



# INSTALLATION AND SERVICING

## EVOMOD

250 500 750 1000

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal.

For the very latest copy of literature for specification and maintenance practices visit our website [www.idealcommercialboilers.com](http://www.idealcommercialboilers.com) where you can download the relevant information in PDF format.



# GENERAL

**Table 1 Performance Data**

| Boiler  |             |                    | 250      | 500       | 750       | 1000      |
|---|-------------|--------------------|----------|-----------|-----------|-----------|
| Boiler output (non-condensing)                      | Max         | kW                 | 232.5    | 465       | 697.5     | 930       |
|   |             | Btu/h              | 793,378  | 1,586,774 | 2,350,184 | 3,173,512 |
| Mean 70°C   | Min         | kW                 | 46.7     | 46.7      | 46.7      | 46.7      |
|   |             | Btu/h              | 159,325  | 159,325   | 159,325   | 159,325   |
| Boiler output (condensing)                          | Max         | kW                 | 252.5    | 505       | 757.5     | 1010      |
|   |             | Btu/h              | 861,530  | 1,723,060 | 2,584,590 | 3,446,120 |
| Mean 40°C   | Min         | kW                 | 51.4     | 51.4      | 51.4      | 51.4      |
|   |             | Btu/h              | 175,404  | 175,404   | 175,404   | 175,404   |
| Boiler Input Max Rate                               | Net         | kW                 | 238      | 476       | 714       | 952       |
|   |             | Btu/h              | 812,056  | 1,624,112 | 2,486,168 | 3,248,224 |
|   | Gross       | kW                 | 264.1    | 523.2     | 792.3     | 1056.4    |
|   |             | Btu/h              | 901,109  | 1,802,218 | 2,703,327 | 3,604,436 |
| Boiler Input Min Rate                               | Net         | kW                 | 47.6     | 47.6      | 47.6      | 47.6      |
|   |             | Btu/h              | 162,411  | 162,411   | 162,411   | 162,411   |
|   | Gross       | kW                 | 52.8     | 52.8      | 52.8      | 52.8      |
|   |             | Btu/h              | 180,256  | 180,256   | 180,256   | 180,256   |
| Maximum Gas Rate                                    |             | m <sup>3</sup> /h  | 25.2     | 50.4      | 75.6      | 100.8     |
|   |             | ft <sup>3</sup> /h | 889.9    | 1779.8    | 2,669.7   | 3,559.6   |
| Approx. flue gas volume (@80°C) i.e. non-condensing | @ max. rate | m <sup>3</sup> /h  | 391      | 783       | 1174      | 1566      |
|   |             | ft <sup>3</sup> /h | 13,808   | 27,615    | 41,459    | 55,303    |
| Max. Flue Resistance                                |             | Pa                 | 105      | 105       | 105       | 105       |
| Flue Gas CO <sub>2</sub> G20/LNG                    | @ Max Rate  | %                  | 9.1 ±0.2 | 9.1 ±0.2  | 9.1 ±0.2  | 9.1 ±0.2  |
|   | @ Min. Rate | %                  | 8.4 ±0.2 | 8.4 ±0.2  | 8.4 ±0.2  | 8.4 ±0.2  |
| NOx with O <sub>2</sub> = 0% ppm                    |             | mg/kWh             | 39.7     | 39.7      | 39.7      | 39.7      |
|   |             |                    | 22.5     | 22.5      | 22.5      | 22.5      |
| Seasonal Boiler Efficiency (Building Regs L2)       |             | %                  | 95.9     | 95.9      | 95.9      | 95.9      |

**Table 2 General Data**

| Boiler                                    |           | 250               | 500             | 750             | 1000            |
|---|-----------|-------------------|-----------------|-----------------|-----------------|
| Gas supply                                |           | 2H - G20 - 20mbar |                 |                 |                 |
| Gas supply connection                     | (in. BSP) | R1 1/4            | R2              | R2              | R2 1/2          |
| *Flow connection                          | (in. BSP) | 2 1/2" PN16       | 5" PN16         | 5" PN16         | 5" PN16         |
| *Return connection                        | (in. BSP) | 2 1/2" PN16       | 5" PN16         | 5" PN16         | 5" PN16         |
| Hydraulic Resistance @ 20°C               | mbar      | 410               | 410             | 410             | 410             |
| Max Press (sealed system)                 | bar (psi) | 6 (87)            | 6 (87)          | 6 (87)          | 6 (87)          |
| Maximum Static Head                       | m (ft)    | 61 (200)          | 61 (200)        | 61 (200)        | 61 (200)        |
| Boiler Electricity Supply                 |           | 230V - 50Hz       |                 |                 |                 |
| Boiler Fuse Rating                        |           | 1 x 5A Internal   | 2 x 5A Internal | 3 x 5A Internal | 4 x 5A Internal |
| Power Consumption (boiler only)           | W         | 350               | 680             | 1020            | 1350            |
| Air Inlet (optional)                      | O/D mm    | 300               | 300             | 300             | 300 x 2         |
| Flue Size dia                             | mm        | 150               | 250             | 250             | 300             |
| Condensate drain                          | mm        | 21.5              | 2 x 21.5        | 3 x 21.5        | 4 x 21.5        |
| Boiler dry weight (unpacked exc. headers) | kg (lb)   | 229               | 420             | 611             | 845             |
| Water Content                             | l (gal)   | 14.8 (3.26)       | 29.6 (6.52)     | 44.4 (9.78)     | 59.2 (13.0)     |
| IP Rating                                 |           | IP20              |                 |                 |                 |

Electricity supply and Fuse rating for pumps etc. refer to manufacturer's instructions.

**Note.** Natural gas consumption is calculated using a calorific value of 37.8MJ/m<sup>3</sup> (1038Btu/ft<sup>3</sup>) gross or 34 MJ/m<sup>3</sup> (910 Btu/ft<sup>3</sup>) nett at 15°C and 1013.25 mbar.

- a. For l/s divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m<sup>3</sup>)
- b. For ft<sup>3</sup>/h divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft<sup>3</sup>)
- c. For M<sup>3</sup>/h multiply L/S by 3.6.

## HEALTH & SAFETY DOCUMENT NO. 635

**The electricity at work regulations, 1989.** The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

**IMPORTANT.** These appliances are CE certified for safety and performance. It is, therefore, important that no external control devices, e.g. flue dampers, economisers etc., are directly connected to these appliances unless covered by these Installation and Servicing Instructions or as otherwise recommended by **Ideal Boilers** in writing. If in doubt please enquire.

Any direct connection of a control device not approved by **Ideal Boilers** could invalidate the certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above regulations.

**External Supply Rating** In determining the mains supply characteristics, the installer must consider the total power ratings of the boiler module(s) and any associated pumps which derive their supply from the boiler. With this information, appropriate supply cable sizes, protection device and protective earth requirements can be calculated.

**CAUTION.** To avoid the possibility of injury during the installation, servicing or cleaning of this appliance, care should be taken when handling edges of sheet steel components.

# GENERAL

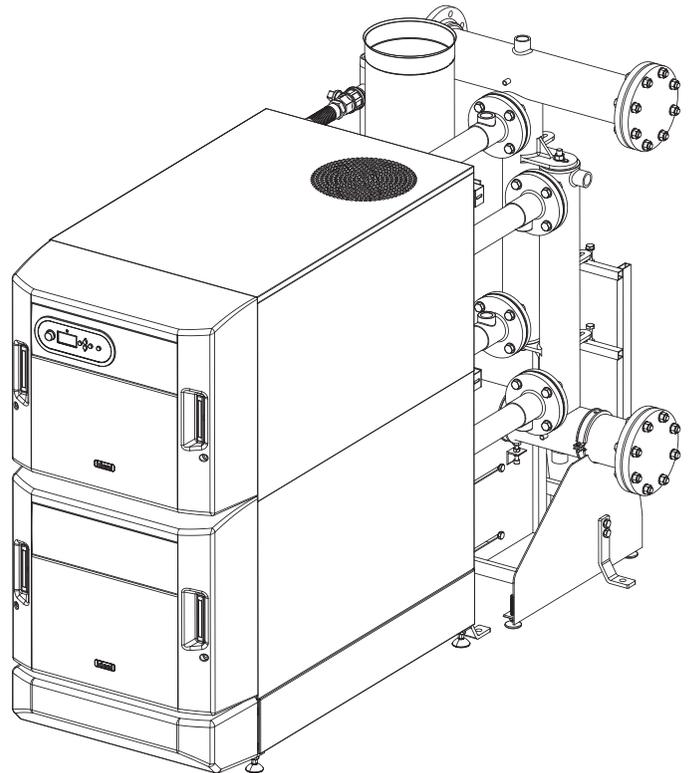
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## EVOMOD 250, 500, 750 & 1000

Natural Gas only

Destination Countries: GB, IE



EVOMOD 500 Model Shown With  
Optional Header Kit Fitted

206810-10320

### Key to symbols

- IE = Ireland, GB = United Kingdom (Countries of destination)  
PMS = Maximum operating pressure of water  
B23 = An appliance intended to be connected to a flue which evacuates the products of combustion to the outside of the room containing the boiler. The combustion air is drawn directly from the room. The fan is up stream of the combustion chamber.

**NOTE TO THE INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER.**

## INTRODUCTION

The **EVOMOD** boilers are fully automatically controlled, floor standing, fanned, super efficient condensing appliances.

The EVOMOD 250 comprises of a single module capable of delivering 250kW.

The EVOMOD 500 comprises two modules (master and slave) stacked vertically and capable of delivering 500kW.

The EVOMOD 750 comprises three modules stacked vertically (central master module, upper & lower slave modules).

The EVOMOD 1000 comprises two 500 modules side by side (the slave module must be positioned to the left of the master module).

The comprehensive boiler controls built into the appliance include:

- 0-10V Boiler control input
- Volt free 'alarm' contacts (lockout)
- Volt free 'boiler run' contacts
- Burner hours run meters
- System temperature indication

The boilers can draw their combustion air from the room or via ducting from outside.

Each module provides a maximum of 250kW heat output and will modulate down to 50kW under the influence of controls.

*(See Table 1, Page 2 for outputs at different temperatures).*

Boilers comprising more than one module will share the heating load equally among the boiler modules, switching the modules off individually once the heating load drops below 20% of the total boiler capacity. In this way a decreasing load is continuously matched for optimum efficiency. The minimum output from all models is 50kW, providing a turndown ration of 5:1 for the 250, 10:1 for the 500, 15:1 for the 750 and 20:1 for the 1000. Modules will fire on the basis of least hours run.

Each module includes a flap which is only opened under air pressure from the module fan. It thus prevents energy wastage through non-firing modules.

Through a sophisticated control system combined with premix burner technology and a stainless steel heat exchanger, the boilers are capable of high operating efficiencies and low emissions (see Table 1).

These boilers are certified to meet the requirements of the EC Gas Appliance Directive, Boiler Efficiency Directive, EMC and Low Voltage Directive.

## OPTIONAL EXTRA KITS

- **Water and Gas Assembly Header Packaged**
- **Water and Gas Header Assembly c/w Valves Packaged**
- **Connection Kit - Evomod 250**
- **Air Inlet Collar Kit**

## SAFETY

**Current Gas Safety (Installation and Use) Regulations or rules in force.**

The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force.

In GB, the installation must be carried out by a Gas Safe Registered Engineer or in IE by a competent person. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety (Installation and Use) Regulations
- The appropriate Building Regulations either The Building

Regulations, The Building Regulations (Scotland), Building Regulations (Northern Ireland).

- The Water Fittings Regulations or Water byelaws in Scotland.
- The Current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

In IE, the installation must be carried out by a Competent Person and installed in accordance with the current edition of I.S.820:2000 "Non Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for electrical installation.

The boilers have been tested by BSI and conform to EN656, EN13856 and EN15417 for use with Natural Gas.

Detailed recommendations are contained in the following Standards and Codes of Practice:

|           |  |
|-----------|--|
| BS. 5854  | Flue and flue Structures in Buildings.   |
| BS. 6644  | Installation of gas fired hot water boilers of rated inputs between 70kW and 1.8MW (net) (2nd and 3rd family gases). |
| BS. 6880  | Low temperature hot water heating systems of output greater than 45kW.   |
| Part 1    | Fundamental and design considerations.   |
| Part 2    | Selection of equipment.  |
| Part 3    | Installation, commissioning and maintenance.   |
| IGE/UP/1  | Soundness testing and purging of industrial and commercial gas installations.  |
| IGE/UP/2  | Gas installation pipework, boosters and compressors on industrial and commercial premises.                           |
| IGE/UP/10 | Installation of gas appliances in industrial and commercial premises.  |

## SAFE HANDLING

This boiler may require 2 or more operatives to move it to its installation site, remove it from its packaging base (see Frame 13) and during movement into its installation location. Manoeuvring the boiler may include the use of a pallet truck and involve lifting, pushing and pulling.

Caution should be exercised during these operations.

Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:

- Grip the boiler at the base.
- Be physically capable.
- Use personal protective equipment as appropriate, e.g. gloves, safety footwear.

During all manoeuvres and handling actions, every attempt should be made to ensure the following unless unavoidable and/or the weight is light.

- Keep back straight.
- Avoid twisting at the waist.
- Avoid upper body/top heavy bending.
- Always grip with the palm of the hand.
- Use designated hand holds.
- Keep load as close to the body as possible.
- Always use assistance if required.

## SAFE HANDLING OF SUBSTANCES

No asbestos, mercury or CFCs are included in any part of the boiler or its manufacture.

## FOUNDATION / LOCATION OF BOILER

The boiler must stand on a floor which must be flat, level and of a suitable load bearing capacity to support the weight of the boiler (when filled with water) and any ancillary equipment.

Ideally the boiler should be placed on a plinth exceeding the plan area of the boiler by 75mm on each side and at least 100mm high.

**The boiler must not be fitted outside.**

## GAS SUPPLY

The local gas supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas. An existing service pipe must NOT be used without prior consultation with the local gas supplier.

A gas meter can only be connected by the local gas supplier or by a Gas Safe Registered Engineer or in IE by a competent person.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the dynamic rate of gas supply required. A minimum working gas pressure of 17mbar MUST be available at the boiler inlet for Natural gas.

Do not use pipes of smaller size than the boiler inlet gas connection.

The complete installation MUST be tested for gas soundness and purged in accordance with the appropriate standards.

### Gas Boosters

A gas booster is required if the gas pressure available at the boiler is lower than that required by the boiler manufacturer to attain the flow rate for maximum burner input rating.

Location of the booster requires careful consideration but should preferably be closer to the burner rather than the gas meter. Ventilation should also be considered to ensure ambient temperature do not exceed designed recommendations. Further guidance is provided in IGE/UP/2.

## FLUE INSTALLATION

The flue header for 500-1000 boilers is supplied.

**IMPORTANT.** It is the responsibility of the installer to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance MUST be isolated from the gas supply and labelled as 'unsafe' until corrective action can be taken.

### Terminal Position

Due to the high efficiency of the boilers pluming will occur.

Particular care should be taken in the case of large output boiler installations, and complying with the requirements of the Clean Air Act.

The flue must be installed in accordance with the appropriate Building Regulations and standards listed on page 4 and in compliance with BS6644. In IE refer to I.S.820:2000.

## FLUE SYSTEM DESIGN

Due to the high efficiency of these boilers, the flue gas temperatures are low and the buoyancy in the stack will be relatively small. The boiler is supplied with an integral fan which is fully matched to the boiler in each case to provide correct combustion air flow and overcome the flue resistance.

The power of this fan is such that there is a large reserve of pressure available to overcome a significant length of flue without affecting the combustion performance of the boiler.

The maximum pressure available at the base of the flue to overcome flue resistance is 105Pa. This includes the resistance of any air ducts used to connect the air inlet direct to outside air. Care should be taken with tall flue systems to ensure excess buoyancy is not created. A negative pressure must not be created at the boiler flue outlet.

See table below for approximate maximum straight flue length.

| Boiler                                | 250  | 500  | 750  | 1000 |
|---------------------------------------|------|------|------|------|
| Flue Size (mm)                        | Ø150 | Ø250 | Ø250 | Ø300 |
| Approx. max. Straight Flue Length (m) | 28   | 80   | 32   | 56   |

The addition of elbows and their positions in the flue will have a significant effect on the maximum allowable flue and air duct lengths. Consult with your flue supplier for detailed design work.

### IMPORTANT NOTE.

**If combustion air is drawn from within the boiler room, ensure no dust or airborne debris can be ingested into the appliance. Dusty concrete flooring should be sealed to reduce the presence of dust. Ideally where possible duct the air supply into the boiler room from a clean source outside the boiler room / building.**

### Material

With no requirement for buoyancy to discharge flue products and with low flue gas temperatures, single wall flues are suitable for most installations. Care should still be taken to maintain compliance with building regulations and relevant standards.

The flue used should be a suitably approved flue for use on a pressurised condensing flue system. The boiler is not suitable for use on plastic flue systems.

**Condensate produced in the flue should be drained separately before entering the boiler.** A Drain point at the bottom of the flue header (500, 750 and 1,000) is provided for this purpose.

Advice regarding the availability of proprietary types of flue system can be obtained by contacting **Ideal Boilers**.

All joints or connections in the flue system must be impervious to condensate leakage. Low points in the flue system should be drained using pipe of material resistant to condensate corrosion.

All drains in the flue should incorporate a water trap.

Care should also be taken in the selection of flue terminals as these tend to accentuate the formation of a plume and could freeze in cold weather conditions.

Care should be taken to ensure the specification of the chimney is suitable for the application by reference to the manufacturers literature.

NOTE:- Long Flues

It is recommended that a support bracket is fitted at least every 1m of flue length and a bracket must be fitted at every flue joint to ensure flue seal and alignment of flue.

# GENERAL

## WATER CIRCULATION SYSTEM

A circulation pump **MUST** be connected to the boiler, see below.

The boiler must **NOT** be used for direct hot water supply. The hot water storage cylinder **MUST** be of the indirect type.

Single feed, indirect cylinders are not recommended and **MUST NOT** be used on sealed systems.

The appliances are **NOT** suitable for gravity central heating nor are they suitable for the provision of gravity domestic hot water.

The hot water cylinder and ancillary pipework, not forming part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing - particularly where pipes run through roof spaces and ventilated underfloor spaces.

The boiler must be vented. There must be no low points between the boiler flow connection and a system vent point, which should be positioned as close as practically possible to the boiler flow connection.

Draining taps **MUST** be located in accessible positions, which permit the draining of the whole system - including the boiler and hot water storage vessel. They should be at least 1/2" BSP nominal size and be in accordance with BS. 2879.

The central heating system should be in accordance with the relevant standards listed on page 4.

Due to the compact nature of the boiler the heat stored within the heat exchanger at the point of shutdown of the burner must be dissipated into the water circuit in order to avoid overheating. In order to allow pump operation after burner shutdown the boiler control box incorporates a 2 minute pump overrun facility. In order to make use of this, a pump must be controlled via the terminals inside the boiler. (Refer to Frame 22).

Independent module pumps or valves may be fitted where hydraulic isolation is required. These must be wired to the module pumps control terminals in the installation box. When sizing module pumps refer to the water flow rates for the 250kW model. When sizing a module valve, take into account any additional hydraulic resistance when sizing the system pump.

When sizing pumps, reference should be made to the Hydraulic Resistance Table on page 6 which show the boiler resistance against flow rates, to achieve the required temperature differential.

Flow rates for common systems using a 20°C temperature differential are given in the table below.

|             | Water flow rate temp.difference 20°C (36°F) |                   |
|-------------|---|-------------------|
|             | l/s   | m <sup>3</sup> /h |
| <b>250</b>  | 3.0   | 10.7              |
| <b>500</b>  | 6.0   | 21.5              |
| <b>750</b>  | 9.0   | 32.2              |
| <b>1000</b> | 12.0  | 43                |

### Note.

- *With the boiler firing at maximum rate, the temperature differential should not be less than 20°C.*
- *With the boiler firing at minimum rate, the temperature differential should not be greater than 35°C. Lower flow rates generating higher temperature differentials will lead to poor system performance.*
- *The lower the return temperature to the boiler, the higher the efficiency. At return temperatures of 55°C and below, the difference becomes marked because the water in the flue gases starts to condense, releasing its latent heat.*

In installations where all radiators have been provided with thermostatic radiator valves, it is essential that water circulation through the boiler is guaranteed. A mixing header will perform this task. Alternatively this can be best achieved by means of a differential pressure valve, which is installed in a bypass between

the flow and return pipes. The bypass should be fitted at least 6m from the boiler, and should be capable of allowing a minimum flow rate to achieve a temperature differential of no greater than 35°C at minimum rate.

## WATER TREATMENT

**These boilers incorporate a STAINLESS STEEL heat exchanger.**

**IMPORTANT.** The application of any other treatment to this product may render the guarantee of **Ideal Boilers** **INVALID**.

**Ideal Boilers** recommend Water Treatment in accordance with Guidance Notes on Water Treatment in Central Heating Systems.

**Ideal Boilers** recommend the use of Fernox Copal or MB1 or GE Betz Sentinel X100 inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

For further information contact:

**Fernox Manufacturing Co. Ltd.**, Cookson Electronics, Forsyth Road, Sheerwater, Woking, Surrey, GU21 5RZ  
Tel: +44 (0) 1799 521133

or

**Sentinel Performance Solutions.**,  
The Heath Business & Technical Park,  
Runcorn, Cheshire, WA7 4QX  
Tel: 0800 389 4670. [www.sentinel-solutions.net](http://www.sentinel-solutions.net)

1. *It is most important that the correct concentration of the water treatment products is maintained in accordance with the manufacturers' instructions.*
2. *If the boiler is installed in an existing system any unsuitable additives **MUST** be removed by thorough cleansing.*
3. *In hard water areas, treatment to prevent limescale may be necessary.*
4. *Under no circumstances should the boiler be fired before the system has been thoroughly flushed.*

## ELECTRICAL SUPPLY

**WARNING. This appliance must be earthed.**

Wiring external to the appliance **MUST** be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations which apply. For Ireland reference should be made to the current ETCI rules for electrical installations.

The point of isolation from the mains should be readily accessible and adjacent to the boiler.

## CONDENSATE DRAIN

Condensate drains are provided on the boiler. These drains must be connected to a drainage point on site. All pipework and fittings in the condensate drainage system **MUST** be made of plastic - no other materials may be used.

**IMPORTANT.** Any external runs must be insulated to avoid freezing in cold weather causing blocking. (Refer to Frame 20)

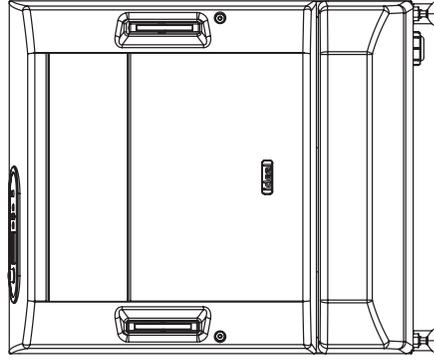
## HYDRAULIC RESISTANCE -

| Boiler | Pressure Drop (mbar) @ 20°C Differential |
|--------|--|
| 250    | 410                                      |
| 500    | 410                                      |
| 750    | 410                                      |
| 1000   | 410                                      |

