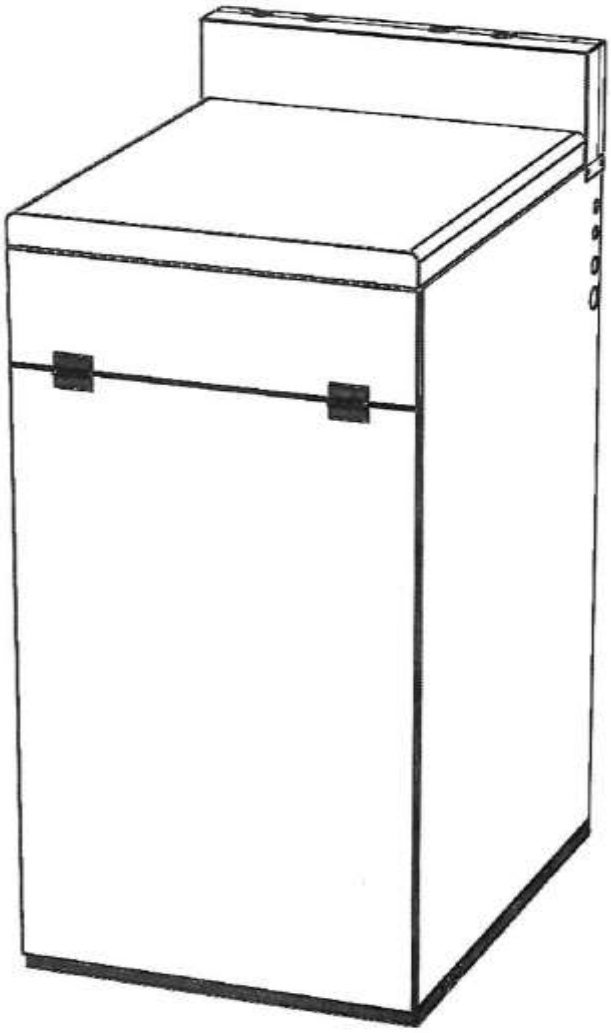
TRIANCO

AZTEC
ELECTRIC BOILERS

6, 9 & 12kW AZTEC COMBI BOILER



INSTALLATION, OPERATION AND SERVICING INSTRUCTIONS

Please read these instructions carefully before installing and operating this appliance

TO BE RETAINED BY THE HOUSEHOLDER

CONTENTS **PAGE**

HEALTH AND SAFETY

INFORMATION FOR THE USER, INSTALLER AND SERVICE ENGINEER

Under the Consumer Protection Act 1987 and the Health and Safety at Work Act 1974, it is a requirement to provide information on substances hazardous to health (COSHH Regulations 1998).

TR Engineering takes every reasonable care to ensure that its products are designed and constructed to meet these safety requirements when the products are properly installed and used. To fulfil the requirements, products are comprehensively tested and examined before despatch.

When working on the appliance, it is the responsibility of the user or engineer to ensure that personal protective clothing or equipment appropriate to parts that could be considered hazardous or harmful is worn.

This appliance may contain some of the items below:

Insulation and Seals

Glass rope, mineral wool, insulation pads, ceramic fibre and glass insulation.

When handling, avoid inhalation and contact with eyes. These may be harmful and cause irritation to the skin, eyes, nose or throat. Use disposable gloves, facemasks and eye protection.

After handling, wash hands and other exposed areas. When disposing of materials, limit dust and the risk of inhalation by using water spray. Ensure materials are securely wrapped.

Seek urgent medical attention if inhaled or ingested. Exposure to eyes and skin should be followed by immediate cleansing of the affected areas and medical attention if necessary.

Glues, Sealants and Paints

The glues, sealants and paints used present no known hazards when the appliance is used in the manner for which it is 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.	

Please read these instructions fully before installing this appliance.
If in doubt seek expert advice

These instructions should be kept in a place close to the appliance for easy reference.

IMPORTANT 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:

Ventilation and Siting

When siting the boiler in a confined space it is essential that adequate ventilation be provided. This will ensure that air is allowed to circulate freely around the appliance keeping down the ambient temperatures. Refer to Ventilation requirements (Page 6) for further details.
Ensure that the area surrounding the boiler is kept free of items which would impede the good ventilation of the appliance (eg. 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 9) for clearance dimensions.

Power Supply and Wiring

The power supply to the premises 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** (see Page 4 for details).
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 14) for full details. Any breakdown attended to by TR 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 as the pump operates on a switched neutral.

System

Isolation valves must be fitted on both the flow and return pipe work 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. Please refer to Page 8 for further details.
Ensure that any isolation valves are open before first use, and that the system is full of water.
The boiler can only be fitted in an upright position.

IMPORTANT:
General Information:
To keep your boiler running efficiently DO NOT OBSTRUCT OR COVER any ventilation air inlet on the appliance or the compartment where it is installed.

To keep the casing clean, switch 'OFF' the boiler at the electrical supply, and simply wipe with a damp cloth. DO NOT use abrasive cleaning fluids as this may damage the stove enamel paintwork.

Important

The electrical supply requirements:-
The 6 kW boilers meet the requirements of EN 61000-3.3.
The 9 kW boiler must be installed in premises having a service supply of $\geq$ 100A per phase.
The 12 kW boiler must be installed in premises having a system impedance of not more than 0.1939 + 0.1939Ω.

TR ENGINEERING LTD CUSTOMER AFTER SALES SERVICE INFORMATION

A step by step guide to reporting a fault with your appliance

A qualified field SERVICE ENGINEER is available to attend a breakdown or manufacturing fault occurring whilst the appliance is under guarantee.

The appliance must be made available for service during normal working hours, Monday to Friday (no weekend work or bank holidays accepted).

A charge will be made where:

- Our Field Service Engineer finds no fault with the appliance or
- The cause of a breakdown is due to other parts of the plumbing/heating system or with equipment not supplied by TR Engineering Ltd. or
- Where the appliance falls outside the guarantee period (see terms and conditions enclosed). or
- The appliance has not been correctly installed, as recommended (see installation, operating and servicing instructions.)

NOTE: Over 50% of all service calls made are found to have no appliance fault.

What to do in the event of an appliance fault or breakdown:

Step 1: Always contact your installer in the first instance, who must thoroughly check all his work PRIOR to requesting a service visit from TR Engineering LTD.

Step 2: If your appliance has developed an in-guarantee fault your installer should contact TR Engineering LTD for assistance.

What happens if my Installer/engineer is unavailable?

Step 3: Contact TR Engineering LTD. We will provide you with the name and telephone number of our Service Agent. However, a charge may apply if the fault is not covered by the appliance guarantee (payment will be requested on site by our independent Service Agent).

PLEASE NOTE: UNAUTHORISED INVOICES FOR ATTENDANCE AND REPAIR WORK CARRIED OUT ON THIS APPLIANCE BY ANY THIRD PARTY WILL NOT BE ACCEPTED BY TR ENGINEERING LTD.

SERVICE CENTRE AND TECHNICAL SUPPORT
Tel: 0114 257 2300 Fax: 0114 257 1419

Hours of Business
Monday to Thursday 8.30am - 5pm
Friday 8.30am - 2.30pm

INTRODUCTION

The Aztec Electric Combination Boiler is a floor mounted electric central heating boiler designed with smaller properties in mind. The unit can be fitted under a removable worktop, access is required to the front and the top 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 copper heat exchanger.

There are three boilers in the range with outputs ranging from 6 kW (20.472 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 Combination Floor Mounted Boiler has been designed to conform to European Directive/Standards EN60335-1:2002 +A15:2011, EN60335-2-35:2002 inc Amd 1, EN55014-1:2006 +A1:2009, EN55014-2:1997 +A2:2008.

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 MAY BE FROZEN.

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

USERS INSTRUCTIONS

The Trianco Aztec Combination 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.

Check that the time switch/programmer is ON and the room thermostat is calling for heat.

Set the boiler to required temperature.

Switch on the electrical supply to the boiler and after a few seconds the boiler's green and amber should illuminate.

Set the time switch/programmer to the times and programs required.

The boiler will now operate automatically, cutting in and out according to heat demand.

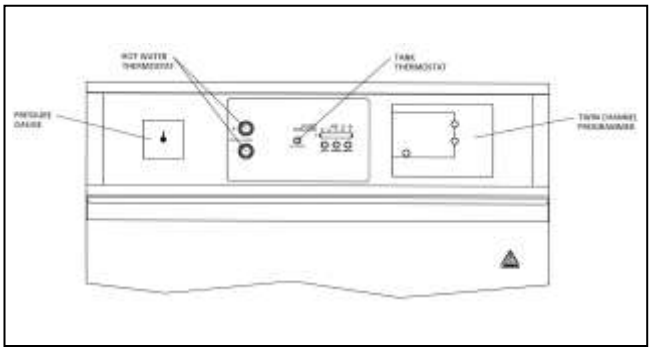
TO TURN OFF THE BOILER

Switch off the boiler at the time switch/programmer.

If the boiler is to be switched off for any length of time it is recommended that the mains supply to the boiler is switched OFF.

TEMPERATURE CONTROL

Your Trianco boiler is fitted with two adjustable temperature control thermostat's to regulate the temperature of the domestic hot water and central heating.



BOILER INDICATOR LIGHT

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

GREEN	Power on to the boiler.
AMBER	Illuminated - In run mode
	Flashing - Temperature satisfied
RED	Boiler fault

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 simple fault finding on page 8).

