



# TRIANCO

BRINGING HEAT TO LIFE



## **AZTEC 6, 9 & 12kW WALL HUNG MAXI COMBINATION BOILER**

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### **INSTALLATION, OPERATION AND SERVICING INSTRUCTIONS**

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

**TO BE RETAINED BY THE HOUSEHOLDER**

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# HEALTH AND SAFETY

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## 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 10) 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**.

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 13) 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.

**System**

Isolation valves must be fitted on both the flow and return pipe work. 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 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  $0.1939 + 0.1939\Omega$ .

## 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 warranty.

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 warranty 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.**

Register your boiler online

[www.trianco.co.uk/product-registration](http://www.trianco.co.uk/product-registration)

### 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-warranty fault your installer should contact TR Engineering LTD for assistance from site.

### 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 warranty (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 wall mounted electric central heating boiler designed with smaller properties in mind. 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 heat exchanger.

## **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 warranty will be invalidated.

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

**The Trianco Aztec Combination Wall 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 INSIDE THE HEAT EXCHANGER IS FROZEN**

Before firing the boiler, ensure the system is full of water and any valves fitted to the system are open.

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

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

Set the boiler to required temperature using the control buttons.

Set the domestic hot water primary flow temperature using the adjustable control on the front cover.

The domestic hot water outlet temperature should be set by the installer. (Factory set @ 45°C)

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 thermostats to regulate the temperature of the domestic hot water and central heating.

Use the Buttons on the fascia to set the heating flow temperature between 35°C – 75°C

Use the small control knob to adjust the flow temperature to the domestic hot water heat exchanger between 60°C -85°C

The boiler is equipped with a thermostatic blending valve, it is recommended when commissioning the boiler this is set to 45°C to obtain the best performance from the boiler.

## BOILER INDICATOR LIGHT

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

<b>LED 1 GREEN</b>	Power to the boiler.
<b>LED 2 AMBER</b>	Illuminated - In run mode Flashing - Temperature satisfied
<b>LED 3 RED</b>	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).

<b>LED 4 – 12 Green</b>	Heating & Hot water set temperature lights.
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The boiler has two neon indicators behind the fold down panel indicating Hot water demand or Heating mode.

### 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

(Not Supplied) This will be a twin channel type capable of switching Heating and Hot Water. The boiler is capable of accepting all modern controls including Hive, Nest, Salus etc.

### 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.

## SIMPLE FAULT FINDING

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

Is the green LED light illuminated?

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.

Amber light illuminated or flashing.

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
D.H.W Draw Off@40°C-45°C	Ltr	80	95	110
Flow rate@45°C	Ltr/min	10	10	10
Weight	kg	65		
Water Content	litres	41		
Width	mm	500		
Depth	mm	300		
Height	mm	1010		
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 Thermostats	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 HSA3ND			
Pump	25/60			
Expansion Vessel	7Ltr charge 0.5mbar			
Available System Head	3m			
Casing Finish	Stove enamelled white			
Thermal Insulation	Insulated with mineral fibre			



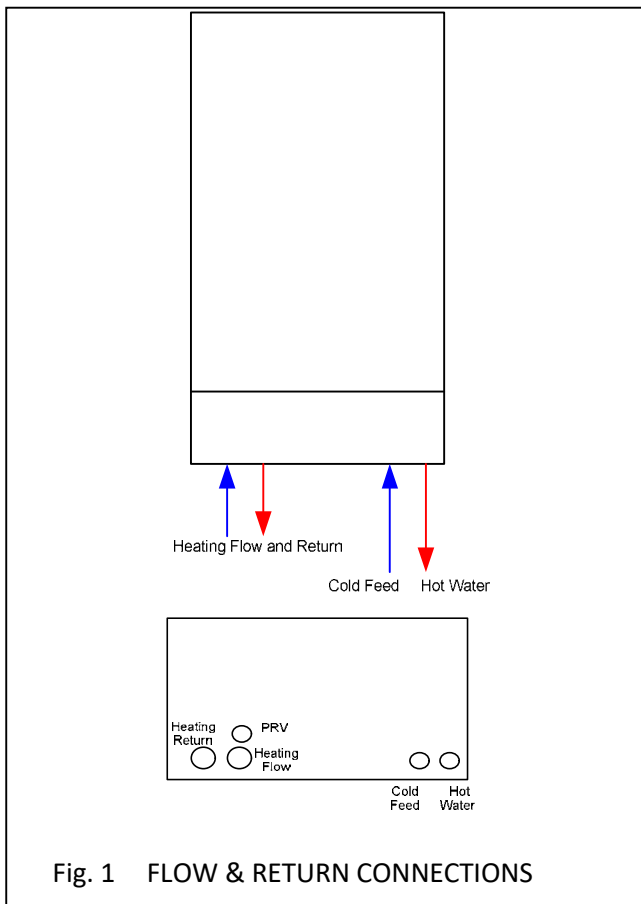


Fig. 1 FLOW & RETURN CONNECTIONS

## 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.**

### 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.**

### SITING THE BOILER

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

Ensure adequate clearance is allowed for making water connections. 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.

The boiler must be mounted on a suitable wall capable of bearing the weight of the boiler.

Attach the two wall brackets supplied using suitable fixings for the wall material. Making sure both brackets are secure and level. See Fig 1.2 page 10 for bracket positions.

Once the brackets are secure the boiler can be lifted into position locating the boiler lugs on to both wall brackets.

To aid in lifting the boiler the case panels must be removed. Do not attempt to lift the boiler with the panels attached as this will damage the case.

### Clearances

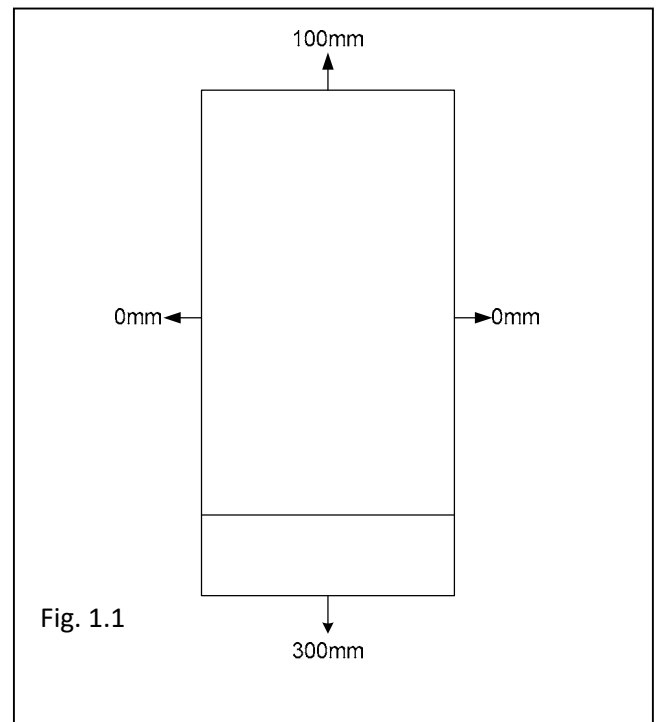


Fig. 1.1

Please allow adequate clearance in front of the boiler for servicing and end user access.

