ZIP AQUAFLO II
Unvented storage cylinders

MODEL NUMBER:
AF3090 - AF6300
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INTRODUCTION

- This corrosion resistant unvented cylinder is made from Duplex stainless steel. It is highly insulated with environmentally friendly foam enclosed in a rust resistant white steel case.
- It is available in direct, and indirect versions in a family of 7 sizes from 90 - 300 litres including Solar Twin Coil and Solar Direct.
- To help ensure compliance with the relevant water and building regulations all cylinders are supplied complete with the necessary safety and control devices needed to connect to the cold water mains. In order to ensure high flow rate performance with minimum pressure drop even in lower pressure areas, pre-set high quality controls have been selected.
- This cylinder is approved to demonstrate compliance with water regulations and building regulations G3 & Part L.

STORAGE PRIOR TO INSTALLATION

- This cylinder should be stored upright in a dry area and kept in its original packaging until immediately prior to installation.

INSTALLATION PREREQUISITES

- This cylinder should only be installed by a competent installer holding their G3 unvented qualification or be a member of a competent persons scheme. The installation of this product is also notifiable under the building regulations. It is a legal requirement to inform local building control of the intention to install an unvented cylinder.
- Leave this manual with the user following installation.
- Visit www.zipwater.co.uk to ensure you have the latest copy of this document.

BENCHMARK

- Benchmark places responsibilities on both manufacturers and installers.
- The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer’s instructions by competent persons and that it meets the requirements of the appropriate building regulations.
- The Benchmark checklist can be used to demonstrate compliance with building regulations and should be provided to the customer for future reference.
- Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark code of practice which is available from the heating and hot water industry council who manage and promote the scheme.
- Visit www.centralheating.co.uk
COLD INLET SET CONNECTIONS

- Pressure reducing valve (including line strainer)
- Cold mains in
- Balanced cold take off
- Internal check valve
- Expansion relief valve
- Discharge to tundish
- Cold supply to cylinder
- Expansion vessel connection

PARTS INCLUDED WITH THE AQUAFLO

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
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<tr>
<td>Cold water inlet set</td>
<td>loose</td>
</tr>
<tr>
<td>15 X 22mm tundish</td>
<td>loose</td>
</tr>
<tr>
<td>Temperature &amp; pressure relief valve</td>
<td>fitted</td>
</tr>
<tr>
<td>Expansion vessel</td>
<td>loose</td>
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<tr>
<td>Expansion vessel bracket</td>
<td>loose</td>
</tr>
<tr>
<td>Compression nut connection for expansion vessel</td>
<td>loose</td>
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<tr>
<td>Immersion heater(s) - dependant on size &amp; configuration</td>
<td>fitted</td>
</tr>
<tr>
<td>Installation manual inc. Benchmark log</td>
<td>loose</td>
</tr>
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WATER SUPPLY

- This cylinder is capable of delivering over 50 litres per minute when connected to a suitable mains supply.
- The high quality inlet control set with its 3 bar operating pressure has been designed to make the most of the pressure and flow available however the performance of any unvented system is only as good as the water supply.
- In unvented systems both hot and cold services are supplied simultaneously from the mains so the maximum possible on-site water demand must be assessed and the water supply should be tested to ensure it can meet these requirements.
- If necessary consult the local water supplier regarding the likely pressure and flow rate availability. It is important that site pressure readings are taken under dynamic flow conditions, high pressures under zero flow conditions are not necessarily indicative of satisfactory performance.
SITING THE AQUAFLO

- This cylinder can be positioned more or less anywhere in the dwelling but it should be remembered that for every 1 metre that an outlet is above the cylinder, the pressure will be reduced by 0.1 bar. If siting outside the heated envelope of the dwelling such as in a garage or outbuilding then frost protection should be provided and exposed pipework should be insulated.
- This cylinder must be supported on a flat base capable of supporting the weight of the cylinder when full. The minimum recommended cupboard size is 650mm square.
- It’s important that consideration is given to access for maintenance of the valves. The immersion heaters are 400mm long and access space should be provided for possible future replacement, also adequate access to remove and re-install the cylinder in the event of a problem.

