



# INSTALLATION AND SERVICING

## EVOMAX

30 40 60 80 100 120 150  
30P 40P 60P 80P

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.



**ERP DATA**

	SYMBOL	UNITS	MODEL					
			30	30P	40	40P	60	60P
Condensing Boiler	n/a	n/a	yes	yes	yes	yes	yes	yes
Low Temperature Boiler	n/a	n/a	no	no	no	no	no	no
B1 Boiler	n/a	n/a	no	no	no	no	no	no
Cogeneration Space Heater	n/a	n/a	no	no	no	no	no	no
Equipped with a Supplementary Heater	n/a	n/a	no	no	no	no	no	no
Combination Heater	n/a	n/a	no	no	no	no	no	no
<b>Nominal Heat Output for Space Heating</b>								
Full Load	P <sub>4</sub>	kW	30	30	40	40	60	60
Part Load	P <sub>1</sub>	kW	9.7	9.7	13	13	19.5	19.5
<b>Auxiliary Electricity Consumption</b>								
Full Load	e <sub>lmax</sub>	kW	0.134	0.134	0.135	0.135	0.092	0.092
Part Load	e <sub>lmin</sub>	kW	0.03	0.03	0.03	0.03	0.026	0.026
Standby	P <sub>SB</sub>	kW	0.006	0.006	0.006	0.006	0.006	0.006
<b>Seasonal Space Heating Energy Efficiency</b>								
Full Load	η <sub>4</sub>	%	89.6	91.6	89.6	91.5	89.7	91.7
Part Load	η <sub>1</sub>	%	98.4	99.6	97.8	99.5	97.9	99.7
Standby Loss	P <sub>stby</sub>	kW	0.08	0.08	0.08	0.08	0.11	0.11
Ignition	P <sub>ign</sub>	kW	0	0	0	0	0	0
<b>Emissions</b>								
Emissions	NO <sub>x</sub>	mg/kWh	28	71	35	72	28	73
Annual Energy Consumption	Q <sub>HE</sub>	GJ	93.0	91.9	123.9	122.6	185.8	181.9
Sound Power Level, Indoors	L <sub>WA</sub>	dB	53	53	53	53	52	52

# PRODUCT FICHE

## EVOMAX HEAT BOILER

Ideal Boilers

### ERP DATA

	SYMBOL	UNITS	MODEL					
			30	30P	40	40P	60	60P
Condensing boiler			Yes					
Seasonal Space heating efficiency class			A					
Rated heat output		kW	30	30	40	40	60	60
Seasonal space heating energy efficiency	$\eta_s$	%	93*	93*	93*	93*	93*	93*
Annual energy consumption	$Q_{HE}$	GJ	92.9	91.9	123.9	122.6	185.8	181.9
Sound power level, indoors	$L_{WA}$	dB	53	53	53	53	52	52

<b>Seasonal Space Heating Energy Efficiency of the Boiler</b>								*%	A
<b>Temperature control (from fiche of temperature control)</b>								%	
<i>Class I</i>	<i>Class II</i>	<i>Class III</i>	<i>Class IV</i>	<i>Class V</i>	<i>Class VI</i>	<i>Class VII</i>	<i>Class VIII</i>	B	
1%	2%	1.5%	2%	3%	4%	3.5%	5%		

### Solar Contribution (from fiche of solar device)

Collector Size (in m <sup>2</sup> )	Tank Volume (in m <sup>3</sup> )	Collector Efficiency (in %)	Tank rating A* = 0.95 A = 0.91 B = 0.86 C = 0.83 D-G = 0.81	
= ('III' x <input style="width: 50px;" type="text"/> + 'IV' x <input style="width: 50px;" type="text"/> ) x 0.9 x ( <input style="width: 50px;" type="text"/> / 100 x <input style="width: 50px;" type="text"/> =				% <b>C</b>

Seasonal Space Heating Energy Efficiency of Package

**TOTAL: A+B+C=**

%

### Seasonal Space Heating Energy Efficiency Class of Package

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A+</b>	<b>A++</b>	<b>A+++</b>
< 30%	≥ 30%	≥ 34%	≥ 36%	≥ 75%	≥ 82%	≥ 90%	≥ 98%	≥ 125%	≥ 150%

The energy efficiency of the package of products provided for in this document may not correspond to its actual energy efficiency once installed in a building, as the efficiency is influenced by further factors such as heat loss in the products in relation to the building size and its characteristics





# GENERAL

**Table 1 Performance Data (Natural Gas)**

Evomax Model			30	30P	40	40P	60	60P	80	80P	100	120	150
Boiler Output (non-condensing) Mean 70°C	Max	kW	30	30	40	40	60	60	80	80	100	120	150
	Min	kW	6	6	8	8	12	15	16	20	20	24	30
Boiler Output (condensing) Mean 40°C	Max	kW	31.54	30.9	42.0	41.2	63.5	62.1	84.4	82.6	103.9	124.7	158.0
	Min	kW	6.5	6.4	8.5	8.3	12.7	15.5	17.2	21.2	21.6	26.0	32.5
Boiler Input Max Rate	Nett	kW	30.4	30.4	40.5	40.5	60.8	60.7	82.0	81.9	102.4	122.9	153.7
	Gross	kW	33.7	33	44.9	44	67.4	66	90.9	88.9	113.6	136.4	170.5
Boiler Input Min Rate	Nett	kW	6.1	6.1	8.1	8.1	12.2	15.2	16.4	20.5	20.5	24.6	30.7
	Gross	kW	6.7	6.6	9.0	8.8	13.5	16.5	18.2	22.2	22.7	27.3	34.1
Gas Rate	Max Rate	m³/hr	3.2	1.26	4.3	1.69	6.4	2.53	8.7	3.41	10.8	13.0	16.2
Flue Gas Flow Rate	Max Rate	m³/hr	47.6	46.5	63.4	62.1	95.1	93.1	128.3	125.4	160.3	192.5	240.7
CO <sub>2</sub> (±0.5%) *	Max Rate	%	9.7	11.4	9.7	11.4	9.7	11.4	9.7	11.4	9.7	9.7	9.7
	Min Rate	%	8.7	10.2	8.7	10.2	8.7	10.5	8.7	10.5	8.7	8.7	8.7
NO <sub>x</sub>	weighted	mg/kWh	31.0	79	39.1	80	32.3	83.8	39.8	68	39.6	38.8	38.1
Efficiency	Seasonal	%	96.7	97.2	96.2	96.7	96.4	96.9	97.2	97.7	96.7	96.6	96.7
	*SEDBUK 2009	%	89.6	90.6	89.3	90.3	89.4	90.5	n/a	n/a	n/a	n/a	n/a

\*CO<sub>2</sub> measurements taken using controlled reference natural gas. Readings on mains gas quality may vary

**Table 2 General Data**

Evomax Model		30	30P	40	40P	60	60P	80	80P	100	120	150
Gas Supply		2H – G20 – 20mbar / 3P - G31 - 37mbar										
Gas Supply Connection		G 3/4										
Flow Connection		G1 1/4										
Return Connection		G1 1/4										
Max Pressure (sealed sys)	Bar (psi)	6.0 (87)										
Maximum Static Head	m	61.0										
Electricity Supply		230V - 50Hz										
Fuse Rating	A	4.0										
Power Consumption	W	126		207		131		265		370	403	400
IP Rating		IP20										
Nominal flue dia - Concent.		80/125									100/150	
Condensate Drain		25										
Water Content	L			3.0				5.0		7.0		9.2
Dry Weight	Kg			49				60.30		75.70		89.75

\* The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy ratings of dwellings. The test data from which it has been calculated have been certified by a notified body.

**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.

- For l/s divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m<sup>3</sup>)
- For ft/h<sup>3</sup> divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft<sup>3</sup>).
- For m<sup>3</sup>/h multiply l/s by 3.6.
- 1kW = 3412 BTU/hr.
- 1m<sup>3</sup> = 35.3ft<sup>3</sup>
- 1mg/kWh (NO<sub>x</sub>) = 0.568 ppm DAF (natural gas).

Propane gas consumption is calculated using a calorific value of 95.7 MJ/m<sup>3</sup> (2500 Btu/ft.<sup>3</sup>) gross or 88.0 MJ/m<sup>3</sup> (2300 Btu/ft.<sup>3</sup>) net at 15°C and 1013.25 mbar.

To obtain the fuel consumption in liquid form divide the above figures by 270.

**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.

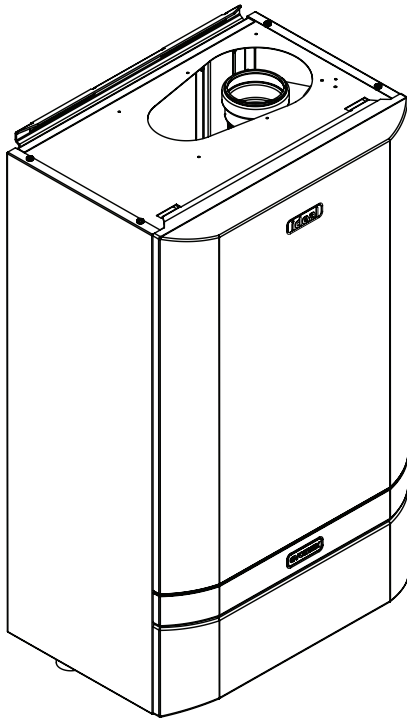
# GENERAL

## EVOMAX

**30, 40, 60, 80, 100, 120, & 150  
30P, 40P, 60P & 80P**

Natural Gas & LPG  
Destination Countries: GB, IE

Boiler size	G.C. Appliance No. (Benchmark No.)
30	41-750-33A
40	41-750-34A
60	41-750-35A
80	41-750-36A
100	41-750-37A
120	41-750-38A
150	41-750-39A
30P	41-750-40
40P	41-750-41
60P	41-750-42
80P	41-750-43



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### Key to symbols

- IE = Ireland, GB = United Kingdom (Countries of destination)
- PMS = Maximum operating pressure of water
- C13 C33 = A room sealed appliance designed for connection via ducts to a horizontal or vertical terminal, which admits fresh air to the burner and discharges the products of combustion to the outside through orifices which, in this case, are concentric. The fan is up stream of the combustion chamber. **Note: Evomax Room Sealed Flues must be used.**
- 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: Evomax Air Inlet Kit must be used.**
- I12H3P = An appliance designed for use on 2nd and 3rd Family gases.

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

## INTRODUCTION

The EVOMAX boilers are fully automatically controlled, wall mounted, fanned, super efficient condensing appliances.

The EVOMAX condensing boilers can be installed either on the wall or into a prefabricated floor mounted frame.

The boilers are suitable for use with a room sealed flue or open flue application.

Through a sophisticated control system combined with premix burner arrangement the boilers are capable of high seasonal efficiencies of >96% and low emissions.

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

**Note.** *These boilers cannot be used on systems that include gravity circulation.*

The boiler are suitable for connection to fully pumped, open vented or sealed water systems. Adequate arrangements for completely draining the system by provision of drain cocks MUST be provided in the installation pipework.

## OPTIONAL EXTRA KITS

- External Vertical Terminal Extension Kit 80/125
- External Vertical Terminal Extension Kit 100/150
- Vertical Roof Flue Kit 80/125
- Vertical Roof Flue Kit 100/150
- Horizontal Wall Flue Kit 80/125
- Horizontal Wall Flue Kit 100/150
- Open Flue Kit 80
- Open Flue Kit 100
- Cascade Flue Kit
- Pitched and Flat Roof Tiles
- Frame and Header Kits
- Pump Kits
- Programmable Room Thermostat Kit
- Modulating Sequencer Kit
- Sequencer 6 Zone Expansion Kit
- Outside Sensor Kit
- Tank Sensor Kit
- Room Sensor Kit
- Safety Interlock Kit
- Plume Kit
- Propane to Natural Gas Conversion Kit

Please note propane variants of the Evomax are Cat II<sub>2HSP</sub> (20/37) and may be converted to natural gas operation only using the approved conversion kit supplied by Ideal.

Natural gas variants of the Evomax are Cat I<sub>2H</sub> and cannot be converted to propane operation.

## 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.813 "Domestic Gas Installations" or I.S. 820 "Non-Domestic Gas Installations" as appropriate, the current Building Regulations and reference should be made to the current ETCI rules for electrical installation.

The Evomax boilers have been tested and certified to;

EN 483, EN 677, PREN 15420, BSEN 15417, BSEN 656, BSEN 60335-2-102, BSEN 55014-1 and BSEN 55014-2 for use with Natural Gas & LPG.

Detailed recommendations are contained in the following Codes of Practice:

BS. 6891	Installation of low pressure gas pipework of up to 28mm (R1) in domestic premises (2nd family gas).
BS. 5482 Pt. 1	Domestic butane and propane gas burning installations.
BS. 5440	Inst. and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases).
	Part 1 Specification for installation of flues.
	Part 2 Specification for installation and maintenance of ventilation for gas appliances.
BS. 6644 : 2005	Installation of gas fired hot water boilers of rated inputs between 70kW and 1.8MW (net) (2nd and 3rd family gases).
BS. 6798	Installation and maintenance of gas fired hot water boilers of rated input not exceeding 70kW net.
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.
BSEN.12828:2003	Heating Systems in buildings: Design for water based systems.
BSEN.12831:2003	Heating Systems in buildings: Method for calculation of the design heat load.
BSEN.13831	Specification for: Expansion vessels using an internal diaphragm, for sealed hot water heating systems.
BSEN.14336:2004	Heating Systems in buildings: Installation and commissioning of water based heating systems.
IGEM/UP/1	Soundness testing and purging of industrial and commercial gas installation.
IGEM/UP/2	Gas installation pipework, boosters and compressors on industrial and commercial premises.
IGEM/UP/10	Installation of gas appliances in industrial and commercial premises.

Where reference is made throughout these instructions I.S.813:2002 "Domestic Gas Installations" reference should also be made to I.S.820:2000 "Non-Domestic Gas Installations" as applicable.

## SAFE HANDLING

This boiler may require 2 or more operatives to move it to its installation site, remove it from its packaging base and during movement into its installation location. Manoeuvring the boiler may include the use of a sack 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:



# GENERAL

- 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.

## LOCATION OF BOILER

The boiler must be installed on a flat and vertical wall, capable of adequately supporting the weight of the boiler and any ancillary equipment or on a boiler frame supplied in kit form by **Ideal Boilers**.

**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 an RGI engineer.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the rate of gas supply required. A minimum working gas pressure of 17.5mbar MUST be available at the boiler inlet for Natural gas and 37mbar for Propane.

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 listed on page 8.

## FLUE INSTALLATION



**DANGER; ONLY USE IDEAL ROOM SEALED FLUE GAS SYSTEMS. THE BOILER CE MARK IS VALID ONLY IF THE APPLIANCE IS OPERATED WITH IDEAL ROOM SEALED FLUE KITS. OTHER FLUE SYSTEMS ARE NOT TESTED WITH THIS APPLIANCE.**



**DANGER; ONLY USE OPEN FLUE GAS SYSTEMS WHERE THE EVOMAX AIR INLET KIT IS USED. THE BOILER CE MARK IS VALID ONLY IF THE APPLIANCE IS OPERATED WITH THE IDEAL AIR INLET KIT.**

The flue kits are suitable for use with the EVOMAX boiler only.

These kits and the associated options are suitable for both roof and wall mounting applications. The Horizontal Wall Flue Kit is not for use with Evomax 150 boilers in compliance with the requirements of the Clean Air Act Memorandum.

The roof flue kits are suitable for both flat and pitched roof termination, using either concentric or flue only terminals.

Connection to the top of the boiler is made using a separately supplied vertical connector in concentric and open flue configurations (supplied in our optional extra kits).

Additional information covering the selection and installation can be found with this booklet.

### Weather Proofing

Where the flue passes through the roof line an adequate seal must be made. This can be achieved by using either:

- Flat weather collar
- Pitched weather collar

Flue duct extension kits are available for concentric flue configuration. These packs contain additional 1 metre ducts and may be cut to the desired length.

Flue duct extension kits are available for open flue configurations. These packs contain 2 x 1 metre ducts and may be cut to the desired length.

If obstructions prevent direct flue routing then both 90° and 45° elbows can be provided to offset the flue system.

### Terminal Position

Due to the high efficiency of the boilers pluming will occur. For this reason, vertical termination is recommended, and in any case, terminal positions which could cause problems should where possible be avoided. Particular care should be taken in the case of large multiple boiler installations, and complying with the requirements of the Clean Air Act.

### 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 turned OFF, labelled as 'unsafe' and corrective action taken.

Where the lowest part of the terminal is fitted less than 2m (80") above a balcony, above ground or above a flat roof to which people have access then the terminal MUST be protected by a purpose designed guard. The minimum spacing between the balcony and the terminal should be 75mm, in order to allow a terminal guard to be fitted.

Terminal guards are available from boiler suppliers - for all requirements contact:

Grasslin (UK) Ltd., Tower House, Vale Rise,  
Tonbridge, Kent TN9 1TB.

Tel: +44 (0) 1732 359 888. Fax: +44 (0) 1732 354 445  
[www.tfc-group.co.uk](http://www.tfc-group.co.uk)

Ensure that the guard is fitted centrally.

The air inlet/products outlet duct and the terminal of the boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440-1: 2008. In IE refer to I.S.813:2002.

The flue must be installed in accordance with Building Regulations and the recommendations of BS. 5440-1:2008 for inputs up to 70kW nett. For larger installation BS. 6644 should be complied with. In IE refer to I.S.820:2000.

## WATER CIRCULATION SYSTEM

The system 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.

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 8.

Due to the compact nature of the boiler the heat stored within the castings 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 4 minute pump overrun facility. In order to make use of this, the pump must be supplied from the terminals inside the boiler. Note: for pumps requiring a current greater than 1.3 amps inductive, they must be connected via a relay.

When sizing pumps, reference should be made to the table below which show the boiler resistance against flow rates, to achieve the required temperature differential.

Flow rates for common systems using either 11°C, 15°C or 20°C temperature differentials and hydraulic resistances are given in the table below.

	Flowrate (l/min)			Hydraulic Resistance (mbar)		
	11°C	15°C	20°C	11°C	15°C	20°C
Evomax 30/30P	39.1	28.7	21.5	425	225	127
Evomax 40/40P	52.1	38.2	28.7	875	405	225
Evomax 60/60P	78.2	57.3	43.0	435	180	83
Evomax 80/80P	104.2	76.4	57.3	750	420	180
Evomax 100	*	95.6	71.7	*	315	134
Evomax 120	*	*	86.0	*	*	218
Evomax 150	*	*	107.5	*	*	230

\* Not recommended due to excessive flowrates which may cause erosion of the casting.

### Note.

- *With the boiler firing at maximum rate, the temperature differential should not be less than figures quoted in table above. High flow rates required for lower temperature differentials could lead to erosion of the heat exchanger water ways.*
- *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 lock out of the boiler.*
- *The lower the return temperature to the boiler, the higher the efficiency.*

In installations where all radiators have been provided with thermostatic radiator valves, it is essential that water circulation through the boiler is guaranteed. 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 use a minimum size of 28mm pipe. The bypass 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 an ALUMINIUM 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.

If water treatment is used **Ideal Boilers** recommend only the use of SCALEMASTER SM-1 PRO, FERNOX, MBI, ADEY MC1, SENTINEL X100 or CALMAG CM100 inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

In hard water areas where mains water can exceed 200ppm Total Hardness (as defined by BS 7593:2006 Table 2) a scale reducing device should be fitted into the boiler cold supply within the requirements of the local water company. The use of artificially softened water, however, is not permitted.

**Ideal Boilers** recommend the use of Fernox Quantomat, Sentinel Combiguard, Calmag CalPhos I scale reducing devices or Scalemaster In-line Scale Inhibitor branded Ideal, which must be used in accordance with the manufacturers' instructions.

### Notes.

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 lime scale may be necessary - however the use of artificially softened water is NOT permitted.*
4. *Under no circumstances should the boiler be fired before the system has been thoroughly flushed.*

For further information contact:

Fernox Alent Plc  
Forsyth Road, Sheerwater, Woking, Surrey GU21 5RZ  
+44 (0) 8706 015000

Sentinel Performance Solutions  
7560 Daresbury Park, Daresbury,  
Warrington, Cheshire WA4 4BS  
Tel: 0800 389 4670

Scalemaster Water Treatment Products  
Emerald Way, Stone, Staffordshire ST15 0SR  
Tel: +44 (0) 1785 811636

Calmag Ltd.  
Riverview Buildings, Bradford Road, Riddlesden, Keighley,  
West Yorkshire BD20 5JH  
Tel: +44 (0) 1535 210320

Adey Professional Heating Solutions  
Gloucester Road, Cheltenham GL51 8NR  
Tel: +44 (0) 1242 546700

## ELECTRICAL SUPPLY

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 connection to the mains should be readily accessible and adjacent to the boiler.

## CONDENSATE DRAIN

**Refer to Frames 22, 23 & 58**

A condensate drain is provided on the boiler. This drain 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.

Installation must be in accordance with BS 6798.

The drain outlet on the boiler is sized for standard 21.5mm (3/4") overflow pipe. It is a universal fitting to allow use of different brands of pipework.

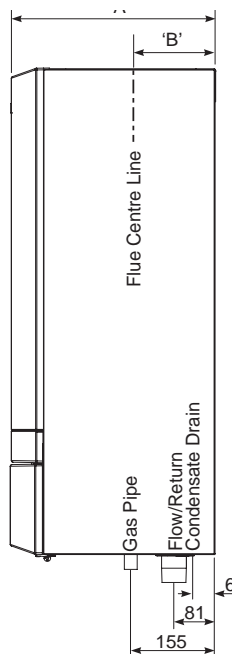
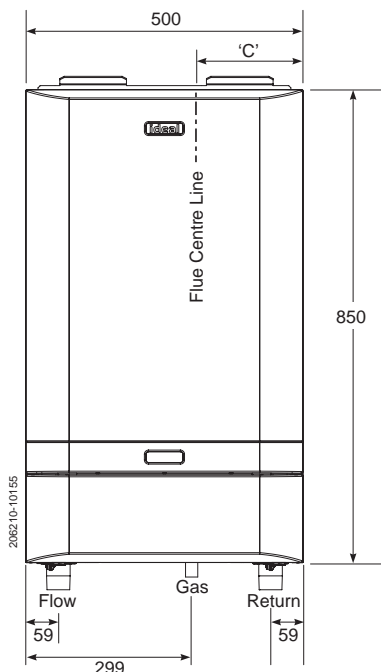
# GENERAL

## 1 BOILER CLEARANCES AND CONNECTIONS

The following minimum clearances must be maintained for operation and servicing.

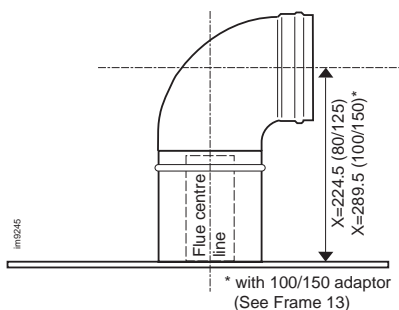
- Front of boiler - 450mm
- Sides of boiler - 25mm
- Above boiler - dependent upon the flue system see drawings
- Below boiler - 300mm
- Clearance between multiple boiler installations - 25mm

Boiler	Dim. A	Dim. B	Dim. C
30, 40, 60, 80	360	130	118
100, 120	520	226	118
150	610	233	120



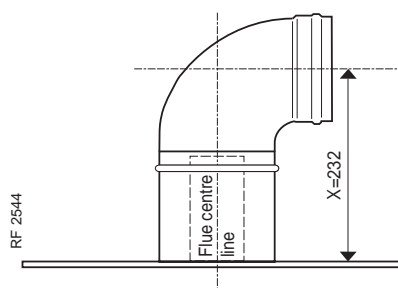
### 80/125 Concentric Flue Connector

EVOMAX 30, 40, 60 & 80  
 Minimum boiler top clearances:  
 for vertical flue 200mm  
 for horizontal flue 350mm (415mm for 100/150)  
 for open flue 350mm

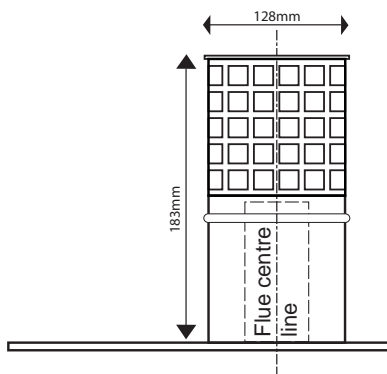


### 100/150 Concentric Flue Connector

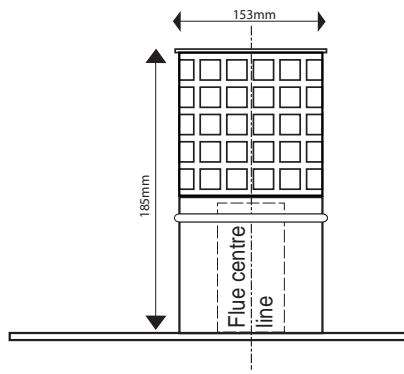
EVOMAX 100, 120 & 150  
 Minimum boiler top clearances:  
 for vertical flue 200mm  
 for horizontal flue 370mm  
 for open flue 350mm



### OPEN FLUE KIT 80



### OPEN FLUE KIT 100



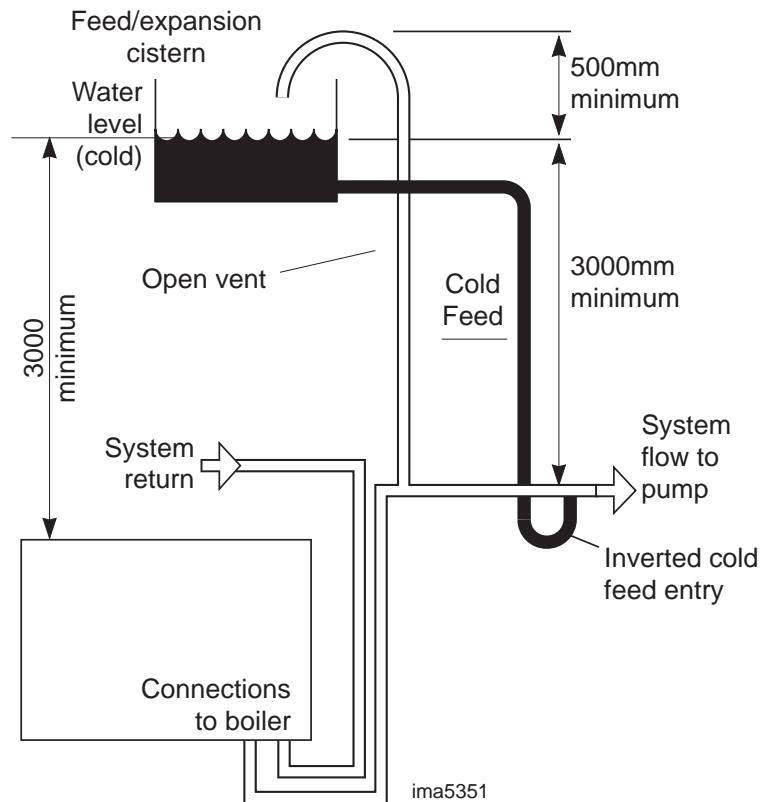
## 2 OPEN VENTED SYSTEM REQUIREMENTS

Detail reference should be made to the appropriate standards listed on page 8.