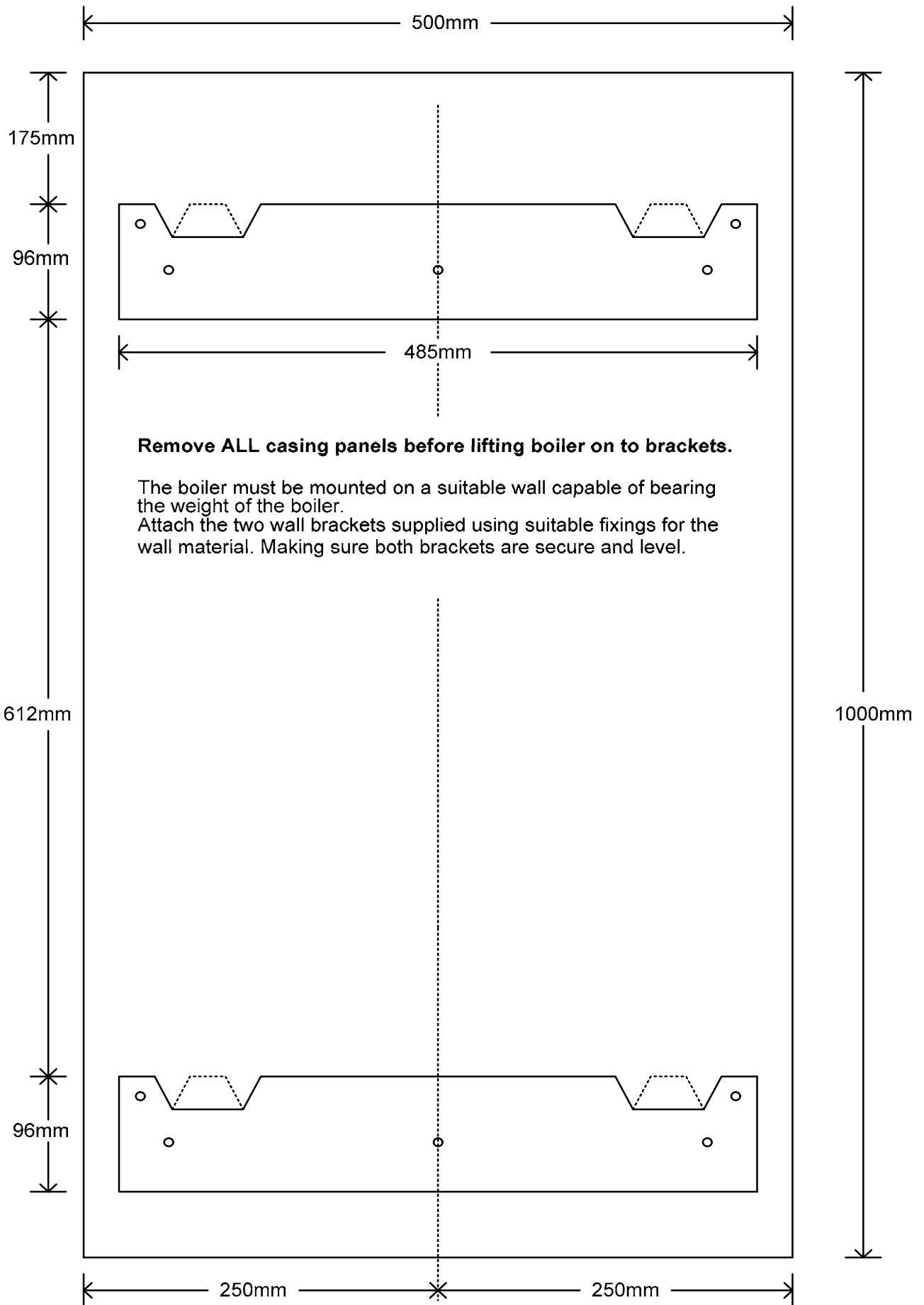


Fig 1.2

**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 110 cm<sup>2</sup> will be required to the compartment, in both high and low positions (see Fig. 2).

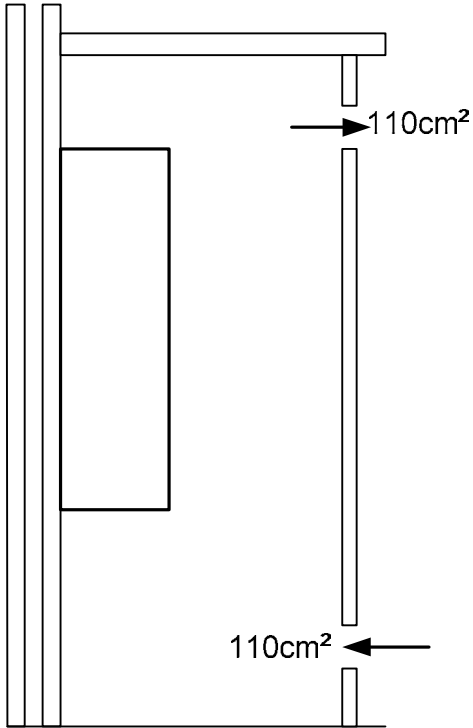


Fig. 2

**WATER SYSTEM**

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

**ISOLATION VALVES MUST BE FITTED**

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. 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 base 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.

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. 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.**

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.**

**Pump**

**WARNING! Risk of injury and damage to property!**  
 Incorrect commissioning can lead to injuries to persons and damage to property.  
**Commissioning by qualified personnel only!**  
 Depending on the operating status of the pump or system (fluid temperature), the entire pump can become very hot.  
**Touching the pump can cause burns!**

**Operation**

The pump is operated using the operating dial. By turning the dial, different control modes can be selected, and the delivery head or constant speed can be set.  
**NOTE:** All settings are retained if the mains supply is interrupted.

**Domestic Hot Water**

It is recommended the Hot water is timed to be on 15 minutes before water will be required at the tap.

The domestic hot water blending valve is factory set to Minimum to give 45°C outlet temperature. This can be adjusted as required but note that any increase will reduce the volume of water available.

