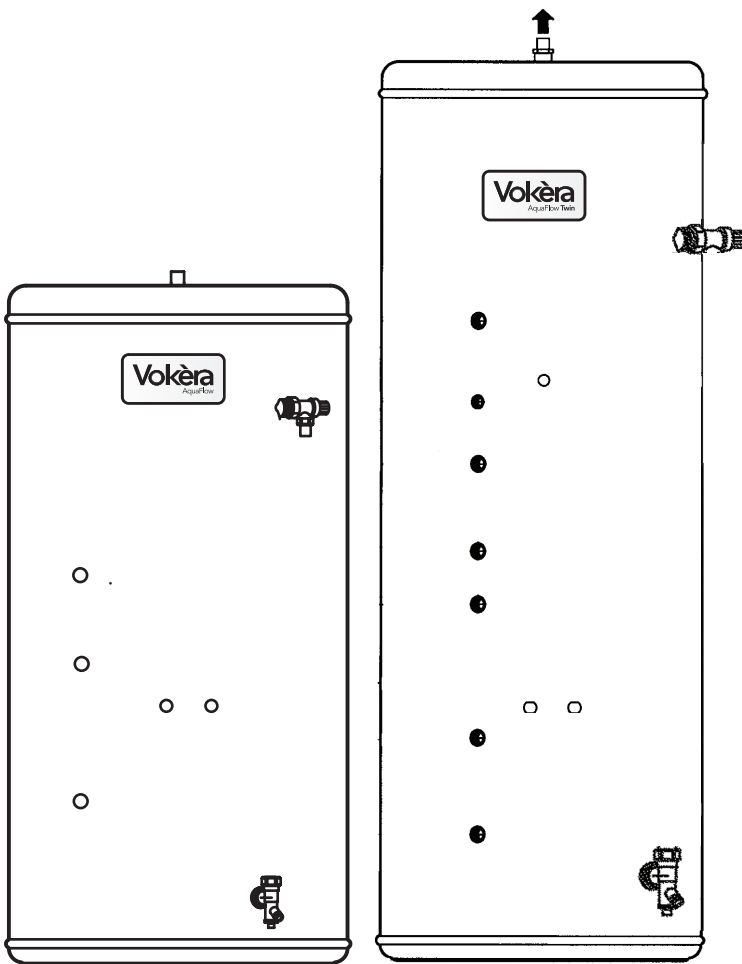


**AquaFlow** Single coil water cylinder

**AquaFlow Twin** Twin coil water cylinder



## Installation & Servicing Instructions



**THESE INSTRUCTIONS  
TO BE RETAINED  
BY USER**



Vokèra is a licensed member of the Benchmark scheme which aims to improve the standards of installation and commissioning of domestic hot water systems in the UK.

# Aquaflow 150 - 200 - 250

# AquaFlow Twin 210 - 250

00142046-00

## INSTALLATION MANUAL

*This manual gives detailed advice for installation and should be read carefully prior to fitting any unvented unit. This Vokera Aquaflow cylinder must be installed by a competent person and be installed in compliance with the Vokera Aquaflow Installation and Maintenance Instructions, all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the date of installation.*

### Components supplied with the unit for site fitting

(See also page 2/3 for component list)

- \* Multibloc valve, includes pressure reducing valve, line strainer, balanced cold water take off, **(for shower or bidet only)** check and expansion valve.
- \* Tundish.
- \* 1/2" F x 15 x 15 tee piece.
- \* Flexible hose.
- \* 3/4" x 22 mm Elbow / Drain Cock
- \* Commissioning valve, 1/2" BSP male.
- \* Motorized valve.
- \* Expansion vessel

### Components factory fitted

- \* Immersion heater(s).
- \* Thermostats / thermal cut-out.
- \* Temperature and pressure relief valve.

### Installation details

The Vokera unvented unit is designed for use with supply pressure up to 16 bar. For pressures over 16 bar an additional pressure reducing valve must be fitted in the supply pipe to the unit. Wall mounting brackets are available for Vokera Aquaflow unvented units 120-200 litres capacity.

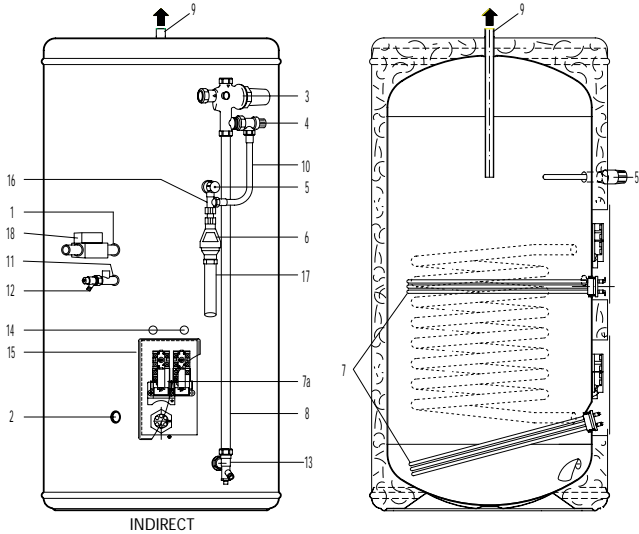
### Health and Safety

Manual Handling Operations Regulations 1992 defines manual handling as: "any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force" The Regulations set no specific requirements such as weight limits. However common sense still has to be used based on an ergonomic approach for each individual