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 boiler is fitted with an automatic air vent, located in the left top side of the interior. This air vent must never be shut off, as this could result in dry firing of the boiler and subsequent damage to the heat exchanger.



## 3 SEALED SYSTEM REQUIREMENTS

**Note.** The method of filling, refilling, topping up or flushing sealed primary hot water circuit from the mains for a non-domestic property is shown below.

### 1. General

- a. Detail reference should be made to the appropriate standards listed on page 8. The information and guidance given below is not intended to override any requirements of these publications or the requirements of the local authority, gas or water undertakings.
- b. The installation should be capable of working with flow temperatures of up to 90°C and a temperature differential of up to 20°C.
- c. All components of the system, including the heat exchanger of the indirect cylinder, must be suitable for a working pressure of 6 bar (87lbf/in<sup>2</sup>) and temperature of 110°C. Care should be taken in making all connections so that the risk of leakage is minimised.
- d. The boiler is fitted with an automatic air vent, located in the left top side of the interior. This air vent must never be shut off, as this could result in dry firing of the boiler and subsequent damage to the heat exchanger.

### 2. Safety Valve

A spring loaded safety valve complying with the relevant requirements of BS. 6759 Pt. 1 must be fitted in the flow pipe as close to the boiler as possible and with no intervening valve or restriction. The valve should have the following features:

- a. A non-adjustable preset lift pressure not exceeding 6 bar (87lbf/in<sup>2</sup>).
- b. A manual testing device.
- c. Provision for connection of a discharge pipe. The valve or discharge pipe should be positioned so that the discharge of water or steam is visible, but will not cause hazard to user or plant.

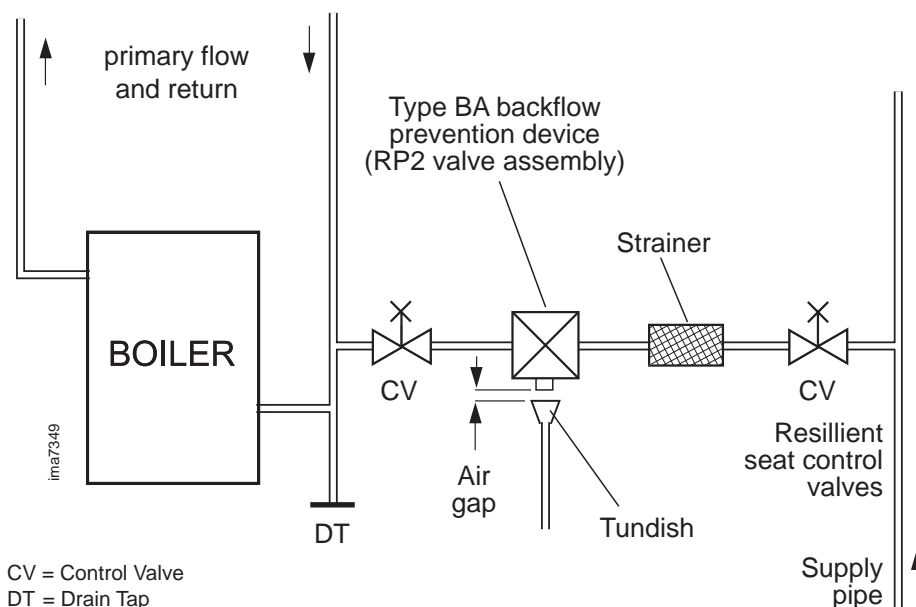
### 3. Pressure Gauge

A pressure gauge covering at least the range 0-6 bar must be fitted to the system. The gauge should be easily seen from the filling point and should preferably be connected at the same point as the expansion vessel.

**IMPORTANT NOTE:** If the boilers are installed on to an Ideal frame & header kit and operated in excess of 3 bar then all safety relief valves will require upgrading. The Evomax has a maximum operating pressure of 6 bar.

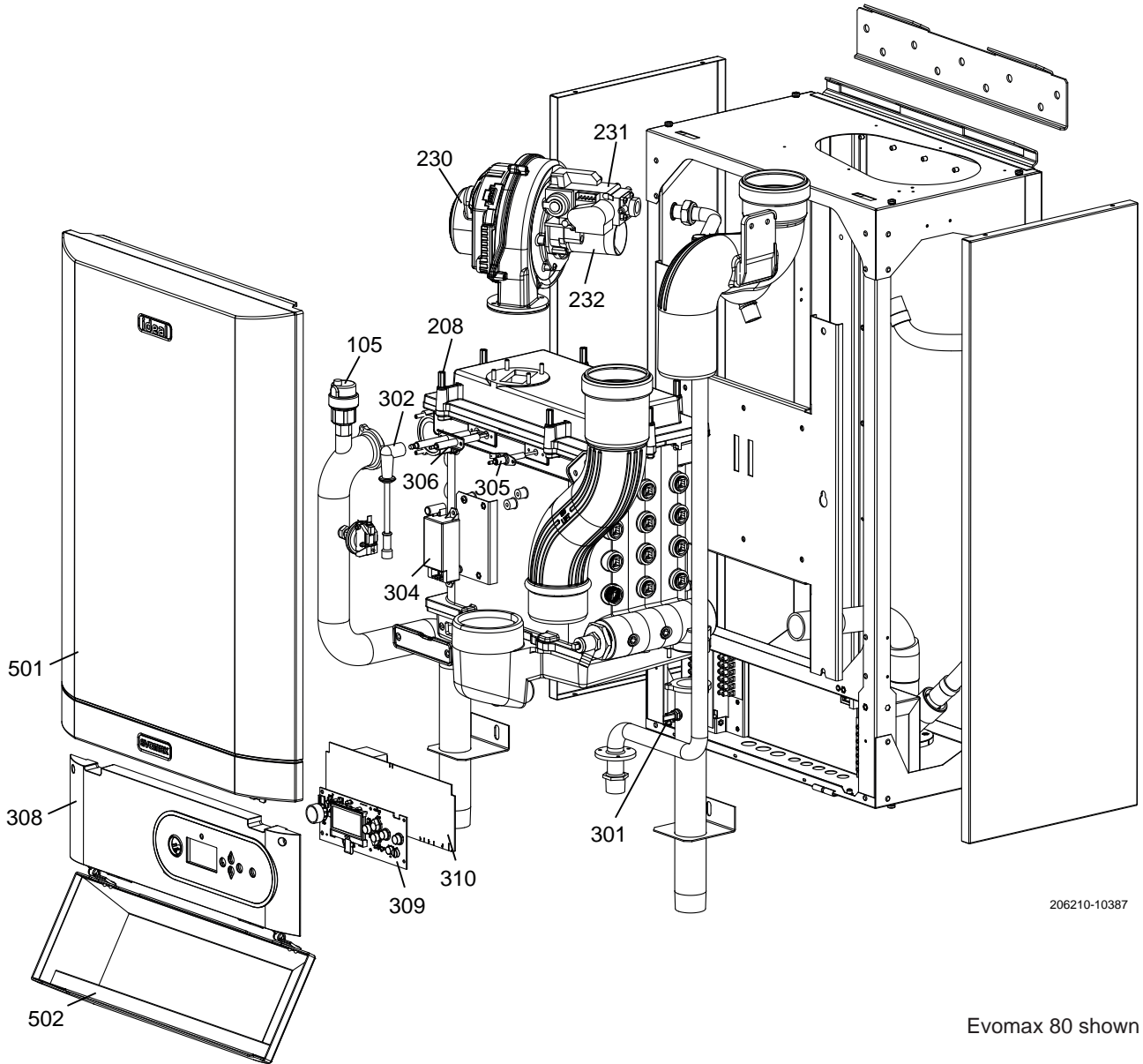
### 4. Expansion Vessel

Expansion vessels used must comply with BS. EN 13831. Connection to the system must not incorporate an isolating valve.



# INSTALLATION

## 4 BOILER ASSEMBLY - Exploded View



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Evomax 80 shown

**KEY**

- |     |                    |     |                         |     |                            |
|-----|--------------------|-----|-------------------------|-----|----------------------------|
| 105 | Auto Air Vent      | 301 | Dry Fire Thermistor Kit | 308 | Fascia Plastic             |
| 208 | Burner Fixings Kit | 302 | Lead Ignition Kit       | 309 | HMI Board                  |
| 230 | Fan                | 304 | Ignitor Unit            | 310 | Primary PCB                |
| 231 | Gas Valve Kit      | 305 | Electrode Detection Kit | 501 | Jacket Assembly Evomax Kit |
| 232 | Venturi 30kW Kit   | 306 | Ignition Electrode Kit  | 502 | Door Assembly Evomax Kit   |



# INSTALLATION

## 5 PACKAGING REMOVAL

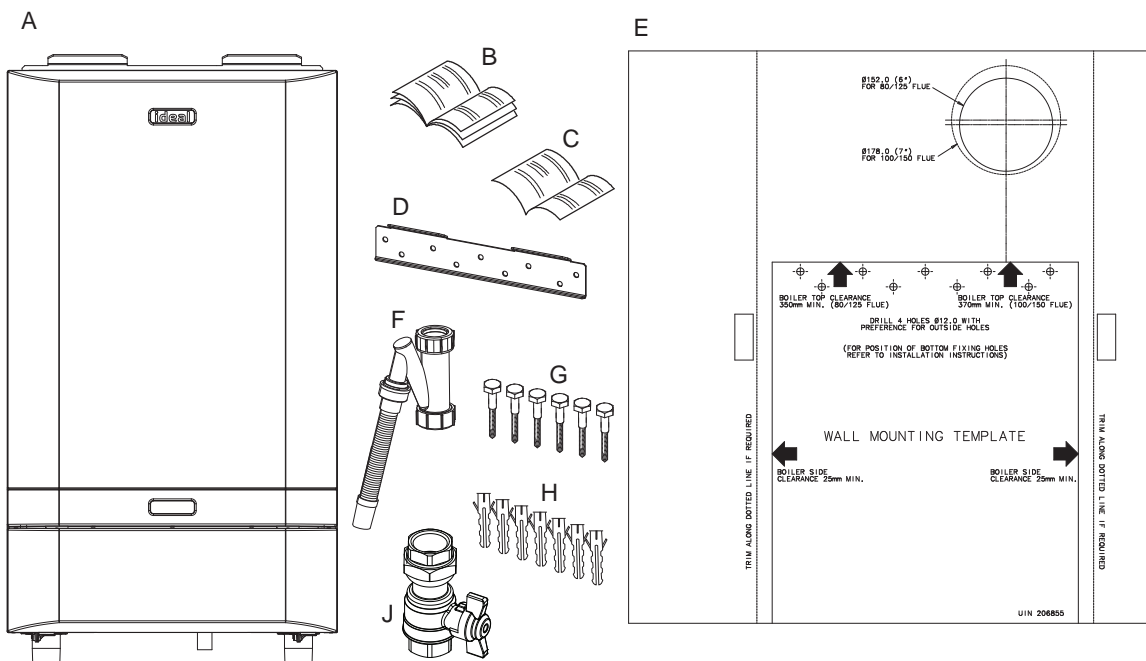
- The boiler should be laying on its back with the straps removed.
- Carefully read the installation instructions before proceeding.
- Remove the outer packing sleeve.
- Remove the protective cardboard wall mounting template from the front of the boiler.
- Remove the packing piece from the top of the boiler.
- Check the contents against the list in Frame 6 'Unpacking'. Note: some items are contained within the top packing piece.
- The boiler may now be stood on its base, with the cardboard bottom packing piece still in place to protect the connections. Due care should be taken when standing up the boilers, with respect to their weights, see Table 2 on page 6.

## 6 UNPACKING

The boiler is supplied fully assembled in one pack. When unpacking the boiler check the contents against the list shown. Do not dispose of the packaging until all contents are accounted for, as some parts are held within the cardboard packing pieces.

### Pack Contents

- A Fully assembled boiler
- B Installation & Servicing/User Instructions
- C Log Book
- D Wall mounting bracket
- E Wall mounting template
- F Condensate Trap
- G M10 x 70 Hex Head Coach Screws - 6 off
- H M10 Wall Plug - 6 off
- J Gas cock



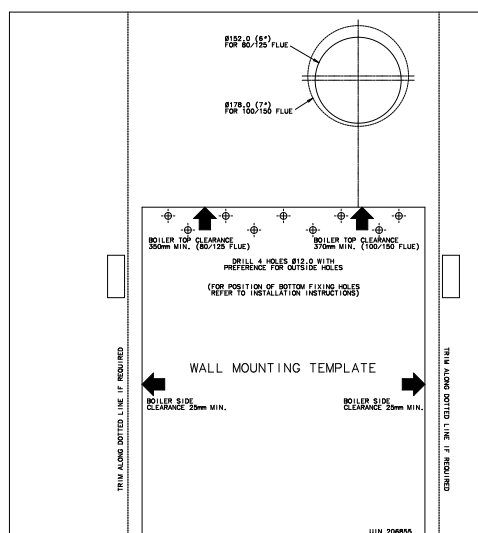


## 7 WALL MOUNTING TEMPLATE

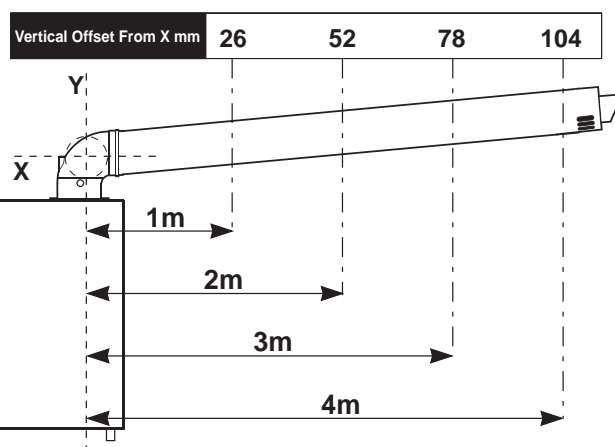
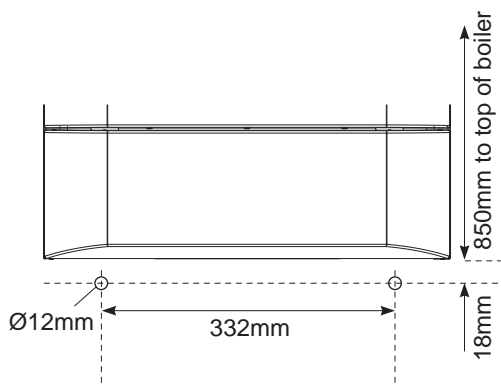
**Note.** The template shows the positions for the top fixing holes. Care must be taken to ensure the correct holes are drilled.

1. Tape template into the selected position.
2. Ensure squareness by hanging a plumbline.
3. Mark on to the wall:
  - a. The top 4 wall mounting plate screw positions.
  - b. The 2 boiler lower fixing positions using diagram below
  - c. The position of the flue duct. Mark the centre of the hole as well as the circumference.
4. Remove the template from the wall.

**Note:** Horizontal flue runs must be inclined at 1.5-3° to the horizontal to allow condensate to drain back to the boiler.



### BOILER LOWER FIXING POSITIONS

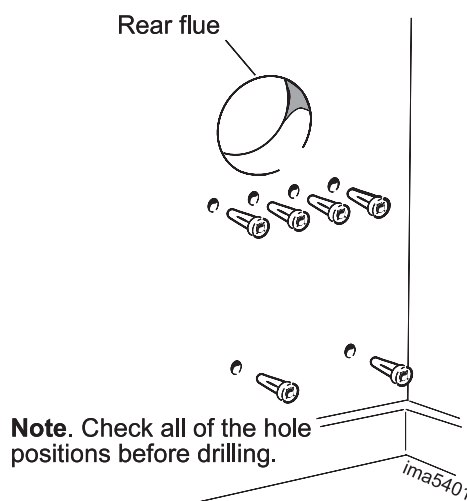


Distance from flue centre line (Y) to outside wall surface. For lengths greater than 4m, increase offset (X) by 26mm for every additional 1m.

## 8 PREPARING THE WALL

**IMPORTANT.** Ensure that, during the cutting operation, masonry falling outside of the building does not cause damage or personal injury.

1. Cut the flue hole ensuring that the hole is square to the wall. Both wall faces immediately around the cut hole should be flat.
2. Drill 4 boiler top fixing holes with a 12mm ( $\frac{1}{2}$ " ) masonry drill and insert the plastic plugs provided, for the wall mounting plate.
3. Drill the 2 boiler lower fixing holes with a 12mm ( $\frac{1}{2}$ " ) masonry drill, insert the plastic plugs provided .
4. Fix the wall bracket into place with 4 M10x70 hex head coach screws provided.

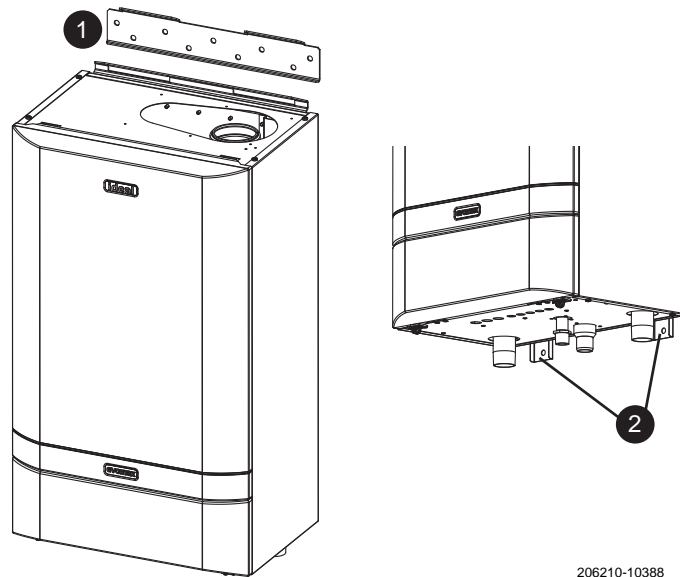


# INSTALLATION

## 9 MOUNTING THE BOILER

• Due care should be taken when lifting the boilers, with respect to their weights, see Table 2 on Page 6. Also refer to Safe Handling on Page 8.

1. Lift the boiler onto the wall mounting plate as shown.  
Note: It is not necessary to hold the boiler at an angle to engage the wall mounting plate.
2. Using the remaining coach screws, secure the bottom of the boiler to the wall through the attached brackets.



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## 10 VENTILATION

### NOT EXCEEDING 70kW

The ventilation requirements of these boilers is 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 obstruction by blocking or flooding.

#### EVOMAX 30/30P, 40/40P, 60/60P

Detail reference should be made to BS. 5440 Pt. 2. In IE refer to the current edition of I.S. 813.

The following notes are for general guidance only:

If installed as a room sealed appliance in a room or internal space, then no purpose provided ventilation is required.

If installed as an open flued appliance in a room or internal space then a permanent air vent is required. The sizes given below are for vents directly communicating with outside air. For other situations refer to BS. 5440 Pt. 2. In IE refer to the current edition of I.S. 813.

Boiler Size	30 & 30P	40 & 40P	60 & 60P
Minimum vent free area (cm <sup>2</sup> )	117	167	269

If installed in a compartment, then permanent air vents are required at high and low level. These vents may communicate direct to outside air, or to a room/internal space. If to a room/internal space, it must itself be adequately ventilated as above.

#### Evomax Ventilation Requirements (not exceeding 70kW net Input) when installed in a compartment

	Room Sealed Application - Min. Vent Free Area (cm <sup>2</sup> )						Open Flue Application - Min. Vent Free Area (cm <sup>2</sup> )					
	To a room or internal space			To outside Air			To a room or internal space			To Outside Air		
Boiler Size	30	40	60	30	40	60	30	40	60	30	40	60
High Level	310	410	610	155	205	305	310	410	610	155	205	305
Low level	310	410	610	155	205	305	620	820	1220	310	410	610

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

### 70kW AND OVER

#### Evomax 80, 80P, 100, 120, 150 and multiple boiler applications

Detail reference should be made to BS. 6644 and IGEM/UP/10 for inputs between 70kW and 1.8MW (net). In IE refer to the current edition of I.S.820. The following notes are for general guidance only:

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 and IGEM/UP/10. In IE refer to the current edition of I.S.820.

### EVOMAX 80, 80P, 100, 120 & 150

#### Open Flued Installations

##### 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) and IGEM/UP/10.

#### Room Sealed Installations

A minimum of 2cm<sup>2</sup> free area per kW of net heat input at both high and low level is required for boiler rooms. For enclosures refer to BS6644 and IGEM/UP/10.

# INSTALLATION

## 11 FLUE SYSTEMS

A comprehensive range of flue kits are available from **Ideal Boilers**. Examples of horizontal and vertical concentric and open flue options are demonstrated on the following pages. Tables are provided with these examples, giving the maximum extensions which may be added.

For horizontal flues: this is the distance from the flue outlet centre line on the boiler to the outside wall. Horizontal flues are **not available for Evomax 150**.

For vertical flue: this is the distance from the top of the boiler case to the aperture in the weather collar.

If elbows are to be used, then the equivalent length of that fitting (see page 22) must be subtracted from the maximum flue extensions allowed for that flue option.

**Note:** Horizontal terminal resistance includes 1 x 90° elbow. Worked examples are shown on page 22.

A multiple boiler flue header system is available 'Ideal Multiline'. This permits up to 6 Evomax boilers to be connected to a single flue header with a maximum total output of 600kW.

Other flue header systems should be designed and supplied by a specialist flue company. BS 6644 and IGE UP/10 provide guidance on design and the drainage of condensate from flue stack and headers. Condensate from a flue stack and header must be collected and drained before entering the boiler.

For room sealed flues Evomax concentric flues must be used.

