



AZTEC EASYFIT 6, 9 & 12kW BOILER



INSTALLATION, OPERATION AND SERVICING INSTRUCTIONS

Please read these instructions carefully before installing and operating this appliance.

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1. Health & Safety

Information for the Installer and Service Engineers

Under the Consumer Protection Act 1987 and the Health & Safety at Work Act 1974, it is a requirement to provide information on substances hazardous to health (COSHH Regulations 1988).

The company takes every reasonable care to ensure that these products are designed and constructed to meet these general safety requirements, when properly used and installed.

To fulfil this requirement products are comprehensively tested and examined before despatch.

When working on the appliance it is the Users/Engineers responsibility to ensure that any necessary personal protective clothing or equipment is worn appropriate to parts that could be considered as being hazardous to health and safety.

This appliance may contain some of the items below:

INSULATION AND SEALS

Mineral fibre, insulation.

May be harmful if inhaled. May be irritating to the skin, eyes, nose or throat. When handling avoid inhalation and contact with eyes. Use (disposable) gloves, face masks and eye protection.

After handling wash hands and other exposed parts. When disposing, reduce dust with water spray, ensure parts are securely wrapped.

GLUES, SEALANTS & PAINT

Glues, sealants and paints are used in the product and present no known hazards when used in the manner for which they are intended.

Notes:

- a) Electrical safety checks should be carried out by a competent person.
- b) It is a requirement of the guarantee and any extended warranty that an annual service is carried out by a competent person.

Installation Engineers Signature Company Name (if applicable)

Company Address

Company Tel. No.

2. Pre-Installation Notes

Before installation, it is imperative that the following guidelines are heeded to ensure the trouble-free and efficient operation of the boiler.

2.1 Ventilation and Siting

When siting the boiler in a confined space it is essential that adequate ventilation be provide. This will ensure that air is allowed to circulate freely around the appliance keeping down the ambient temperatures. Refer to Ventilation Requirements (**page 11**) for further details.

Ensure that the area surrounding the boiler is kept free of items which would impede the good ventilation of the appliance (e.g. towels, linen, etc.).

When siting the boiler, take into account the potential requirement for future servicing. Enough space should be provided at the front of the boiler to enable an engineer to adequately service and/or replace items such as the PCB or heat exchanger. Space should also be available for the removal of the front casing panel. Please refer to siting information (**Page 10**) for clearance dimensions.

2.2 Power Supply and Wiring

The power supply to the boiler must meet the minimum requirements of the unit being installed, with special attention paid to the supply current, cable size and RCD recommendation. The supply voltage to the appliance must never drop below **207 volts**.

When fitting external controls, such as a room thermostat or programmer, particular consideration should be given to the wiring of these secondary items into the appliance. Please refer to the wiring instructions (**Pages 15-17**) for full details. Any breakdown attended to by T R Engineering Ltd which is found to be caused by an incorrectly wired appliance will be chargeable.

It is important that the pump is wired back to the boiler as shown in the wiring diagram.

2.3 System

Isolation valves must be fitted on both the flow and return pipework of each boiler to be installed. These are useful as from time to time the boiler may require draining of water and the lengthy drawing-off process can be avoided by the astute placement of these valves.

Ensure that any isolation valves are open before first use and that the system is full of water.

The boiler can be fitted only in an upright position, with the flow connection to the top of the boiler.

3. After Sales Service Information

A qualified field service engineer is available to attend a breakdown occurring during the boiler's guarantee period.

The boiler must be made available for attendance during normal working hours, Monday to Friday.

3.1 How to Report a Fault

Step 1

Contact your installation or service engineer, who should assess the unit and works carried out on the appliance prior to requesting the attendance of an engineer from T R Engineering Ltd.

Step 2

Please note that upon attendance by a T R Engineering Ltd engineer, a charge will be made where:

- The engineer finds no fault with the boiler.
- The cause of the breakdown is due to parts of the system not manufactured or supplied T R Engineering Ltd.
- The boiler has not been installed in accordance with these instructions.
- The boiler has not been commissioned by a qualified engineer.
- The boiler has not been serviced annually since installation.
- The breakdown occurs outside the guarantee period.



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- The appliance has not been maintained correctly.
- The breakdown occurs due to use of the boiler not sanctioned by these instructions.
- The breakdown occurs as a result of work on the appliance by an unauthorised third-party.

Important:

Invoices for attendance and repair work by any third-party will not be accepted unless authorised in advance by T R Engineering Ltd.

3.2 Technical Assistance

A team of trained technical advisors are available to discuss any problem with the appliance. In many cases, the problem may be solved over the telephone, eliminating the need for an engineer's visit.

Before making contact, please have the following information ready:

- The appliance serial number.
- A description of the fault and any unusual behaviour by the boiler before the failure occurred.
- The installation and commissioning dates and the details of any annual services.

| Appliance Serial No: |
|----------------------|
| Installation Date:// |

Service Centre and Technical Support Tel: 0114 257 2300 Fax: 0114 257 1419

Hours of Business Monday-Thursday 8:30am – 17:30pm Friday: 8:30am – 14:30pm

4. Introduction

The Aztec electric boiler is a wall mounted electric central heating boiler designed with smaller properties in mind. Fitted vertically only and requiring access to the front and the right hand side of the boiler FOR SERVICING. Once the boiler is switched on it is fully controlled by an automatic management system which monitors the safety and running functions of the boiler. Designed to work on a fully pumped wet system only. The boiler produces hot water by passing water over electric heating elements housed in an insulated stainless steel heat exchanger.

There are three boilers in the range with outputs ranging from 6kW (20400 Btu/hr) to 12 kW (41,000 Btu/hr).

IMPORTANT SAFETY NOTES

Read these instructions before installing your boiler.

The heating system must comply with the latest editions of British Standards 5449 and The Building Regulations and Electrical Wiring Regulations BS 7671.

- 1. Always switch OFF the electrical supply before removing the cover.
- 2. If any part of the boiler is modified, then the guarantee/warranty will be invalidated.

We recommend that you keep these instructions in a place near your appliance for easy reference.

The Trianco Aztec wall mounted boiler has been designed to conform to European Directive/Standards.

EN 60335-1:1994/A16:2001, EN 60335-2-35:1998/A1:2000, EN 55014-1:2000, EN61000-3-2:2000 and EN 61000-3-3:1995.

THE PERSON(s) WHO INSTALLS THIS APPLIANCE SERVICES OR CARRIES OUT ANY REMEDIAL WORK, I.E. ELECTRICAL FAULT FINDING, MUST HAVE SUITABLE ENGINEERING QUALIFICATIONS.

WARNING: DO NOT SWITCH ON THIS APPLIANCE IF THERE IS ANY POSSIBILITY THAT THE WATER HEAT EXCHANGER IS FROZEN.

THE INSTALLATION OF THIS APPLIANCE MUST MEET THE REQUIREMENTS OF THE CURRENT ISSUES FOR ELECTRICAL INSTALLATIONS IEE WIRING REGULATIONS.

5. User Instructions

The Trianco Aztec boiler has been designed and constructed to give years of trouble free service and these instructions are provided to assist you in obtaining the best performance with the least trouble and cost.

The boiler is fully automatic in operation and requires little attention other than the setting of the thermostat and any external system controls such as a room thermostat and time switch.

IMPORTANT:

DO NOT COVER OR BOX IN YOUR BOILER. ALLOW AIR TO CIRCULATE FREELY AROUND THE APPLIANCE.

WARNING: DO NOT ATTEMPT TO SWITCH ON THE BOILER IF THERE IS ANY POSSIBILITY THAT THE WATER HEAT EXCHANGER IS FROZEN.

Before firing the boiler, ensure the system is full of water and any valves fitted to the system are open. The cylinder thermostat will control the first fire up until the cylinder reaches 60°C.