WATER SUPPLY

- A minimum of 1.5 bar at 20 l/m flow should be available.
- Where mains inlet pressures are likely to exceed 10 bar then an additional upstream pressure reducing device should be fitted.
- A minimum of 22mm supply pipe-work should ideally be provided and existing 1/2” (15mm) cold mains pipe-work may need to be upgraded. Hard water treatment should be considered in areas where CaCO$_3$ content it greater than 200ppm.
SCHEMATIC - INDIRECT CYLINDERS

- Hot outlet
- Non return valve
- Pump
- Secondary return
- Boiler flow
- Boiler return
- Temperature & pressure relief valve
- Tundish
- 2 port valve
- Dual stat

SCHEMATIC - DIRECT CYLINDERS

- Hot outlet
- Immersion heater
- Temperature & pressure relief valve
- Tundish
- Immersion heater

Standard indirect cylinder shown, please repeat installation procedure for as many coils as there are present on AquaFlo. Different heat sources may have different installation requirements.

Do not fit shut off valve between cylinder and expansion valve.

Drain via cold inlet.
COLD MAINS PIPEWORK & EXPANSION VESSEL

- Run the cold main through the building to the place where the cylinder is to be installed. Take care not to run the cold pipe near hot water or heating pipe work so that the heat pick up is minimised.
- Identify the cold water supply pipe and fit an isolating valve (not supplied).
- A 22mm BS1010 stopcock can typically be used but a 22mm quarter turn full bore valve would be better as it does not restrict the flow as much. Do not use “screwdriver slot” or similar valves.
- Make the connection to the cold feed of the cylinder and incorporate a drain valve.
- Position the inlet control just ABOVE the temperature & pressure relief valve (TPRV) mounted on the side of the cylinder.
- This ensures that the cylinder does not have to be drained down in order to service the inlet control set.
- Ensure that the arrow points in the direction of the water flow.
- Select a suitable position for the expansion vessel.
- Mount it to the wall using the bracket provided. Use the compression connection supplied to connect the vessel into the cold water pipe adjacent to the cold feed point on the cylinder.
- There must be no obstruction or flow restriction between the cylinder and the expansion vessel.

BALANCED COLD CONNECTION

- If there are to be showers, bidets or monobloc taps in the installation then a balanced cold supply is necessary.
- There is a 22mm balanced connection on the inlet control set.
- All outlets in the house will be at 3 bar and thus automatically balanced.

HOT WATER PIPEWORK

- Run the first part of the hot water distribution pipework in 22mm.
- This can be reduced to 15mm and 10mm as appropriate for the type of tap etc.
- Your aim should be to reduce the volume of the hot draw off pipework to a practical minimum so that the time taken for the hot water is as quick as possible.
- Do not use monobloc mixer tap or showers if the balanced cold connection is not provided, the unit will back pressurise and result in discharge.
- Ensure that the top of the vessel is accessible for servicing.

PRIMARY COIL CONNECTIONS (INDIRECT SYSTEMS)

- Compression connections are provided for the primary circuit which must be positively pumped.
- Primary flow and return connections are interchangeable to suit site conditions without affecting reheat times.
- These connections are metric and should be changed by the installer if using Irish size copper tube.
- Sealed or vented primary circuits can be used, to comply with normal installation practice the primary pressure should not exceed 3 bar although the cylinder coil is suitable for up to 7 bar if required.
- The boiler may be gas, electric, oil etc. but must be under effective thermostatic control.
- Uncontrolled heat sources such as some AGA's, back boilers, solid fuel stoves, etc. may not be suitable please contact us for guidance.
- The two port zone valve should be installed into the primary flow pipework leading to the coil flow inlet.
- The direction of flow arrow should be towards the primary flow connection.
- On twin coil cylinders an extra thermostat boss is provided.
- Maximum operating temperature of primary coils under normal circumstances is 85° C.
- Ensure corrosion inhibitor compatible with stainless steel coils is used in the primary circuit.
SECONDARY CIRCULATION (INDIRECT SYSTEMS)

• Where secondary circulation is required a circulator suitable for wholesome water should be used in conjunction with a non return valve to prevent back-flow.
• It may be necessary to incorporate an extra expansion vessel into the circuit to accommodate the increased system water volume in larger secondary circulation systems.
• Where off peak electrical tariffs are being used then secondary circulation should be avoided.
• A secondary return boss is fitted as standard on 210, 250 & 300L.
• On smaller sizes tee into the cold feed pipe above the drain.

SECONDARY CIRCULATION (DIRECT SYSTEMS)

• Secondary return systems are not recommended with electrically heated cylinder, and we suggest consideration should be given to a trace heated circuit.
• Where secondary circulation is unavoidable a circulator suitable for potable water must be used in conjunction with a non return valve to prevent back-flow.
• The return connection should be made with a swept tee into the cold feed pipework directly above the drain connection.
• It may be necessary to incorporate an extra expansion vessel into the circuit to accommodate the increased system water volume in larger secondary circulation systems.
• A secondary return boss is fitted as standard on 210, 250 & 300L. On smaller sizes tee into the cold feed pipe above the drain.