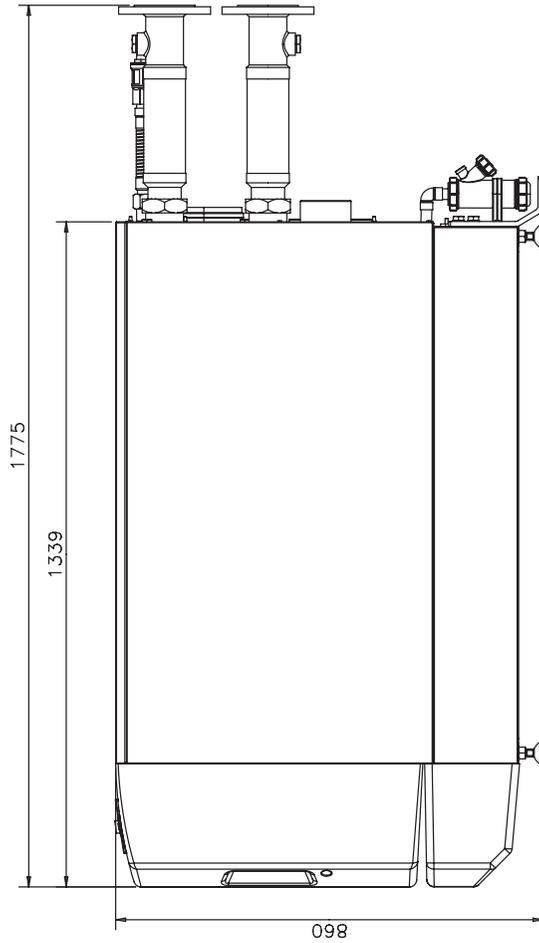
# GENERAL

## 1 BOILER DIMENSIONS AND CONNECTIONS - 250 MODEL

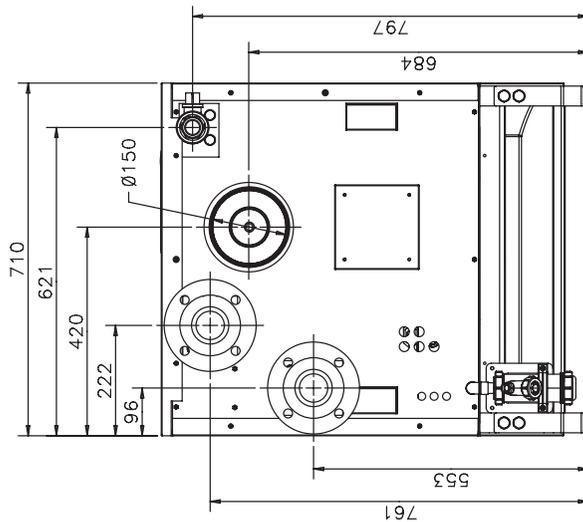
All dimensions shown in mm



Front View



Side View



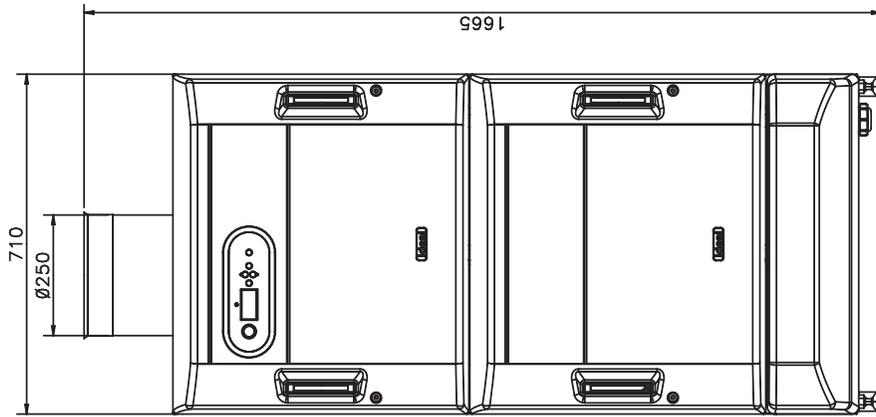
Back View

**EVOMOD 250**  
*(Note: shown with optional connection kit fitted)*

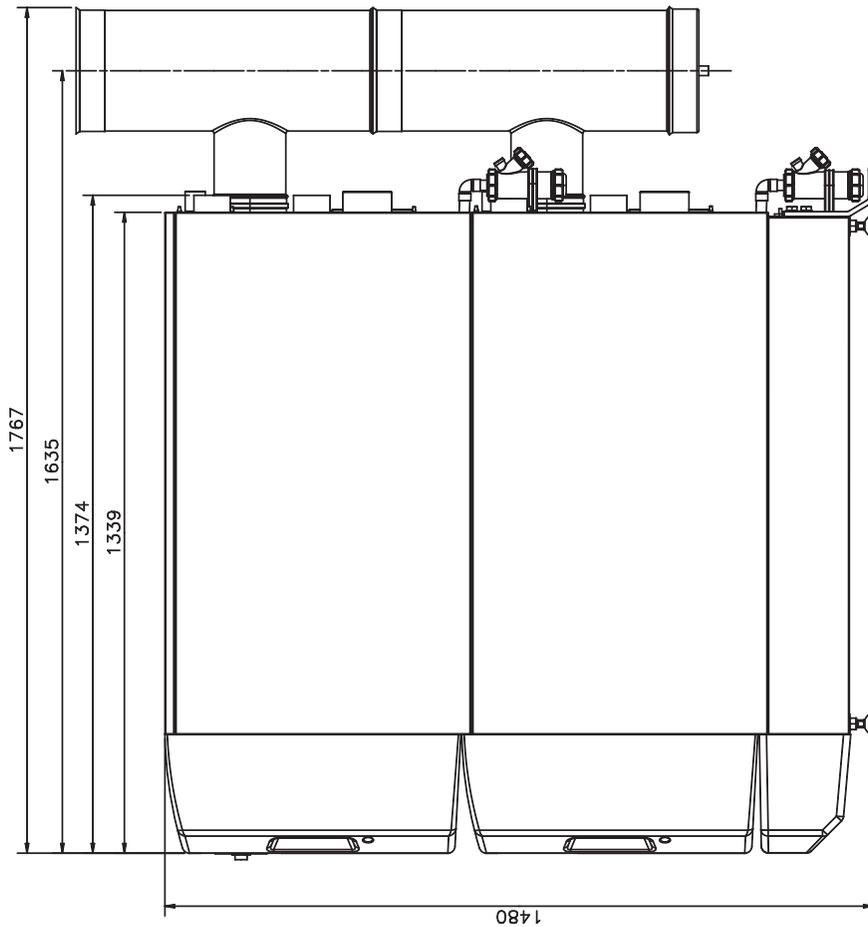
# GENERAL

## 2 BOILER DIMENSIONS AND CONNECTIONS - 500 MODEL

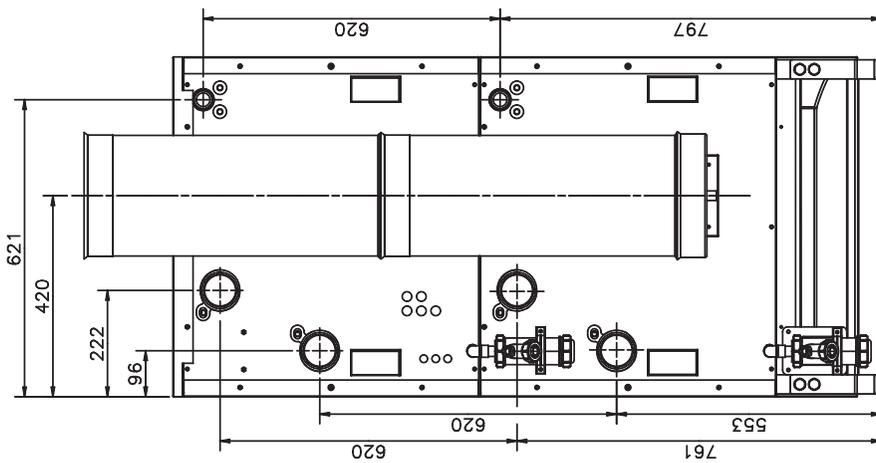
All dimensions shown in mm



Front View



Side View



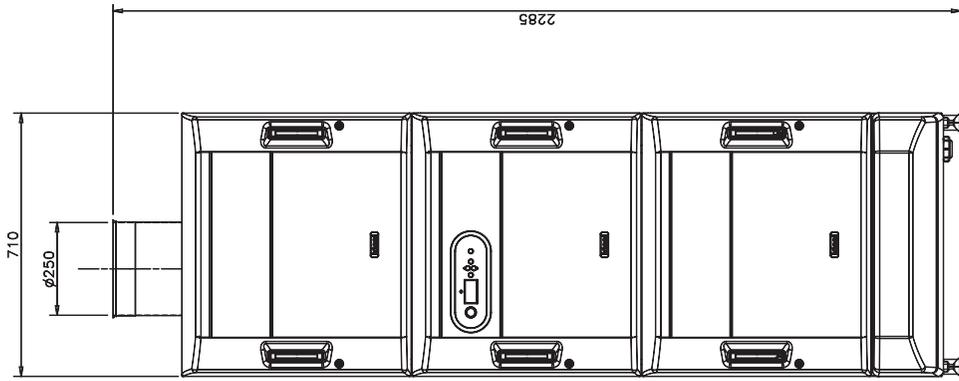
Back View

**EVOMOD 500**

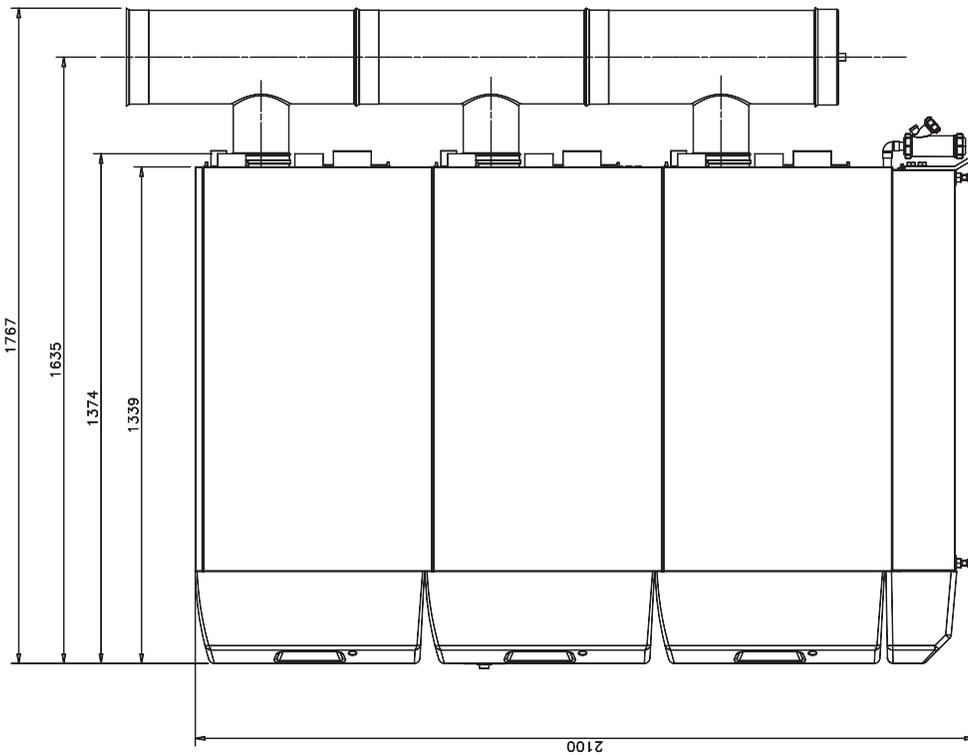
# GENERAL

## 3 BOILER DIMENSIONS AND CONNECTIONS - 750 MODEL

All dimensions shown in mm

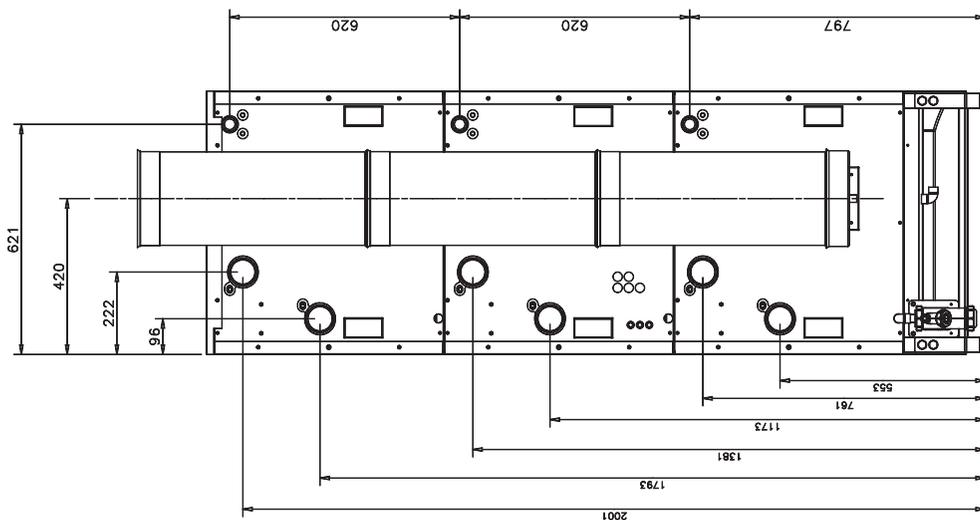


Front View



Side View

**EVOMOD 750**

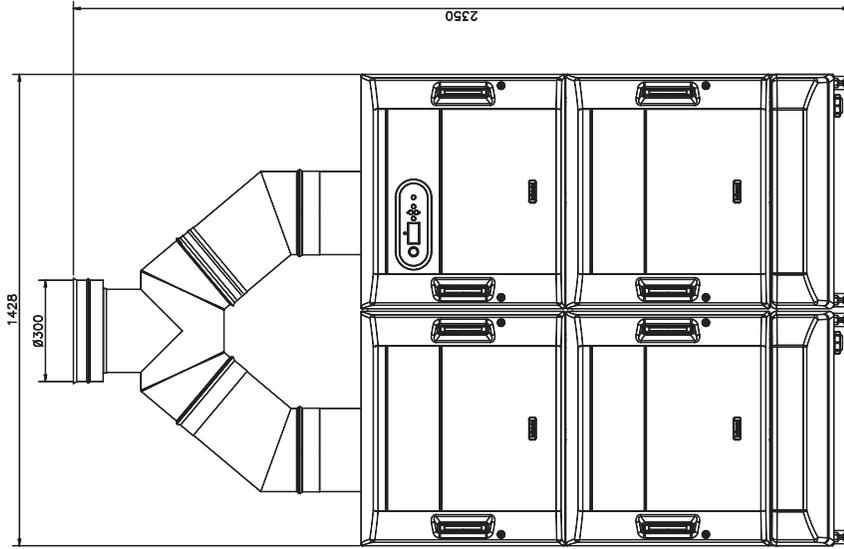


Back View

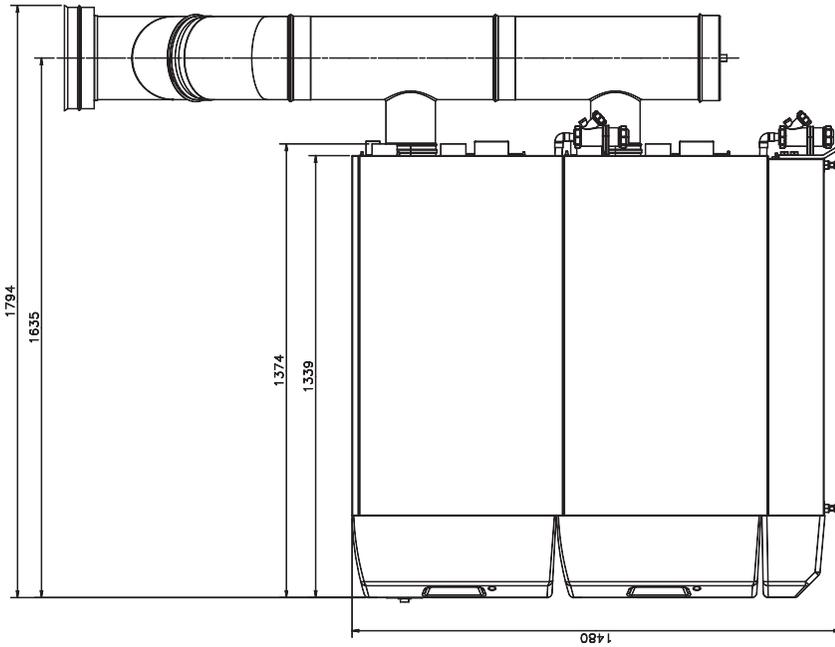
# GENERAL

## 4 BOILER DIMENSIONS AND CONNECTIONS - 1000 MODEL

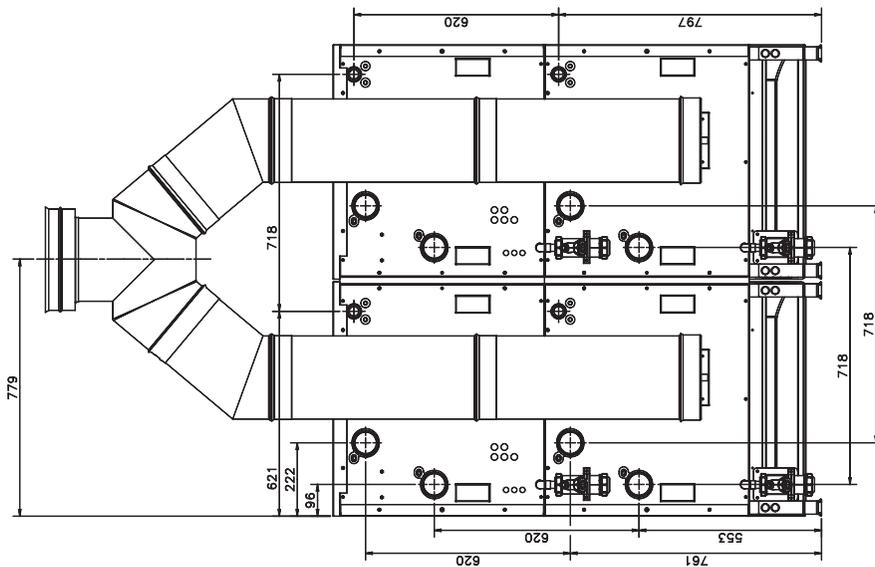
All dimensions shown in mm



Front View



Side View

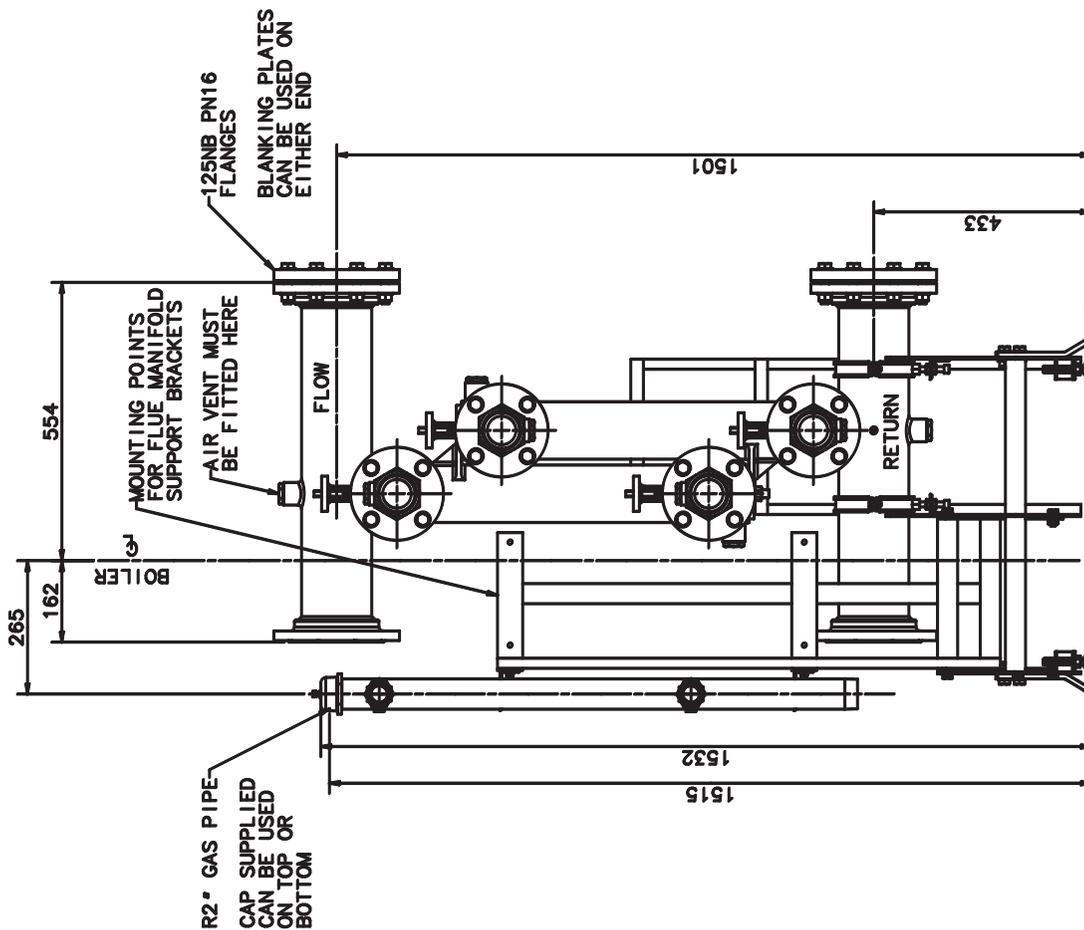


Back View

**EVOMOD 1000**

5 HEADER KITS

All dimensions shown in mm

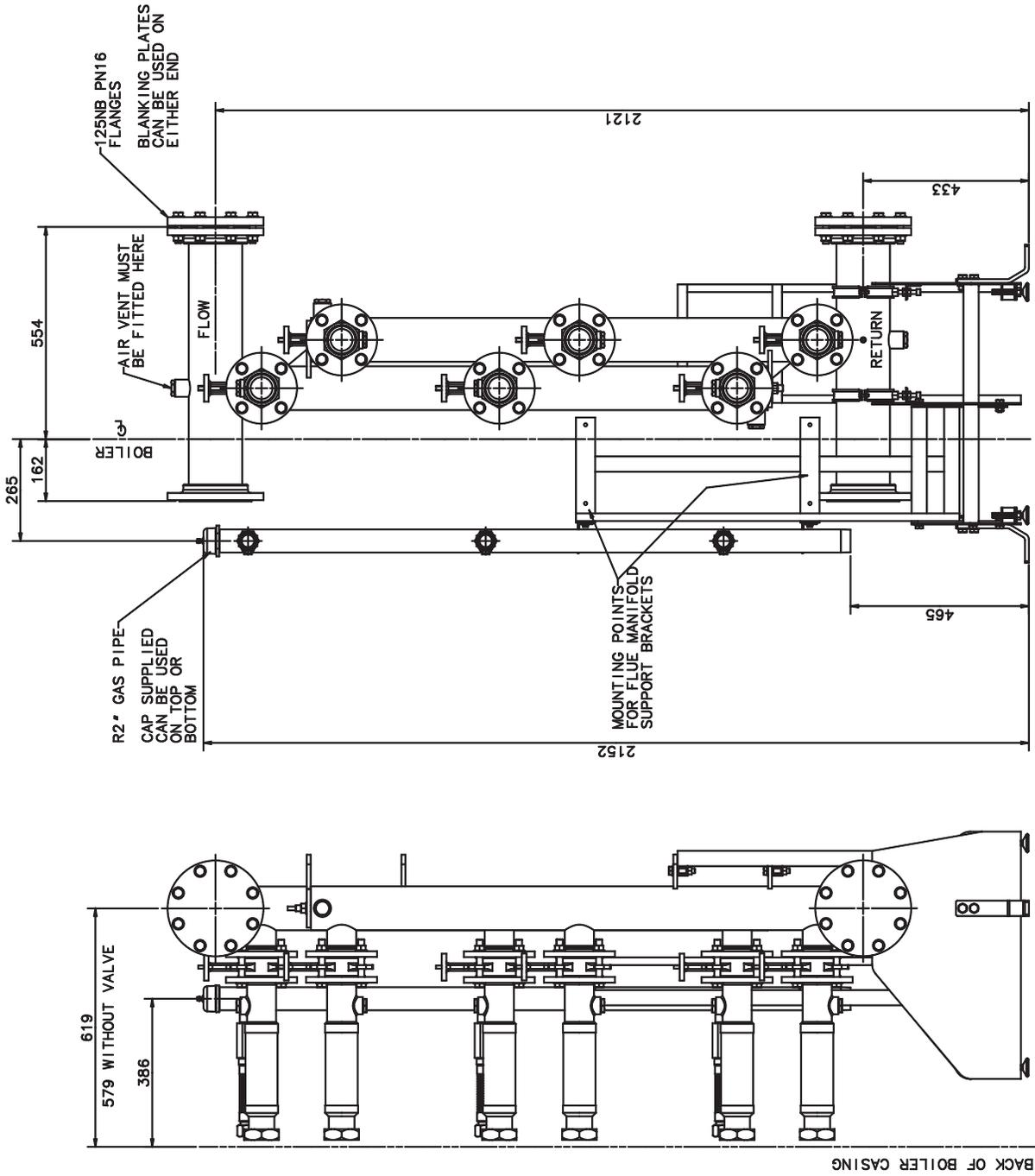


EVOMOD 500 KW HEADER ASSY

(Note: Optional header includes valves shown. Dimensions for optional header without valves also provided.)

6 HEADER KITS

All dimensions shown in mm

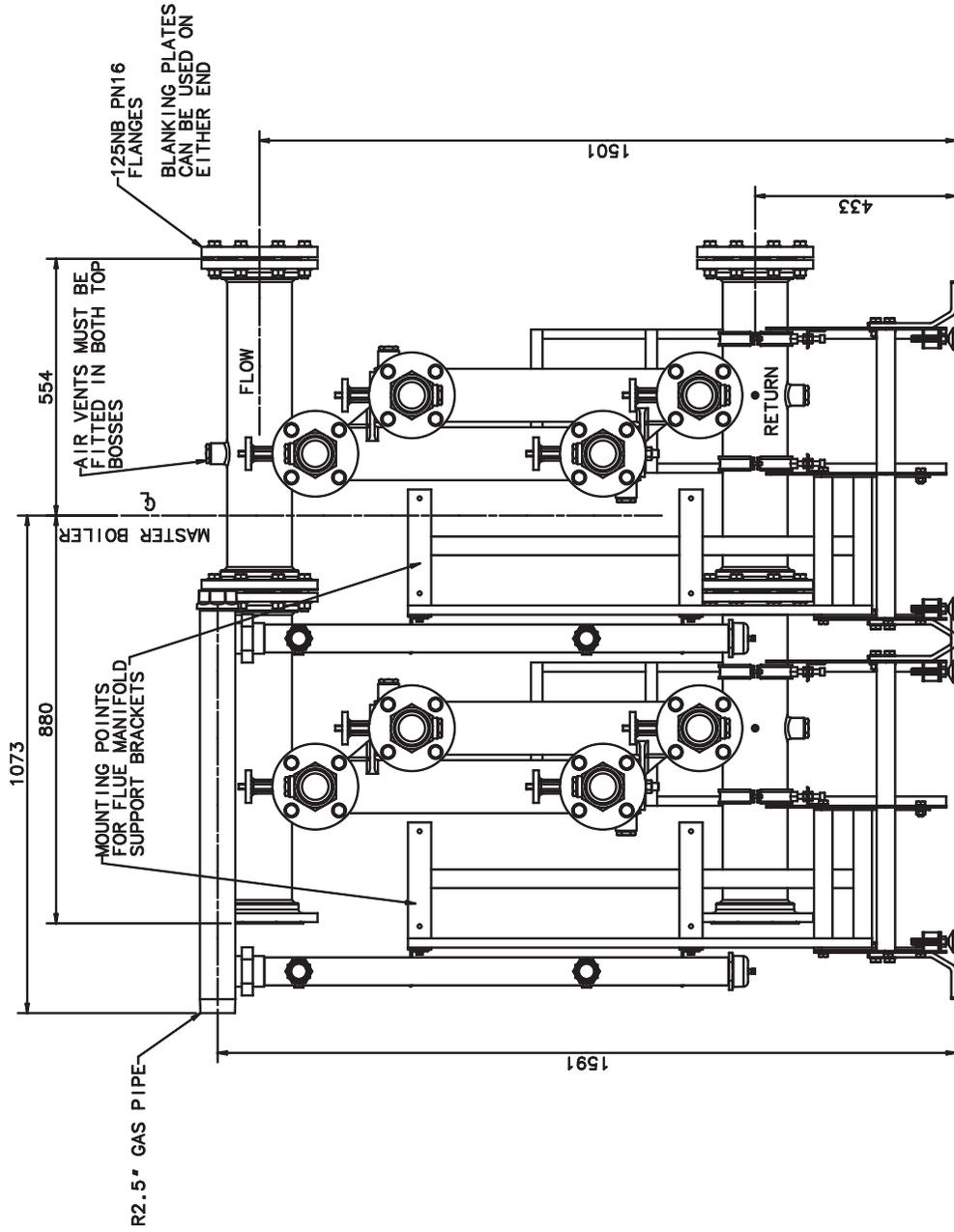


EVOMOD 750 KW HEADER ASSY

(Note: Optional header includes valves shown. Dimensions for optional header without valves also provided.)

7 HEADER KITS

All dimensions shown in mm



EVOMOD 1000 KW HEADER ASSY

(Note: Optional header includes valves shown. Dimensions for optional header without valves also provided.)

# GENERAL

## 8 BOILER CLEARANCES

The minimum dimensions as indicated must be respected to ensure good access around the boiler.

Recommended minimum clearances are as follows.

**Rear:** 750mm or adequate space from the rear of the jacket to make the flue connections, drain connection, flue and any safety or control devices.

**Left Side:** 400mm      **Right Side:** 450mm

**Front:** 600mm for normal service and replacement of components. However, it is noted that 1.2m is required in the event of heat exchanger replacement.

**Top:** 300mm (clearance above boiler casing).

## 9 VENTILATION

The ventilation requirements of these boilers are dependant on the type of flue system used, and their heat input. All vents must be permanent with no means of closing, and positioned to avoid accidental obstructions by blocking or flooding.

Detail reference should be made to BS. 6644 for inputs between 70kW and 1.8MW (net).

In IE refer to the current edition of I.S.820:2000. The following notes are for general guidance only:

Dust contamination in the combustion air may cause blockage of the burner slots. Unless the boiler room provides a dust free environment then direct connection of the air intake via ducting to clean outside air should be used.

**IMPORTANT NOTE: If combustion air is drawn from within the boiler room, ensure no dust or airborne debris can be ingested into the appliance. Dusty concrete flooring should be sealed to reduce the presence of dust.**

The temperature within a boiler room shall not exceed 25°C within 100 mm of the floor, 32°C at mid height and 40°C within 100 mm of the ceiling.

### Open Flued Installations

If ventilation is to be provided by means of permanent high and low vents communicating direct with outside air, then reference can be made to the sizes below. For other ventilation options refer to BS. 6644. In IE refer to the current edition of I.S.820.

### Required area (cm<sup>2</sup>) per kW of total rated input (net)

|                     | Boiler Room | Enclosure |
|---------------------|-------------|-----------|
| Low level (inlet)   | 4           | 10        |
| High level (outlet) | 2           | 5         |

Note: Where a boiler installation is to operate in summer months (e.g. DHW) additional ventilation requirements are stated, if operating for more than 50% of time (refer to BS6644).

## 10 OPEN VENTED SYSTEM REQUIREMENTS

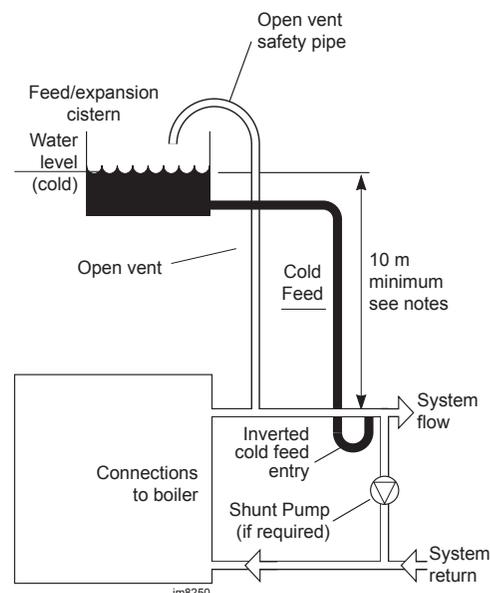
Detail reference should be made to the appropriate standards listed on page 4.

The information and guidance given below is not intended to override any requirements of the above publications or the requirements of the local authority, gas or water undertakings.

The vertical distance between the pump and feed/expansion cistern **MUST** comply with the pump manufacturer's minimum requirements, to avoid cavitation. Should these conditions not apply either lower the pump position or raise the cistern above the minimum requirement specified by **Ideal Boilers**. The isolation valves should be fitted as close to the pump as possible.

The information provided is based on the following assumptions:

1. An independent open vent/safety pipe connection is made immediately after the system flow pipe connection.
2. An independent cold feed/expansion pipe connection is made immediately after the open vent/safety pipe connection.
3. The maximum flow rate through the boiler is based on a temperature difference of 20°C at full boiler output.
4. The boiler is at the highest point of circulation in the system. Systems designed to rise above the boiler flow tapplings will automatically require a minimum static head higher than that shown.
5. The position of the open vent/safety pipe above the expansion cistern water level is given as a guide only. The final position will depend upon the particular characteristics of the system. Pumping over of water into the expansion cistern must be avoided.
6. Both open vent/safety pipe and cold feed/expansion pipes must be of adequate diameter to suit the output of the boiler. Refer to Tables below and BS 6644:2005.



**Note.**

*This diagram does not show safety valves, water flow switches, etc. necessary for the safe operation of the system.*

### Open Vent Pipe Sizes

| Rated output kW | Minimum bore mm | Nominal Size (DN) in |
|-----------------|-----------------|----------------------|
| 301 to 600      | 50              | 2                    |
| 601 and above   | *               | *                    |

\*Steel pipe sizes complying with medium or heavy quality or BS 1387.

### Cold Feed Pipe Sizes

| Rated output kW | Minimum bore mm | Nominal Size (DN) in |
|-----------------|-----------------|----------------------|
| 301 to 600      | 38              | 1 1/2                |
| 601 and above   | 50              | 2                    |

\*Steel pipe sizes complying with medium or heavy quality or BS 1387.

\* Determine using  $A=3.5 \times Q_R$  ( $Q_R$  = heat output (Kw)  $A$  = area (mm<sup>2</sup>) **Note.** Refer to Frame 29 for typical system arrangements.

# INSTALLATION

## 11 SEALED SYSTEM REQUIREMENTS

**Working pressure 6 bar maximum.**

Particular reference should be made to BS. 6644 and Guidance note PM5 "Automatically controlled steam and hot water boilers" published by the Health and Safety Executive.

The information and guidance given below is not intended to override any requirements of either of the above publications or the requirements of the local authority, gas or water undertakings.