- Check that the time switch/programmer (if fitted) is ON and the room thermostat is calling for heat.
- Switch on the electrical supply to the boiler and after a few seconds the boiler's green and amber light should illuminate.
- Set the boiler control thermostat to the required temperature using the control buttons.
- Set the time switch/programmer (if fitted) to the times and programs required.
- The boiler will now operate automatically, cutting in and out according to the heat demand.

5.1 To Turn Off the Boiler

- Switch off the boiler at the time switch/programmer (if fitted).
- If the boiler is to b switched off for any length of time it is recommended that the mains supply to the boiler is switched OFF.

5.2 Boiler Control Thermostat

The boiler control thermostat enables you to select the temperature of the water leaving the boiler. It is calibrated between 35° C and 75° C.

Using a small screwdriver set the temperature by turning the knob to the required setting or when the case is fitted use the buttons to switch between low and high (35°C and 75°C in 5 degree increments).





5.3 Boiler Indicator Lights

There are twelve LED indicator lights on the boiler fascia panel these are:

```
LED 1 – GREEN – Power to the boiler
LED 2 – AMBER – Illuminated – In run mode
Flashing – Temperature satisfied
LED 3 – RED – Boiler fault
LED 4-12 – GREEN – Temperature lights 35°C – 75°C
```



Fig 1

If the red LED light flashes, this means a fault has occurred. This would result in the boiler continuing to operate at a reduced output. If the red LED is permanently on, this indicates a fault has occurred (see Fault Finding on **pages 19-27**).

5.4 ESRTD3 Digital Room Thermostat

5.4.1 Thermostat Display

This product has a built-in auto-rechargeable battery to power the display when the system is between heating cycles. To conserve power this will run for eight hours and if the heating intervals are more than eight hours apart, the display "go to sleep" – although the thermostat is still active. When the mains power is restored, the battery auto-recharges. This is a design feature to ensure delayed start thermostat clears its memory at the end of every heating cycle.

5.4.2 What is Chronoproportional Control (TPI)?

A Chronoproportional (or TPI) room thermostat makes boilers operate more efficiently and provide close accurate control. Chronoproportional control is a load compensator as it ensures that the boiler 'ON' time is reduced to a minimum and matches the boiler heat output with the heat loss. This reduces the net temperature of the return water to the boiler. This is due to the TPI (Time Proportional and Integral) advanced energy saving feature.

Rather than just a simple ON/OFF control, like other domestic room thermostats, room thermostats with TPI increases boiler efficiency by firing the boiler at regular intervals, adjusting firing duration with demand, to maintain set room temperatures, giving them a great advantage over other domestic room thermostats and achieving a constant ambient environment for the user e.g. if a property only has a simple mechanical thermostat installed, then the energy saving benefits of a replacement high efficiency condensing boiler will not be realised as the boiler will rarely be running in condensing mode. Heating and hot water can account for over 80% of total household energy usage. Chronoproportional (TPI) thermostats can provide great cost savings. It can be used on any boiler, with underfloor and radiator systems, zoned heating and electric heating systems. The use of an electronic thermostat with Chronoproportional capability provides closed temperature control plus possible reductions of 10% in both fuel cost and carbon emissions. This thermostat has the option of standard setting or TPI.

5.4.3 What is Delayed Start

The ESi Delayed Start function offers real energy savings. Save as much as 10% on your heating costs. This feature delays the start-up of the heating, depending on how warm the room temperature is at the time when the central heating is due to come on.

The heating start can be delayed for up to an hour if the room is already relatively warm, when the weather is milder for example. This often reduces how long the heating is on per day, with no comfort loss, saving you energy and money. The delayed start feature can be fully automated and needs no extra programming.

5.4.4 Setting the Temperature

To set the temperature, turn the dial until the desired temperature is shown in the LCD display. The LCD display will flash the desired temperature for (approximately) 5 seconds before returning to display the current room temperature.

5.4.5 Technical Data

| Digital Room Thermostat with TPI & Delayed Start | | | |
|--|-----------------------------|--|--|
| Fixing | Easy Fit Back Plate | | |
| Sensing Element | Electronic | | |
| Power Supply | 230VAC, 50Hz | | |
| Switch Action | 3(1)A 230VAC | | |
| Temperature Setting Range | 5°C to 30°C | | |
| Current Rating | Maximum 3 (1) Amp | | |
| Terminal Differential | <0.6°C at 4°/hour | | |
| Switch Type | SPST | | |
| Dimensions | L:85mm x H: 85mm x D: 35mm | | |
| Complies with | EN60730-1, EN60730-2.7, EMC | | |
| | Directive 2004/108/EC, LVD | | |
| | Directive 2006/95/EC | | |

WARNING: Interference with sealed parts renders the guarantee void.

5.4.6 Mounting the Thermostat

- Position the thermostat about 1.5m above floor level, in a location where the thermostat is accessible, reasonably lit and free from extremes of temperature and draughts. Do not position the thermostat near sources of heat, such as TV, radiators, lights, direct sunlight or an outside wall.
- 2. Loosen the screws on the back-plate and remove from the thermostat.
- 3. Fix the back plate, terminals at the top, either directly onto a flat wall using wall plugs and screws or on a flush mounting single conduit box. Route the wires through the back of the thermostat and fit the wires to the wall-plate in accordance with the relevant diagram shown overleaf and in accordance with I.E.E. regulations.
- 4. Select personal options by referring to DIP switch menu.
- 5. Fit the thermostat onto back-plate, and tighten screws.
- 6. Ensure an appropriate fuse is fitted to the circuit before reconnecting to the mains supply (3 Amp usually).

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5.4.7 DIP Switch Settings – Heating



HEAT COMP DELAY (TPI) ON 3 CYCLES DLAYED START ON

Option to switch to:

- 1. Chronoproportional (Chrono)
- 2. 3 or 6 cycles (Chrono on, only)
- 3. Delayed Start ON or OFF

5.4.8 Setting Delayed Start

To set Delayed Start ON, switch the Delayed Start switch to the ON position on the DIP switch setting (to the right).

To set Delayed Start OFF, switch delayed Start switch to the OFF position on the DIP switch setting (to the left).

When the system is switched to HEAT and the Delayed Start switch is in the ON position, the thermostat will calculate the delayed start time to switch on the heating according to the difference between the setting temperature and room temperature:

- When the room temperature is 6°C or more lower than the setting temperature, the delayed start function will not work.
- When the room temperature is 5.9°C lower than the setting temperature, it will have a one minute delay.
- When the room temperature is 5.8°C lower than the setting temperature, it will have two minutes delay, and so on.
- The maximum delay time is 45 minutes.

5.5 ESCTDEP Cylinder Thermostat

5.5.1 introduction to the ESCTDEP (Electronic Dual Cylinder Thermostat)

The ESi Controls Electronic Dual Cylinder Thermostat (patent pending) is a revolutionary new energy saving product. With real safety and energy saving benefits and providing accurate temperature control, it also features a clean and informative LCD display.

The hot water can be stored at any desired temperature between 25°C and 65°C, with the confidence that the weekly automatic one hour "boost" to above 60°C kills Legionella bacteria, resulting in substantial energy saving.

The LCD display shows the current water temperature and the user defined water temperature, while the red LED indicates that the unit is calling for heat. The sensitive electronic sensors operate at a far greater accuracy than conventional oil filled mechanical dual thermostats, and do not need physical contact unlike traditional dual thermostats.

The large dial makes it easy to set the required controller temperature (between 25°C and 65°C). While the second (limit) safety thermostat is pre-set to 80°C with a concealed manual reset, to comply with Building Regulations.

