer and a single Check Valve. The valve can be fitted in any orientation to suit the installation, however, ensure that the Valve is installed with the direction of flow arrows (stamped on the side of the brass body) pointing towards the MEGAFLO **Eco** Solar heater.

If a balanced pressure cold water supply is required to a thermostatic shower mixer valve this may be teed off the supply to the MEGAFLO **Eco** Solar immediately after the 3 Bar Pressure Reducing Valve (See Figure 7, p. 14).

**Figure 4 - 3 Bar Pressure Reducing Valve**



### 8 Bar Pressure Relief Valve (See Figure 5 below)

This should be installed between the 3 bar Pressure Reducing Valve and the MEGAFL0 Eco Solar cylinder. Should a balanced pressure cold water draw off supply be required for the cold water outlets, this should be taken off between the 3 bar Pressure Reducing Valve and 8 bar Pressure Relief Valve (see Figure 7, p. 14). **Branches to drinking water outlets should be taken before the Pressure Relief Valve to avoid the possibility of warm expanded water being drawn from the tap.**

Figure 5 - 8 Bar Pressure Relief Valve

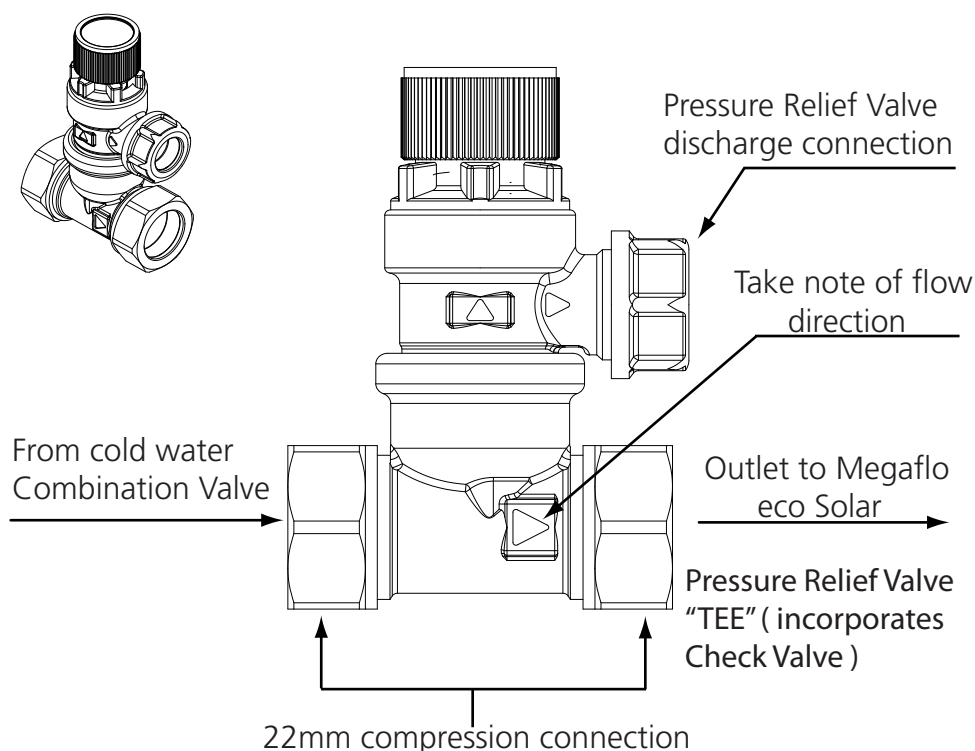
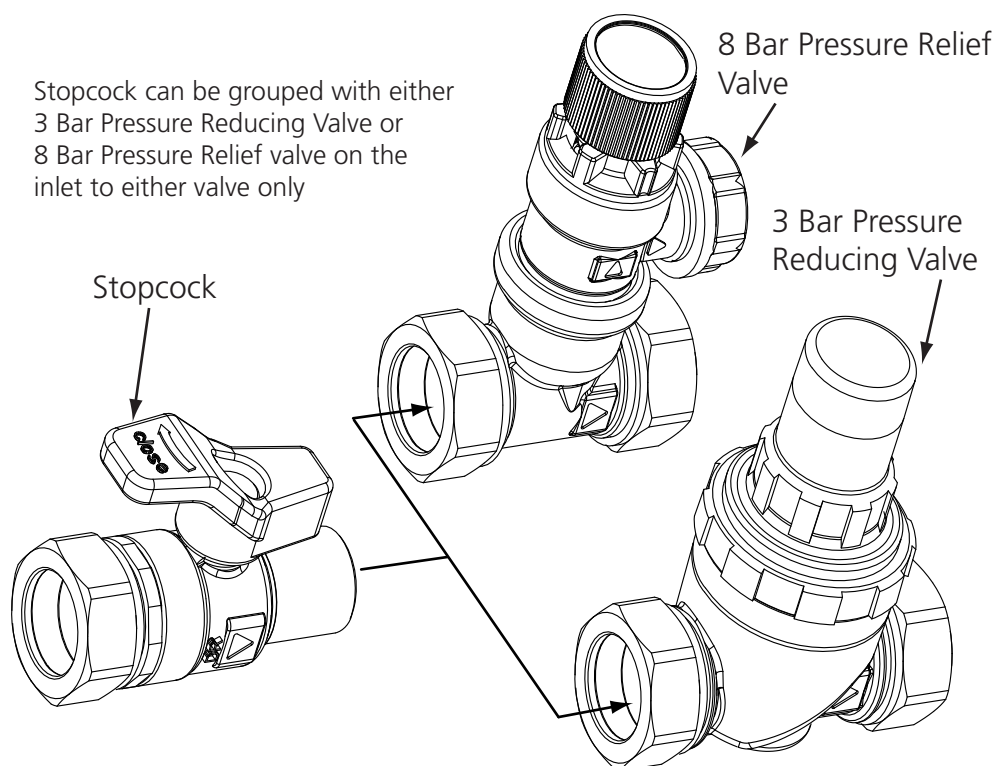
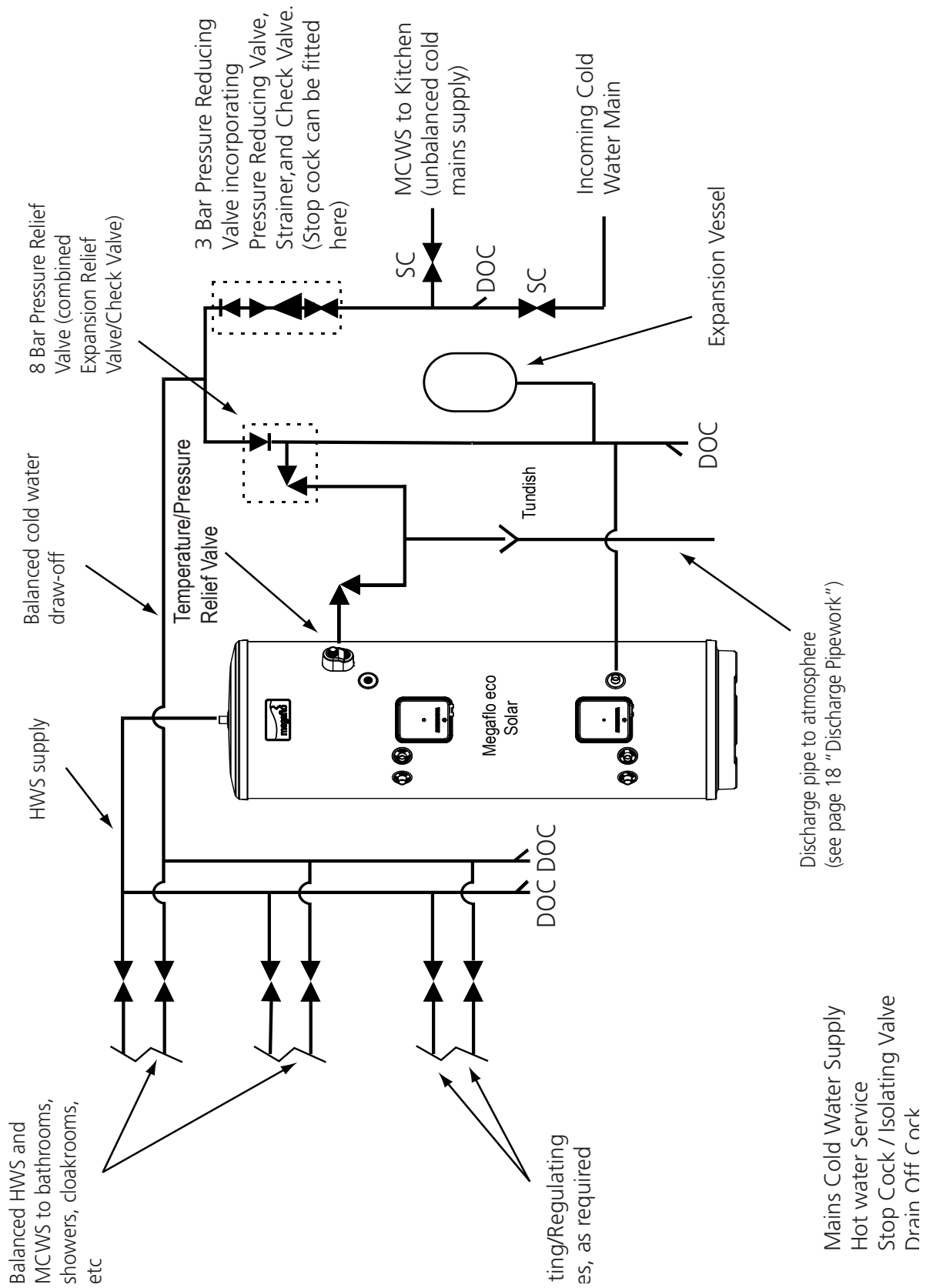


Figure 6 - Valve set can be grouped two ways



**Figure 7 - Schematic installation diagram using 3 bar Pressure Reducing Valve in conjunction with 8 bar Pressure Relief Valve**



### Drain Tap

A drain tap is supplied and should be installed in the cold water supply to the MEGAFLO Eco Solar unit between the 8 Bar Pressure Relief Valve and the heater at as low a level as possible (see Figure 1, p. 5). It is recommended that the outlet point of the drain pipe work be at least 1 metre below the level of the heater (this can be achieved by attaching a hose pipe to the drain tap outlet spigot). The drain tap supplied provides very good water flow control and blanking cap for extra security.

### Outlet Pipework

Ideally the pipework from the MEGAFLO Eco Solar to the outlet fittings should be in 22mm pipe with short runs of 15mm pipe to showers and basin taps. Small bore pipe can also be used to suit some taps, but runs should be of minimum length. Pipe sizes may vary due to system design.

### Expansion Vessel

The Expansion Vessel accommodates expansion that results from heating the water inside the unit. The unit is pre-charged at 0.35MPa (3.5 Bar). The Expansion Vessel must be connected between the 8 Bar Pressure Relief Valve and the MEGAFLO Eco Solar cylinder (See Figure 1, p. 5). The location of the Expansion Vessel should allow access to re-charge the pressure as and when necessary, this can be done using a normal car foot pump. It is recommended that the Expansion Vessel is adequately supported. An Expansion Vessel wall mounting bracket is supplied for this purpose.

**NOTE: DO NOT USE THE POTABLE WATER EXPANSION VESSEL SUPPLIED WITH THE MEGAFLO Eco SOLAR FOR ANY OTHER PURPOSE. IT MUST NOT BE USED IN PLACE OF THE SOLAR PRIMARY SYSTEM EXPANSION VESSEL.**

### Secondary Circulation

The secondary return pipe should be in 15mm pipe and incorporate a check valve to prevent backflow. A suitable WRAS approved bronze circulation pump will be required. On large systems, due to the increase in system water content, it may be necessary to fit additional expansion volume to the secondary system by fitting an external expansion vessel to the circuit. This should be done if the capacity of the secondary circuit exceeds 10 litres.

### Indirect models

If a secondary circulation system is required on an indirect model, it is recommended that it be connected as shown in Figure 8a below.

### Direct models

If a secondary circulation system is required on a direct model, it is recommended that it be connected as shown in Figure 8b via a swept tee (spares code 95605812). Particular attention should be paid by the installer to maintain the return water temperature (guidelines state that a minimum of 55° C is advisable). Factors such as, but not limited to secondary circulation flow rates, minimising heat loss of all secondary pipework and timed operation during periods of high demand are critical to the correct operation and longevity of the heating element(s) and thermostats.