In general commercial closed pressurised systems are provided with either manual or automatic water make up.

In both instances it will be necessary to fit automatic controls intended to protect the boiler, circulating system and ancillary equipment by shutting down the boiler plant if a potentially hazardous situation should arise.

Examples of such situations are low water level and operating pressure or excessive pressure within the system. Depending on circumstances, controls will need to be either manual or automatic reset. In the event

of a shutdown both visual and audible alarms may be necessary.

Expansion vessels used must comply with EN 13831 and must be sized on the basis of the total system volume and initial charge pressure.

Initial minimum charge pressure should not be less than 1.0 bar (14.7psi) and must take account of the static head and specification of the pressurising equipment. The maximum water temperatures permissible at the point of minimum pressure in the system are specified in Guidance Note PM5.

When make up water is not provided automatically it will be necessary to fit controls which shut down the plant in the event of the maximum system pressure approaching to within 0.35bar (5psi) of the safety valve setting.

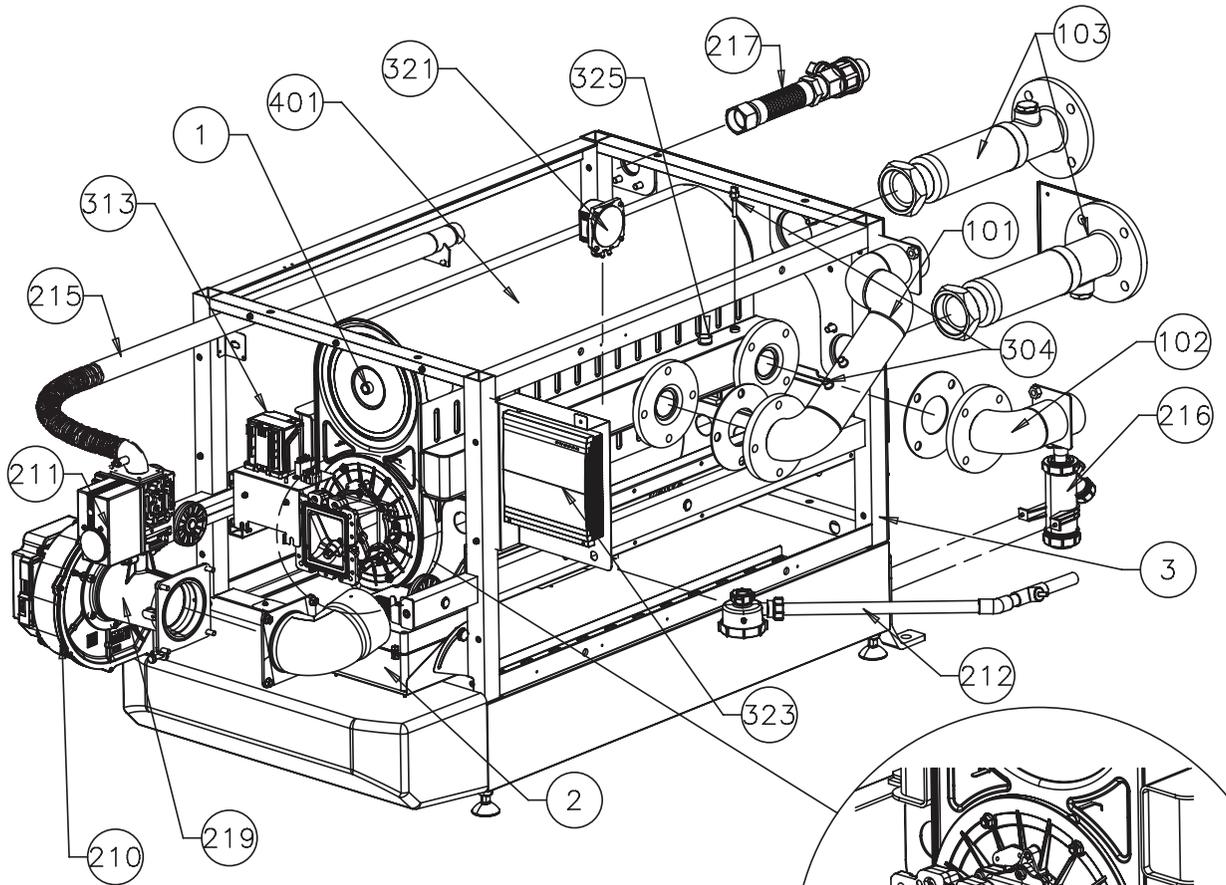
Other British Standards applicable to commercial sealed systems are:

BS. 6880: Part 2  
BS. 6282: Part 1

BS. 1212  
BS. 6283: Part 4

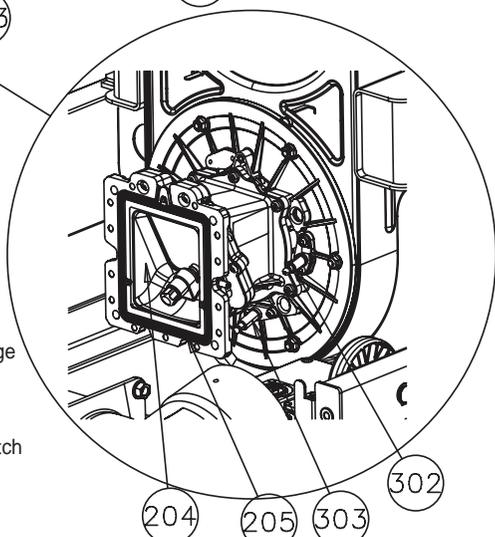
BS. 6281: Part 1

## 12 BOILER ASSEMBLY



### Legend

- |                           |                               |  |
|---------------------------|-------------------------------|--|
| 1. Flue Sampling Point    | 211. Gas Valve                | 304. Thermistor (Return)                 |
| 2. Mains Connection Box   | 212. Condensate Assy.         | 313. Module PCB                          |
| 3. Earth Bonding Point    | 215. Gas Pipe                 | 321. Condensate Blockage Pressure Switch |
| 101. Flow pipe            | 216. Condensate Trap          | 323. Master PCB box                      |
| 102. Return Pipe          | 217. Gas Pipe Flexible 1 1/4" | 325. Water Pressure Switch               |
| 103. Hose Flexible 2 1/2" | 219. Venturi                  | 401. Heat Exchanger                      |
| 204. Flap Flange Unit     | 302. Ignition Electrode       |  |
| 205. Flange Gasket        | 303. Detection Electrode      |  |
| 210. Fan                  | 304. Thermistor (Flow)        |  |



# INSTALLATION

## 13 PACKAGING REMOVAL / REMOVAL FROM PALLET

### Evomod 250, 500, 750

The boiler is delivered on a wooden pallet with protective cardboard packing pieces at the front. The side panels & bottom side panels are contained within cardboard packs strapped to the sides of the boilers. The footer is contained in a cardboard box, strapped to the boiler, or placed on the flue header pallet. All condensate traps are individually boxed & stored within the footer box. A protective plastic wrap protects the contents of the pallet. The flue components are in a cardboard box on a separate pallet. The water connection kit (250) comes in a separate box, the header kits (500, 750, 1000) come on a separate pallet.

### Evomod 1000

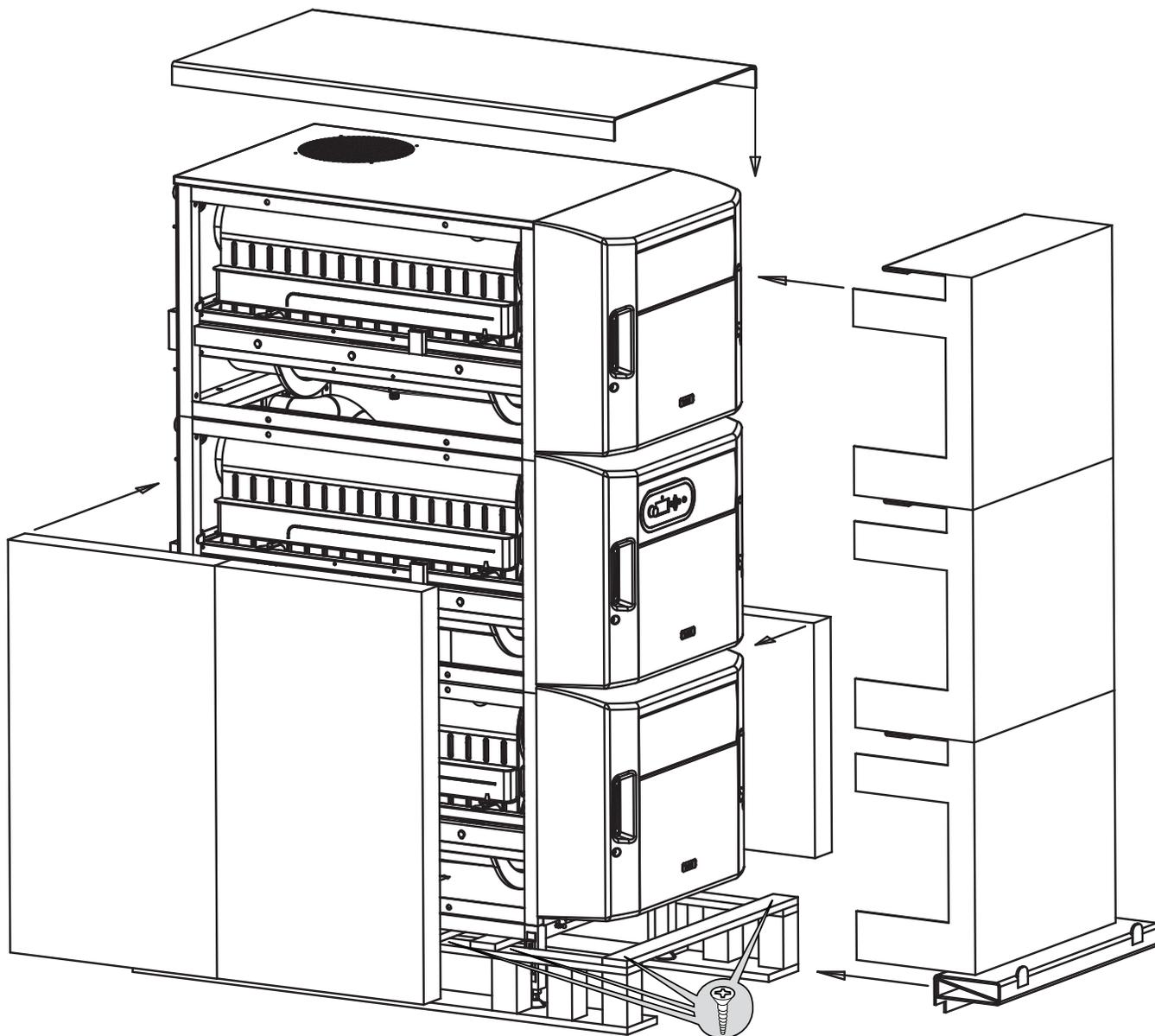
This boiler comes packed as above except the boiler is split onto 2 pallets. The header assembly comes split across 2 pallets + a gas manifold.

#### To unpack the boiler:

- Remove the plastic wrap
- Unstrap and remove side panel boxes, store in a safe place
- Lift off footer box, store in a safe place
- Retrieve the condensate trap boxes from within the footer box, store in a safe place.
- Remove the protective cardboard packing from the front.
- Remove all screws from the wooden pallet & disassemble the pallet.

#### LIST OF PACK CONTENTS

1. Boiler on pallet(s)
2. Side panel pack(s)
3. Footer pack(s) inc. condensate traps
4. Flue components



EVOMOD 750

## 14 ASSEMBLING THE BOILER

### Evomod 250, 500, 750

- Position the boiler in its desired position.
- Use the adjustable feet to level the boiler & lock in place with the backing nuts.
- Bolt securely to the floor through the brackets on the back legs. Tighten bolts holding brackets to back legs.

### Evomod 1000

- Position the 2 boiler frames side by side in their desired position. Note – Frame containing the user control must be positioned on the right.

- Use the adjustable feet to level the 2 frames & lock in place with the backing nuts.
- Remove the 3 nuts & bolts securing each spacer frame from the master frame. Use these fasteners to secure the 2 frames together with the spacer frames fitted between.
- Bolt securely to the floor through the brackets on the back legs. Tighten bolts holding brackets to back legs.

The boiler module/modules are shipped with the plastic front cover/covers, the top panel and the rear panel factory fitted. The module side panels are packed separately as is the footer and condensate traps. Following unpacking the module side panels must be fitted.

1. Remove the two screws retaining the plastic front cover, press and swing the two handles into the removing position.



Master Module Only

2. Using the two handles pull the module cover forwards and then pull the two support brackets forward to provide a temporary hanging point for the cover, carefully place the cover on the support brackets. Alternatively, the module cover can be placed on the floor adjacent to the module.



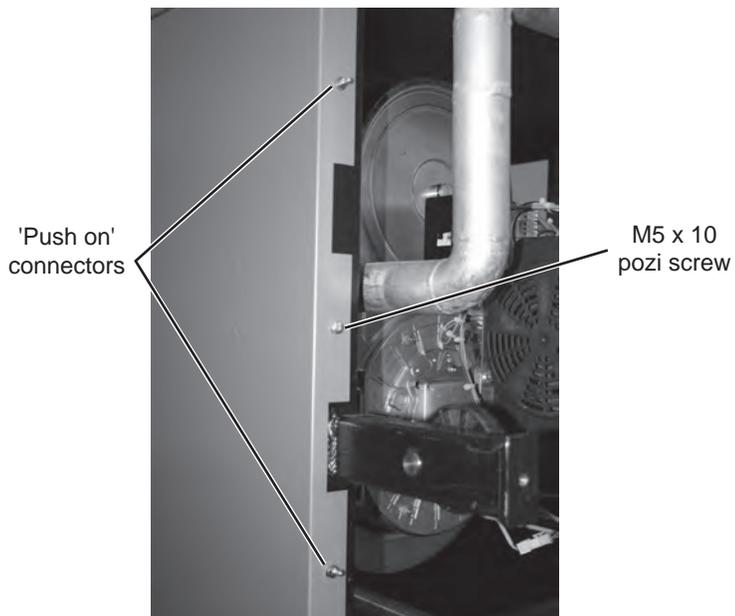
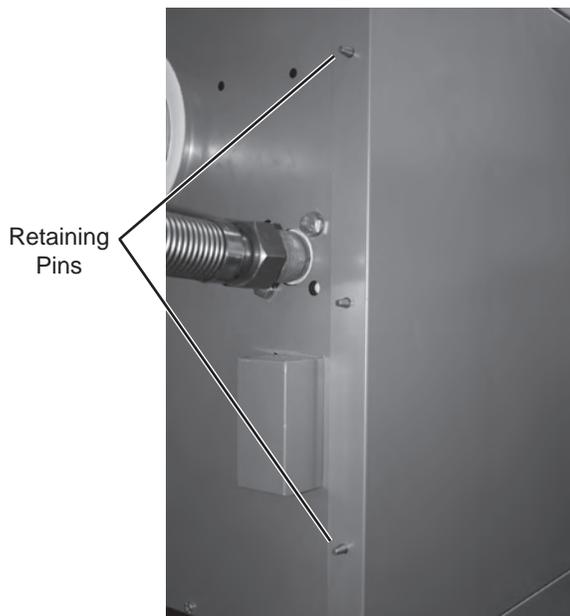
"Pull out" support brackets

Module Hanging Point

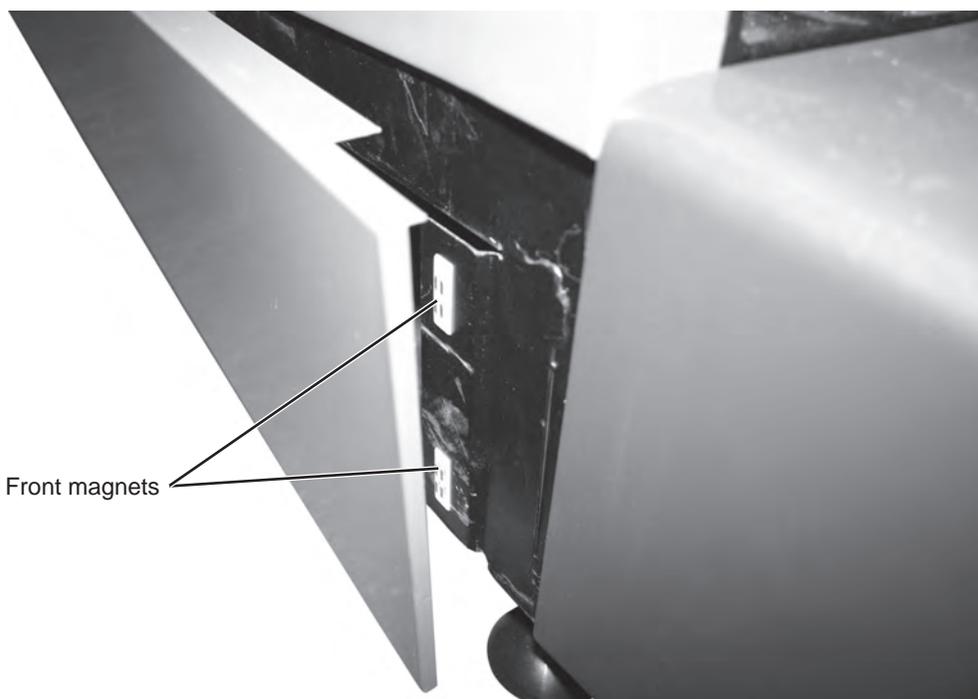
# INSTALLATION

## 15 ASSEMBLING THE BOILERS .... CONTINUED

3. Remove the 'push on' connectors & M5 screws from the front of the frame.
4. Hang the side panels over the 2 retaining pins on the back of the frame then secure at the front using 2 'push on' connectors & an M5 screw per panel.



5. Fit the bottom side panels to the frame using the front and rear magnets pre fitted to the frame.



6. Refit the plastic front cover/s in reverse order.

**IMPORTANT. ENSURE THE MODULE/S ASSEMBLY IS LEVEL IN BOTH DIRECTIONS TO ENSURE SATISFACTORY ASSEMBLY.**

## 16 WATER AND GAS HEADER INSTALLATION

The flue header is supplied as standard with the boiler (not 250 model).

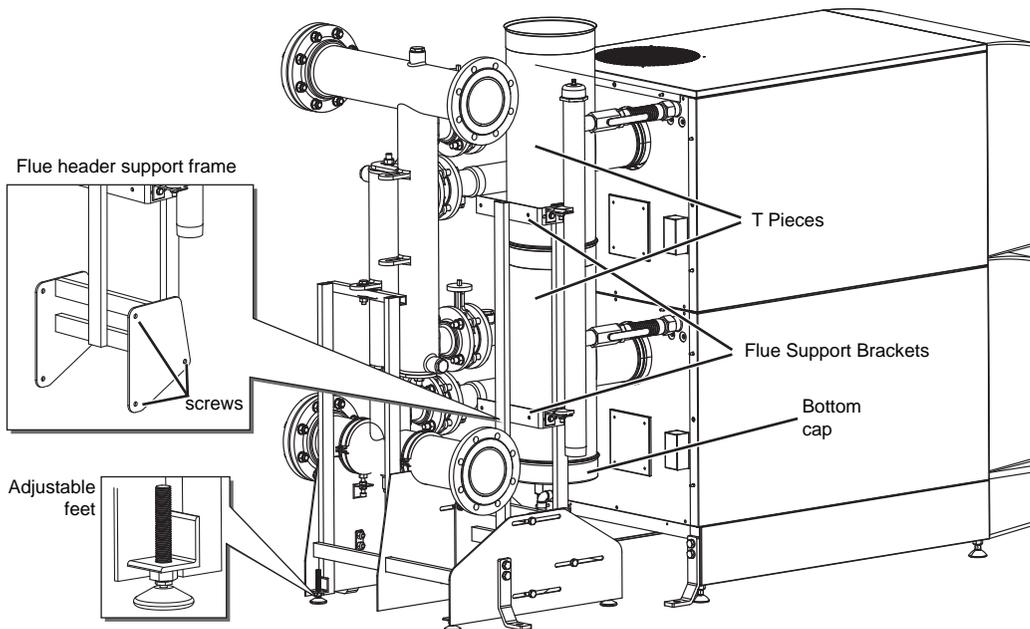
See table on page 5 for guidance on maximum permissible flue duct system design

### 500kW & 750kW (see Frame 17 for 1000kW)

1. Assemble the flue manifold T pieces (long legs point upwards), ensuring the seals are fitted and lubricated using the seal lubricant provided.
2. Push the assembled T pieces into the boiler connections ensuring the seals are fitted and lubricated using the seal lubricant provided.
3. Unpack and position the header assembly at the rear of the boiler.
4. Use the adjustable feet to both level the unit and position the unions adjacent to their respective module connections.
5. Connect each header flow & return flexible hose connection to the appropriate module male thread using the fibre washer provided. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
6. An air vent point is provided in the top of the flow header and an automatic air vent MUST be fitted.

The water and gas header system is supplied as a fully assembled self supporting unit capable of connecting the water and gas services direct to the rear of the module/s.

7. If the header kit used includes isolation valves, a pressure relief valve MUST be fitted to the 1" boss provided on the flexible flow pipe of each module.
8. A 1" boss is provided on the underside of the flexible return pipe to enable a drain valve to be fitted.
9. The header thermistor MUST be fitted to the boss provided on the header flow pipe.
10. Connect each flexible gas header pipe to the appropriate module male thread. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
11. Secure the flue manifold to the header frame with the 2 support brackets provided. Note: The frame that supports the flue manifold & gas header can move forwards or backwards for adjustment.
12. Fit the bottom cap to the flue manifold & secure with one of the locking bands provided. Use the remaining locking bands to secure the flue manifold T pieces together. Note: This bottom cap must be connected to a drain via a water trap using plastic components only.

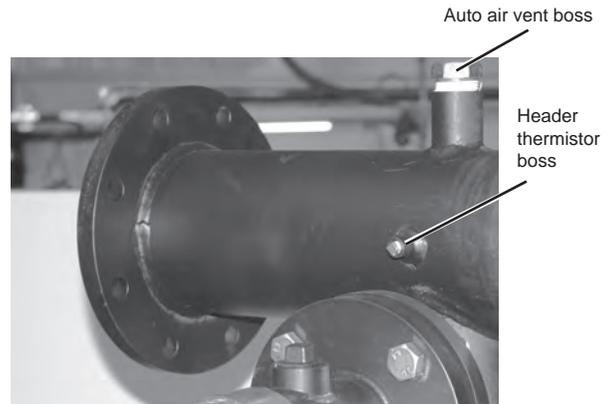
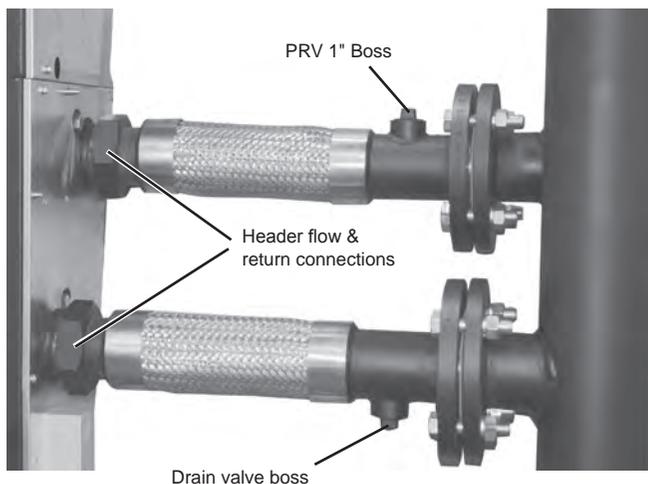


Refer to frames 1-4 for dimensions.

The header flow and return pipes are terminated with two 2 1/2" PN16 flanges (250 model) and 5" PN16 flanges (500, 750 and 1000 models). For 1000 models, the headers are bolted together at the flanges.

### Flushing

If installing onto a new or existing system it is strongly recommended that the system be thoroughly flushed in accordance with the requirements of BS:7593 before connecting the boiler.



continued . . . . .

## 17 CONT'D WATER AND GAS HEADER INSTALLATION

**1000kW** (note - refer to diagrams in Frame 16 for reference)

1. Assemble the 2 pairs of flue manifold T pieces (long legs point upwards), ensuring the seals are fitted and lubricated using the seal lubricant provided.
2. Push the assembled T pieces into the boiler connections ensuring the seals are fitted and lubricated using the seal lubricant provided.
3. Unpack and position the first header assembly at the rear of the right hand modules, when viewed from the back.
4. Use the adjustable feet to both level the unit and position the unions adjacent to their respective module connections.
5. Connect each header flow & return flexible hose connection to the appropriate module male thread using the fibre washer provided. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
6. Connect each flexible gas header pipe to the appropriate module male thread. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
7. Unpack the second header assembly. Remove any blanking plates from the side to mate with the first header assembly. Remove the flue header support frame by removing the 6 nuts and bolts. Position the header assembly at the rear of the left hand modules, when viewed from the back.
8. Use the adjustable feet to level the unit, position the unions adjacent to their respective module connections and align with the adjacent header.
9. Bolt the 5" flow & return headers pipes of the 2 header assemblies together using the gaskets and fasteners provided.
10. Connect each header flow & return flexible hose connection to the appropriate module male thread using the fibre washer provided. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
11. Connect each flexible gas header pipe to the appropriate module male thread. Note: A number of adjustments are available within the header assembly to help align connections. These must be secured after any adjustments.
12. Refit the flue header support frame using the 6 nuts and bolts.
13. Secure the flue manifolds to the header frames with the 4 support brackets provided. Note: The frame that supports the flue manifold & gas header can move forwards or backwards for adjustment.
14. Fit the bottom caps to the flue manifolds & secure with the locking bands provided. Use locking bands to secure the flue manifold T pieces together. Note: The bottom caps must be connected to a drain via water traps using plastic components only.
15. Assemble the 2 flue elbows to the Y piece ensuring the seals are fitted and lubricated using the seal lubricant provided. Fit this assembly to combine the outlets of the 2 flue manifolds. Secure using the locking bands provided.
16. An air vent point is provided in the top of both flow headers. An automatic air vent must be fitted to the boss nearest the end from which the water flow will be taken.
17. If the header kit used includes isolation valves, a pressure relief valve **MUST** be fitted to the 1" boss provided on the flexible flow pipe of each module.
18. A 1" boss is provided on the underside of the flexible return pipe to enable a drain valve to be fitted. Remove any blanking plates from the side to mate with the second header assembly.
19. The header thermistor **MUST** be fitted to the boss provided on the header flow pipe nearest to the end from which the flow water will be taken.
20. Link the 2 vertical gas headers using the gas manifold provided

### AIR INLET

Combustion air can be drawn in via the grille situated on the top of boiler assembly or ducted in from outside of the building in which the boiler is installed using the air inlet kit.

**IMPORTANT NOTE.** If combustion air is drawn from within the boiler room, ensure no dust or airborne debris can be ingested into the appliance. Dusty concrete flooring should be sealed to reduce the presence of dust. Ideally where possible duct the air supply into the boiler room from a clean source outside the boiler room/building.

An air inlet collar kit is available as an optional extra for fitting to the boiler.

## 18 FROST PROTECTION

The boiler has built into its control system the facility to protect the boiler only against freezing.

If the flow temperature falls below 5°C the boiler will fire until the flow temperature exceeds 19°C. The pump will stay running for a further 2 minutes.

Central heating systems fitted wholly inside the building do not normally require frost protection as the building acts as a 'storage heater' and can normally be left at least 24 hours without frost damage. However, if parts of the pipework run outside the building or if the boiler will be left off for more than a day or so, then frost protection for the system is recommended.

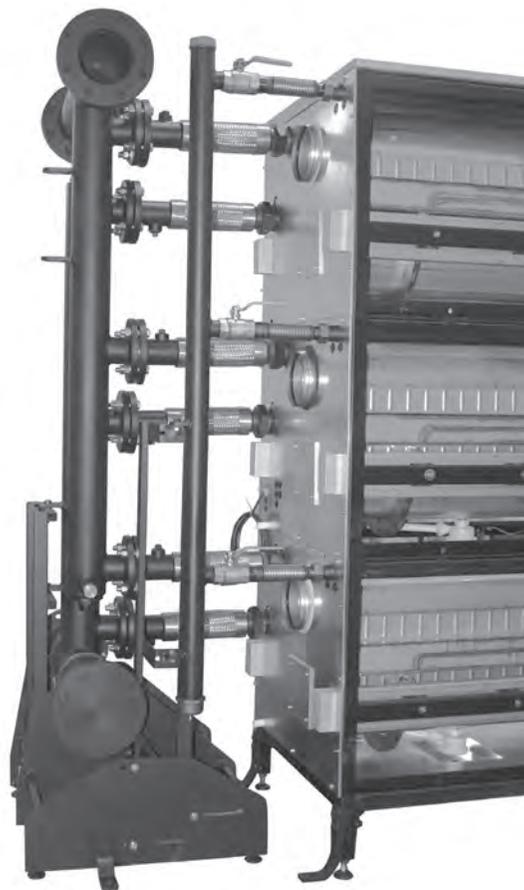
## 19 GAS CONNECTION

The header gas supply pipe terminates in a Rp 1 ¼" female thread connection (250 model), a R2" male taper connection (500 & 750 models) and a R2 ½" male taper connection (1000 model)

A minimum working gas pressure of 17mb must be available at the boiler inlet with the boiler firing.