ROOM THERMOSTAT

The room thermostat should not be positioned near a source of heat such as a radiator or exposed to the sun as this will cause the central heating to switch off before the room is up to temperature. Follow the manufacturer's instructions for best siting position for the thermostat.

FROST PROTECTION

If the boiler and central heating is shut down for many hours during very cold weather, the water may be in danger of freezing and, as such, it is advisable to protect the installation with a frost thermostat.
Where the system is not protected, the boiler should be left switched on and the room thermostat set to a low setting e.g. 7°C (45°F) to prevent the building temperature falling too low.
If the system is shut down for a 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.

TIME SWITCH/PROGRAMMER

When choosing the operating times for your boiler, it is useful to remember that central heating usually takes between half an hour to an hour before it becomes effective.
It is suggested that the time switch/programmer is set to bring on the heating about an hour before heating is required.
It is also worth noting that the heating system will usually remain effective for up to half an hour after boiler shutdown. The timer can therefore be switched off earlier as an economy measure.

Cleaning Casings

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

Simple Maintenance

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

PROGRAMMER SET UP

Switches/Jumpers

The installer should select the jumper positions required if changing from the factory presets-these jumpers are found on the rear of the unit. Always enable the internal memory back up battery before installing the unit, the memory back up battery will be kept charged from the mains supply.

Switch / Jumpers	Function
Program Type	1 Jumper for 5-2 (factory default setting) or 7 days program
P/G	1 Jumper for fully pumped and controlled system (factory default setting) or gravity-fed hot water system.
Internal memory back up	1Jumper to enable/disable the internal memory back up battery. (Disable is the factory default setting)

After power up or RESET is pressed, the programmer is reset.

During system reset, all LCD segments are turned on for 2 seconds or any key is held. After 2 seconds and all keys are released, the programmer is initialised. The typical reset display is shown below.

After reset, the programmer is operating at Normal (off) mode.

Functions of Keys

Key	Function
+1Hr	Temporary Override.
MODE	Operating Mode Selection.
↑	Increase Set point.
↓	Decrease Set point.
BL/HOLIDAY	Turn on backlight for 5 seconds. Activate/De-activate Holiday Override.
SET	Key for Clock/Program settings.
SELECT	Key for Clock/Program settings.
RESET	System reset.

Default Program Settings after reset.

Same for both 5-2 and 7 days program.

Program	O/P	CH		HW	
		Weekday M to F	Weekend SA to SU	Weekday M to F	Weekend SA to SU
1	ON	6.00am	6.00am	6.00am	6.00am
	OFF	8.00am	8.00am	8.00am	8.00am
2	ON	10.00am	10.00am	10.00am	10.00am
	OFF	12.00pm	12.00pm	12.00pm	12.00pm
3	ON	6.00pm	6.00pm	6.00pm	6.00pm
	OFF	10.00pm	10.00pm	10.00pm	10.00pm

Setting the Clock

Press and hold SET and SELECT in Normal mode for 3 seconds to enter Clock setting mode.

"12 hr" or "24 hr", and "SET" are displayed.
All other indicators are cleared.

Release SET and SELECT press ↑ or ↓ to toggle between "12 hr" or "24 hr" format.

Press SELECT clock and "SET" are displayed. The "Hour" is flashing to indicate that it is the selected item to be adjusted.

Release SELECT press ↑ or ↓ to increase or decrease the "Hour" respectively.

Press and release SELECT the minutes will flash press ↑ or ↓ to increase or decrease the "minute" respectively.

Press and release SELECT to set the year, "y xx" is displayed, press ↑ or ↓ to increase or decrease the "year" respectively. The "year" can be set between 2005 and 2099 inclusive.

Press and release SELECT to set the Month of Year, “m xx” is displayed, press ↑ or ↓ to increase or decrease the “month” respectively. The “month” can set between “01” to “12”.

Press and SELECT to set the Day of Month, “d xx” is displayed, press ↑ or ↓ to increase or decrease the “day” respectively. The “day” can be set between “01” to the end of the month which is determined by the year and month set above.

Press and release SELECT to set Day Light Saving, “dls” is displayed, press ↑ or ↓ to enable or disable the Day Light Saving.

Press and release SELECT to allow change of “hour” again. Press and hold ↑ or ↓ for 2 seconds to enter fast advance. Selected item will stop flashing when a key is pressed. The selected item will flash again once the key is released. Press SET at any time to confirm the setting and return to normal mode.

Programmer will return to normal mode after 15 seconds if no key is pressed, Clock is also updated with the latest setting.

Day Light Saving

When enabled, the clock will automatically shift 1 hour ahead of the standard official time from the last Sunday in March at 2:00am until the last Sunday in October at 2:00am.

5-2 day’s program selected

Central Heating and Hot Water has independent program set. 3 different sets of Time can be set for Weekday or Weekend. Total of 12 settings.
To review or change program, press SET in Normal mode to enter program setting mode. Program 1 of the weekday, and “SET PROG” are displayed. All other indicators are cleared. “Weekday” is flashing to indicate that it is the selected item to be adjusted.

Press ↑ or ↓ to select the program set for weekday/weekend/CH/HW to be reviewed or adjusted with the below sequences.

Weekday CH -> Weekday HW -> Weekend CH -> Weekend -> Weekday CH

Press SET at any time during program set, this will immediately return to Normal mode.

Press SELECT at any time to confirm the selection. “Hour” is flashing to indicate that it is the selected item to be adjusted.

Press SELECT to select among the items to be reviewed or adjusted with the sequences below.

(Program 1 OFF) “hour”→ “minute”→
(Program 2 ON) “hour” → “minute”→
(Program 2 OFF) “hour”→ “minute”→
(Program 3 ON) “hour”→ “minute”→
(Program 3 OFF) “hour”→ “minute”→
And then cycle back to (Program 1 ON).

Press SET at any time to confirm the setting and return for program set selection.

7 Days program selected

Central Heating and Hot Water has independent Program sets. 3 different sets of time can be set for each day of the week, total of 42 settings.

To review or change program, press SET in Normal mode to enter Program Setting mode. Program 1 of Monday, and “SET PROG” are displayed. All other indicators are cleared. “Day of Week” is flashing to indicate that it is the selected item to be adjusted.

Press ↑ or ↓ to select the program set for Day of Week to be reviewed or adjusted with the sequences below.

Monday CH<-> Monday <-> Tuesday CH <->…
…<-> Sunday HW -> Monday CH

Press SET at any time during program and set, this will immediately return to normal mode.

Press SELECT at any time to confirm the selection. “Hour” is flashing to indicate that is the selected item to be adjusted.

Press SELECT to select among the items to be reviewed or adjusted with the sequences below.

(Program 1 ON) “hour”→ “minute”→
(Program 1 OFF) “hour”→ “minute”→
(Program 2 ON) “hour”→ “minute”→
(Program 2 OFF) “hour”→ “minute”→
(Program 3 ON) “hour”→ “minute”→
(Program 3 OFF) “hour”→ “minute”→
And then cycle back to (Program 1 ON)

Press SET at any time to confirm the setting and return for program set selection.

5-2 or 7 days program

Time of the programs must be in sequence, i.e. the OFF time cannot be earlier than the ON time, setting of Program 3 cannot be earlier than Program 2, etc.
The PROG indicator is displayed accordingly to indicate the program number.
The CH/HW indicator is displayed accordingly to indicate CH or HW program is programming.
Selected item will be flashing and can be adjusted by ↑ or ↓ key. Program time is changed in 1 minute steps.
Press and hold ↑ or ↓ for 2 seconds to enter fast advance.
Selected item will stop flashing when a key is pressed. The selected item will flash again once the key is released.
Programmer will return to normal mode after 15 seconds if no key is pressed, program settings are stored.

Program review/changes are allowed even when Temporary Override is enabled.

Operating Mode Selection

Press MODE at normal mode to select among four operating modes, ON, Once, AUTO, and OFF.
For each press and release of MODE, the operating mode is cycled in the sequence below:

ON→ ONCE→ AUTO→ OFF→ ON

The mode indicator is changed to indicate the selected operating mode.

Function of each operating mode is:

Operating Mode	Function
ON	Continuously on
ONCE	On for 1 period a day, from Program 1 ON to Program 3 OFF
AUTO	Automatic program control
OFF	Continuously off

Fully Pumped and Controlled System (P). Central Heating and Hot Water can be operated independently.
Gravity-fed Hot Water System (G). Central Heating cannot be operated without Hot Water.

Temporary Override: +1Hr Program Override

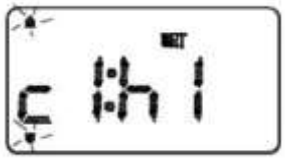
Press +1Hr at normal mode to activate the +1Hr Program Override setting mode.

Clock is cleared, “SET” is displayed, and Mode indicator(s) are flashing at “ON”. “c1” is displayed on the left side for CH or/and “h1” is displayed on the right side for HW.

For HW +1Hr is pressed to activate the +1Hr Program Override.

For CH +1Hr is pressed to activate the +1Hr program Override.

With gravity selected, CH +1Hr is pressed to activate the +1Hr Program Override.



Subsequent press of +1Hr to increase the duration by 1 hour. Maximum duration is 9 hours. If the number rolls back to”0”, this will disable the +1Hr Program Override.

When Gravity-fed Hot Water System is selected, if the HW duration is shorter than the CH duration, the HW duration will be set to the same duration of CH automatically.

Press SET or wait 3 seconds without key pres to start counting down. “SET” disappears and both CH and HW will be turned on immediately. The mode indicator(s) keeps flashing at “on” position to indicate the temporary override. After 10 seconds, the clock is displayed with the Mode indicator(s) flashing to indicate that the +1Hr Program Override mode is activated.