### Pipe capacities (copper)

15mm o/d = 0.13 litres per metre run (10 litres = 77m)

22mm o/d = 0.38 litres per metre run (10 litres = 26m)

28mm o/d = 0.55 litres per metre run (10 litres = 18m)

### Secondary Circulation Connection

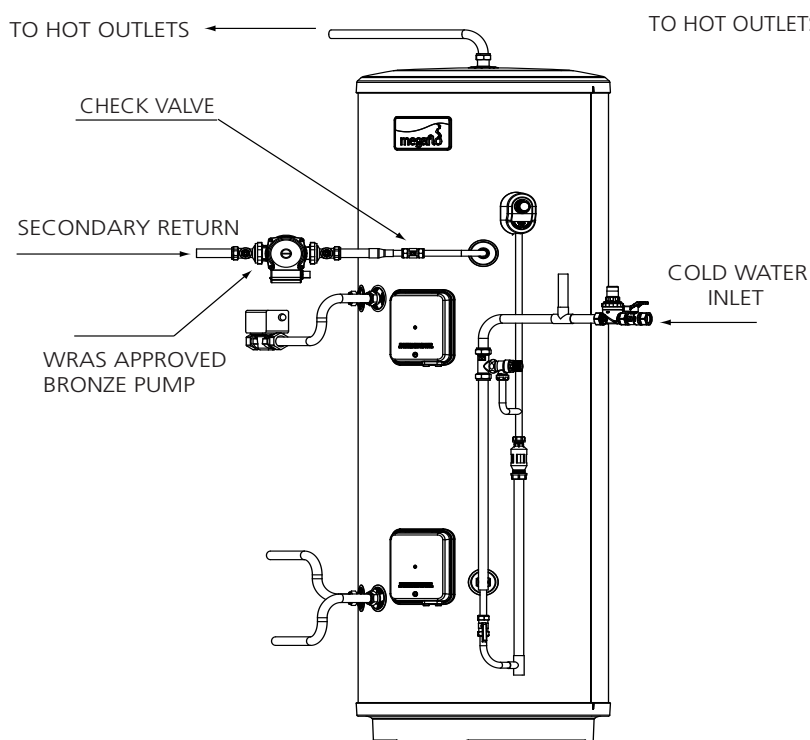


Fig. 8a INDIRECT MODELS

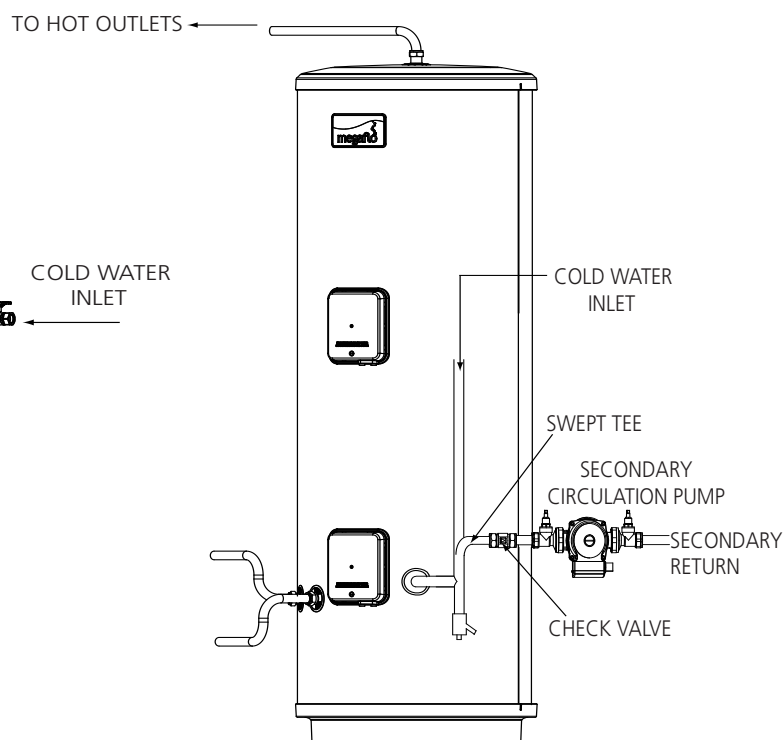


Fig. 8b DIRECT MODELS

### T&P Relief Valve Insulation

A set of insulating components is supplied with the MEGAFLO **Eco** Solar water heater and should be installed to gain maximum heat and energy saving benefits. See Figure 9 below, for installation instructions.

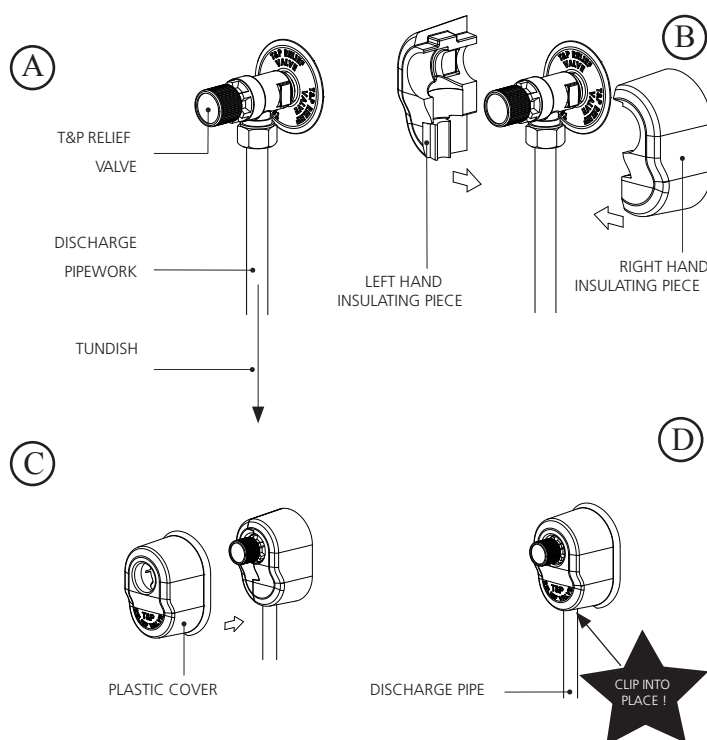
### Warnings

- i) Under no circumstances should the factory fitted Temperature /Pressure Relief Valve be removed other than by authorised Heatrae Sadia personnel. To do so will invalidate any guarantee or claim.
- ii) The Cold Water Inlet Control kit must be fitted to the mains water supply to the MEGAFLO **Eco** Solar unit.
- iii) No control or safety valves should be tampered with.
- iv) Water may drip from the discharge pipe of the pressure relief device (Expansion Valve) and this pipe must be left open to atmosphere. The discharge pipe should not be blocked or used for any other purpose.

**Figure 9 - INSTALLATION OF T&P INSULATION SET**

### IMPORTANT INFORMATION: HOW TO INSULATE YOUR T&P RELIEF VALVE

TO SAVE HEAT AND ENERGY A SET OF INSULATING PARTS FOR THE T&P RELIEF VALVE HAVE BEEN SUPPLIED WITH THIS WATER HEATER. INSTALL THE HEATER FIRST THEN FIT THE INSULATING PARTS BY FOLLOWING THE DIAGRAMS BELOW.



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

### Discharge pipes from safety devices

#### Discharge pipe D1

- 3.50 Safety devices such as **temperature relief valves** or **combined temperature and pressure** and **pressure relief valves** (see paragraphs 3.13 or 3.18) should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a **tundish**.
- 3.51 The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the **temperature relief valve**.
- 3.52 Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.
- 3.53 Where valves other than the **temperature and pressure relief valve** from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the **hot water storage system unit** or package.

#### Tundish

- 3.54 The **tundish** should be vertical, located in the same space as the unvented **hot water storage system** and be fitted as close as possible to, and lower than, the valve, with no more than 600mm of pipe between the valve outlet and the **tundish** (see Diagram 1).

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

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

#### Discharge pipe D2

- 3.56 The discharge pipe (D2) from the **tundish** should:
- (a) have a vertical section of pipe at least 300mm long below the **tundish** before any elbows or bends in the pipework (see Diagram 1); and
  - (b) be installed with a continuous fall thereafter of at least 1 in 200.
- 3.57 The discharge pipe (D2) should be made of:
- (a) metal; or
  - (b) other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291).
- 3.58 The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. for discharge pipes between 9m and 18m the equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance. See Diagram 1, Table 1 and the worked example.
- Note:** An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of BS 6700:2006 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- 3.59 Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.
- 3.60 The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should:
- (a) contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the **tundish**;
  - (b) be a separate branch pipe with no **sanitary appliances** connected to it;
  - (c) if plastic pipes are used as branch pipes carrying discharge from a safety device they should be either polybutylene (PB) to Class S of BS 7291-2:2006 or cross linked polyethylene (PE-X) to Class S of BS 7291-3:2006; and
  - (d) be continuously marked with a warning that no **sanitary appliances** should be connected to the pipe.

#### Note:

1. Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1.
2. Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack.

#### Termination of discharge pipe

- 3.61 The discharge pipe (D2) from the **tundish** should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.
- 3.62 Examples of acceptable discharge arrangements are:
- b) to a trapped gully with the end of the pipe below a fixed grating and above the water seal;
  - (c) downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and
  - (d) discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering system that would collect such discharges.
- 3.63 The discharge would consist of high temperature water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.



## Discharge Pipework

It is a requirement of Building Regulations that any discharge from an unvented system is conveyed to where it is visible, but will not cause danger to persons in or about the building. The tundish and discharge pipes should be fitted in accordance with the requirements and guidance notes of Building Regulations. Building Regulation G3 Requirements and Guidance (p. 17) are reproduced in the following sections.

For discharge pipe arrangements not covered by G3 Guidance advice should be sought from your local Building Control Officer. Any discharge pipe connected to the Pressure Relief devices (Expansion Valve and Temperature and Pressure Relief Valve) must be installed in a continuously downward direction and in a frost free environment.

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

### G3 Requirement

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

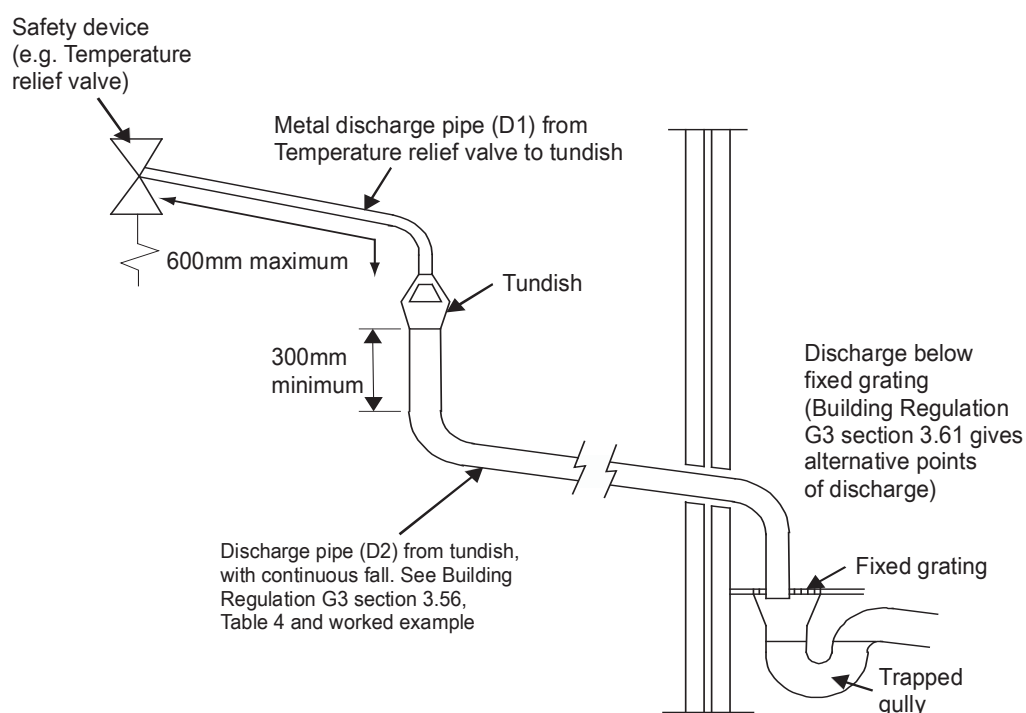
#### Notes:

- 1) Discharge pipe-work D2 can now be a plastic pipe but only pipes that have been tested to a minimum 110°C must be used.
- 2) Discharge pipe D2 can now be plumbed in the soil stack but only soil stacks that can handle temperatures of 99°C or greater should be used.