**DIMENSION AND WEIGHTS TABLE 1**

PRODUCT REF.	150	200	250	210T	250T
HEIGHT	900	1150	1600	1400	1600
DIAMETER	580	580	580	580	580
WEIGHT EMPTY	40	48	64	60	64
COIL RATING KW	12	26	26		
UPPER COIL				12	12
LOWER COIL				12	26

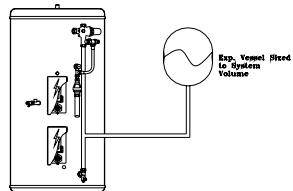
# General Layout Fig: 1



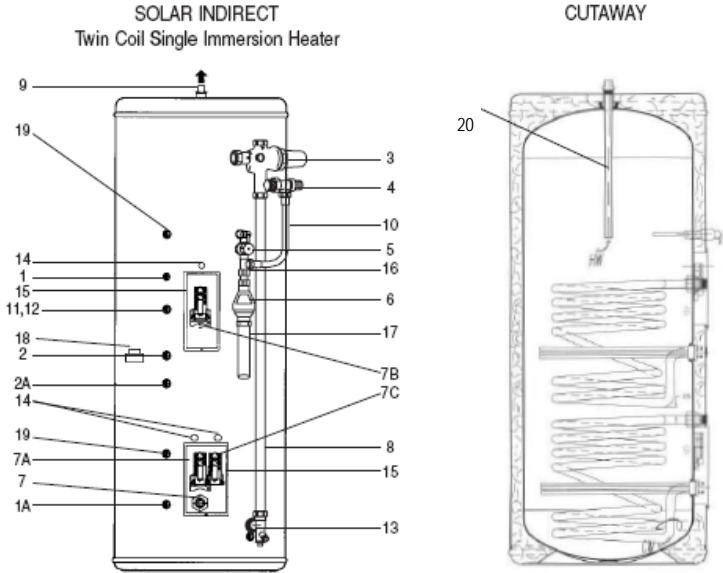
KEY	Part No	KEY	Part No
1 Flow ¼" BSPF		10 Flexible Hose	202108
2 Return ¼" BSPF		11 Secondary Return ½" BSPF Fit ½" Fx ½" Mx 15mm Tee piece (Not supplied)	
3 Pressure Reducing Valve Includes Item 4	510503	12 Commissioning Valve / Fitting (½" MI Drain Cock)	250440
4 Check and Expansion Valve	510505	13 Elbow / Drain Cock	250445
5 Temperature and Pressure Relief Valve	550803	14 Cable Entry	
6 Tundish	219002	15 Electrical Box	
7 Immersion Heater	71255	16 Tee Piece	250006
7A Thermostat Immersion Heater Thermostat Cylinder	80400 80511	17 Discharge Pipe (Not supplied)	
8 Cold Feed Tube (Not Supplied See Table 2)		18 Motorised Valve Not Factory Fitted)	92000
9 Hot Water Outlet 22mm			

TABLE 2

Series	Length of tube (ø22) mm
120	480 mm
150	585 mm
200	760 mm



# General Layout Fig: 1A



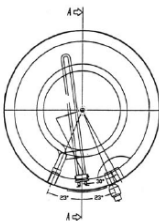
## KEY

## Part No

## KEY

## Part No

1	Return 3/4" BSP		10	Flexible Hose	202108
1A	Return 3/4" BSP				
2	Flow 3/4" BSP		11	Secondary Return 1/2" BSPF	
2A	Flow 3/4" BSP			Fit 1/2" Fx 1/2" Mx 15mm Tee piece (Not supplied)	
3	Pressure Reducing Valve Includes Item 4	510503	12	Commissioning Valve / Fitting (1/2" MI Drain Cock)	250440
4	Check and Expansion Valve	510505	13	Elbow / Drain Cock	250445
5	Temperature and Pressure Relief Valve	550803	14	Cable Entry	
6	Tundish	219002	15	Electrical Box	
7	Immersion Heater	71255	16	Tee Piece	250006
7A	Immersion Heater Thermostat	80020			
7B	Thermostat Boiler	80030	17	Discharge Pipe (Not supplied)	
7C	Thermostat Solar	80030			
8	Cold Feed Tube (Not Supplied See Table 2)		18	Motorised Valve Not Factory Fitted)	92000
9	Hot Water Outlet 22mm		19	Solar Sensor Bosses	
			20	Dip Pipe (removable)	