5.5.2 Technical Data

| Electronic Dual Thermostat | | |
|----------------------------|---|--|
| Power Supply | 230 VAC 50-60Hz | |
| Switch Action | SPDT (control), SPST (limit) | |
| Temperature Setting Range | 25°C to 65°C | |
| Automated "Boost" | Once per week, >60°C for one hour | |
| Limit Thermostat | 80°C with concealed manual reset | |
| Tolerance | <1°C | |
| Switching Differential | 2°C | |
| Dimensions | L: 108mm x H: 90mm x D: 54mm | |
| Complies with | EMC (89/336 & 92/32 EEC) BS EN 60730-1: | |
| | 2000, BS EN 60730-2-9:2002. LVD (73/23/ | |
| | EEC) (93/68/EEC) BS EN 60730-1:2000, BS | |
| | EN 60730-2-9:2002 | |

5.5.3 Adjusting and Resetting the Cylinder Thermostat

Adjust the dial to show the desired hot water temperature on the display, between 25°C to 65°C. Remember, the lower the temperature, the less chance of scalding, and the more energy saving. Most home owners find a temperature of around 48°C - 53°C to be adequate.

If the system should overheat, the cause must be determined and resolved by a suitably qualified person. In the event of an overheat, the thermostat cuts out automatically. The reset for the thermostat is under the adjustment dial.

5.6 ES2247B Twin Channel Programmer

5.6.1 Introduction to the Twin Channel Programmer

This programmer can automatically switch your central heating or hot water ON and OFF either 2 or 3 times a day, at whatever times you choose. Timekeeping is maintained through power interruptions by a replaceable internal battery (by qualified installer/electrician only) designed to last for the lifetime of the programmer and the clock is automatically put forward 1 hour at 1:00am on the last Sunday of March and back 1 hour at 2:00am on the last Sunday of October. The clock is factory pre-set to UK time and date, but you can alter it if you want. During installation, the installer selects 24 hour, 5/2 day or 7 day programming and either 2 or 3 on/off periods per day, via the technical settings.

The large easy to read display makes programming easy and the unit is designed to eliminate the possibility of accidental changes to your programme. Buttons normally visible, only affect your set programme temporarily. All buttons which can permanently change your programme are located behind the flip over facia.

- The 24 hour programmer option runs the same programme every day.
- The 5/2 day programmer option allows different ON/OFF times at weekends.
- The 7 day programmer option allows different ON/OFF times for each day of the week.
- Pumped System (PU) allows independent control of central heating and hot water.
- Gravity System (Gr) does not allow central heating without hot water but can provide hot water without central heating.

IMPORTANT: These settings should only be changed by a qualified person. Contact your installer. The programmer is not suitable for the



switching of devices greater than 6 Amp rated (e.g. Not suitable for use as an immersion timer).

5.6.2 Quick Operating Guide



- 1. Home \bigcirc (takes you back to the home screen).
- 2. Next ▶ (moves you to the next option within a function).
- 3. Advance to the next programmed ON/OFF (ADV).
- 4. Add up to 3 hours of extra central heating/hot water (+HR).
- 5. Set time and date.
- 6. Set programmer option (24hr, 5/2, 7 day) & central heating.
- 7. Set programmer option (24hr, 5/2, 7 day) & hot water.
- 8. Reset.
- 9. Set operation mode (ON/AUTO/ALL DAY/OFF).
- 10. Runs the programme.
- 11. +/- buttons for settings adjustment.
- 12. Moves between days when programming central heating/ hot water (DAY).
- 13. Copy function (COPY).
- 14. Holiday mode.
- 15. Day of the week.
- 16. Time display.
- 17. AM/PM.
- 18. Date display.
- 19. Displays which ON/OFF period (**1/2/3**) is being set when programming central heating/hot water.
- 20. Displays whether setting the ON time or OFF time when programming central heating/hot water (**ON/OFF**).
- 21. Operating mode (ON/OFF/AUTO/ALL DAY).
- 22. Advanced temporary override is active (ADV).
- 23. Radiator/Tap symbol show that central heating/hot water is currently ON.
- 24. +1hr/2hr/3hr temporary override is active.



5.6.3 Programming the Unit

The Factory Pre-Set Programme

This programmer has been designed to be simple to use, requiring minimal user intervention with a pre-programmed heating profile.

The pre-set heating times and temperatures will suit most people (see table below). To accept the factory pre-set settings, move the slider to RUN which will revert the programmer to Run Mode (the colon (:) in the LCD display will begin to flash).

If the user changes from the factory-set programme and wants to return to it, pressing the reset button with a non metallic pointed tool will return the unit to the factory-set programme. **NB**. Every time the reset is pressed, the time and date must be set again.

Pre-Set Temperatures: 5/2 Day

| Configuration | Configuration | Mon – Fri | Sat – Sun |
|---------------------|---------------------|------------|------------|
| 2PU & 2Gr | 3PU & 3Gr | Times | Times |
| 1 st ON | 1 st ON | 06:30am | 07:30am |
| 1 st OFF | 1 st OFF | 08:30am | 10:00am |
| | 2 nd ON | 12:00 noon | 12:00 noon |
| | 2 nd OFF | 12:00 noon | 12:00 noon |
| 2 nd ON | 3 rd ON | 05:00pm | 05:00pm |
| 2 nd OFF | 3 rd OFF | 10:30pm | 10:30pm |

7 Day:

In 7 day setting, the pre-set settings are the same as 5/2 day programme (Mon to Fri and Sat/Sun).

24Hr:

In 24 hr setting, the pre-set settings are the same as Mon to Fri of the 5/2 programme.

5.6.4 Setting the Programmer Option (5/2, 7 day, 24hr)

1. Switch the slider to HEATING. Press either the +/- button to move between 7 day, 5/2 day or 24hr operation.

5/2 Day Operation is shown by MO, TU, WE, TH, FR flashing (5 Day and then Sa, SU flashing (2 day).

7 Day Operation is shown by just one day flashing at a time.

24 hr Operation is shown by MO, TU, WE, TH, FR, SA, SU flashing at the same time.

2. Wait 15 seconds to automatically confirm or press the **Home** button. Move the slider to RUN to return to Run Mode.

5.6.5 Setting the Central Heating programme

- 1. Move the slider to HEATING. Choose between 5/2 day, 7 day or 24 hr programmer operation (see above steps 1-2).
- 2. Press the **Next →** button. Press the Day button until the desired day/block of days you want to programme is flashing.
- The display shows the 1st ON time. Press +/- to set the time (10 minute increments). Press the Next → button.
- The display shows the 1st OFF time. Press +/- to set the time (10 minute increments). Press the Next → button.
- 5. The display will now show the 2nd ON time. Repeat steps 3-4 until all remaining ON/OFF periods have been set. On the last OFF



period, press the **Day** button until the next desired day/block of days you want to programme is flashing.

- 6. Repeat steps 3-5 until all days/block of days have been programmed.
- 7. Wait 15 seconds to automatically confirm or press the **Home** button. Move the slider to RUN to return to Run Mode.

5.6.6 Setting the Hot Water Programme

- 1. Move the slider to HW. Choose between 5/2, 7 day or 24 hr programmer operation.
- 2. Press the **Next →** button. Press the **Day** button until the desired day/block of days you want to programme is flashing.
- The display shows the 1st ON time. Press +/- to set the time (10 minute increments). Press the Next ▶button.
- The display shows the 1st OFF time. Press +/- to set the time (10 minute increments). Press the Next ▶ button.
- The display will now show the 2nd ON time. Repeat steps 3-4 until all remaining ON/OFF periods have been set. On the last OFF period, press the **Day** button until the next desired day/block of days you want to programme is flashing.
- 6. Repeat steps 3-5 until all days/block of days have been programmed.
- Wait 15 seconds to automatically confirm or press the Home
 button. Move the slider to RUN to return to Run Mode.