**Table 5 Sizing of copper discharge pipe "D2" for common T&P Relief Valve sizes.**

VALVE OUTLET SIZE	MINIMUM SIZE OF DISCHARGE PIPE D1	MINIMUM SIZE OF DISCHARGE PIPE D2 FROM TUNDISH	MAXIMUM RESISTANCE ALLOWED, EXPRESSED AS A LENGTH OF STRAIGHT PIPE (I.E. NO ELBOWS OR BENDS)	RESISTANCE CREATED BY EACH ELBOW OR BEND
G 1/2	15mm	22mm 28mm 35mm	UP TO 9m UP TO 18m UP TO 27m	0.8m 1.0m 1.4m
G 3/4	22mm	28mm 35mm 42mm	UP TO 9m UP TO 18m UP TO 27m	1.0m 1.4m 1.7m
G 1	28mm	35mm 42mm 54mm	UP TO 9m UP TO 18m UP TO 27m	1.4m 1.7m 2.3m

**Figure 10 - Schematic discharge pipe arrangement**



## Worked example of discharge pipe sizing

The example on page 18 is for a G $\frac{1}{2}$  temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

From Table 5:

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G $\frac{1}{2}$  temperature relief valve is 9m.

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

Therefore the permitted length equates to: 5.8m

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

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G $\frac{1}{2}$  temperature relief valve equates to 18m.

Subtract the resistance of 4 No. 28mm elbows at 1m each = 4m

Therefore the maximum permitted length equates to: 14m

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

## INDIRECT MODEL

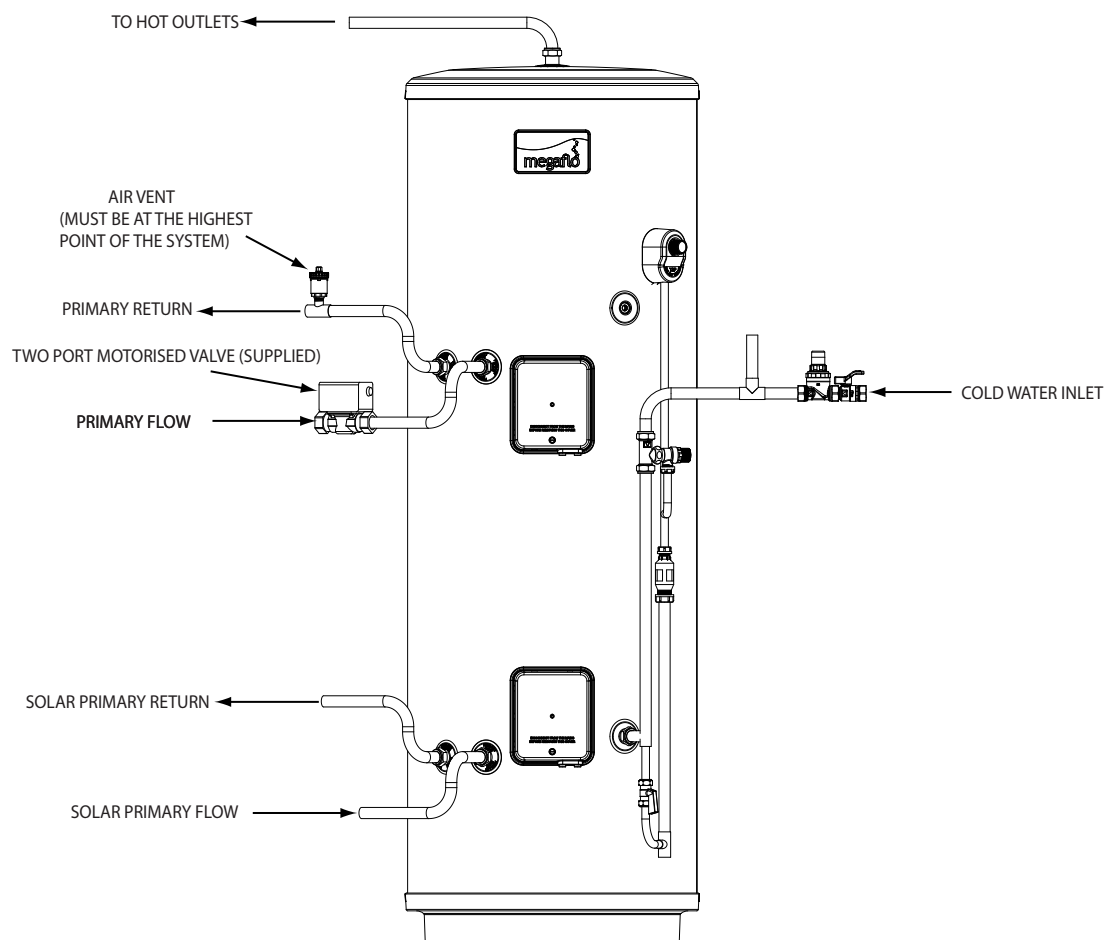
### Boiler Selection

The MEGAFLO **Eco** Solar Indirect models are supplied with an auxiliary heating coil and is suitable for use with most gas or oil fired boilers compatible with unvented systems i.e. fitted with a temperature control thermostat and thermal cut-out. If in doubt consult the boiler manufacturer. Solid fuel boilers or any other boiler in which the energy input is not under effective thermostatic control, unless additional and appropriate safety measures are installed, **SHOULD NOT** be used. The boiler used can either be a sealed system or open vented type, maximum primary circuit pressure 0.3Mpa (3 bar). The primary flow from the boiler **MUST** be pumped. Gravity circulation will not work due to the special design of the primary heat exchanger. It is recommended that an air bleed point or automatic air vent is incorporated in the primary return pipework close to the MEGAFLO **Eco** Solar unit. The boiler flow temperature should usually be set to 82°C (maximum flow temperature to primary heat exchanger 88°C). The boiler cannot be vented through the MEGAFLO **Eco** Solar unit.

### Indirect Thermal Cut-Out And 2-Port Motorised Valve

To comply with Building Regulations, and to prevent the MEGAFLO **Eco** Solar from overheating the 2-port motorised valve supplied **MUST** be fitted to the primary flow to the indirect coil (see Figure 11 below).

**Figure 11 - Primary connections to indirect units**



## Wiring

All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E. Wiring Regulations.

The MEGAFLO **Eco** Solar Indirect combined thermostat and thermal cut-out are factory pre-wired. The 2-port motorised valve supplied **MUST** be wired in series with the Indirect controls such that the power supply to the valve is interrupted should either the Thermostat or Thermal cut-out operate. The Figures 13 and 14 (see p. 21) detail the wiring required between these controls and the motorised valve. Wiring to external controls is made via the terminal block fitted. The cable should be routed through the aperture in the terminal cover and secured using the cable grip provided. **The Indirect Thermal cut-out MUST NOT be bypassed.**

## Heating System Controls

The controls provided with the MEGAFLO **Eco** Solar will ensure the safe operation of the MEGAFLO **Eco** Solar within a central heating system. Other controls will be necessary to control the space heating requirements and times that the system is required to function. Depending on the boiler selected, heating circuit design and controls used it may be beneficial to incorporate a system bypass in the heating system pipework.

The MEGAFLO **Eco** Solar is compatible with most heating controls, examples of electrical circuits are given in Figures 13 and 14, (see p. 21). However, other systems may be suitable, **refer to the controls manufacturers' instructions, supplied with the controls selected, for alternative system wiring schemes.**

## Immersion Heater(s)

The MEGAFLO **Eco** Solar indirect units (Indirect models) are supplied with an immersion heater which can be used as an alternative heat source should the boiler supply need to be isolated from the MEGAFLO **Eco** Solar unit. The immersion heater is located within the controls housing. refer to sections, "Wiring and Operation" (see p.22). for details of wiring and operation of the immersion heater, 210 litre models and above are supplied with a second blanked off boss which can be used for the connection of a second immersion heater should this be required.

### To remove the blanking plug:

Ensure the cylinder is drained of water first. Open the cover to the upper immersion heater boss. Unscrew the brass backnut using the key spanner provided with the unit. Remove the blanking plate and sealing gasket from the boss.

### Fitting additional immersion heater:

Insert the immersion heater and sealing gasket into the upper boss. Ensure that the sealing gasket is not displaced when inserting. It may be helpful to support the immersion heater using a round shafted screwdriver inserted into one of the thermostat pockets. Hand tighten the brass backnut. Secure the immersion heater in position by tightening with the key spanner provided. If an additional immersion heater and thermostat assembly is required order part no. 95:970:554

Figure 12 - Indirect Wiring layout

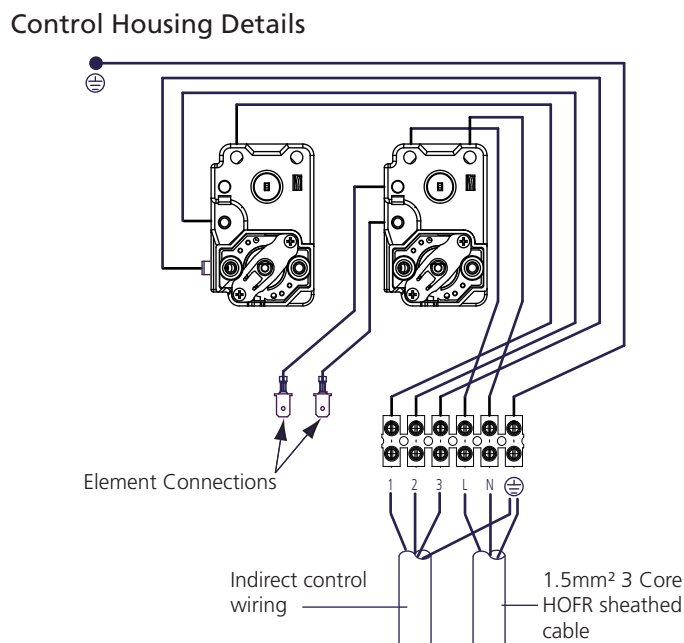


Figure 13 - 2 port valve in conjunction with a 3 port mid-position valve system ("Y" Plan)