**TABLE 2**

Series	Length of tube (ø22) mm
210	955 mm
250	1195 mm
330	1670 mm

## COLD WATER SUPPLY

1. To obtain the best performance from your Aquaflow unvented system it is advisable to feed the unit with an uninterrupted supply.
2. Locate the water heater in a suitable position to facilitate the installation of the cold water supply, discharge fittings and pipework. Also take into account access to the immersion heaters and the commissioning valve.
3. Fit the combined male elbow / drain cock to cold supply point (13), so that the compression fitting is vertical.
4. Fit the commissioning valve (12) to the commissioning fitting.
5. Fit both ½" male solar sensor pockets to the Solar Sensor bosses (19).
6. Fit the female outlet of the tee piece to the temperature and pressure relief valve (5) with the horizontal connection facing right at approx. 45°.
7. Fit the tundish (6) to the tee piece using a short length of 15 mm copper tube.
8. Fit the length of copper tube 22mm specified in Table 2 to the cold feed elbow (see 3 above).
9. Fit the pressure reducing valve (3) to the top of the copper tube (see 7 above), so that the black knob is facing right.
10. Connect the flexible hose to the 1/2" outlet of the expansion valve (4) and the horizontal outlet of the tee piece (see 5 above). Discard compression nut & ring.
11. If a balanced mains pressure cold water supply is required to a **shower or bidet (over rim type only, ascending spray type requires type AA,AB or AD air gap)**, remove the blanking cap from the pressure reducing valve (3) and connect to the shower or bidet cold supply. *(Major shower manufacturers advise fitting a mini expansion vessel in the balanced cold supply pipework to accommodate thermal expansion and prevent tightening of shower controls) Using the balanced cold connection to feed bath taps can reduce the flow available to the unvented cylinder.*
12. Before connecting the cold supply, flush the cold supply pipework of all flux and debris.
13. Connect the cold supply to the pressure reduction valve (Multibloc) (3).

### Hot water supply

14. Connect the hot water supply pipe to the outlet (9). Ensure connection is water tight.

### Secondary return

15. A secondary return facility is provided on all units. Fit a ½" F x ½" M x 15mm tee piece between the commissioning valve (12) and the commissioning fitting. See also figure 4 on page 16.

### Discharge pipe

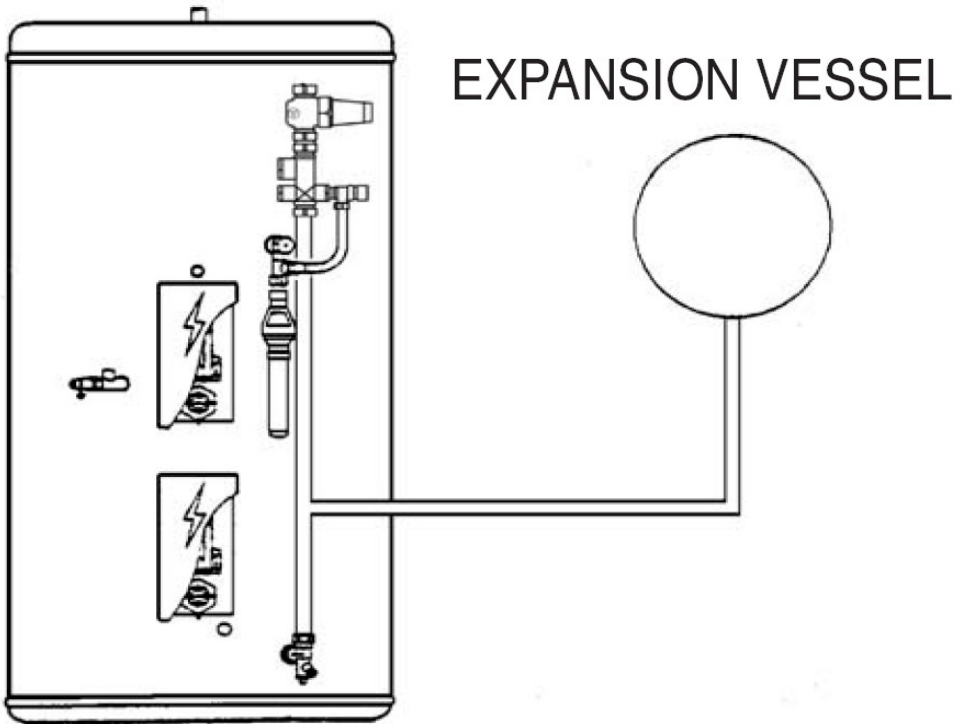
16. Connect the discharge pipe from the tundish (6.) This must have a continuous fall and be fitted in accordance with The Building Regulations (see pages 5 and 12).

## Primary flow & return and motorised valve

17. The boiler primary flow and return connections should be made to the unit. The motorised valve must be fitted into the primary flow. The primary flow and return fittings are 3/4" BSP female.
18. For electrical connection of the motorised valve and immersion heater, please read Electrical Installation Instructions. (Pages 7 – 11)

## Expansion Vessel

19. Connect the expansion vessel to the cylinder as shown in the diagram below. The vessel should be charged/pressurised to the same pressure as the PRV (Pressure Reducing Valve).



## Solar Primaries

20. The Solar flow and return connections should be made to the lower coil connections. Temperature control from the Solar circuit is achieved using a differential solar controller. The solar pump must be wired in series through the thermal cut-out on the Aquaflow cylinder (see figure3 page 12).
21. If the solar primary circuit contains a mechanical shut-off device, ensure that a non return valve in the circuit prevents thermal siphoning if the circulation is stopped. Care should be

taken to ensure the device is suitable for temperatures and fluids that may be present in a solar-thermal system.

22. Temperature sensors for the cylinder provided with the differential controller should be inserted into the pockets provided see figure 1A.