5.6.7 Setting the Operation

 Switch the slider to PROG. Press either the +/- button to move between ON/OFF/AUTO/ALL DAY. Press the Next ▶ button to move between the 3 channels.

ON: Central heating and hot water is ON continuously.

AUTO: Central heating and hot water will be switched **ON** and **OFF** in accordance with set programmes.

ALL DAY: Central heating and hot water will switch ON at the first ON and switch OFF at the last OFF.

OFF: Central heating and hot water will be permanently **OFF**.

2. Wait 15 seconds to automatically confirm or press the **Home** button. Move the slider to RUN to return to Run Mode.

5.6.8 Temporary Manual Overrides

The Advance Function

The ADVANCE function allows the user to move to the next ON/OFF programme for a "one off" event, without having to change the programme or use the ON or OFF buttons.

NB: The ADVANCE function is only available when the programme is in AUTO or ALL DAY operating modes and the slider must be switched to RUN.

To Advance Central Heating

- 1. Press the Next → button until the radiator symbol is displayed. Press the ADV button. This will turn the central heating ON if it is in an OFF period and OFF if it is in an ON period. The word ADV will appear to the left hand side of the radiator symbol.
- 2. It will stay in this state until either the button is pressed again, or until a programmed ON/OFF period commences.

To Advance Hot Water

- 1. Press the **Next** → button until the tap symbol is displayed. Press the **ADV** button. This will turn the hot water ON if it is in an OFF period and OFF if it is in an ON period. The word **ADV** will appear to the left hand side of the tap symbol.
- 2. It will stay in this state until either the **ADV** button is pressed again, or until a programmed ON/OFF period commences.

The +HR Boost Function

The +HR function allows the user to have up to 3 hours of extra central heating or hot water, without having to change the programme.

NB: The +HR function is only available when the programme IS IN auto, all day OR off OPERATING MODES AND THE SLIDER MUST BE SWITCHED TO run. If the programmer is in AUTO or ALL DAY mode when the +HR button is pressed and the resulting time of the boost overlaps a START/ON time, the boost will disengage.

To +HR Boost Central Heating

- 1. Press the **Next** → button until the radiator symbol is displayed. Press the +HR button.
- 2. One press of the button will give one extra hour of central heating; two presses of the button will give two extra hours; three presses of the button will give the maximum three extra hours. Pressing it again will switch off the +HR function.
- 3. The +1HR, +2HR or 93HR status will appear on the right hand side of the radiator symbol.

To +HR Boost Hot Water

- 1. Press the **Next ▶** button until the tap symbol is displayed. Press the +HR button.
- 2. One press of the button will give one extra hour of hot water; two presses of the button will give two extra hours; three presses of the button will give the maximum three extra hours. Pressing it again will switch off the +HR function.
- 3. The +1HR, +2HR or +3HR status will appear on the right hand side of the trap symbol.

Holiday Mode

Holiday Mode saves energy by letting you reduce the temperature for 1 to 99 days while you are away from home, resuming normal operation on your return.

- 1. Press in to enter Holiday Mode and the screen will display d:1.
- 2. Press +/- buttons to select the number of days you would like the Holiday Mode to run for (between 1-99 days).
- 3. Press the **Home** $\widehat{\square}$ button to confirm. The system will now turn OFF for the number of days chosen. The number of days will alternate with the time symbol on display and the number of days will count down.
- 4. Once the countdown has finished, the programmer will return to normal operation. It may be advisable to set the Holiday Mode 1 day less so the house is back up to temperature for your return.
- 5. To cancel the Holiday Mode, press in button to revert back to run mode.

5.6.9 Basic Settings

Setting the Time and Date

The time and date are factory set and changes between summer and winter time are handled automatically by the unit.

- 1. Switch the slider to Time/Date.
- 2. The hour symbols will flash, use the +/- buttons to adjust.
- Press the Next → button and the minute symbols will flash, use the +/- buttons to adjust.
- 4. Press the **Next →** button and the day date will flash, use the +/- buttons to adjust the day.
- 5. Press the **Next** → button and the month date symbols will flash, use the +/- buttons to adjust the month.
- Press the Next ▶ button and the year date symbols will flash, use the +/- buttons to adjust the year.

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7. Press the **Next** → button and or wait 15 seconds to automatically confirm and return to Run Mode.

5.6.10Setting the Backlight

The backlight can either be set permanently ON or OFF. The programmer backlight is pre-set to be permanently OFF. When the backlight is permanently OFF, the backlight will turn ON for 15 seconds when + or – buttons is pressed, then turn OFF automatically.

To change setting to permanently ON, move the slider to TIME/DATE. Press the **Next** ➡ button repeatedly until Lit is displayed. Press +/- to turn backlight ON or OFF. Press the **Next** ➡ button or wait for 15 seconds to automatically confirm and return to Run Mode.

NB: Do not use Advance or +HR Boost button to activate the back light as it may engage the Advance or +HR facility and turn on the boiler. Only use the Home \widehat{m} button.

5.6.11Resetting the Unit

Press the reset button with a non-metallic pointed tool to reset the unit. This will restore the built in programme and also reset the time to 12:00pm and the date to 01/01/2000.

NB: As a safety feature after resetting the unit will be in OFF operating mode. Reselect your required operating mode. Use of excessive force may result in the reset button sticking behind the front cover of the programmer. If this happens the unit will "freeze" and the button can only be released by a qualified installer.

5.6.12 Power Interruption

In the event of a mains supply failure the screen will go blank but the back-up battery ensures that the programmer continues to keep the time and retain your stored programme. When power is restored switch the slider to RUN to return to Run Mode.

5.6.13Technical Data

| Twin Channel Programmer | | |
|---------------------------|--|--|
| Power Supply | 230 VAC 50-60Hz | |
| Operating Temperature | 0°C to 35°C | |
| Switch Rating | 230V AC, 6 (2)A SPDT | |
| Battery Type | Lithium Cell CR2032 | |
| Enclosure Protection | IP30 | |
| Plastics | Thermoplastic, flame retardant | |
| Insulation Class | Double | |
| Wiring | For fixed wiring only | |
| Back Plate | Industry standard | |
| Dimensions | 140mm(L) x 90mm (H) x 30mm (D) | |
| Clock | 12 hour am/pm, 1 minute resolution | |
| BST/GMT Time Change | Automatic | |
| Clock Accuracy | +/- 1 sec/day | |
| Programme Cycle | 24hr, 5/2 Day or 7 Day selectable | |
| Programme ON/OFFs per day | 2 ON/OFF or 3 ON/OFF selectable | |
| Programme Selection | Auto, ON, All Day, OFF | |
| Programme Override | +1, +2, +3Hr and/or Advance | |
| Heating System | Pumped, Gravity selectable | |
| Complies with: | EN60730-1, EN60730-2.7, EMC Directive 2014/30/EU, LVD Directive 2014/35/EU | |

5.6.14Technical Settings

- 1. Move the slider to RUN. Hold down the Home button, the Day button and the —button (under the facia) together for 3 seconds to enter the Technical Setting Mode.
- 2. Press +/- to choose between 2 or 3 ON/OFs per day.
- Press the Next → button and press +/- to choose between Pu (Pumped, allows independent control of CH and HW) or Gr (Gravity, does not all CH without HW but can provide HW without CH).
- 4. Press the Next ▶ button and press +/- to choose between Protection ON/OFF. (If Protection is ON and the system does not call for heat for one week, the system will be turned ON for one minute each week that the system does not call for heat).
- 5. Press the **Next** ➡ button and press +/- to choose between 12 hour clock or 24 hour clock.