## 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 the internal 7 litre expansion vessel might not accommodate the entire system volume.**

**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 heating 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.

### 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.

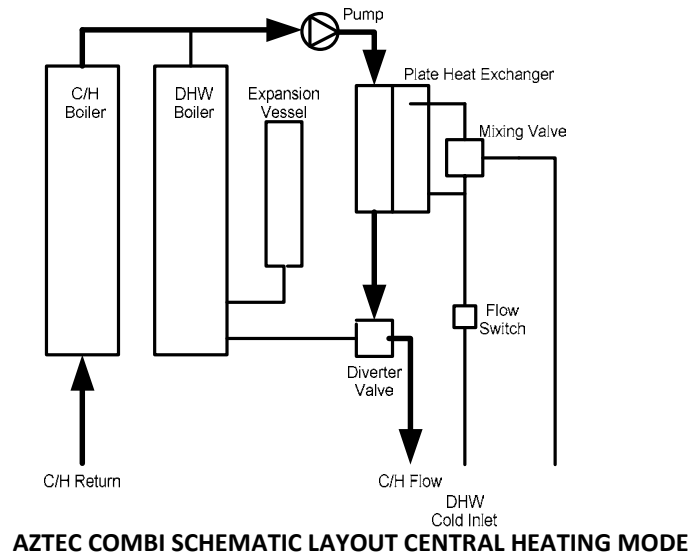
### System Makeup

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.

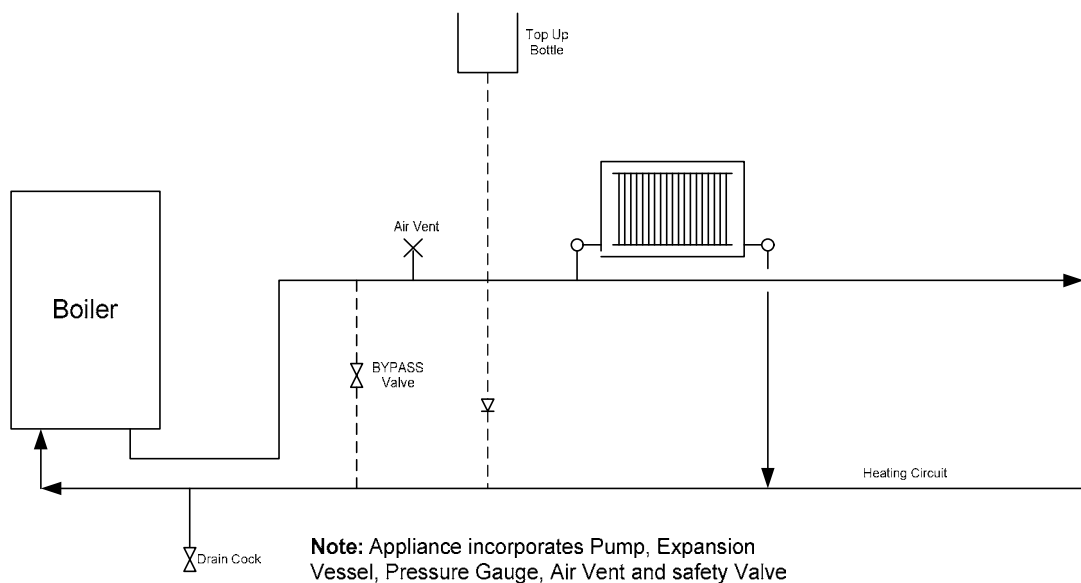
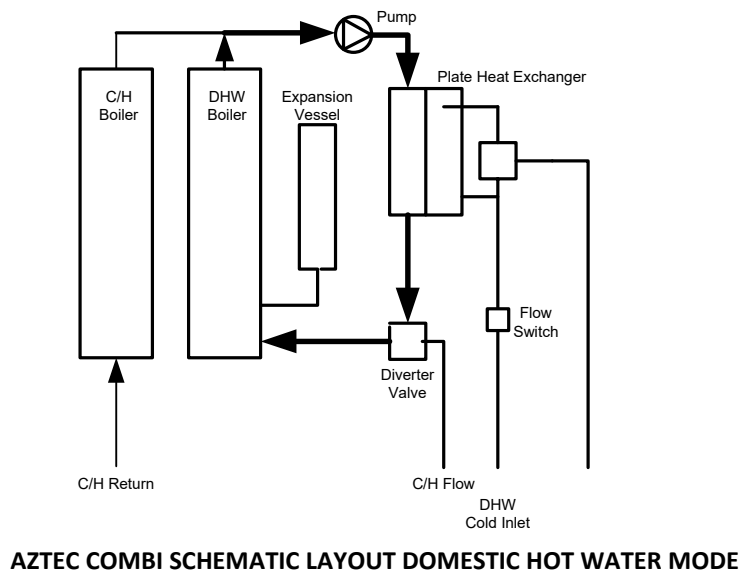
There must be no permanent connection to the mains water valve supply even through a non-return valve.

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**



**Fig 4**



**Fig 5**

## ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

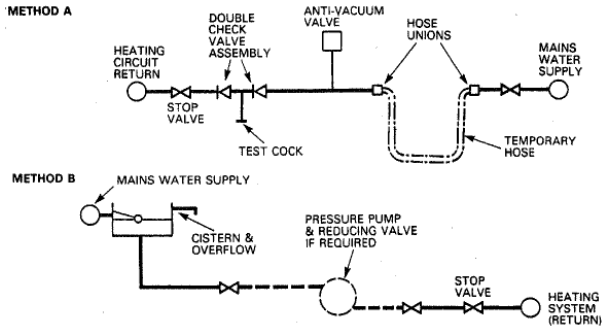


Fig 6

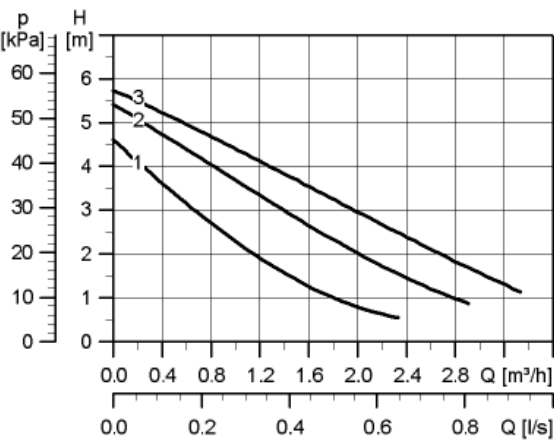


Fig 7

## WIRING INSTRUCTIONS

All electrical work must be carried out in accordance with current IEE wiring regulations.

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 should meet the requirements of EN61000-3-3.

The 9kW boiler must be installed in premises having a service supply  $\geq 100A$  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 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.