## COMMISSIONING

### Filling up

1. Open one hot water tap.
2. Close the commissioning valve (12).
3. Open the cold water supply valve.
4. When water flows from the open hot tap allow to flow to expel air from the system pipe work.
5. Open each hot water tap in turn to expel air from the system pipe work.
6. Check for leaks.
7. Manually operate Temperature and Pressure Relief Valve (5) to ensure free water flow through discharge pipe.(Turn knob to left.)

### Draining

Switch off the electrical power off (Important to avoid damage to element). Isolate boiler from Aquaflow unit. Turn off the cold water supply valve. Open hot water tap. Open drain (13). The unit will drain.

## SAFETY AND MAINTAINANCE

### Safety Cut-out

1. The safety cut-out operates if:
  - a. Wiring is incorrect.
  - b. The immersion heater thermostat or cylinder thermostat fails.
  - c. Thermostat is set too high.
2. Remember before resetting the safety cut-out or altering the thermostat setting, isolate electrical supply to the unit prior to removal of the electrical box lid.
3. Reduce thermostat setting and press the reset button. After adjustments are completed, ensure the lid to the electrical box is replaced correctly and the retaining screw is fitted.
4. If still out of operation, contact installer.

### Cold or tepid water discharge from tundish

1. Turn off the electrical supply to the immersion heaters.
2. Turn off cold water supply valve.
3. Open a hot tap.
4. Recharge the expansion vessel to the setting of the pressure reducing valve.
5. Close all hot taps.
6. Open mains supply valve

7. Open and close a hot tap to ensure continuity of supply
8. Turn on electrical supply to the immersion heaters.

### **Hot water discharge from tundish**

This indicates a malfunction of a thermal cut-out, operating thermostat or the combined temperature and pressure relief valve. Turn off the electrical supply to the immersion heater and also isolate an indirect unit from the boiler. Contact the installer or competent engineer.

## **INSTALLATION AND SERVICING INSTRUCTIONS**

### **Cold water inlet control (Multibloc) See Page 2/3 Items 3 - 4**

This combination consists of a pressure reducing valve with integral strainer, check valve and expansion valve with stainless steel seat. The pressure settings are set and locked in the factory and are shown on the top of each valve. For optimum performance the following installation instructions should be complied with.

### **Installation**

1. Cold water supply to be 22 mm nominal size.
2. Flush supply pipework before connection to remove all flux and debris prior to fitting the inlet controls. Failure to do this may result in irreparable damage to the controls and will invalidate the warranty.
3. The "MULTIBLOC" can be fitted in any orientation to suit the installation as long as it is fitted in the correct flow direction. Check the flow arrows on the side of the body.
4. The expansion valve should be either horizontal or upright - if fitted inverted, debris may be deposited on the seat and cause fouling of the seat when the valve operates. Check direction of flow arrows.
5. The black plastic plugs in the body are pressure gauge connections to enable pressure monitoring to be carried out, should the system develop a fault. It is recommended that these be accessible (the pressure reducing valve has two - only one need be accessible).
6. Expansion relief drain pipework must be connected to a safe visible discharge point via a tundish and the pipework must have a continuous fall.
7. The pressure reducing valve has two outlets, the second one is for a balanced cold water supply, to a shower or a bidet (**over rim type only, ascending spray type requires type AA,AB or AD air gap**) (*Major shower manufacturers advise fitting a mini expansion vessel in the balanced cold supply pipework to accommodate thermal expansion and prevent tightening of shower controls*) **Using the balanced cold connection to feed bath taps can reduce the flow available to the unvented cylinder.** The balanced cold supply is blanked off.

**NOTE:** If the unit has been commissioned and is to be unused for more than 8 weeks it is advisable to turn off the cold supply and draw off approximately 5 litre of water through a hot tap. **NB** The cold supply must be opened prior to use.

**The Benchmark Log Book enclosed with the cylinder should be completed after commissioning the system and handed to the customer for future reference.**



## MAINTENANCE

Under normal circumstances the "MULTIBLOC" combination control valve should not require any maintenance. However, annual inspection and / or cleaning of the integral line strainer, pressure reducing valve, cartridge, expansion relief valve cartridge and seating may be necessary depending on local water conditions.

### Pressure reducing valve

1. Isolate cold water supply.
2. Unscrew the retaining nut of the valve. The complete operating mechanism, including the strainer can be removed.
3. Clean the filter mesh and the cartridge under running water.
4. Replace cartridge ensuring that strainer is correctly located and reassemble the unit. Pressure Reducing Valve cartridge and strainer Part No. 510 501 2.1 Bar.



### Spare Parts

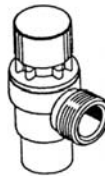
Pressure reducing valve  
Cartridge and strainer  
Part No. 510 501  
2.1Bar

### Expansion relief cartridge

1. Isolate cold water supply.
2. Unscrew blue expansion relief headwork from valve body.
3. Clean valve seat face and seating - do not scratch or damage either seal face or seating.
4. Refit in reverse order. Do not overtighten. Expansion valve cartridge and seat Part No. 214009 8.0 Bar. Complete Expansion Valve Part No. 510 505 8.0 Bar.