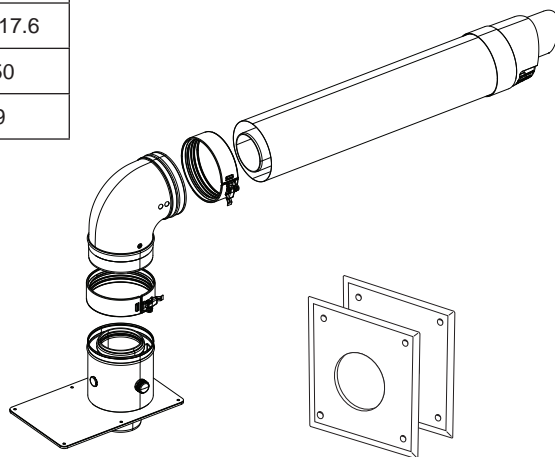
## 12 HORIZONTAL WALL FLUE KIT

Evomax horizontal concentric flue application ~ maximum lengths and pressure differentials						
Model	30/30P	40/40P	60/60P	80/80P	100	120
Max flue length (m)	42	42	7.5	12	14.3	17.6
Flue Size	80 / 125				100 / 150	
Wall flue kit No	213267				213269	

### Contents

- Boiler adapter + screws (x6)
- 90° elbow
- Terminal
- Locking collars (x2)
- Wall plates (x2)

**Note:** See Frame 18 for elbow equivalent lengths.



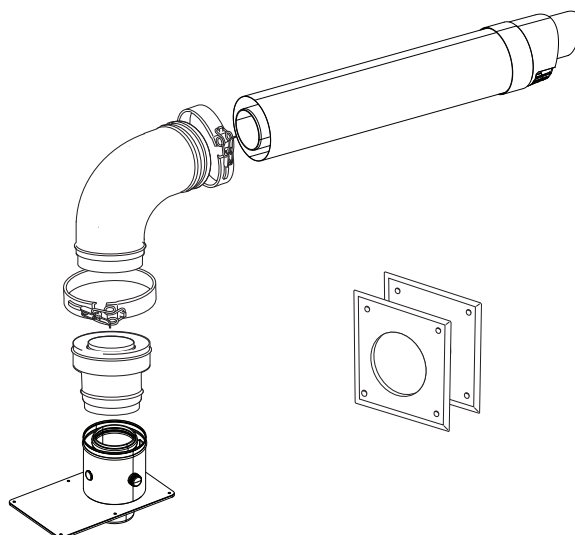
## 13 HORIZONTAL WALL FLUE KIT - For longer flue lengths for the Evomax 60 & 80

Evomax 60 & 80 horizontal concentric flues of longer length		
Model	60/60P	80/80P
Max flue length (m)	30	35
Flue Size	100 / 150	
Wall flue kit No	213268	

### Contents

- Boiler adapter + screws (x6)
- Increaser
- 90° elbow
- Terminal
- Locking collars (x2)
- Wall plates (x2)

**Note:** See Frame 18 for elbow equivalent lengths.



# INSTALLATION

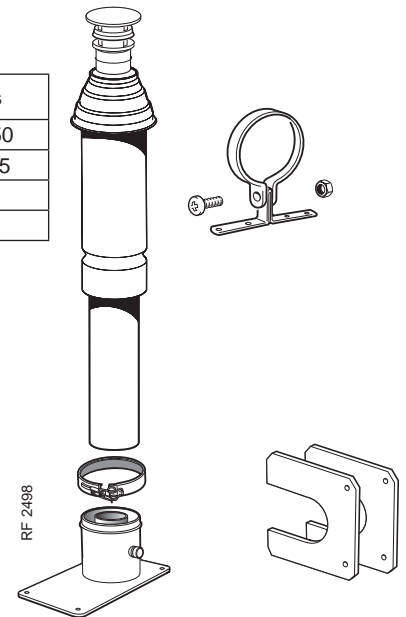
## 14 VERTICAL ROOF FLUE KIT

Evomax vertical concentric flue application ~ maximum lengths and pressure differentials							
Model	30/30P	40/40P	60/60P	80/80P	100	120	150
Max flue length (m)	42	42	7.5	12	14.3	17.6	7.5
Flue Size	80 / 125				100 / 150		
Vertical flue kit No	213264				213266		

### Contents

- Boiler adapter + screws (x6)
- Terminal
- Locking Collar
- Finishing plates (x2)
- Bracket

**Note:** See Frame 18 for elbow equivalent lengths.



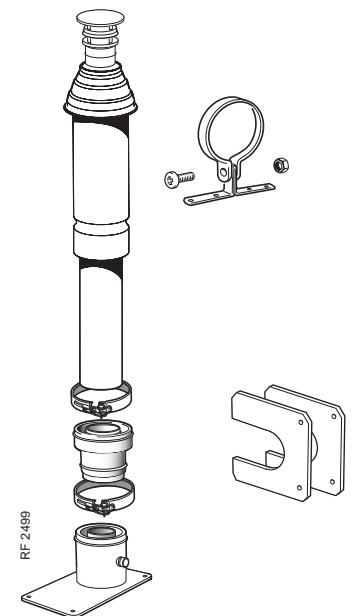
## 15 VERTICAL ROOF FLUE KIT -

Evomax 60 & 80 vertical concentric flues of longer length		
Model	60/60P	80/80P
Max flue length (m)	30	35
Flue Size	100 / 150	
Vertical flue kit No	213265	

### Contents

- Boiler adapter + screws (x6)
- Increaser
- Terminal
- Locking Collars (x2)
- Finishing plates (x2)
- Bracket

**Note:** See Frame 18 for elbow equivalent lengths.



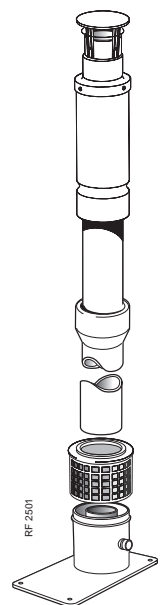
## 16 OPEN FLUE KITS

Evomax open flue application ~ maximum lengths and pressure differentials							
Model	30/30P	40/40P	60/60P	80/80P	100	120	150
Max flue length (m)	65	70	25	22	20	49	32
Max flue press diff (Pa)	140	225	150	312	220	365	430
Flue Size	80/125				100/150		
Open flue kit No	158662 + 158771 + 158769				158663 + 158772 + 158770		

### Contents

- 158662 / 158663
- Boiler adapter + screws (x6)
  - Air inlet grille
- 158771 / 158772
- Extension tube (x2)\*
- 158769 / 158770
- Terminal

**Note:** See Frame 18 for elbow equivalent lengths.

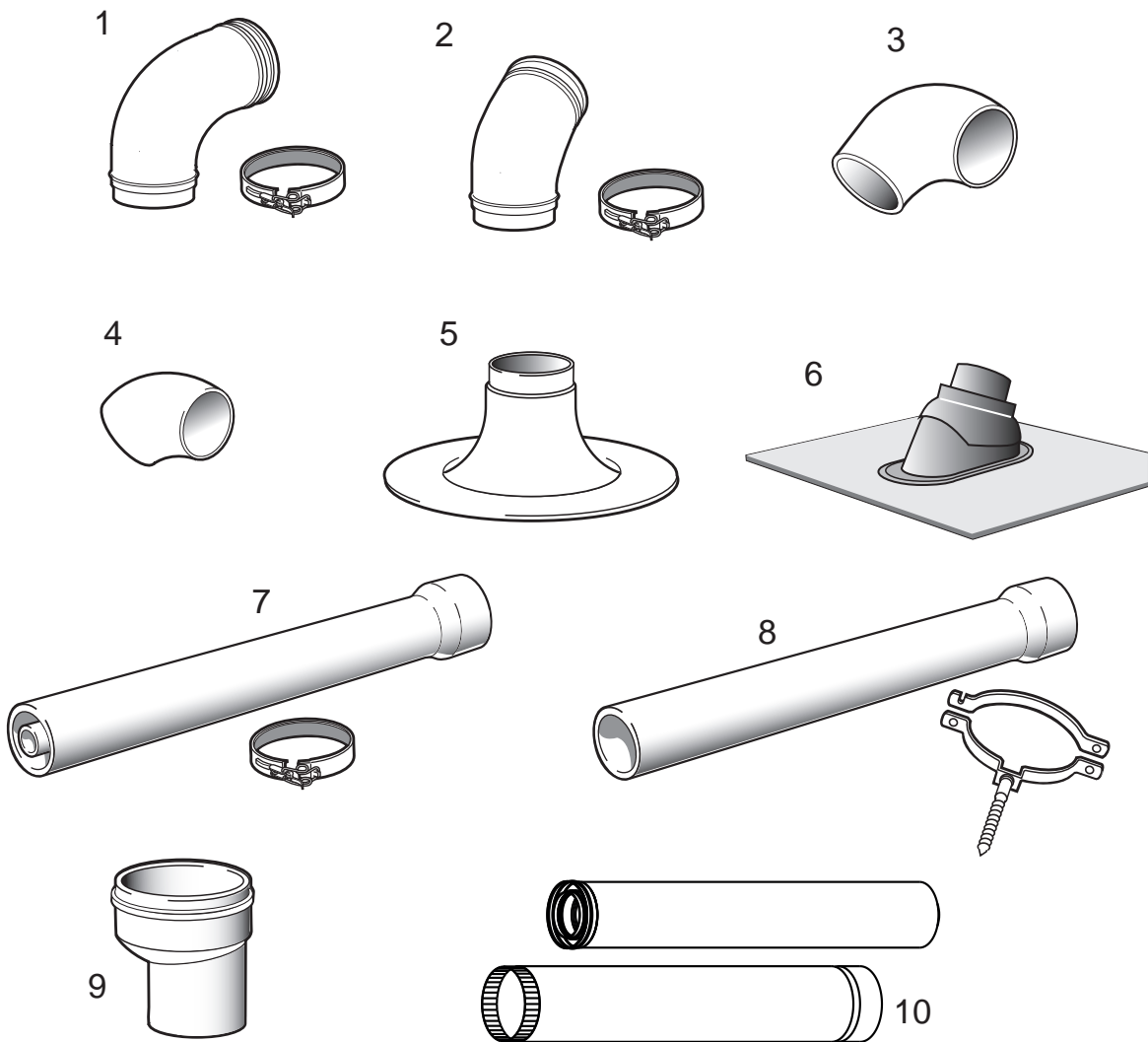


# INSTALLATION

## 17 FLUE KIT ACCESSORIES



Accessory		Part No.			
		80/125	100/150	80	100
1.	90° elbow (concentric)	213259	213263	n/a	n/a
2.	45° elbow (concentric)	213260	213258	n/a	n/a
3.	90° elbow	n/a	n/a	158773	158774
4.	45° elbow (pair)	n/a	n/a	158775	158776
5.	Flat Weather Collar	152611	152612	158780	158780
6.	Pitched Weather Collar	152609	152610	158779	158779
7.	1m Extension (concentric)	213261	213262	n/a	n/a
8.	1m Extension (pair)	n/a	n/a	158771	158772
9.	Increaser 80-100	n/a	n/a	152404	n/a
10.	Roof Terminal Extension	255429	255429	n/a	n/a



FLUE OUTLET

# INSTALLATION

## 18 PERMISSIBLE FLUE LENGTH

The maximum permissible flue lengths for each model is shown in Table X below, these lengths are inclusive of the terminal resistance.

The value shown is the max available length for extension.

The equivalent length of elbows is shown in Table xx

<b>Table X</b>				
<b>Max Permissible Equivalent Flue Length (inc terminal resistance) meters</b>				
Flue Size	Concentric		Open Flue	
	80/125	100/150	80	100
Model				
30/30P	42	-	65	-
40/40P	42	-	70	-
60/60P	7.5	30	25	-
80/80P	12	35	22	-
100	-	14.3	-	20
120	-	17.6	-	49
150	-	7.5	-	32

<b>Table xx</b>				
<b>Equivalent Length of Elbows (meters)</b>				
Size	Concentric		Open Flue	
	80/125	100/150	80	100
45°	0.85	1.25	0.45	0.60
90°	1.6	1.9	1.0	1.0

<b>19 Examples of Flue Length Calculation</b>							
Example		Max Permissible Equivalent Length (Table X)	Elbows				Max permissible Straight Length
Model	Flue Type		Type	Equivalent Length (Table XX)	No	Total Equivalent Length	
60	80/125	7.5	90	1.6	2	3.2	4.3
60	100/150	30	90	1.9	2	3.8	26.2
80	80/125	12	90	1.6	3	4.8	7.2
120	100/150	17.6	90	1.9	4	7.6	10.0

# INSTALLATION

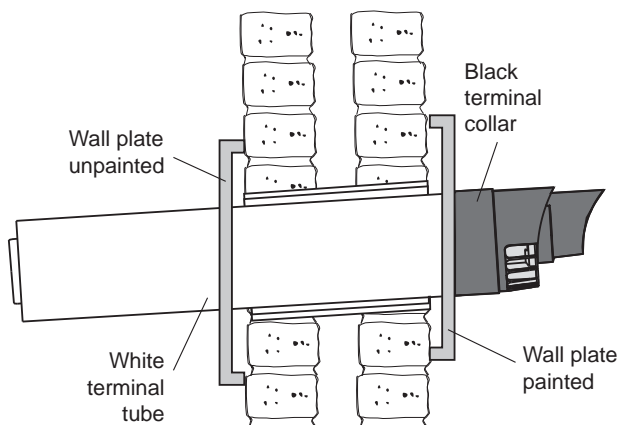
## 19 ASSEMBLING THE FLUE

Flue terminals or extension ducts may be cut to shorter lengths if required. When cutting a duct ensure it is square by marking the length all the way around and only cut back the plain end. When cutting concentric duct it is important that the inner duct is maintained at 20mm longer than the outer duct to allow correct connection of the ducts. Care should be taken to support the inner duct when cutting the flue.

**Note.** Horizontal flue runs must be angled down between 1.5° - 3° towards the boiler to allow the condensate to drain. For this reason it is recommended that a support bracket is used for every 1m of extension pipe.

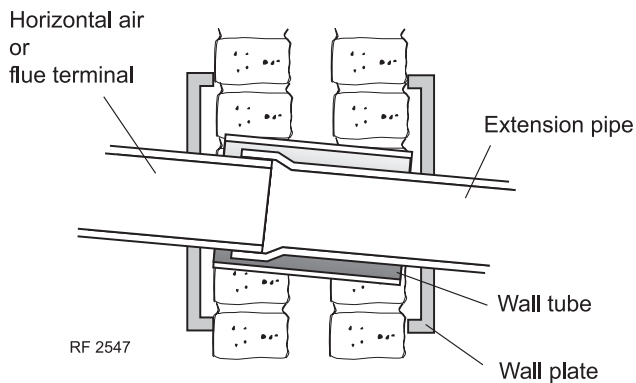
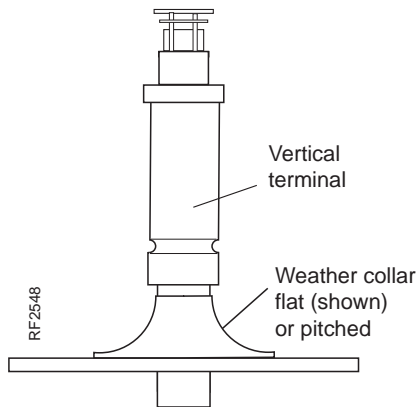
Care must be taken when assembling flues, not to damage the seals.

See below for flue assembly examples.



Cut the white terminal tube to the correct length and ensure the painted wall plate is pushed hard up to the black terminal collar when fitted.

**Important.** There should be NO white terminal tube visible when viewed from the outside.



FLUE OUTLET

# INSTALLATION

## 20 FLUE TERMINATION POSITION

Due to the high efficiency of these boilers pluming will occur. For this reason vertical termination is recommended, and in any case, terminal positions which could cause problems should where possible be avoided.

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

The information below is extracted from BS. 5440 Pt. 1 and is for boilers with heat inputs not exceeding 70kW nett, and the latest Building Regulation Part J. Detailed reference should still be made to these standards. In IE refer to I.S. 813:2002.

Concentric Wall Terminal Positions	Minimum spacing	
A. Below an opening (1)	300 mm	12"
B. Above an opening (1)	300 mm	12"
C. Horizontally to an opening (1)	300 mm	12"
D. Below gutters, soil pipes or drain pipes	75 mm	3"
E. Below eaves	200 mm	8"
F. Below balcony or car port roof	200 mm	8"
G. From a vertical drain pipe or soil pipe	150 mm	6"
H. From an internal or external corner or to a boundary alongside the terminal	300 mm	12"
I. Above ground, roof or balcony level	300 mm	12"
J. From a surface or a boundary facing the terminal	600 mm	24"
K. From a terminal facing the terminal	1200 mm	48"
L. From an opening in the car port into the building	1200 mm	48"
M. Vertically from a terminal on the same wall	1500 mm	60"
N. Horizontally from a terminal on the same wall	300 mm	12"
Concentric Roof Terminal Positions		
Directly below an opening, air brick, windows, etc.	300 mm	12"
Below plastic/painted gutters	500 mm*	20"
Below painted surface	500 mm*	20"
Below eaves or balcony	500 mm	20"
From wall	1000 mm	40"
Below velux window	2000 mm	80"
Above or side of velux window	600 mm	24"

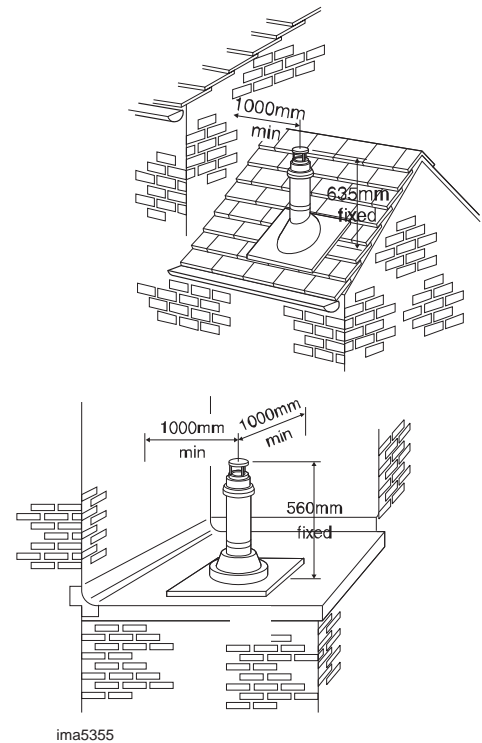
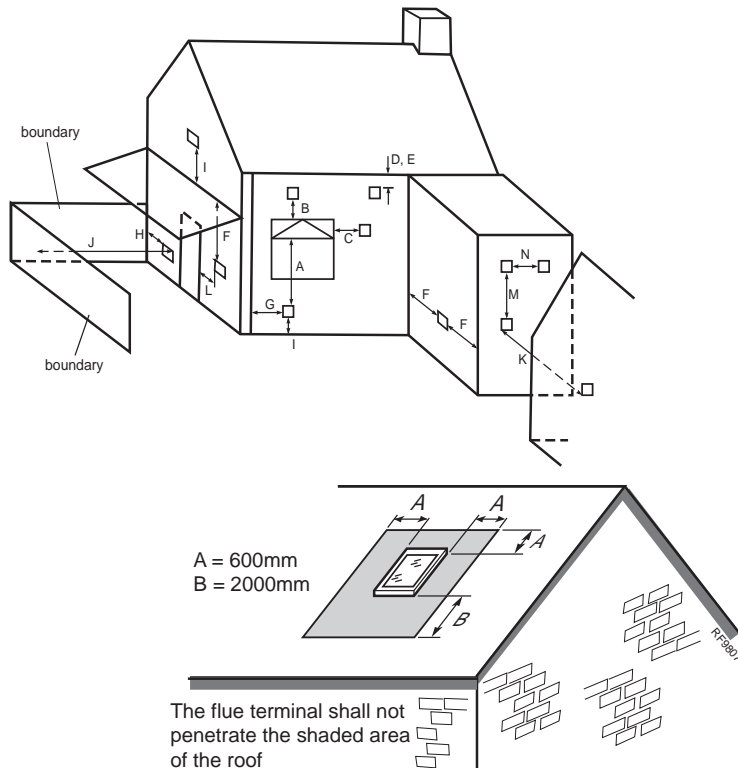
\* may be reduced to 300mm if a shield fitted

EVOMAX-10154

(1) An opening here means an openable element, such as an openable window, or a fixed opening such as an air vent. However, in addition, the outlet should not be nearer than 150mm (fanned draught) to an opening into the building fabric formed for the purpose of accommodating a built in element, such as a window frame.

If the terminal is fitted less than 500 mm below plastic gutters, painted eaves or any other painted surface then an aluminium shield at least 1m long should be fitted to protect the surface.

For positioning of open flue terminals reference should be made to BS. 5440 Pt. 1. In IE refer to I.S.813.2002.



ima5355

### HEAT INPUTS IN EXCESS OF 70kW NETT

For boiler installations with total heat inputs in excess of 70kW nett, reference should be made to BS6644 and IGEM/UP/10. In IE refer to I.S.820.2000.



# INSTALLATION

## 21 BOILER FRAME AND HEADER KITS

Heat output to a maximum of 600kW (632kW condensing) can be achieved by cascading up to six Evomax boilers.

This can be achieved by the use of Evomax multiple boiler Frame & Header Option Kits.

Boilers can be fitted either side by side or back to back using Frame & Header Option Kits.



## 22 SEQUENCER CONTROL OF MULTIPLE BOILERS

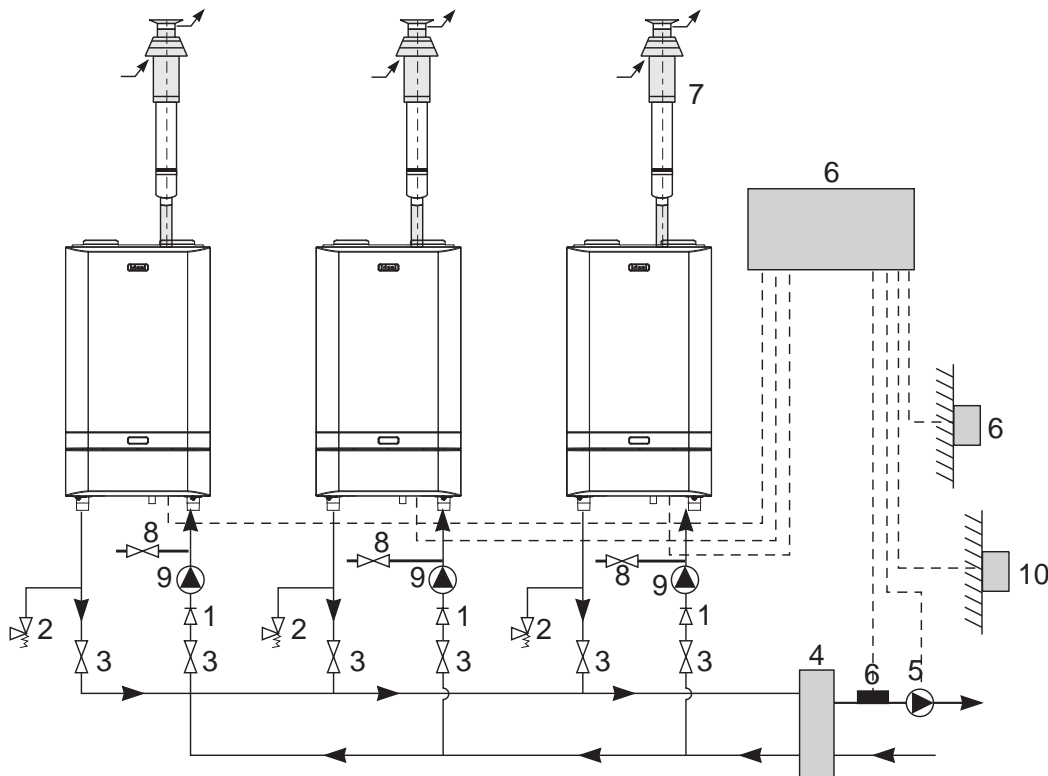
In installations where the heat load is greater than the boiler capacity an ideal solution is to use multiple boiler arrangements.

The ideal way to control a multiple boiler installation is with our modulating sequencer

See below a typical installation with our modulating sequencer kit. This device is capable of controlling up to 5 boilers. Additional kits are required for greater than this.

### Legend

- |  |                      |
|--|----------------------|
| 1. Non-return valve  | 7. Flue gas terminal |
| 2. Safety valve  | 8. Drain cock        |
| 3. Service valve   | 9. Shunt pump        |
| 4. Mixing header   | 10. Room Sensor      |
| 5. System pump   |                      |
| 6. Modulating Sequencer kit complete with outdoor sensor and flow sensor |                      |



## 23 CONDENSATE DRAIN



This appliance is fitted with a siphonic 75mm condensate trap system that requires filling before operating the appliance for the 1st time or after maintenance.

All condensate pipework should conform to the following:

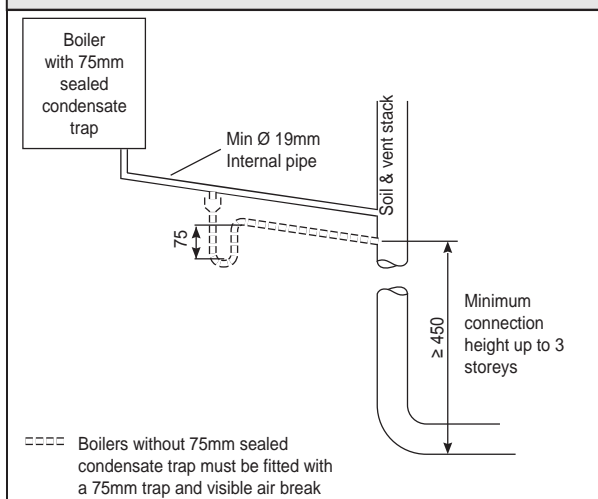
- a. Where a new or replacement boiler is being installed, access to an internal 'gravity discharge' termination should be one of the main factors considered in determining boiler location.
- b. Plastic with push fit or solvent connections.
- c. Internal plastic pipe work a minimum of 19mm ID (typically 22mm OD)
- d. External plastic pipe must be a minimum of 30mm ID (typically 32 OD) before it passes through the sleeved wall.
- e. All horizontal pipe runs, must fall a minimum of 45mm per metre away from the Boiler.
- f. External & unheated pipe work should be kept to a minimum and insulated with Class "O" waterproof pipe insulation.
- g. All installations must be carried out in accordance to the relevant connection methods as shown in the "Condensate installation diagrams" & BS6798:2009
- h. Pipe work must be installed so that it does not allow spillage into the dwelling in the event of a blockage (through freezing)
- i. All internal burrs should be removed from the pipe work and any fittings.

In order to minimise the risk of freezing during prolonged very cold spells, one of the following methods of terminating condensate drainage pipe should be adopted.

### Internal Drain Connections

Wherever possible, the condensate drainage pipe should be routed to drain by gravity to a suitable internal foul water discharge point such as an internal soil and vent stack or kitchen or bathroom waste pipe etc. See Figs 1 and 2.

**Figure 1 - Connection of Condensate Drainage Pipe to Internal Soil & Vent Stack**



### Condensate Pump

Where gravity discharge to an internal termination is not physically possible or where very long internal pipe runs would be required to reach a suitable discharge point, a condensate pump of a specification recommended by the boiler or pump manufacturer should be used terminating into a suitable internal foul water discharge point such as an internal soil and vent stack or internal kitchen or bathroom waste pipe etc. (fig 3).

### External Drain Connections

The use of an externally run condensate drainage pipe should only be considered after exhausting all internal termination options as described previously. An external system must terminate at a suitable foul water discharge point or purpose designed soak away. If an external system is chosen then the following measures must be adopted:

The external pipe run should be kept to a minimum using the most direct and "most vertical" route possible to the discharge point, with no horizontal sections in which condensate might collect.