5.6.15 Fitting the Back Plate

- 1. Position the wall-plate (terminals along top edge) with 60mm (min) clearance to its right, 25mm (min) above, 90mm (min) below. Ensure that the supporting surface will fully cover the back of the programmer.
- 2. Offer the back plate to the wall in the position where the programmer is to be mounted, remembering that the back plate fits to the left side of the programmer. Mark the fixing positions though the slots in the back plate, drill and plug wall, then secure back plate in position.
- 3. All necessary electrical connections should now be made. Ensure that the wiring to the wall-plate terminals leads directly away from the terminals and is completely enclosed within the wall-plate aperture. Wire ends must be stripped and screwed to the terminals so that minimal bare wire is showing.

5.6.16 Commissioning

Switch on the mains supply. Referring to the User Instructions.

- 1. Use the buttons to ensure correct product functionality.
- 2. Set timing and programme details in accordance with customer requirements.
- 3. Normally the unit will be left with channel in 'Auto' mode.
- 4. Set backlight either permanently ON or OFF in accordance with customer requirements.
- 5. Leave these installation instructions with customer for reference.

5.7 Frost Protection

If the boiler and central heating is shut down for many hours during cold weather, the water may be in danger of freezing. The boiler incorporates a frost thermostat.

If the system is shut down for long period during very cold weather, it is advisable to completely drain the system. However, frequent draining should be avoided, especially in hard water areas, as this could lead to scaling of the boiler waterways.

WARNING: DO NOT SWITCH ON THIS APPLIANCE IF THERE IS ANY POSSIBILTY THAT THE WATER HEAT EXCHANGER IS FROZEN.

5.8 Wilo - Yonos Para Pump

The pump consists of a hydraulic system, a glandless pump motor with a permanent magnet rotor, and an electronic control module with an integrated frequency converter. The control module can have either a



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operating knob (self regulated pump RKA/RKC model). It is equipped with an LED display in order to display the pump operating status.

Functions

All functions can be set, activated or deactivated by using the operating knob or by an externally controlled PWM signal.



The differential pressure setpoint H is increased linearly over the permitted volume flow range between ½ H and H. The differential pressure generated by the pump is adjusted to the corresponding differential pressure setpoint. This control mode is especially useful in heating systems with radiators, since the flow noises at the thermostatic valves are reduced.

Constant Differential Pressure (Δp-c):

The differential pressure setpoint H is kept constant over the permitted volume flow range at the set differential pressure setpoint up to the maximum pump curve. Wilo recommends this control mode for underfloor-heating circuits or older heating systems with large-sized pipes as well for all applications with no changeable pipe system cure, e.g. boiler charge pumps.

The pump will overrun for a short period of time after the boiler turns off

5.9 Cleaning & Maintenance

Use hot soapy water applied with a damp dry cloth for the enamel, then dry with a soft dry cloth.

Ensure that the natural ventilation around the boiler is not obstructed. If fitted in a compartment ensure all ventilation grilles are clear.

6. Technical Specification

| MODEL | Aztec | Aztec | Aztec |
|-------------------------|---|-------|-------|
| Electrical Input | 6kW | 9kW | 12kW |
| Supply Current (amp) | 25A | 39A | 51A |
| RCD Rating (amp) | 32A | 40A | 63A |
| Minimum Cable Size (mm) | 4 | 6 | 16 |
| Weight (kg) | 66kg empty, 271kg full | | |
| Water Content (litres) | 210 | | |
| Diameter (mm) | 750 | | |
| Height (mm) | 1540 | | |
| Mains Supply | 230V 50Hz | | |
| Max Operating Pressure | 3 bar 43.5 psi | | |
| Test Pressure | 6 bar 87 psi | | |
| Boiler Flow Temperature | Adjustable between 35°C and 75°C, located on the front casing | | |
| Limit Thermostat | Factory set at 100°C | | |
| Casing Finish | Stove enamelled white | | |

7. Installation Instructions

7.1 Regulations

Installation of the system must comply with the following British Standards and regulations:

BS 5449 - Forced Circulation Hot Water Central Heating Systems.

BS 7074 - Part 1 - Code of Practice for Sealed Water Systems. The Building Regulations **Current I.E.E Regulations** Local water undertaking Bye-Laws

7.2 Health & Safety at Work Act 1974

The installer should be aware of his responsibilities under the Act and provide where necessary, appropriate protection for persons carrying out the installation. In the interests of safety a competent engineer should install the boiler and all wiring must be carried out in accordance with current IEE wiring regulations.

IMPORTANT: ALL ELECTRICAL WORK MUST BE CARRIED OUT BY A QUALIFIED ELECTRICAL ENGINEER TO CURRENT IEE WIRING **REGULATIONS.**

7.3 Siting the Boiler

IMPORTANT: NOT TO BE INSTALLED IN A SHOWER COMPARTMENT OR BATHROOM.

The boiler is designed to be fitted in an upright position only. Ensure adequate clearance is allowed for making water connections as the boiler can be fully serviced from the front. The boiler must also be fitted in a dry well ventilated position, which is not subject to adverse temperature conditions (see ventilation requirements).

Care should be taken when siting the appliance to make sure adequate access is available for future servicing of the appliance. Please do note the PCB, heat exchanger assembly and immersion heater may require removal during such times. The immersion heater is situated to the right hand side of the cylinder as indicated In Fig 4. A minimum distance of 25mm should be left to the front of the unit to the door of the cupboard to allow for ventilation of the Aztec boiler casings.



7.4 Unpacking the Boiler

Carefully open the boiler carton, remove the boiler and place in a safe place until required.

NOTE - ALWAYS STORE THE BOILER IN A DRY PLACE PRIOR TO FITTING. DO NOT ALLOW THE BOILER TO BE STORED WITH THE CASING REMOVED.



7.5 Ventilation Requirements

If the appliance is to be fitted in a confined space or compartment, it is a requirement that adequate ventilation is provided to prevent the overheating of the boiler controls. Aeration of 100cm² will be required to the compartment, in both high and low level positions.



8. RM Stelflow 210L Cylinder

8.1 Introduction

The corrosion resistant Stelflow Unvented cylinder is made from Duplex Stainless Steel. It is highly insulated with environmentally friendly foam enclosed in a rust resistant white steel case.

To help ensure compliance with the relevant Water and Building Regulations all Stelflow units are supplied complete with 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.

Stelflow is approved to demonstrate compliance with Water Regulation and Building Regulations G3 and Part L.

8.2 Installation Prerequisites

This cylinder should only be installed by a competent installer holding their G3 unvented qualification. The installation of this product is also notifiable under the national Building Regulations.

The installation must comply with the requirements of the following codes of practice.

BS 5449 Part 1 Forced Circulation Hot Water Systems.

BS 7074 Part 1 Code of Practice for Sealed Water Systems.

BS 7593 Treatment of Water in Domestic Hot Water Central Heating Systems.

8.3What is 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 <u>www.centralheating.co.uk</u>.



8.1.4 Water Supply

The Stelflow is capable of delivering 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 what is 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. The Aztec boilers are low water content boilers so require a good flow rate at all times (see below chart).

| Model | Min Flow Rate/Min |
|------------|-------------------|
| Aztec 2kW | 4 Litres |
| Aztec 6kW | 8 Litres |
| Aztec 9kW | 10 Litres |
| Aztec 11kW | 11 Litres |
| Aztec 12kW | 12 Litres |

A minimum of 22mm supply pipe work should ideally be provided and existing $\frac{1}{2}$ " (915mm) cold mains pipe work may need to be upgraded. Hard water treatment should be considered in areas where content is greater than 200ppm, if required adjust cylinder temperature to below 60 degrees.

8.1.5 Cold Mains Pipework & Expansion Vessel

Run the cold mains through the building to the place where the Stelflow 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 BS 1010 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 of the cylinder. There must be no obstruction or flow restriction between the cylinder and the expansion vessel.