Expansion valve  
(Cartridge)  
Part No.  
8.0 Bar 214009  
6.0 Bar 214005  
4.0 Bar 214046



Expansion valve  
Part No. 510 505  
8.0Bar

### Tundish

Install the Tundish in a vertical position within a maximum of 500 mm from the Temperature and Pressure Relief Valve drain connection. Ensure the expansion relief pipework discharges through the tundish. Tundish pipework must be 22 mm with a minimum vertical length of 300 mm below tundish. Maximum permitted length of 22 mm pipework is 9 m. Each bend or elbow is equivalent to 0.8 m of pipework. All pipework must have continuous fall and discharge in a safe, visible position. If any doubt, refer to *Building Regulation G3*.

## Immersion heaters

All units are fitted with one immersion heater which is located behind the electrical box.

## Indirect Units Upper Coil

### Motorised valve

To comply with regulations governing the installation of indirect unvented cylinders, a motorised valve must be fitted in the primary flow. Your AquafLOW unit has been supplied with a two port motorised valve, which will act as a positive energy cut-out should the safety cut-out operate. The motorised valve will also control the temperature of the domestic stored water via the cylinder thermostat, which is located in the electrical box. The unit should be installed on an "S" or "Y" plan system. Cylinder temperature control can also be achieved via the solar thermostat when the boiler is not operational.

**Please follow the instructions carefully.** All electrical connections must conform to current IEE wiring regulations. The working thermostat which controls the temperature of the domestic hot water (see fig. 2/2A/2B/2C) is adjustable between 45°C - 75°C. A safety cut out is also incorporated within the thermostat and will operate at 85°C ± 3°C. Should the safety cut out be brought into operation, the motorised valve will operate and close down the primary flow to the cylinder. To reset the safety cut-out and the motorised valve the reset button must be pressed in (see fig. 2/2A/2B/2C). If using a 6-wire 28mm or 1" BSP V4043H on either circuit the white wire is not needed and must be made electrically safe.

## Lower (Solar) coil

Heat sources to unvented hot water cylinders must be controlled by a thermal cut-out as well as a thermostat. The AquafLOW Twin is supplied both with bosses for solar sensor pockets and the pockets themselves. The top half of the thermostats fitted to the cylinder is a thermal cut-out. The solar controller (not supplied) and solar sensor point should be wired through the AquafLOW Twin Thermal cut-out.

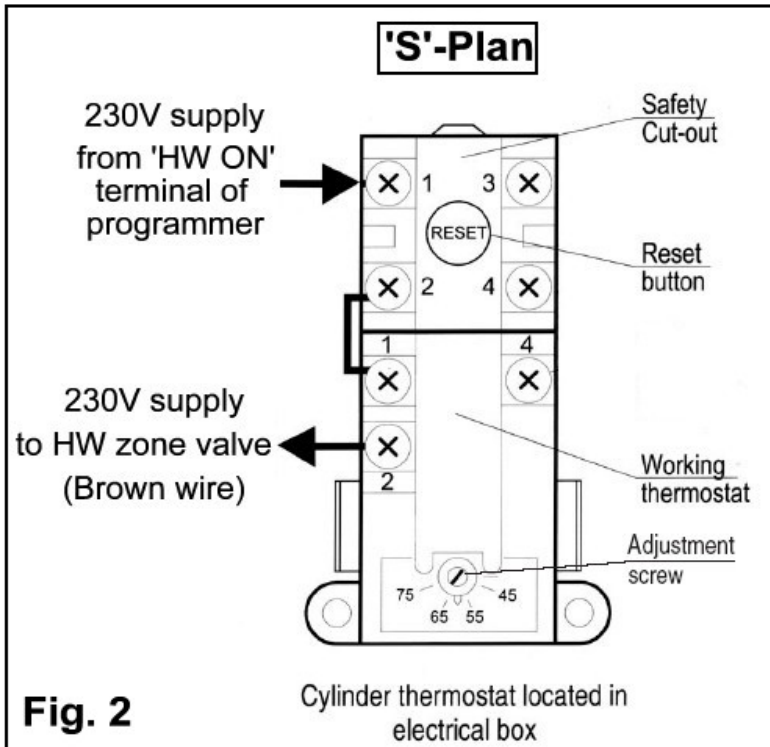
Please note that the direction of flow in the solar coil is reversed compared to the boiler coil. If the cylinder is not being used for solar use, connect the lower coil according to the instructions for the upper coil.

**Vokera can not be responsible if alternative wiring plans are used.**

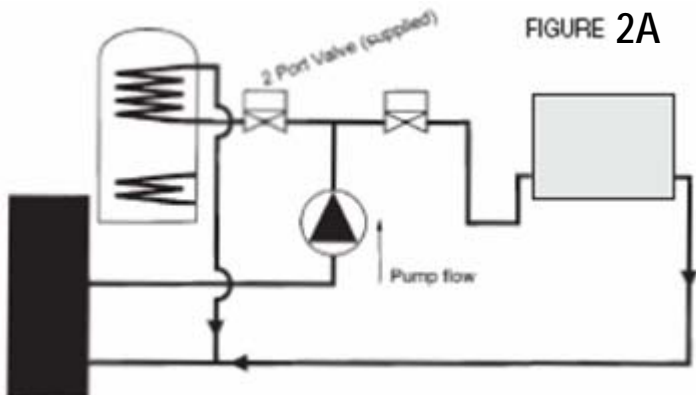
**Important:** Before resetting the safety cut-out or altering the thermostat setting isolate electrical supply to the unit before removal of the lid.