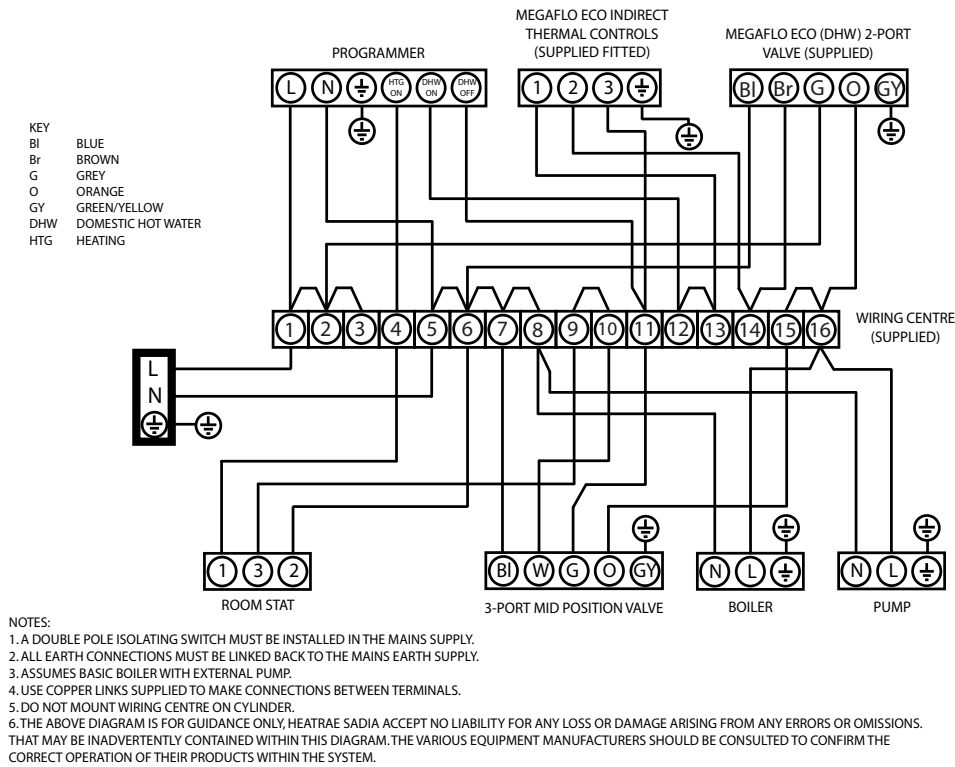
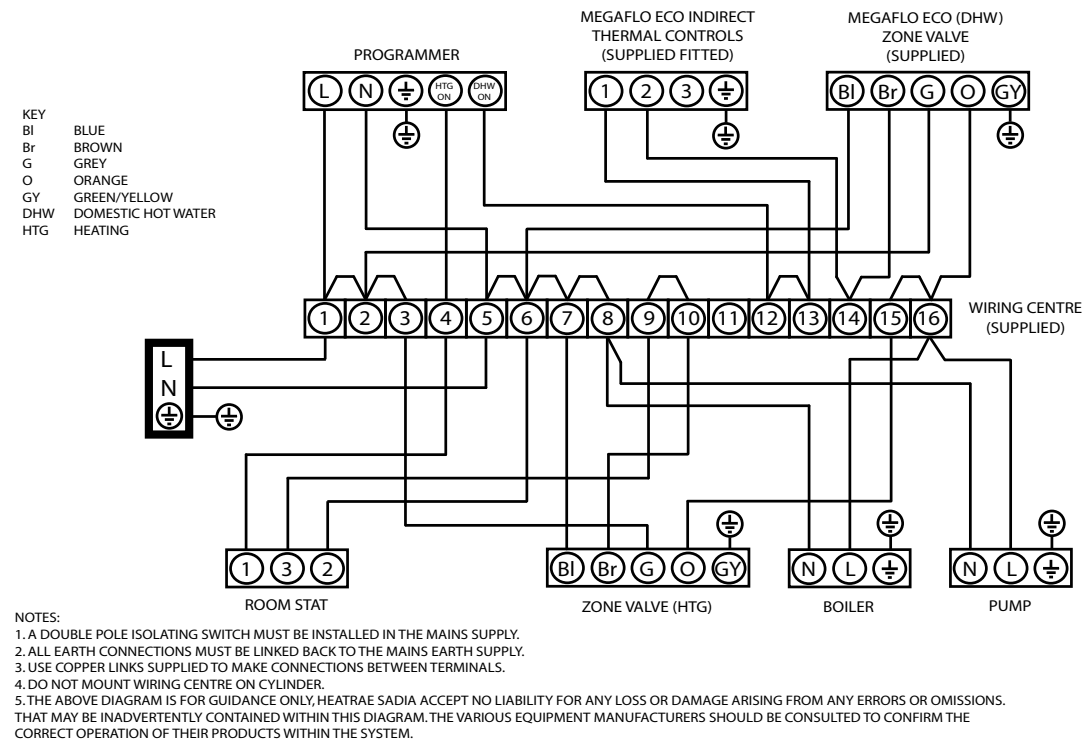


Figure 14 - 2 x 2 port valve system ("S"Plan)



## DIRECT MODEL

### Immersion Heater(s)

The MEGAFLO Eco Solar Direct is supplied with either one (D models) or two (DD models) factory fitted immersion heaters. Each immersion heater is rated 3kW at 240V.

#### To remove the immersion heater:

Open the cover to the upper immersion heater. Disconnect the two wires to element tabs, pull out the two thermostat capillaries (remember which way round they go) and move out of the way. Unscrew the brass backnut using the key spanner provided. Remove the immersion heater assembly and sealing gasket from the boss.

#### Replacement:

Insert the immersion heater and sealing gasket into the required boss. Ensure that the sealing gasket is not displaced when inserting. It may be helpful to support the immersion heater using a round shafted screwdriver inserted into the thermostat pocket. Hand tighten the brass backnut. Secure the immersion heater in position by tightening with the key spanner provided. Replace the thermostat capillaries, spiral one in first (making sure capillary tubes do not touch element legs). Reconnect element wires from thermostat.

If an additional immersion heater is required order part no. 95:970:554.

### Wiring (See Figure 16, p.23)

All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E. Wiring Regulations. **Each circuit must be protected by a suitable fuse and double pole isolating switch with a contact separation of at least 3mm in both poles.** The immersion heater(s) should be wired in accordance with Figure 15, (p. 23). The immersion heaters MUST be earthed. The supply cable should be 1.5mm<sup>2</sup> 3 core HOFR sheathed and must be routed through the cable gland provided with the outer sheath of the cable firmly secured by tightening the screw on the cable gland. Replace the immersion heater cover(s) before operating ensuring that the threaded edge clip is in position to provide a suitable thread for the cover screw.

**DO NOT OPERATE THE IMMERSION HEATER(S) UNTIL THE MEGAFLO Eco SOLAR HAS BEEN FILLED WITH WATER.**

### Operation

See Figure 16, (p. 23) for details on how to adjust the temperature setting of the heater. The thermostat incorporates a thermal cut-out that will switch off the immersion heater in the event of a thermostat failure. The thermal cut-out reset button position is indicated on Figure 16, (p. 23).

**DO NOT BYPASS THE THERMAL CUT-OUT IN ANY CIRCUMSTANCES.**

#### Access to Control Unit:

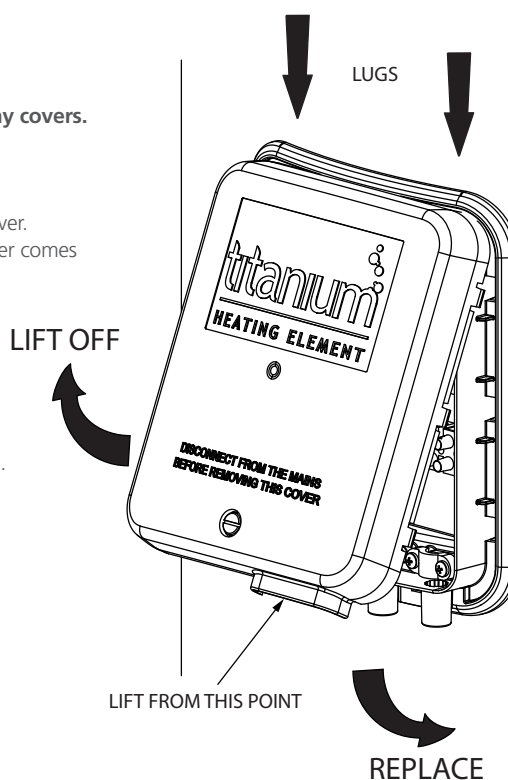
Disconnect from mains supply before removing any covers.

#### Removing the Control Cover:

- Unscrew the large screw using a flat ended screw driver.
- Lift from bottom of cover at point indicated until cover comes away freely

#### Replacing the Control Cover:

- Tilt and align the top 2 lugs in the holes indicated
- Firmly press the cover until it "snaps" back in place.
- Tighten the large screw ( **DO NOT OVER TIGHTEN** ).



## Safety

DO NOT BYPASS THE THERMAL CUT-OUT(S) IN ANY CIRCUMSTANCES

DISCONNECT FROM THE MAINS SUPPLY BEFORE REMOVING ANY COVERS

NEVER ATTEMPT TO REPLACE AN IMMERSION HEATER OTHER THAN WITH THE RECOMMENDED HEATRAE SADIA MEGAFLO Eco SOLAR SPARE PART

Figure 15 - Schematic wiring diagram - Direct immersion heaters, with adjustment details

### Direct Wiring Layout

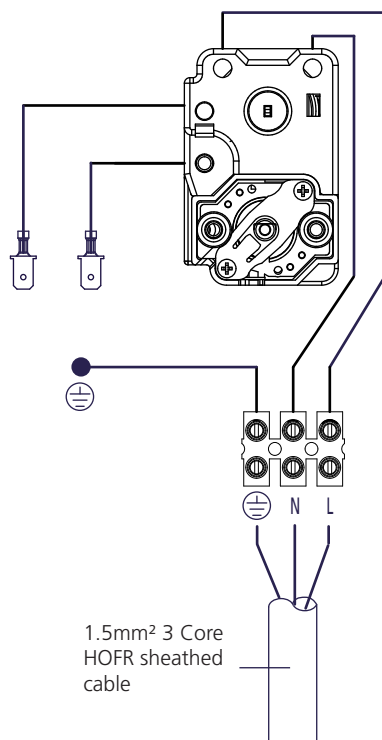
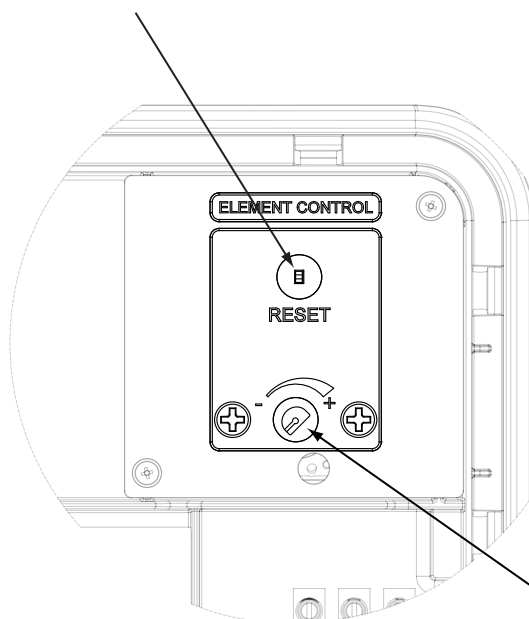


Figure 16 - Adjustment details

### THERMAL CUT-OUT RESET BUTTON



### SPINDLE POSITIONS

 = MINIMUM TEMP

 = MAXIMUM TEMP

 = APPROX 60 °C

ROTATE SPINDLE CLOCKWISE  
FOR TEMPERATURE INCREASE  
AND COUNTER CLOCKWISE  
FOR TEMPERATURE DECREASE

TEMPERATURE ADJUSTING  
SPINDLE

## SOLAR PRIMARY

### CONNECTION TO THE SOLAR PRIMARY CIRCUIT

The lower (Solar) coil of the MEGAFLO **Eco** Solar must be connected to a fully pumped solar primary circuit. The connections are suitable for a 22mm copper pipe direct to compression fittings provided. The connections are also threaded 3/4" BSP male parallel should BSP connections be required.

The solar primary circuit must have its own dedicated circulating pump, thermal and safety controls which must be installed as per the manufacturer's instructions.

### CONTROL OF SOLAR PRIMARY CIRCUIT

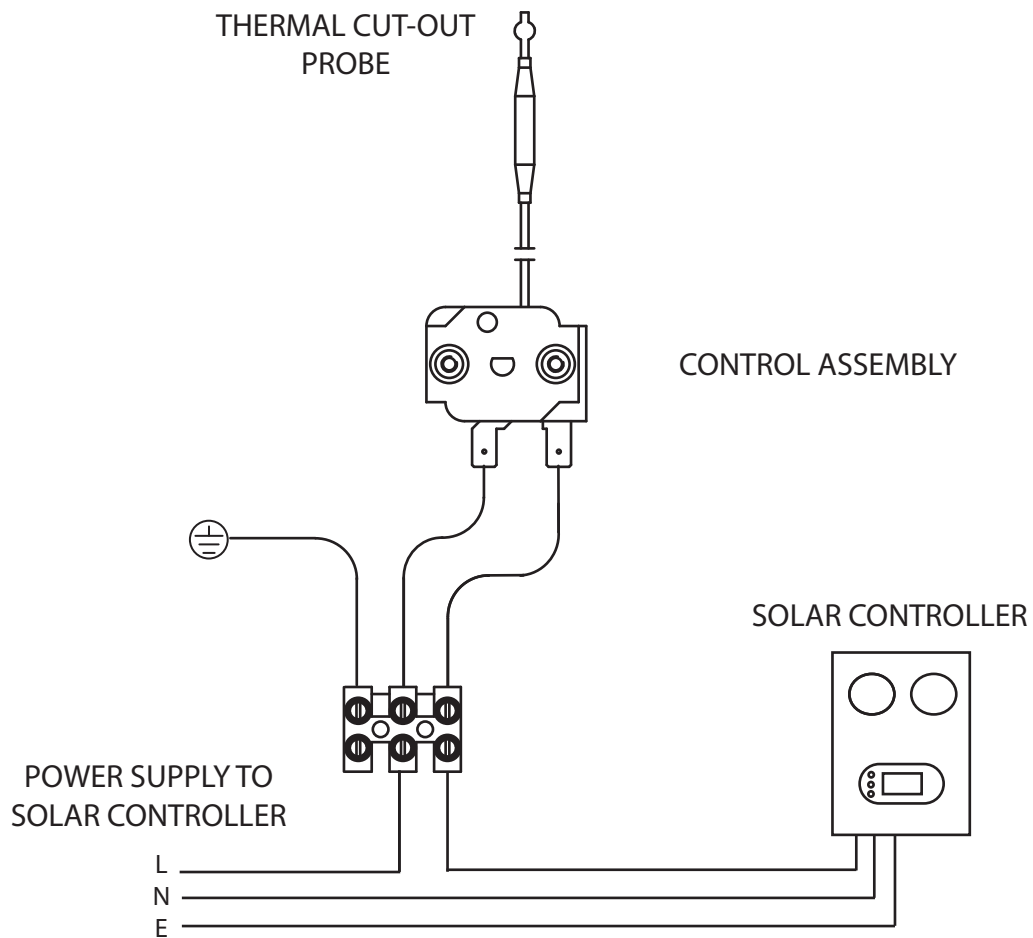
Temperature control of the MEGAFLO **Eco** Solar must be carried out using a suitable proprietary solar differential temperature controller. The cylinder temperature sensing probe (usually supplied with the solar differential temperature controller) should be inserted into the pocket provided on the MEGAFLO **Eco** Solar (Figure 17 below) and its cable secured using the cable clamp supplied.