CH/HW will be turned off at the end of the duration, and the corresponding Mode indicator will disappear. When both channels stop, the programmer will return to the Normal mode.

When the +1Hr Program Override mode is activated and the clock is displayed, pressing of +1Hr will review the current settings with the “SET” displayed, with no change in the internal count down timer(s). If no further key press within 10 seconds, the clock is displayed again with the Mode indicator(s) flashing.

When reviewing the current settings, subsequent press of +1Hr will add 1 hour to the internal count down timer(s). Press SET or wait 3 seconds without any key press to start counting down. Press +1Hr until the duration becomes 0 will stop the corresponding channel. When Gravity-fed Hot Water System, pressing of HW +1Hr will set the duration same as CH duration. When both channels stop, the Programmer will return to the Normal mode.

Holiday Override

Press and hold BL/HOLIDAY at normal mode for 3 seconds to activate the Holiday Override setting mode.

“1 dy”, “SET”, “H” PROG indicator, and MODE indicator(s) at “off” position are displayed, all other indicators are cleared. “Day” is flashing to indicate that it is ready to adjust.

Press ↑ or ↓ to increase or decrease the number of days to turn off the system. Maximum days to turn off the system is 31 days. If the number rolls back to “0”, this will disable the holiday override.
Press and hold ↑ or ↓ for 2 seconds to enter fast advance.
Press SET or wait 3 seconds without key press to start counting down. “SET” disappears and both CH and HW will be turned off immediately.

Press BL/HOLIDAY for 3 seconds again to de-activate the Holiday Override mode. The programmer returns to the normal mode.

The programmer counts each pass through midnight as a day.

LCD Backlight

LCD backlight is activated when BL/HOLIDAY or any key is pressed. The backlight will automatically turn off in 5 seconds after all keys are released.

LCD backlight can only operate when AC is present.

LCD backlight is illuminated throughout the Clock, Program, and Temporary Override Temperature settings.

SIMPLE FAULT FINDING

If the boiler fails to start for no apparent reason make the following make the following checks before calling your service engineer.

Is the green LED light illuminated?
NO
Check for blown fuse or thrown power breaker. If replacement fuse or power breaker fails again, call your service engineer.

If the red LED is permanently illuminated, contact your service engineer.

Flashing red LED indicates an open circuit. The boiler can still be operated. Your service engineer should be contacted.

Check to see if all external controls i.e. programmer or room thermostat is calling for heat.

Resetting the boiler

If a fault has occurred and the LED is illuminated but the pump continues to run, then switching the power off for 30 seconds and then on again should reset the light. This may be caused by the ambient temperature around the boiler being too high. Check to ensure that any boiler ventilation is not obstructed. If the fault reoccurs, contact your engineer.

IMPORTANT: Electrical safety checks should be carried out by qualified electrical engineer.

TECHNICAL DETAILS	UNIT	AZTEC 6kW	AZTEC 9kW	AZTEC 12kW
Electrical Input	kW	6	9	12
Supply Current	Amp	25	39	51
RCD Rating	Amp	32	40	63
Minimum Cable Size	mm	4	6	16
Flow rate	Ltr/min			
Weight	kg	128		
Water Content	litres	69		
Width	mm	555		
Depth	mm	749		
Height	mm	1135		
Mains Supply	230V 50Hz			
Max Operating Pressure	300 kPa / 3 bar			
Test Pressure	600 kPa / 6 bar			
Boiler Flow Temperature	Adjustable between 35°C and 75°C			
Limit Thermostat	Factory set at 100°C			
CH Flow & Return	22mm Compression			
DHW Inlet & Flow	15mm Compression			
Maximum Flow Temp CH	75°C			
Pressure Gauge	0 – 4 bar			
Pressure Relief Valve	3 bar			
Diverter Valve	Danfoss HS A3ND			
Pump	Grundfos 25/60			
Expansion Vessel	10Ltr charge 0.5mbar			
Available System Head	3m			
Casing Finish	Stove enamelled white			
Thermal Insulation	Insulated with mineral fibre			

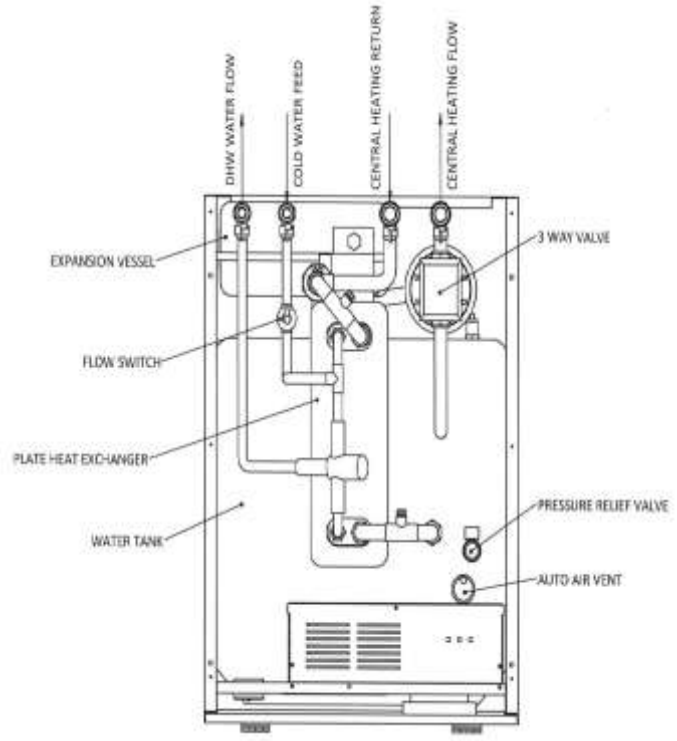


Fig. 1

FLOW & RETURN CONNECTIONS

INSTALLATION
Regulations

Installation of the boiler must comply with the following British Standards and Regulations:

BS5449 – Forced circulation hot water central heating systems.

BS7074-Part 1: Code of practice for sealed water systems.

The Building Regulations: Part 'L' (Northern Ireland)
Current I.E.E. Regulations
Local water undertaking By-laws.

Health and Safety at Work Act

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 regulations.

IMPORTANT

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

SITING THE BOILER

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

Ensure adequate clearance is allowed for making water connections. The unit can be fitted under a removable worktop, access is required to the front and the top of the boiler for servicing. 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 note that the PCB and heat exchanger assembly may require removal during such times.

UNPACKING THE BOILER

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

NOTE: ALWAYS STORE THE BOILER IN A DRY PLACE PRIOR TO FITTING.

VENTILATION REQUIREMENTS

If the appliance is to be fitted in a confined space or compartment with a potential ambient temperature of 60˚C or more, it is strongly recommended that adequate ventilation is provided to prevent the overheating of the boiler controls. Aeration of 110 cm² will be required to the compartment, in both high and low positions (see Fig. 2).

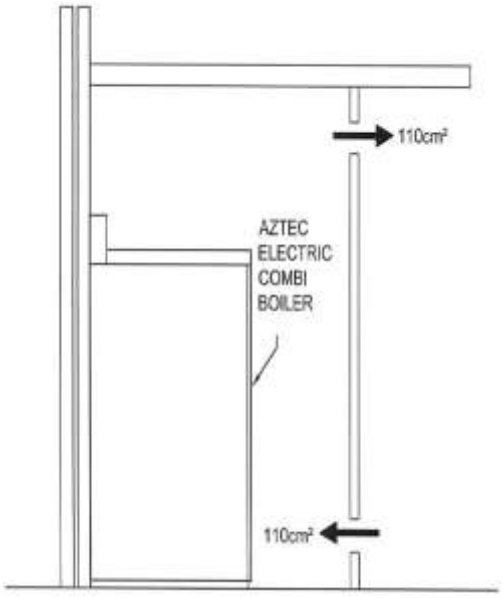


Fig. 2

WATER SYSTEM

IMPORTANT: USE ONLY COMPRESSION FITTINGS WHEN CONNECTING THE BOILER TO THE CENTRAL HEATING SYSTEM.

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.

The water system must be thoroughly flushed out with cold water without the pump in position.

Refit the pump and fill the system. Vent all air from system. Clear any air locks and examine the system for water leaks.

IMPORTANT: ENSURE ALL SERVICE VALVES ARE IN OPEN POSITION.

The boiler is supplied with Dia. 22mm tail pipes at the rear of the boiler for connection to the heating system (see Fig: 1). The boiler is also supplied with 15mm tail pipes for connection to the DHW circuit (see Fig: 1).

The boiler must be installed using 22mm compression fittings. The Aztec range of boilers are low water content boilers so require a good flow rate at all times (see chart).

Model	Minimum Flow Rate / Min
6kW	8 litres
9kW	10 litres
12kW	12 litres

Aztec boilers are approved for use on fully pumped open vented systems and sealed systems. When fitting on a sealed system a 3 bar safety valve **must be fitted** to system, where thermostatic radiator valves are fitted it will be necessary to fit a bypass to obtain minimum flow rates.

IMPORTANT: IF MINIMUM FLOW RATES ARE NOT OBTAINED THE BOILER MAY GO TO LOCK OUT ON HIGH LIMIT THERMOSTAT.

Where more than 1 boiler is fitted refer to multiple boiler instructions. System must be flushed out before adding inhibitor to BS 7593: 1992 treatment of water in central heating boiler.

IMPORTANT: THIS BOILER IS TO BE FITTED ON FULLY PUMPED SYSTEMS ONLY.