## 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.

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

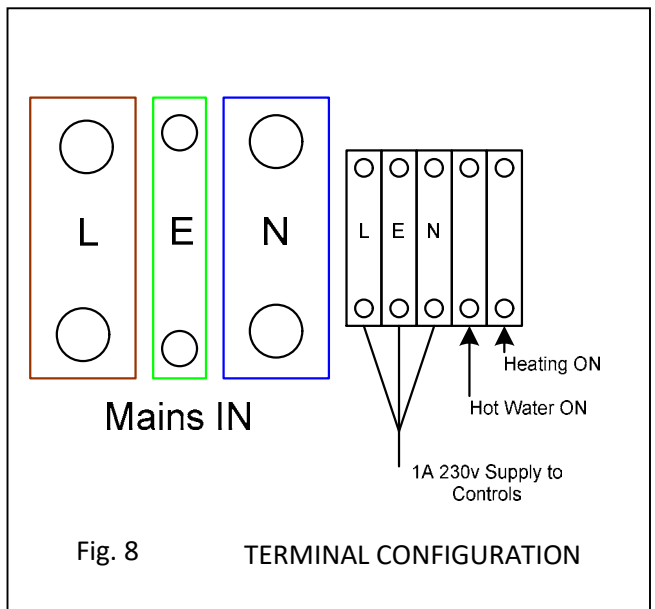


Fig. 8

TERMINAL CONFIGURATION

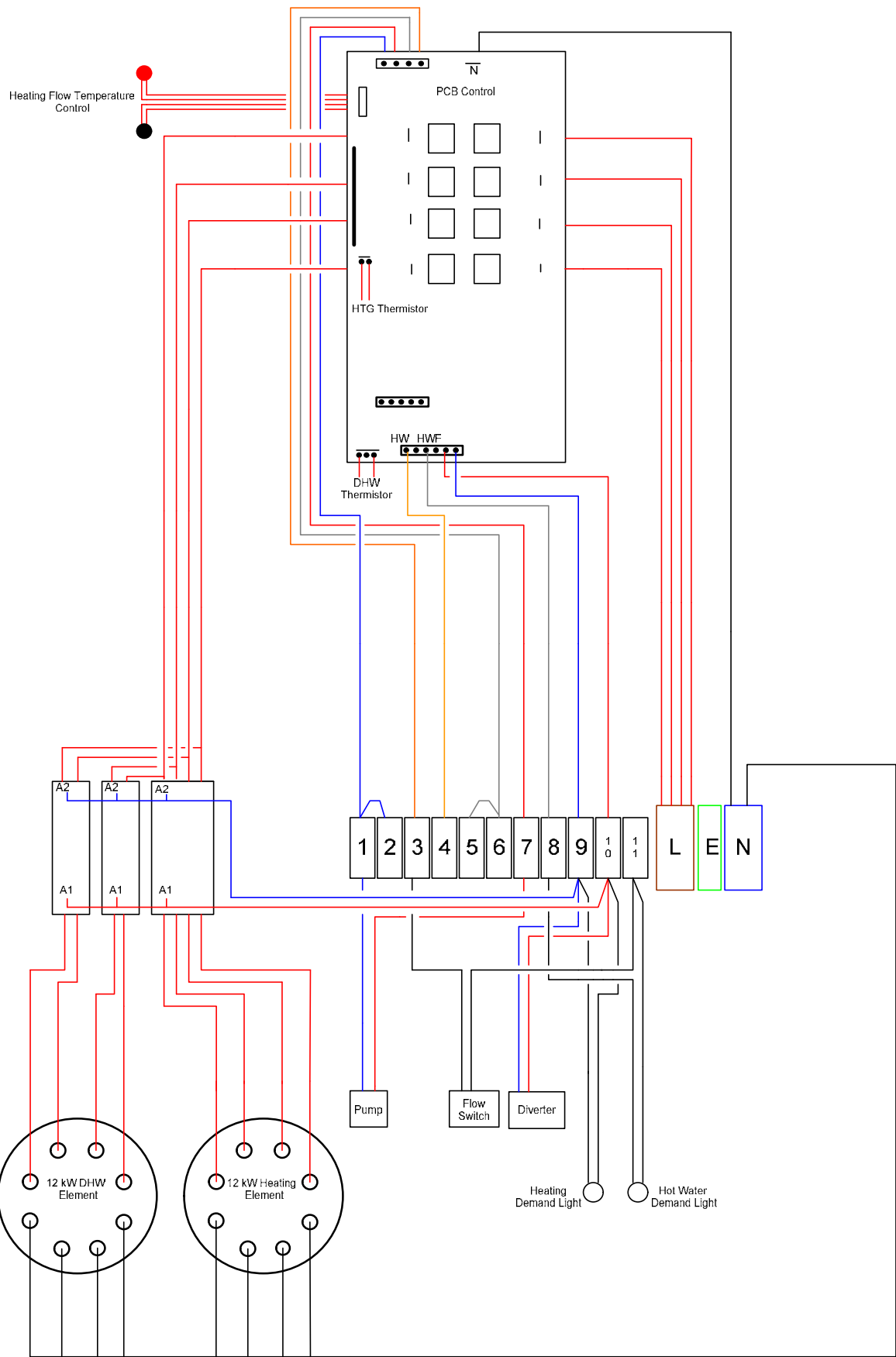


Fig. 9

Internal Wiring diagram

## 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 carrying 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 the heat exchanger's top and bottom flanges.

## PARTS REPLACEMENT

### Casing Removal

Isolate electrical supply to the boiler.

Remove 2 top fixing screws securing front case in position. Lift front panel upwards and away from boiler.

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

The boiler is fitted with two manual reset high limit thermostats. 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 front casing and 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. **N.B. Take note of wiring arrangement before disconnecting.**

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.

Finally remove the 2 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.

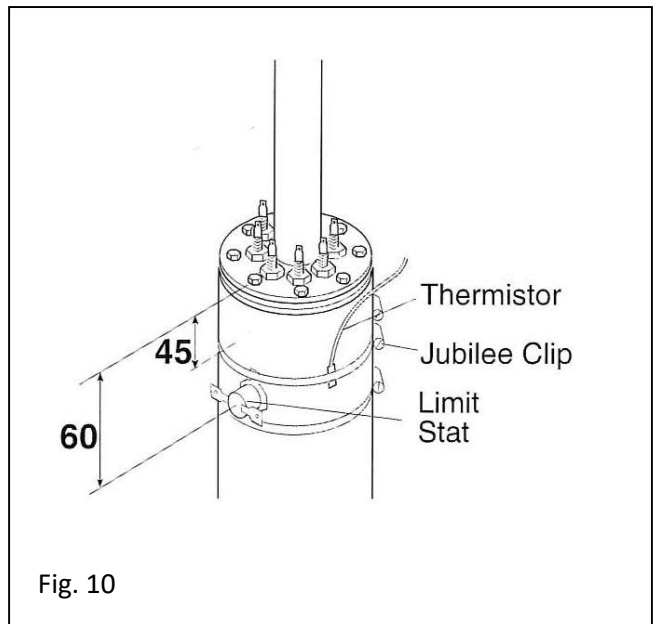
## HIGH LIMIT THERMOSTAT REPLACEMENT

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.



## 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).



## 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 thermostats 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 onto the tank on the left-hand side at the top. 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 thermistors 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 on the left hand side of the tank at the top. 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 the external controls fitted are calling for heat.

**Blown Fuse on Board**

The fuse is located at the top of the PCB (fuse type 20mm 1000Ma anti surge)  
The fuse covers external controls.