The solar controller and solar primary circulation pump must be wired via the over-temperature cut-out mounted in the lower solar controls housing (Figure 17 below). This will ensure that the heat input to the solar coil is interrupted in the event of the cylinder over-heating. There must also be suitable Check (non-return) valves installed in the solar primary flow and return to prevent the possibility of any thermo-syphoning if the solar circulation is stopped.

Connection to the solar differential temperature controller should be in accordance with the manufacturer's instructions. The controller should be set to give a recommended cylinder temperature of approx. 60°C otherwise nuisance operation of the thermal cut-outs may occur.

The MEGAFLO **Eco** Solar cylinders are fitted with two additional sensor pockets for use with solar controllers. A second 10mm pocket is supplied within the bottom Solar Control assembly and a 8mm pocket is supplied near the T&P valve, this pocket can be removed and used as a secondary circulation connection if needed, **on Indirect models only**

Figure 17 - Solar wiring layout



## Commissioning

### Filling and flushing the MEGAFLO Eco Solar

Ensure that all fittings and immersion heaters are correctly fitted and tightened. An immersion heater key spanner is provided to aid in tightening the immersion heater(s).

- i) Open a hot tap furthest from the MEGAFLO **Eco** Solar.
- ii) Open the isolating valve on the 3 Bar Pressure Reducing Valve by turning the blue handle on the stop cock (if fitted in this position) so that it lies parallel to the direction of flow. Open the mains stop cock to fill the unit. When water issues from the tap, allow to run for a few minutes to thoroughly flush through any residue, dirt or swarf, then close tap.
- iii) Open successive hot taps to purge any air from the system.
- iv) Check all connections for leaks and rectify as necessary.
- v) The Strainer housed within the 3 Bar Pressure Reducing Valve should be cleaned to remove any debris that may have been flushed through the main supply pipe. Refer to Section 3, (p. 28) for instructions on how to do this.

**WARNING: If the installation is to be left unused following installation and commissioning, e.g. unoccupied properties, the water heater should be drained or regularly flushed through with fresh mains water once a week.**

**When placing the unit into service, the procedure for filling the unit and the system checks above should be observed.**

### Check the operation of the Safety Valves

- i) Slowly, manually open (turn black knob on end counter-clockwise), for a few seconds, the Temperature and Pressure Relief Valve (T&P Valve) situated on the MEGAFLO **Eco** Solar unit (see Figure 1, p.5). Check water discharged runs freely away through the tundish and discharge pipework. Close valve, ensure water flow stops and valve reseats correctly.
- ii) Repeat for the 8 Bar Pressure Relief Valve (see Figures 5 and 6, p. 13).

**NOTE: The water discharged may be very hot**

### Indirect Units (Solar Primary Circuit)

Fill the solar primary circuit following the instructions provided with the solar hydraulic controls. The cylinder temperature control sensor probe supplied with the solar differential temperature controller must be inserted into the pocket in the lower controls housing and its cable securely clamped. Heating by the solar primary circuit is controlled by the solar differential temperature controller, refer to the manufacturer's installation instructions for details of how to set up and commission the solar primary circuit. The solar controller should be programmed to give a maximum storage temperature in the MEGAFLO **Eco** Solar of 70°C although 60°C is recommended to minimise scaling.

### Direct Units

Switch on the electrical supply to the immersion heater(s) and allow the unit to heat up. Check that the thermostat operates correctly. A storage temperature of approx. 60°C is recommended. If necessary the temperature can be adjusted by inserting a flat bladed screwdriver in the adjustment knob on top of the immersion heater thermostat and rotating clockwise (see Figure 16, p. 23). The full adjustment represents a temperature range of between 12° and 68°C. Check that no water is discharged from either the Expansion Valve or Temperature and Pressure Relief Valve during the heating cycle.

### Indirect Units

Fill the indirect (primary) circuit following the boiler manufacturer's commissioning instructions. To ensure the primary heating coil in the MEGAFLO **Eco** Solar is filled the 2-port motorised valve (supplied) should be manually opened by moving the lever on the motor housing to the **MAN OPEN** position. When the primary circuit is full return the lever to the AUTO position. Vent any trapped air by opening the air bleed.

Switch on the boiler, ensure the programmer is set to Domestic Hot Water. Allow the MEGAFLO **Eco** Solar unit to heat up and check that the indirect thermostat and 2-port motorised valve operate correctly. A storage temperature of approx. 60°C is recommended. If necessary the temperature can be adjusted by inserting a flat bladed screwdriver in the adjustment knob (located on the front of the thermostat mounting bracket see Figure 16, p. 23 ) and rotating clockwise to increase the temperature or counter clockwise to reduce the temperature. The minimum thermostat setting is 12°C. The adjustment range on the combined thermostat and thermal cut-out is 12°C-68°C

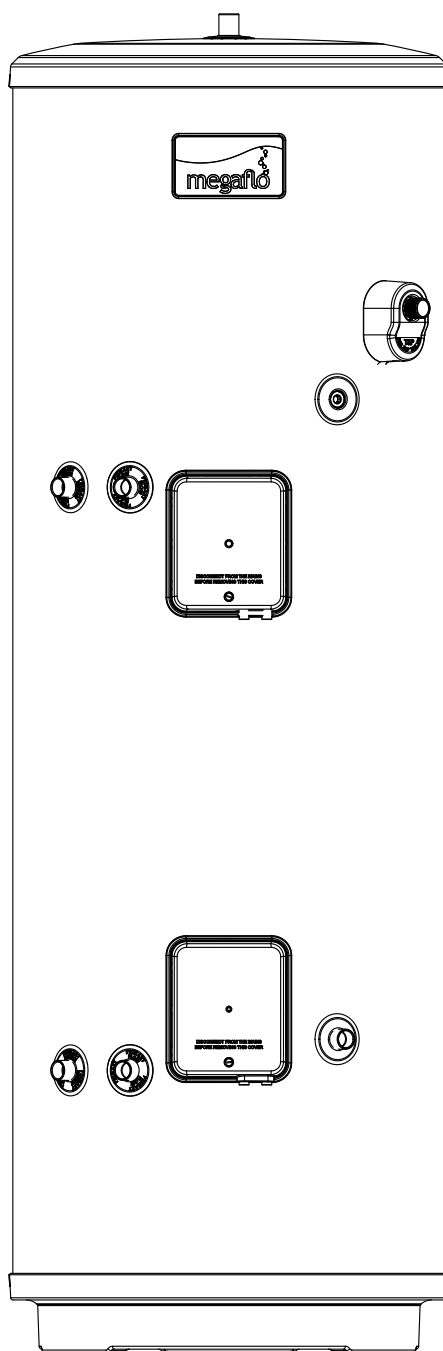
Check that no water is discharged from either the Expansion Valve or Temperature and Pressure Relief Valve during the heating cycle.

### Benchmark™ Log Book

On completion of the installation and commissioning procedures detailed in this Product Guide the Benchmark™ "Installation, Commissioning and Service Record Log", pages 34 and 35, should be completed and signed off by the competent installer or commissioning engineer in the relevant sections. The various system features, location of system controls, user instructions and what to do in the event of a system failure should be explained to the customer. The customer should then countersign the Benchmark™ commissioning checklist (page 34) to accept completion. The Service Record should be filled in when any subsequent service or maintenance operation is carried out on the MEGAFLO **Eco** Solar unit (See Maintenance and Servicing, p. 35).



- Maintenance
- Fault Finding
- Servicing
- Spares
- Benchmark



## Maintenance

### Maintenance requirements

To ensure the continued optimum performance of the MEGAFLO **Eco** Solar it should be regularly maintained. This is of particular importance in hard water areas or where the water supply contains particulate matter. Maintenance should be carried out by a competent person and any replacement parts used should be authorised MEGAFLO **Eco** Solar spare parts. It is recommended that maintenance is carried out every 12 months and includes the checks detailed below.

In hard water areas consideration should be given to periodically descaling the immersion heater elements. To do this the MEGAFLO **Eco** Solar unit will need to be drained, details below list how to drain the unit and remove the immersion heater(s).

### Check operation of Safety Valves

Slowly open the Temperature and Pressure Relief Valve by twisting its cap for a few seconds. Check water is discharged and that it flows freely through the tundish and discharge pipework. Check valve reseats correctly when released.

**NOTE: The water discharged may be very hot.**

Repeat the procedure for the 8 Bar Pressure Relief Valve.

### Clean the strainer

The strainer is incorporated within the Pressure Reducing Valve housing of the Cold Water Combination Valve (see Figure 17, p. 31). To inspect and clean the strainer:

- i) Turn off the isolating valve on the 3 Bar Pressure Reducing Valve by turning the blue handle (if fitted in this position) so it lies 90° to the direction of flow or main stop cock to the house.
- ii) Open the lowest hot tap in the system to relieve the system pressure.
- iii) Using a spanner unscrew the Pressure Reducing Cartridge and remove the moulded housing. The strainer will be removed with the cartridge.
- iv) Wash any particulate matter from the strainer under clean running water.
- v) Replace the strainer and screw the Pressure Reducing Valve Cartridge into the moulded housing.
- vi) Close hot tap, turn on isolating valve by turning handle so it lies parallel to the direction of flow. Check for leaks.

### Draining the MEGAFLO Eco Solar unit

**Switch off the electrical supply to the immersion heater(s) and shut down the boiler on indirect units.** Turn off the mains water supply to the MEGAFLO **Eco** Solar unit. Attach a hosepipe to the drain cock having sufficient length to take water to a suitable discharge point below the level of the unit, at least one metre below the unit is recommended. Open hot water tap nearest to the MEGAFLO **Eco** Solar to relieve the system pressure. Open drain cock. If water fails to drain from the MEGAFLO **Eco** Solar vent the unit by manually opening the Temperature / Pressure Relief Valve.

### Descaling immersion heater(s)

Open the cover(s) to the immersion heater housing(s) and disconnect wiring from immersion heater(s). Remove the thermostat capillaries, 2 or 4 depending on which unit being serviced. Unscrew immersion heater backnut(s) and remove immersion heater from the unit. A key spanner is supplied with the MEGAFLO **Eco** Solar unit for easy removal / tightening of the immersion heater(s). Over time the immersion heater gasket may become stuck to the mating surface. To break the seal insert a round shafted screwdriver into one of the pockets on the immersion heater and gently lever up and down.

Carefully remove any scale from the surface of the element(s). **DO NOT** use a sharp implement as damage to the element surface could be caused. Ensure sealing surfaces are clean and seals are undamaged, if in doubt fit a new gasket.

Replace immersion heater(s) ensuring the lower (right angled) element hangs vertically downwards towards the base of the unit. It may be helpful to support the immersion heater using a round shafted screwdriver inserted into one of the thermostat pockets whilst the backnut is tightened. Replace the thermostat(s) by carefully plugging the two male spade terminations into the corresponding terminations on the element.

Rewire the immersion heater(s) in accordance with Figure 12, p. 20 or Figure 15, p. 23. Close and secure terminal cover(s).

### Expansion Vessel Charge Pressure

Remove the dust cap from the top of the expansion vessel. Check the charge pressure using a tyre pressure gauge. The charge pressure (with the system depressurised) should be 0.3MPa (3 Bar). If it is lower than the required setting it should be re-charged using a tyre pump (schrader valve type). **DO NOT OVER CHARGE.** Re-check the pressure and when correct replace the dust cap.