SEALED WATER SYSTEM REQUIREMENTS

The installation must comply with the appropriate requirements of the current issue of BS4814, BS5449, BS6798 and BS7074 Part 1 and 2.

Safety Valve

A 3 bar safety valve is fitted within the unit. The drain must be routed to the outside of the building. The drain must not discharge above an entrance or a window or any public access area, be clear of any electrical fittings and positioned so that any discharge can be seen.

Expansion Vessel Capacity

A diaphragm type expansion vessel, conforming to the current issue of BS4814. The expansion vessel must be connected to the systems at a point close to the inlet side of the circulating pump. The expansion vessel volume depends on the total water system volume and the initial system design pressure. For any system an accurate calculation of vessel size is given in the current issue of BS5449 and BS7074 Part 1.
The water content of the boiler is given in the technical specification. Note a higher initial design pressure requires a larger volume expansion vessel.
The charge pressure must not be less than the static head of the system, which is the highest point of the system above the expansion vessel.

Capacity of Expansion Vessel

Where design information is not complete the following chart (page 11) can be used for selecting the size of the vessel, it should be noted that the size given in the table take account of fault conditions.

NOTE: Failure to ensure the correct vessel size could result in premature failure of the expansion vessel which in turn may adversely affect other components in the system i.e. circulating pump and diverter valve.

System Temperature

The normal running temperature of the system is 75°C, if a fault was to occur then the safety device would allow the system temperature to rise to 100°C. It is recommended that this figure be used in the calculations of vessel size.

Expansion Vessel Connection

The expansion vessel should be connected in the neutral part of the system this being the return pipe work close to the boiler, refer to sealed system pipe work layout drawing.(Fig. 5)

Pressure Gauge

A 0 to 4 bar pressure gauge is fitted within the unit.

Inhibitor

If using an existing system take care to drain down the entire system including the radiators then thoroughly clean out before fitting the boiler. Attention is drawn to the current issue of BS5449 and BS7593 on the use of inhibitors in central heating systems.

Drain Tapping

A drain tapping is provided on the boiler. An additional tapping must be provided at the lowest point of the system, which will allow the entire system to be drained.

System Makeup

Water loss from the system should be replaced from a makeup vessel connected to the system. This vessel should be higher than the top of the system. Alternatively provision can be made by pre-pressurisation of the system via a temporary hose connection and through a double check valve (non-return) and stop valve.

There must be no permanent connection to the mains water valve supply even through a non return valve.

Safety valve setting (bar gauge)	3 Bar		
Vessel charge and initial system pressure (bar gauge)	0.5	1.0	1.5
Total water content of system (litre)	Vessel volume (litre)		
25	2.3	3.3	5.9
50	4.7	6.7	11.8
75	7.0	10.0	17.7
100	9.4	13.4	23.7
125	11.7	16.7	29.6
150	14.1	20.1	35.5
175	16.4	23.4	41.4
200	18.8	26.8	47.4

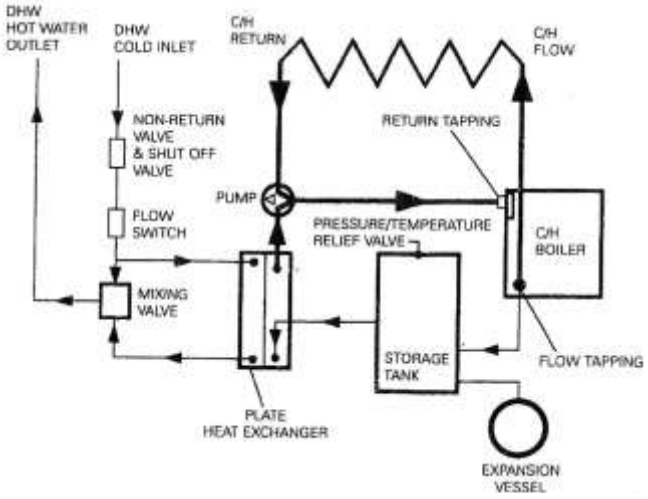


Fig 3

AZTEC COMBI SCHEMATIC LAYOUT CENTRAL HEATING MODE

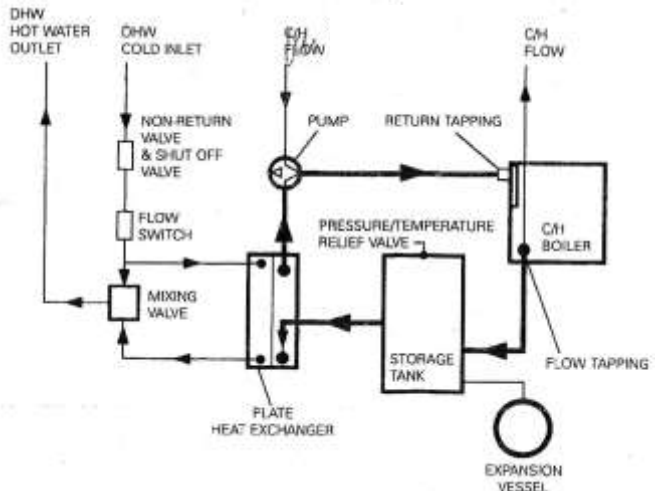


Fig 4

AZTEC COMBI SCHEMATIC LAYOUT DOMESTIC HOT WATER MODE

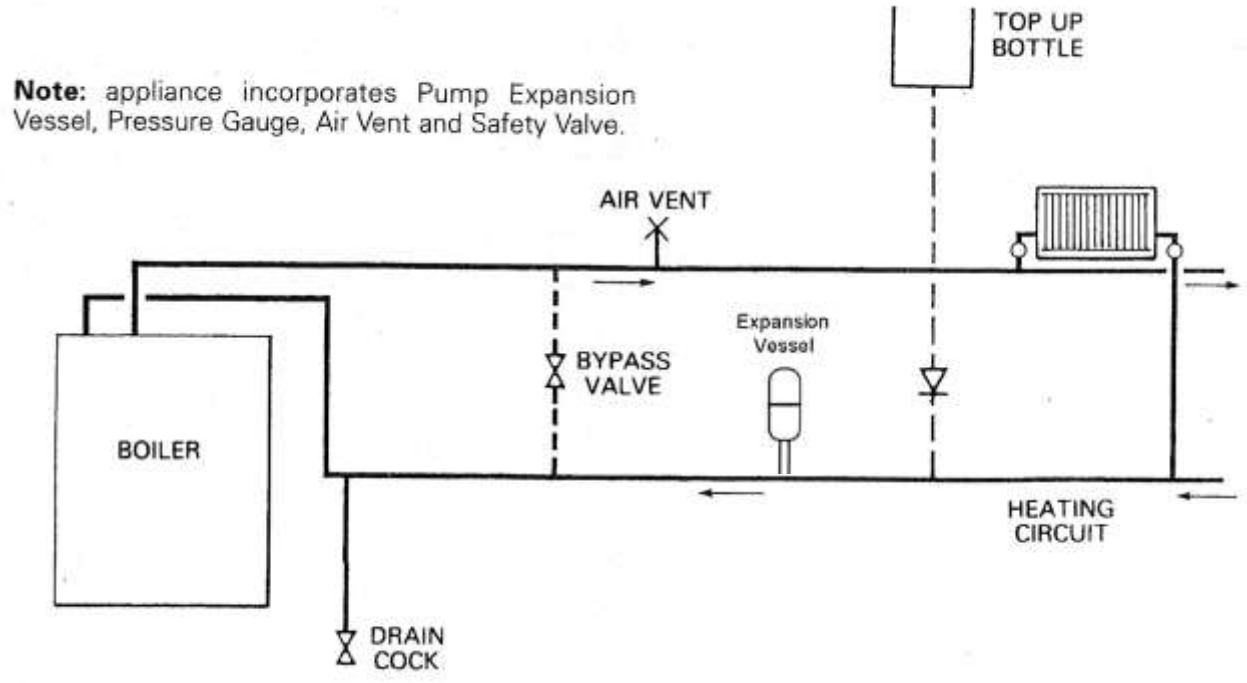


Fig 5 **SEALED SYSTEM PIPING SCHEMATIC DIAGRAM**

ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

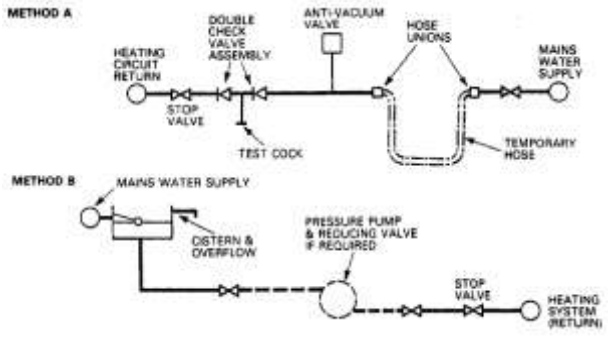


Fig 6

PUMP FLOW CURVE

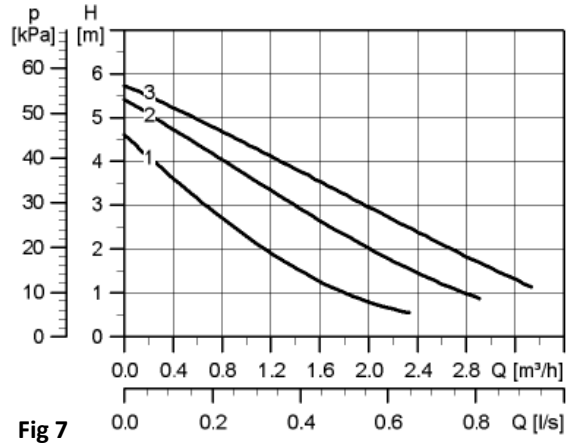


Fig 7

WIRING INSTRUCTIONS

All electrical work must be carried out in accordance with current IEE wiring regulations (seventeenth edition).