**RCD UNIT TRIPS**

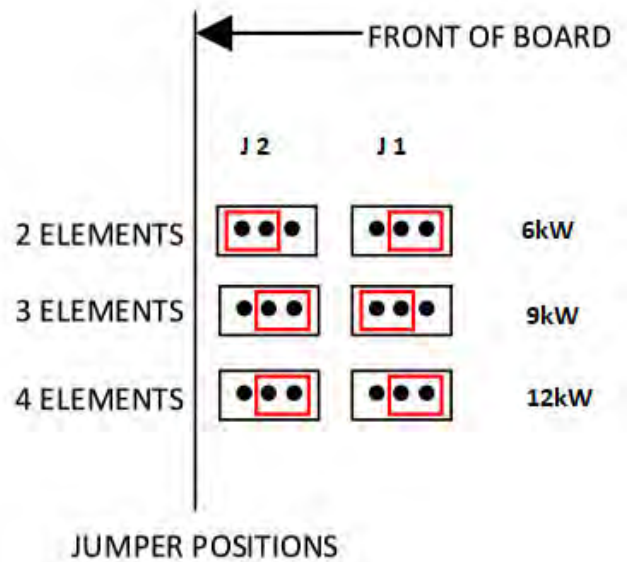
Check that the RCD unit is correctly rated for boiler size. If under size change. Inspect mains terminal block wiring for short-circuiting. Check electrical elements for earth continuity, if element is found to be faulty fit new element.

**Other Information**

**Thermistor Values**

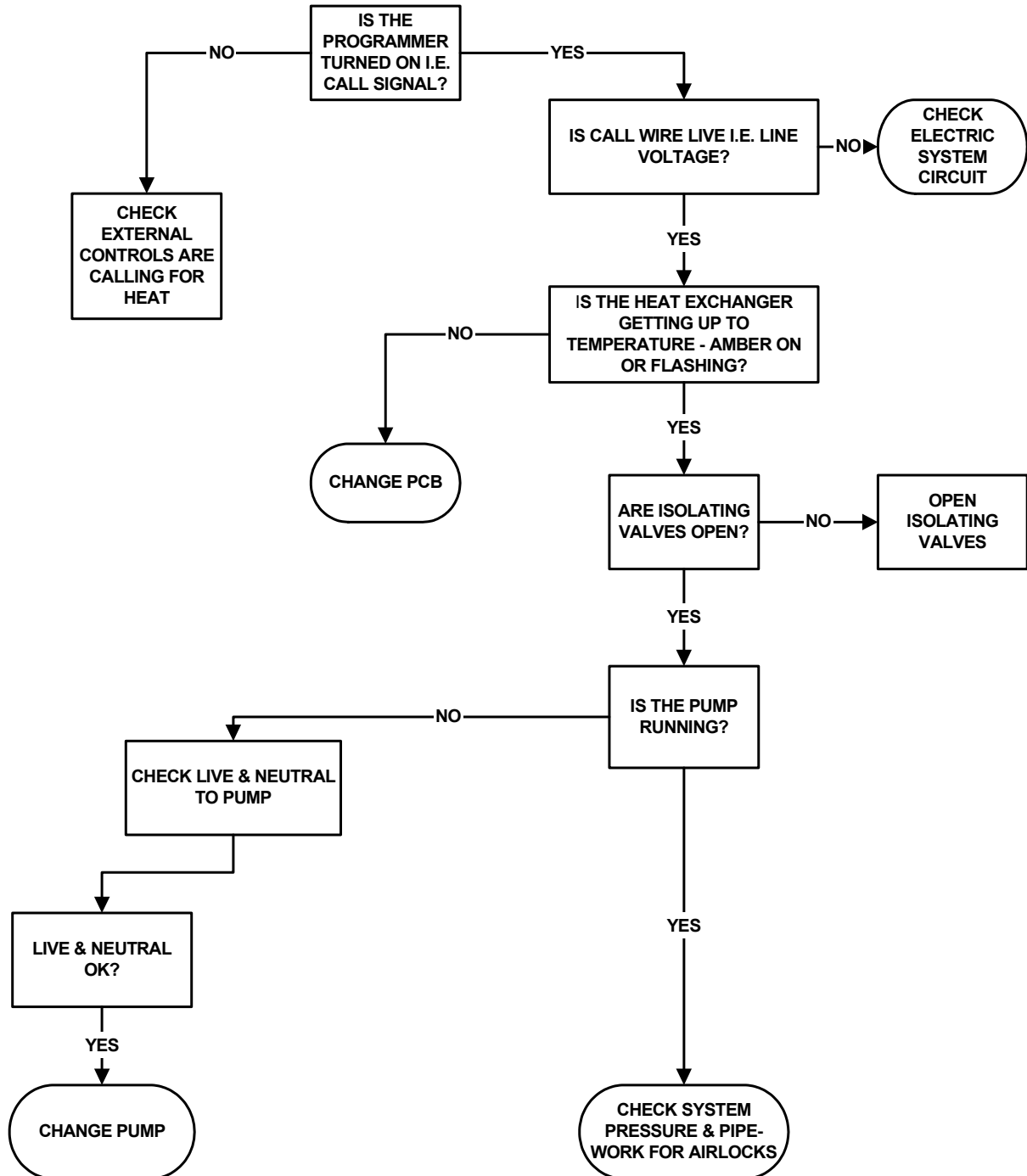
Thermistor Values	
Temperature (°C)	Resistance Value (Ohms)
0	32554
5	25339
10	19872.2
15	15698.5
20	12487.7
25	10000
30	8059.1
35	6543.7
40	5329.9
45	4371.7
50	3605.3
55	2988.7
60	2490
65	2084.4
70	1753
75	1480.9