IMMERSION HEATERS

• This cylinder is now classified under the ErP Directive as an electric water heater which must have a minimum energy rating of Band C - see data label.
• To achieve this, the immersion heater installed is fitted with a self-thinking smart thermostat as defined by the ErP directive. Where the cylinder has multiple heaters only the lower heater will be smart formatted.
• The Smart immersion heater is clearly defined by a grey composite head cap affixed by the three screws.
• Upper immersion heaters continue to have white composite caps affixed with a centre threaded pole and a traditional mechanical thermostat. Instructions for the installation, operation and usage of the two thermostats differ and are detailed below.
• All standard supply is with immersion heater elements of 3 kW output at 240 Volts, Incoloy elements, double pole thermal isolation and 1¾” BSP threaded head.
• As a requirement of building regulations the cylinder immersion heaters are fitted with thermal cut-out in addition to the normal control thermostat.
• To help ensure correct replacement the immersion heaters have a special 1 ¾” BSP thread.
• They are of a low noise Incoloy construction and rated at 3kW at 240V.
• Replacement immersion heaters should be purchased via Zip otherwise your warranty may be affected.
• The ‘o’ring on the head of the immersion heater should be correctly positioned and lubricated before fitting. Screw in hand-tight until almost sealed then gently tighten as the ‘o’ rings will seal easily.
Electrical connection 3kW rating

- The electrical installation should only be effected by a suitably qualified electrician in accordance with latest IEE regulations. Ensure the electricity supply is isolated before working on the system.
- The electricity supply to each immersion heater must be fused at 13A via a double pole isolating switch with a separation of at least 3mm to both poles to BS 3456.
- The cable must be 2.5mm² heat resistant (85°C HOFR) sheathed flex complying to BS 6141:1981 Table 8. Do not use a cable of lesser rating.
- For immersion heaters other than 3kW consult wiring requirements supplied with the immersion heater.
- Do not operate the immersion heater(s) until the unit is full of water. If any sterilisation liquid is in the cylinder do not operate the immersion heater(s) as this will cause premature failure. Electricity to be supplied by a fused supply compliant with local regulations, and fitted by a qualified Part P Electrician.
- This device must be earthed.
- Earth connection, (green & yellow), should be made firmly to the earth post marked “E”, using the terminal attachments provided.
- Live connection, (brown), from the mains supply cable to the thermostat terminal marked “L”.
- Neutral connection, (blue), from the mains supply cable to the thermostat terminal marked “N”.

As per instruction above, 3kW immersion heaters MUST be wired in 2.5mm heat resistant cable, failure to do so can cause nuisance tripping and Zip will be unable to support your installation until this has been corrected.
- For alternative rated immersion heaters consult the instructions supplied with the element.
IMMERSION HEATERS

Commercial / heavy duty / constant use

- For commercial / heavy duty installations where constant usage / reheat is required or where an external programmer designed for immersion heaters is not present then titanium immersion heaters must be fitted in order to comply with the warranty.

Energy cut out & cylinder thermostat

- As a requirement of building regulations the cylinders are fitted with a thermal cut-out in addition to the normal control thermostat.
- This unit should be fitted to the dedicated boss on the cylinder and wired to the two port valve controlling the primary flow. (See systems wiring diagrams, pages 14 - 16).

Recommended temperature settings

- For domestic usage a temperature set of 55°C - 60°C is the norm.
- This is above the growth temperature range for Legionella and low enough to prevent nuisance high limit tripping of the thermostat and unnecessary scaling.

Smart thermostat operation

- The Smart thermostat is a Thermowatt T-Mec2 thermostat and its function is controlled by a single control knob, slotted to accept a screwdriver.
- ECO setting - (Fig. 2) Economy Smart mode-This is the factory setting in which the thermostat is supplied.
- This setting provides the maximum energy efficiency and uses self-thinking smart technology to learn the user’s habits to control water temperature to suit established demand.
- During the first weeks operation the thermostat will operate at 70°C whilst recording hot water usage, and in each subsequent week adjusts automatically to the most efficient use of electricity.
- Care must be taken when using hot water during the first week of operation as delivered water will be hotter than usual.
- Should the power supply be interrupted the thermostat will lose all recorded data and revert back to learning mode, i.e. 70°C for one week. The antibacterial mode will function.
- In applications of erratic or sporadic usage the Smart thinking thermostat may not be able to establish regular usage patterns effectively. In such an instance use OPK setting.
- OPK setting - (Fig. 3) basic electronic thermostat mode or off peak mode-This setting will control temperature to 60°C without Smart control, and is unaffected by any interruption in manual switching or by timer such as off peak tariffs, (Economy 7/10), type installations.
- Some Smart meters may require this setting. Antibacterial mode will still function.
- OFF setting - (Figure 4) In this mode the thermostat will not operate, only the double pole safety cut-out will function. Antibacterial mode will not function.
- Setting - (Figure 5) antifreeze mode-This setting will maintain a water temperature of 20°C to prevent the cylinder from freezing.
- This setting may be preferred for holiday periods. Antibacterial mode will function.
- Setting the thermostat to MAX (Figure 6) will control the water temperature to a maximum of 70°C.
- The water temperature may be adjusted to a lower setting by adjusting the control knob anti-clockwise to a point where the lowest setting is 10°C. Antibacterial mode will still function.