NOTE: 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.

8.1.6 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.

8.1.7 Primary Coil Connections

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 coil in the Stelflow is suitable for up to 7 bar if required. The boiler must be under effective thermostatic control. 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.

8.1.8 Secondary Circulation

Where secondary circulation is required a circulator suitable for potable water should be used in conjunction with a non-return valve to prevent backflow. 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.

8.1.9 Immersion Heaters

As a requirement of Building Regulations the Stelflow 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 13/4" thread. They are of a low noise Incoloy construction and rated at 3kW at 240V. Replacement immersion heaters should be purchased via ourselves otherwise your guarantee may be affected.

The 'O'' ring of 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. The electrical supply to each immersion heater/s must be fused at 13A via a double pole isolating switch 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 operate the immersion heater/s until the unit is full of water. If any serialisation liquid is in the cylinder do not operate the immersion heater/s as this will cause premature failure.

Electric to be supplied by a fused supply compliant with local regulations, and fitted by a qualified Part P Electrician.

8.1.10 Energy Cut-out and Cylinder Thermostat

As a requirement of Building Regulations the Stelflow unit is 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 to the two port valve controlling the primary flow.





8.2 Plumbing Schematic



8.3 Discharge Arrangement

Full detail of Building Regulation G3 is available as a free download from: <u>www.planningportal.gov.uk</u>. 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 pipework 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 pipework 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:

- 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 18 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 BS 6700: Specification for design installation, testing and maintenance of services supplying water for domestic use within buildings and their cartilages.
- 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:

- 1. To a trapped gully with outlet below a fixed grating and above water seal.
- 2. Downward discharges to low level, within 100mm, above external surfaces such as car parks, hard standing, grassed area with protective wire cage to prevent contact but retaining visibility of discharge.
- 3. 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;

- 1. 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.
- 2. Be a separate branch pipe with no sanitary appliances connected to it.

- 3. Plastic pipes used as branch pipes with the discharge should be Polybutalene (PB) or cross linked polythene (PE-X) complying with national standards such as Class S of BS 7291-1:2006 or Class S of BS 7291-3:2006 respectively.
- 4. Be continuously marked with a warning that no sanitary appliances should be connected to the pipe.
- 5. 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.



8.4 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 Stelflow 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.

8.5 Indirect Units

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 between 55°C and 65°C as required.

8.6 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 allowing as much water as possible to flow through the tundish. Check that your discharge pipework is free from debris and is carrying the water away without spillage over the tundish and release the valves and check that they re-seat properly.



8.7 Draining

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

WARNING! Water drained off may be very hot.

8.8 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.

- 1. The expansion vessel relief valve on the inlet control set should have 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 ensure that the discharge pipework is allowing the water to drain away adequately. If not check for blockages etc. and clear.
- 2. 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.
- 4. Remove the head on the inlet control set by unscrewing, and clean the mesh filter within.
- 5. The benchmark service record supplied within this manual should be updated at each service.

SERVICING MUST BE CARRIED OUT ANNUALLY AND SHOULD ONLY BE CARRIED OUT BY COMPETENT INSTALLERS AND ANY SPARE PARTS USED MUST BE PURCHASED FROM T R ENGINEERING LTD. NEVER BYPASS ANY SAFETY DEVCES OR OPERATE THE UNIT WITHOUT THEM FULLY OPERATIONAL.

YOUR GUARANTEE MAY BE VOID WIHTOUT PROOF OF ANNUAL SERVICING. THE COMMISSIONING CERTIFICATE SUPPLIED AT THE REAR OF THIS MANUAL SHOULD ALSO BE COMPLETED BY THE INSTALLER.

9. Wiring Instructions

ALL ELECTRICAL WORK MUST BE CARRIED OUT IN ACCORDANCE WITH CURRENT IEE WIRING REGULATIONS.

BEFORE COMMENCING INSTALALTION CHECK POWER SUPPLY TO THE PROPERTY TO ENSURE THAT THERE IS SUFFICIENT CURRENT AND VOLTAGE AVAILABLE FOR SIZE OF BOILER BEING FITTED. TAKE INTO ACCOUNT REQUIREMENTS OF OTHER ELECTRICAL APPLIANCES. THE BOILER MUST BE CONNECTED TO THE MAINS SUPPLY BY MEANS OF A DOUBLE POLE LINKED SWITCH WITH 3mm CONTACT GAP IN BOTH POLES.

IMPORTANT: After completing electrical installation work preliminary safety checks should be carried out as described in BS 7671:2001.

IMPORTANT:

The electrical supply requirements:-

The 6kW boiler supply should meet the requirements of EN 61000-3.3. The 9kW boiler must be installed in premises having a service supply of \geq 100A per phase and meet the requirements of IEC 60417-5855.

The 12kW boiler must be installed in premises having a system impedance of not more than $0.1939 + 0.1939\Omega$.

A double pole RCD with trip level sensitivity of 30mA can be used capable of breaking full load current to BS EN 61008:1994.

Note: RCD UNIT can be used as the isolating switch if mounted close enough to the boiler.

Miniature circuit breakers (MCB) **MUST** be fitted between RCD unit and boiler and RCD and any external controls.

It is important the correct size MCB is used in the supply from the RCD to the boiler.

9.1 Electrical Connections

WARNING: THIS APPLIANCE MUST BE EARTHED.

The mains connection block is located inside the boiler on a bracket at the top left hand side of the boiler which can be directly wired to the boiler MCB. Use the correctly rated cable.

Where the pump is wired directly back to the boiler both live and neutral connections must be used with the earth being wired back to the earth post. This is important as the pump is controlled by a switched neutral. This is also applies to pumps being controlled with a relay.

IMPORTANT: CORRECT POLARITY <u>MUST</u> BE OBSERVED WHEN BRINGING THE MAINS SUPPLY INTO THE BOILER.

9.2 Boiler Output Set-Up

Before turning the unit on you should make sure that the jumper settings on the PCB have been adjusted to the kW output required. See below picture for jumper position and where to set them.



Jumper position on PCB

Fig 8

Where to position jumpers for boiler output



Fig 9

Depending on the output of the boiler depends on what size cable and RCD should be used. It is vital that the correct size cable and RCD are installed to prevent any hazards. See below table which details the cable size and RCD size for the relevant output.

| Boiler Output | Cable Size | RCD Size |
|---------------|------------|----------|
| 6kW | 4mm | 32A |
| 9kW | 6mm | 40A |
| 12kW | 16mm | 63A |



9.3 Wiring Diagram



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9.4 Element & PCB Wiring Diagram





10. Servicing Instructions

To ensure reliable operation of your Aztec electric boiler, it is recommended that you have your boiler serviced once a year.

The person(s), who services or carries out any remedial work, i.e. electrical fault finding, must have suitable engineering qualifications. Isolate the mains supply before carrying out any service work.

- 1. Check all electrical connections on PCB and electric elements to ensure they are secure and clean.
- 2. Check electrical insulation on wiring.
- 3. Ensure all air grilles are clean and free from obstructions.
- Inspects seals around elements and also the heat exchanger top and bottom flanges.



11. Parts Placement

11.1 Casing Removal

IMPORTANT

Isolate the mains electrical supply to the boiler before carrying out any maintenance work.

- 1. Isolate electrical supply to the boiler.
- 2. Remove 4 fixing screws securing front casing in position.
- 3. Slide top casing upwards this will allow front casing slide forward.

IMPORTANT: All electrical connections should be checked. Loose connections can cause problems.

This boiler is fitted with a manual reset high limit thermostat. Before replacing any part, ensure that the thermostat does not require resetting.