**Element Jumper Connections**

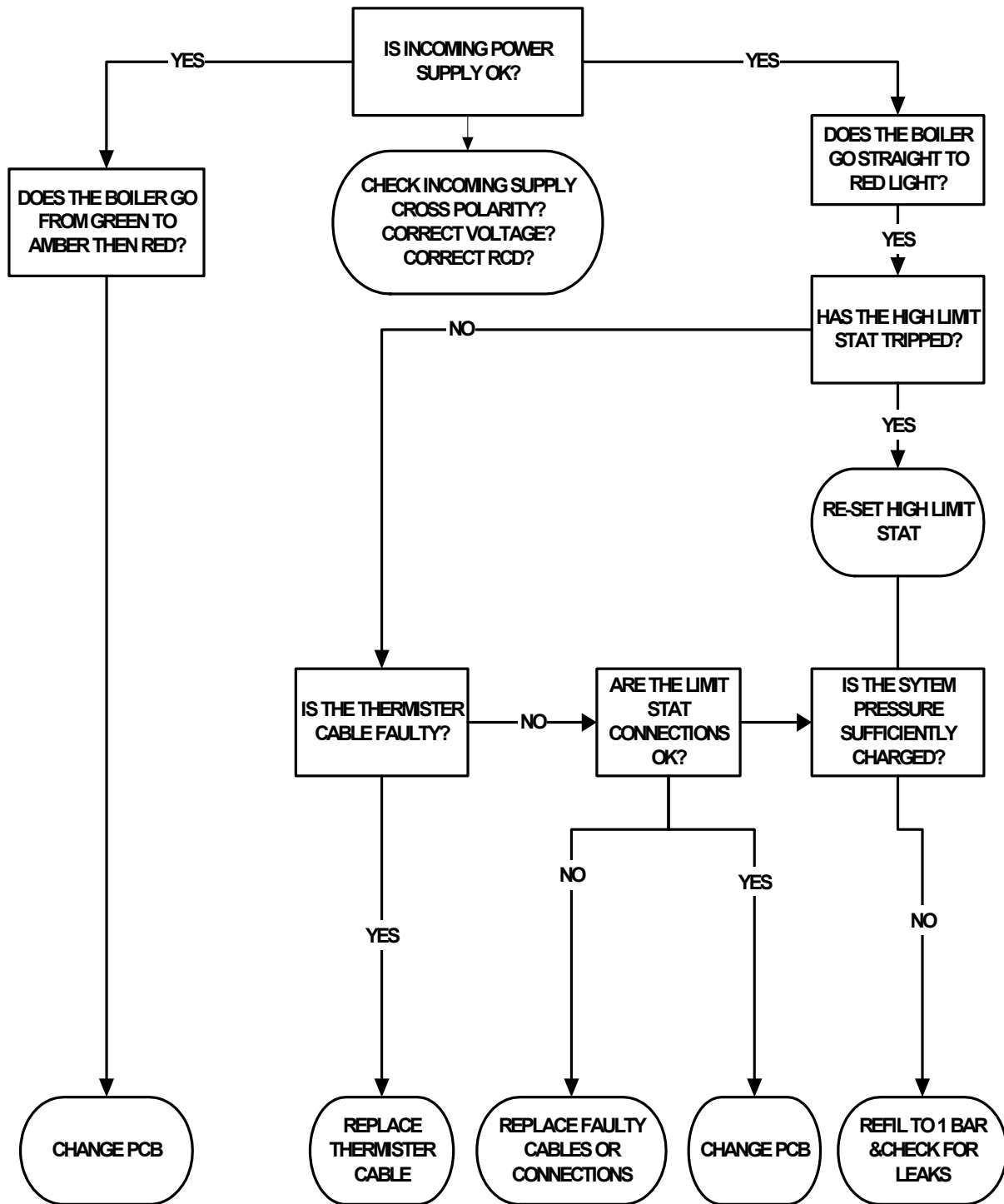


It is important to set the jumpers to the required boiler output before turning the boiler on. Boilers are factory set to 6kW