Before commencing installation check power supply to property to ensure that there is sufficient current and voltage available for size of boiler 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

The electrical supply requirements:
The 6kW boiler supply should meet the requirements of EN61000-3.3.
The 9kW boiler must be installed in premises having a service supply ≥ 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 + 0.1939Ω.

A double pole RCD with a trip level sensitivity of 30ma can be used capable of breaking full load current to BS EN61008: 1994

NOTE: RCD unit can be used as the isolating switch if mounted close enough to the boiler.
Miniature circuit breakers MCB's **MUST** be fitted between RCD unit and boiler and RCD and any external controls. Refer to technical specification. For MCB ratings refer to wiring diagram.

It is important the correct size MCB is used in the supply from the RCD to the boiler. An additional MCB rated 6A will be required to supply the external controls.

ELECTRICAL CONNECTIONS

WARNING: THIS APPLIANCE MUST BE EARTHED.

The mains connection block is located inside the boiler on a bracket at the bottom 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 connection 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 also applies to pumps being controlled by a relay.

IMPORTANT: CORRECT POLARITY MUST BE OBSERVED WHEN BRINGING THE MAINS SUPPLY INTO THE BOILER.

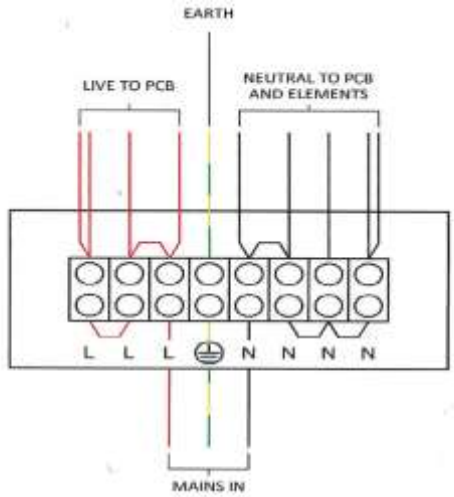
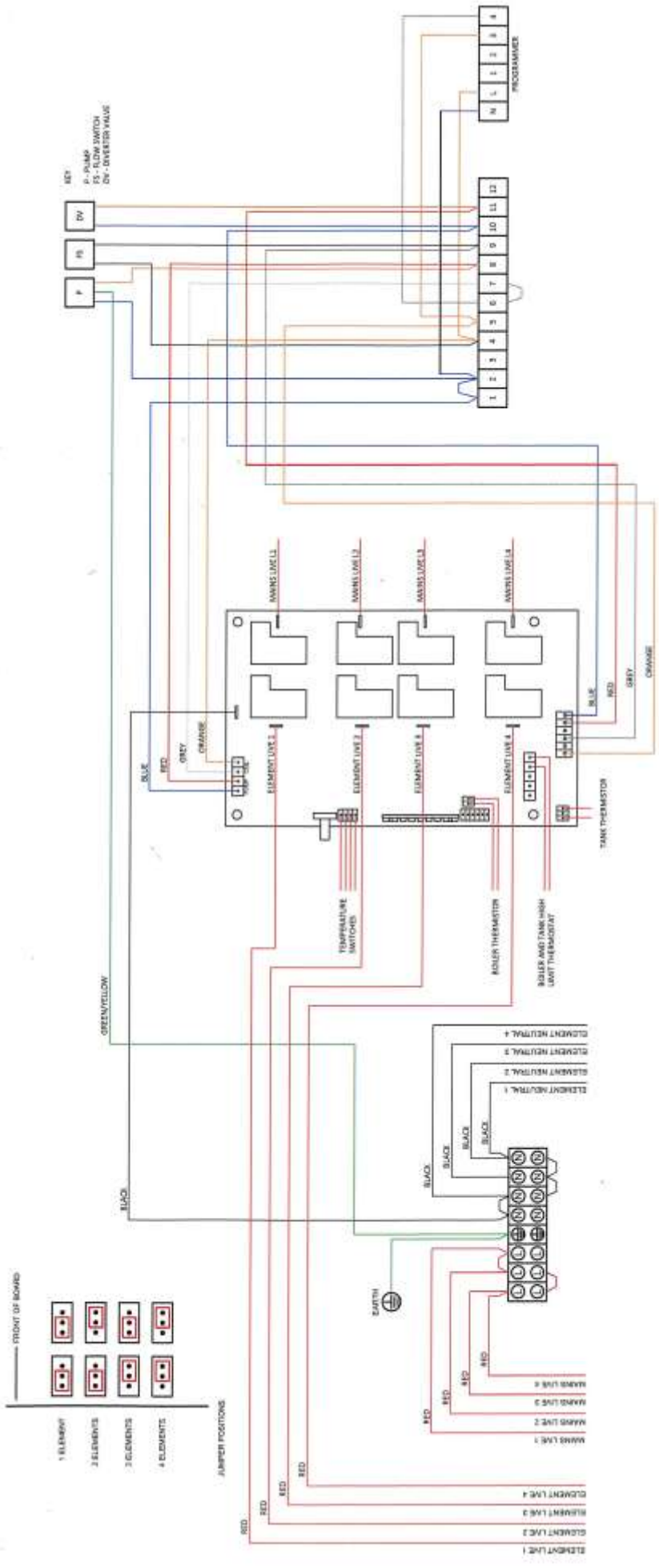


Fig. 8 TERMINAL CONFIGURATION



INTERNAL WIRING DIAGRAM

Fig. 9

SERVICING

To ensure reliable operation of your Aztec electric combination 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 mains supply before out any service work.

Check all electrical connections on PCB and electric elements to ensure they are secure and clean.

Check electrical insulation on wiring.

Ensure all air grilles are clean and free from obstructions.

Inspect seals around elements and also, the heat exchanger's top and bottom flanges.

PARTS REPLACEMENT

Casing Removal

Isolate electrical supply to the boiler.

Remove 4 fixing screws securing front case in position.

Disconnect temperature button cables from the PCB.

This will allow the front casing to be removed.

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

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

PCB ASSEMBLY REPLACEMENT

Note: The PCB is supplied with the element jumper fitted suitable for 12kW boiler. When a 6kW or 9kW output boiler is required, the element jumper must be repositioned.

Ensure electrical supply to the boiler is isolated.

Remove the top casing and the control box lid. Disconnect the temperature button cables from the PCB.

Disconnect the pump and call plug, the thermistor plug, the fan (where fitted) and high limit thermostat plug.

Disconnect all element cables apart from the rear element. **N.B. Take note of wiring arrangement before disconnecting.**

Now remove the grey pipe insulation, it is now possible to disconnect the remaining element.

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.**

Disconnect the remaining red and black power cables from the PCB.

For ease of access disconnect from the main terminal block both the red and black cables and also the power input cables, leaving the earth cable connected.

Free both the pump and call terminal blocks by removing the terminal block fixing screws.

Finally remove the 4 fixing screws holding the PCB mounting bracket in position and remove the PCB from the unit.

Re-fit in reverse order on reassembly always refer to wiring diagram.

HIGH LIMIT THERMOSTAT REPLACEMENT

Ensure electrical supply is isolated to boiler

The high limit thermostat can be found fixed to top front face of boiler.

Remove 2 terminal connectors from high limit thermostat, loosen retaining straps and slide thermostat out from behind.

Important when replacing thermostat ensure a heat sink compound is used between back of thermostat and face of boiler. (See Fig. 10 for positioning).

Inspect retaining straps and replace where necessary.

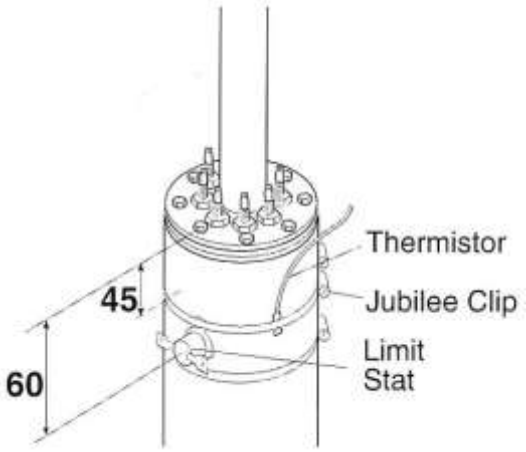


Fig. 10

THERMISTOR REPLACEMENT

Isolate electrical supply to boiler.

The thermistor is located fixed to top front face of the boiler above the high limit thermostat.

Disconnect from PCB board and slide out from behind retaining strap.

Important when replacing thermistor ensure a heat-sink compound is used between thermistor and boiler body (see Fig. 10 for positioning).

Inspect retaining strap and replace where necessary.

ELEMENT REPLACEMENT

Isolate electrical supply to boiler.

Drain down system.

Disconnect terminal connectors from high limit thermostat

Remove thermistor from behind the retaining strap.

Disconnect electrical elements and earth wire.

Disconnect compression fitting from the top and bottom of boiler.

Boiler unit can now be carefully removed.

Remove 8 fixing screws on top flange with and withdraw the element assembly.

Remove bottom element positioning bracket.

Remove damaged element.

Refit in reverse order and ensure element seals are fitted.