Mechanical thermostat operation - upper heater

- The mechanical thermostat has an adjustable control operating between 20°C and 65°C.
- Usual desired domestic setting is between 55°C and 60°C.
- The thermostat is supplied set at 60°C. To set turn to maximum, (fully clockwise), and back off, (anticlockwise), approx a quarter of its travel then effecting minor adjustment to suit personal taste.
IMMERSION HEATERS

Thermal cut-out, both smart and mechanical thermostats

- Should the water cylinder attempt to overheat, (80°C), the thermal cut-out will activate.
- This will isolate both the live and neutral connections within the immersion heater.
- This also may trip during a power spike.
- To re-set isolate the power supply and allow the cylinder to cool down.
- Remove head cap and press high limit cut-out re-set button on top of thermostat.
- Should there be continued tripping of this safety device consult a qualified electrician to investigate power supply and/or replace thermostat.

Replacement immersion heaters - all types

- Replacement immersion heaters, in all formats, for your water heater are available, call Zip on 0345 6 005 005.
- Standard heaters have Incoloy elements, a 1¾” BSP threaded head and standard rating of 3kW at 240V.
- Check the label detail on the head before ordering as alternative specifications are available.
- The ‘O’ ring on the head of the immersion heater should be correctly positioned and lubricated with a WRAS approved silicon lubricant before fitting.
- Screw in hand-tight until almost sealed then gently tighten as the ‘O’ rings will seal easily. Remake wiring connection as per instructions provided.

![Fig. 2](image1.png) ![Fig. 3](image2.png) ![Fig. 4](image3.png) ![Fig. 5](image4.png) ![Fig. 6](image5.png)

DISCHARGE ARRANGEMENT

- Full detail of building regulation G3 is available as a free download from: www.planningportal.gov.uk.
- The discharge from both the temperature relief and expansion relief valves can be joined together via a 15mm end feed tee.
- It is important that any discharge water does not collect in this pipe-work and can run freely to the tundish.
- The tundish should be mounted in a vertical and visible position located in the same space as the unvented hot water storage system and be fitted as close as possible and within 600mm of the safety device e.g. the temperature relief valve.
- The discharge pipe-work from the tundish must be routed in accordance with Part G3 of the building regulations.

The discharge pipe from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal and:
DISCHARGE ARRANGEMENT

- 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. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18m and 27m at least 3 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance.
- An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- Have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework and be installed with a continuous fall of at least 1 in 200 thereafter.
- Be installed with a continuous fall.
- Any discharge should be visible at the tundish.
- See regulations for instruction relating to dwellings occupied by persons with impaired vision or mobility.
- From the tundish, pipework should terminate in a safe place where there is no danger to persons in the vicinity of the discharge. Examples of acceptable discharge arrangements include:
  - To a trapped gully with outlet below a fixed grating and above water seal.
  - Downward discharges to low level, within 100mm, above external surfaces such as car park, hard standing, grassed area with protective wire cage to prevent contact but retaining visibility of discharge.
  - Discharge at high level into metal hopper and metal downpipe with the termination point clearly visible or onto roof capable of withstanding high temperature discharge and at least 3m away from plastic guttering system.
- Building Regulation G3 allows for the usage of non-metallic pipework within the tundish discharge (D2):
  - The discharge pipe (D2) should be made of a) metal or b) other material that has demonstrated to be capable of safely withstanding high temperatures of water discharged and is clearly and permanently marked to identify the product and the performance standard.
- The discharge should not be connected to a soil discharge stack unless it can be demonstrated of safely withstanding the high temperature of water discharge, in which case it should:
  - Contain a mechanical seal, not a water trap, which allows water into the branch pipe but not foul air from the drain to be ventilated through the tundish.
  - Be a separate branch pipe with no sanitary appliances connected to it.
  - Plastic pipes used as branch pipes with the discharge should be polybutalene (PB) or cross linked polythene (PE-X) complying national standards such as Class S of B7291-2:2006 or Class S of BS7291-3:2006 respectively.
  - Be continuously marked with a warning that no sanitary appliances should be connected to the pipe.
  - Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN 1043-1:2002.
- The foregoing is an appraisal of building regulation detail and it is essential the installer gains knowledge of the full requirements prior to product installation.