### Refilling system

**DO NOT** switch on the immersion heater(s) or boiler until the system has been completely refilled.

Close the drain tap. With the hot tap open, turn on mains water supply. When water flows from the hot tap allow to flow for a short while to purge air and to flush through any disturbed particles. Close hot tap and then open successive hot taps in system to purge any air. The electrical supply can now be switched on.

### Benchmark™

On completion of any maintenance or service of the MEGAFLO **Eco** Solar, the Benchmark™ "Installation, Commissioning and Service Record" should be filled in to record the actions taken and the date the work was undertaken. (Section 3, page 34 & 35)

## Fault finding

The Fault Finding Chart (Table 6 below) will enable operational faults to be identified and their possible causes rectified. Any work carried out on the MEGAFLO **Eco** Solar unvented water heater and its associated controls **MUST** be carried out by a competent installer for unvented water heating systems. In case of doubt contact the MEGAFLO **Eco** Solar Service Division, (p. 40).

**Table 6 - Fault Finding Chart**

FAULT	POSSIBLE CAUSE	REMEDY
No hot water flow	1. Mains water supply off.	1. Check and open stop cock.
	2. Strainer blocked.	2. Turn off water supply. Remove strainer and clean (see page 28).
	3. Cold Water Combination Valve incorrectly fitted.	3. Check and refit as required.
Water from hot taps is cold	1. BACK UP immersion heater not switched on.	1. Check and switch on.
	2. BACK UP immersion heater thermal cut-out has operated	2. Check. Reset by pushing button. (Figure 16, page 23)
	3. INDIRECT programmer set to Central Heating only.	3. Check. Set to a Domestic Hot Water programme.
	4. INDIRECT boiler not working.	4. Check boiler operation. If fault is suspected consult boiler manufacturer's instructions.
	5. INDIRECT thermal cut-out has operated.	5. Check. Reset by pushing button on cut-out. Check operation of indirect thermostat (Figure 16, page 23).
	6. INDIRECT motorised valve not connected correctly.	6. Check wiring and/or plumbing connections to motorised valve (see Fig 13 and 14).
	7. SOLAR, Insufficient solar gain with no auxiliary heating switched.	7. Check auxiliary heat source is switched on and is controlled to provide heat gain if no solar output is available
Water discharges from Expansion Valve	1. INTERMITTENTLY Air volume has reduced within the expansion vessel	1. See Page 28 for details on how to test and recharge
	2. CONTINUALLY a. 3 Bar Pressure Reducing Valve not working correctly	2a. Check pressure from 3 Bar Pressure Reducing Valve. If greater than 3 bar replace Pressure Reducer cartridge.
	b. Expansion Valve seat damaged.	2b. Remove Expansion Relief cartridge from 8 Bar Pressure Relief valve and check seating. If necessary fit new cartridge
Water discharges from the T&P Relief valve intermittently	1. Air volume in Megaflo eco has reduced	1. See Page 38 (Operational Faults section for re-charging)
	2. 8 Bar expansion relief valve faulty	2. Check valve and replace if necessary
Water discharges from the T&P Relief valve continually	1. Thermal control failure NOTE water will be very hot.	1. Switch off power to immersion heater(s) and shut down boiler. DO NOT turn off water supply. When discharge stops check all thermal controls, replace if faulty.
Milky water	1. Oxygenated water.	1. Water from a pressurised system releases oxygen bubbles when flowing. The milkiness will disappear after a short while

## Servicing

### Important

- i) Servicing should only be carried by authorised BAXI CUSTOMER SUPPORT engineers, agents or by installers competent in the installation and maintenance of unvented water heating systems.
- ii) Any spare parts used MUST be authorised MEGAFLO **Eco** Solar parts.
- iii) Disconnect the electrical supply before removing any electrical equipment covers.
- iv) NEVER bypass any thermal controls or operate system without the necessary safety valves.
- v) Water contained in the MEGAFLO **Eco** Solar unit may be very hot, especially following a thermal control failure. Caution must be taken when drawing water from the unit.

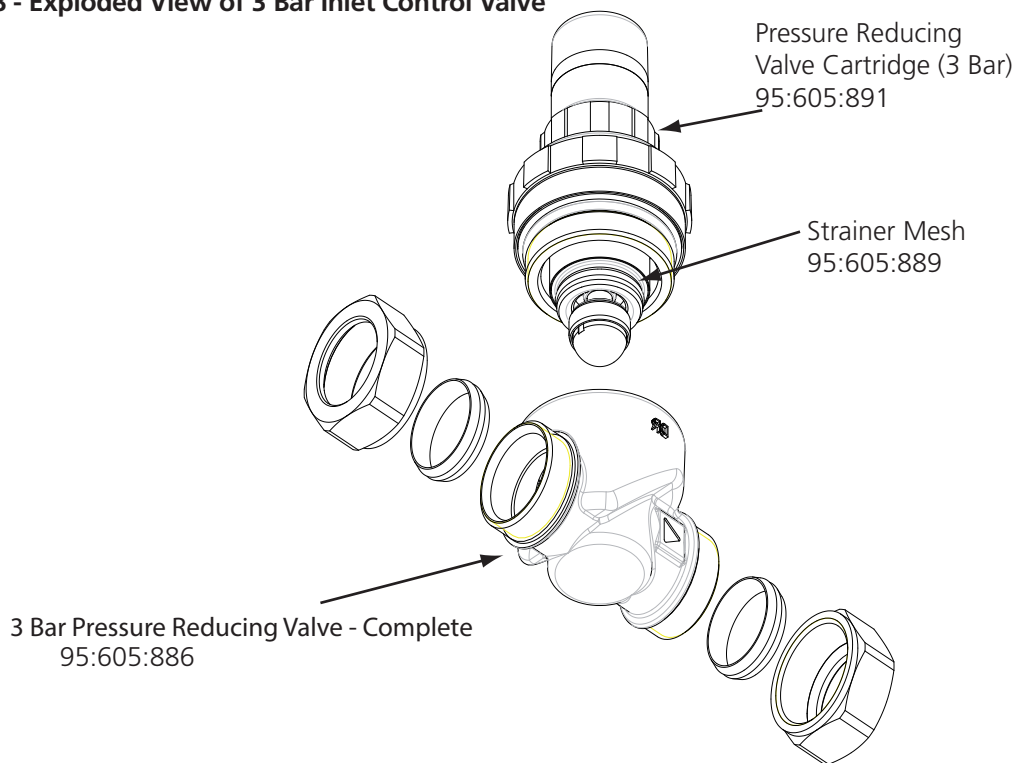
## Spares

### Spare parts

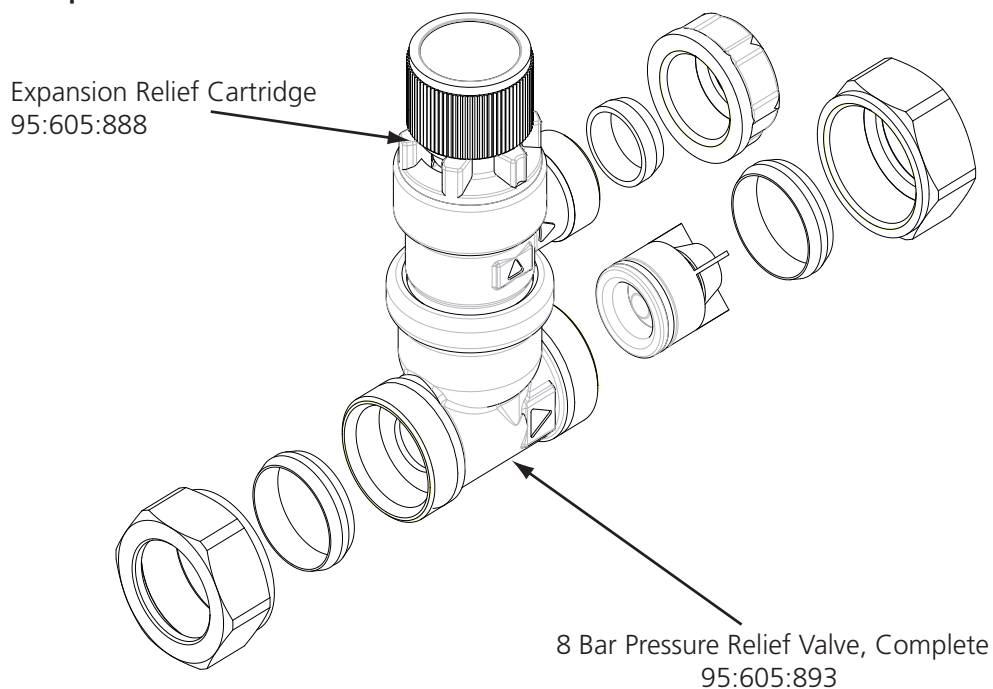
A full range of spare parts are available for the MEGAFLO **Eco** Solar range. Refer to the Technical Data label on the unit to identify the model installed and ensure the correct part is ordered.

Description	Part no.
Cold Water Inlet Control Kit - Complete	95:605:894
3 Bar Pressure Reducing Valve - Complete	95:605:886
8 Bar Pressure Relief Valve - Complete	90:605:893
Stopcock	95:605:885
Immersion Heater Backnut	95:607:940
Immersion Heater Gasket	95:611:822
Immersion Heater Key	95:607:861
Immersion Heater Blanking Plug	95:605:881
Titanium Immersion Heater - Upper	95:606:989
Titanium Immersion Heater - Lower	95:606:988
Direct Combined Thermostat / Thermal Cut-Out	95:612:717
Tundish	95:605:838
Direct Titanium Control Cover	95:614:119
Mounting Plate (Direct)	95:607:929
3 way Terminal Block (Direct)	95:607:932
3 way Terminal Block (Solar)	95:607:939
Insulation Set ( T & P Relief Valve )	95:607:922
Indirect Accessory Kit (210L, 250L & 300L)	95:970:554
Mounting Plate (Indirect)	95:607:931
Indirect Control Cover	95:614:118
6 way Terminal Block	95:607:933
2 Port Motorised Valve (22mm Connections )	95:605:819
Incoloy Immersion Heater - Lower	95:606:984
Titanium Immersion Heater - Upper	95:606:985
Indirect Combined Thermostat and Cut-out	95:612:716
Temperature / Pressure Relief Valve	95:605:810
Set of Compression Nuts and Olives	95:607:838
Drain Valve 1/4 Turn	95:605:051
Mounting Plate, Solar	95:607:937
1/2" BSP Sensor Pocket Assembly Short	95:607:938
Twin Solar Temperature Pocket	95:606:990
Expansion Vessel (24 Litre)	95:607:612
Solar Thermal Cut-Out	95:612:698
Swept tee (secondary return)	95:605:812