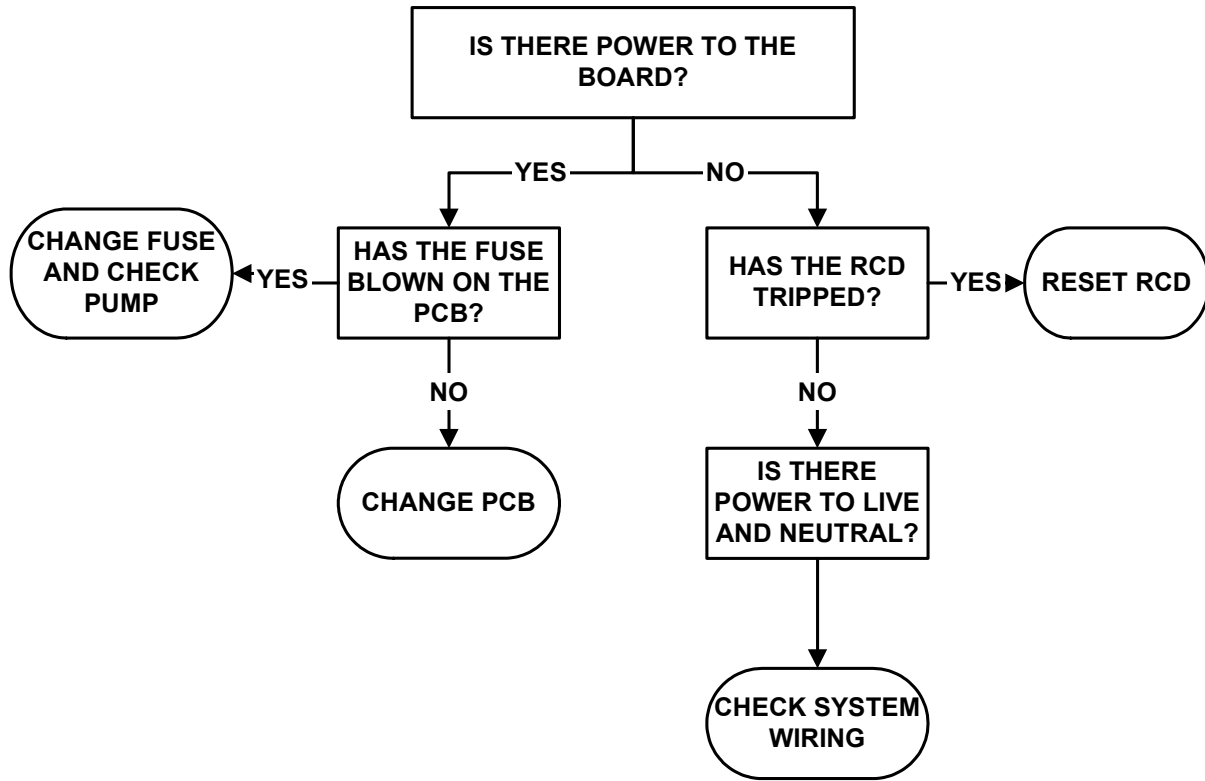
## NO HEAT - PERMANENT GREEN LIGHT



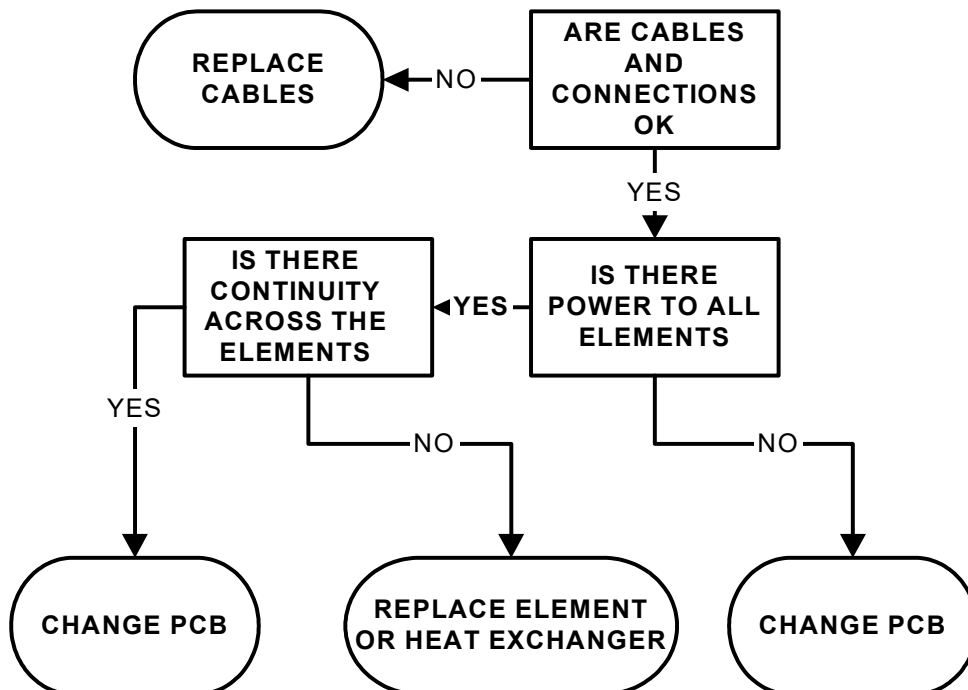
## PERMANENT RED LIGHT

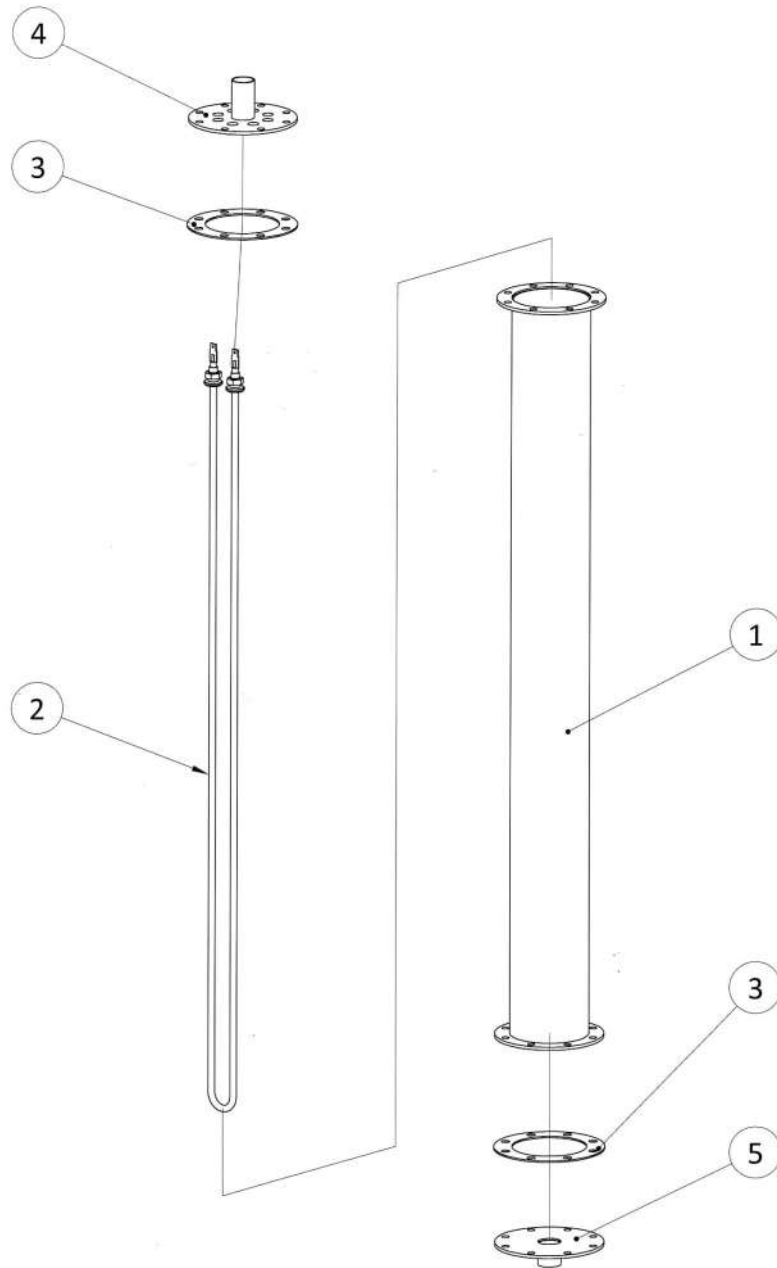


## NO GREEN LIGHT

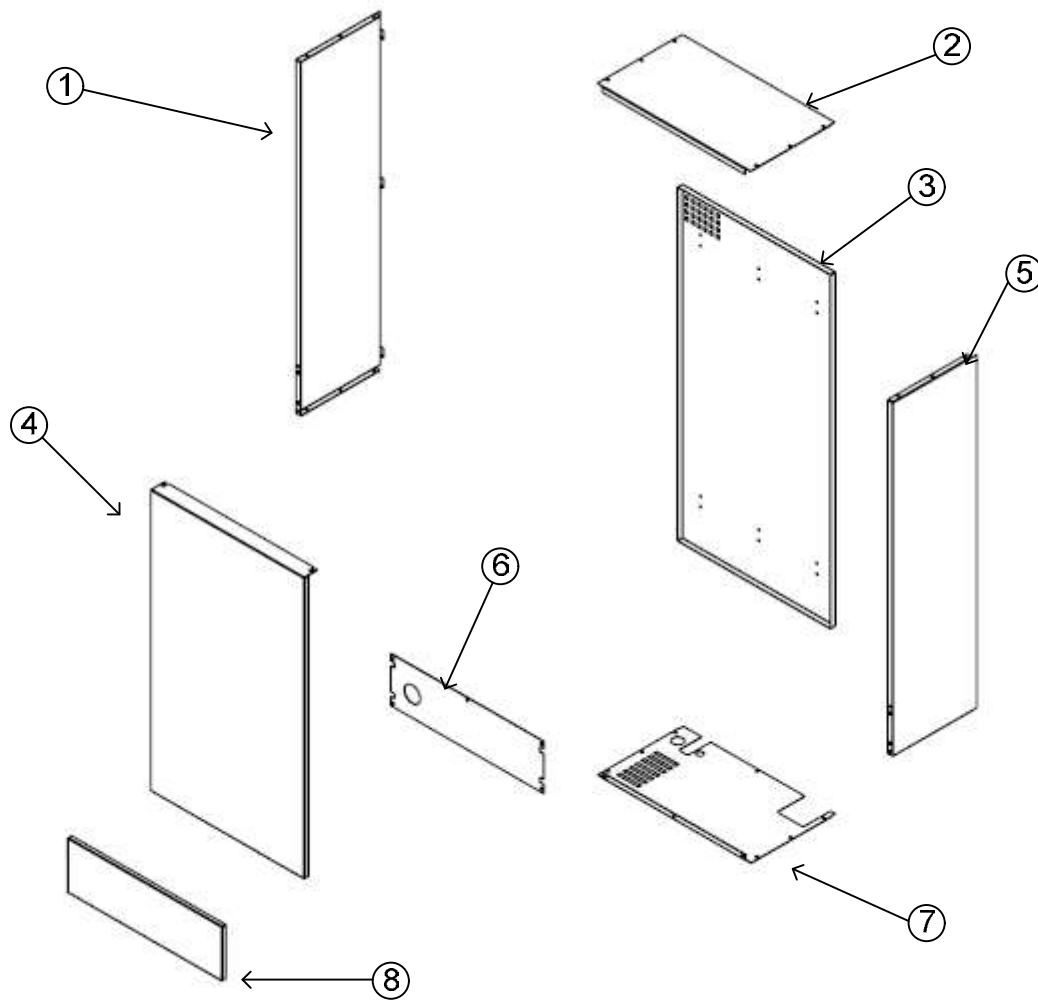


## FLASHING RED LIGHT

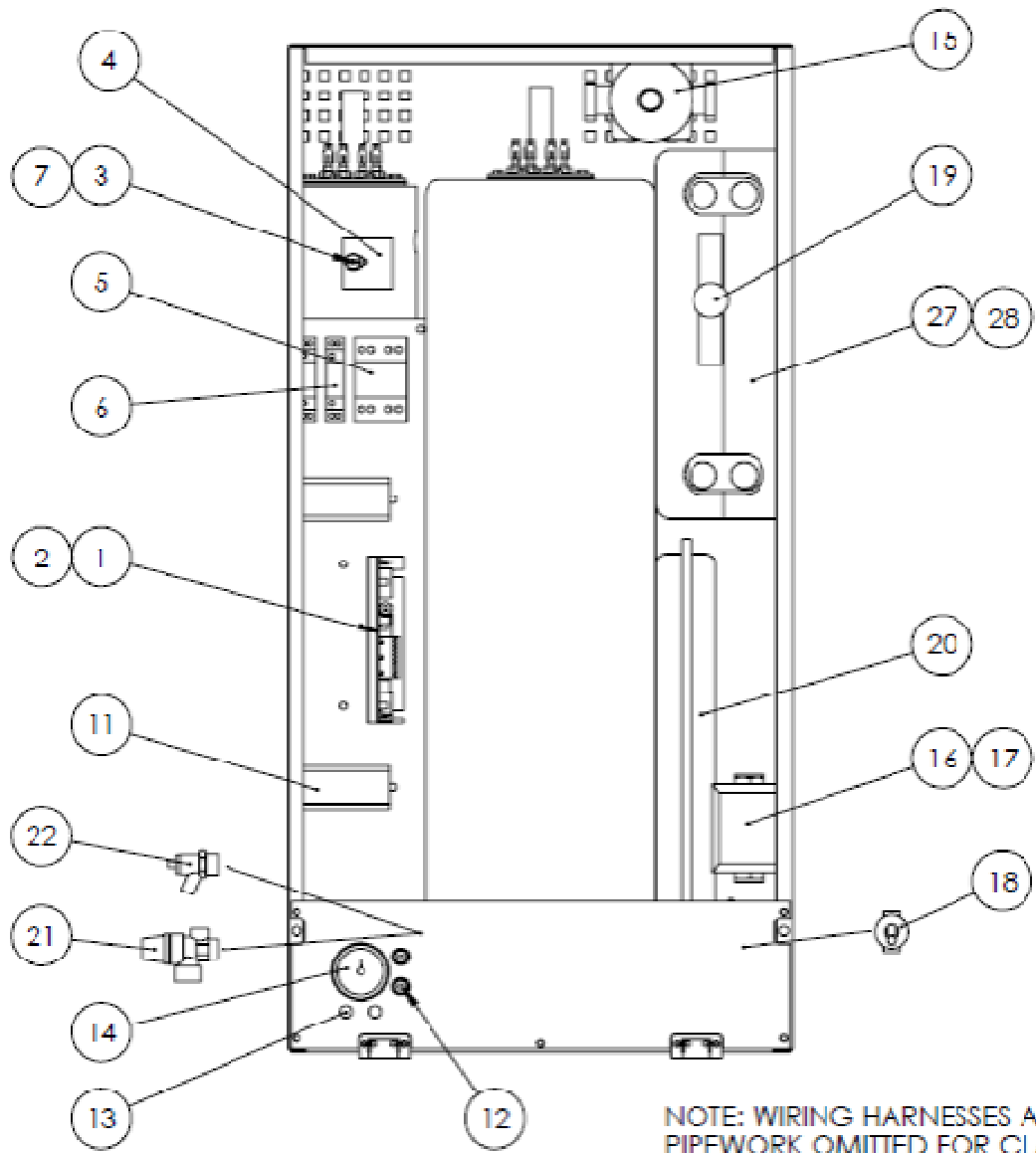




ITEM	PART No.	DESCRIPTION	QUANTITY
1		HEATER BODY W.U.	1
2	221850	3kW ELEMENT	4
3	221807	GASKET	2
4		ELEMENT FLANGE W.U.	1
5		BOTTOM FLANGE W.U.	1



ITEM	PART No.	DESCRIPTION	QUANTITY
1	226216	Left Hand Side Panel	1
2	226212	Top Panel	1
3	226207	Back Panel	1
4	226215	Front Door	1
5	226216	Right Hand Side Panel	1
6	226211	Control mounting Plate	1
7	226209	Bottom Panel	1
8	226210	Front Hinged Panel	1



NOTE: WIRING HARNESSES AND PIPEWORK OMITTED FOR CLARITY



ITEM	PART No.	DESCRIPTION	QUANTITY
1	211890	Printed Circuit Board	1
2	226221	Printed Circuit Board Mounting Bracket	1
3	221825	High Limit Thermostat	2
4		Thermistor Wiring Harness complete	1
5		4 Pole Relay	1
6		2 Pole Relay	2
7		High Limit Thermostat Wiring Harness	1
8		PCB Mains Wiring Harness	1
9		PCB to Relay Wiring Harness	1
10		Relay to Element Wiring Harness	1
11		Mains terminal block	1
12		Temperature Control Buttons & Wiring Harness	1
13		Neon Indicator (Green)	2
14	221921	Pressure Gauge	1
15		Pump	1
16	501938	Diverter Valve Head	1
17	501930	Diverter Valve Body	1
18	208651	Flow switch	1
19	211830	Thermostatic Mixing valve 45-65	1
20		Expansion Vessel	1
21	221920	Pressure Relief Valve	1
22		Drain Valve	1
23	210796	Cable Gland (Small)	1
24	210797	Lock Nut (Small)	1
25	221887	Cable Gland (Large)	1
26	221888	Lock Nut (Large)	1
27	208771	Plate Heat Exchanger	1
28		Plate Heat Exchanger Insulation	1



# TRIANCO

BRINGING HEAT TO LIFE

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