IMPORTANT

- Queries with regard to discharge arrangement, contact your local building control office
Note The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

Note It is not acceptable to discharge straight into a soil pipe. See G3 3.60 for guidance.

Diagram of a typical discharge pipe arrangement (extract from building regulations G3).

**COIL CONNECTIONS [INDIRECT SYSTEMS]**

**Twin coil format**

- Indirect twin coil units can be installed in two separate formats:
  - In a solar powered system with a backup boiler.
  - In a system with two non-solar heat sources (normally two boilers).
- With either format it is essential that the installation meets all current regulations including, in particular, the high limit cut out requirements of building regulation G3.

**Upper coil**

- This is connected to the boiler as per the instructions for a single coil cylinder with the high limit thermostat inserted into the middle thermostat pocket and wired to control the supplied two port valve in either the primary flow or return as indicated in the wiring instructions.
**COIL CONNECTIONS (INDIRECT SYSTEMS)**

**Lower coil - solar variant**
- In a solar system the lower coil is connected to the solar heat source.
- Either primary coil connection may be used for flow or return.
- The solar cylinder sensor supplied is inserted into the lower thermostat pocket and the energy cut out into the upper pocket.
- The ‘mechanical’ control thermostat is not normally utilised in a solar system. In systems where the panels are above the cylinder then the energy cut out shall be wired so as to interrupt the power supply to the solar pump or controller in the event of over temperature.
- In systems where the cylinder is above the panels then the energy cut out should be wired to a suitable two port valve (not supplied) on the return pipe-work to the solar panel.

**Lower coil - non solar variant**
- This is connected to the additional boiler as per the instructions for a single coil cylinder with the high limit thermostat inserted into the lower thermostat pocket and wired to control the supplied two port valve in either the primary flow or return.

**SYSTEM WIRING**

**Typical wiring - S plan, 1 zone**

Typical wiring - S plan, 1 zone

![Wiring Diagram](image)

Wiring colours
- W = white  G = grey  BL = blue  G/Y = green/yellow  BR = brown

Electrical abbreviations
- L = Live  N = Neutral  C = Common  SL = Switched live  E = Earth
Typical wiring - S plan, 2 zone

Wiring colours
W = white  G = grey  BL = blue  G/Y = green/yellow  BR = brown

Electrical abbreviations
L = Live  N = Neutral  C = Common  SL = Switched live  E = Earth
Typical wiring - Y plan

3 PORT MID POSITION

DUAL STAT

2 PORT (DHW)

WIRING CENTRE

ROOM STAT

PROGRAMMER

BOILER

WIRING colours
W = white  G = grey  BL = blue  G/Y = green/yellow  BR = brown

Electrical abbreviations
L = Live  N = Neutral  C = Common  SL = Switched live  E = Earth
COMMISSIONING

Filling the system

- Check all connections for water tightness including any factory made connections such as the temperature and pressure relief valve as these may have loosened during transit.
- The pressure in the expansion vessel should be checked to ensure it is 3 bar (45PSI).
- The valve is of the car tyre (Schrader) type. The hot tap furthest away from the cylinder should be opened before filling the system to let air out. The system should be flushed before use.
- The remaining taps should be opened in turn to expel air.
- The Benchmark commissioning checklist shall be completed upon commissioning by the installer.

Immersion heaters, direct & indirect systems

- The system must be fully filled and flushed before switching on the power to the immersion heaters and allowing the unit to heat up.
- The standard immersion heater is supplied preset at 60°C. Turning fully to + sets to approx 65°C, see page 10 for smart thermostat.

Indirect systems only

- Ensure the lever on the two port valve is set to the filling position and use the boiler manufacturers commissioning instructions to fill the primary circuit. When full release the lever.
- Switch the programmer to domestic hot water (DHW) and allow the unit to start to heat.
- Adjust the dial of the dual thermostat to 55°C - 60°C as required.