**Figure 18 - Exploded View of 3 Bar Inlet Control Valve**



**Figure 19 - Exploded View of 8 Bar Pressure Relief Valve**



**Figure 20 - Exploded View of Stopcock**

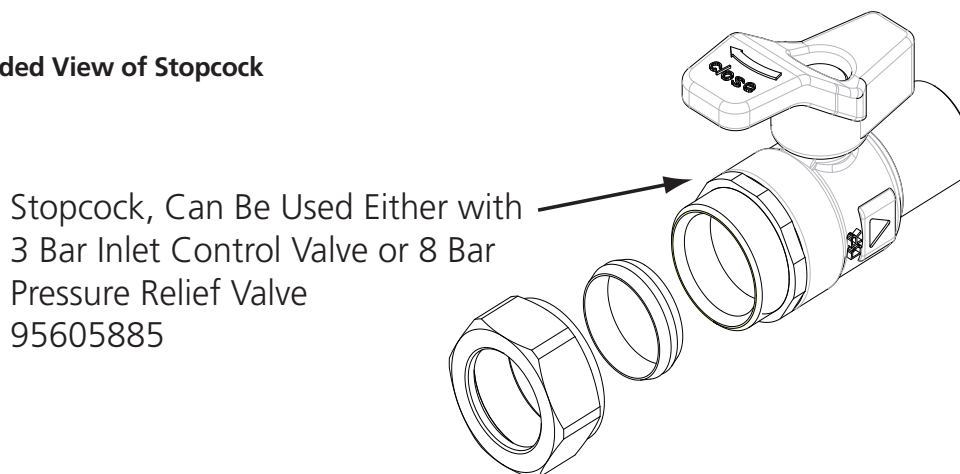


Figure 21: Indirect Exploded View

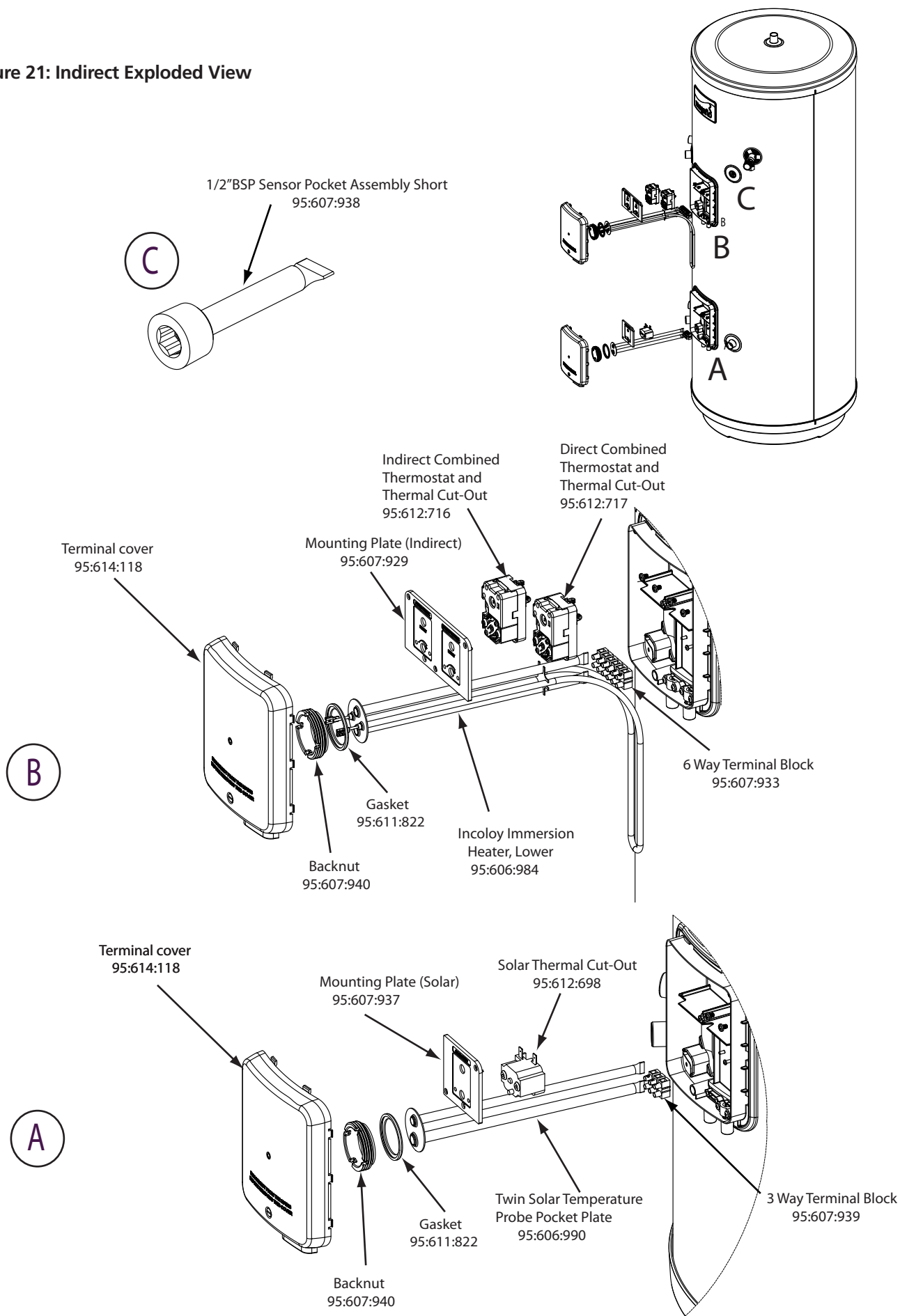
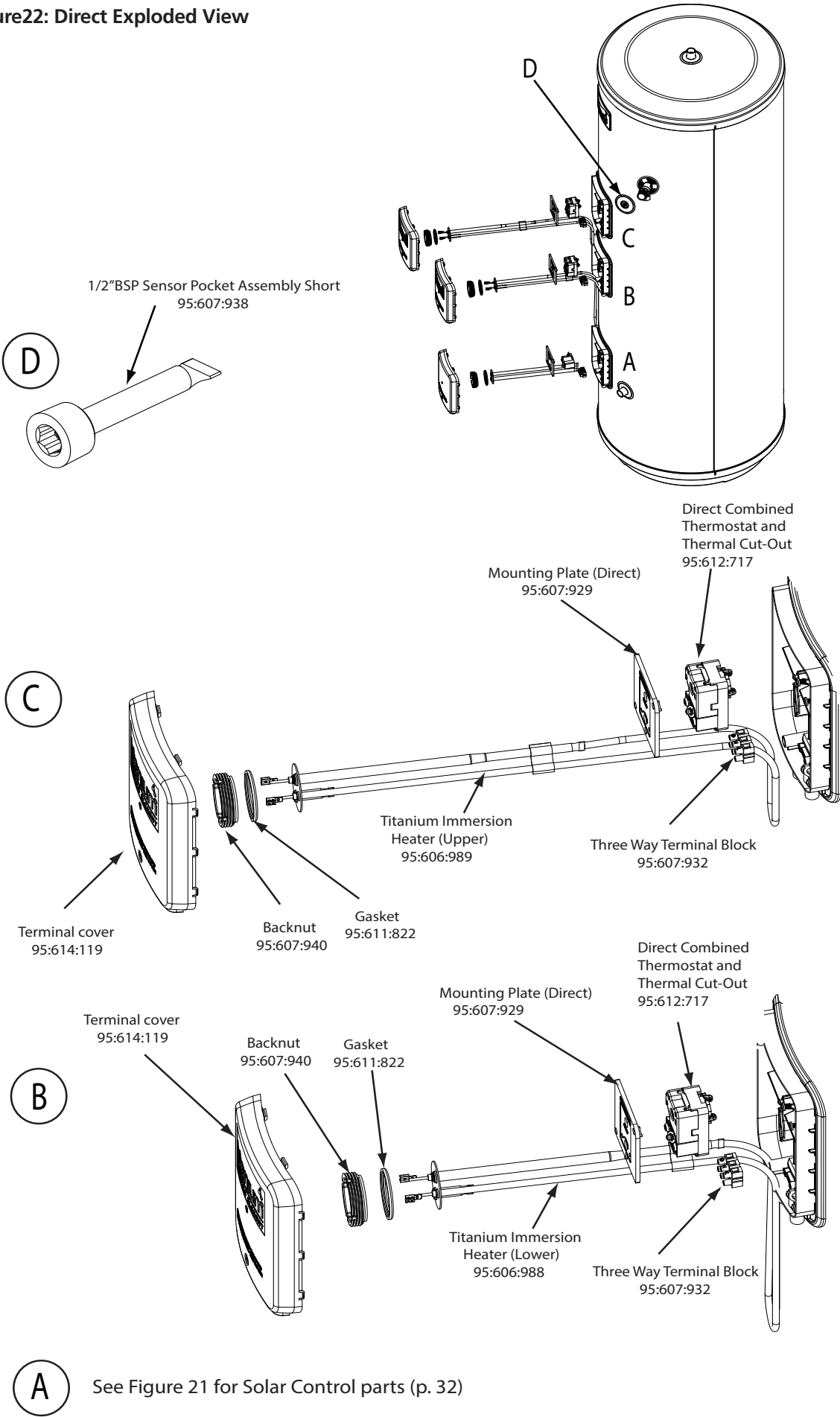


Figure22: Direct Exploded View



# MAINS PRESSURE HOT WATER STORAGE SYSTEM COMMISSIONING CHECKLIST

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.

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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.

<b>SERVICE 1</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 2</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 3</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 4</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 5</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 6</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 7</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 8</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 9</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

<b>SERVICE 10</b>	Date
Engineer Name	
Company Name	
Telephone Number	
Comments	
Signature	

## Spares Stockists

Advanced Water Co.Ltd.  
Unit D5 Enterprise Way  
Vale Park, Evesham  
Worcs WR11 1GS  
Tel: 01386 760066  
Fax: 01386 760077

Electric Water Heating Co.  
2 Horsecroft Place  
Pinnacles  
Harlow  
Essex CM19 5BT  
Tel: 0845 0553811  
E-Mail: [sales@ewh.co.uk](mailto:sales@ewh.co.uk)

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

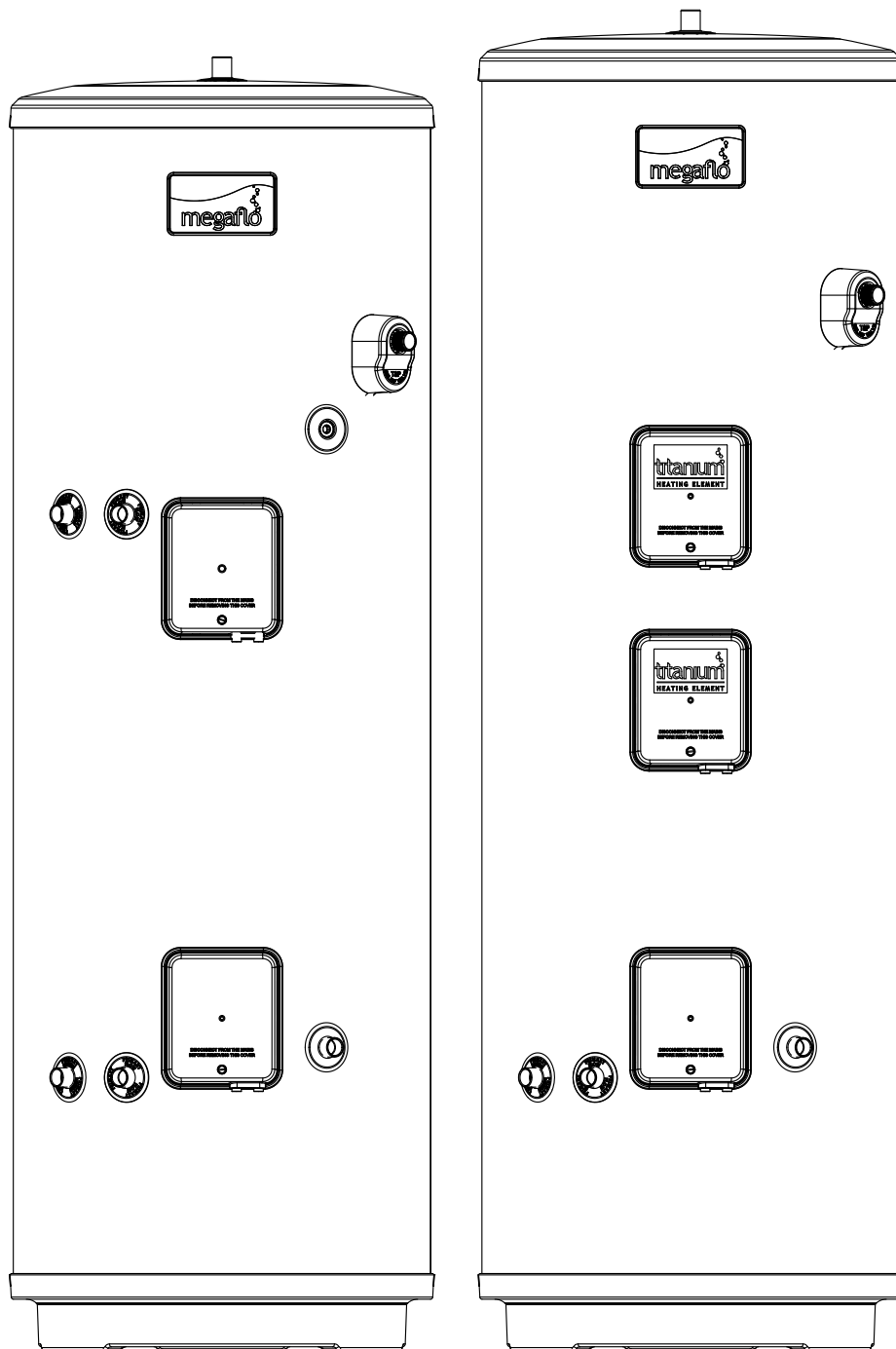
Parts Center  
Tel: 0845 270 9800  
[www.partscenter.co.uk](http://www.partscenter.co.uk)

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

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

William Wilson Ltd  
Unit 3A  
780 South Street  
Whiteinch  
Glasgow G14 0SY  
Tel: 0141 434 1530

Alternatively contact your local supplying merchant or wholesale branch



- User Instructions
- Guarantee
- Customer Service

## IMPORTANT LEGAL REQUIREMENT FOR INSTALLERS

MEGAFLO Eco Solar, a trading name of Heatrae Sadia, a licensed member of the Benchmark™ Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance. is managed and promoted by the Heating and Hotwater Industry Council. For more information visit [www.centralheating.co.uk](http://www.centralheating.co.uk). Please ensure that the installer has fully completed the Checklist on Page 34 of this manual and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales). All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Checklist. This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Checklist after each service. The Checklist may be required in the event of any warranty work.