Check for continuity through 2 terminals on each element.

IMPORTANT: Inspect all seals and change where necessary.

FAULT FINDING

Red LED permanently illuminated indicates one of the following faults.

High limit thermostat has operated or faulty electrical connections

The boiler has two high limit thermostat's fitted, one on the heat exchanger and one on the tank. The high limit thermostat on the heat exchanger is fitted to the front top of the stainless steel heat exchanger and secured in position with 2 retaining clamps. The tank high limit thermostat is fitted *********. Check electrical connections on thermostat and PCB to check thermostat has not failed using a multi-meter check continuity across terminals of thermostat. To reset press the red button in centre of thermostat. The thermostat may have tripped due to one of the following:

Faulty circulation pump.
Isolation valve on system closed.
Air trapped in system.
Out of calibration limit thermostat.
Temperature settings on PCB board incorrect.
No water in system.

Thermistor

The boiler has two thermistor's fitted, one on the heat exchanger and one on the tank. The heat exchanger 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 The tank thermistor is fitted *********. 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 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 controller would show up 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.

PCB Running Temperature

The PCB control unit has a built in temperature control sensor which protects the PCB from overheating, if the board was to overheat the sensor would detect the high temperature and shut off the power to the board until the board temperature has returned to normal running temperature. The boiler will resume operation but the red light will continue to flash to indicate a fault has occurred. To reset the board the power must be turned off for 30 seconds then switched on again.
To differentiate between a temperature or element problem, switch off the power supply to the boiler allow the boiler to cool down then switch the power back on, if the LED continues to flash then check elements and connections.

Green LED

If the green LED is illuminated but the boiler is not functioning, check that any external controls fitted are calling for heat. If no external controls are fitted check that link wire is in place on call terminal block (refer to wiring diagram Fig 1).

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 above the PCB transformer (fuse type 20mm 630Ma anti surge Bessman type S560)

The fuse may have blown due to one of the following:

When multiple boilers are fitted and a larger pump is used. If the pump is wired directly into the PCB the fuse may need upgrading. (See page 11)

If the call terminal is used to supply power to ancillary controls.

Element Jumper Connections

Fitted on all models.

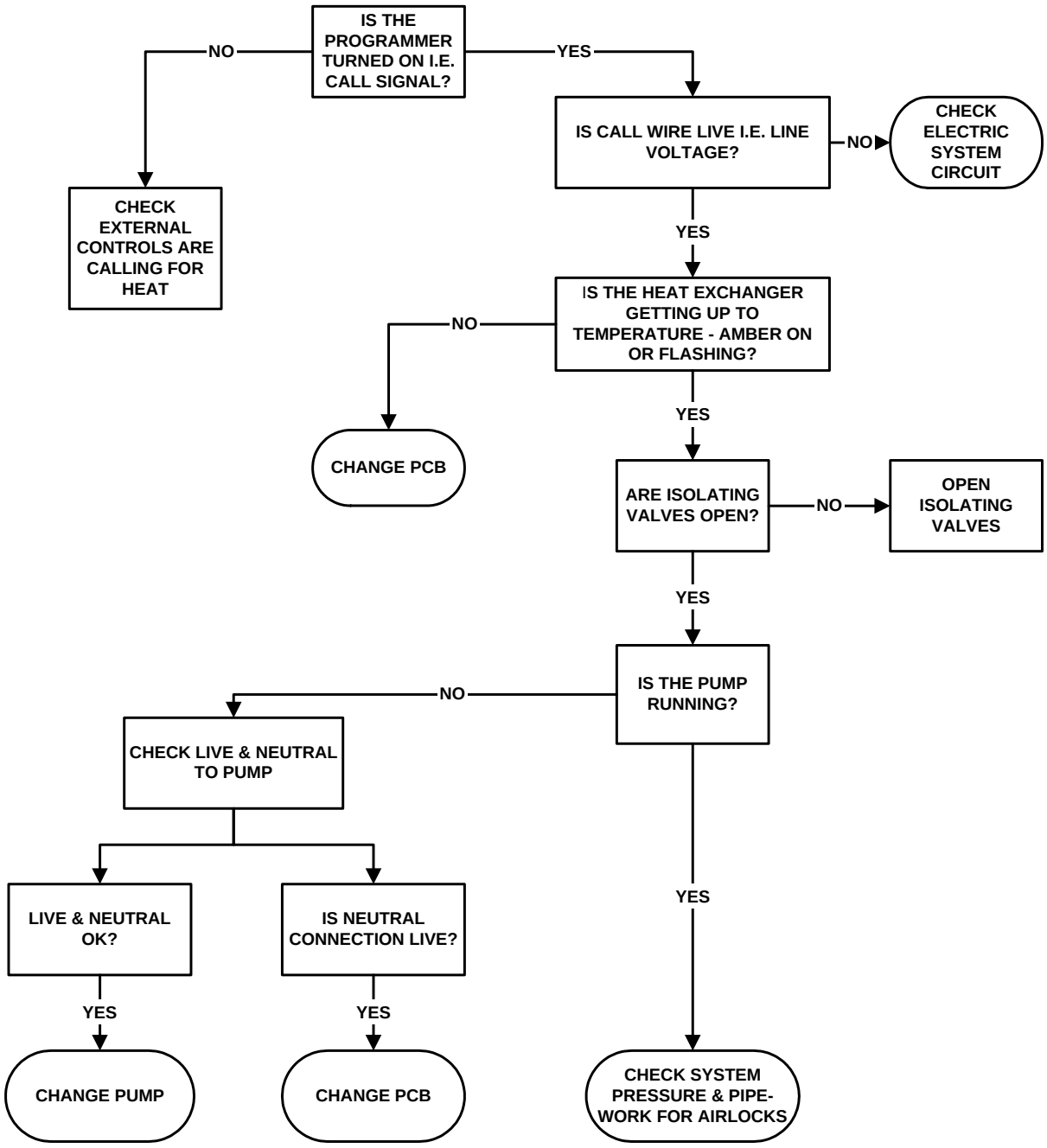
AZTEC	JUMPER 1	JUMPER 2
12kW	Back	Back
6 & 9kW	Front	Back

RCD UNIT TRIPS

Check that the RCD unit is correctly rated for boiler size. If under size change. Inspect mains terminal block wiring for short-circuiting. Check electrical elements for earth continuity, if element is found to be faulty fit new element.

Thermistor Values	
Temperature (°C)	Resistance Value (Ohms)
0	32554
5	25339
10	19872.2
15	15698.5
20	12487.7
25	10000
30	8059.1
35	6543.7
40	5329.9
45	4371.7
50	3605.3
55	2988.7
60	2490
65	2084.4
70	1753
75	1480.9