11.2 PCB Assembly Replacement

- 1. Ensure electrical supply is isolated to the boiler.
- 2. Remove the fixing screws and washers (2 at top and 2 at bottom), lift up the top-plate and carefully slide off the front casing panel.
- 3. Disconnect the pump & call plug, the thermistor plug and the high limit stat plug.
- 4. Disconnect all element cables apart from the rear element. N.B. Take note of wiring arrangement before disconnecting.
- 5. Now remove the grey pipe insulation, it is now possible to disconnect the remaining element.
- 6. With all elements disconnected, again taking note of wiring arrangement, carefully disconnect and remove the element cables from the PCB.

IMPORTANT: Care **MUST** be taken when handling the PCB.

- 7. For ease of access disconnect from the main terminal block both the red & black cables and also the power input cables, leaving the earth cable connected.
- 8. Free both the pump and call terminal blocks by removing the terminal block fixing screws.
- 9. Finally remove the 4 fixing screws holding the PCB to the bracket.

11.3 High Limit Thermostat Replacement

- 1. Ensure electrical supply is isolated to the boiler.
- 2. The high limit thermostat can be found fixed to top front face of boiler.
- 3. Remove 2 terminal connectors from high limit thermostat, loosen retaining straps and slide thermostat out from behind.

IMPORTANT: When replacing the thermostat ensure a heat sink compound is used between back of the thermostat ensure a heat sink boiler (see Fig. 10 for positioning).

4. Inspect retaining straps and replace where necessary.

11.4 Thermostat Replacement

- 1. Isolate the electrical supply to the boiler.
- 2. Thermistor is fixed to the top front of the boiler above the high limit thermostat.
- 3. Disconnect from the PCB and slide out from behind the retaining strap.

IMPORTANT: When replacing the thermistor ensure a heat sink compound is used between the thermistor and the boiler body (see Fig. 10 for positioning).

- 4. Inspect retaining straps and replace where necessary.
- 5. When replacing the front casing, ensure the thermostat control shaft passes through the hole in the front control panel.





11.5 Element Replacement

- 1. Isolate electrical supply to the boiler.
- 2. Drain down the system.
- 3. Disconnect the terminal connectors from the high limit thermostat.
- 4. Remove the thermistor from behind the retaining strap.
- 5. Disconnect electrical elements and earth wire.
- 6. Disconnect compression fitting top and bottom of boiler.
- 7. Remove securing bracket on bottom of the boiler then carefully remove the top bracket.
- 8. Boiler unit can now be carefully removed.
- 9. Remove eight fixing screws on top flange and withdraw element assembly.
- 10. Remove bottom element positioning bracket.
- 11. Removed damaged element.
- 12. Refit in reverse order, ensure element seals are fitted.
- 13. Check for continuity through two terminals on each element. **IMPORTANT**

Inspect all seals and change where necessary.

12. Fault Finding

Red LED permanently illuminated indicates one of the following faults.

High limit thermostat has operated or fault electrical connections.

The high limit thermostat is fitted to the front top of the copper heat exchanger and secured in position with 2 retaining clamps. Check electrical connections on thermostat and PCB to check thermostat has not failed using a multi meter to check the continuity across the terminals of the thermostat.

To reset press the red button in the centre of the thermostat. Thermostat may have tripped due to one of the following:-

- 1. Faulty circulation pump
- 2. Isolation valve on system closed
- 3. Air trapped in the system
- 4. Out of calibration limit thermostat
- 5. Temperature settings on PCB incorrect
- 6. No water in the system

Thermistor

The thermistor is fitted to the front top of the heat exchanger and secured in position with a clamp; the other end terminates with a white connector that plugs on to the PCB.

Check the connections on the board to make sure it is correctly fitted; also inspect the thermistor for any broken wires.

Mains Inlet Wiring

If the mains supply to the boiler is wired incorrectly on the inlet terminal block. Check polarity.

PCB Damage

Inspect the LED lights and the boiler temperature control adjuster for any damage to connections to the PCB controller.

Voltage Drop

If the voltage drops below 207 volts.

Red LED flashes indicates one of the following faults

Poor Electrical Connection

Check the electrical connections to the elements and the PCB controller, a poor connection would show up as a fault.

Element Failure

To check elements for failure, disconnect each individual element and check continuity through the element, if there is continuity between the two terminals the element is ok. Check each element individually replacing the electrical connectors after testing.

Element Cables

If there is a break in the element cable, this would show up as a fault. Check all element cables and connections.

Jumpers

Are the jumpers set correctly (see Fig 8 & 9).

Green LED

If the green LED is illuminated but the boiler is not functioning, check that any external controls fitted are calling for heat.

Blown Fuse on Board

If there is power to the boiler but no LED illuminated then the fuse on the PCB may have blown. The fuse is located at the top edge of the PCB. (Fuse type 20mm 1A anti-surge Bessman type S560). The fuse may have blown due to one of the following:-

- 1. When multiple boilers are fitted and a larger pump is used.
- 2. If the call terminal block is used to supply power to any ancillary controls.

RCD Unit Trips

Check that he RCD unit is correctly rated for the boiler size. If under sized then change.

Inspect the mains terminal block for earth continuity, if the element is found to be faulty then fit a new element.

Thermistor Values

| Temperature | Resistor Value |
|-------------|----------------|
| 0 | 32554 |
| 5 | 25339 |
| 10 | 19872.2 |
| 15 | 15698.5 |
| 20 | 12487.7 |
| 25 | 10000 |
| 30 | 8069.1 |
| 35 | 6534.7 |
| 40 | 5329.9 |
| 45 | 4371.7 |
| 50 | 3605.3 |
| 55 | 2988.7 |
| 60 | 2490 |
| 65 | 2084.4 |
| 70 | 1753 |
| 75 | 1480.9 |



12.1 No Heat – Permanent Green Light





12.2 Flashing Red Light





12.3 Permanent Red Light





12.4 No Green Light





12.5 Unvented Cylinder Fault Finding

| Symptoms | Possible Causes | Follow Up Action |
|---|---|---|
| Cylinder appears to leak from within the case. | Loose cylinder connection. | Check all connection points including immersion heaters to ensure integrity of joint and remake any suspect joints. |
| | Possible fault at Pressure Reducing Valve. | Follow fault finding information for Inlet Control Group. |
| Expansion Valve operates and water is visible at the Tundish. | Back pressure from the system. | 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. |
| Expansion valve operates when cylinder is heated. | Possible fault at Expansion Vessel. | Follow fault finding information for Expansion Vessel. |
| Noise when operating tap outlet. | Insecure Pipework. | Increase the number of pipe clips. |
| | External works to public mains. | Wait for works to be completed. |
| Reduced water flow. | Debris from water mains. | Strip & clean or replace Inlet Control Group. |
| | Pressure Reducing Valve sticking. | Strip & clean or replace Inlet Control Group. |
| No hot water available | Immersion heater failure. | Follow fault finding information for Immersion heater. |
| | Boiler failure. | Check operation of the boiler and its controls. |

12.6 Expansion vessel Fault Finding

| Symptoms | Possible Causes | Follow Up Action |
|--|--|--|
| | Expansion Vessel is too small. | Vessel needs resizing and installation by appropriately qualified engineers. |
| Discharge of water from the Relief Valve. | Pre-charge set incorrectly on vessel installation. | Pre-charge requires setting while system is de-pressurised according to cylinder manufacturers recommendations. |
| | Membrane is ruptured and may require replacement. | Replace membrane or entire vessel. Inspect Schrader valve for leaks or damage. |
| | Membrane may be partially de- pressurised due to natural losses and require re-pressurisation. | Re-pressurise or consider replacement depending on age of vessel and amount of pressure lost. Inspect Schrader valve for leaks or damage. |
| | Failure of Flange Plate. | Replace Flange Plate or entire vessel. |
| Leak from Flange or Water | Loss of torque in Flange retaining bolts. | Re-tighten bolts as needed. |
| Connection. | Ruptured membrane has caused corrosion of vessel body resulting in pinhole leak. | Entire Vessel must be replaced. Inspect Schrader valve for leaks or damage. |
| Vessel appears to be full of liquid when system is cold. | Membrane is de-pressurised. | Replace membrane or entire vessel. Inspect Schrader valve for leaks or damage. |
| Water is discharged from vessel when Schrader pin is de-pressed for inspection of air pressure | Membrane is ruptured. | Membrane or vessel requires replacement. |