Storage temperatures

- A storage temperature of 60 - 65°C is normal for both direct and indirect cylinder.
- In hard water areas consideration should be given to reducing this to 55 - 60°C.
- In many healthcare applications the guidance on Legionella control and safe water delivery temperatures will require storing the water at 60 - 65°C, distributing at lower temperatures and using thermostatic mixing valves to control the final temperature.
- For details consult the NHS estates guidance on safe hot water temperatures.

Safety valve checks

- Any water coming from either the expansion relief valve or the temperature / pressure relief valve during heat up is indicative of a problem which needs to be identified and rectified.
- The temperature relief and expansion relief valves should be fully opened, one at a time then both together allowing as much water as possible to flow through the tundish.
- Check that your discharge pipework is free from debris, is carrying the water away without spillage over the tundish, release the valves and check that they re-seat properly.

Draining

- Isolate the AquaFlo from the electricity supply to prevent the immersion heaters burning out.
- Isolate the AquaFlo from the cold mains. Attach a hose to the draining tap ensuring it reaches to a level below the AquaFlo (This will ensure an efficient syphon is set up and the maximum amount of water is drained from the unit).
- Open the hot tap closest to the unit and open the draining tap.

WARNING!

- Water drained off may be very hot.
ANNUAL SERVICING

- A competent installer should carry out the following checks on an annual basis, ideally at the same time as the annual boiler service.
- The expansion relief valve on the inlet control set should be eased open allowing water to flow for 5 seconds. The valve should then be closed making sure it resets correctly.
- Repeat this procedure with the pressure / temperature relief valve.
- Always insure that the discharge pipework is allowing the water to drain away adequately. If not check for blockages etc. and clear.
- Ensure that any immersion heaters that are fitted are working correctly and that they are controlling the water at a temperature of between 55°C and 65°C.
- Make sure the pressure in the expansion vessel is charged to 3 bar.
- Turn off the water supply to the unit and open a hot tap first.
- The valve on the expansion vessel is a Schrader (standard car tyre) type. Air or CO₂ can be used to re-pressurise the expansion vessel.
- Remove the head on the inlet control set by unscrewing, and clean the mesh filter within.
- The benchmark service record supplied within this manual shall be updated at each service by the installer.

WARNING!

- Servicing must be carried out annually & should only be carried out by competent installers and any spare parts used must be purchased from Zip, call 0345 6 005 005.
- Never bypass any safety devices or operate the unit without them fully operational.
- Your warranty may be void without proof of annual servicing.
- The commissioning certificate supplied at the rear of this manual should also be completed by the installer.

USER INSTRUCTIONS

- The AquaFlo is automatic in normal use and requires only annual servicing.
- Employ a competent installer to perform the annual servicing.
- It is your responsibility to ensure the cylinder is serviced annually and the service record is maintained.
- Failure to do so may adversely affect the warranty.
TROUBLE SHOOTING

In the event of a problem call Zip on 0435 6 005 005

Discharge at the tundish

- If water is flowing from the safety valves through the tundish this indicates a fault condition and action is needed.
- If this water is hot turn the boiler and / or the immersion heater off.
- Do not turn off the water until the discharge runs cool.
- The discharge may also stop.
- Call a competent plumber out to service the AquaFlo. Tell them you have a fault on an unvented cylinder.
- Zip stock spare parts, call Zip on 0345 6 005 005.

Trouble shooting tables

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible cause</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unvented cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylinder appears to leak from within the case.</td>
<td>Loose cylinder connection</td>
<td>Check all connection points including immersion heaters to ensure integrity of joint and remake any suspect joints.</td>
</tr>
<tr>
<td>Expansion valve operates and water is visible at the tundish.</td>
<td>Possible fault at pressure reducing valve</td>
<td>Follow fault finding information for inlet control group. (Page 21).</td>
</tr>
<tr>
<td></td>
<td>Back pressure from the system</td>
<td>Check all mixer type outlets are served by a balanced cold service. Where not, re-pipe or install bespoke pressure reducing valve to offending outlet.</td>
</tr>
<tr>
<td>Expansion valve operates when cylinder is heated.</td>
<td>Possible fault at expansion vessel.</td>
<td>Follow fault finding information for expansion vessel. (Page 20).</td>
</tr>
<tr>
<td>Noise when operating tap outlet.</td>
<td>Insecure pipework.</td>
<td>Increase the number of pipe clips.</td>
</tr>
<tr>
<td>Reduced water flow</td>
<td>External works to public mains.</td>
<td>Wait for works to be completed.</td>
</tr>
<tr>
<td></td>
<td>Debris from water mains.</td>
<td>Strip &amp; clean or replace inlet control group.</td>
</tr>
<tr>
<td></td>
<td>Pressure reducing valve sticking.</td>
<td>Strip &amp; clean or replace inlet control group.</td>
</tr>
<tr>
<td>No hot water available.</td>
<td>Immersion heater failure</td>
<td>Follow fault finding information for immersion heater</td>
</tr>
<tr>
<td></td>
<td>Boiler failure (indirect systems)</td>
<td>Check operation of the boiler and its controls.</td>
</tr>
</tbody>
</table>