## 'S' Plan systems

Refer to the wiring diagrams contained within the boiler installation instructions for the wiring of 'S'-Plan systems. Connect the cylinder thermostat as shown in the diagram below



## S Plan System Schematic

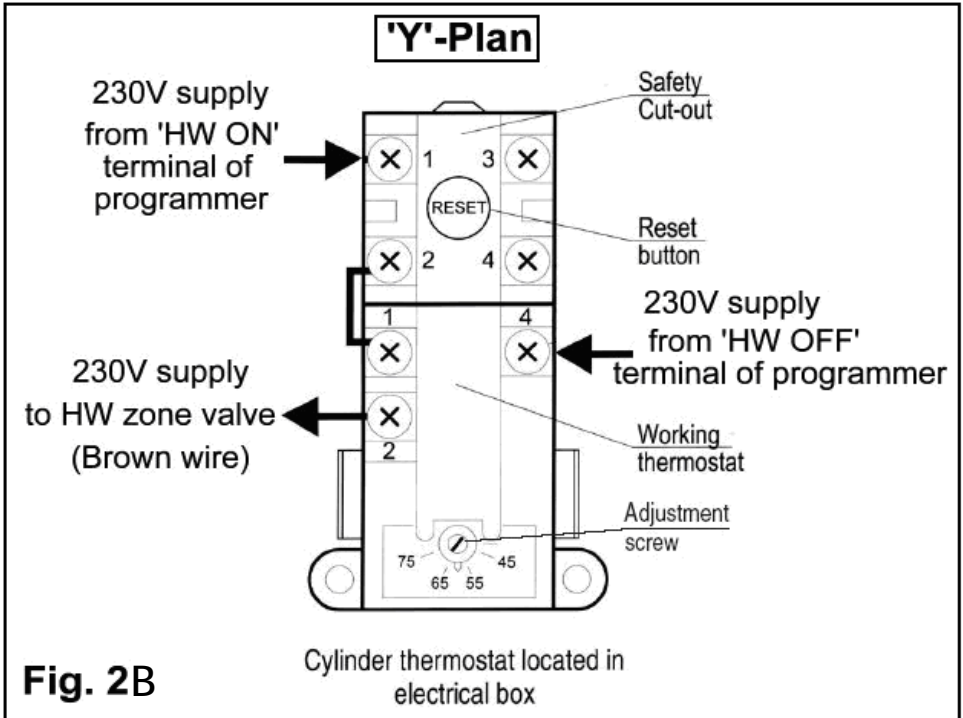


## Y Plan Wiring Layout

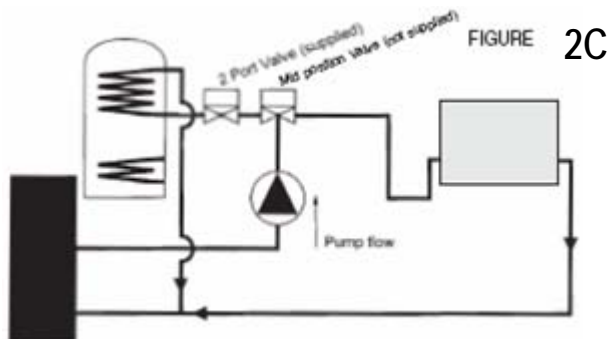
Refer to the wiring diagrams contained within the boiler installation instructions for the wiring of 'Y'-Plan systems. Connect the cylinder thermostat as shown in the diagram below.

**NOTE**

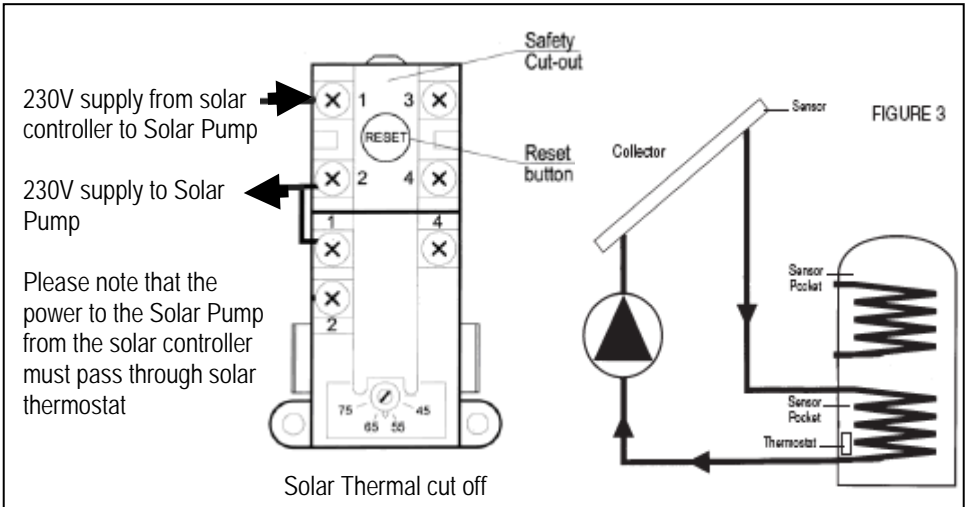
A 10 way junction box must be used on the Y plan system.