12.7 Inlet Control Group Fault Finding



12.8 Tundish Fault Finding





12.9 T&P Valve Fault Finding





12.11 Immersion Heater Fault Finding



12.12 Energy Cut Out Fault Finding





13. Parts List





| ITEM | DESCRIPTION | QTY | 2kW | 6kW | 9kW | 11kW | 12kW |
|------|----------------------------|-----|--------|--------|--------|--------|--------|
| 1 | Heat Exchanger Assembly | 1 | 221881 | 221882 | 221883 | 221884 | 221880 |
| 2 | PCB Assembly | 1 | 211559 | 211559 | 211559 | 211559 | 211559 |
| 3 | Element | 1 | 222641 | - | - | - | - |
| | | 3 | - | 221802 | - | - | - |
| | | 3 | - | - | 221850 | - | - |
| | | 3 | - | - | - | 221850 | - |
| | | 1 | - | - | - | 221802 | - |
| | | 4 | - | - | - | - | 221850 |
| 4 | Thermistor | 1 | 221824 | 221824 | 221824 | 221824 | 221824 |
| 6 | Tube Insulation | 1 | 221863 | 221826 | 221843 | 221843 | 221843 |
| 7 | Back Casing Assembly | 1 | 221865 | 221830 | 221845 | 221845 | 221845 |
| 8 | Front Casing Assembly | 1 | 221867 | 221821 | 221847 | 221847 | 221847 |
| 9 | Bottom Pipe Bracket | 1 | 221815 | 221815 | 221815 | 222093 | 222093 |
| 10 | Pipe Bracket | 1 | 221814 | 221814 | 221814 | 221814 | 221814 |
| 11 | High Limit Thermostat | 1 | 221825 | 221825 | 221825 | 221825 | 221825 |
| 12 | Jubilee Clip | 2 | 95256 | 95256 | 95256 | 95256 | 95256 |
| 13 | Cable Gland | 1 | 210796 | 210796 | 210796 | 210796 | 210796 |
| 14 | Locknut | 1 | 210797 | 210797 | 210797 | 210797 | 210797 |
| 15 | Gasket | 1 | 221807 | 221807 | 221807 | 221807 | 221807 |
| 16 | 22mm Pipe Insulation | 1 | 99285 | 99285 | 99285 | 99285 | 99285 |
| 17 | Duct Top | 1 | 221793 | 221793 | 221793 | 221793 | 221793 |
| 18 | Top Pipe Bracket | 1 | 221796 | 221796 | 221796 | 221796 | 221796 |
| 19 | Тор Сар | 1 | 221791 | 221791 | 221791 | 221791 | 221791 |
| 20 | Snap In Protection Grommet | 1 | 221787 | 221787 | 221787 | 221787 | 221787 |
| 22 | Cable Gland | 1 | 210796 | 221825 | 221887 | 221887 | 221887 |
| 23 | Locknut | 1 | 210797 | 221825 | 221887 | 221887 | 221887 |
| 24 | Label Call | 1 | 221965 | 221965 | 221965 | 221965 | 221965 |
| 25 | Label Pump | 1 | 221964 | 221964 | 221964 | 221964 | 221964 |
| 26 | Terminal Block | 1 | 96278 | 96278 | 96278 | 96278 | 96278 |
| 27 | Fuse 1A | 1 | 211563 | 211563 | 211563 | 211563 | 211563 |
| 28 | Switch Assembly | 1 | 211562 | 211562 | 211562 | 211562 | 211562 |
| | Wiring Harness | 1 | - | 221798 | 221798 | 221799 | 221799 |



14.Benchmark Log Book

| 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 state. | f utory rights. | |
|---|--------------------|-----------|
| Customer Name Telephone Number | | |
| Address | | |
| Cylinder Make and Model | | |
| | | |
| Commissioned by (print name) | | |
| Company Name Telephone Number | | |
| Company Address | | |
| 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? | | <u>°C</u> |
| 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? | | <u>°C</u> |
| All appropriate pipes have been insulated up to 1 meter or the point where they become concealed | No |] |
| | | |
| UNVENTED SYSTEMS ONLY | | |
| Where is the pressure reducing valve situated (if fitted)? | | |
| What is the pressure reducing valve setting? | |] |
| 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 | 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 | <u> </u> |
| THERMAL STORES ONLY | | |
| What store temperature is achievable? | |] °C |
| What is the maximum bot water temperature? | | <u> </u> |
| | | |
| ALL INSTALLATIONS | | |
| The hot water system complies with the appropriate Building Regulations. | | |
| The system has been installed and commissioned in accordance with the manufacturer's instructions. | | |
| The system controls have been demonstrated to and understood by the customer. | | |
| The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer. | | |
| 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.



SOURCE: Heating and Hot Water Industry Council

www.centralheating.co.uk



15.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

| SERVICE 1 | Date | | | |
|--------------|------|--|--|--|
| Engineer Nam | е | | | |
| Company Nam | ne | | | |
| Telephone Nu | mber | | | |
| Comments | | | | |
| | | | | |
| | | | | |
| | | | | |
| Signature | | | | |
| | | | | |

| SERVICE 3 | Date | | | |
|---------------|------|--|--|--|
| Engineer Name | 9 | | | |
| Company Nam | е | | | |
| Telephone Nun | nber | | | |
| Comments | | | | |
| | | | | |
| | | | | |
| | | | | |
| Signature | | | | |
| | | | | |

| SERVICE 5 | Date | | | |
|--------------|------|--|--|--|
| Engineer Nam | e | | | |
| Company Nan | ne | | | |
| Telephone Nu | mber | | | |
| Comments | | | | |
| | | | | |
| | | | | |
| | | | | |
| Signature | | | | |
| | | | | |

| | Data |
|---------------|------|
| SERVICE / | Date |
| Engineer Name | 9 |
| Company Nam | e |
| Telephone Nun | nber |
| Comments | |
| | |
| | |
| | |
| Signature | |
| | |

| SERVICE 9 Date | |
|------------------|--|
| Engineer Name | |
| Company Name | |
| Telephone Number | |
| Comments | |
| | |
| | |
| | |
| Signature | |
| | |
| | |

| SERVICE 2 | Date |
|--------------|------|
| Engineer Nam | e |
| Company Nam | ne |
| Telephone Nu | mber |
| Comments | |
| | |
| | |
| | |
| Signature | |
| | |

| SERVICE 4 | Date | | |
|--------------|-------|--|--|
| Engineer Nam | ne | | |
| Company Nar | ne | | |
| Telephone Nu | ımber | | |
| Comments | | | |
| | | | |
| | | | |
| | | | |
| Signature | | | |

| SERVICE 6 Date | |
|------------------|--|
| Engineer Name | |
| Company Name | |
| Telephone Number | |
| Comments | |
| | |
| Signature | |
| • | |

| SERVICE 8 | Date |
|---------------|------|
| Engineer Name | e |
| Company Nam | e |
| Telephone Nur | nber |
| Comments | |
| | |
| | |
| | |
| Signature | |
| | |

| SERVICE 10 | Date |
|---------------|------|
| Engineer Name | |
| Company Name | 9 |
| Telephone Num | ıber |
| Comments | |
| | |
| | |
| | |
| Signature | |
| | |

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