Call an electrician, a plumber qualified in unvented water heater systems, or Zip on 0345 6 005 005 for assistance, service, spare parts or enquiries.
### TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible cause</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expansion vessel</strong></td>
<td>Expansion vessel is too small.</td>
<td>Vessel needs resizing and installation by appropriately qualified engineers.</td>
</tr>
<tr>
<td></td>
<td>Pre-charge set incorrectly on vessel installation.</td>
<td>Pre-charge requires setting while system is de-pressurised according to cylinder manufacturers recommendations.</td>
</tr>
<tr>
<td></td>
<td>Membrane is ruptured and may require replacement.</td>
<td>Replace membrane or entire vessel. Inspect Shrader valve for leaks or damage.</td>
</tr>
<tr>
<td></td>
<td>Membrane may be partially de-pressurised due to natural losses and require re-pressurisation.</td>
<td>Re-pressurise or consider replacement depending on age of vessel and amount of pressure lost. Inspect Shrader valve for leaks or damage.</td>
</tr>
<tr>
<td><strong>Discharge of water from the relief valve.</strong></td>
<td>Failure of flange plate.</td>
<td>Replace flange plate or entire vessel</td>
</tr>
<tr>
<td></td>
<td>Loss of torque in flange retaining bolts</td>
<td>Re-tighten bolts as needed</td>
</tr>
<tr>
<td></td>
<td>Ruptured membrane has caused corrosion of vessel body resulting in pinhole leak.</td>
<td>Entire vessel must be replaced. Inspect Shrader valve for leaks or damage.</td>
</tr>
<tr>
<td><strong>Vessel appears to be fully of liquid when system is cold.</strong></td>
<td>Membrane is de-pressurised.</td>
<td>Replace membrane or entire vessel. Inspect Shrader valve for leaks or damage.</td>
</tr>
<tr>
<td><strong>Water is discharged from vessel when Shrader pin is de-pressed for inspection of air pressure.</strong></td>
<td>Membrane is ruptured.</td>
<td>Membrane or vessel requires replacement</td>
</tr>
</tbody>
</table>

Call an electrician, a plumber qualified in unvented water heater systems, or Zip on 0345 6 005 005 for assistance, service, spare parts or enquiries.
TROUBLE SHOOTING

Inlet control group fault finding

1. Is the Safety Relief Valve passing?
   - Yes: Check the expansion vessel pressure.
   - No: Do you have pressure?
     - No: Check the strainer and service valve.
     - Yes: Pressure Okay.
2. Is the pressure to specification?
   - Yes: Repressurise Expansion Vessel.
   - No: Valve serviced and is okay to use.
3. Is the Pressure Reducing Valve working correctly?
   - Yes: Replace the Safety Relief Valve.
   - No: PRV Failed.

Replace the Pressure Relief Valve.

Tundish fault finding

1. Is water running from the Tundish?
   - Yes: Is the water being discharged hot?
     - Yes: Check Temperature & Pressure Relief Valve.
     - No: Check Safety Relief Valve.
     - See the flow chart for T&P Valve.
     - See the flow chart for Inlet Control Group.
   - No: No fault.
TROUBLE SHOOTING

T & P valve fault finding

Immersion heater fault finding
TROUBLE SHOOTING

Dual thermostat

Is the Control Stat Working?

Test Stat continuity

If test fails replace Dual Stat.

Is the Dual Thermostat working?

No fault with the Dual Thermostat.

Is the Limit Stat reset & working?

Reset Limit Stat.

Test Dual Stat continuity.

If test fails replace Dual Stat.

Energy cut out

Is the Cut Out Thermostat working?

Test Stat continuity

Reset Limit Stat.

If test fails replace Dual Stat.