Fit a gas supply pipe not less than the sizes by boiler output stated above.

All gas supply pipe work must be independently supported.



## 20 CONDENSATE DRAIN

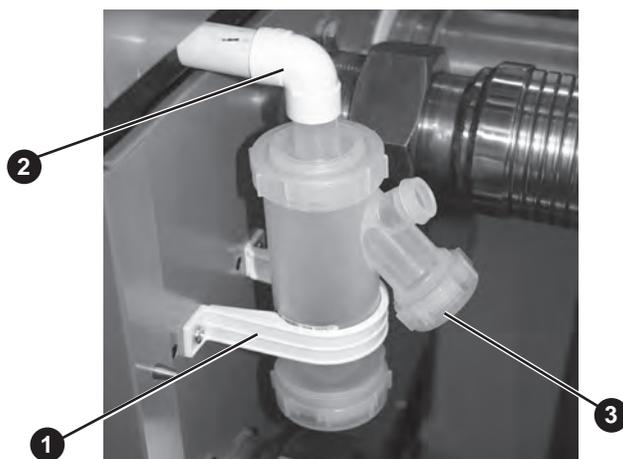
Each module is provided with a condensate trap, the pipe size from the trap outlet is 22mm.

The routing of the drain must be made to allow a minimum fall of 1 in 20 away from the boiler, throughout its length.

1. Fit the provided trap/s to each module/s and support with the bracket provided.
2. Connect the rubber elbow (provided) to the trap top connection.
3. Connect a condensate drain to each trap outlet and pipe to a suitable drain point preferably within the building.

**IMPORTANT.** Any external runs must be kept to a minimum and insulated to avoid freezing in cold weather causing blocking.

All pipe work and fittings must be plastic. No other materials may be used.



## 21 ELECTRICAL CONNECTIONS

**Warning.** This appliance **MUST** be earthed.

A mains supply of 230V 50Hz is required (Live, Neutral and Earth). An additional Earth is required to be connected to the Master Module chassis Earth Bonding point on the rear RHS vertical strut lower connection. See Frame 12, Boiler Assembly.

Where more than one module is to be installed, i.e. Evomod 500, 750, 1000 each module chassis must also be bonded together using the supplied earth bonding straps.

Wiring external to the boiler **MUST** be in accordance with the current I.E.E. (BS7671) wiring Regulations and any local regulations. For Ireland reference should be made to the current ETCl rules for electrical installations.

Connection should be made in a way that allows complete isolation of the electrical supply - such as a double pole switch, having a 3mm (1/8") contact separation in both poles. The means of isolation must be accessible to the user after installation.

When making mains electrical connections to the modules it is important that the wires are prepared in such a way that the earth conductor is longer than the current carrying conductors, such that if the cord anchorage should slip the current carrying conductors become taut before the earthing conductor.

**WARNING.** Sensor cables must be separated from cables in the 230V circuit. Refer to Frame 25 for terminal connections.

# INSTALLATION

## 22 EXTERNAL WIRING

External wiring MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations. For Ireland reference should be made to the current ETCI rules for electrical installations.

For wiring external controls to the boiler, reference should be made to the systems wiring diagram supplied by the relevant manufacturer in conjunction with the connection diagram shown in Frame 25.

Difficulty in wiring should not arise, providing the following directions are observed:

A wiring tray has been provided to allow the safe routing of all external wires within the master boiler module. All cables should be secured using the cable glands provided at the rear entry holes on the Installer Wiring Box. Cables should be passed through the grommets in either the 16mm or 22mm wiring access holes in the rear panel (see Frame 24).

1. The appliance must be wired with a permanent live supply. External controls should NOT be wired in series with this mains input. Controlling the mains input in this way will prevent the pump over-run sequence and may cause damage to the heat exchanger.
2. **Connection of Header Pump** A single Cascade/System pump may be connected to the Master PCB via an external contact or relay. This pump is controlled from the Sequencer and runs whenever any module is active, also providing pump overrun. This output may also be used to provide pump overrun requirements to a BMS or control panel where multiple pumps or zones are installed.

3. **Connection of Optional Module Pumps** Module pumps may be connected directly to the Boiler via the Installer Wiring Box, providing that their individual load does not exceed 3A inductive.

Each module has a volts free contact allowing control of the pump independently. This may be wired as a switched contact with external live feed connected to the pump, or a common live within the Installer Wiring Box may be linked to the Live In terminal. The Live In or Live Out terminals may be commonised using a suitable DIN rail terminal linking bar if desired.

**Note.** The circuit protective device, isolation switch and wiring must be sized in accordance with the total load of both the boiler and module pumps.

4. **Connection of System Controls** Connection is provided within the Master PCB for heating demand. External wiring into the Master PCB must be strain relieved by fitting the appropriate bridge clamps into the plastic base and securely tightening the screws.

**Heating Demand can be controlled in one of two ways:**

1. A switched live or volts free contact wired into the screw terminals L and SL.
2. A 0-10V DC signal via suitable screened 2 core cable into the screw terminals S and 0V.

**Note.** The 0-10V input is a safety extra low voltage (SELV) connection.

## 23 CH CONTROL CONNECTIONS

Heating demand can be controlled by:

1. **ON/OFF using a 230V switched live to 'SL' terminals.**  
A call for heat will cause the boiler to run and maintain a set flow temperature (see Frame 25).
2. **0-10V (SELV)**  
A call for heat can be generated using a 0-10V input with the flow temperature set point or boiler capacity controlled by the voltage signal.  
Connect 0-10V signal using terminals marked '0-10V'.

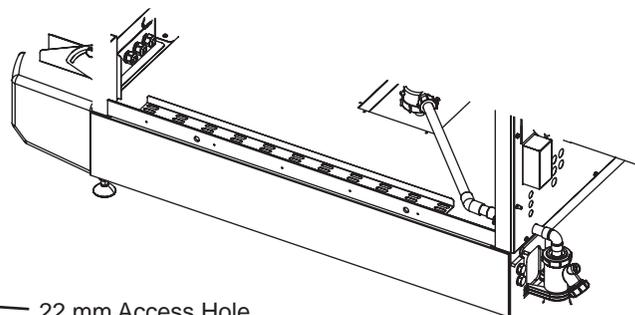
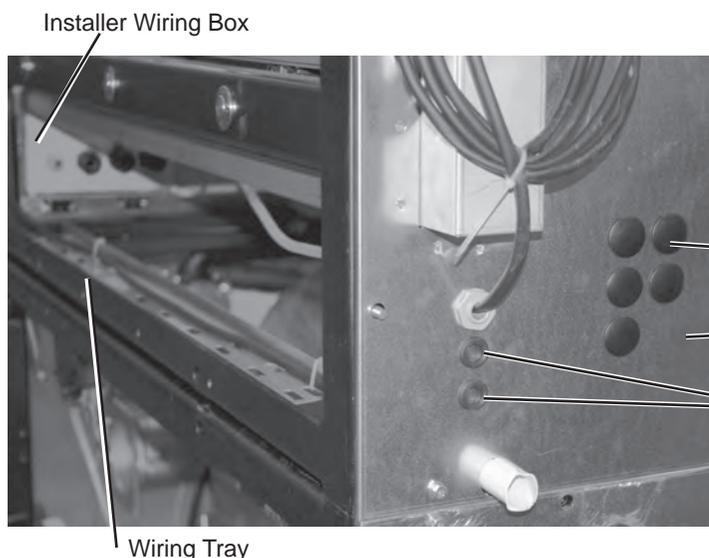
### Header Thermistor (provided with Lead and Cable Gland)

A Header Thermistor is provided to monitor the desired set point temperature to control the boiler output. This can be placed in the supplied header or at an appropriate point in the system pipe work. It must not be extended past the supplied cable length.

### Boiler Status Signals

Two volts free contacts are provided to indicate the status of the boiler to remote system controls. A Burner On contact is closed when any of the boiler modules is firing. The Fault contact is closed 4 minutes after a boiler or module fault occurs.

## 24 CABLE ROUTING

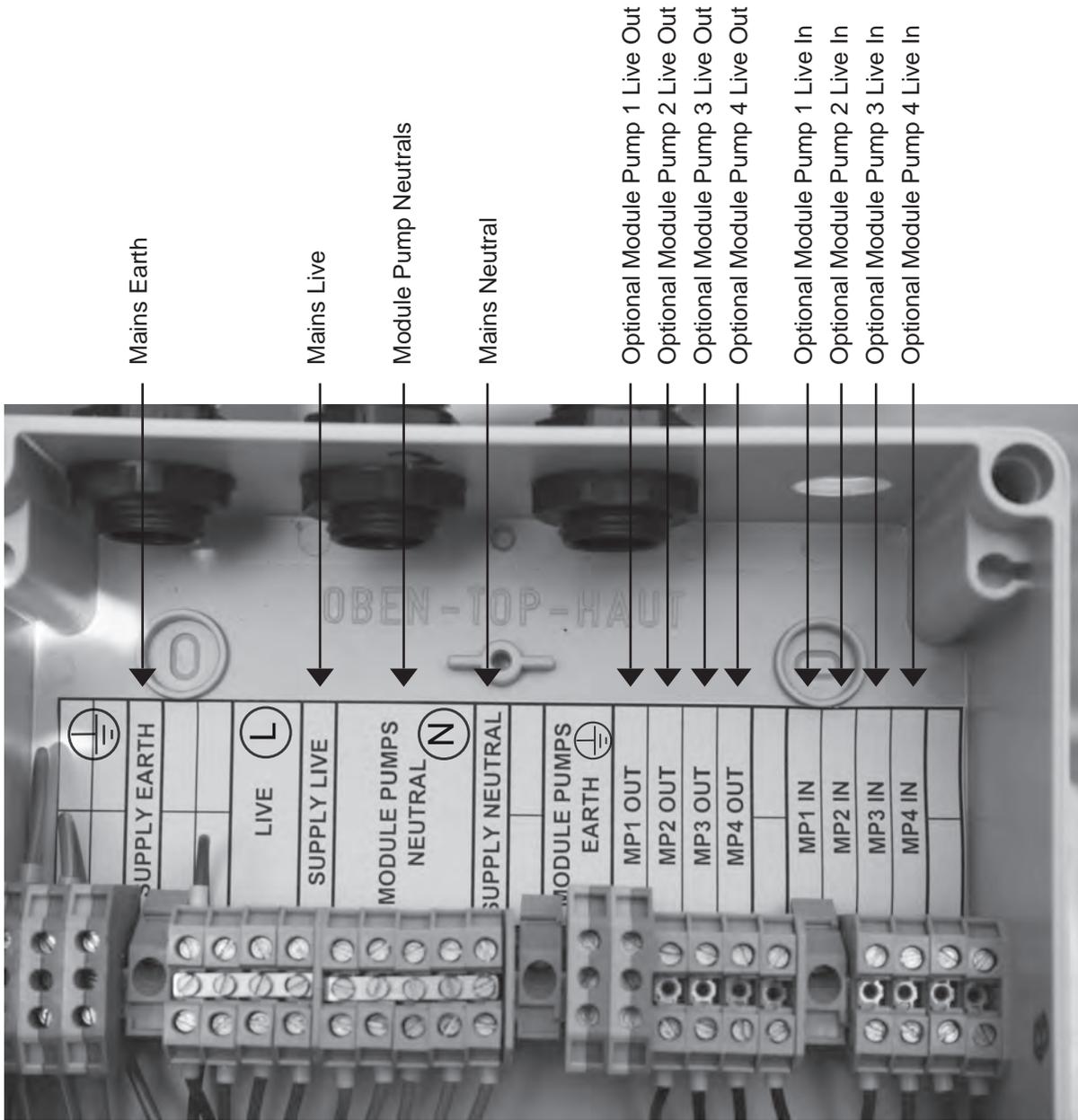


**Note:** Please ensure SELV separation when using single wires

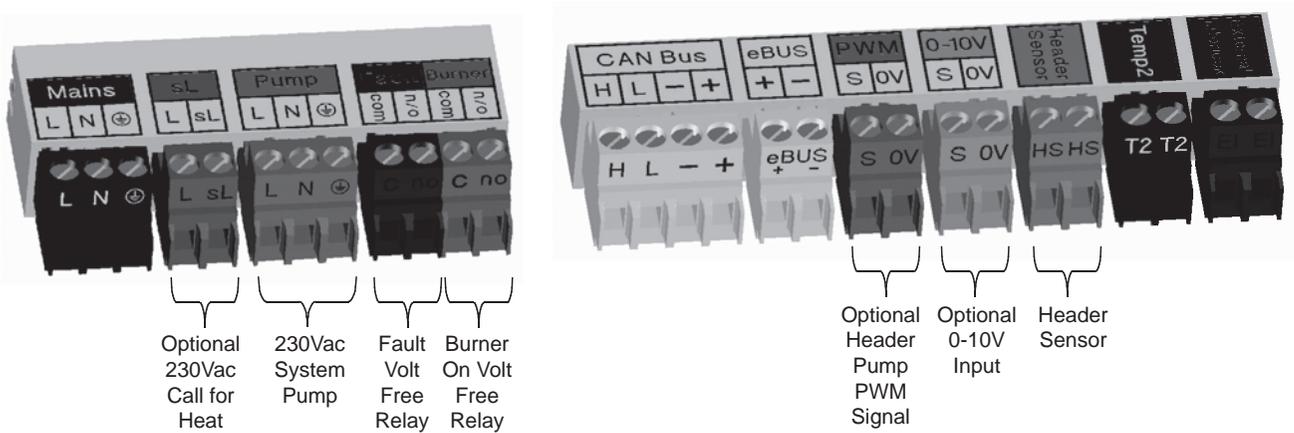
# INSTALLATION

## 25 INSTALLER CONNECTIONS

Connection 1: Inside Installer Wiring Box (front, right of Master Module)

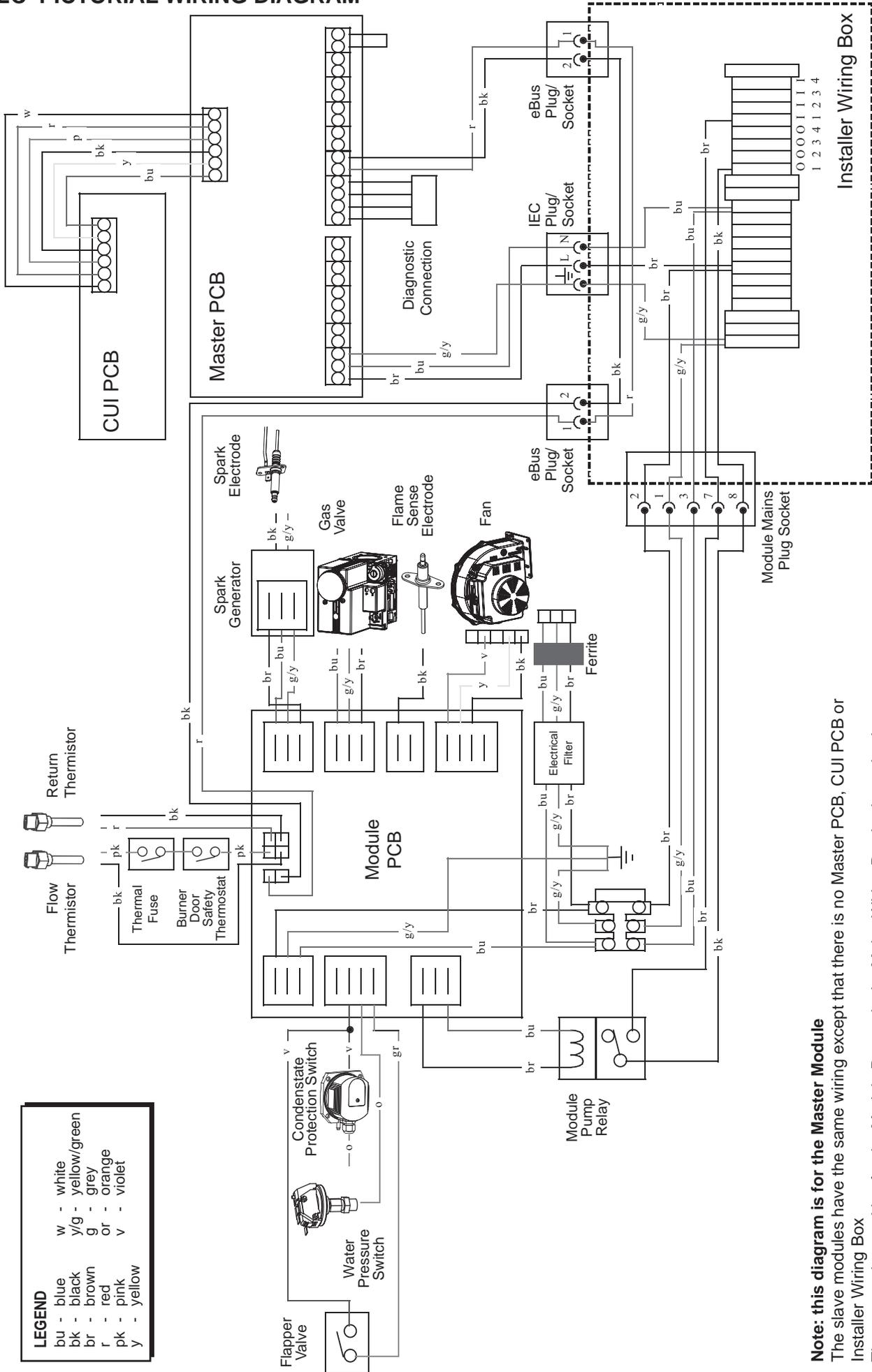


Connection 2: Inside Master PCB Box (top, right hand side of Master Module)



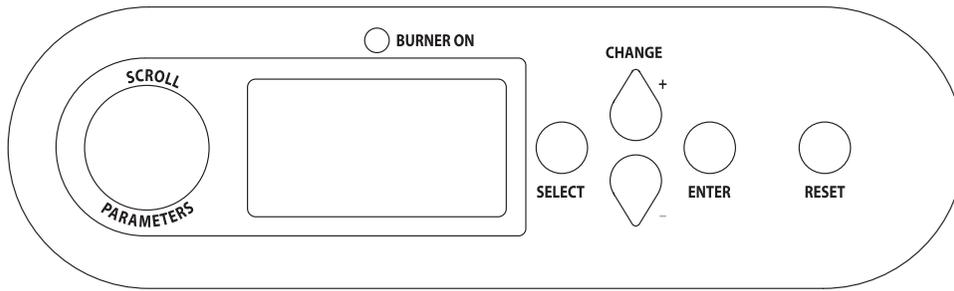
INSTALLATION

26 PICTORIAL WIRING DIAGRAM



**Note: this diagram is for the Master Module**  
 The slave modules have the same wiring except that there is no Master PCB, CUI PCB or Installer Wiring Box  
 The connection position for the Module Pumps in the Mains Wiring Box is shown by the numbers in the Mains Wiring Box  
 (I1 = Module Pump 1 Live In, I2 = Module Pump 2 Live In, etc  
 O1 = Module Pump 1 Live Out, O2 = Module Pump 2 Live Out etc.

## 27 BASIC CONTROLS DISPLAY



### EVOMOD USER INTERFACE

#### Mains On

When the mains to the boiler is switched on a screen similar to the following will be displayed.

|              |             |
|--------------|-------------|
| <b>Ideal</b> |             |
| Initialising | Please Wait |
| U/I PCB      | 330.E18     |
| Pri' PCB     | 332.E08     |

#### Off Mode

If the boiler has been switched to Off Mode the following screens will be displayed. No Boiler operation will take place with this setting. See page 26 to change to On Mode. For a 250kW boiler only Module1 will be shown, for a 500kW boiler only Module1 and Module2 will be shown etc.

|   |   |   |
|---|---|---|
| <b>Off Mode</b><br>For Heating<br>select On Mode<br>Press select for Menu | ↔ | <b>Off Mode</b><br>Module 1 Standby<br>Module 2 Standby<br>Module 3 Standby<br>Module 4 Standby |
|---|---|---|

#### Heat Demand Off, Switched Live Mode

If there is no Heat Demand from the External Switched Live Control then screens similar to the following will be displayed. See page 28 to set the boiler for 0-10V Operation. For a 250kW boiler only Module1 will be shown, for a 500kW boiler only Module1 and Module2 will be shown etc.

|   |   |  |
|---|---|--|
| <b>Heat Demand Off</b><br>No Heat Demand<br>from Switched Live<br>Press select for Menu | ↔ | <b>Heat Demand Off</b><br>Module 1 Standby<br>Module 2 Standby<br>Module 3 Standby<br>Module 4 Standby |
|---|---|--|

#### Heat Demand On, Switched Live Mode

If there is an ongoing Heat Demand generated by the switched live to the boiler being on then screens similar to the following will be displayed. The Flow Setpoint will vary depending on its setting. See page 26 for adjusting Flow Setpoint. Flow Temp will vary with the actual flow temperature of the boiler. Either Standby, Fan Pre-Purge, Ignition, Burner On, Fan Post-Purge or Pump Overrun will be shown for each module dependent on its current operating state. For a 250kW boiler only Module1 will be shown, for a 500kW boiler only Module1 and Module2 will be shown etc.

|  |   |   |
|--|---|---|
| <b>Heat Demand On</b><br>Switched Live On<br>Flow Setpoint 80°C<br>Flow Temp 80°C<br>Press select for Menu | ↔ | <b>Heat Demand On</b><br>Module 1 Burner On<br>Module 2 Burner On<br>Module 3 Standby<br>Module 4 Standby |
|--|---|---|

#### Boiler Frost Protection Mode

If the boiler flow temperature drops below 5°C screens similar to the following will be displayed. Flow Temp will vary with the actual flow temperature of the boiler. Either Standby, Fan Pre-Purge, Ignition, Burner On, Fan Post-Purge or Pump Overrun will be shown for each module independently dependent on its current operating state. For a 250kW boiler only Module1 will be shown, for a 500kW boiler only Module1 and Module2 will be shown etc.

|  |   |   |
|--|---|---|
| <b>Heat Demand On</b><br>Boiler Frost Protection<br>Frost Setpoint 5°C<br>Flow Temp 5°C<br>Press select for Menu | ↔ | <b>Heat Demand On</b><br>Mod 1 Burner on<br>Mod 2 Burner On<br>Mod 3 Standby<br>Mod 4 Standby |
|--|---|---|

#### Heat Demand Off, 0-10V Operating Mode

If there is no Heat Demand from the External 0-10V Control then a screen similar to the following will be displayed. See page 28 to set the boiler to Switched Live Operation. For a 250kW boiler only Module1 will be shown, for a 500kW boiler only Module1 and Module2 will be shown etc.

|   |   |  |
|---|---|--|
| <b>Heat Demand Off</b><br>No Heat Demand<br>from 0-10V Input<br>Press select for Menu | ↔ | <b>Heat Demand Off</b><br>Module 1 Standby<br>Module 2 Standby<br>Module 3 Standby<br>Module 4 Standby |
|---|---|--|

#### Heat Demand On, 0-10V Capacity Operating Mode

If there is an ongoing Heat Demand generated by the 0-10V signal to the boiler, and the boiler is configured for 0-10V Capacity Operation, then screens similar to the following will be displayed. See page 28 to set the boiler to 0-10V Temperature Operation. The Target Output will vary dependent on the 0-10V signal. Actual Output will vary with actual burner outputs of the boiler. Flow Temp will vary with the actual flow temperature of the boiler. Either Standby, Fan Pre-Purge, Ignition, Burner On, Fan Post-Purge or Pump Overrun will be shown for each module dependent on its current operating state.

|  |   |   |
|--|---|---|
| <b>Heat Demand On</b><br>0-10V Input = 10V<br>Target Output = 100%<br>Actual Output = 100%<br>Flow Temp 20°C | ↔ | <b>Heat Demand On</b><br>Module 1 Burner On<br>Module 2 Burner On<br>Module 3 Standby<br>Module 4 Standby |
|--|---|---|

#### Heat Demand On, 0-10V Temperature Operating Mode

If there is an ongoing Heat Demand generated by the 0-10V signal to the boiler, and the boiler is configured for 0-10V Temperature Operation, then screens similar to the following will be displayed. See page 28 to set the boiler to 0-10V Capacity Operation. The Flow Setpoint will vary dependent on the 0-10V signal. Flow Temp will vary with the actual flow temperature of the boiler. Either Standby, Fan Pre-Purge, Ignition, Burner On, Fan Post-Purge or Pump Overrun will be shown for each module dependent on its current operating state.

|   |   |   |
|---|---|---|
| <b>Heat Demand On</b><br>0-10V Input = 10V<br>Flow Setpoint 80°C<br>Flow Temp 80°C<br>Press select for Menu | ↔ | <b>Heat Demand On</b><br>Module 1 Burner On<br>Module 2 Burner On<br>Module 3 Standby<br>Module 4 Standby |
|---|---|---|

## 28 EVOMOD BASIC OPERATING INSTRUCTIONS

### SETTING FLOW TEMPERATURE

Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate the KNOB clockwise until a screen similar to the following is displayed

|                       |
|-----------------------|
| Ideal 750kW           |
| Normal Operation      |
| <b>Set Flow Temp'</b> |
| Set Off/On            |
| State of Inputs       |

Press SELECT and a screen similar to the following will be displayed

|                |
|----------------|
| Set Flow Temp' |
| 80°C           |

Press + and - to change to the required setting and then press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### SETTING OFF/ON MODE

Note that Off Mode will disable the Boiler  
Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate the KNOB clockwise until a screen similar to the following is displayed

|                        |
|------------------------|
| Ideal 750kW            |
| Set Flow Temp'         |
| <b>Set Off/On Mode</b> |
| State of Inputs        |
| State of Outputs       |

Press SELECT and a screen similar to the following will be displayed

|                |
|----------------|
| Set Off/On     |
| Off Mode       |
| <b>On Mode</b> |
| Minimum        |
| Maximum        |

Press + and - to change to the required setting and then press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### VIEWING THE STATE OF THE BOILER INPUTS

Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate KNOB clockwise until a screen similar to following is displayed

|                        |
|------------------------|
| Ideal 750kW            |
| Set Off/On             |
| <b>State of Inputs</b> |
| State of Outputs       |
| Fault History          |

Press SELECT and a screen similar to the following will be displayed

|                      |
|----------------------|
| Ideal 750kW          |
| Main Menu            |
| <b>Boiler Inputs</b> |
| Module 1 Inputs      |
| Press - for more     |

Rotate the KNOB until the Inputs you would like to view are highlighted and then press ENTER  
The state of the inputs will vary as the boiler operates

For the Boiler Inputs a screen similar to the following will be displayed

|                      |      |
|----------------------|------|
| <u>Boiler Inputs</u> |      |
| Header Temp'         | 80°C |
| Switched Live        | On   |
| 0-10V Input          | 0V   |
| External Interlock   | On   |

For the Module Inputs a screen similar to the following will be displayed

|                        |      |
|------------------------|------|
| <u>Module 1 Inputs</u> |      |
| e-Bus                  | Off  |
| Flow Temp              | 80°C |
| Return Temp            | 60°C |
| Press - for more       |      |

Press SELECT to return to the sub-menu, rotate the KNOB anti-clockwise until Main Menu is highlighted and press SELECT. Rotate the Knob anti-clockwise until Normal Operation is highlighted and press SELECT to return to normal operation.

*continued.....*

## 29 EVOMOD BASIC OPERATING INSTRUCTIONS CONT'D

### VIEWING THE STATE OF THE BOILER OUTPUTS

Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate KNOB clockwise until a screen similar to the following is displayed

|                         |
|-------------------------|
| Ideal 750kW             |
| State of Inputs         |
| <b>State of Outputs</b> |
| Fault History           |
| Show Hours Run          |

Press SELECT and a screen similar to the following will be displayed

|                       |
|-----------------------|
| Ideal 750kW           |
| Main Menu             |
| <b>Boiler Outputs</b> |
| Module 1 Outputs      |
| Press - for more      |

Rotate the KNOB until the Outputs you would like to view are highlighted and then press ENTER  
The state of the outputs will vary as the boiler operates

For the Boiler Outputs a screen similar to the following will be displayed

|   |
|---|
| <b>Boiler Outputs</b>                   |
| Header Pump                      On     |
| Burner On Relay                      On |
| Fault Relay                      On     |

For the Module Outputs a screen similar to the following will be displayed

|                                   |
|-----------------------------------|
| <b>Module 1 Outputs</b>           |
| Fan                      3000rpm  |
| Gas Valve                      On |

Press SELECT to return to the sub-menu, rotate the KNOB anti-clockwise until Main Menu is highlighted and press SELECT. Rotate the Knob anti-clockwise until Normal Operation is highlighted and press SELECT to return to normal operation.