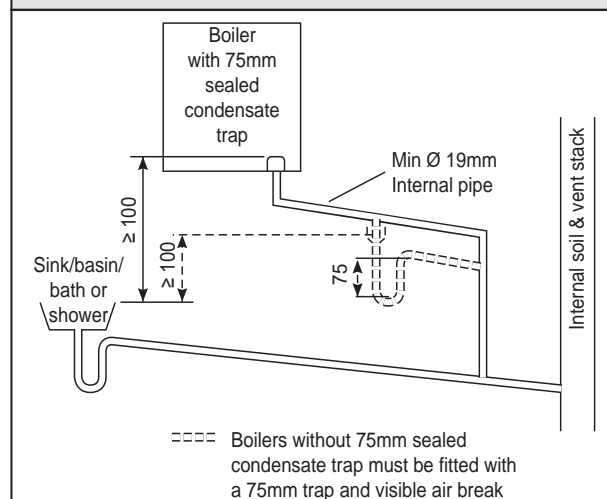
- For connections to an external soil/vent stack see Fig 4. Insulation measures as described should be used.
- When a rainwater downpipe is used, an air break must be installed between the condensate drainage pipe and the downpipe to avoid reverse flow of rainwater into the boiler should the downpipe become flooded or frozen, see Fig 5.
- Where the condensate drain pipe terminates over an open foul drain or gully, the pipe should terminate below the grating level, but above water level, to minimise "wind chill" at the open end. The use of a drain cover (as used to prevent blockage by leaves) may offer further prevention from wind chill. See Fig 6.
- Where the condensate drain pipe terminates in a purpose designed soak away (see BS 6798) any above ground condensate drain pipe sections should be run and insulated as described above. See Fig 7

### Unheated Internal Areas

Internal condensate drain pipes run in unheated areas, e.g. lofts basements and garages, should be treated as external pipe.

Ensure the customer is aware of the effects created by a frozen condensate and is shown where this information can be found in the user manual.

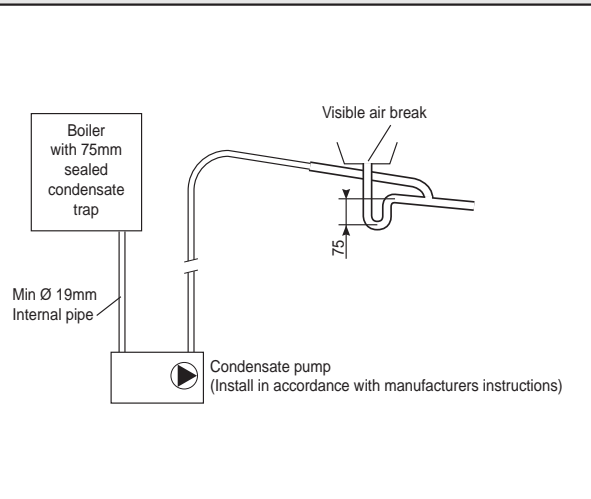
**Figure 2 - Connection of a Condensate Drainage Pipe Downstream of a Sink, Basin, Bath or Shower Water Trap to Internal Soil Vent Stack**



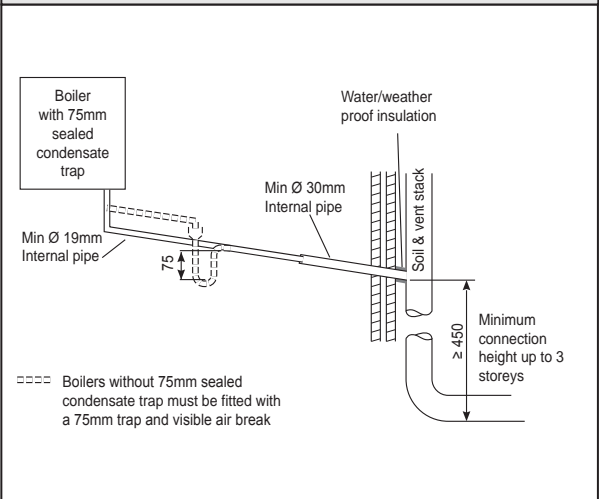
continued . . . . .

## 24 CONDENSATE DRAIN - CONT'D.....

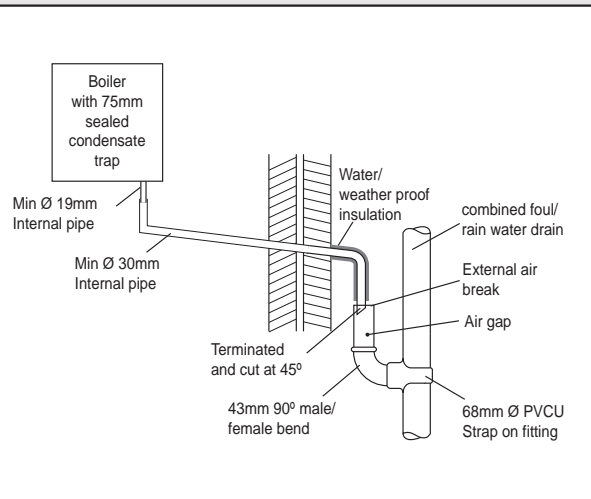
**Figure 3** - Connection of a Condensate Pump Typical Method (see manufacturers detailed instructions)



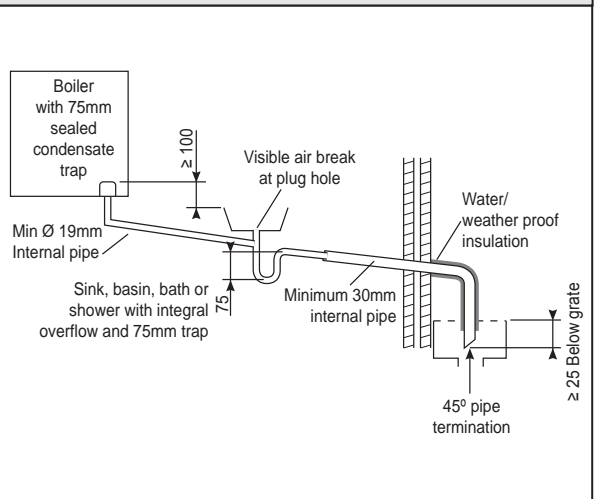
**Figure 4** - Connection of condensate Drainage Pipe to External Soil & Vent Stack



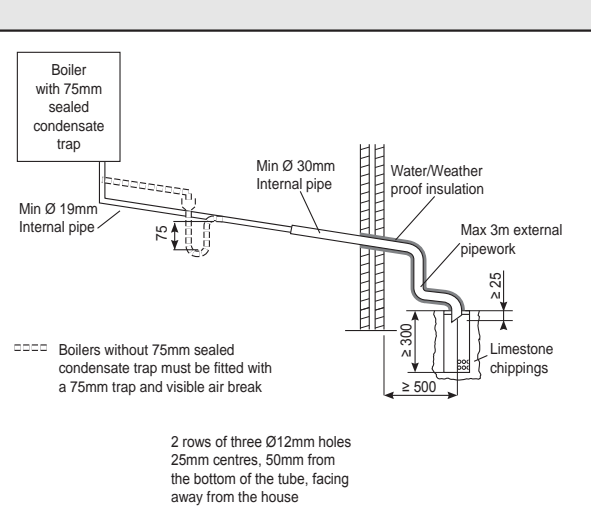
**Figure 5** - Connection of a Condensate Drainage Pipe to an External Rainwater Downpipe (only combined foul/rainwater drain)



**Figure 6** - Connection of Condensate Drainage Pipe Upstream of a Sink, Basin, Bath or Shower Waste Trap to External Drain, Gully or Rainwater Hopper



**Figure 7** - Connection of a Condensate Drainage Pipe to an External Purpose Made Soak Away.



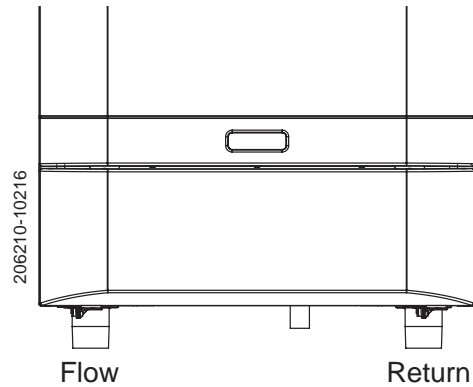
# INSTALLATION

## 25 BOILER WATER CONNECTIONS

The boiler flow and return pipes are terminated with a 1 1/4" BSP male taper connection located at the bottom of the appliance.

**Note.** *This appliance is NOT suitable for use with a direct hot water cylinder.*

Plastic plugs fitted into the open ends of the flow and return pipes must be removed before connecting the system pipework.



## 26 FROST PROTECTION

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

If the boiler flow temperature  $T_1$ , falls below 5°C the pump and burner run until the temperature exceeds 19°C.

Central heating systems fitted wholly inside the building do not normally require frost protections 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 a frost thermostat should be wired into the system, see Frame 45.

## 27 GAS CONNECTION

Refer to Frame 1 for details of the position of the gas connection.

A MINIMUM working gas pressure of 17.5 mbar (7" w.g.) must be available at the boiler inlet for natural gas and 37mbar for propane with the boiler firing. Refer to Frame 54 for details of the pressure test point position.

Extend a gas supply pipe NOT LESS THAN 22mm O.D. to the boiler and connect using the gas cock provided.

**IMPORTANT.** The gas service cock contains a non-metallic seal so must not be overheated when making capillary connections.

In order to determine the actual working gas pressure at the boiler inlet the figure from the table below must be added to the measured pressure (refer to Frame 54).

Evomax Gas Line Pressure Drop (Natural Gas)	
Boiler Model	mbar
30	0.2
40	0.4
60	0.9
80	1.6
100	2.5
120	3.6
150	5.6

The pressure loss for LPG versions is negligible due to the very low velocity through the pipe work.

**Note.** *It should be noted that this pressure drop is present within the internal boiler pipe work and is irrespective of the fact that manifold headers are used. This pressure drop will be experienced on each individual boiler regardless of single or multiple installation.*

## 28 ELECTRICAL CONNECTIONS

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

A mains supply of 230V 50Hz is required. The supply wiring MUST be suitable for mains voltage. Wiring should be 3 core PVC insulated cable NOT LESS than 0.75mm<sup>2</sup> (24 x 0.2 mm) and to BS. 6500, Table 16. The fuse rating should be 4A.

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, or a plug and unswitched socket serving only the boiler and system controls. The means of isolation must be accessible to the user after installation.

When making mains electrical connections to the boiler 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.

4 self adhesive cable clips are provided to aid routing of the wiring across the bottom panel of the boiler.

## 29 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 ETCL rules for electrical installations.

The wiring diagrams illustrated in Frames 41-44 cover the systems most likely to be used with this appliance.

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 30.

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

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. 230V AC output is provided and must be used for the system pump and optionally for a DHW pump or valve, programmer and thermostats. Care must be taken to ensure that the earth conductor is longer than the current carrying conductors for reasons given in Frame 28.

3. Input terminals are available for connecting a variety of system controls for heating demand, and optionally for DHW demand.

Heating demand can be controlled by:

- 230V programmer and/or room thermostat
- programmable room thermostat kit
- Modulating sequencer kit
- a bms
- outside temperature sensor

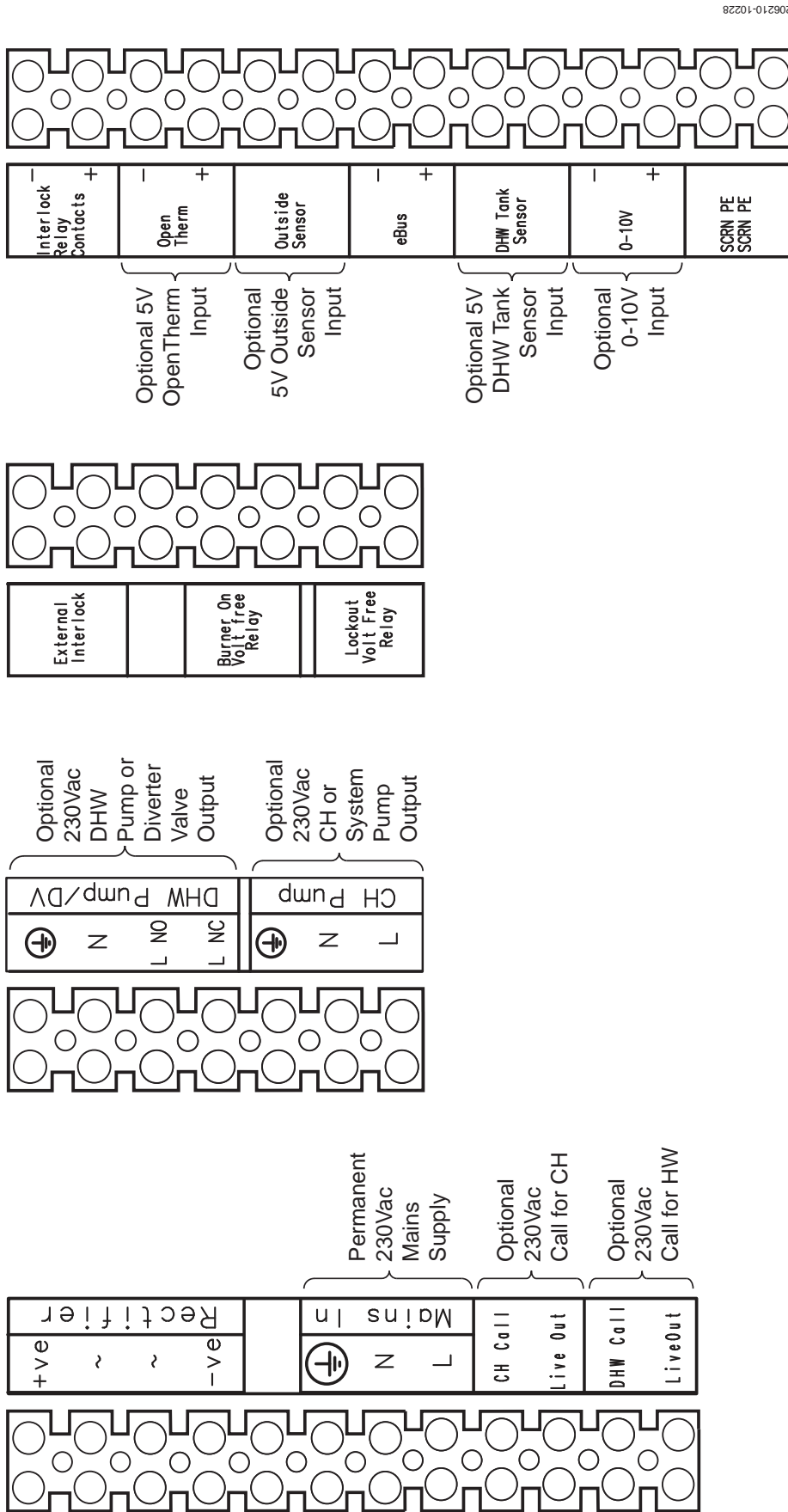
DHW demand can be controlled by:

- 230V programmer and/or cylinder thermostat
- tank sensor kit

The electrical supply and their inputs onto the boiler can be seen in Frame 30.

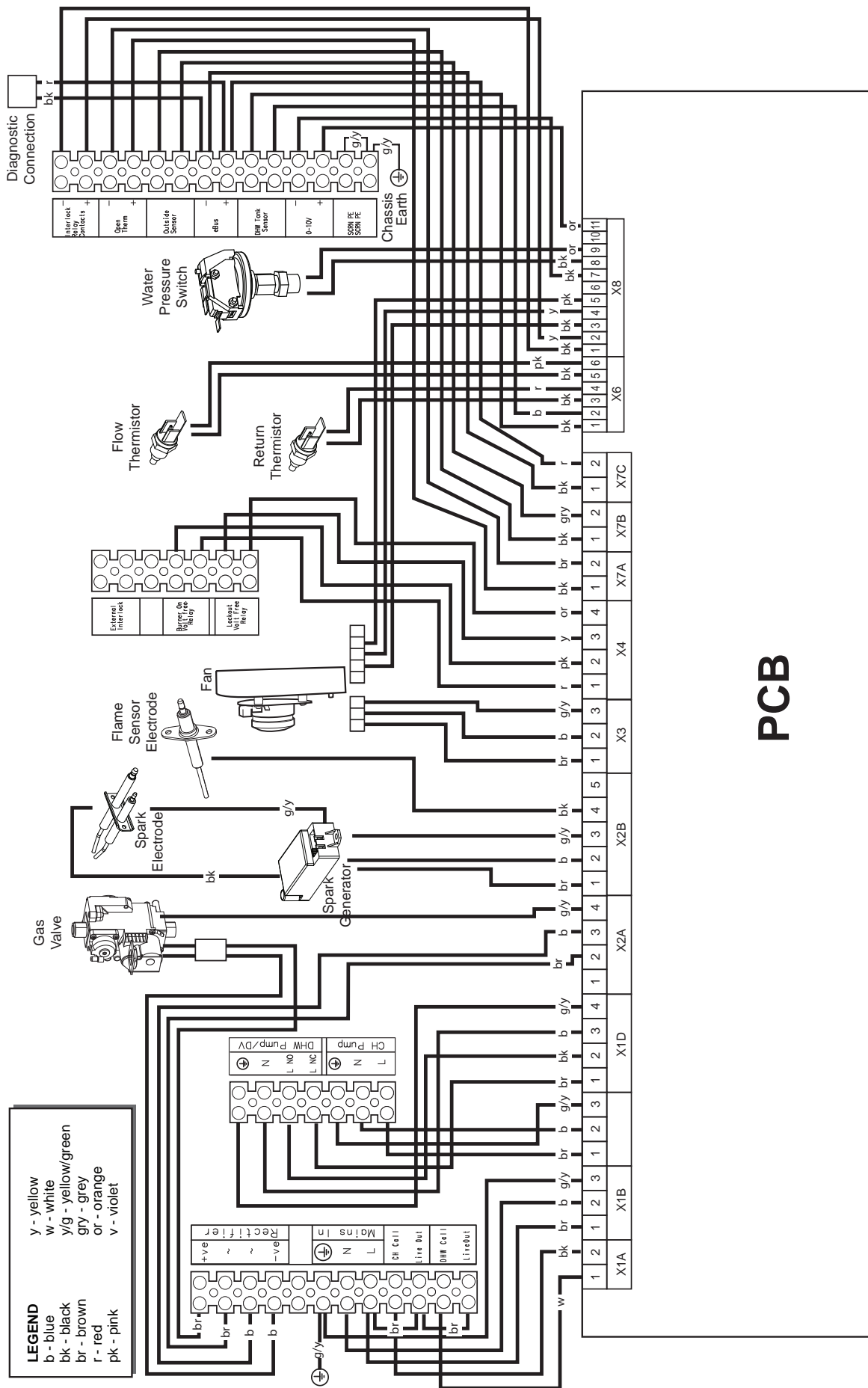
4. An optional outside temperature sensor may be fitted for outside weather compensation. See Frame 30 for connection details.

30 INSTALLER CONNECTIONS



1. If a Pump is to be run from the boiler and the electrical current draw is 1.3A inductive or less then the pump can be connected directly into the CH Pump or DHW Pump connections, as appropriate (e.g. Grundfos 40/60 UPS is satisfactory). If the current draw is more than this (eg a Grundfos 40/120 UPS) then an external relay should be operated by the CH Pump or DHW Pump connections, with the external relay then powering the pump.
2. The Lockout Volt Free Relay contacts will close 4 minutes after a Fault occurs.
3. The Burner On Volt Free Relay contacts will close when the Burner is on.
4. Only Ideal Outside Sensor and DHW Tank Sensor kits should be connected to the boiler.
5. The External Interlock and Interlock Relay Contacts connections are only used in conjunction with the External Interlock Kit. If external interlocks are volt free then no kit is required.
6. The Rectifier connections must not be used (only used in the existing internal boiler wiring).
7. The eBus connections are not for use.

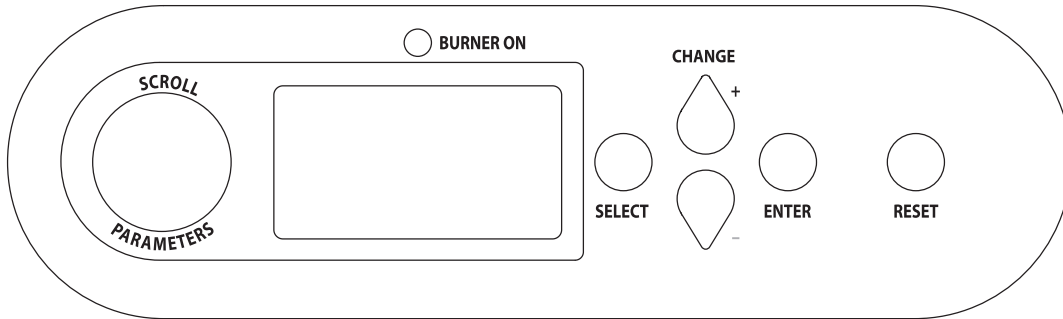
31 INTERNAL WIRING



PCB



## 32 BASIC CONTROLS DISPLAY



### EVOMAX USER INTERFACE

#### Mains On

When the mains to the boiler is switched on a screen similar to the following will be displayed  
The designation at the end of the bottom line indicates whether the boiler is suitable for Natural Gas or LPG.

<b>Ideal</b>		
Initialising		Please Wait
U/I PCB		330.E18
Pri' PCB	00.54	Nat Gas

#### Standby Mode

If the boiler has been switched to Standby Mode the following screen will be displayed  
No Boiler operation will take place with this setting. See Frame 34 to change to Summer or Winter setting

<b>Standby Mode</b>	
For Central Heating	
select Winter Mode	
For Hot Water	
select Summer or Winter	

#### Summer Mode

If the boiler has been switched to Summer Mode a screen similar to the following will be displayed (line 5 may vary depending on setup)  
Domestic Hot Water operation will take place with this setting but Central Heating will not.  
See Frame 34 to enable Central Heating by changing to Winter setting

<b>Summer Mode</b>	
For Central Heating	
select Winter Mode	
No Hot Water Demand	
Switched Live	Off

#### Winter Mode

If there is no current Heat Demand a screen similar to the following will be displayed (line 5 may vary depending on setup)  
Line 5 indicates "Switched Live" or "OpenTherm" or "0-10V" depending on which controls are connected to the boiler

<b>Winter Mode</b>	
No Central Heating	
Demand	
No Hot Water Demand	
Switched Live	Off

#### Domestic Hot Water Mode (DHW Thermostat)

If there is an ongoing Domestic Hot Water Demand using a DHW Thermostat, screens similar to the following will be displayed  
Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler  
Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
Burner Power and Flow Temperature will vary as the boiler operates

<b>Hot Water</b>	
DHW Switched Live On	
Burner On	
DHW Thermostat	
Flow Temp	80°C

<b>Hot Water</b>	
Burner Power	100%
Burner On	
DHW Thermostat	
Flow Temp	80°C



#### Domestic Hot Water Mode (DHW Thermistor)

If there is an ongoing Domestic Hot Water Demand using a DHW Thermistor, screens similar to the following will be displayed  
Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler  
Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
Burner Power and Hot Water Temp' will vary as the boiler operates  
See Frame 34 for adjusting DHW Setpoint  
See Frame 39 for configuring the boiler to use a DHW Thermistor

<b>Hot Water</b>	
OpenTherm Mode	
Burner On	
DHW Setpoint	65°C
Hot Water Temp'	65°C

<b>Hot Water</b>	
Burner Power	100%
Burner On	
DHW Setpoint	65°C
Hot Water Temp'	65°C



*continued . . . . .*



## 33 BASIC CONTROLS DISPLAY CONTINUED.....

### Central Heating Mode

If there is an ongoing Central Heating Demand screens similar to the following will be displayed  
 Line 2 indicates whether Switched Live or OpenTherm is controlling the boiler  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Outside temperature will only be shown if an outside sensor is connected to the boiler  
 Burner Power and Flow Temp will vary as the boiler operates  
 See Frame 38 for adjusting Flow Setpoint

Central Heating	
CH Switched Live On	
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C

Central Heating	
Burner Power	100%
Outside Temp'	10°C
Flow Setpoint	80°C
Flow Temp	80°C

### Boiler Frost Protection Mode

If the boiler flow temperature drops below 5°C screens similar to the following will be displayed  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Outside temperature will only be shown if an outside sensor is connected to the boiler  
 Burner Power and Flow Temp will vary as the boiler operates

Boiler Frost Protect	
Burner Power	100%
Burner On	
Frost Setpoint	5°C
Flow Temp	80°C

Boiler Frost Protect	
Burner Power	100%
Outside Temp'	10°C
Frost Setpoint	5°C
Flow Temp	80°C

### System Frost Protection Mode

If an Outside Sensor is fitted and the Outside Temperature drops below the system frost protection temperature setpoint a screen similar to the following will be displayed  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Flow Temperature and Outside Temperature will vary as the boiler operates  
 See Frame 38 for adjusting the system frost protection temperature setpoint.