## Y Plan System Schematic



## Solar Schematic



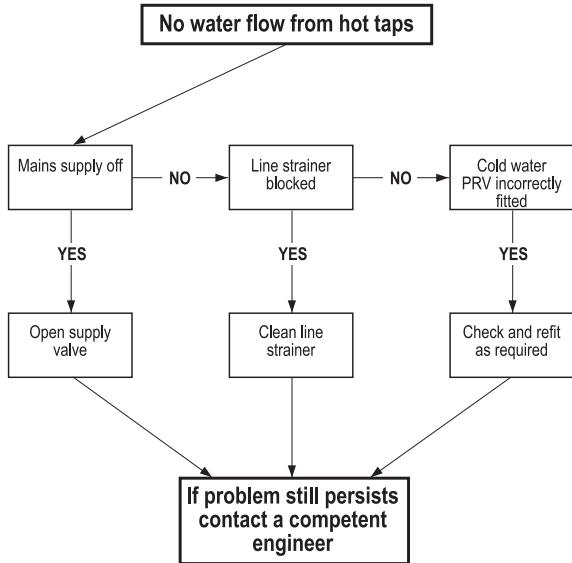
## AQUAFLOW FAULT FINDING GUIDE

FAULT	POSSIBLE CAUSE	REMEDY
No water flow from hot taps	<ol style="list-style-type: none"> <li>1. Mains supply off.</li> <li>2. Strainer blocked.</li>   <li>3. Cold water inlet Pressure Reducing Valve incorrectly fitted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and open stopcock.</li> <li>2. Turn off water supply. Remove strainer and clean. (See Pressure Reducing Valve page 6 Installation Manual)</li> <li>3. Check and refit as required.(see item 3 page 5 of installation manual)</li> </ol>
Water from hot taps is cold.	<ol style="list-style-type: none"> <li>1. Immersion heaters not switched on.</li> <li>2. Immersion heater thermal cut-out has operated.</li>   <li>3. Programmer set to central heating or not switched on.</li> <li>4. Boiler not working.</li>   <li>5. Cylinder thermal cut-out has operated.</li> <li>6. Motorised valve not operating correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and switch on.</li> <li>2. Check and reset button. (See thermostat diagram page 9 and safety cut-out on page 4 of Installation manual).</li> <li>3. Check and set to hot water.</li>   <li>4. Check boiler operation. If fault suspected consult installer or boiler manufacturer.</li> <li>5. As at No. 2.</li>   <li>6. Check wiring and / or plumbing connections to motorized valve. (See pages 8 or 10 of the installation manual).</li> </ol>

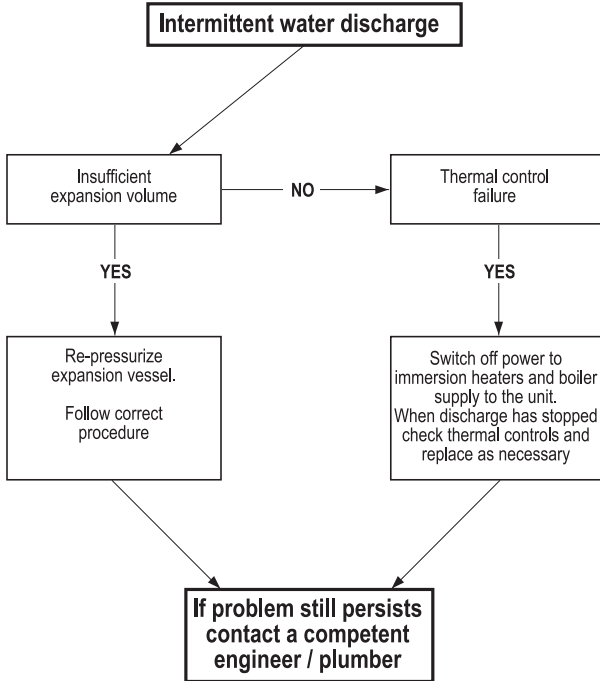
Intermittent water discharge.	<ol style="list-style-type: none"> <li>1. Reduced expansion capacity.</li> <li>2. Thermal control failure. (Note Water will be hot).</li> </ol>	<ol style="list-style-type: none"> <li>1. Recharge expansion vessel to correct charge (same as pressure reducing valve).</li> <li>2. Switch off power to immersion heater(s) and boiler supply to the unit. When discharge has stopped, check thermal controls, replace if faulty. Contact a competent person.</li> </ol>
Continuous water discharge.	<ol style="list-style-type: none"> <li>1. Cold water inlet Pressure Reducing Valve not working.</li> <li>2. Temperature and pressure relief valve faulty.</li> <li>3. Expansion relief valve not working correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check pressure from valve if greater than 2.1 bar replace. (See page 6 of installation manual)</li> <li>2. As No. 2 of above.</li> <li>3. Check and replace if faulty. (See page 6 of installation manual).</li> </ol>