## User Instructions

### Warnings

IF WATER DISCHARGES FROM THE TEMPERATURE / PRESSURE RELIEF VALVE ON THE MEGAFLO Eco SOLAR UNIT REFER TO PAGE 29 (TABLE 6) FIRST FOR GUIDANCE. IF THIS DOES NOT RECTIFY THE FAULT SWITCH OFF ELECTRICAL SUPPLY TO THE IMMERSION HEATER(S) [ DIRECT UNITS ] OR SHUT DOWN THE BOILER [ INDIRECT UNITS ]. DO NOT TURN OFF THE WATER SUPPLY. CONTACT A COMPETENT INSTALLER FOR UNVENTED WATER HEATERS TO CHECK THE SYSTEM.

DO NOT TAMPER WITH ANY OF THE SAFETY VALVES FITTED TO THE MEGAFLO Eco SOLAR SYSTEM, IF A FAULT IS SUSPECTED CONTACT A COMPETENT INSTALLER.

### SOLAR PRIMARY CIRCUIT

Temperature control when heating by the solar primary circuit will be controlled by the external solar differential temperature controller. The controller should be set to give a water storage temperature of approx. 60°C, however it can be set to other temperatures. This will usually have been done during installation. A maximum of 70°C is recommended to avoid nuisance operation of the thermal cut-outs fitted to the unit. Adjustment is made at the solar differential temperature controller, refer to the manufacturer's instructions for details of how to make any adjustments.

Changes to the operating temperature differential set points can affect the efficiency of the operation of the solar heating circuit, it is recommended that any changes made are carried out by a competent solar water heating installation engineer.

### Immersion Heaters

A combined thermostat and thermal cut-out is provided for each immersion heater. The thermostat is factory set to give a water storage temperature of approx. 60°C, however it can be set to control between 12°C and 68°C. This will usually have been done during installation. Adjustments can only be made by opening the terminal cover(s), **DO NOT remove the cover(s) without first switching off the electrical supply.** The temperature adjustment is made by inserting a flat bladed screwdriver in the slot in the disc on top of the thermostat and rotating (see Figure 16, p. 23).

**If in any doubt consult a competent electrician.**

**Indirect units** (CL models) are fitted with an Indirect Thermostat which controls a 2-port motorised valve and hence the temperature of the water in the MEGAFLO Eco Solar unit. The thermostat is factory set to give a water storage temperature of approx. 60°C, however it can be set to control between 12°C and 68°C, this will usually have been done during installation. Adjustments can only be made by opening the terminal cover. **DO NOT REMOVE THE COVER WITHOUT FIRST SWITCHING OFF THE ELECTRICAL SUPPLY.** Temperature adjustment is made by inserting a flat bladed screwdriver in the adjustment knob located on the front of the thermostat mounting bracket (see Figure 16, p. 23 ) and rotating. At the minimum position the temperature will be approx. 12°C.

**If in any doubt consult a competent electrician.**

### Flow Performance

When initially opening hot outlets a small surge in flow may be noticed as pressures stabilise. This is quite normal with unvented systems and does not indicate a fault. In some areas a cloudiness may be noticed in the hot water. This is due to aeration of the water, is quite normal and will quickly clear.

### Operational Faults

Operational faults and their possible causes are detailed in Table 6, p. 29 . It is recommended that faults should be checked by a competent installer.

The air volume within the expansion vessel will periodically require re-charging to ensure expanded water is accommodated within the hot water system. A discharge of water INTERMITTENTLY from the Expansion Valve will indicate the air volume in the Expansion Vessel has reduced to a point where it can no longer accommodate the water expansion.

If after following the above actions water still discharges from the Expansion Relief Valve further advice should be sought from a competent installer or the BAXI CUSTOMER SUPPORT on Tel: 0844 871 1535.

## Lifetime Warranty\*

The MEGAFLO Lifetime Warranty provides unrivalled levels of customer support and peace of mind in the unlikely event that a problem arises from a manufacturing defect. It is supported by a large nationwide team of company-employed field-based engineers and our own call centre, which is open 363 days a year.

This Lifetime Warranty applies in relation to the following MEGAFLO products:

- MEGAFLO cylinders
- MEGAFLO calorifiers

### The MEGAFLO Domestic Lifetime\* Warranty

The MEGAFLO Domestic Lifetime\* Warranty covers MEGAFLO cylinders installed in domestic properties† against corrosion for the lifetime\* of the owner.

The cold water combination valve (and expansion vessel, where supplied) is covered by a five year warranty from the date of purchase of the MEGAFLO product that includes both parts and labour. All other components, including any other valves, fittings and controls are covered by a two year warranty from the date of purchase of the MEGAFLO product that includes both parts and labour.

In the case of the Megaflo Systemready, Megaflo Systemfit and Megaflo SolaReady units the supplied pumps and motorized valves ( where fitted ) are also covered by this two year warranty.

Incalloy immersion heaters ( where fitted ) are covered by a two year warranty.

Titanium Immersion heaters ( where fitted ) are covered by a five year warranty.

### The MEGAFLO Commercial Lifetime\* Warranty

The MEGAFLO Commercial Lifetime Warranty covers MEGAFLO cylinders and calorifiers installed in non-domestic properties^ against corrosion for a period of 30 years from the date of purchase.

All other components, including valves, expansion vessels, immersion heaters, fittings and controls are covered by a two year warranty from the date of purchase of the MEGAFLO product that includes both parts and labour.

### Accessories

Shower heat recovery units are covered against manufacturing defects for a period of two years. Flat plate solar collectors are covered against manufacturing defects for a period of 10 years from the date of purchase of the MEGAFLO product. Evacuated tube solar collectors are covered against manufacturing defects for a period of five years from the date of purchase of the MEGAFLO product. All other solar accessories are covered against manufacturing defects for a period of two years from the date of purchase of the MEGAFLO product.

### Outside of the UK

These warranties are valid for installations within the United Kingdom.

For installation in the Republic of Ireland please contact Potterton Myson (Ireland) Limited on 00353 (0) 1 4590870

For installations outside of the United Kingdom and the Republic of Ireland, please telephone MEGAFLO Export on +44 1603 420271 for further details of the warranty terms and conditions applicable.

These guarantees are valid provided that:

- The MEGAFLO product has been installed by a competent installer in accordance with the instructions contained in the installation instructions and in compliance with all relevant laws, guidance, codes of practice and regulations in force at the time of installation.
- The MEGAFLO product has not been modified or tampered with in any way, other than by a Heatrae Sadia or Baxi Customer Support approved engineer.
- The MEGAFLO product has not been subject to damage by scale.
- The MEGAFLO product and any part or parts of the MEGAFLO product (whether factory fitted or otherwise) have not been repaired or replaced other than by a Baxi Customer Support approved engineer and any replacement parts used on

the MEGAFLO product are authorised MEGAFLO spare parts.

- The factory fitted temperature and pressure relief valve have not been tampered with or removed.
- The MEGAFLO product has not been subject to misuse or neglect.
- The MEGAFLO product has only been used for the storage of wholesome water. Should another substance be put through the product, the warranty will be invalid unless it is part of a disinfectant procedure carried out in accordance with BS EN 806.
- The MEGAFLO product has not been subjected to frost or freezing temperatures (except for solar collectors which are designed for external installation).
- The Benchmark™ commissioning checklist service record, included in the MEGAFLO installation instructions has been completed.
- Regular maintenance has been carried out by a competent person/, an approved engineer from Heatrae Sadia or any other part of the Baxi Group Baxi Customer Support approved engineer in accordance with the requirements set out in the maintenance section of the installation instructions.
- Access is available, at reasonable times and upon reasonable notice, to the MEGAFLO product to allow for any inspection repair or replacement.
- The product is registered within 60 days of purchase. This can be done by telephone, online or by using the registration form provided with the product.
- Evidence of purchase (for example a receipt or delivery note) and date of supply is submitted when making a claim.
- The MEGAFLO product has not been affected by any cause beyond our reasonable control including, without limitation: an act of God, explosion, flood, fire or accident; war or civil disturbance; strike, industrial action or stoppages of work; any form of government intervention; a third party act or omission including theft or malicious damage; failure by you to give us a correct delivery address or notify us of any change of address.

If any of the following situations occur, the MEGAFLO Lifetime Warranty\* will not apply:

- Any wilful or accidental damage caused by your negligence
- Damage caused as a result of scale.
- Installation not in line with the installer and user manuals provided,
- Failure to comply with installation instructions (whether oral or in writing),
- Misuse of the MEGAFLO product or alteration of the MEGAFLO product not in accordance with the requirements set out above.
- Defects which are not reported to us outside of the warranty period on 03444 8711535 or [customer.support@baxi.co.uk](mailto:customer.support@baxi.co.uk)
- Any third party repair or replacement costs unless those costs have been agreed and authorised by Baxi Customer Support or Heatrae Sadia in writing prior to incurring the costs.
- In relation to the MEGAFLO Commercial Lifetime Warranty only, we will not be liable for any indirect and consequential losses and any loss of earnings, loss of business, or losses in relation to stress and inconvenience, howsoever caused.

## Claims

Defects should be reported to us as soon as you are aware of them. Please report defect to us by contacting 03444 8711535 or [customer.support@baxi.co.uk](mailto:customer.support@baxi.co.uk).

## Notes

We are only able to carry out warranty repair/replacement to MEGAFLO solar collectors which have safe access and that meet current Health & Safety working at heights requirements. The customer will cover the cost of any safety equipment including but limited to scaffolding and lifting equipment that is required to meet this standard and will appoint a contractor to carry this work out.

Heatrae Sadia accepts no liability for any third party damage.

These warranties do not affect your statutory rights and remedies in relation to the MEGAFLO products.

## Annual service

Annual services are available from Baxi Customer Support, the service division of Heatrae Sadia.

Please contact Baxi Customer Support on 0844 871 1535 for details.

\*In domestic† properties, lifetime is the period during which the first owner of the MEGAFLO or new build home continues to own the property. Should the property be sold, the new owner and any subsequent owners will receive a 30 year warranty from the date the original owner purchased the MEGAFLO or new home with a MEGAFLO installed. In non-domestic properties lifetime is a period of 30 years from the date of purchase by the original owner and is transferable to any new owner of the property.

†Domestic is any premises not being, or ever having been, wholly or partly utilised for business purposes.

^Non-domestic premises are any premises other than those defined as Domestic.†

All MEGAFLO warranties are conditional on the installation being carried out in accordance with the installation instructions supplied with the product. These warranties do not affect your statutory rights. Full terms and conditions of these warranty packages are available on request or via [www.heatraesadia.com/megaflo](http://www.heatraesadia.com/megaflo)

Heatrae Sadia\*, Hurricane Way, Norwich, Norfolk, NR6 6EA

MEGAFLO may introduce modifications to their products from time to time. Consequentially the details given in this brochure are subject to alteration without notice.

## Contacts

Specification Advice Hotline

T: 01603 420220

F: 01603 420229

E: [specifier@heatraesadia.com](mailto:specifier@heatraesadia.com)

[www.heatraesadia.com](http://www.heatraesadia.com)

\* Heatrae Sadia is a trading name of Baxi Heating UK Limited, Brooks House, Coventry Road, Warwick, CV34 4LL

July 2015



## Customer service

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Telephone:	MegaFlo
0344 8711535	Hurricane Way
Facsimile:	Norwich
0344 8711528	Norfolk
E-mail:	NR6 6EA
megafloservice@heateam.co.uk	

## Important notice to installations outside of the UK.

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References to legislation, legal requirements, regulations, building regulations benchmark, spares stockists, guarantees and warranty are **ONLY APPLICABLE WITHIN THE UK.**

For local legislation, legal requirements, regulations, building regulations outside of the UK, contact your local Authority.

For spares stockists, guarantees and warranty outside the UK, contact your local supplier or,

**Export Sales**

**T: +44 (0)1603 420271**

**F: +44 (0)1603 420199**

**E: export.sales@heatraesadia.com**

**BY HEATRAESADIA**