System Frost Protect	
Flow Temp	80°C
Burner On	
Frost Setpoint	-10°C
Outside Temp'	10°C

### Cylinder Frost Protection Mode

If a Domestic Hot Water Thermistor is connected to the boiler and the DHW temperature drops below 5C a screen similar to the following will be displayed  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Burner Power, Hot Water Temp' and Outside Temp' will vary as the boiler operates  
 Outside temperature will only be shown if an outside sensor is connected to the boiler

Cylinder Frost Protect	
Burner Power	100%
Burner On	
Frost Setpoint	5°C
Hot Water Temp'	4°C

Cylinder Frost Protect	
Burner Power	100%
Outside Temp'	10°C
Frost Setpoint	5°C
Hot Water Temp'	4°C

### 0-10V Capacity Operating Mode

If 0-10V Capacity operation is ongoing screens similar to the following will be displayed  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Flow Temp' and Burner Power will vary as the boiler operates  
 0-10V Input and Burner Setpoint Target will vary as the external Building Management System controls them  
 See Frame 36 for configuring the boiler for 0-10V Capacity Operation

0-10V Operation	
0-10V Input =	10.0V
Burner On	
Burner Setpoint Target	100%
Flow Temp	80°C

0-10V Operation	
Burner Power	100%
Burner On	
Burner Setpoint Target	100%
Flow Temp	80°C

### 0-10V Temperature Operating Mode

If 0-10V Temperature operation is ongoing screens similar to the following will be displayed  
 Line 3 indicates the current operating State (Pre-Purge or Ignition or Burner On or Pump Overrun)  
 Flow Temp' and Burner Power will vary as the boiler operates  
 0-10V Input and Flow Setpoint will vary as the external Building Management System controls them.  
 See Frame 36 for configuring the boiler for 0-10V Temperature Operation.

0-10V Operation	
0-10V Input =	10.0V
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C

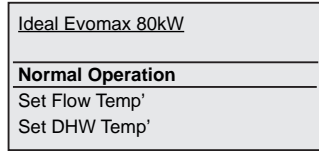
0-10V Operation	
Burner Power	100%
Burner On	
Flow Setpoint	80°C
Flow Temp	80°C

continued . . . . .

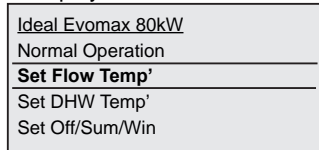
## 34 EVOMAX USER INTERFACE - BASIC OPERATING INSTRUCTIONS

### SETTING FLOW TEMPERATURE

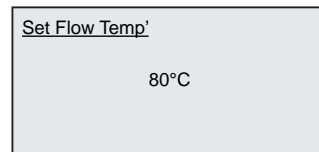
Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending the maximum output of the boiler



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



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



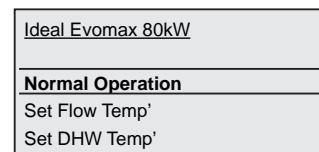
Press + and - to change to the required setting and then press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### SETTING DOMESTIC HOT WATER TEMPERATURE

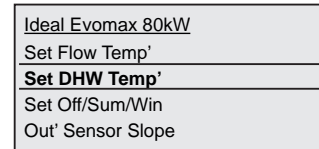
Note that DHW Temperature can only be set if a DHW Thermistor has been connected to the boiler and the boiler configured for its use. Without a DHW thermistor the flow temperature for the DHW switched live input will be controlled to the DHW Temperature Setpoint +4°C.

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

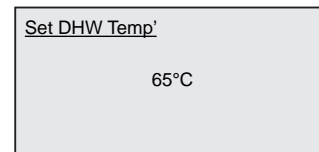
The kW output number in the 1st line will vary depending the maximum output of the boiler



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



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

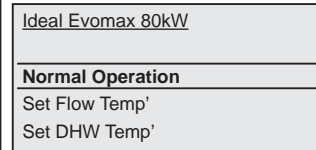


Press + and - to change to the required setting and then press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

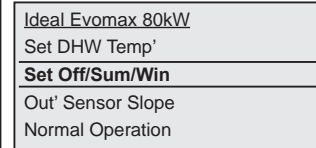
### SETTING SUMMER, WINTER AND STANDBY OPERATION

Note that Standby Mode will disable Domestic Hot Water and Central Heating, Summer Mode will disable Central Heating

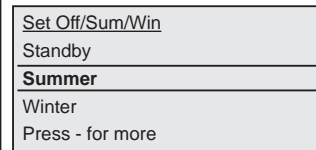
Press SELECT and a screen similar to the following will be displayed  
The kW output number in the 1st line will vary depending the maximum output of the boiler



Rotate KNOB clockwise until a screen similar to following is displayed



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



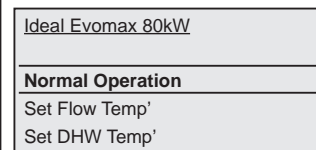
Press + and - to change to required setting, press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

### SETTING THE OUTSIDE SENSOR SLOPE

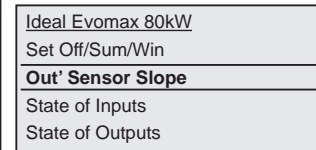
Note that an Outside Sensor must be fitted to the boiler for this feature to be active (this will be detected automatically)

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

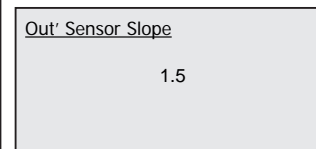
The kW output number in the 1st line will vary depending on the maximum output of the boiler



Rotate KNOB clockwise until a screen similar to following is displayed



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



Note that a higher number gives a higher room temperature and a lower number gives a lower room temperature  
Press + and - to change to required setting, press ENTER to store  
Rotate the KNOB anti-clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation  
*continued . . . . .*

## 35 EVOMAX USER INTERFACE - BASIC OPERATING INSTRUCTIONS CONTINUED...

### 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 the maximum output of the boiler

Ideal Evomax 80kW
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

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

Ideal Evomax 80kW
Out' Sensor Slope
<b>State of Inputs</b>
State of Outputs
Fault History

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

<b>State of Inputs</b>
Flow Temp'                      80°C
Return Temp'                      60°C
Flue Temperature                      70°C
Press - for more

The state of the inputs will vary as the boiler operates

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 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 the maximum output of the boiler

Ideal Evomax 80kW
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

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

Ideal Evomax 80kW
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

<b>State of Outputs</b>
Boiler Pump                      On
DHW Pump/Valve                      Off
Fan                                      3000rpm
Press - for more

The state of the outputs will vary as the boiler operates

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 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 the maximum output of the boiler

Ideal Evomax 80kW
<b>Normal Operation</b>
Set flow Temp'
Set DHW Temp'

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

Ideal Evomax 80kW
State of Outputs
<b>Fault History</b>
Show Hours Run
Normal Operation

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

<b>Fault History: Max 10</b>
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 the maximum output of the boiler

Ideal Evomax 80kW
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until a screen similar to following is displayed

Ideal Evomax 80kW
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>
Total Hours    20 h
Flame On        10 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

*continued . . . . .*

## 36 EVOMAX 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

Installer Mode
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

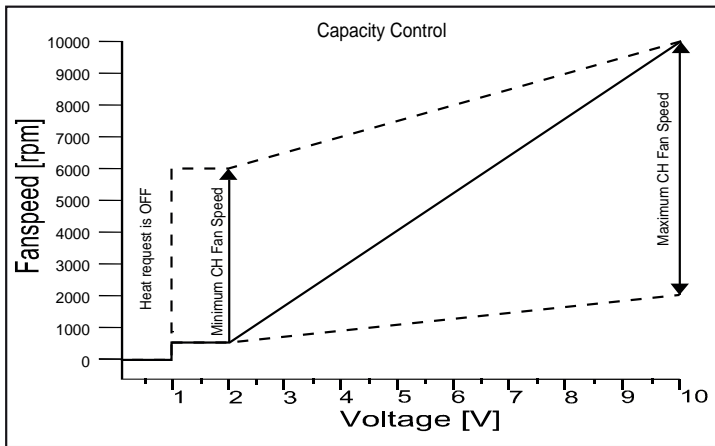
Installer Mode
Show Hours Run
<b>Set to 0-10V Input</b>
Set Night Setback
DHW Pump / Valve

Press SELECT and the following screen will be displayed

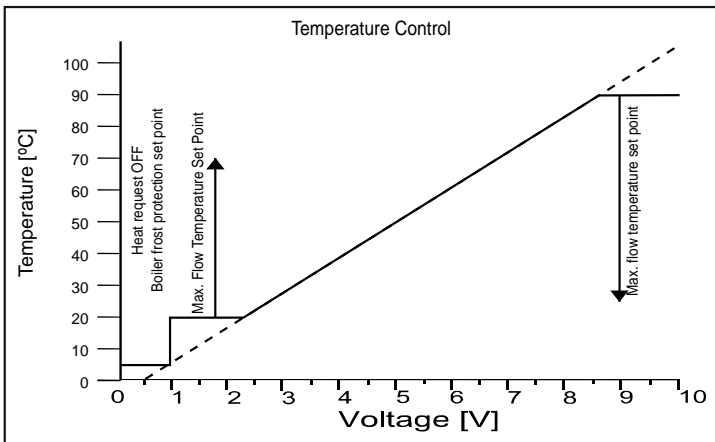
Set to 0-10V Input
<b>0-10V Off</b>
0-10V Capacity
0-10V Temperature

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



*continued . . . . .*

## 37 EVOMAX USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED....

### ENABLING NIGHT SETBACK

Note- Night Setback is only operational if Outside Sensor has been connected  
When Night Setback is enabled the boiler will run at the normal flow temp. during CH Demand and reduced temperature when for no demand

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set to 0-10V Input
<b>Set Night Setback</b>
DHW Pump / Valve
Set Booster

Press SELECT and the following screen will be displayed

Set Night Setback
On
<b>Off</b>

Press + and - to change to 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

Note- Booster Function is only operational if Outside Sensor has been connected

If Booster function is enabled and CH Demand is ongoing for more than 10 minutes then the Flow Temp. target is increased by 10°C  
When the Burner switches off the temperature is reset

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
DHW Pump / Valve
<b>Set Booster</b>
CH/DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

Set Booster
On
<b>Off</b>

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

### ENABLING VALVE POWER OPEN/VALVE POWER CLOSED/SHUNT PUMP

The boiler default setting is the CH Pump output will only be On for a CH Demand and the DHW Pump output will only be on for a DHW Demand.  
This can be changed so that the CH Pump output controls the system pump and the DHW Pump output operates a Valve (power open or power shut)  
This can also be changed so that the CH Pump output controls a system pump and the DHW Pump output controls a shunt pump

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Night Setback
<b>DHW Pump/Valve</b>
Set Booster
CH/DHW Priority

Press SELECT and the following screen will be displayed

DHW Pump/Valve
<b>Pump</b>
Valve Power Open
Press - for more

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

### CHANGING 2ND SWITCHED LIVE INPUT BETWEEN DHW & CH

To change the 2nd switched live input from DHW operation (factory default) to CH operation, press SELECT and then hold + and - down together for more than 5s and the following screen will be displayed:

Installer Mode
<b>Normal Operation</b>
Set Stat 1 Temp
Set Stat 2 Temp

Rotate the 1st stat clockwise until the following screen is displayed

Installer Mode
Set Booster
<b>2nd SL DHW / CH</b>
CH / DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

2nd SL DHW / CH
<b>DHW</b>
CH2, Priority = SL2
CH2, Priority = SL1

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 . . . . .*

### 38 EVOMAX USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS

**Note:** if this menu option is not displayed then the "2nd sL DHW/CH" menu option has been set for CH. CH Priority can be set from the "2nd sL DHW/CH" menu option or the 2nd sL can be reconfigured for DHW operation.

#### CHANGING CH / DHW PRIORITY

The boiler default setting is DHW always has priority ahead of CH. It is possible to change this so CH always has priority ahead of DHW or the boiler alternates between DHW and CH every 10 mins. 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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Booster
<b>CH/DHW Priority</b>
Set Max Flow Temp'
Set Min Flow Temp'

Press SELECT and the following screen will be displayed

CH/DHW Priority
<b>Priority = DHW</b>
Priority = CH
Priority = Equal

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 MAXIMUM FLOW TEMPERATURE SETPOINT

Boiler default setting is that maximum flow temperature setpoint is 82°C. This feature limits the maximum flow temperature that can be set in the Basic Operating Mode

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
CH/DHW Priority
<b>Set Max Flow Temp'</b>
Set Min Flow Temp'
Sys Frost Protect

Press SELECT and the following screen will be displayed

Set Max Flow Temp'
<b>80°C</b>

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

Boiler default setting is that minimum flow temperature setpoint is 30°C. This feature limits the minimum flow temperature that can be set in the Basic Operating Mode. 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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Max Flow Temp'
<b>Set Min Flow Temp'</b>
Sys Frost Protect
Soft Start Time

Press SELECT and the following screen will be displayed

Set Max Flow Temp'
<b>30°C</b>

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 SYSTEM FROST PROTECTION TEMP. SETPOINT

Note that System Frost Protection Function is only operational if an Outside Sensor has been connected. The CH pump is switched on if the Outside Temp. is less than the System Frost Protection Temp. The CH pump is switched off if the Outside Temp. is more than the System Frost Protection Temp. +5°C. The boiler default setting is the system frost protection temp. setpoint is -10°C. 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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Set Min Flow Temp'
<b>Sys Frost Protect</b>
Soft Start Time
O/S Room Temp'

Press SELECT and the following screen will be displayed

Sys Frost Protect
<b>-10°C</b>

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

*continued . . . . .*



## 39 EVOMAX USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED....

### CHANGING THE SOFT START TIME

The Soft Start Time is the time for which the boiler will run at the ignition rate after a flame is detected

This feature helps make the boiler fully compatible with the CH/DHW system. The default Soft Start time is 5s

Care should be taken in adjusting this feature as system noise and/or boiler lockout could occur

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Sys Frost Protect
<b>Soft Start Time</b>
O/S Room Temp'
DHW Sensor

Press SELECT and the following screen will be displayed

Soft Start Time
5s

Press + and - to change to required setting then press ENTER to store  
 Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation  
 Note that the minimum setpoint after adjustment is 60s

### CHANGING THE NOMINAL ROOM TEMPERATURE ACHIEVED DURING OUTSIDE SENSOR OPERATION (O/S ROOM TEMP')

Note that the O/S Room Temp' Function is only operational if an Outside Sensor has been connected

The O/S Room Temp' is the notional room temperature that the boiler will try to achieve under Weather Compensation operation  
 The default O/S Room Temp' is 20°C

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Soft Start Time
<b>O/S Room Temp'</b>
DHW Sensor
Factory Settings

Press SELECT and the following screen will be displayed

O/S Room Temp'
20°C

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

### ENABLING THE DOMESTIC HOT WATER THERMISTOR

The default is for a DHW Heat Demand to be indicated by a DHW Thermostat providing a 230V input to the DHW Switched Live  
 Instead a DHW Thermistor, available as a kit from Ideal, can be connected to the DHW Thermistor input

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
O/S Room Temp'
<b>DHW Sensor</b>
Factory Settings
Anti-Legion Temp'

Press SELECT and the following screen will be displayed

DHW Sensor
Heating Only
<b>DHW Thermistor</b>
DHW Switched Live

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 . . . . .*

### 40 EVOMAX USER INTERFACE - ADVANCED OPERATING INSTRUCTIONS CONTINUED....

#### REVERTING TO FACTORY SETTINGS

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

Installer Mode
<b>Normal Operation</b>
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
DHW Sensor
<b>Factory Settings</b>
Anti-Legion Temp'
Anti-Legion Enable

Press SELECT and the following screen will be displayed

Factory Settings
<b>Reset?</b>

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

Factory Settings
Are you sure?
Press Enter to Reset
Press Select not to
Reset

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

Factory Settings
<b>Reset?</b>

Press Select then Rotate the KNOB clockwise until Normal Operation is highlighted again and press SELECT to return to normal operation

#### CHANGING THE ANTI-LEGIONELLA TEMPERATURE

Note Anti-Legionella Temp. Function is only operational if a DHW Thermistor has been connected  
Care should be taken reducing this temp. as unsafe condition could result  
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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Factory Settings
<b>Anti-Legion Temp'</b>
Anti-Legion Enable
BUS Address

Press SELECT and the following screen will be displayed

Anti-Legion Temp'
70°C

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

#### DISABLING THE ANTI-LEGIONELLA FUNCTION

Note that the Anti-Legionella Temperature Function is only operational if a Domestic Hot Water Thermistor has been connected.  
Care should be taken in disabling this function as an unsafe condition could result.

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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
Anti-Legion Temp'
<b>Anti-Legion Enable</b>
BUS Address
Flame/LPG Relay

Press SELECT and the following screen will be displayed

Anti-Legion Enable
<b>On</b>
Off

Press + and - to change to required setting 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 VOLT FREE BURNER ON RELAY TO OPERATE AS AN LPG RELAY FOR BELOW GROUND LEVEL LPG APPLICATIONS

If LPG is to be used in an application below ground level then an additional valve is required to control the LPG input to the boiler  
This valve should be wired from the Volt Free Burner on Relay and enabled 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 DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

Installer Mode
BUS Address
<b>Flame/LPG Relay</b>
Normal Operation

Press SELECT and the following screen will be displayed

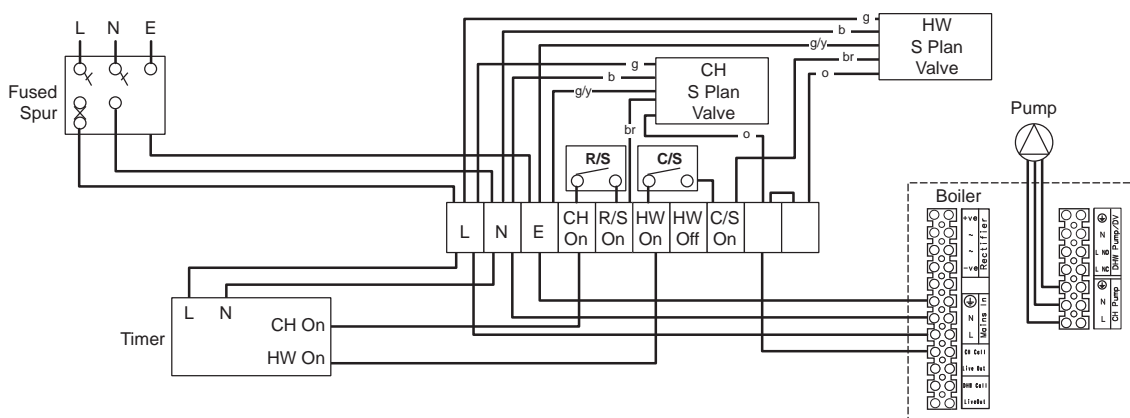
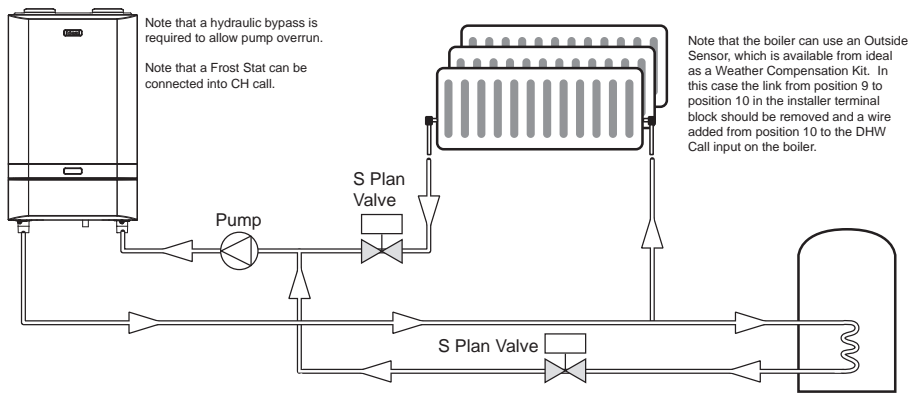
Flame/LPG Relay
-
<b>Flame On</b>
LPG Gas Valve

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

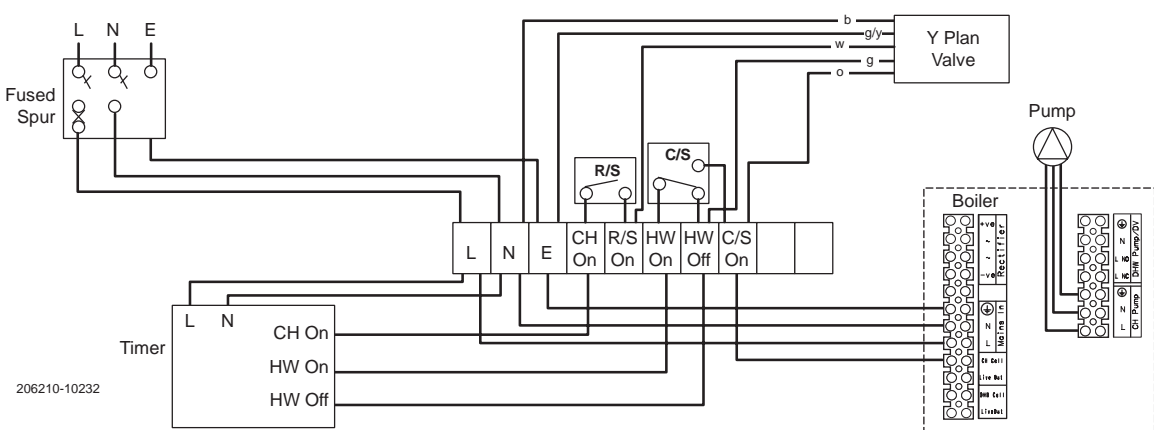
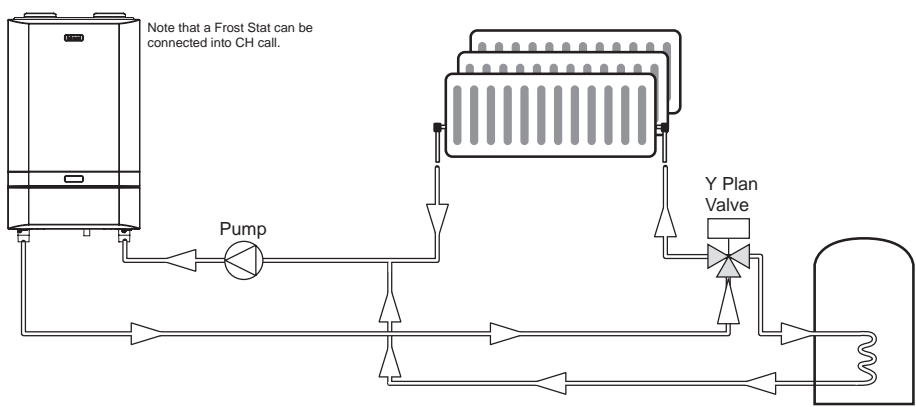


# INSTALLATION

## 41 EVOMAX WITH S PLAN SYSTEM



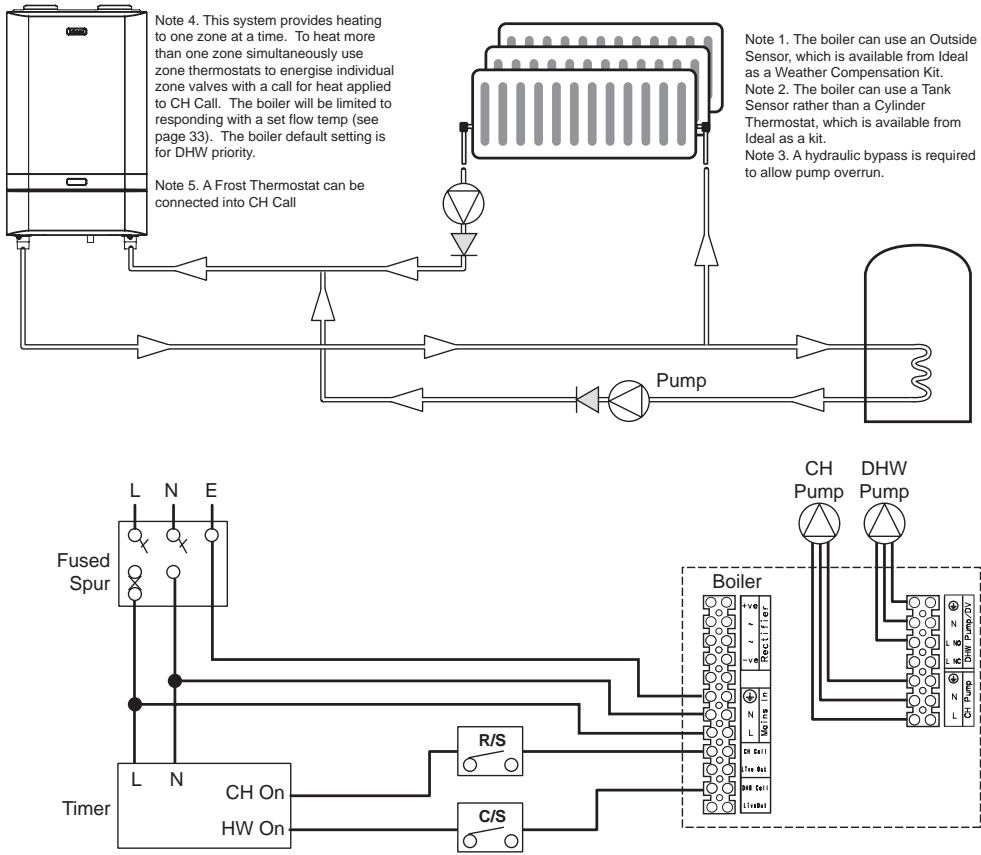
## 42 EVOMAX WITH Y PLAN SYSTEM



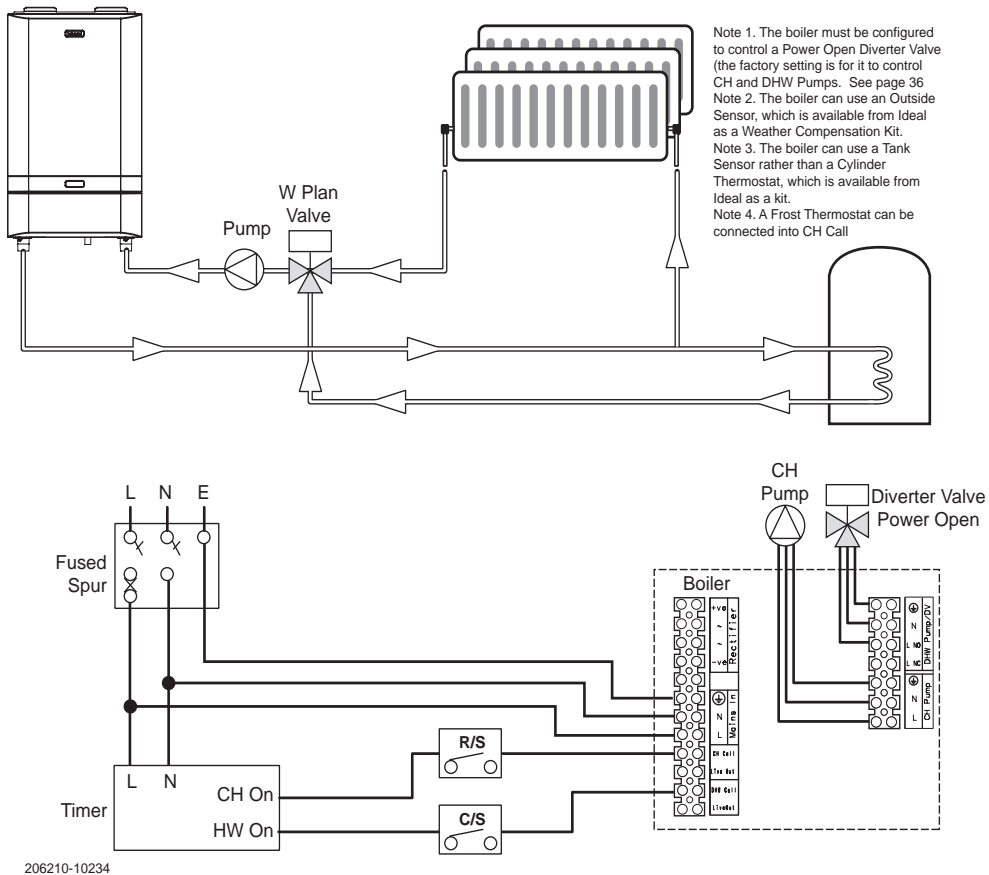
206210-10232

## INSTALLATION

### 43 EVOMAX WITH BOILER CONTROL OF CH AND DHW PUMPS



### 44 EVOMAX WITH BOILER CONTROL OF PUMP AND DIVERTER VALVE



## 45 EVOMAX WITH EXTERNAL CONTROLS VIA SWITCHED LIVE, 0-10V INPUT OR OPENTHERM

Note that the boiler requires a 4 minute pump overrun period.