### VIEWING THE FAULT HISTORY OF THE BOILER

Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate KNOB clockwise until a screen similar to the following is displayed

|                      |
|----------------------|
| Ideal 750kW          |
| State of Outputs     |
| <b>Fault History</b> |
| Show Hours Run       |
| Normal Operation     |

Press SELECT and a screen similar to the following will be displayed

|                       |
|-----------------------|
| Fault History: Max 10 |
| Fault 1 [Latest]      |
| Ignition Lockout [16] |
| 23 days ago           |
| Press - for more      |

The Fault History will vary depending on the operation of the boiler  
Press SELECT to exit this option  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### VIEWING THE BOILER HOURS RUN

Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending on the maximum output of the boiler

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate KNOB clockwise until a screen similar to following is displayed

|                       |
|-----------------------|
| Ideal 750kW           |
| Fault History         |
| <b>Show Hours Run</b> |
| Normal Operation      |

Press SELECT and a screen similar to the following will be displayed

|  |
|--|
| <b>Show Hours Run</b>                    |
| Flame On Mod 1                      20 h |
| Flame On Mod 2                      20 h |
| Flame On Mod 3                      20 h |
| Flame On Mod 4                      20 h |

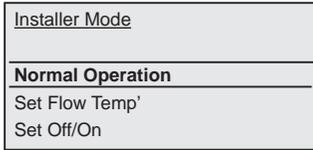
The times will vary depending on the operation of the boiler  
Press SELECT to exit this option  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

# INSTALLATION

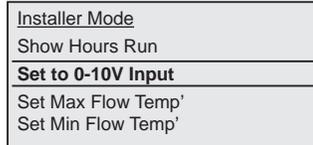
## 30 EVOMOD USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS

### SETTING TO 0-10V

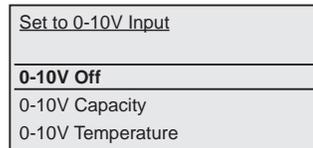
Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed



Rotate the KNOB clockwise until the following screen is displayed

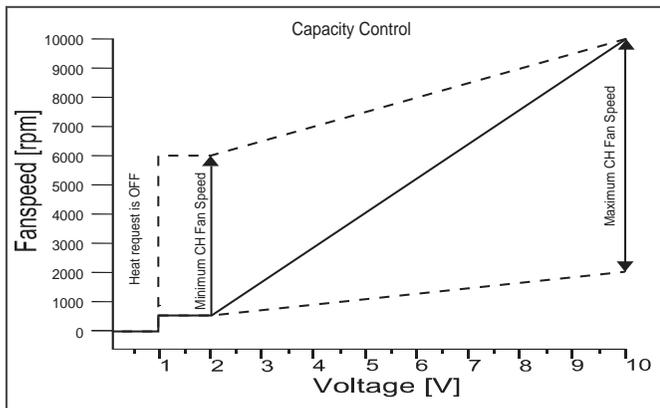


Press SELECT and the following screen will be displayed

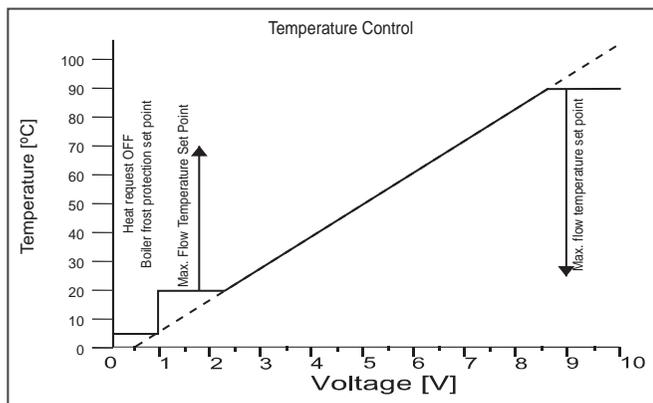


Press + and - to change to the required setting and then press ENTER to store  
 Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation.

0-10V Capacity Control is governed by the following relationship



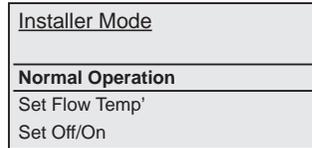
0-10V Temperature Control is governed by the following relationship



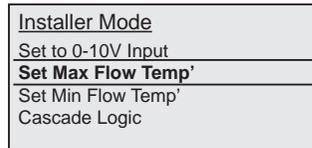
### CHANGING THE MAXIMUM FLOW TEMPERATURE SETPOINT

The boiler default setting is that the maximum flow temperature setpoint is 80°C  
 This feature limits the maximum flow temperature that can be set in the Normal Access Mode

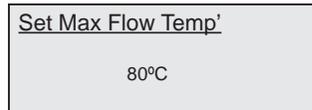
Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed



Rotate the KNOB clockwise until the following screen is displayed



Press SELECT and the following screen will be displayed

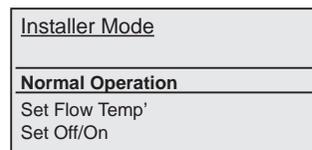


Press + and - to change to the required setting and then press ENTER to store  
 Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

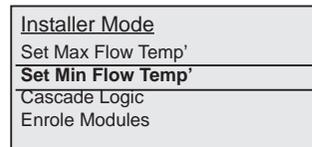
### CHANGING THE MINIMUM FLOW TEMPERATURE SETPOINT

The boiler default setting is that the minimum flow temperature setpoint is 30°C  
 This feature limits the minimum flow temperature that can be set in the Normal Access Mode

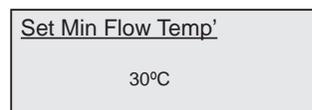
Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed



Rotate the KNOB clockwise until the following screen is displayed



Press SELECT and the following screen will be displayed



Press + and - to change to the required setting and then press ENTER to store  
 Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

*continued . . . . .*

## 31 EVOMOD USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS - CONT.

### CHANGING THE CASCADE LOGIC

The boiler default setting is that the boiler will operate at maximum efficiency, this is achieved by having as many burners switched on as possible with them operating at as low an output as possible  
This can be changed so that as few burners are switched on as possible operating at higher outputs

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

|                         |
|-------------------------|
| Installer Mode          |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate the KNOB clockwise until the following screen is displayed

|                      |
|----------------------|
| Installer Mode       |
| Set Min Flow temp    |
| <b>Cascade Logic</b> |
| Enrole Modules       |
| Lead Module          |

Press SELECT and the following screen will be displayed

|                               |
|-------------------------------|
| Cascade Logic                 |
| <b>Max No of Modules Fire</b> |
| Min No of Modules Fire        |

Rotate the KNOB until the required setting is highlighted and then press ENTER to store  
Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### CHANGING THE LEAD MODULE

The boiler default setting is that the boiler will change the lead module on a regular basis to ensure that all burners operate equally. If you would rather set the boiler so the lead module does not change, and is therefore used much more heavily than other modules, proceed as follows

Press SELECT and then hold + and - down together for more than 5s, the following screen will be displayed

|                         |
|-------------------------|
| Installer Mode          |
| <b>Normal Operation</b> |
| Set Flow Temp'          |
| Set Off/On              |

Rotate the KNOB clockwise until the following screen is displayed

|                     |
|---------------------|
| Installer mode      |
| Enrole Modules      |
| <b>Lead modules</b> |
| Burner power        |
| Operating State     |

Press SELECT and the following screen will be displayed

|                  |
|------------------|
| Lead Module      |
| <b>Automatic</b> |
| Manual           |

Rotate the KNOB until the "Manual" is highlighted and then press ENTER. Change the module sequence as required (note that sequence must be 00000 up to 8) and press enter to store and then select to exit.  
Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

# INSTALLATION

## 32 EVOMOD WITH SWITCHED LIVE OR 0-10V CONTROL

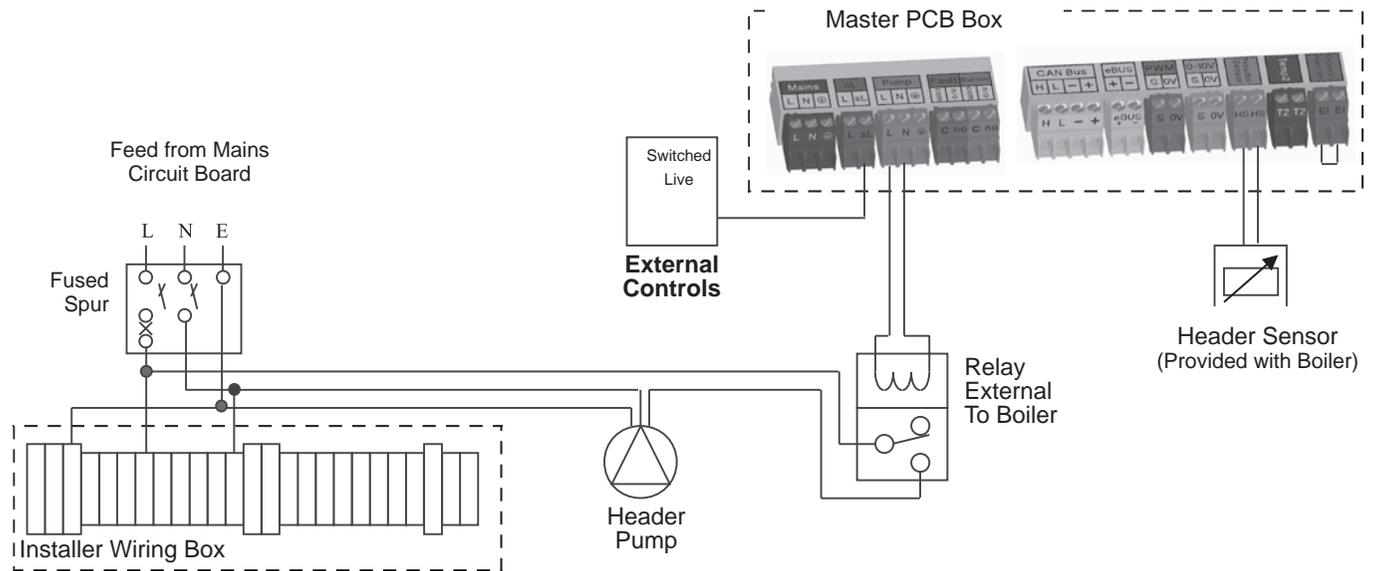
**Note:** that the boiler requires a 2 minute pump overrun period.  
The boiler warranty will be invalid if this is not provided.

It is recommended that the pump overrun functionality is achieved by connecting the pump to the boiler Header Pump connections via a relay (see diagram).

### EVOMOD WITH SWITCHED LIVE CONTROL

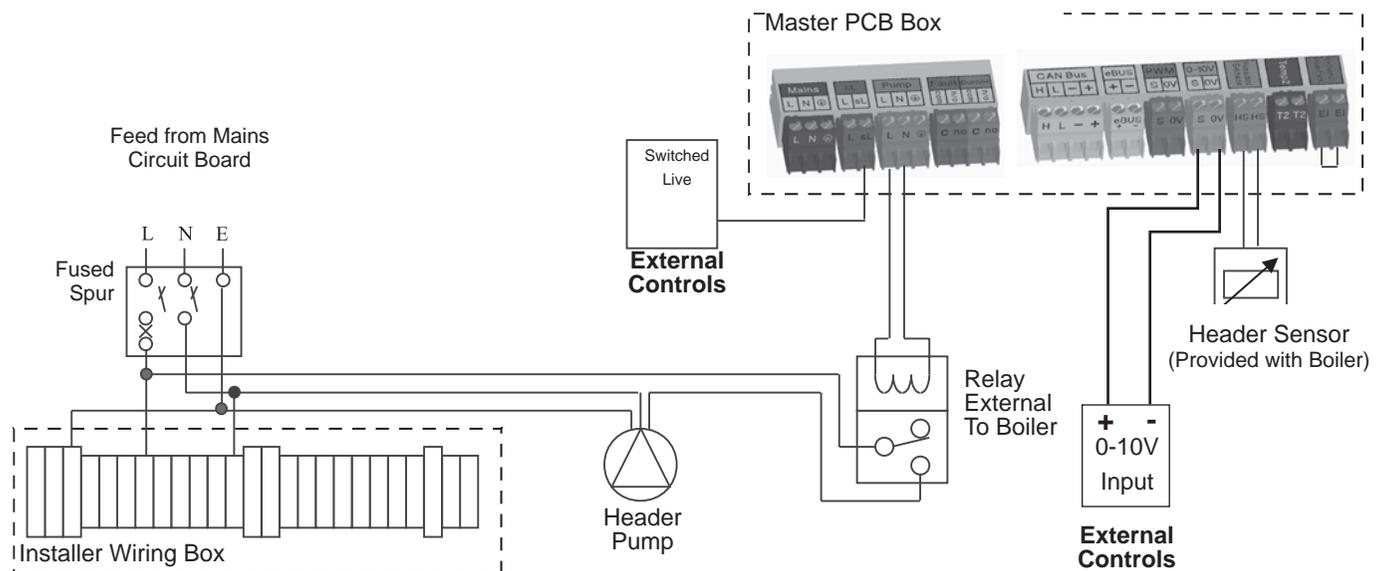
**Notes**

- 1 The boiler will automatically configure itself to a Switched Live input
- 2 The Switched Live must be from the same phase as the boiler mains supply or be a volts free relay contact fed with 2 wires from the Installer Wiring Box



### EVOMOD WITH 0-10V CONTROL

Note that the boiler must be configured for a 0-10V Input (see frame 28)



**Note**

The MCB and wiring must be sized depending upon the total load requirement of the boiler plus any locally supplied pumps.

## 33 COMMISSIONING AND TESTING

### A. ELECTRICAL INSTALLATION

1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth using a suitable meter.

**WARNING.** Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and DO NOT SMOKE.

### B. GAS INSTALLATION

1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and then purged in accordance with the recommendations of the relevant standards listed on page 4.

In IE refer to I.S.820:2000.

## 34 INITIAL LIGHTING

1. Check that the system has been filled and the boiler is not air locked - air in the boiler could damage the heat exchanger. For this reason if an automatic air vent has been fitted it must never be off.
2. Check that all the drain cocks are closed and any valves in the flow and return are open.
3. Check that the GAS SERVICE COCKS ARE OPEN.
4. Check the indication on the pressure gauge. If the pressure is less than 0.8 bar the installation should be filled up first (sealed system only).
5. Switch the electricity supply ON to all modules and check that all the external controls are calling for heat. Check that the boiler is in On Mode (see Frame 28).
6. The header pump switches on and the first module fan switches on. After 2 mins the first module will ignite and then the burner will modulate to satisfy the heat demand. Additional modules will be switched on at regular intervals.

If after 5 attempts the module has failed to light then it will lock out. To restart the Ignition sequence press the reset button and a screen similar to the following will be displayed.

|  |
|--|
| Reset  |
| <b>Normal Operation</b>                              |
| Reset Module 1 <span style="float: right;">01</span> |

Rotate the knob until the module you wish to reset is highlighted and then press reset again.

7. The gas valves are preset at the factory to nominal values. Dependant on site installation conditions (e.g. flue length) the module performance can vary slightly. To check the performance, measure the CO/CO<sub>2</sub> values at maximum and minimum rates whilst adjusting the gas valves if necessary.  
To set a module to run at either maximum or minimum rate for 5 minutes press SELECT and the following screen will appear.

|                         |
|-------------------------|
| Ideal 750kW             |
| <b>Normal Operation</b> |
| Set Flow Temp           |
| Set ON/OFF              |

Rotate the knob clockwise until a screen similar to the following is displayed.

|                   |
|-------------------|
| Ideal 750kW       |
| Set Flow Temp     |
| <b>Set Off/On</b> |
| State of Inputs   |
| State of outputs  |

Press SELECT and a screen similar to the following will be displayed.

|                |
|----------------|
| Set Off/On     |
| Off Mode       |
| <b>On Mode</b> |
| Service        |

Rotate the knob until Service is highlighted and press ENTER and a screen similar to the following will be displayed.

|                  |
|------------------|
| Service Mod      |
| Normal Operation |
| Service Mod 1    |
| Service Mod 2    |
| Service Mod 3    |

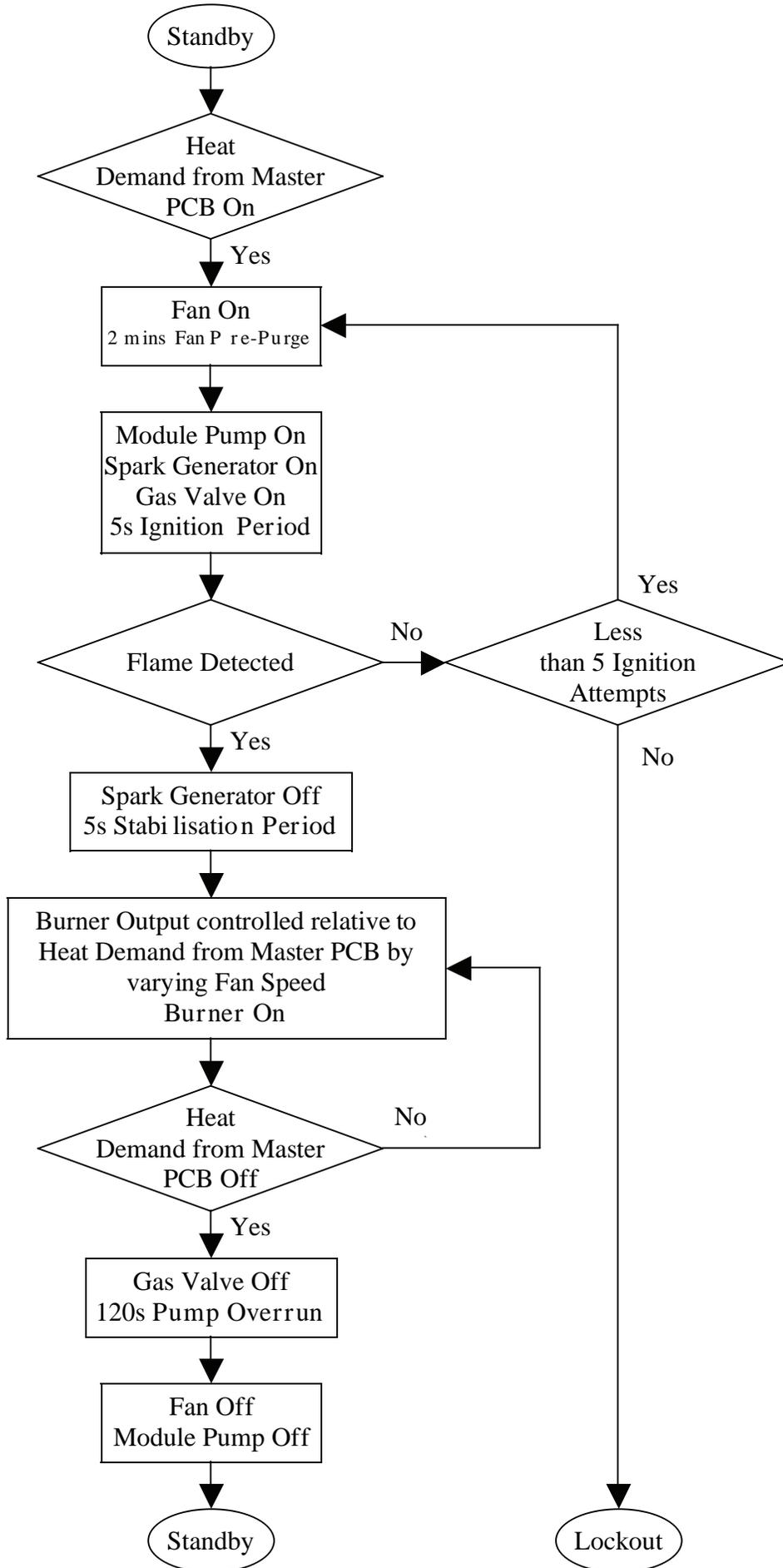
Rotate the knob until service for the appropriate module is highlighted and press ENTER and a screen similar to the following is displayed.

|               |
|---------------|
| Service Mod 1 |
| Off           |
| Minimum       |
| Maximum       |

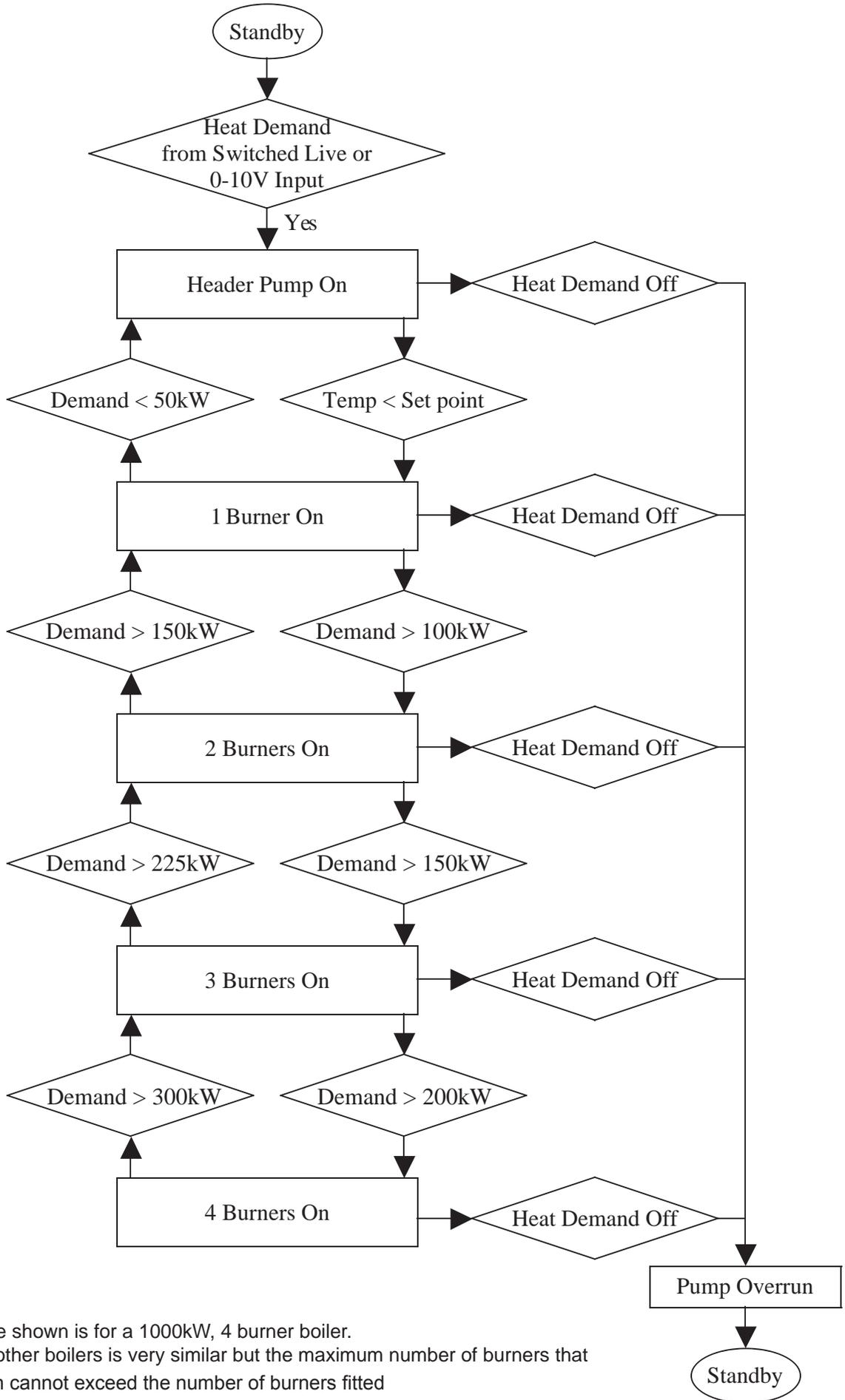
Rotate the knob until Minimum or Maximum is highlighted as required and press ENTER.

8. Operate the boiler for 5 minutes and check the gas rate (Table 1). You should obtain a value at least 90% of the nominal.
9. Refit the module cover. See Frame 14.

35 EVOMOD MODULE OPERATING SEQUENCE



36 EVOMOD BOILER OPERATING SEQUENCE



Note: the sequence shown is for a 1000kW, 4 burner boiler. The sequence for other boilers is very similar but the maximum number of burners that can be switched on cannot exceed the number of burners fitted

## 37 GENERAL CHECKS

Make the following checks for correct operation.

1. The correct operation of ANY secondary system controls should be proved. Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.
2. Water circulation system;
  - a. With the system HOT examine all water connections for soundness.
  - b. With the system still HOT, turn off the gas, water and electricity supplies to the boiler and drain down to complete the flushing process.

c. Refill and vent the system, clear all air locks and again check for water soundness.

d. Balance the system.

3. Check the condensate drain for leaks and check it is discharging correctly.

4. Finally set the controls to the User's requirements.

**Note.** *If optional kits are fitted then refer to the instructions supplied with the kits.*

## 38 HANDING OVER

### ROUTINE OPERATION

Draw the attention of the boiler owner or his representative to the Lighting and Operating Instruction User Guide. Give a practical demonstration of the lighting and shutting down of the boiler.

Describe the function of the boiler and system controls and show how they are adjusted and used.

Hand these Installation and Servicing Instructions/User's Instructions and Log book to the customer and request him to keep them in a safe place for ready reference. For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance to the appropriate standard.

### IMPORTANT.

Point out to the owner that the boiler must have regular maintenance and cleaning, at least annually, in order to ensure reliable and efficient operation. Regular attention will also prolong the life of the boiler and should preferably be performed at the end of the heating season.

After servicing, complete the service section of the log book and return to the owner or their representative.

Recommend that a contract for this work should be made with the regional gas authority or a Gas Safe Registered Engineer.

In IE servicing work must be carried out by a competent person.

## 39 SAFETY

It is the law that any service work must be carried out by a Gas Safe Registered Engineer. In IE service work must be carried out by a competent person.

**WARNING.** Always turn off the gas supply at the gas service cock, and switch off and disconnect the electricity supply to the appliance and any external controls before servicing or replacing components.

**IMPORTANT.** After completing the servicing or replacement of components always:

- Test for gas soundness.
- Test the burner manifold flanges for soundness. This can be done with leak detection spray whilst operating the boiler. The gas valve and controls must be shielded from the spray.
- Check the water system is correctly filled and free of air. Air in the boiler could cause damage to the heat exchanger. For this reason if an automatic air vent is fitted it must never be shut off.
- Check the module cover is correctly fitted.
- With the system hot examine all water connections for soundness.
- Check the gas rate and measure the combustion CO/CO<sub>2</sub> content. Refer to Frame 34 for reference on how to force the burner to maximum and minimum gas rates. The CO/CO<sub>2</sub> ratio of the flue gas on each module should not be greater than 0.004 ratio. The CO<sub>2</sub> values should be correct to the figures in Table 1 on Page 2.
- Carry out functional checks as appropriate.

## 40 SERVICING SCHEDULE

To ensure the continued safe and efficient operation of the appliance it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage but should be carried out at least annually.

**Ideal Boilers** does not accept any liability resulting from the use of unauthorised parts or the repair and servicing of appliances not carried out in accordance with the Company's recommendations and specifications.

**Note.**

*Some build-up within the heat exchanger assembly is quite usual with this type of condensing boiler. Though removal and cleaning is recommended annually, the heat exchanger and condensate trap must be inspected and cleaned after a maximum of 2 years operation.*

1. Light the boiler and carry out function checks, noting any operational faults.
2. Run the boiler for 5 minutes and then check the gas consumption rate. Refer to Frame 34 for reference on how to force the burner to maximum and minimum rates.
3. For correct boiler operation the CO/CO<sub>2</sub> ratio of the flue gas on each module should not be greater than 0.004 ratio and the CO<sub>2</sub> values should be correct to the figures in Table 1 on Page 2.

4. If the combustion reading is greater than the acceptable value AND the integrity of the combustion circuit seals and flue system have been verified, and the gas inlet pressure has been checked.
5. Remove and inspect the fan/venturi assembly. Refer to Frame 45.
6. Remove the burner assembly and inspect the electrodes and sightglass. Refer to Frame 46.
7. Remove and clean the burner. Refer to Frame 46.
8. Inspect the heat exchanger through the burner opening. If there are signs of oxide build up, clean the exposed heat exchanger surface with a suitable brush. Refer to Frame 47.
9. Clean the condensate traps. Refer to Frame 48 & 49.
10. Check that the flue terminal and air inlet are unobstructed and that the fluing and ducting are correctly sealed.

**REPEAT PROCEDURE FOR BOTH SLAVE AND MASTER MODULES.**

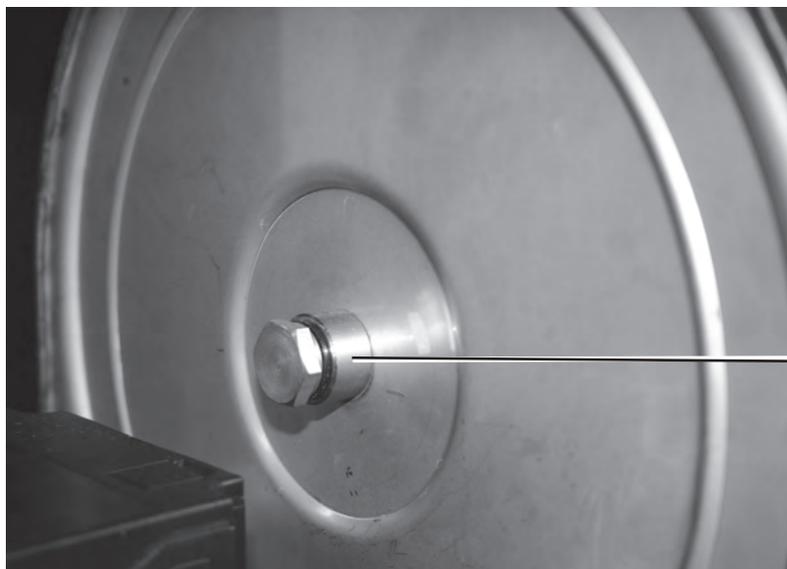
11. After servicing refer to Frame 39 for final safety checks.