**NOTE: Disconnect electrical supply before removing any electrical equipment covers.**

**AQUAFLOW FAULT FINDING GUIDE**

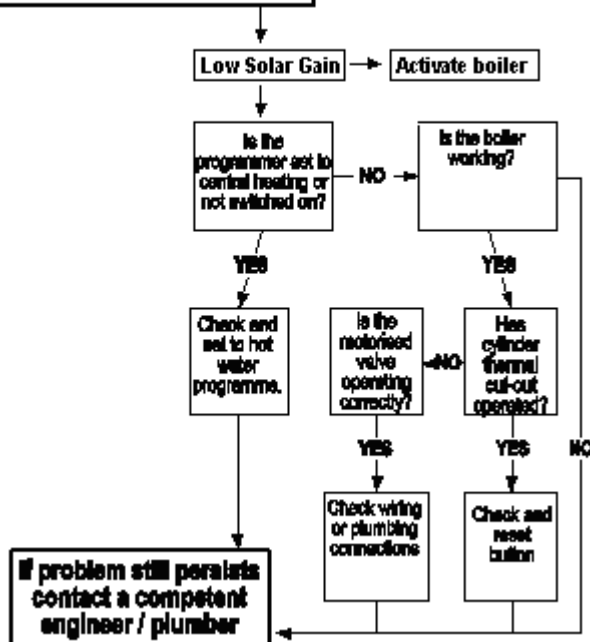


## AQUAFLOW FAULT FINDING GUIDE

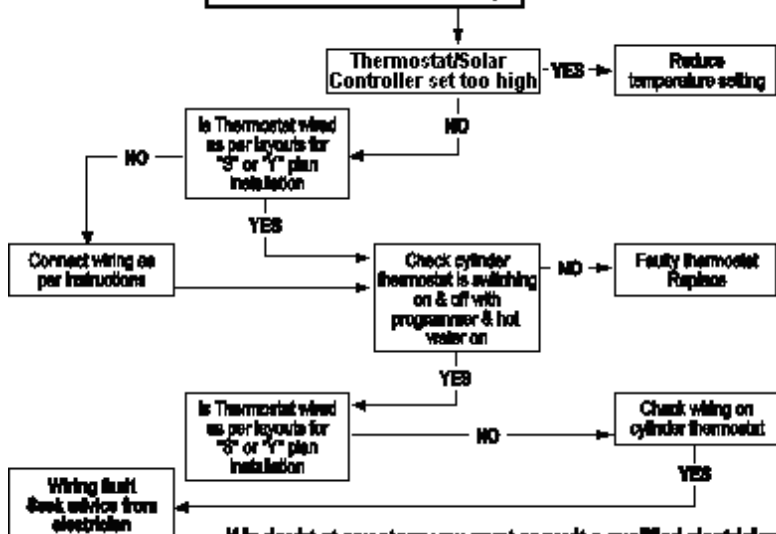


**AQUAFLOW FAULT FINDING GUIDE**

**Hot water from taps is cold**



**Excessive hot water from taps**



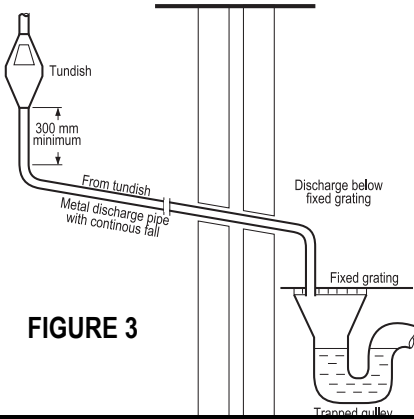
**If in doubt at any stage you must consult a qualified electrician**



Notes:

## ALTERNATIVE DISCHARGE

Downward discharges at low level, i.e. up to 100 mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children may play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.



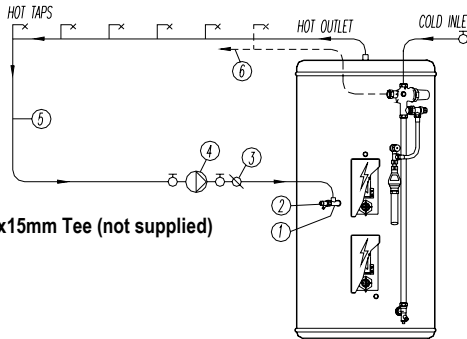
**FIGURE 3**

Discharge at high level, i.e. into a metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastics guttering system that would collect such discharges (tundish visible).

Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation discharging can be traced reasonably easily. The single common discharge pipe should be at least one pipe size larger than the largest individual discharge pipe to be connected. For further information contact your Building Control Office or The British Board of Agrément.

## SECONDARY RETURN

**FIGURE 4**



- 1 Secondary Return use 1/2"Fx1/2" Mx15mm Tee (not supplied)
- 2 Commissioning Valve
- 3 Non Return Valve
- 4 Circulation Pump
- 5 Secondary Return Line
- 6 Balanced cold supply for showers or bidet only.

All replacement parts must be supplied by Vokera.  
To obtain the address of a local stockist contact:

**Vokera Ltd.**  
**Borderlake House**  
**Unit 7 Riverside Ind Est**  
**London Colney**  
**AL2 1HG**

**Phone: 0844 391 0999**  
**Fax: 01727 744004**

**www.vokera.co.uk.**

**E-mail: enquiries@vokera.co.uk**

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**[www.vokera.ie](http://www.vokera.ie)**

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