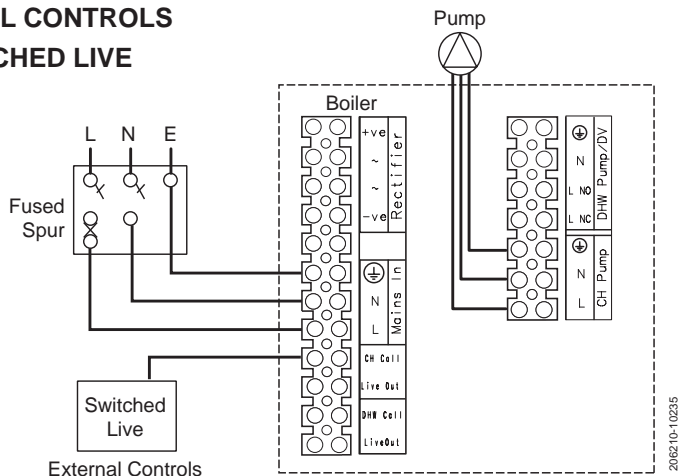
The boiler warranty will be invalid if this is not provided.

It is recommended that the pump overrun functionality is achieved by connecting the pump to the boiler CH Pump connections (see diagram), although this functionality can be replicated with external controls (for example a Building Management System).

If the CH Pump connection is used and the electrical current draw is 1.3A inductive or less then the pump can be connected directly into the CH Pump connection (a Grundfos 40/50 UPS is OK).

If the current draw is more than this (eg a Grundfos 40/120 UPS) then an external relay should be operated by the CH Pump connection, with the external relay then powering the pump.

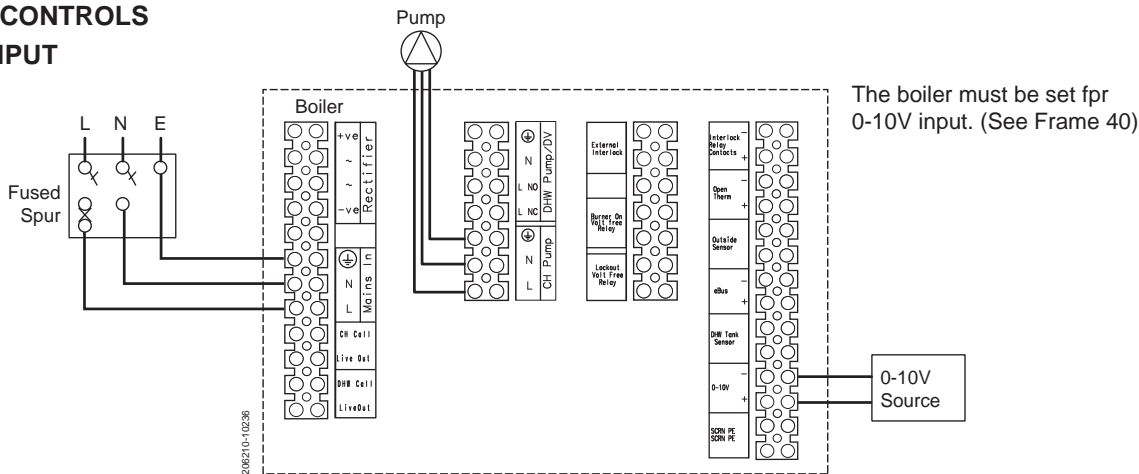
### EXTERNAL CONTROLS VIA SWITCHED LIVE



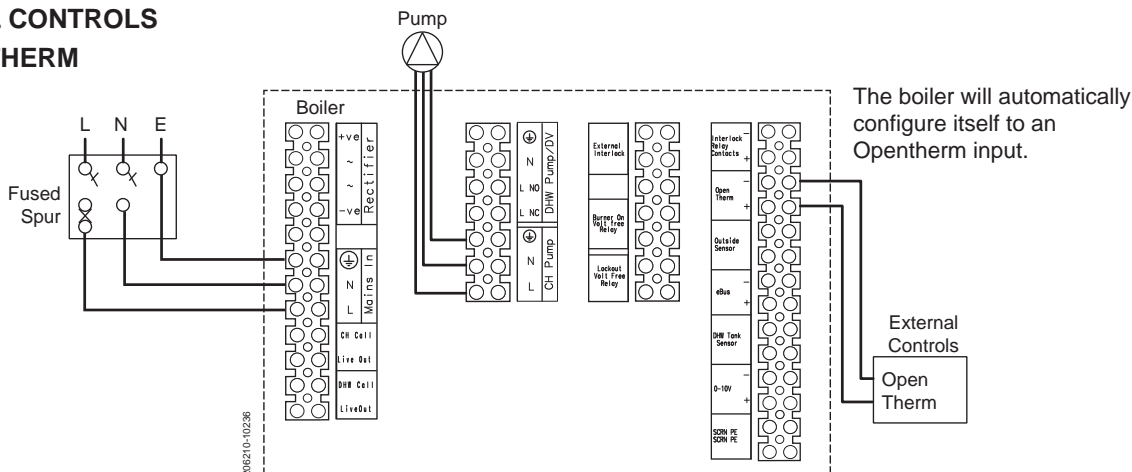
**Notes.**

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.
3. A Frost Thermostat can be connected into the CH Call Input.

### EXTERNAL CONTROLS VIA 0-10V INPUT

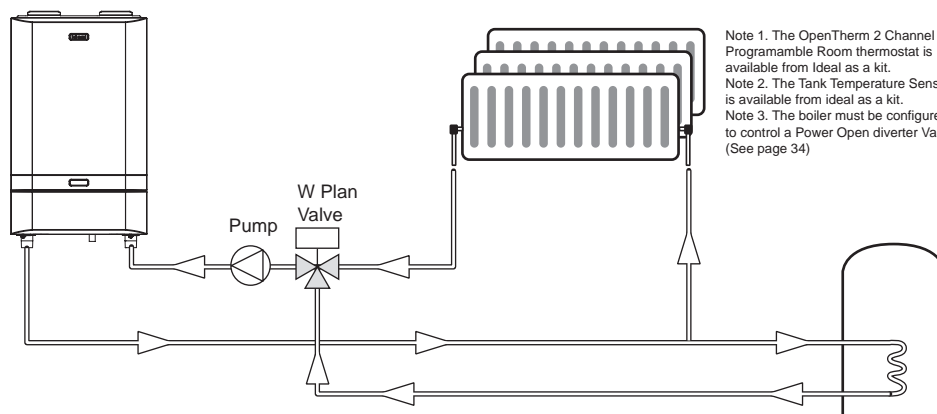


### EXTERNAL CONTROLS VIA OPENTHERM

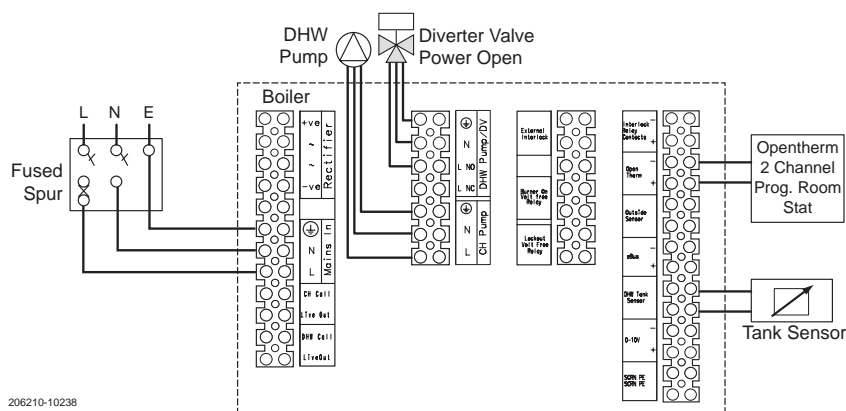


# INSTALLATION

## 46 EVOMAX WITH OPENTHERM 2 CHANNEL PROGRAMMABLE ROOM STAT



Note 1. The OpenTherm 2 Channel Programmable Room thermostat is available from Ideal as a kit.  
 Note 2. The Tank Temperature Sensor is available from Ideal as a kit.  
 Note 3. The boiler must be configured to control a Power Open diverter Valve (See page 34)



## 47 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 and short circuit, using a suitable meter.

### 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 8, by the installer.

In IE refer to I.S.813:2002.

**TO ARRANGE COMMISSIONING:**

**CALL: 01482 498376**

**WEB: [www.idealcommercialboilers.com](http://www.idealcommercialboilers.com)**

**TO QUALIFY FOR FREE COMMISSIONING, BOILERS MUST BE COMMISSIONED WITHIN 3 MONTHS OF INSTALLATION**

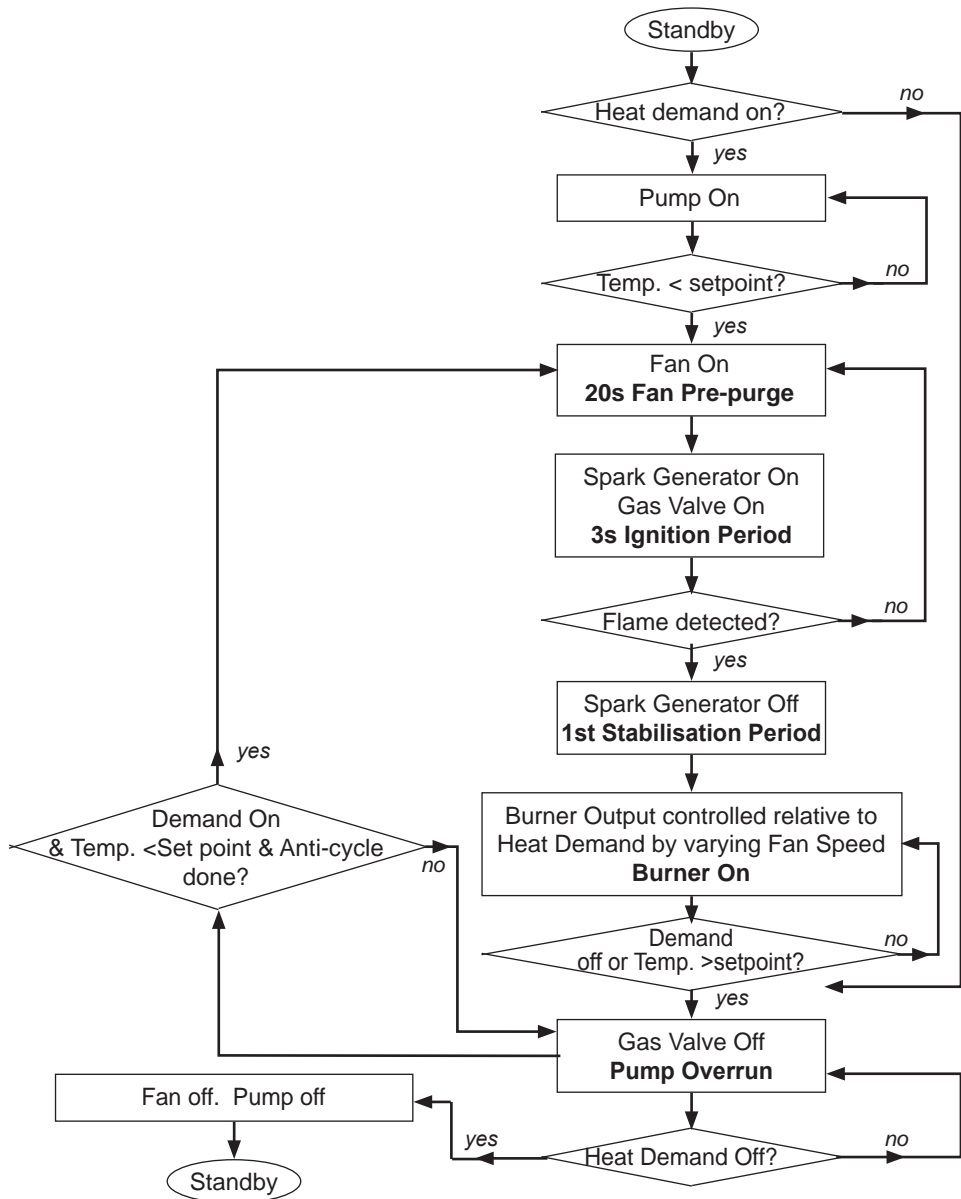
**WARNING.** Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and **DO NOT SMOKE.**

## 48 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 the airvent located in the left top side must never be shut 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 COCK IS ON.
4. Fill the condensate trap with water before putting the unit into operation (see Frame 58 for condensate trap removal).
5. Check the indication on the pressure gauge. If the pressure is less than 1 bar the installation should be filled up first (sealed system only).
6. Switch the electricity supply ON and check that all the external controls are calling for heat. Check boiler is set for winter operation - see Evomax user interface basic operating instructions.
7. The boiler will commence the ignition sequence. If after 5 attempts the boiler has failed to light then it will lock out. Press the reset button to restart the ignition sequence.
8. Operate the boiler for 10 minutes and check the gas rate (Table 1). You should be able to read at least 90% of the nominal.

Evomax ~ Flue CO <sub>2</sub> % measurements (hot condition)												
	30	40	60	80	100	120	150	30P	40P	60P	80P	
Max Rate	9.2% - 10.2%							10.9% - 11.9%				
Min Rate	8.2% - 9.2%							9.7% - 10.7%		10.0% - 11.0%		

## OPERATING SEQUENCE



*Note. The fan runs for 4 mins after the burner switches off*

## 49 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 an optional programmer kit is fitted then refer to the instructions supplied with the kit.

## 50 HANDING OVER

### ROUTINE OPERATION

Full instructions covering routine lighting and operation of the boiler are given on the Lighting and Operation Instruction Label located on the inside of the lower controls door.

Draw the attention of the boiler owner or his representative to the Lighting and Operating Instruction Label. 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.

## 51 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.

### NOTE.

*When the burner switch is in the off position the boiler control module remains live.*

### IMPORTANT.

After completing the servicing or replacement of components always:

- Test for gas soundness.

- 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 the automatic air vent in the left top side must never be shut off.
- Check the jacket front panel is correctly fitted, ensuring that a good seal is made. Secure the controls fascia in place.
- With the system hot examine all water connections for soundness.
- Check the gas rate and measure the combustion CO/CO<sub>2</sub> content. The CO/CO<sub>2</sub> ratio of the flue gas should not be greater than 0.004 ratio & the CO should not exceed 350ppm. The CO<sub>2</sub> should be as stated in Frame 48.
- Carry out functional checks as appropriate.

## 52 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 aluminium oxide 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, sump 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 procedure opposite on how to force the burner to maximum rate.
3. Optional test - Connect a suitable gas analyser to the sampling point fitted in the flue adapter. For correct boiler operation the CO/CO<sub>2</sub> ratio of the flue gas should not be greater than 0.004 ratio and the CO<sub>2</sub> values should match those in table 1. If this is the case and the gas input is at least 90% of the nominal, once compliance with the note above is ensured, then no further action need be taken. If not proceed to 4.
4. Remove and clean the burner. Refer to Frames 55 and 56.
5. Inspect the heat exchanger through the burner opening. If there are signs of aluminium oxide build up, spray water down the flueways. Refer to Frame 56.
6. Remove the sump cover and scrape out any deposits. Refer to Frame 57.
7. Remove the condensate trap and flush through with water. Refer to Frame 58.
8. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.
9. After completion of servicing refer to Frame 51 for reference to final safety checks.

### SETTING TO MAXIMUM OUTPUT

Ensure that there is a current CH demand to the boiler (e.g. the CH Switched Live is on)

Press SELECT and the following screen will be displayed.

The kW output number in the 1st line will vary depending on the maximum output of the boiler.

Ideal 80kW
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate KNOB clockwise until the following screen is displayed

Ideal 80kW
Set DHW Temp'
Set Off/Sum/Win
Out' Sensor Slope
State of Inputs

Press SELECT and the following screen will be displayed

Set Off/Sum/Win
Standby
Summer
Winter
Press - for more

Press + and - until the following screen is displayed.

Set Off/Sum/Win
Minimum
Maximum
Press - for more

Press ENTER and the boiler will go to Maximum Rate for 5 minutes  
Operation will be automatically reset at the end of 5 minutes

## 53 CASING REMOVAL

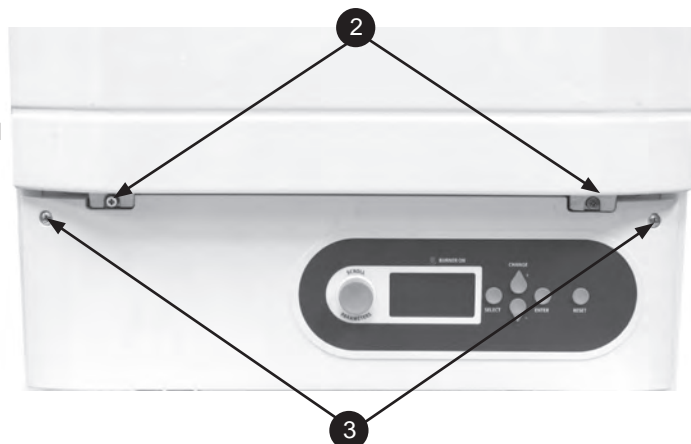
### Front Panels

1. Pull the two sides of the control casing door to open.
2. Remove the two screws retaining the front panel, lift the panel to remove.
3. Remove the two screws retaining the control panel and swing the panel down into the service position.

### Side Panels

*Note. Removal is not required for normal service.*

1. Remove the two (or three) screws from the top and bottom of the side panels.
2. Re-assemble in reverse order.

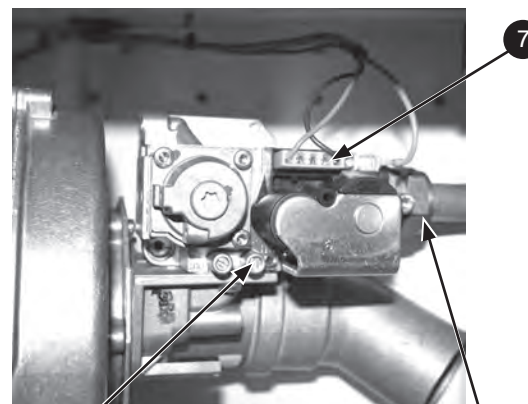
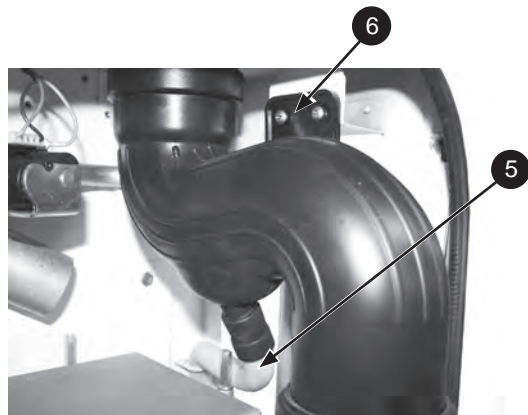
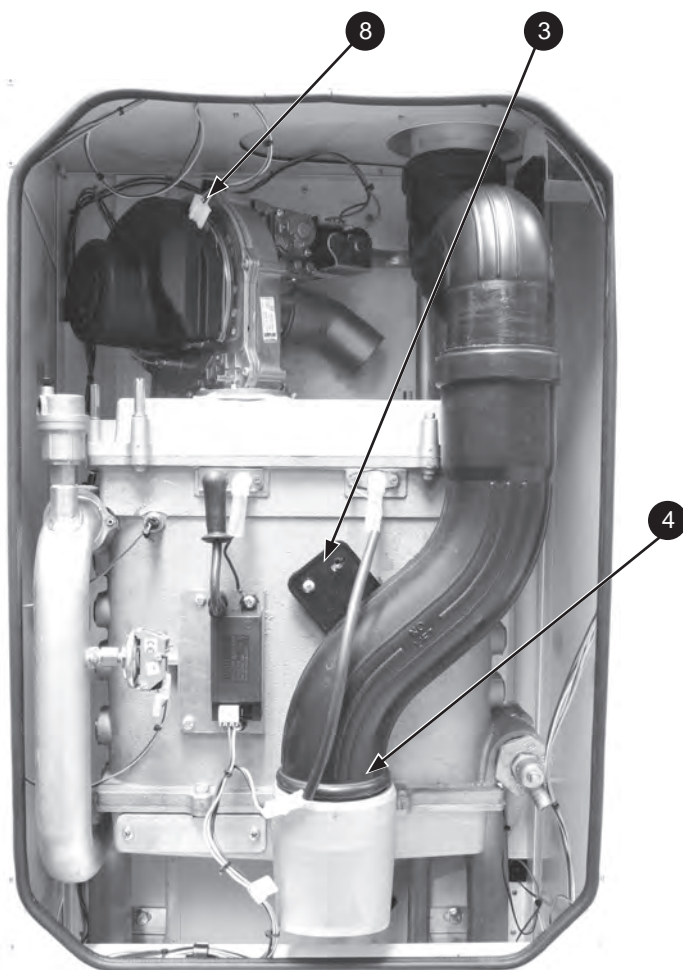




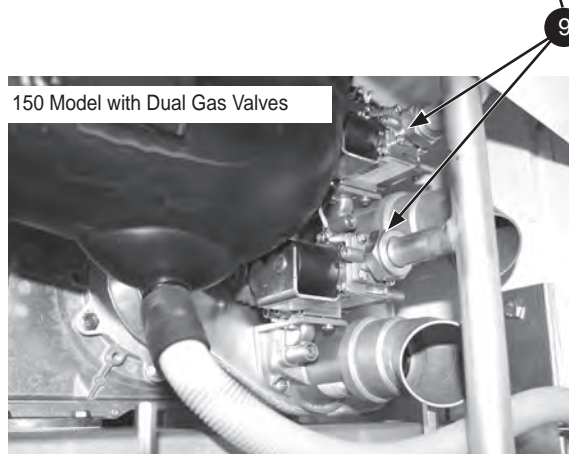
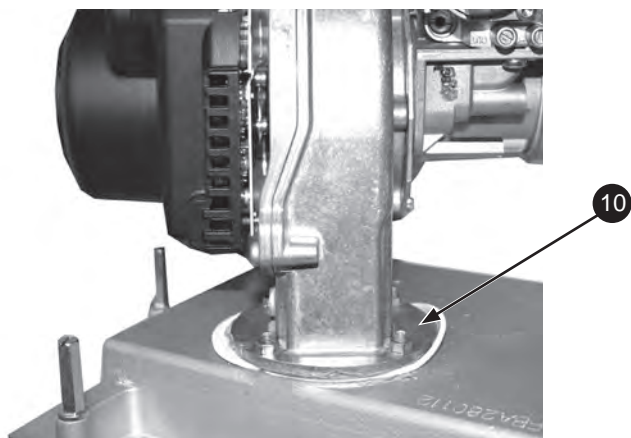
## SERVICING

### 54 REMOVAL OF FAN AND GAS VALVE ASSEMBLY

1. Refer to Frame 51.
2. Remove the upper front panel, Refer to Frame 53.
3. Remove the two screws retaining the flue tube to the heat exchanger.
4. Lift the lower section of flue upwards to disengage from the sump then twist outwards and pull down to completely remove..
5. Disconnect condensate pipe from upper flue elbow.
6. Remove the flue tube elbow fixing screws and remove elbow by pulling downwards.
7. Disconnect the electrical connections from the gas valve/s.
8. Disconnect the electrical connections from the fan.
9. Undo the gas valve union nut/nuts and retain the fibre washer/s.
10. Remove the four nuts/washers (or screws depending upon boiler size) retaining the fan assembly and remove the fan assembly.
11. Inspect & clean as necessary.
12. Re-assemble in reverse order replacing all gaskets.