## 41 GAS VALVE ADJUSTMENT

If the boiler contains more than 1 Module fitted with individual gas valves. All gas valves must be adjusted independently.

**Maximum rate adjustment**

1. Switch the boiler on and operate for 5 minutes.
2. See Table 1, Page 2 for minimum and maximum gas rate setting.
3. Set the module to maximum output (see Frame 34).
4. Connect a suitable flue analyser to the flue sampling point of the Master Module.
5. Using the maximum rate adjustment screw, adjust the master module gas valve, if necessary, until the CO<sub>2</sub> measures 9.1% ± 0.2 (nb. clockwise reduces CO<sub>2</sub>).
6. Connect a suitable flue analyser to the flue sampling point of the Slave Module.
7. Using the maximum rate adjustment screw, adjust the Slave Module gas valve until the CO<sub>2</sub> measures 9.1% ± 0.2 (nb. clockwise reduces CO<sub>2</sub>).
8. Repeat until all modules are set at max.



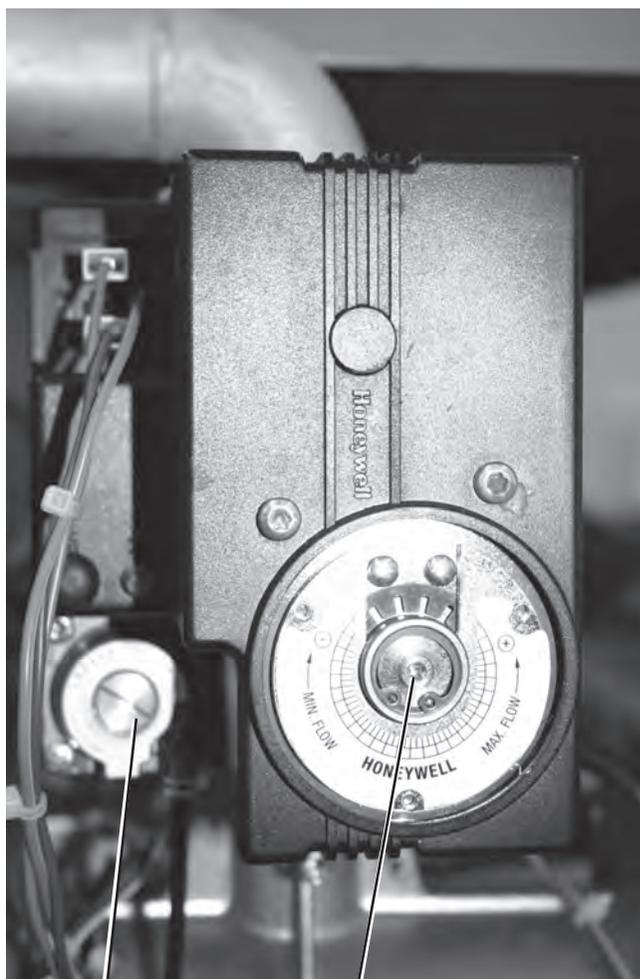
**4**  
Flue sampling point  
**11**

*continued .....*

## 42 GAS VALVE ADJUSTMENT - CONT

### Minimum rate adjustment

9. See Table 1 p2 for minimum and maximum gas rate setting.
10. Set the module to minimum output.
11. Connect a suitable flue analyser to the flue sampling point of the Master Module.
12. Remove the protective cap and then using the offset adjustment screw, adjust the valve on the master module until the CO<sub>2</sub> value measures 8.4% ± 0.2 (nb. anti-clockwise reduces CO<sub>2</sub> level). **Note:** The offset adjustment is more sensitive than the throttle adjustment.  
  
IMPORTANT: The CO measurement when the CO<sub>2</sub> is set should not exceed 22-ppm. Under no circumstances should the CO/CO<sub>2</sub> ratio exceed 0.004.  
  
Adjust in steps of no more than 1/8 turn and wait 1 minute after each adjustment to allow setting to stabilise.
13. Connect a suitable flue analyser to the flue sampling point on the next Module.
14. Remove the protective cap and then using the offset adjustment screw, adjust the valve on the Module until the CO<sub>2</sub> value measures 8.4% ± 0.2 (nb. anti-clockwise reduces CO<sub>2</sub> level).
15. Repeat until all modules are set at minimum.
16. Re-check the CO<sub>2</sub> level at maximum rate repeating steps 3 to 14 if necessary.
17. Seal adjustment screw cap with tamper proof paint.
18. If the required CO<sub>2</sub> level cannot be obtained with a CO/CO<sub>2</sub> ratio below 0.004 then contact Ideal Boilers Installer/Technical Help Line - 01482 498376



Offset Adjustment Screw  
(Firstly remove screw cap for access)

12

5 Maximum Rate Adjustment Screw  
(Firstly remove plastic cap for access)

## 43 CASING REMOVAL

### Module front cover

1. Remove the two screws retaining the plastic front cover, press and swing the two handles into the removing position.



1

continued . . . . .

## 44 CASING REMOVAL - CONT

### Module front cover

- Using the two handles pull the module cover forwards and then pull the two support brackets forward to provide a temporary hanging point for the cover, carefully place the cover on the support brackets. Alternatively, the module cover can be placed on the floor adjacent to the module.



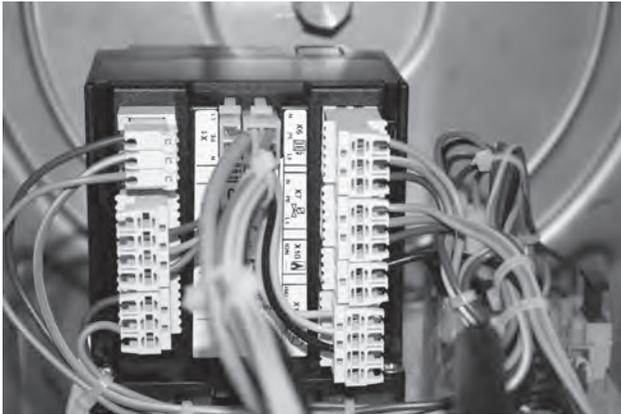
"Pull out" support brackets

Module Cover Hanging Point

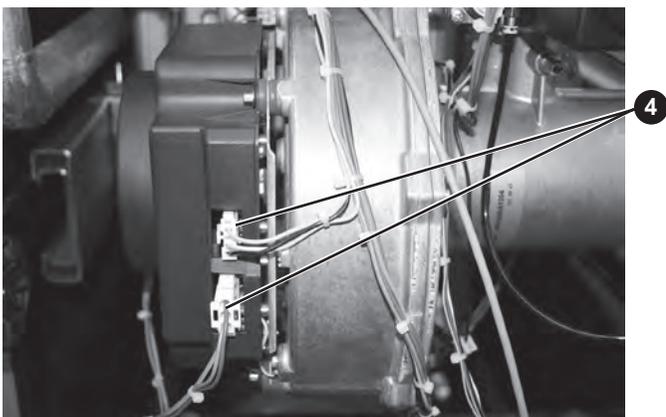
## SERVICING

### 45 REMOVAL OF FAN / VENTURI FOR INSPECTION

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 43).
3. Disconnect the electrical connections from the Module PCB.



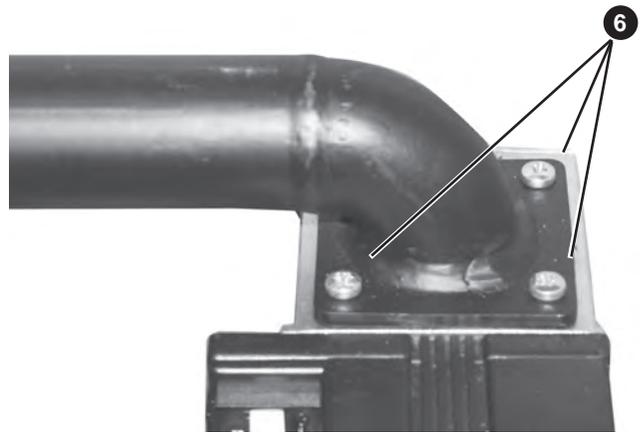
4. Disconnect the electrical connections from the fan.



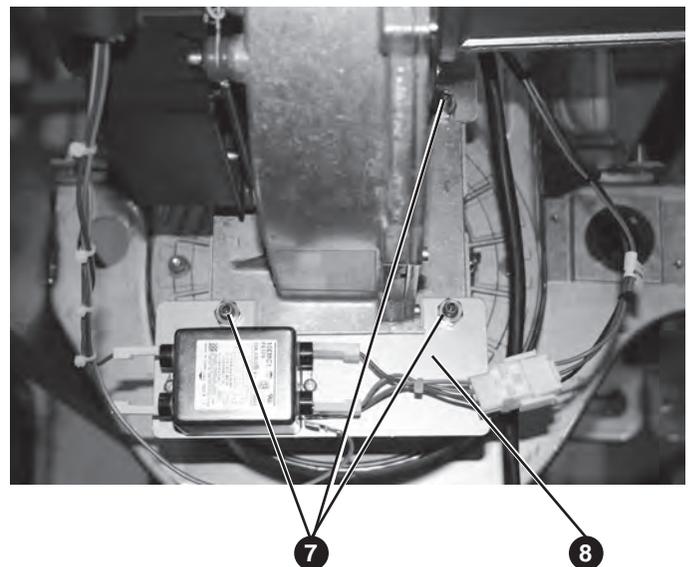
5. Disconnect the detector lead 'in line' connector.



6. Remove the four nuts retaining the gas pipe to the gas control valve.



7. Remove the four nuts and washers retaining the fan to the burner mounting plate.

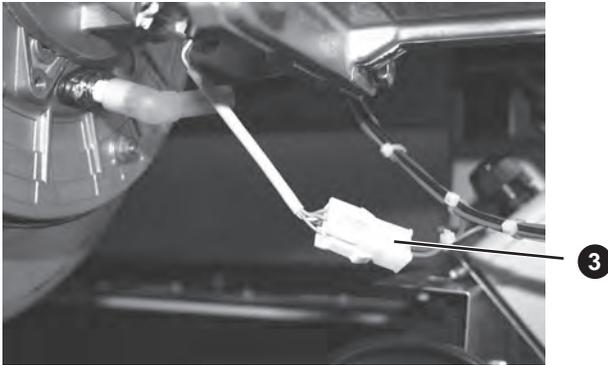
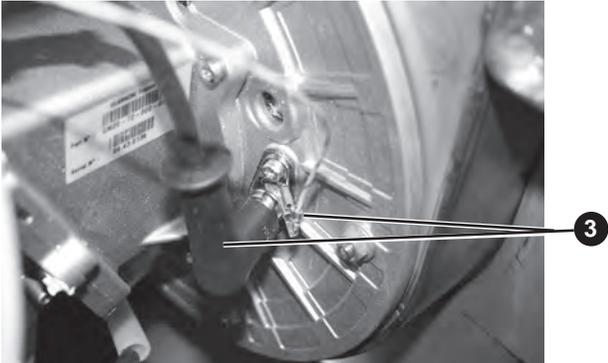


8. Remove the EMC filter bracket.
9. Remove the Module PCB to a safe place.
10. Carefully remove the fan assembly to a safe working area.
11. Inspect the fan and venturi and reassemble in reverse order replacing any seals/gaskets which show signs of wear.
12. Refer to Frame 39 for final safety checks.

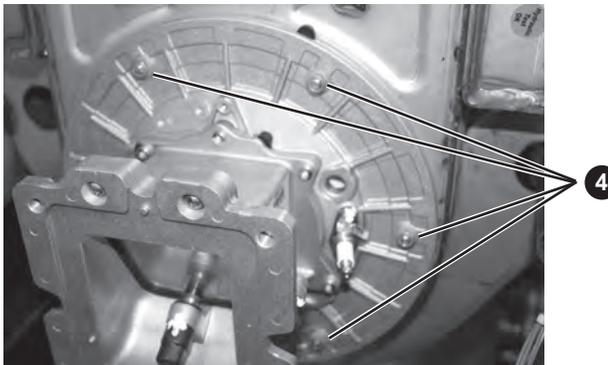
**REPEAT THE PROCEDURE FOR THE SLAVE MODULE/S**

## 46 REMOVAL OF BURNER ASSEMBLY AND BURNER CLEANING

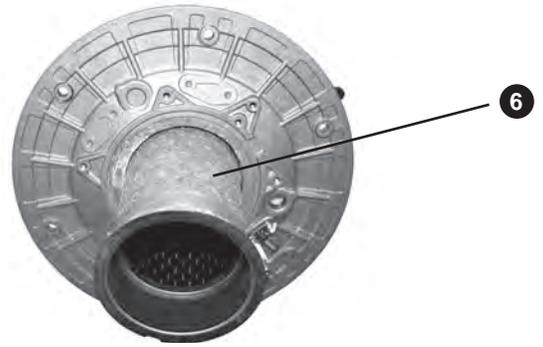
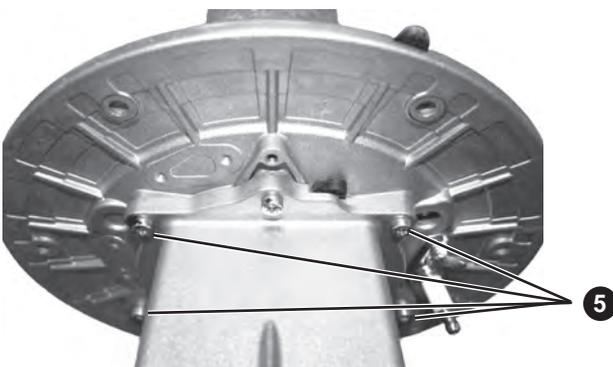
1. Refer to Frame 40.
2. Refer to Frame 45 for removal of fan/venturi.
3. Disconnect the ignition lead cap, earth lead and sensing lead 'in line' connector.



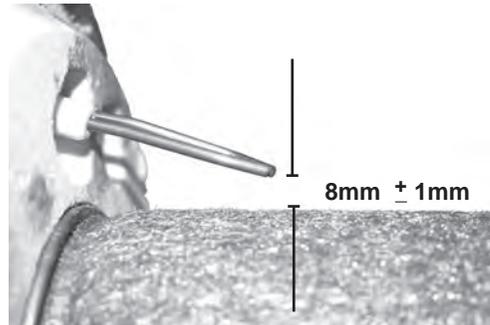
4. Remove the six nuts retaining the burner assembly and carefully withdraw the assembly.



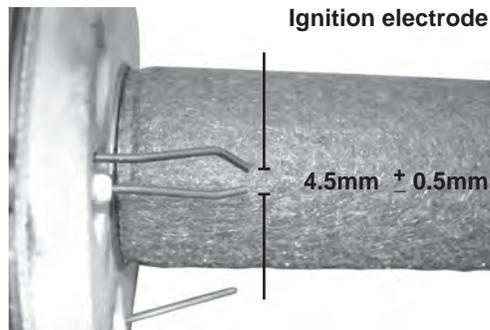
5. Remove the five screws retaining the fan mounting manifold and remove the manifold.



6. Carefully remove the burner, the burner can be cleaned internally only using a soft brush and/or vacuum. The metal fibre outer surface **MUST NOT BE BRUSHED**. If the burner shows signs of damage it must be replaced.
7. Inspect the ignition and detection electrodes for signs of damage and check the dimensional relationship between the electrodes and the burner surface (refer to photographs for correct dimensions).

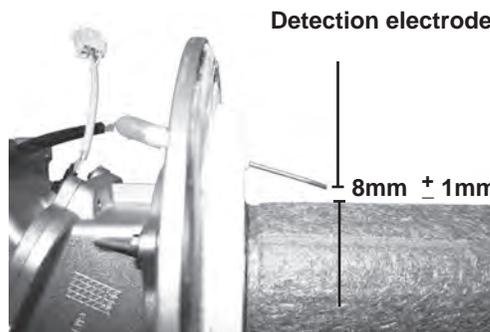


8mm ± 1mm



Ignition electrode

4.5mm ± 0.5mm



Detection electrode

8mm ± 1mm

8. Re-assemble in reverse order replacing any seals/gaskets which show signs of wear.
9. Refer to frame 39 for final safety checks.

**REPEAT PROCEDURE FOR SLAVE MODULE/S**

## 47 HEAT EXCHANGER CLEANING

1. Refer to Frame 40.
2. Refer to Frame 45 for fan/venturi removal.
3. Refer to Frame 46 for burner assembly removal.
4. Inspect the exposed heat exchanger surface and if necessary clean with a suitable brush.
5. Re-assemble in reverse order replacing any seals/gaskets which show signs of wear.
6. Refer to frame 39 for final safety checks.

**REPEAT PROCEDURE FOR SLAVE MODULE/S**

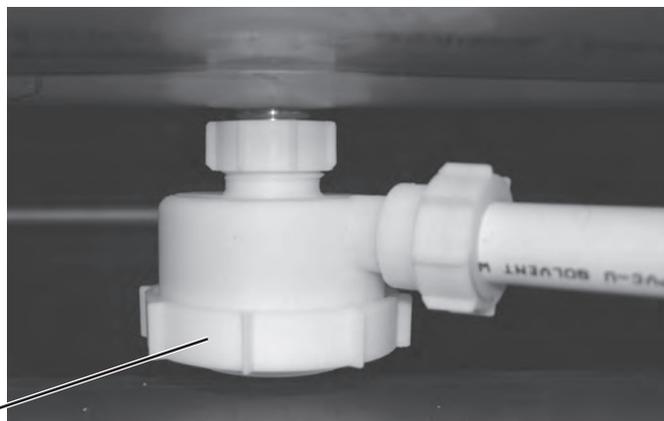


## 48 CLEANING OF CONDENSATE DEBRIS COLLECTOR

1. Refer to Frame 40.
2. Remove module right hand side panel (refer to Frame 15)
3. Unscrew the module condensate debris collector cleaning cover taking care to control the removal of any residual condensate.
4. Clean any debris from the collector, if necessary pour water through the heat exchanger heating surface to flush debris out of the collector.
5. Replace collector cover taking care to inspect and if necessary replace the seal.
6. Re-assemble in reverse order.
7. Refer to frame 39 for final safety checks.

**REPEAT PROCEDURE FOR SLAVE MODULE/S**

3



## 49 CLEANING OF MODULE CONDENSATE TRAP

1. Refer to Frame 40.
2. Place a container beneath the trap to collect the condensate contained within.
3. Remove the bottom cleaning cover and plastic seal whilst collecting any residual condensate.
4. If deposits are visible in the trap body, it can be removed by unscrewing the top cover and releasing the support bracket. Thoroughly flush the body with water.
5. Re-assemble in reverse order, replacing the condensate trap if there are signs of wear to any seals or the cartridge.
6. Refer Frame 39 for final safety checks.

**REPEAT PROCEDURE FOR SLAVE MODULE/S**

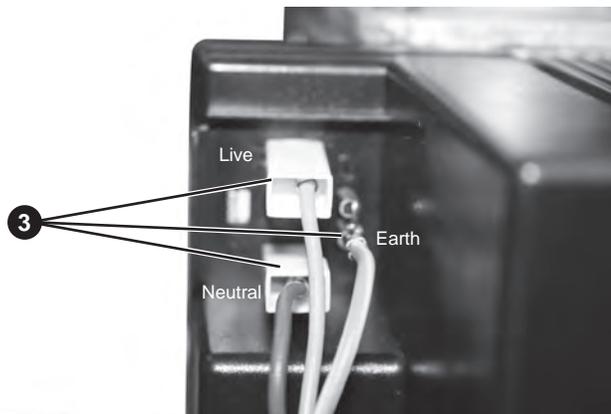
4

3

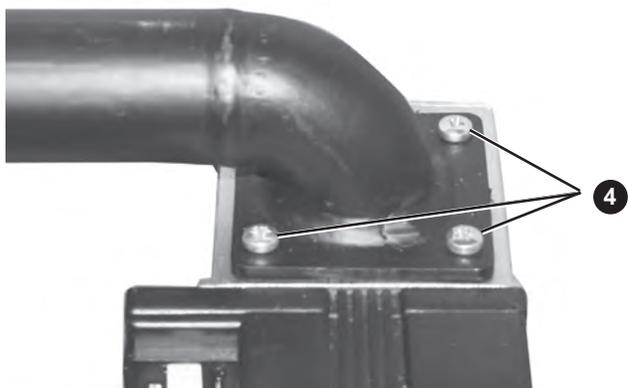


## 50 GAS VALVE

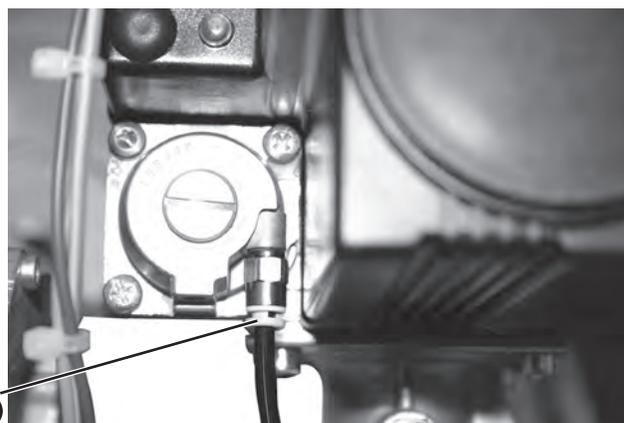
1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the electrical connections.



4. Remove the four nuts retaining the gas pipe to the gas control valve.



5. Remove the pressure sensing lead by lifting the white sealing ring and pulling the black lead out.



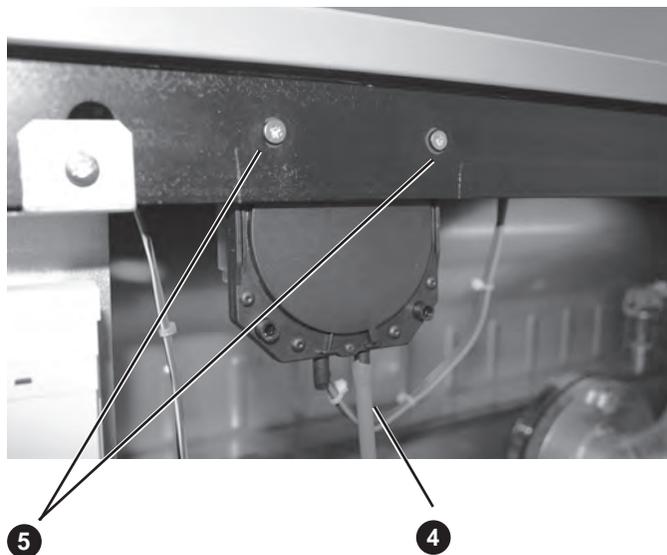
6. Remove the four socket cap screws retaining the gas valve to the outlet flange.



7. Withdraw the gas valve taking care to retain the inlet and outlet 'O' rings.
8. Fit the new gas valve (replace inlet/outlet 'O' rings if showing signs of wear)
9. Re-assemble in reverse order.
10. Refer to instruction sheet with new gas valve for correct setting procedure.
11. Refer to Frame 39 for final safety checks.

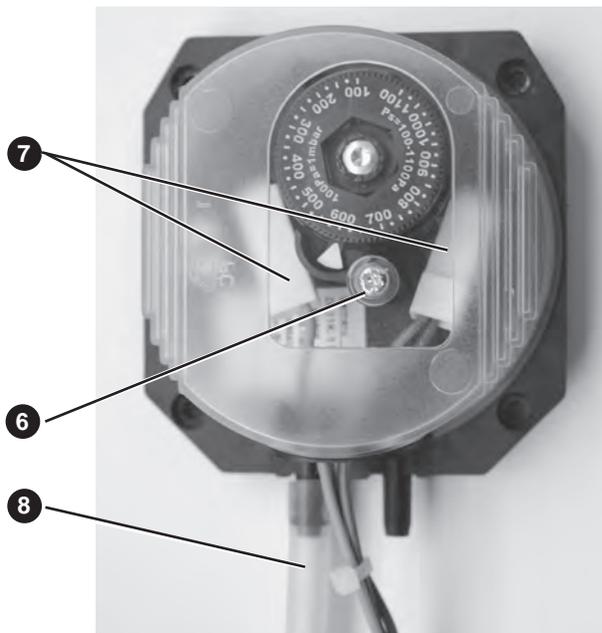
## 51 CONDENSATE BLOCKAGE PRESSURE SWITCH

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the right hand side panel (refer to Frame 15)
4. Pull off the sensing tube at the pressure switch.
5. Remove the two pressure switch fixing screws.



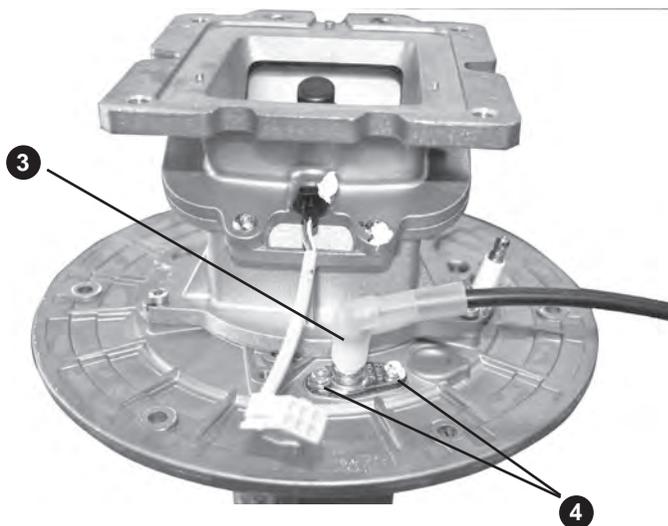
## 52 CONDENSATE BLOCKAGE PRESSURE SWITCH - Cont.

6. Remove the single cover fixing screw and remove the plastic cover.
7. Pull off the two electrical connections and transfer to the new switch.
8. Re-assemble in reverse order ensuring the pressure pipe is fitted to the positive (+) connection on the pressure switch.
9. Refer to frame 39 for final safety checks.



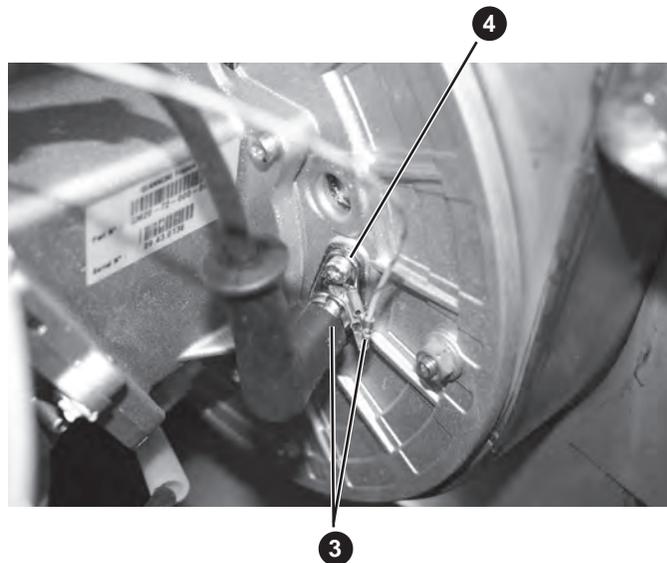
## 53 DETECTION ELECTRODE REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover. Refer to Frame 44.
3. Remove the detection plug cap.
4. Remove the two cap screws retaining the detection electrode and carefully withdraw the electrode.
5. Fit the new electrode and re-assemble in reverse order.
6. Refer to Frame 39 for final safety checks.



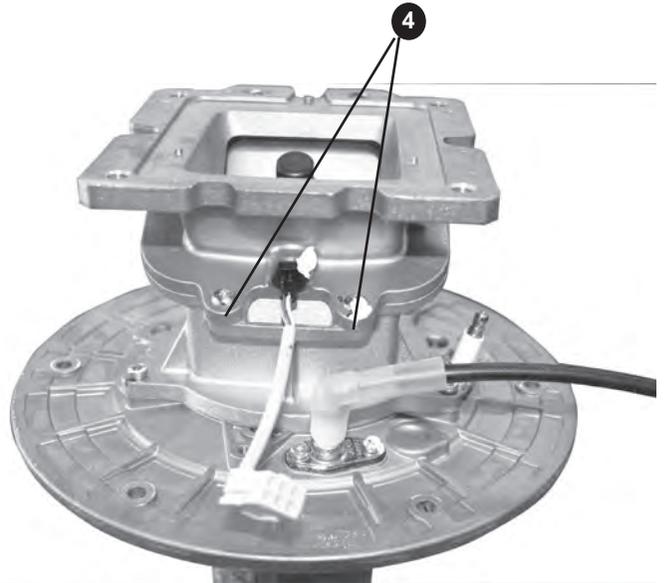
## 54 IGNITION ELECTRODE REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the ignition plug cap and the earth connection.
4. Remove the two cap screws retaining the ignition electrode and carefully withdraw the electrode.
5. Fit the new electrode and re-assemble in reverse order.
6. Refer to Frame 49 for final safety checks.