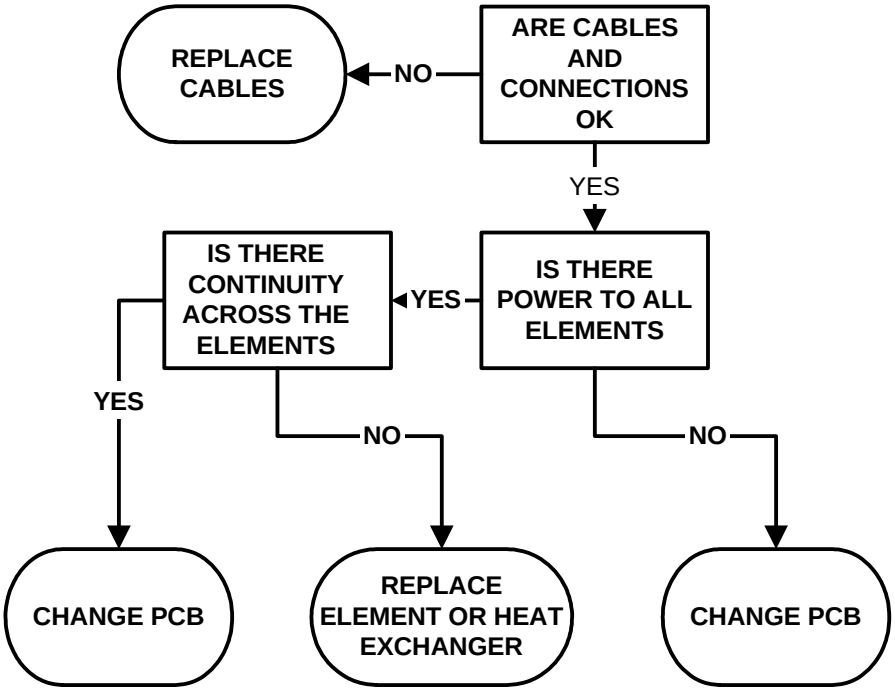
NO HEAT - PERMANENT GREEN LIGHT



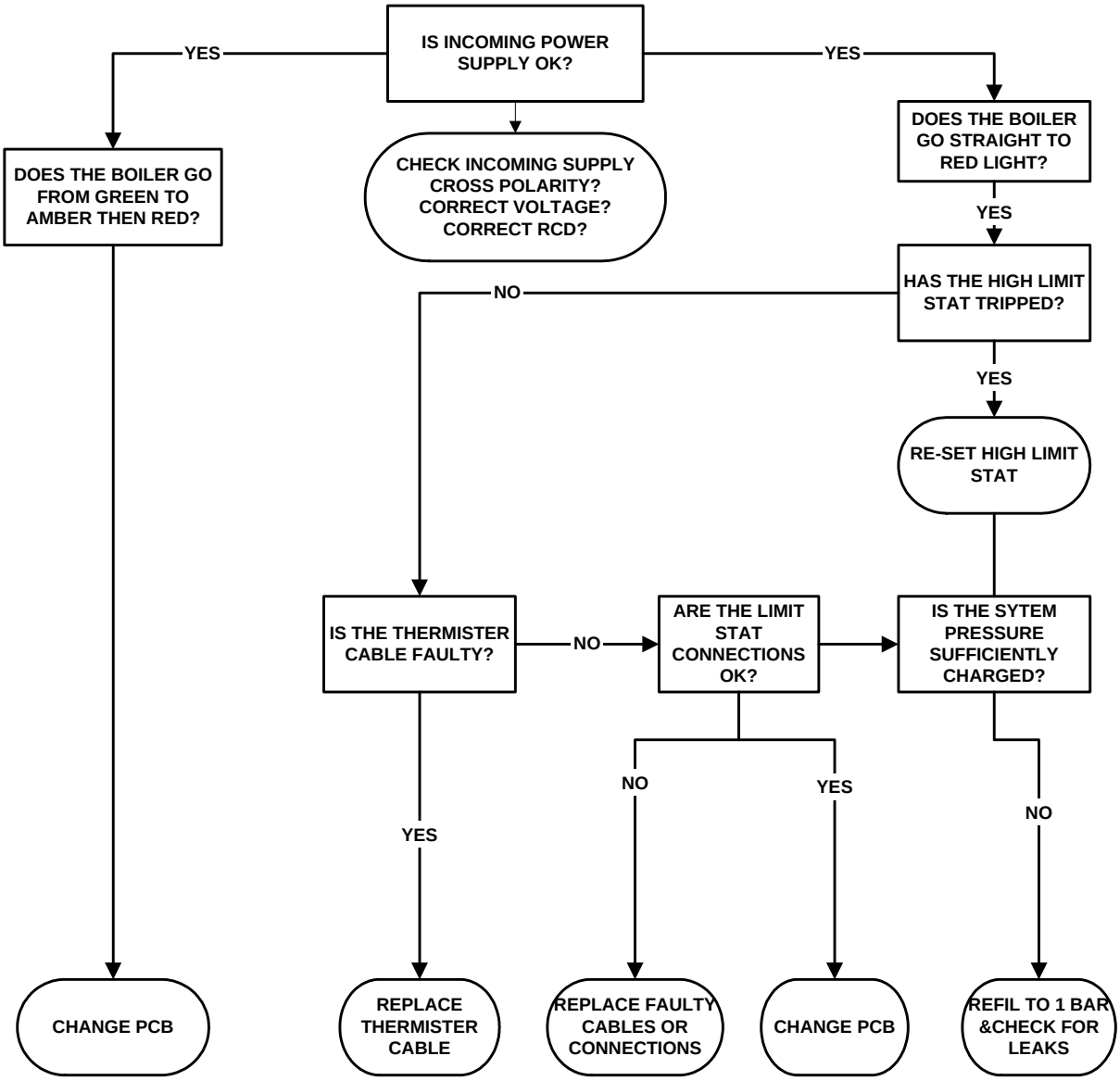
IMPORTANT!