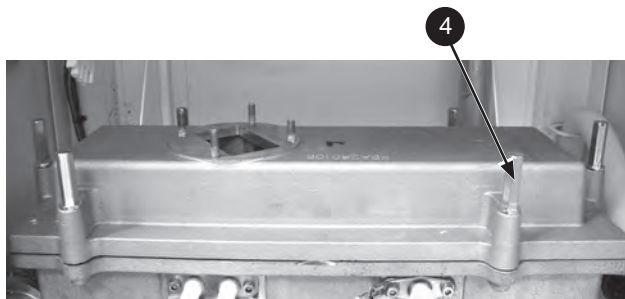


Inlet Gas Pressure Test Point for 30, 40, 60 80 & 150 models  
For 100 & 120 models the inlet gas pressure test point can be found on the inlet gas manifold



## 55 BURNER REMOVAL

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Remove the fan and gas valve assembly (Refer to frame 54)
4. Remove the six/eight extended nuts securing the burner to release the burner body.
5. Lift the burner body to remove it from the studs and lift the burner out of its recess.
6. The burner can now be cleaned on the back face only, the metal fibre surface must not be touched. The burner must be replaced if it shows signs of damage.
7. After cleaning the burner replace it in the recess and check the burner body seal for signs of damage. If damage is apparent it must be replaced.
8. Reassemble in reverse order. The six (or eight) extended nuts should be fitted following a diagonal tightening sequence twice. The nuts should be secured firmly.
9. Check the operation of the boiler (Refer to Frame 51).



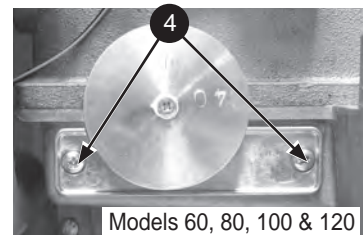
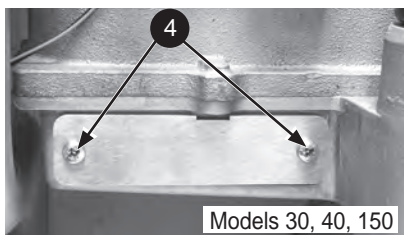
## 56 HEAT EXCHANGER INSPECTION / CLEANING

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Remove the fan and gas assembly (Refer to frame 54)
4. Remove the burner (Refer to frame 55)
5. Remove the ignition and detection electrodes (Refer to frame 62/63)
6. Inspect the heat exchanger for signs of aluminium oxide deposits. If necessary clean the heat exchanger by spraying water down the flue ways.
7. Reassemble in reverse order replacing all gaskets.
8. Check the operation of the boiler (Refer to frame 51)



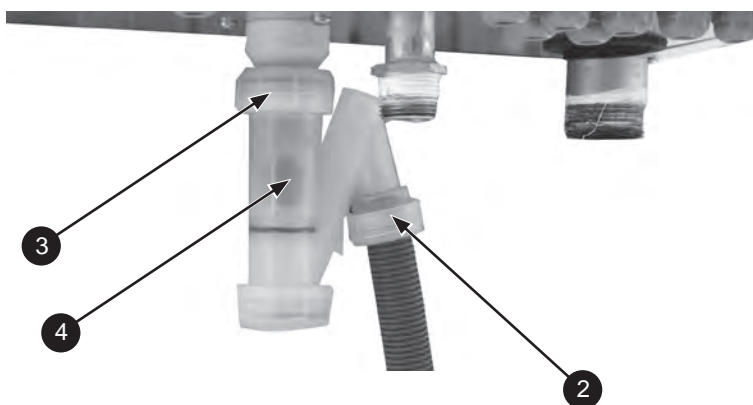
## 57 REMOVAL OF SUMP COVER

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Prepare boiler for possible water spillage during the process.
4. Remove the two screws from the helmholtz/clean-out cover and pull away from the boiler.
5. Scrape out any deposits.
6. Reassemble in reverse order replacing all gaskets.



## 58 CONDENSATE TRAP

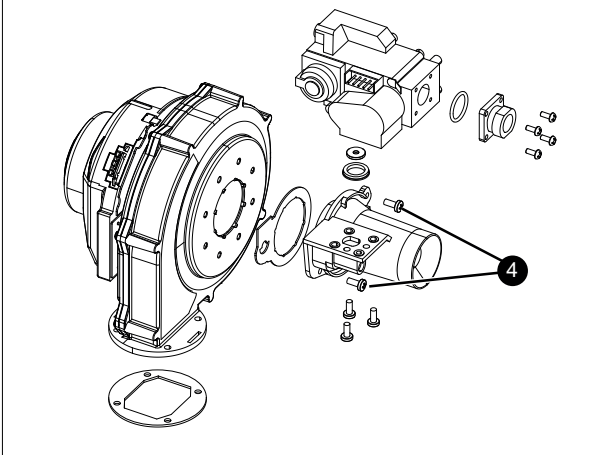
1. Refer to Frame 51.
2. Unscrew the nut and disconnect the flexible pipe.
3. Unscrew the top nut and remove the condensate trap.
4. Remove the ball from the condensate trap and flush out with water to remove any debris.
5. Reassemble in reverse order.
6. Check the operation of the boiler (Refer to frame 51)



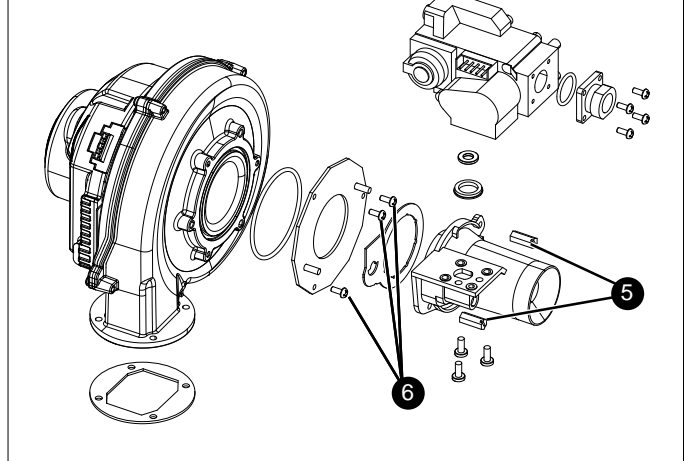
## 59 FAN REPLACEMENT

1. Refer to Frame 51.
2. Remove the upper front panel (Refer to frame 53).
3. Remove the fan and gas assembly (Refer to frame 54).
4. Remove the screws retaining the venturi to the fan (for 30, 40, 60, 80, 100 & 120 or mixing chambers (150 only)).
5. Remove the extended nuts holding the venturi to the fan (80 only).
6. Remove the screws retaining the fan plate (80 only) or mixing chamber to fan (150 only).
7. Transfer venturi and gas valve assembly to the new fan.
8. Reassemble in reverse order replacing all gaskets.
9. Check the operation of the boiler (Refer to frame 51).

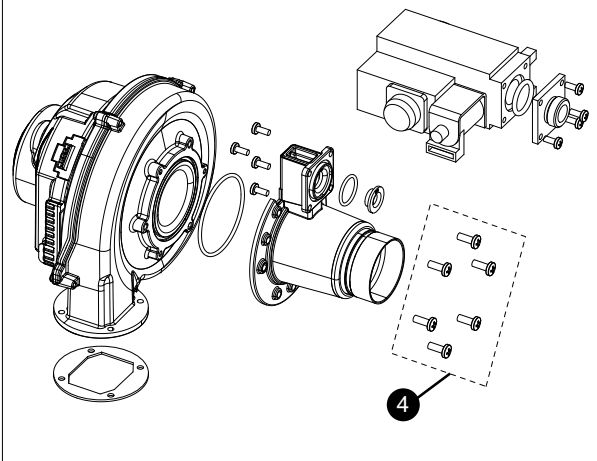
Evomax 30, 40 & 60



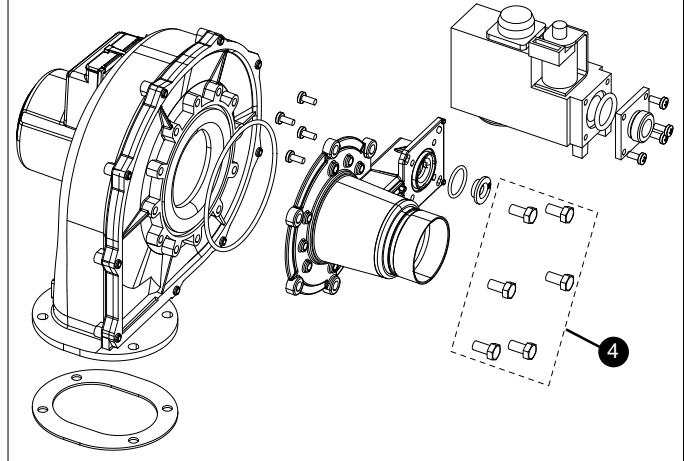
Evomax 80



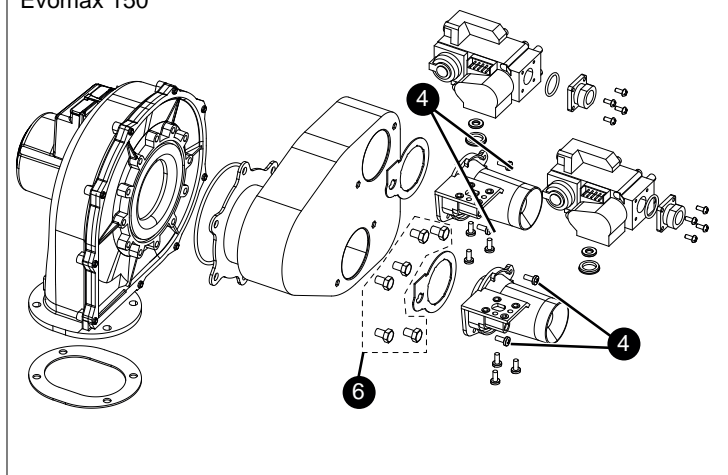
Evomax 100



Evomax 120



Evomax 150



**Gas Management Assembly Part No's**

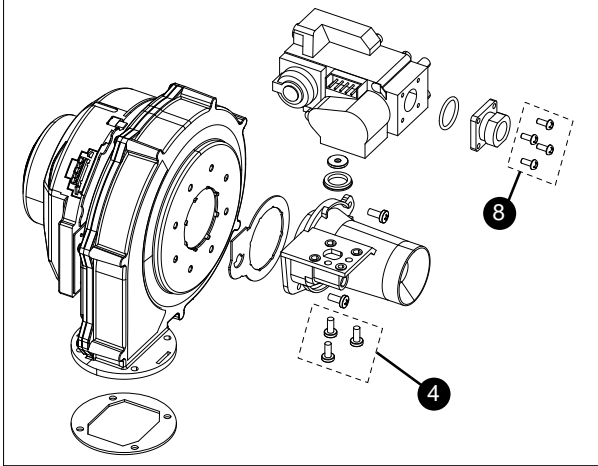
Model	Fan	Venturi	Valve	Injector
30	176272	176359	176313	176368
30P	176272	176359	176313	176558
40	176272	176360	176313	176369
40P	176272	176360	176313	176559
60	176272	176361	176313	176370
60P	176272	176361	176313	176560
80	176273	176362	176313	176371
80P	176273	176362	176313	176561
100	176273	175232	176358	176373
120	176274	174381	176777	176373
150	176274	176362	176313	176371



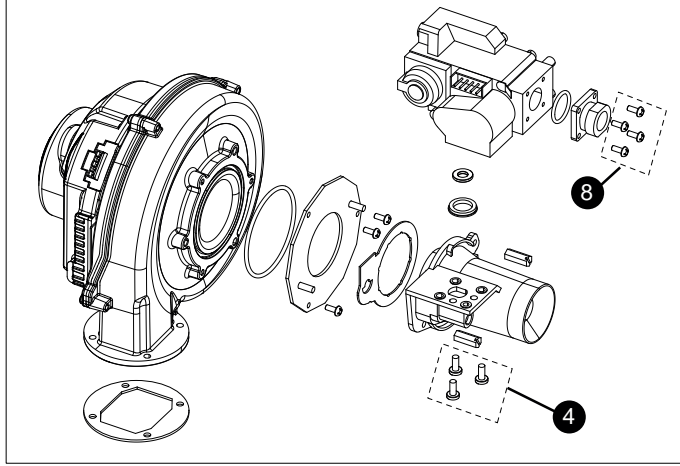
## 60 GAS VALVE REPLACEMENT

1. Refer to Frame 51.
2. Remove the upper front panel (Refer to frame 53).
3. Remove the fan and gas assembly (Refer to frame 54).
4. Remove the 3 screws holding the gas valve to the venturi (30,40,60,80 only).
5. Remove the venturi from the fan to access the gas valve fixing screws (100/120 only Refer to frame 59).
6. Remove the four screws retaining the gas valve.
7. Remove the venturi from the mixture chamber before removing the gas valve (as in (4) - 150 only).
8. Remove the 4 screws retaining the inlet flange to gas valve & transfer to new valve (100/120 only).
9. Fit new gas valve to venturi using the new seal provided, ensure gas injector is fitted correctly.
10. Reassemble in reverse order replacing all gaskets.
11. Check the operation of the boiler (Refer to frame 51).

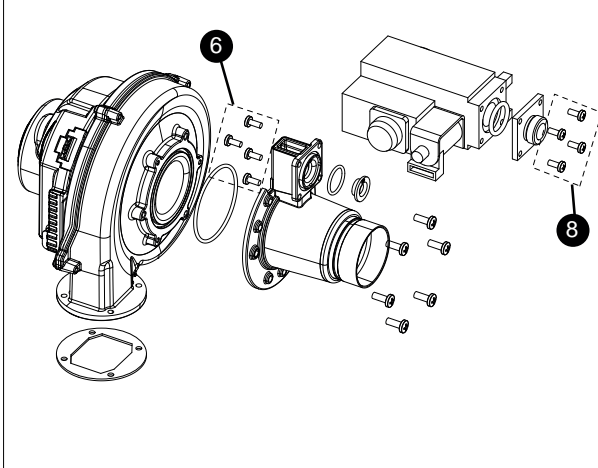
Evomax 30, 40 & 60



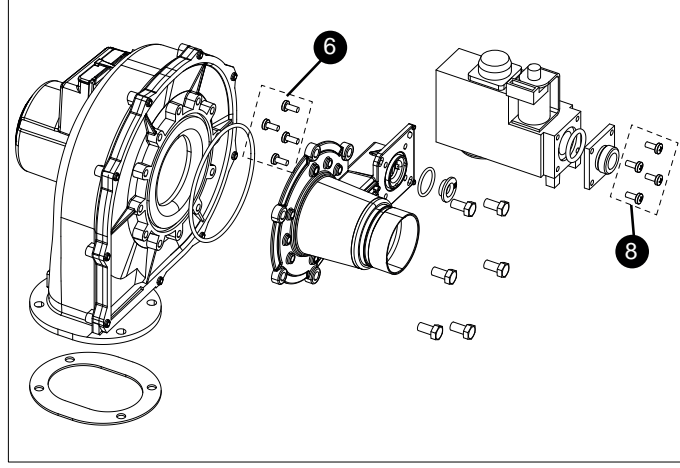
Evomax 80



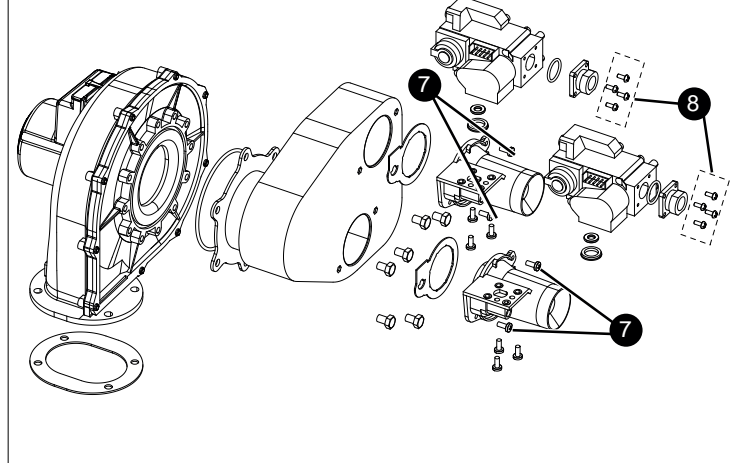
Evomax 100



Evomax 120



Evomax 150



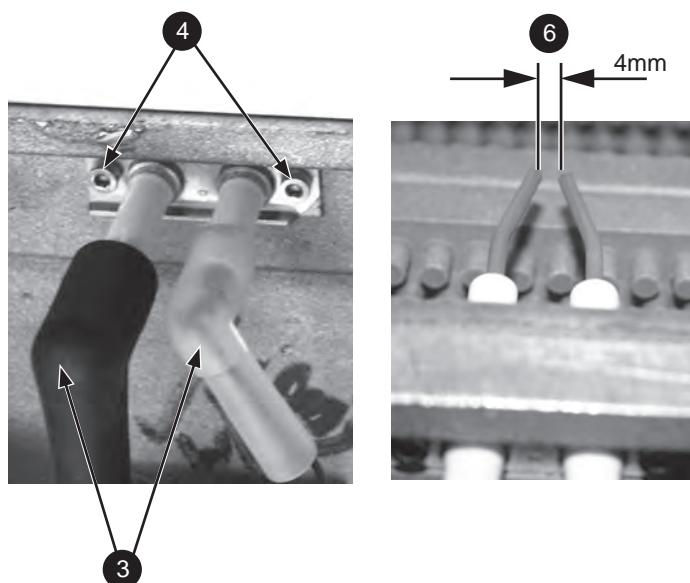
Gas Management Assembly Part No's				
Model	Fan	Venturi	Valve	Injector
30	176272	176359	176313	176368
30P	176272	176359	176313	176558
40	176272	176360	176313	176369
40P	176272	176360	176313	176559
60	176272	176361	176313	176370
60P	176272	176361	176313	176560
80	176273	176362	176313	176371
80P	176273	176362	176313	176561
100	176273	175232	176358	176373
120	176274	174381	176777	176373
150	176274	176362	176313	176371

## 61 VENTURI REPLACEMENT

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Remove the fan and gas assembly (Refer to frame 54)
4. Remove venturi from fan / mixture chamber and gas valve (Refer to frame 59/60)
5. Replace with new venturi ensuring the gas orifice is fitted and seal is replaced.
6. Reassemble in reverse order replacing all gaskets.
7. Check the operation of the boiler (Refer to frame 51)

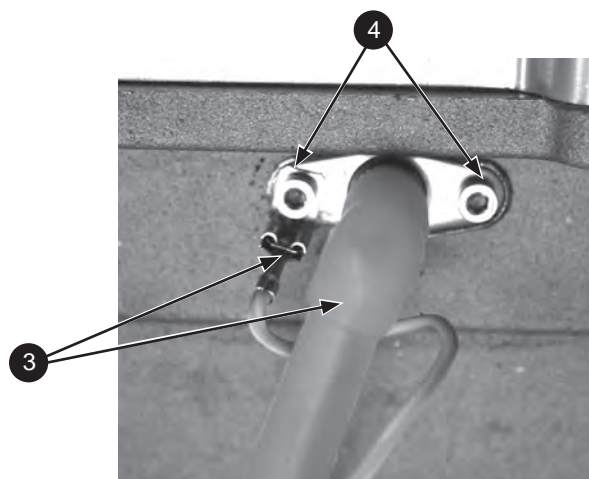
## 62 IGNITION ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Pull off the spark lead and earth connection.
4. Remove the two retaining cap head screws.
5. Pull out the electrode and pull off the old gasket.
6. Replace with new electrode and gasket supplied checking the spark gap is 4mm.
7. Reassemble in reverse order.
8. Check the operation of the boiler (Refer to frame 51)



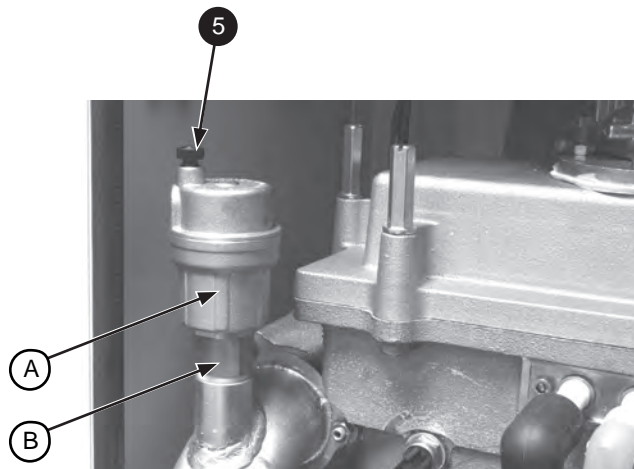
## 63 DETECTION ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53)
3. Pull off the HT lead and earth connection.
4. Remove the two retaining cap head screws.
5. Pull out the electrode and pull off the old gasket.
6. Replace with new electrode and gasket.
7. Reassemble in reverse order.
7. Check the operation of the boiler (Refer to frame 51)



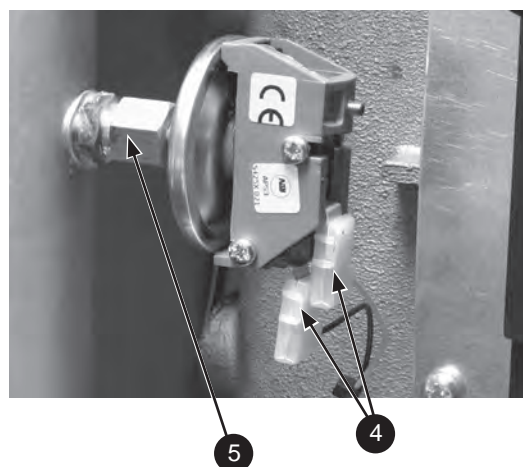
## 64 AUTOMATIC AIR VENT REMOVAL

1. Refer to Frame 51.
2. Remove the front panel. Refer to Frame 63.
3. Unscrew the air vent (A) from the self sealing fitting (B) on the top left of the flow pipe.
4. Fit the new air vent.
5. Ensure the black plastic vent cap is loose to allow air to escape. Air in the boiler could cause damage to the heat exchanger.
6. Re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 51.



## 65 WATER PRESSURE SWITCH REPLACEMENT

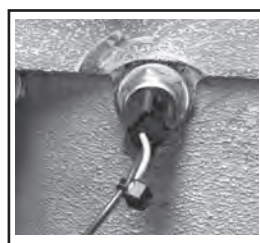
1. Refer to Frame 51.
2. Remove the front panel (Refer to frame 53).
3. Isolate the water circuit and drain the boiler.
4. Disconnect the electrical connections from the switch.
5. Unscrew the water pressure switch.
6. Refit new switch.
7. Connect electrical connections.
8. Refill the system ensuring all the air escapes via the air vent.
9. Reassemble in reverse order.
10. Check the operation of the boiler (Refer to frame 51).



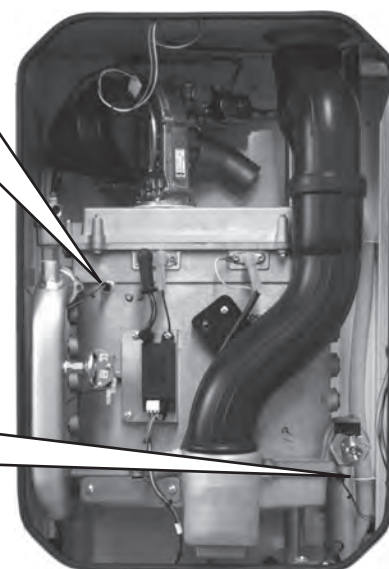
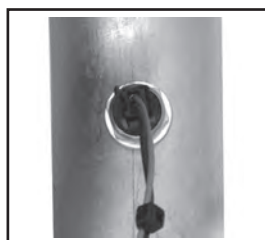
## 66 FLOW/RETURN THERMISTOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the front panel. Refer to Frame 53.
3. Isolate the water circuit and drain the system.
4. Disconnect the electrical connections from the thermistor.
5. Unscrew the thermistor.
6. Fit the new thermistor with built in 'O' ring seal. Do not overtighten.
7. Refill the system ensuring all the air in the heat exchanger is vented through the air vent.
8. Re-assemble in reverse order.
9. Check the operation of the boiler. Refer to Frame 51.