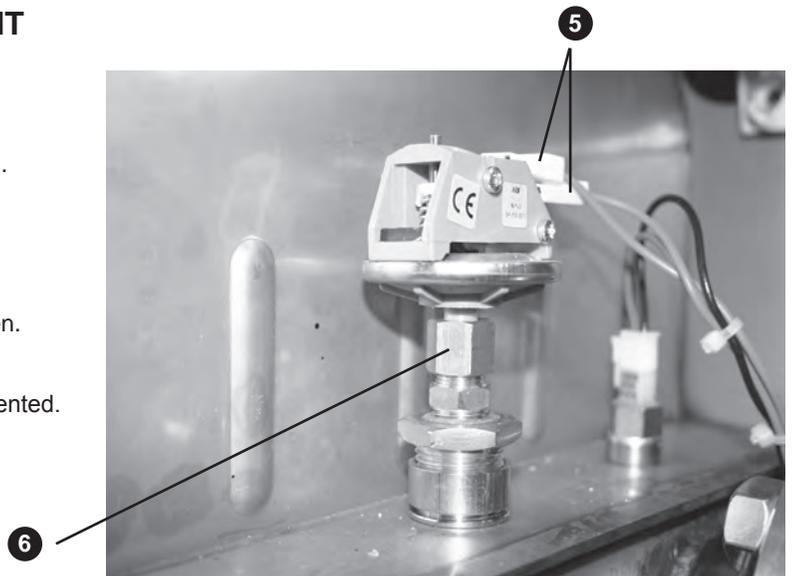
## 55 FLAPPER VALVE REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the fan/venturi assembly (refer to Frame 45).
4. Remove the flapper valve by removing the 6 fixing screws.
5. Fit the new flapper valve and reassemble in reverse order.
6. Refer to Frame 39 for final checks.



## 56 PRESSURE SWITCH REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the right hand side panel (refer to Frame 15).
4. Isolate the water circuit and drain boiler.
5. Pull off the two electrical connections.
6. Unscrew the pressure switch.
7. Fit the new pressure switch. NOTE. Do not overtighten.
8. Re-assemble in reverse order.
9. Re-fill the system ensuring all the air in the boiler is vented.
10. Refer to Frame 39 for final safety checks.

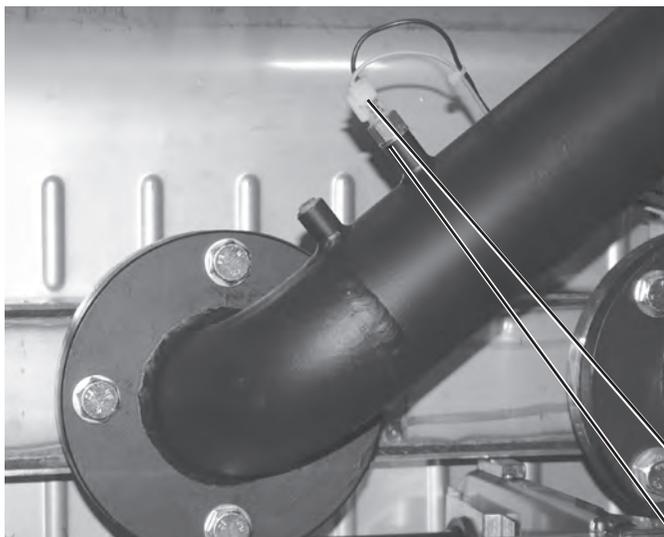


## SERVICING

### 57 FLOW AND RETURN THERMISTOR REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the right hand side panel (refer to Frame 15).
4. Isolate the water circuit and drain boiler.
5. Pull off the electrical connection.
6. Unscrew the flow and/or return thermistor.
7. Fit the new thermistor/s.
8. Re-assemble in reverse order.
9. Re-fill the system ensuring all the air in the boiler is vented.
10. Refer to Frame 39 for final safety checks.

Flow Thermistor

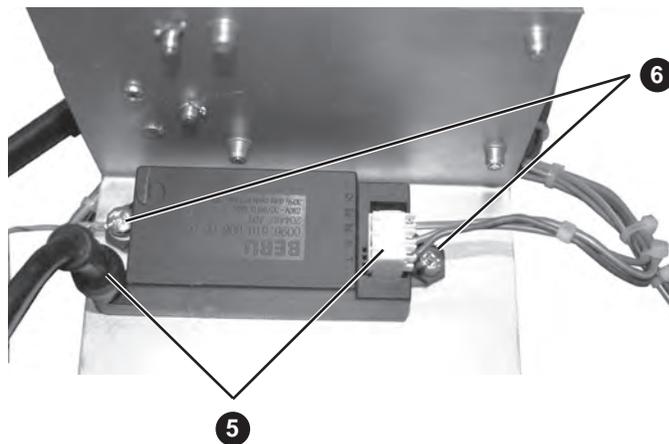
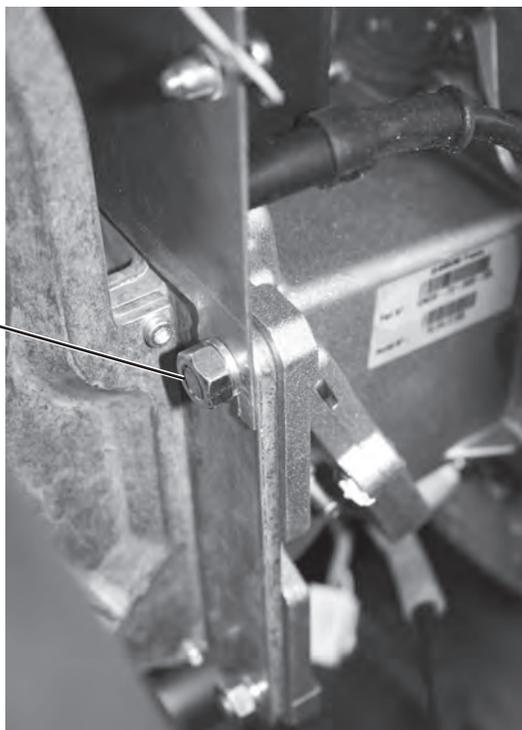


Return Thermistor



### 58 SPARK GENERATOR

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Slacken the two top nuts retaining the burner sequence controller bracket.
4. Lift the bracket clear of the studs and turn to expose the HT generator fixing screws.
5. Remove the HT lead and electrical connection.
6. Remove the two fixing screws taking care to retain the earth lead.
7. Fit the new HT generator re-assembling in reverse order.
8. Refer to Frame 39 for final safety checks.



## 59 FAN REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the fan assembly to a safe working area (Refer to Frame 45).
4. Remove the six venturi fixing screws, remove venturi and fit to new fan.
5. Fit the new fan assembly and re-assemble in reverse order.
6. Refer to Frame 39 for final safety checks.

4



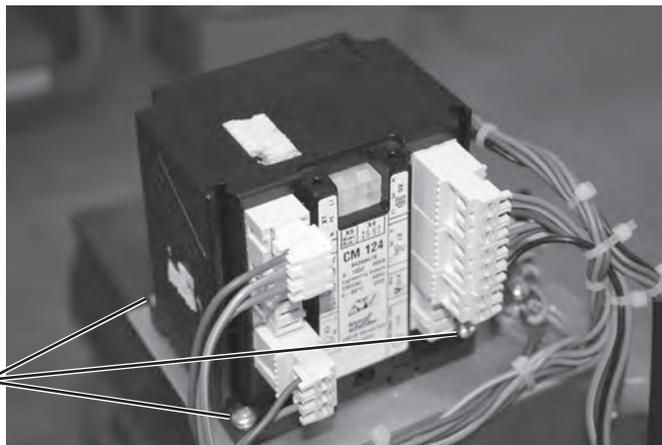
## 60 BURNER REPLACEMENT

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the fan assembly to a safe working area (Refer to Frame 45).
4. Remove the burner (Refer to Frame 46)
5. Fit the new burner ensuring all seals and gaskets are inspected for wear or damage and replaced accordingly.
6. Re-assemble in reverse order.
7. Refer to frame 39 for final safety checks.

## 61 MODULE PCB

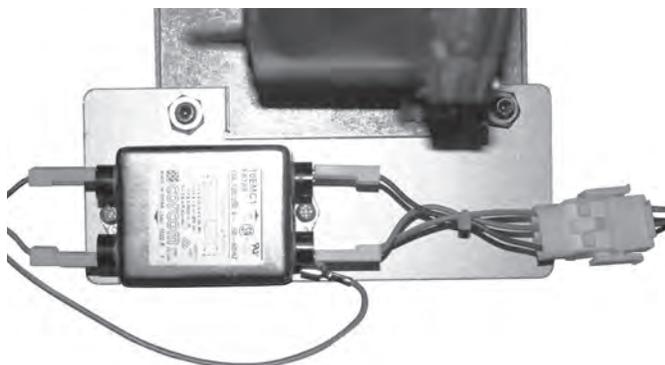
1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove all electrical connections from the Module PCB.
4. Remove the four screws retaining the control to the bracket.
5. Fit the new Module PCB, re-assembling in reverse order.
6. Refer to Frame 39 for final safety checks.

4



## 62 EMC FILTER REPLACEMENT

1. Disconnect the leads from the EMC filter.
2. Remove the two screws fixing the EMC filter to the bracket.
3. Re-assemble in reverse order.

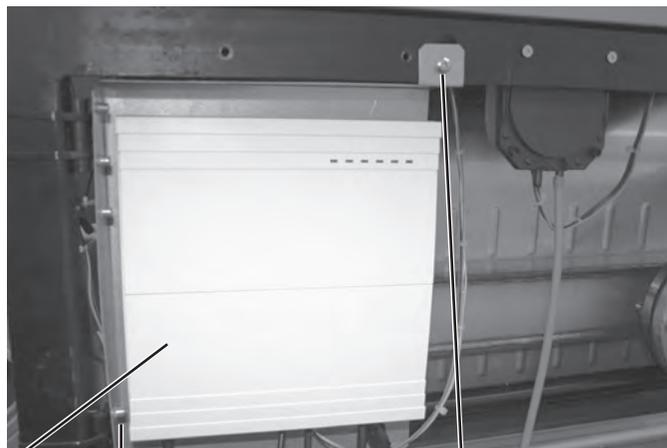
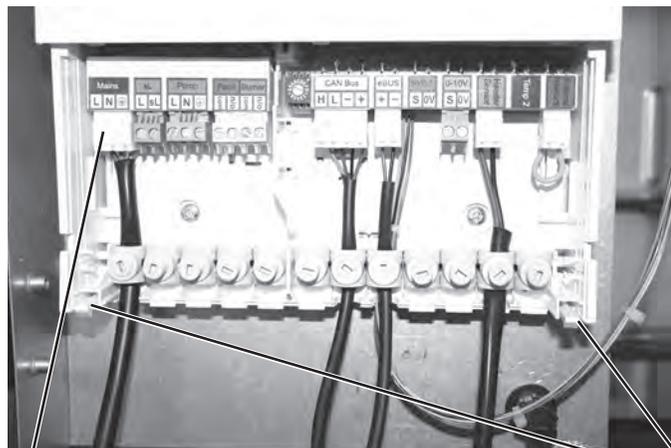


## 63 MASTER PCB REPLACEMENT

**Note:** Observe all ESD Handling Procedures

1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the right hand side panel (refer to Frame 15).
4. Remove the Master PCB Box bottom cover by pressing in the two plastic spring clips and pulling forwards.

5. Remove the top right single fixing screw and swing the Master PCB Box out into the service position.
6. Remove ALL plug in connections to the Master PCB Box wiring centre.
7. Remove the screws fastening the Master PCB Box hinges to the metal housing and remove Master PCB Box.
8. Fit the new Master PCB Box and re-assemble in reverse order.
9. Refer to Frame 39 for final safety checks.



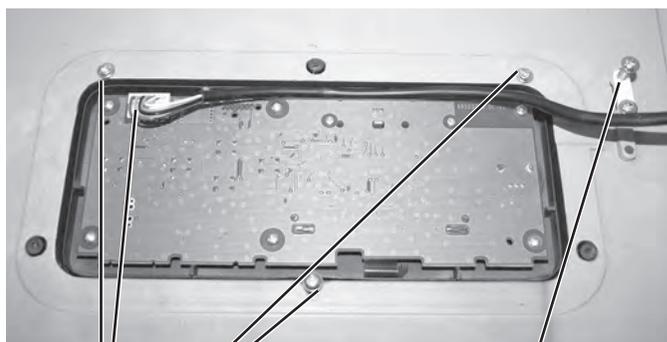
6 4 7 5

## 64 CUSTOMER USER INTERFACE (CUI) PCB REPLACEMENT

**Note:** Observe all ESD Handling Procedures

1. Refer to Frame 40.
2. Remove the master module front cover (refer to Frame 44).
3. Disconnect the CUI PCB electrical connection at the top left hand of the master module frame.
4. Refer to the ESD precautions and make careful use of the wrist strap provided with the replacement User Interface Kit. Failure to do so may damage or shorten the life of the User Interface.

5. Remove the three screws retaining the User Interface cover and remove.
6. Release the cable clamp.
7. Remove the three screws retaining the CUI PCB, pull off the edge connector and remove the CUI PCB.
8. Fit new CUI PCB, re-assemble in reverse order.
9. Refer to Frame 39 for final safety checks.



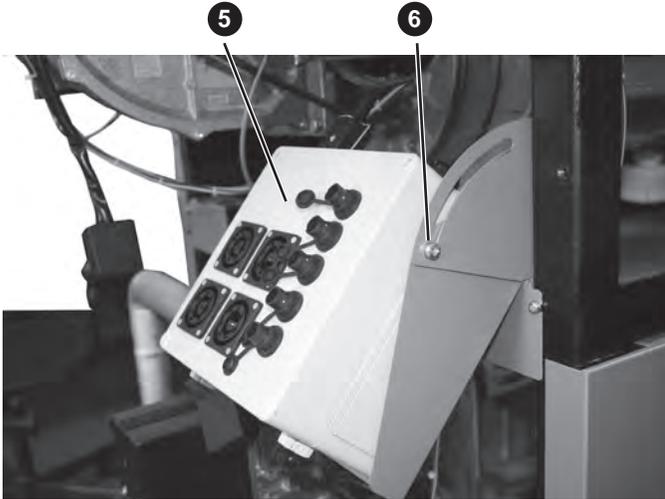
3 5 7 6

SERVICING

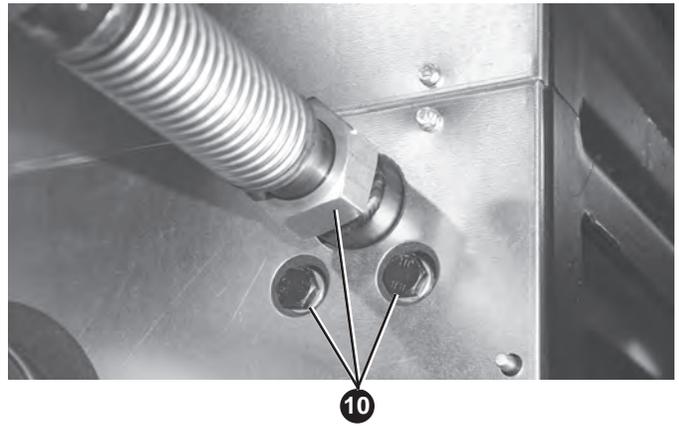
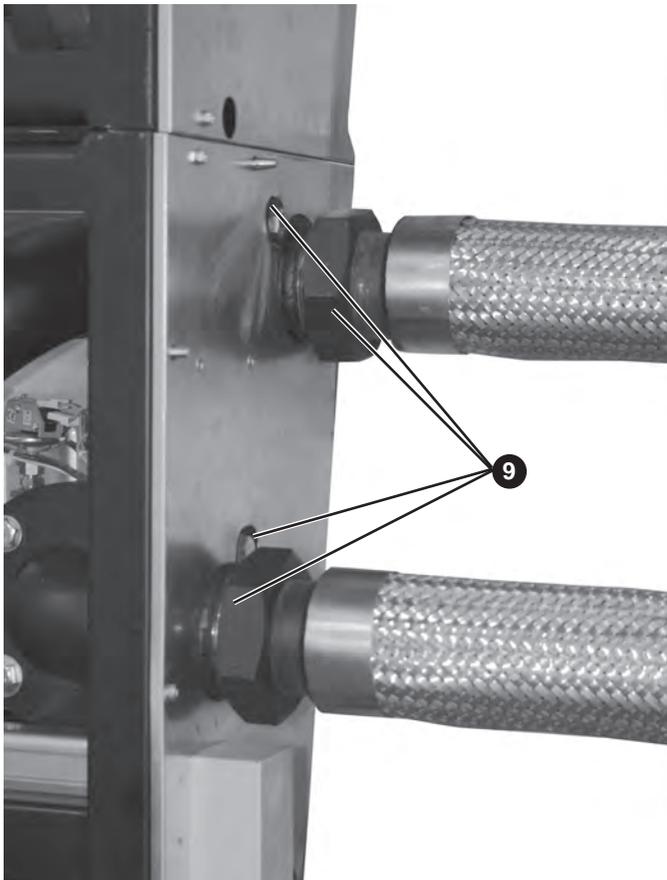
## 65 HEAT EXCHANGER REPLACEMENT (MASTER & SLAVE MODULES)

**NB. Ignore items 5 and 6 for slave modules**

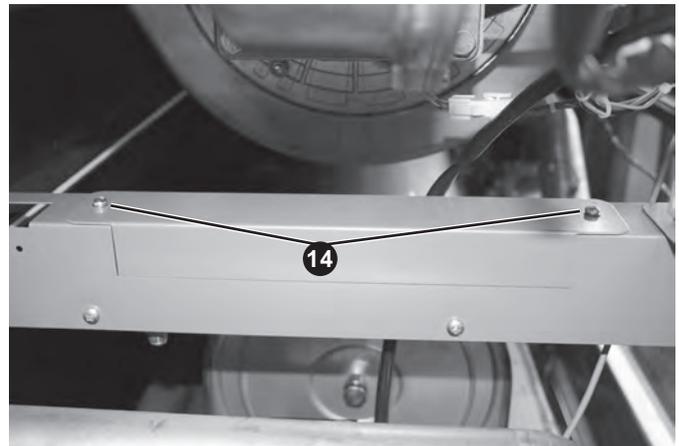
1. Refer to Frame 40.
2. Remove the module front cover (refer to Frame 44).
3. Remove the right hand side panel (refer to Frame 15).
4. Isolate the water circuit and drain boiler.
5. Disconnect all 'plug in' connections to the junction box.
6. Slacken the mains wiring box fixing screw and swing the box down.



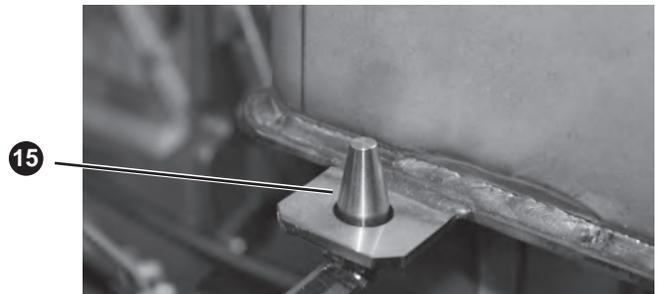
7. Remove the fan assembly (Refer to Frame 45).
8. Remove the burner assembly (Refer to Frame 46).
9. Remove the single fixing bolt at the module water flow and return connections and unscrew the union connections.



10. Remove the two fixing bolts at the gas connections and unscrew the gas union connections.
11. Pull the gas pipe forwards to remove.
12. Remove the water pressure switch and flow and return thermistor electrical connections (Refer to Frames 56 & 57).
13. Disconnect and remove the heat exchanger condensate debris collector (Refer to Frame 48).
14. Remove the two screws retaining the central frame infill panel and remove panel.



15. Pull the heat exchanger unit forwards and lift off from the support pins (the unit is heavy therefore ensure the safe handling instructions contained on page 4 are followed).

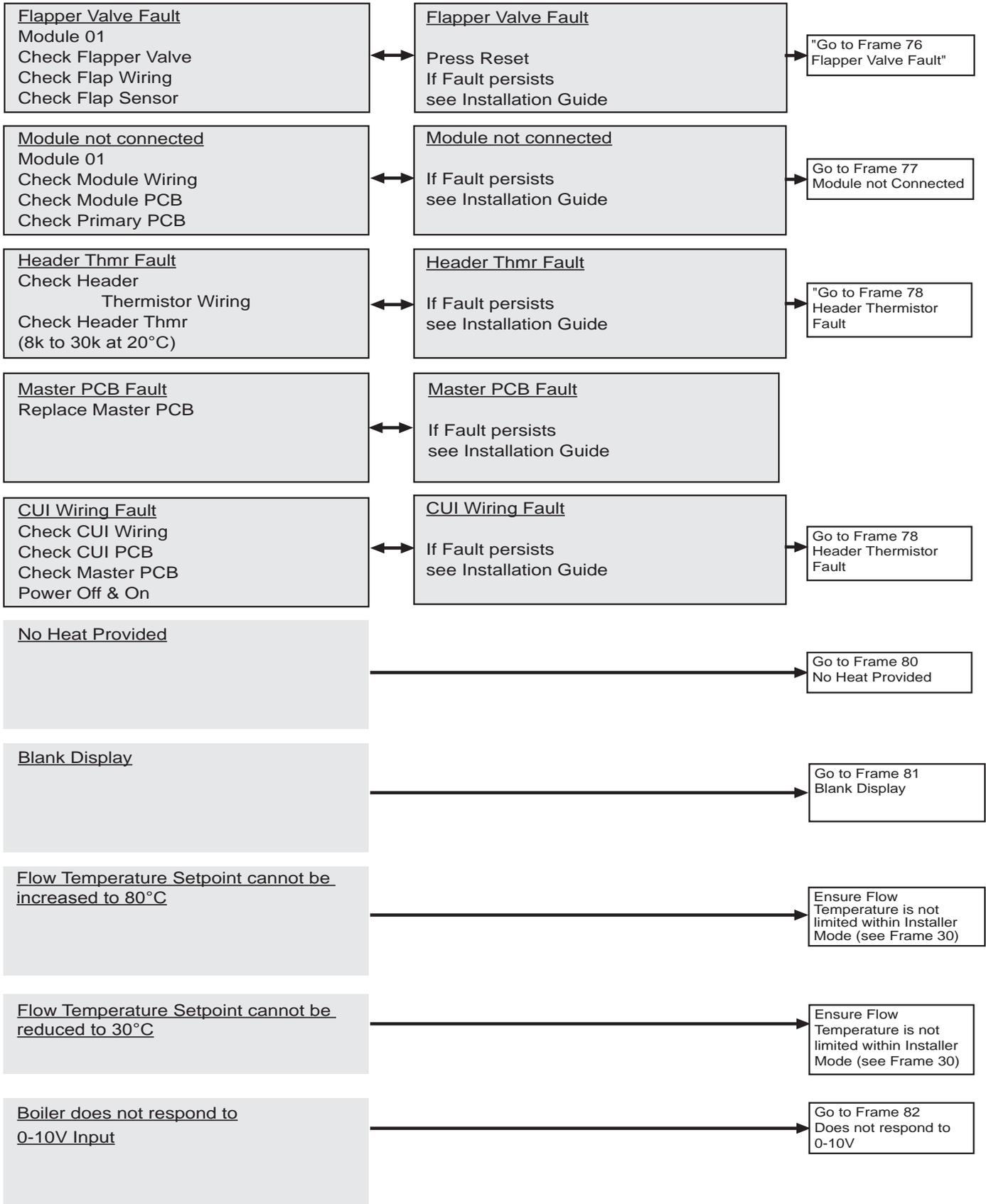


16. Remove flow & return headers and fit to new heat exchanger.
17. Remove the water pressure switch and the return thermistor and fit to new heat exchanger.
18. Re-assemble in reverse order.
19. Re-fill the system ensuring all the air in the boiler is vented.
20. Refer to Frame 39 for final safety checks.