No fault with the Thermostat.
### SPARE PARTS

<table>
<thead>
<tr>
<th>Ref</th>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SA20001</td>
<td>Cold water inlet set</td>
</tr>
<tr>
<td>2</td>
<td>SA20002</td>
<td>15mm x 22mm tundish</td>
</tr>
<tr>
<td>3</td>
<td>SA20003</td>
<td>Temperature &amp; pressure relief valve</td>
</tr>
<tr>
<td>4</td>
<td>SA20004</td>
<td>Expansion vessel - 12 litre (including bracket)</td>
</tr>
<tr>
<td>4</td>
<td>SA20005</td>
<td>Expansion vessel - 18 litre (including bracket)</td>
</tr>
<tr>
<td>4</td>
<td>SA20006</td>
<td>Expansion vessel - 24 litre (including bracket)</td>
</tr>
<tr>
<td>5</td>
<td>SA20007</td>
<td>Immersion heater 3kW</td>
</tr>
<tr>
<td>5</td>
<td>SA20015</td>
<td>Immersion heater 3kW titanium</td>
</tr>
<tr>
<td>5</td>
<td>SA20017</td>
<td>Immersion heater 6kW titanium</td>
</tr>
<tr>
<td>6</td>
<td>SA20008</td>
<td>Immersion heater dual stat</td>
</tr>
<tr>
<td>6</td>
<td>SA20014</td>
<td>Solar high limit stat. (Not shown)</td>
</tr>
<tr>
<td>7</td>
<td>SA20011</td>
<td>2 port valve</td>
</tr>
<tr>
<td>7</td>
<td>SA20013</td>
<td>Non self resetting thermostat (high limit), (not shown)</td>
</tr>
<tr>
<td></td>
<td>SA20010</td>
<td>Separate expansion vessel bracket, (not shown)</td>
</tr>
</tbody>
</table>
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

Address

Cylinder Make and Model

Cylinder Serial Number

Commissioned by (print name)

Company Name

Company Address

Telephone Number

Registered Operative ID Number

Commissioning Date

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

Building Regulation 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 □  No □

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 meter or the point where they become concealed  

Yes □  No □

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 □  No □

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 □  No □

The system has been installed and commissioned in accordance with the manufacturer’s instructions  

Yes □  No □

The system controls have been demonstrated to and understood by the customer  

Yes □  No □

The manufacturer’s literature, including Benchmark Checklist and Service Record, has been explained and left with the customer  

Yes □  No □

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.

©Heating and Hot Water Industry Council (HHIC)

www.centralheating.co.uk
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.

<table>
<thead>
<tr>
<th>Service</th>
<th>Date</th>
<th>Engineer Name</th>
<th>Company Name</th>
<th>Telephone Number</th>
<th>Comments</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVICE 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVICE 2</td>
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<tr>
<td>SERVICE 3</td>
<td></td>
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<tr>
<td>SERVICE 4</td>
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<tr>
<td>SERVICE 5</td>
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<tr>
<td>SERVICE 6</td>
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</tr>
<tr>
<td>SERVICE 7</td>
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<tr>
<td>SERVICE 8</td>
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<tr>
<td>SERVICE 9</td>
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<td></td>
</tr>
<tr>
<td>SERVICE 10</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
WARRANTY

Certain warranties may be implied by law into your contract with Zip. The warranty provided below is additional to these implied warranties and nothing set out below shall limit your statutory rights or rights at law. Zip Water UK warrants that, subject to satisfactory maintenance and registration of the product, should the cylinder fail within ten years of installation, or any installation component part fail within two years of installation, the part will be repaired or replaced free of charge by Zip, its distributor or service provider, (except as set out below), provided the appliance is installed and used strictly in accordance with the instructions supplied, and that failure is not due to accident, misuse, abuse, unsuitable water conditions, or to any alteration, modification or repair by any party not expressly nominated by Zip.

No costs are payable by the customer other than any mileage or travelling-time charges incurred by a Zip service provider or the cost of removal, cartage and re-installation of any component of the appliance if it needs to be returned for repair to Zip or its distributor.

This warranty does not cover damage resulting from non-operation of the product, the use of non authorised parts or consequential damage to any other goods, furnishings or property.

Zip does not exclude, restrict or modify any liability that cannot be excluded, restricted or modified or which cannot, except to a limited extent, be excluded, restricted or modified as between the owner or user and Zip under the laws applicable.

Furthermore this warranty does not displace any statutory warranty, but, to the extent to which Zip is entitled to do so, the liability of Zip under any statutory warranty will be limited at Zip’s option to the replacement of the appliance or supply of equivalent appliance, the payment of the cost of replacing the appliance or acquiring an equivalent appliance, or the payment of the cost of having the appliance repaired or the repair of the product.

Registering your purchase.

Registering your Zip installation on the Zip website may help to establish date of installation should it become necessary to service the appliance under terms of the Zip warranty. To register your installation go to www.zipwater.co.uk and look under the heading “Warranty”.