THE PCB ON THIS BOILER SWITCHES NEUTRAL NOT LIVE

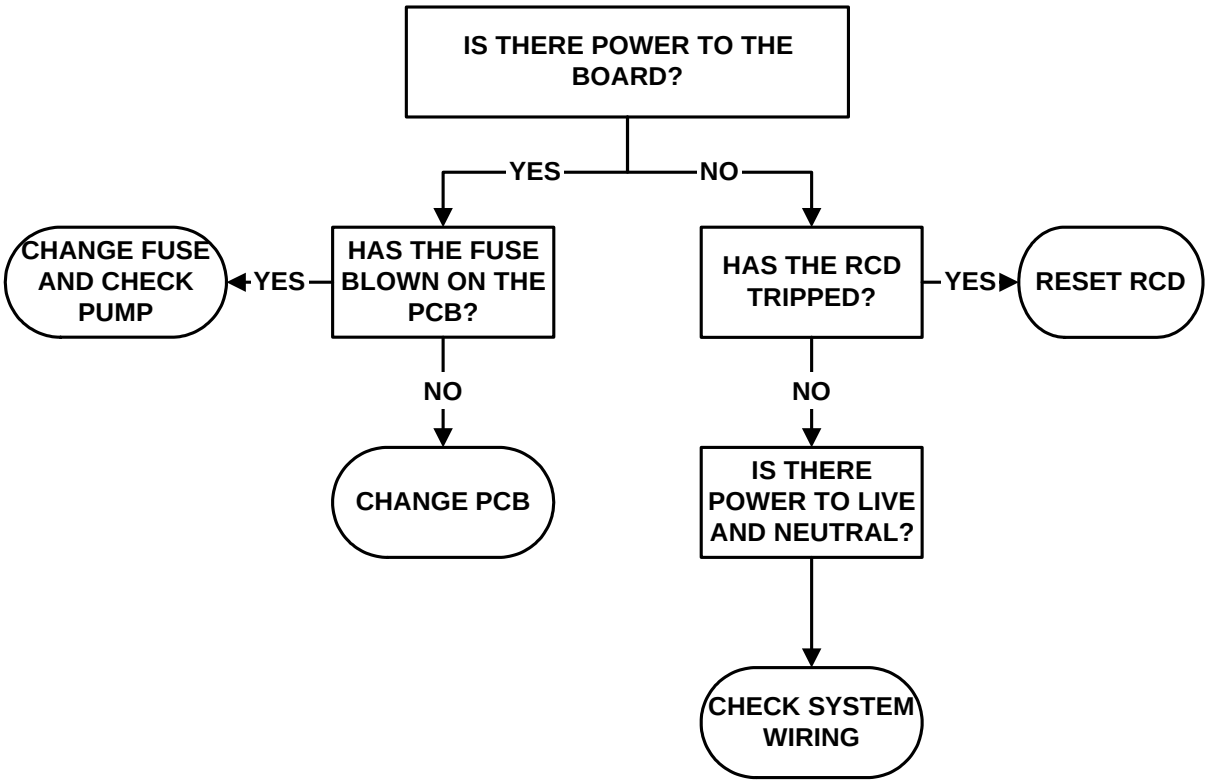
FLASHING RED LIGHT

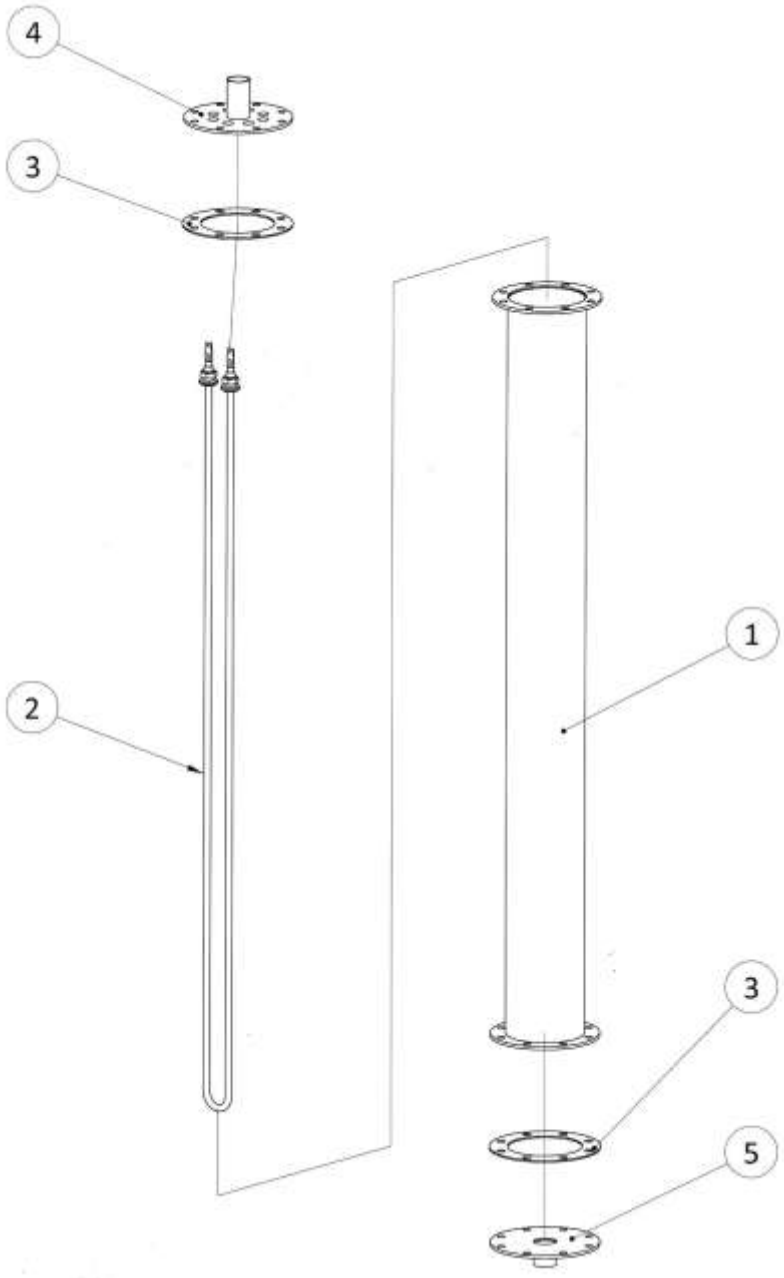


PERMANENT RED LIGHT

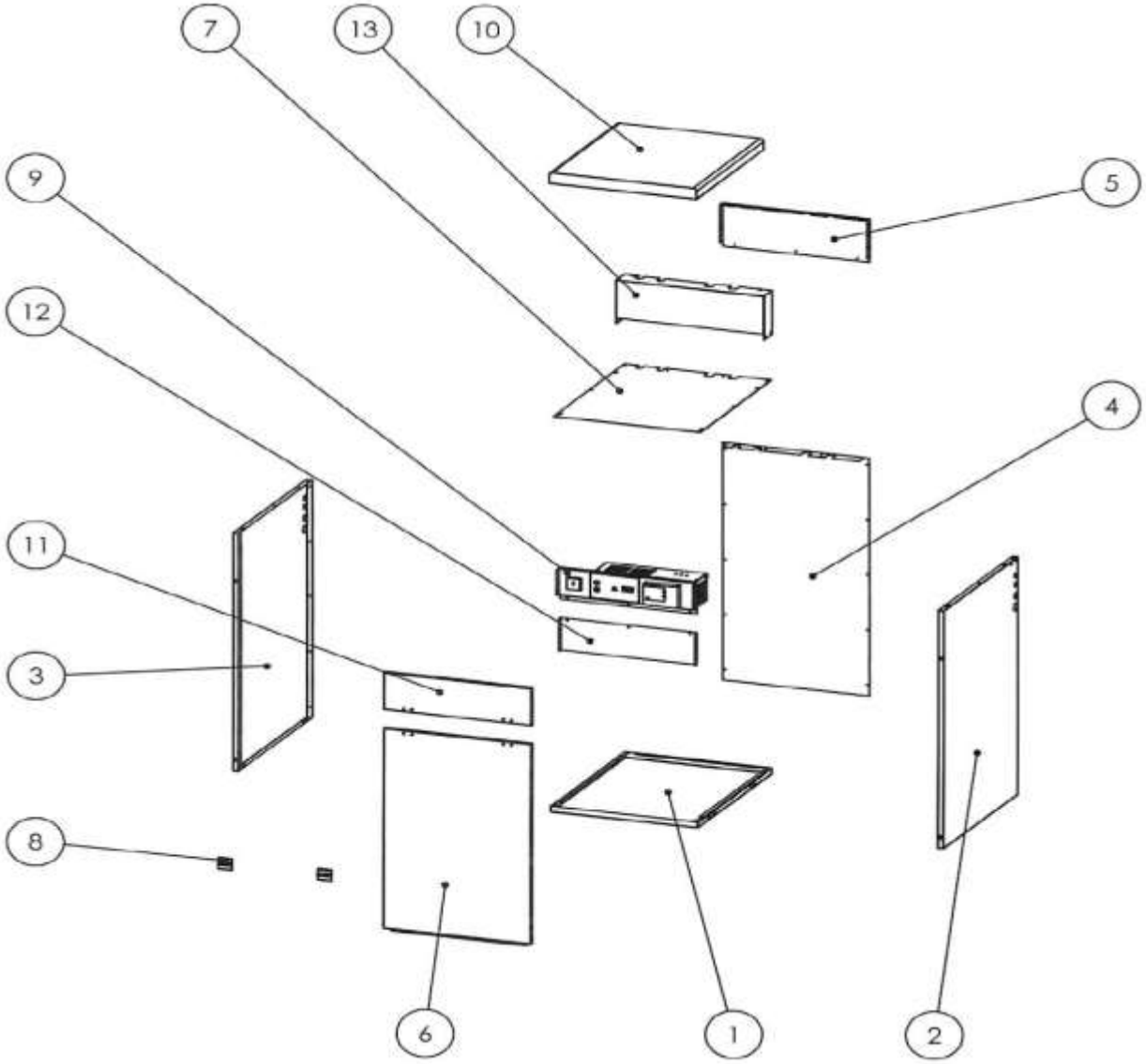


NO GREEN LIGHT

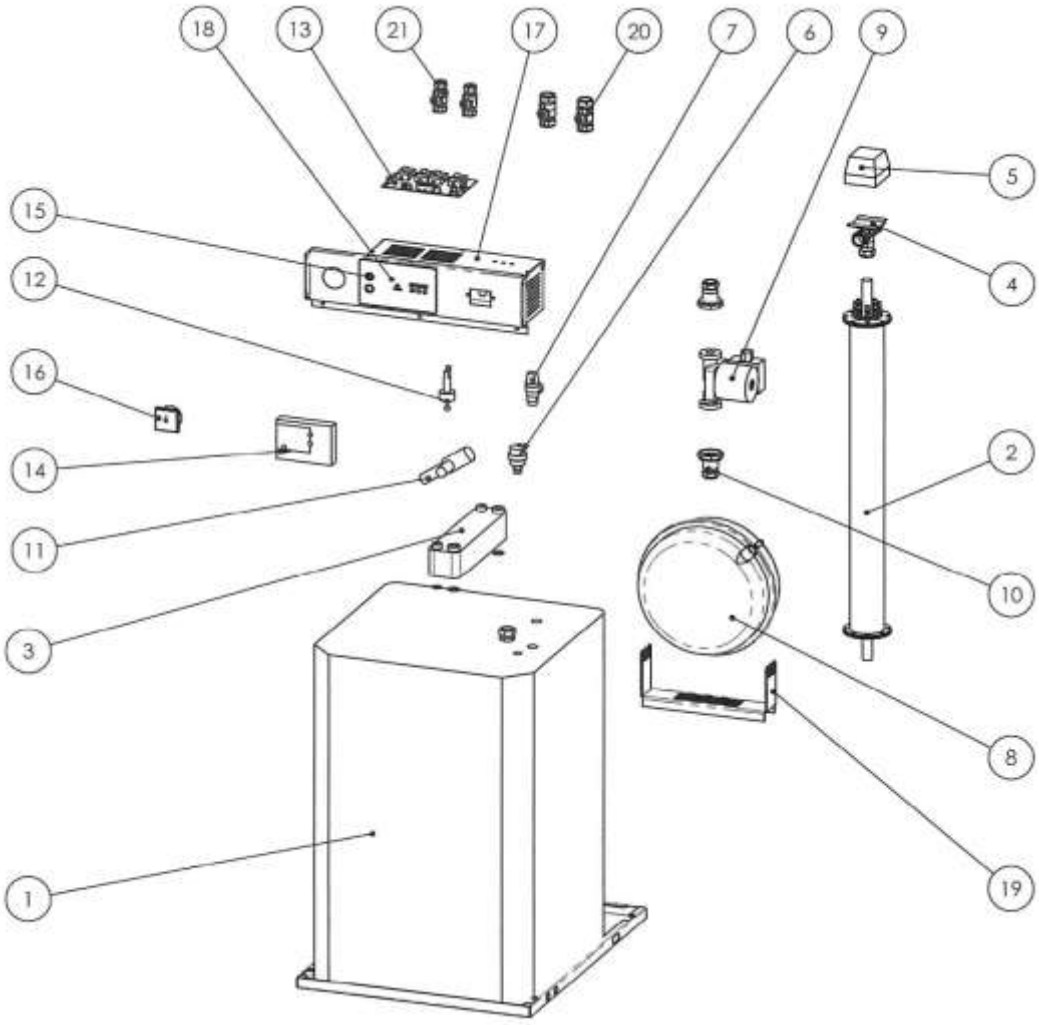




ITEM	PART No.	DESCRIPTION	QUANTITY
1	211501	HEATER BODY W.U.	1
2	211503	3kW ELEMENT	4
3	211701	GASKET	2
4	211509	ELEMENT FLANGE W.U.	1
5	211554	BOTTOM FLANGE W.U.	1



ITEM	PART No.	DESCRIPTION	QUANTITY
1	211791	BASE TRAY	1
2	211851	R/H SIDE ASSEMBLY	1
3	211855	L/H SIDE ASSEMBLY	1
4	211904	BACK PANEL	1
5	211903	PIPE COVER REAR	1
6	211863	DOOR ASSEMBLY	1
7	211905	INNER TOP PANEL	1
8	400261	HINGE	2
9	211885	FASCIA COVER PANEL	1
10	211860	TOP PANEL ASSY	1
11	211869	DROP DOWN PANEL	1
12	211858	BULKHEAD PANEL	1
13	211902	PIPE COVER FRONT	1



ITEM	PART No.	DESCRIPTION	QUANTITY
1	211800	HOT WATER TANK	1
2	221880	HEAT EXCHANGER	1
3	208771	PLATE HEAT EXCHANGER	1
4	209824	DIVERTER VALVE BODY	1
5	501938	DIVERTER VALVE HEAD	1
6	207296	AUTOMATIC AIR VENT	1
7	221920	3 BAR PRESSURE RELIEF VALVE	1
8	207291	10Ltr EXPANSION VESSEL	1
9	500014	PUMP	1
10	99461	PUMP SERVICE VALVE	2
11	211830	MIXING VALVE	1
12	208651	FLOW SWITCH	1
13	211890	PRINTED CIRCUIT BOARD	1
14	211891	TWIN CHANNEL PROGRAMMER	1
15a	211551	TEMPERATURE PUSH BUTTON SWITCH (RED)	1
15b	211552	TEMPERATURE PUSH BUTTON SWITCH (BLUE)	1
16	221921	PRESSURE GAUGE	1
17	211884	CONTROL BOX	1
18	211842	FASCIA PANEL LABEL	1
19	211881	EXPANSION VESSEL SUPPORT BRACKET	1
20	99647	22mm BALL VALVE	2
21	99646	15mm BALL VALVE	2

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