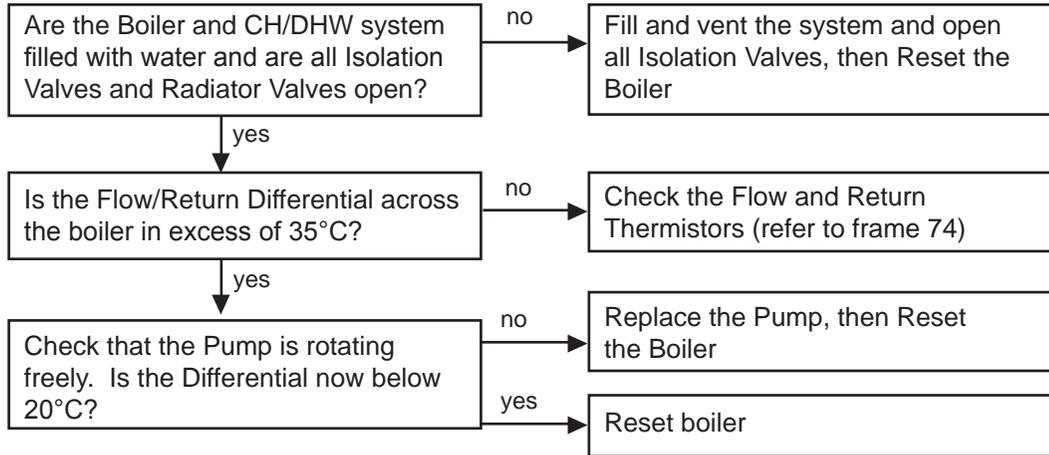
# FAULT FINDING

## 67 FAULT FINDING CHART - MAIN MENU CONT.

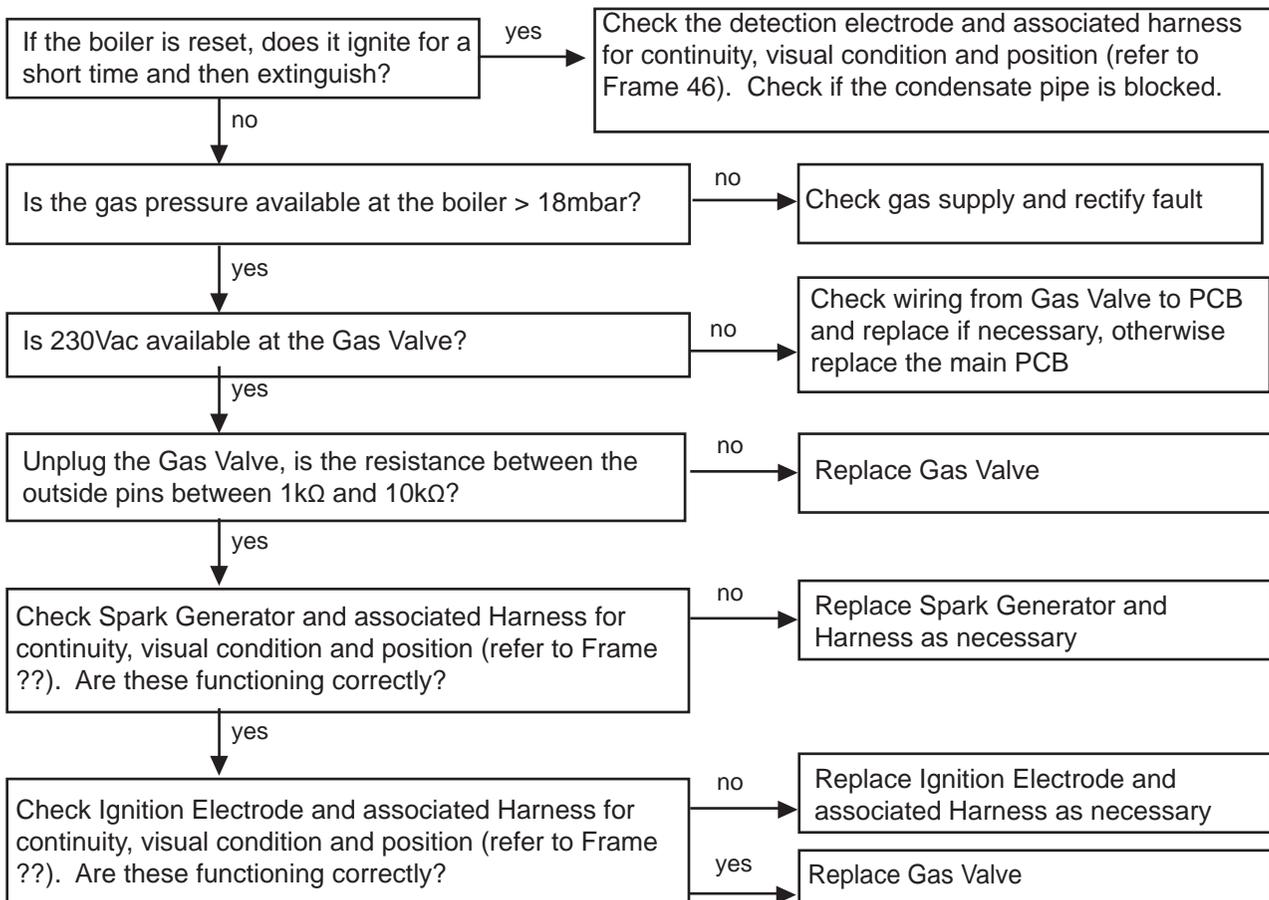


## FAULT FINDING

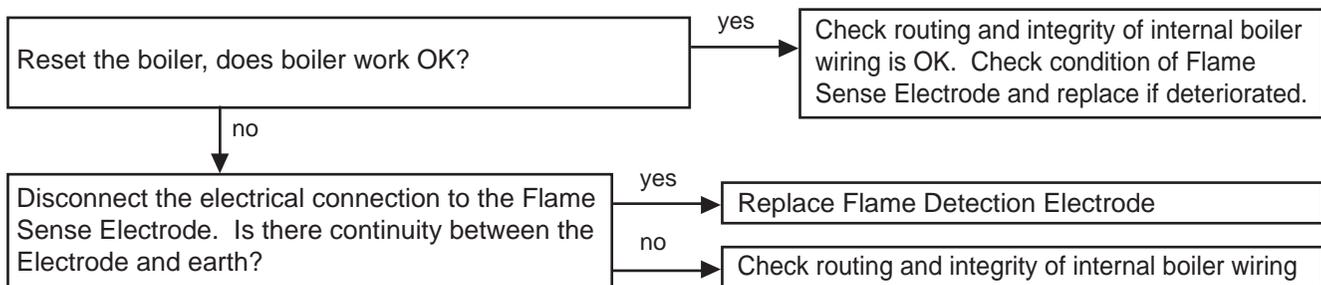
### 68 OVERHEAT LOCKOUT



### 69 IGNITION LOCKOUT

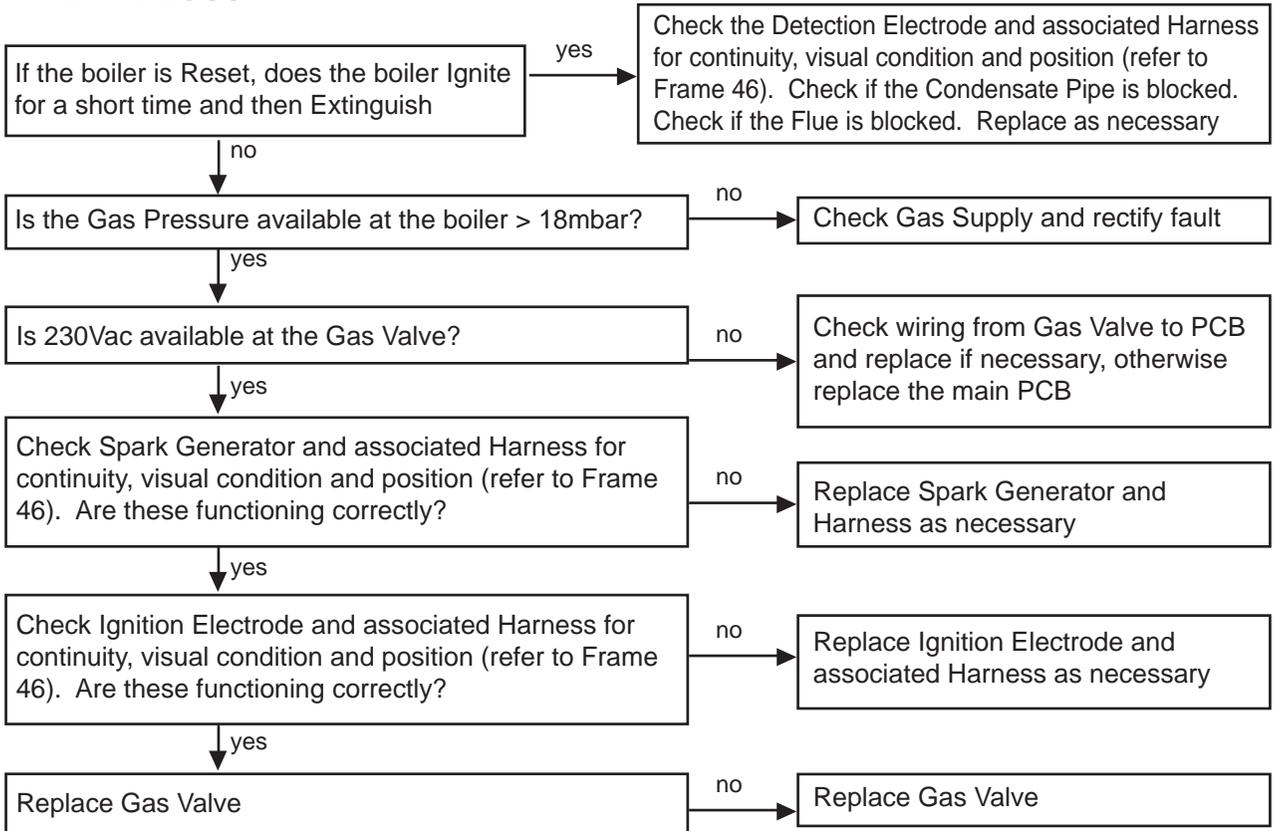


### 70 FALSE FLAME LOCKOUT

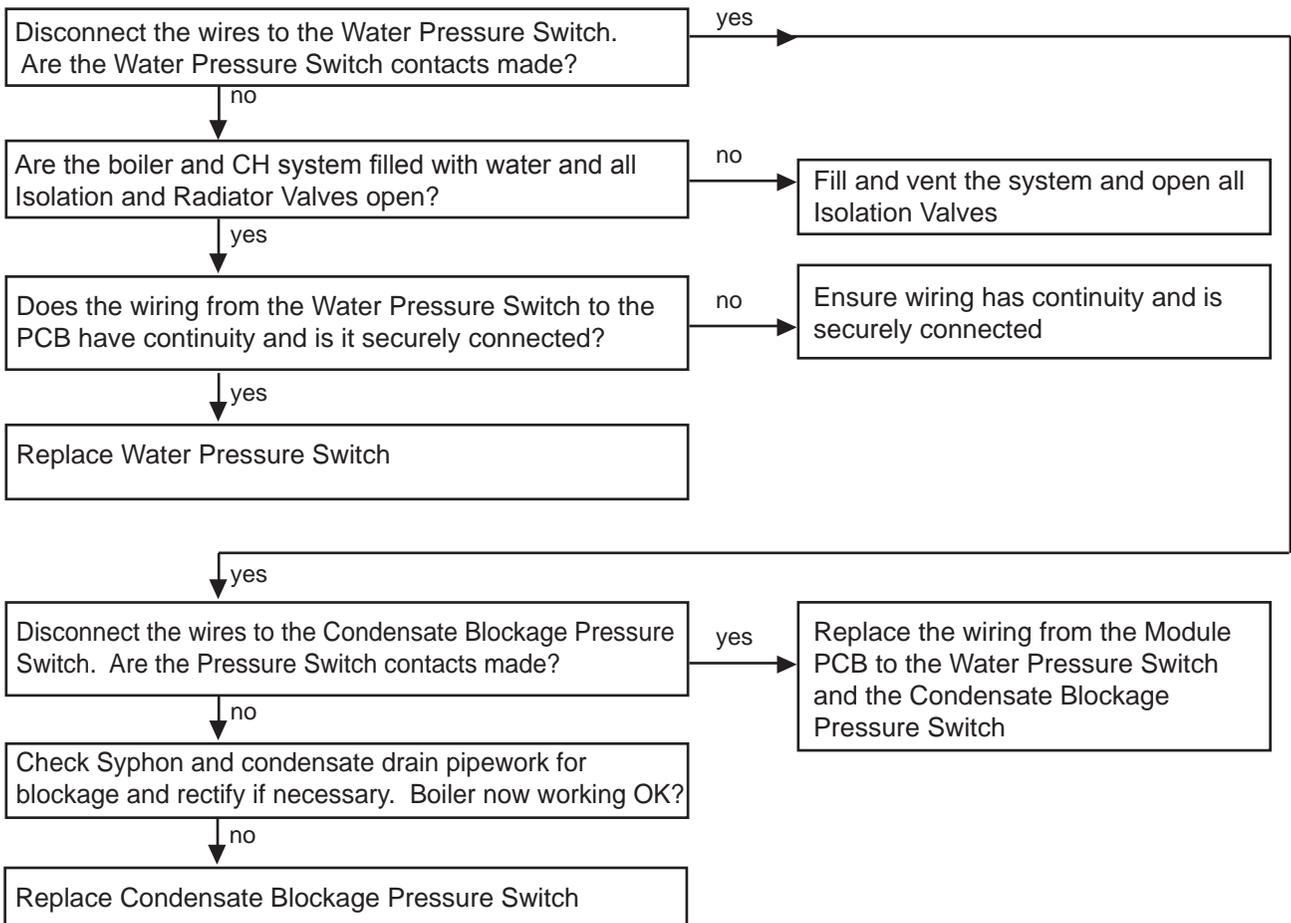


# FAULT FINDING

## 71 FLAME LOSS

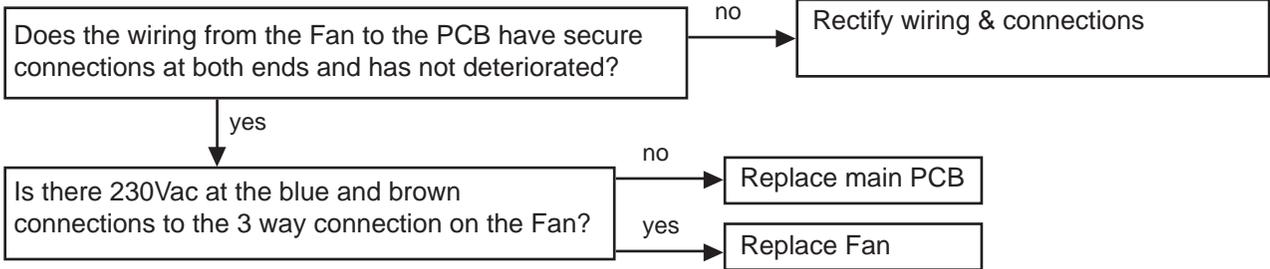


## 72 LOW WATER PRESSURE OR CONDENSATE BLOCKAGE

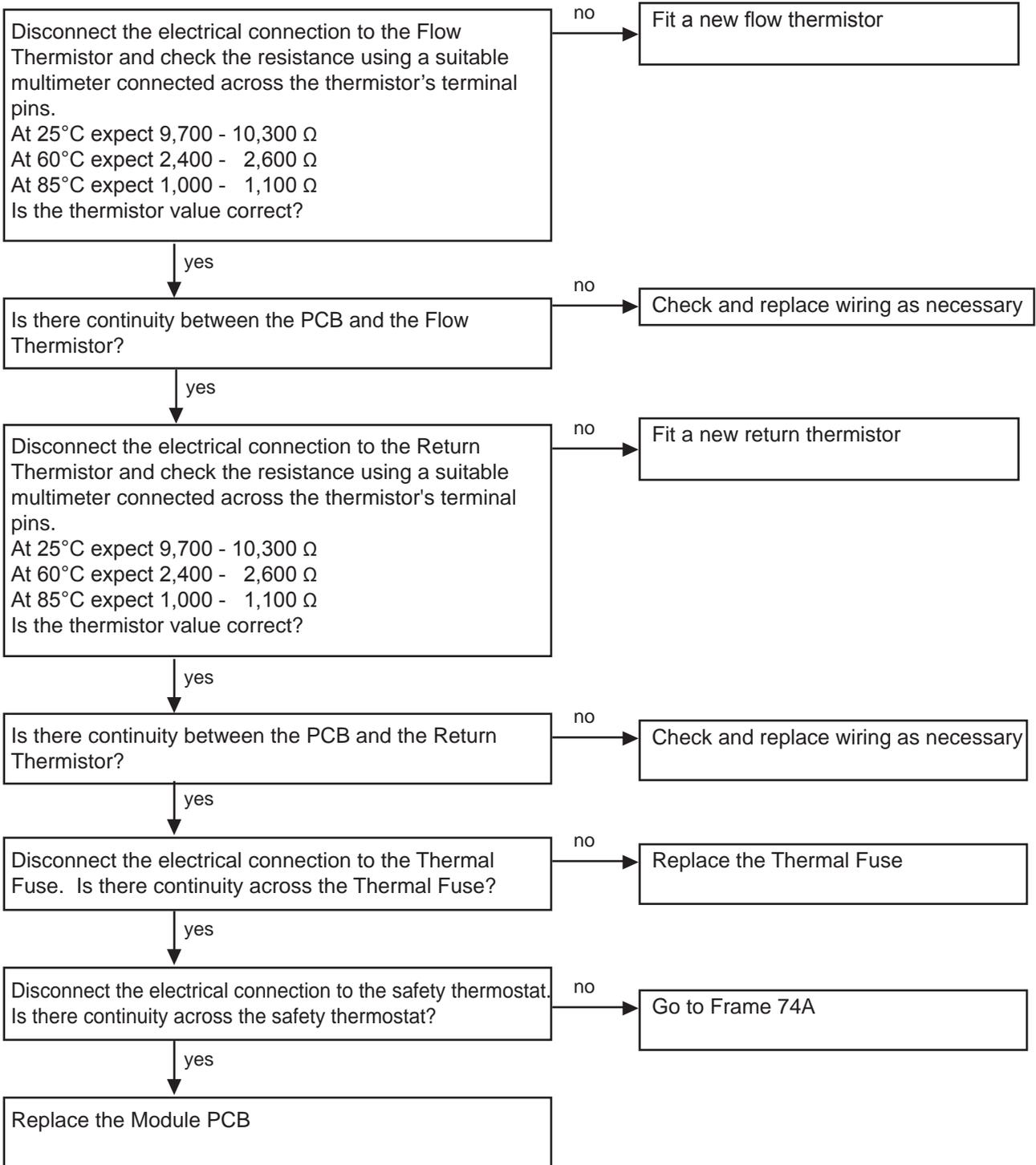


# FAULT FINDING

## 73 FAN FAULT



## 74 FLOW THERMISTOR OR RETURN THERMISTOR OR THERMAL FUSE FAULT OR SAFETY THERMOSTAT OPEN



# FAULT FINDING

## 74A SAFETY THERMOSTAT OPEN

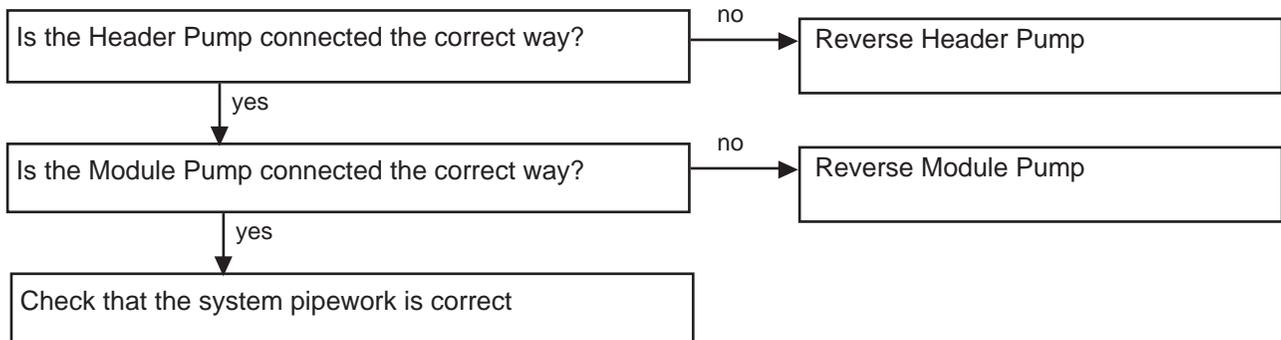
The release of the thermostat will require the intervention of a qualified person in the boiler's maintenance; they will have to remedy the defect responsible for the unusual temperature rise and then carry out a verification (see protocol) of the heat exchanger before re-engaging the thermostat.

### Protocol;

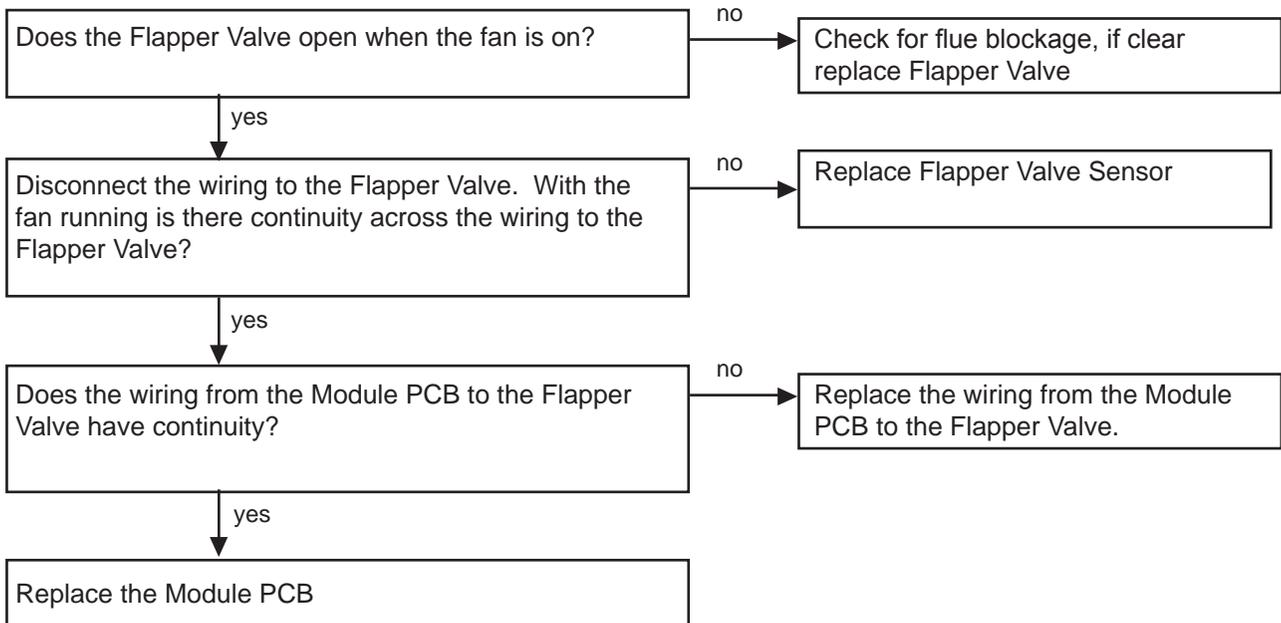
(By following your recommendations for the maintenance to the boiler)

1. Remove the burner door.
2. Check the condition of door gaskets - replace if necessary.
3. Check the condition of the insulation on the door, and the insulation at the rear of the combustion chamber - replace if necessary.
4. Check the condition of the burner.
5. Check for fouling of the combustion chamber. If necessary, clean it (nylon brush and removal of these deposits).
6. Check the condition of the condensate drain. (Clean the siphon)
7. Check the condition of the flue system.
8. By re-assembling the burner door on to the heat exchanger, screw the nuts in accordance with the torque to 5N/m.
9. Re-engage the safety thermostat (must be reset at room temperature which is about 22°C) and check the connection (wiring of the thermostat).
10. Before restarting of the boiler, check the water pressure in the boiler.
11. After restarting, control the level of combustion (CO<sub>2</sub> measurement) by verifying the correct adjustment of the gas valve in relation to the type of gas.

## 75 FLOW/RETURN REVERSED



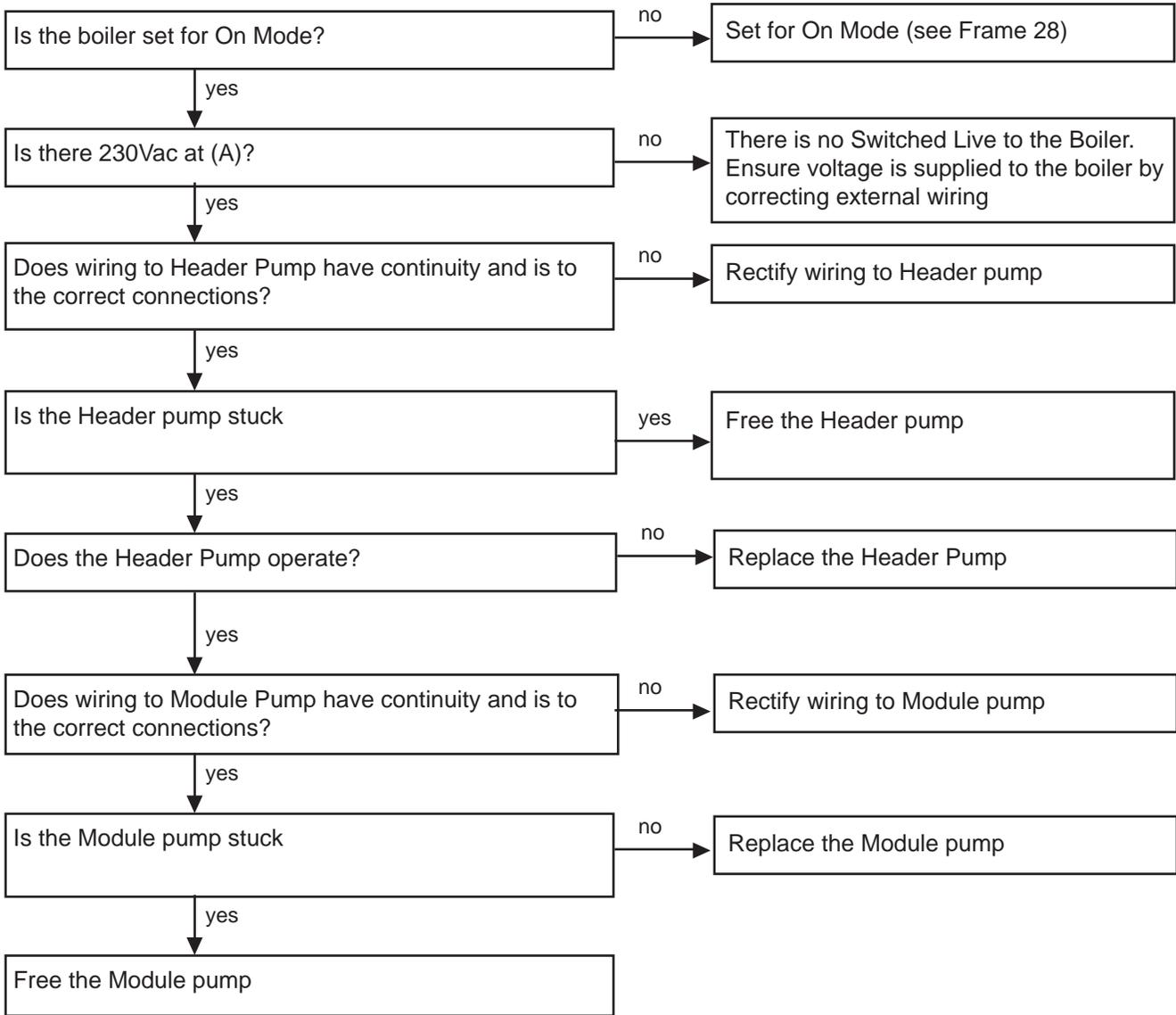
## 76 FLAPPER VALVE



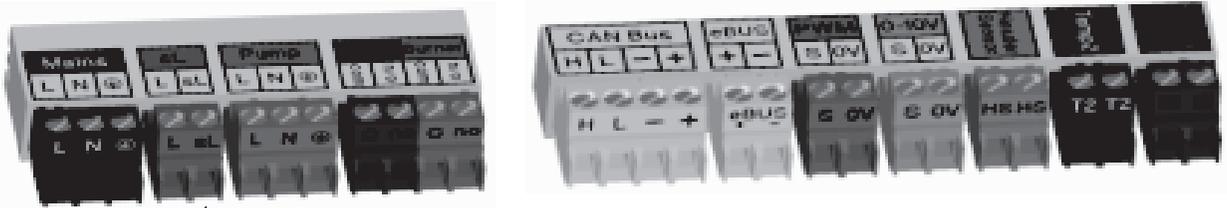


# FAULT FINDING

## 80 NO HEAT



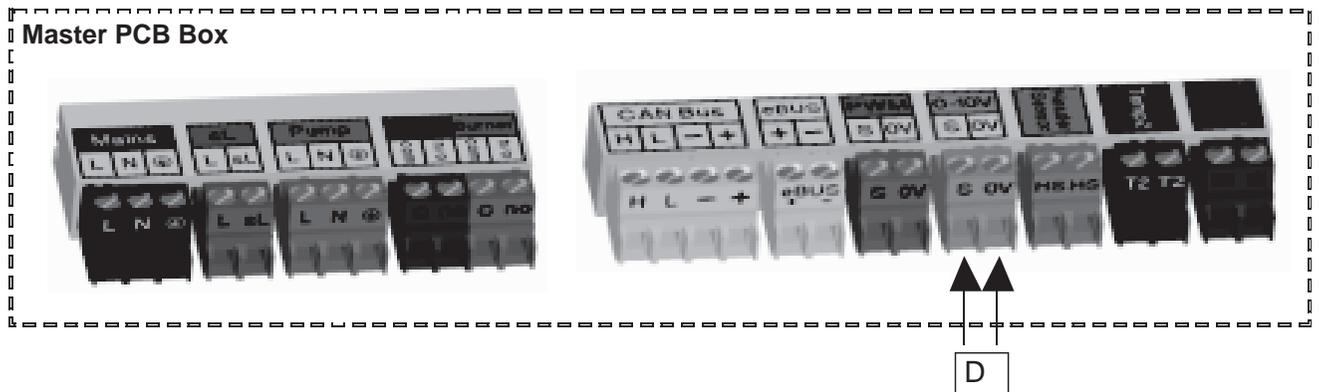
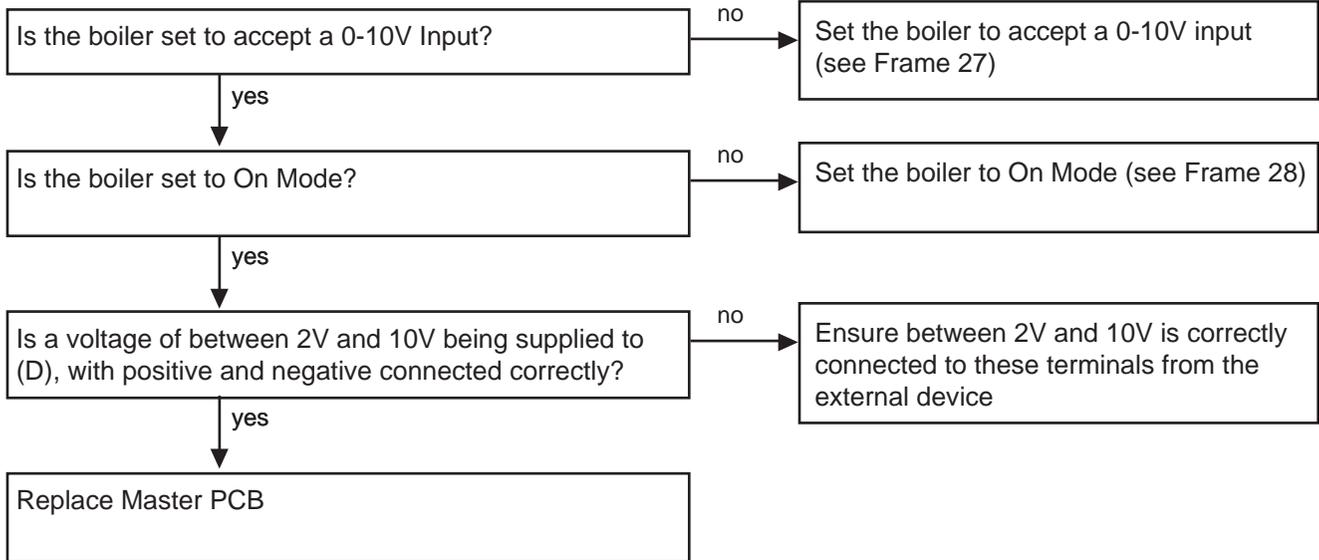
Master PCB Box



A



82 0-10V INTERFACE



83 TECHNICAL CHARACTERISTICS - TEMPERATURE SENSORS

The table below gives the relationship between temperature and resistance for the following sensors; flow thermistor, return thermistor, header thermistor.

| Temperature in °C | Resistance in ohm | Temperature in °C | Resistance in ohm |
|-------------------|-------------------|-------------------|-------------------|
| 10                | 19,900            | 60                | 2490              |
| 20                | 12,490            | 70                | 1750              |
| 30                | 8,060             | 80                | 1250              |
| 40                | 5,330             | 90                | 910               |
| 50                | 3,600             | 100               | 680               |

## SPARE PARTS

When replacing any part on this appliance use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal. Failure to do so could affect safety or performance of this appliance.

Comprehensive spares parts information and details of approved Ideal Parts Distributors are available on [www.idealparts.com](http://www.idealparts.com)

**Our Parts team are also available to help with your Ideal Spare Parts enquiries on 01482 498665.**

When calling, and to ensure we can provide you with the most accurate parts information, please ensure you have the following to hand;

- Boiler Model
- Appliance GC Number
- Boiler Serial Number

## NOTES

**NOTES**

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### **Technical Training**

The Ideal Technical Training Centre offers a series of first class training courses for domestic, commercial and industrial heating installers, engineers and system specifiers.

For details of courses please ring:..... 01482 498432



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