FLOW



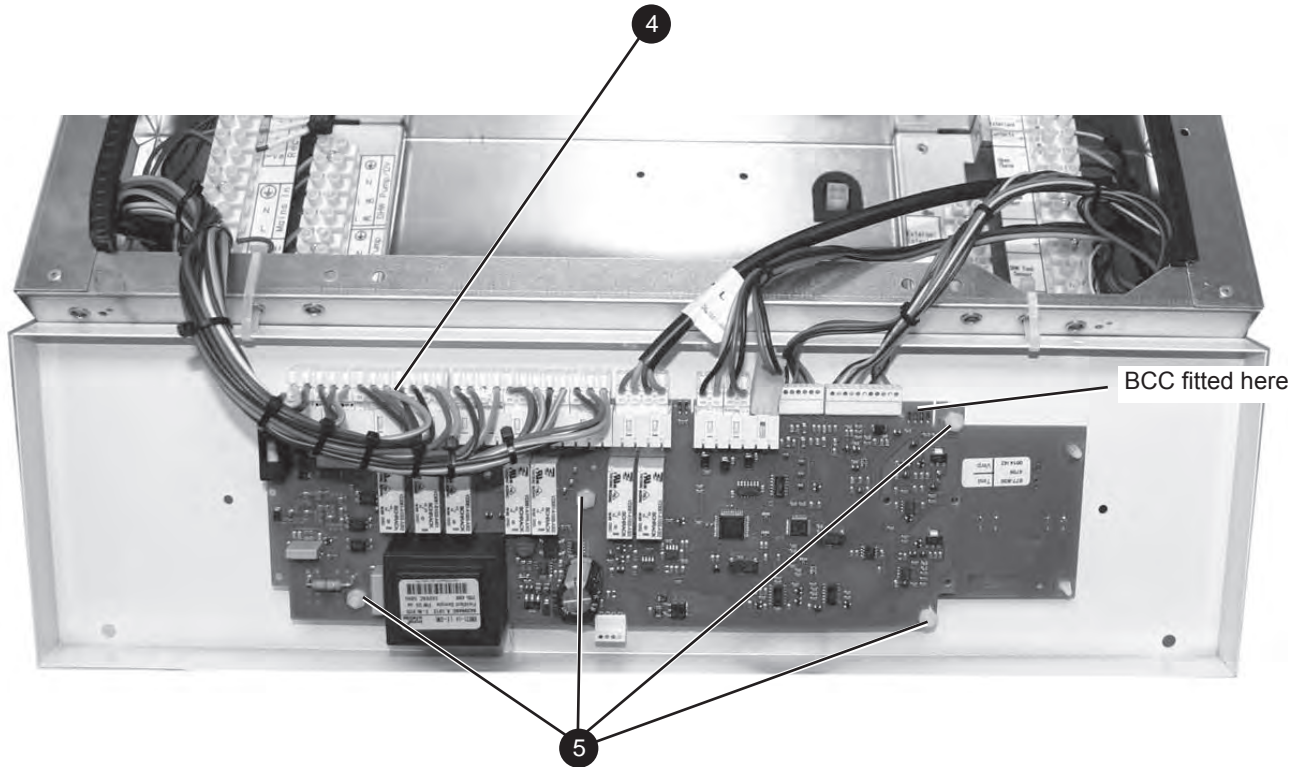
RETURN





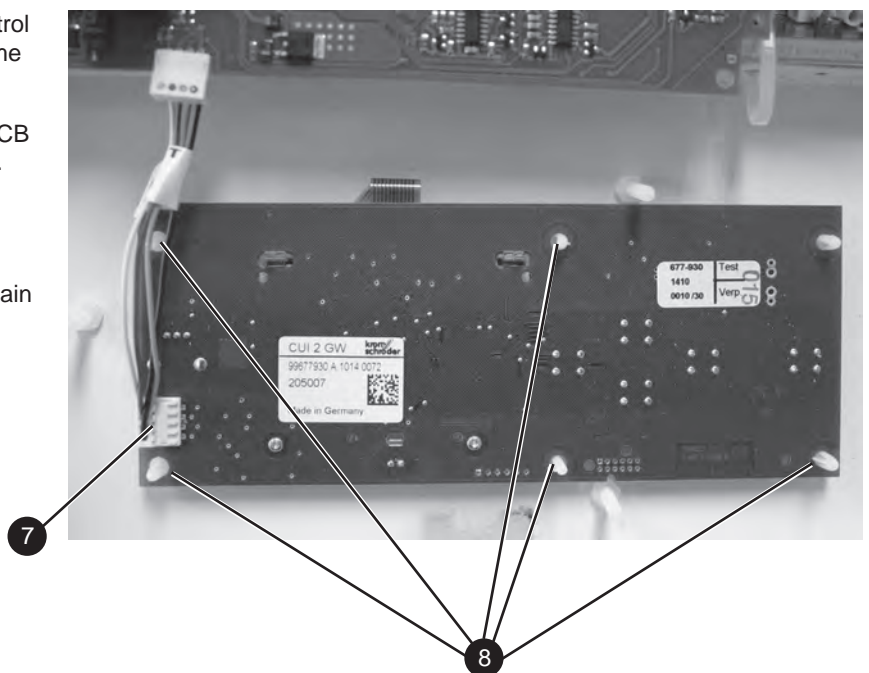
## 67 MAIN PCB REPLACEMENT

1. Refer to Frame 51.
2. Remove the upper front panel & put the control panel into the service position. Refer to Frame 53.
3. Fit the earth strap provided with the spare PCB to your wrist and to a suitable earthed metal.
4. Pull off all of the main PCB connectors.
5. Remove the four plastic nuts retaining the main PCB.
6. Fit new PCB and BCC (BCC must be fitted or boiler will not work) and re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 51.



## 68 USER INTERFACE BOARD

1. Refer to Frame 51.
2. Remove the upper front panel & put the control panel into the service position. Refer to Frame 53.
3. Fit the earth strap provided with the spare PCB to your wrist and to a suitable earthed metal.
4. Pull off all of the main PCB edge connectors (refer to Frame 67).
5. Remove the four plastic nuts retaining the main PCB - see item 5 in Frame 67.
6. Remove the main PCB.
7. Pull off the user interface edge connector.
8. Unclip the board and lift to clear the six mounting posts.
9. Fit the new user interface.
10. Reassemble in reverse order.
10. Check the operation of the boiler. Refer to Frame 51.

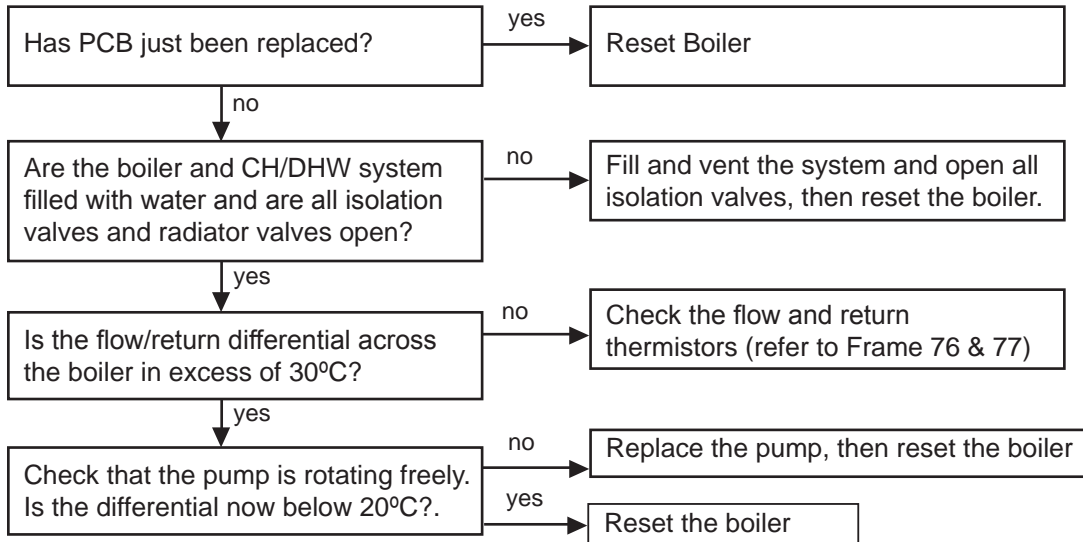




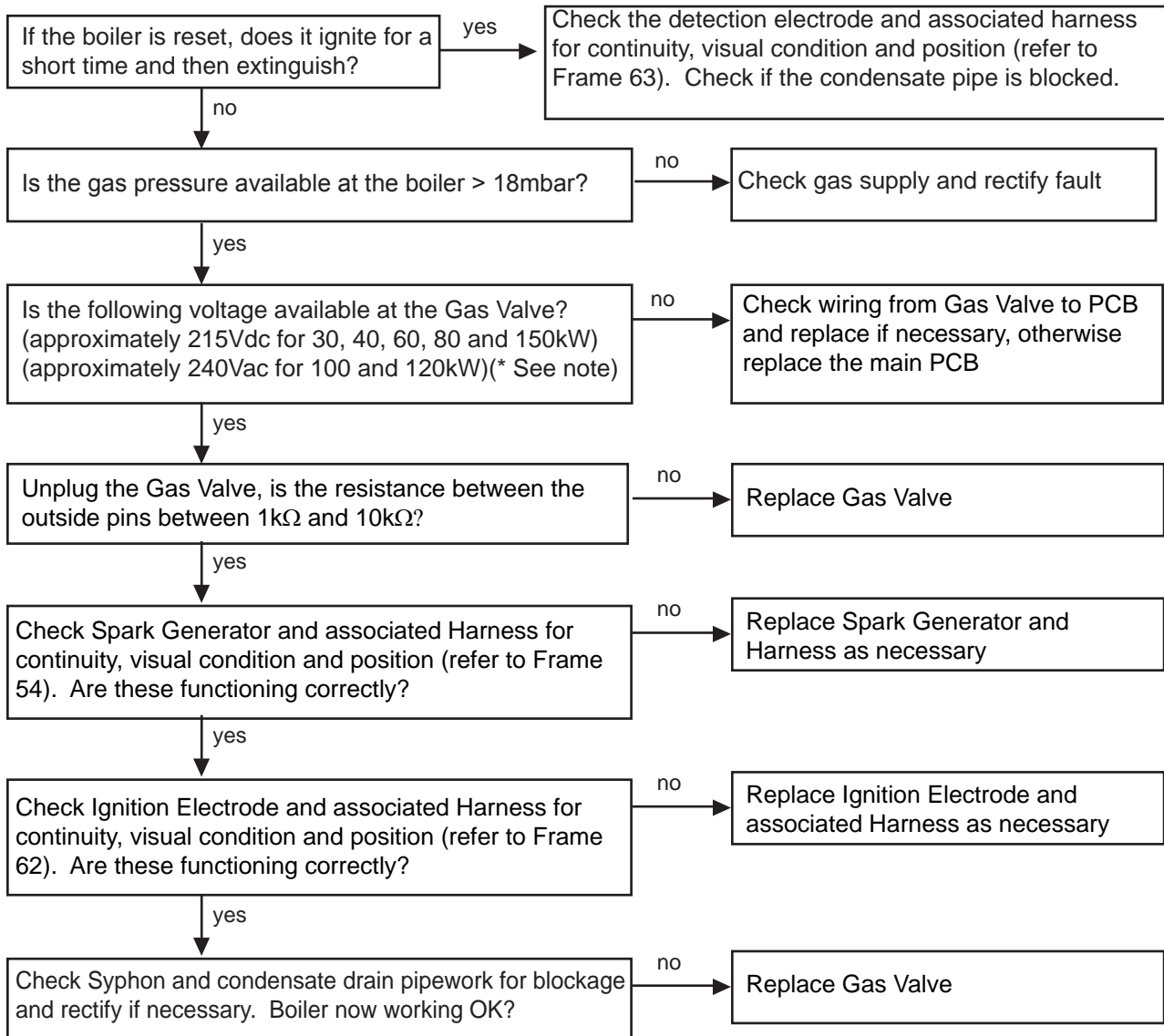


## FAULT FINDING

### 70 OVERHEAT LOCKOUT



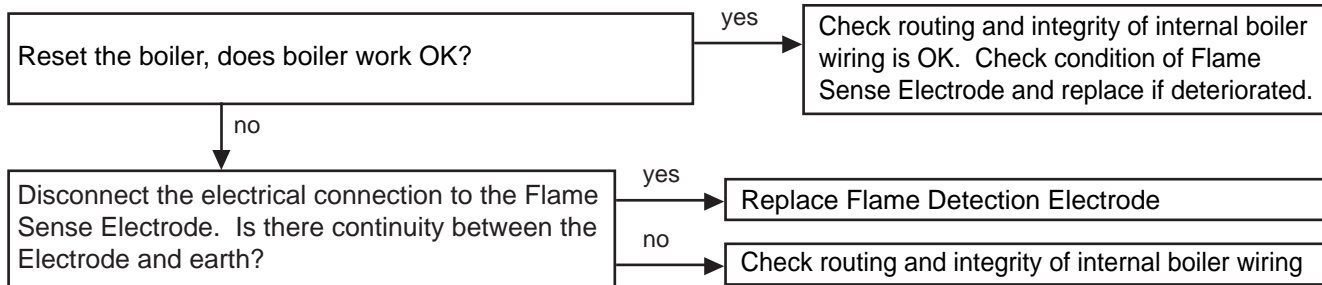
### 71 IGNITION LOCKOUT



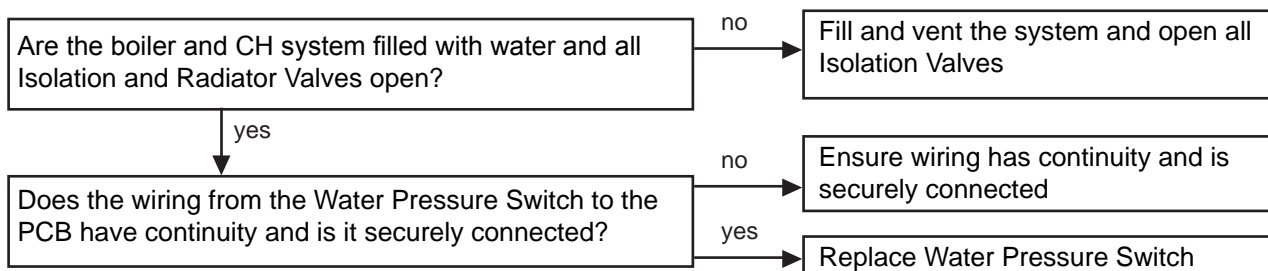
\* Note: due to the wave form of the rectified voltage, the reading will vary depending on the type of meter used to measure the value. In general terms a reading of greater than 150V indicates that the correct voltage is supplied to the gas valve.

## FAULT FINDING

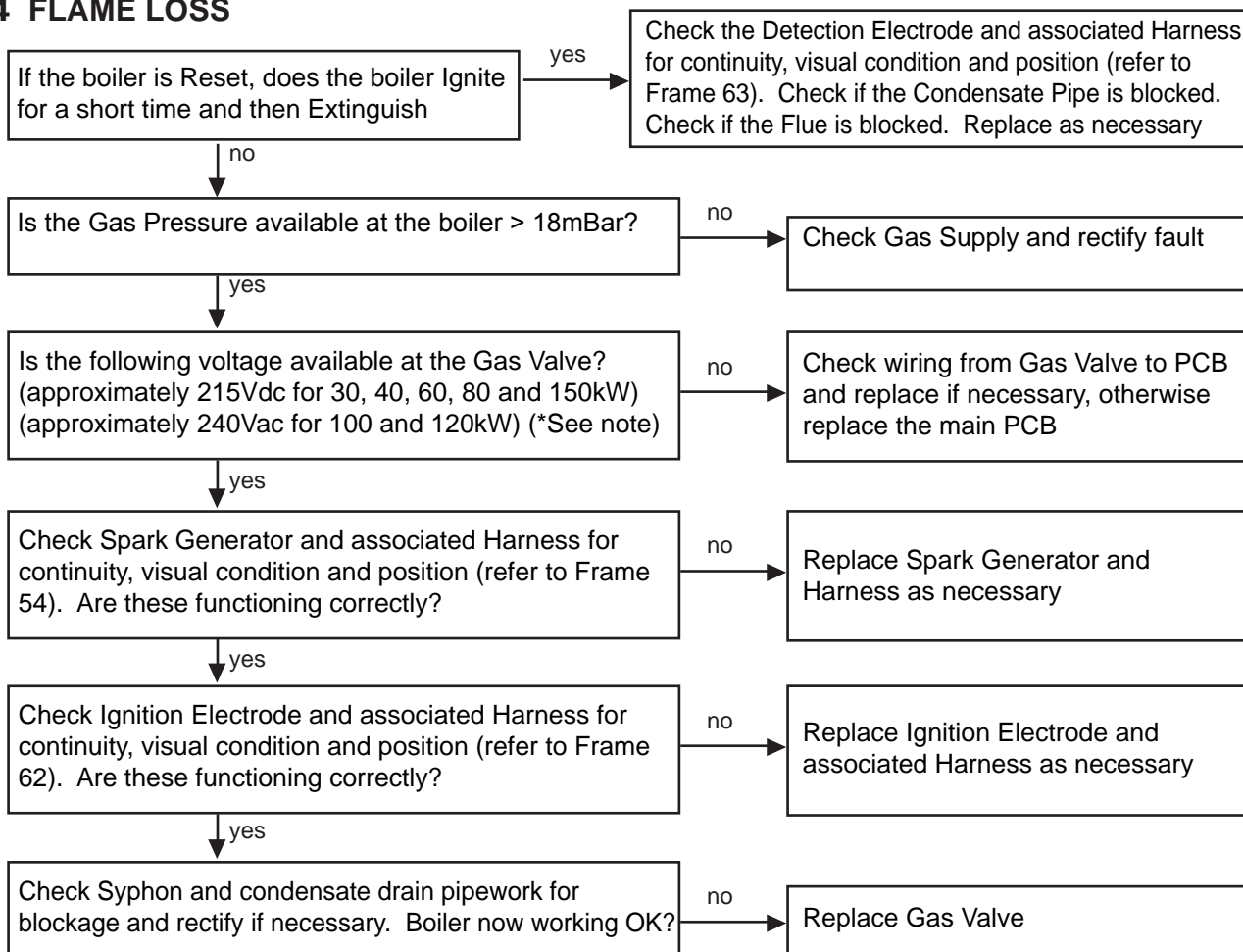
### 72 FALSE FLAME LOCKOUT / ERROR 20



### 73 LOW WATER PRESSURE



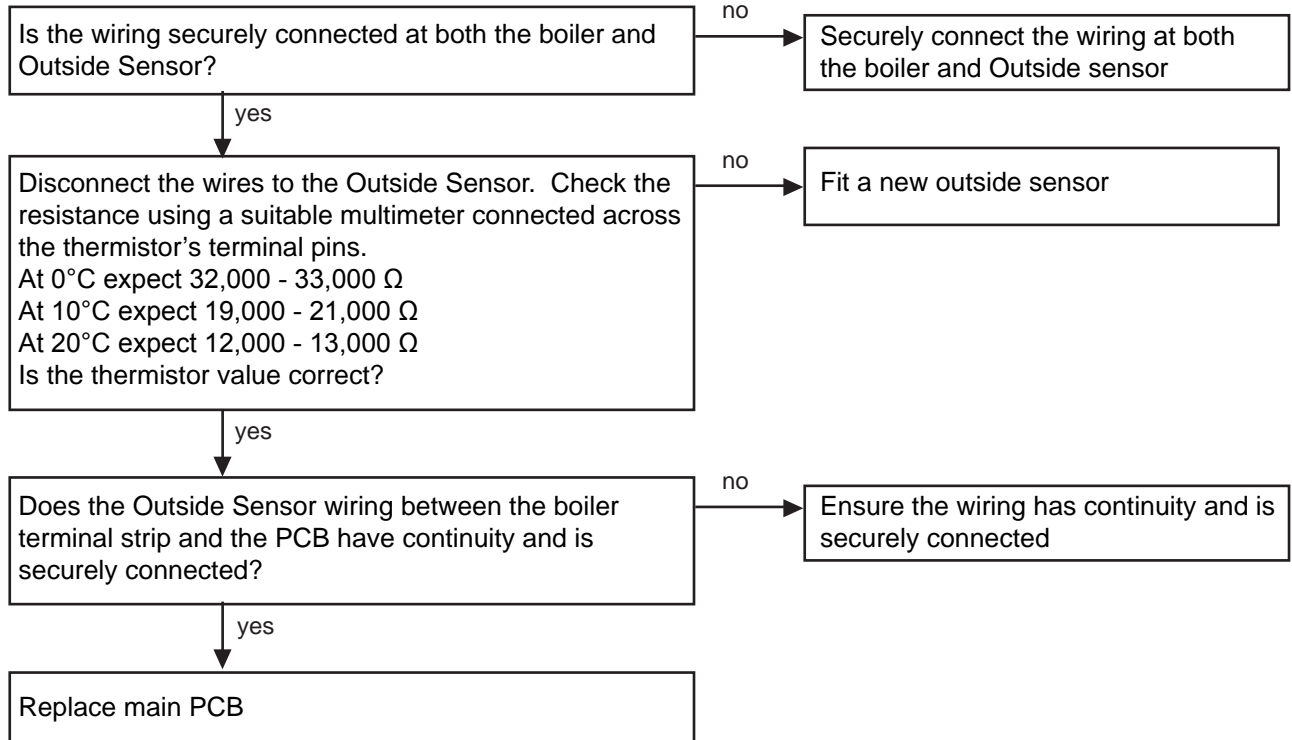
### 74 FLAME LOSS



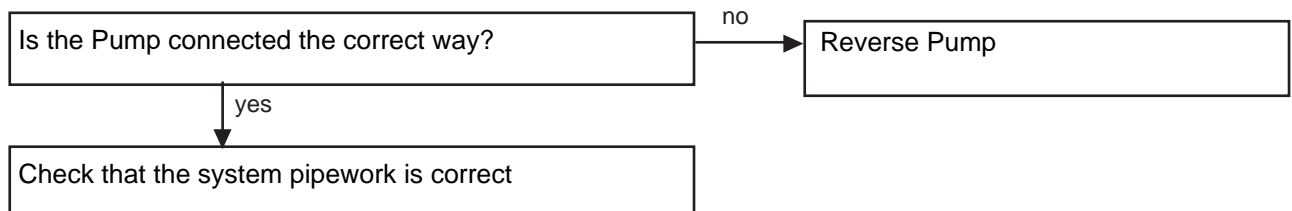
\* Note: due to the wave form of the rectified voltage, the reading will vary depending on the type of meter used to measure the value. In general terms a reading of greater than 150V indicates that the correct voltage is supplied to the gas valve



**78 OUTSIDE SENSOR FAULT**

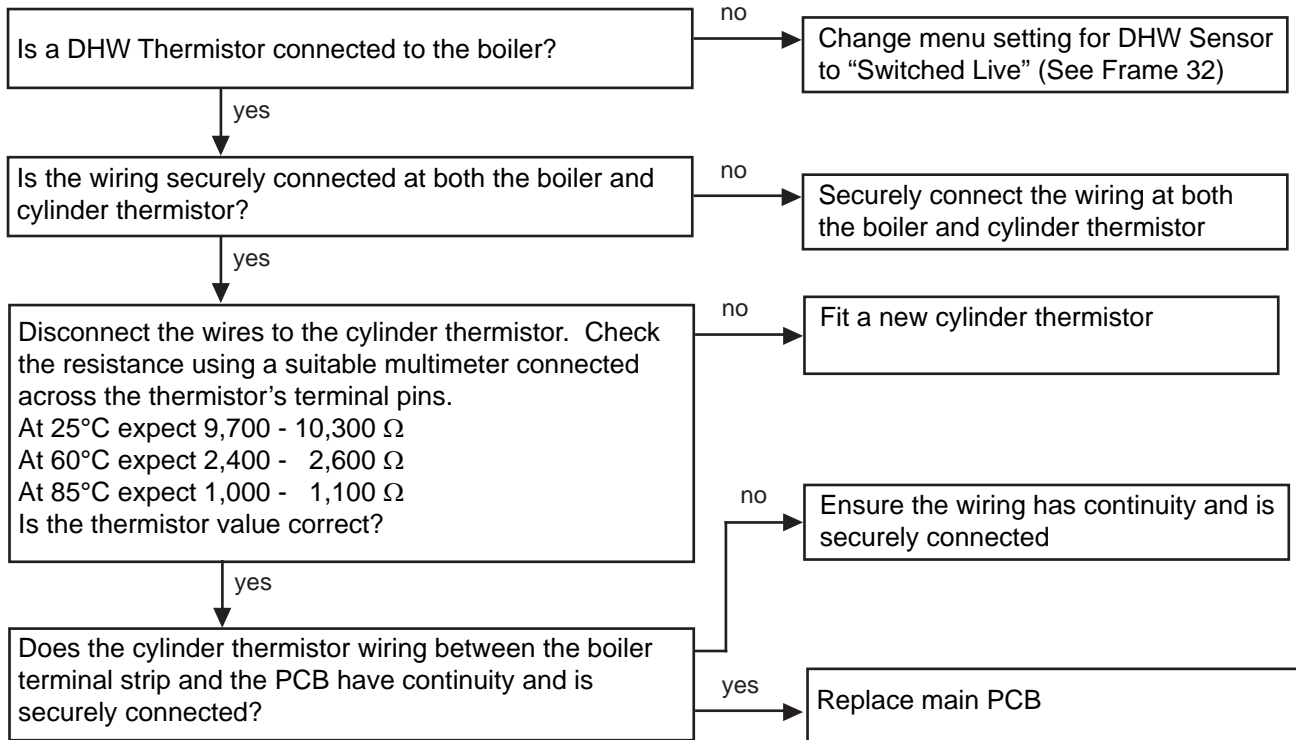


**79 FLOW/RETURN REVERSED**

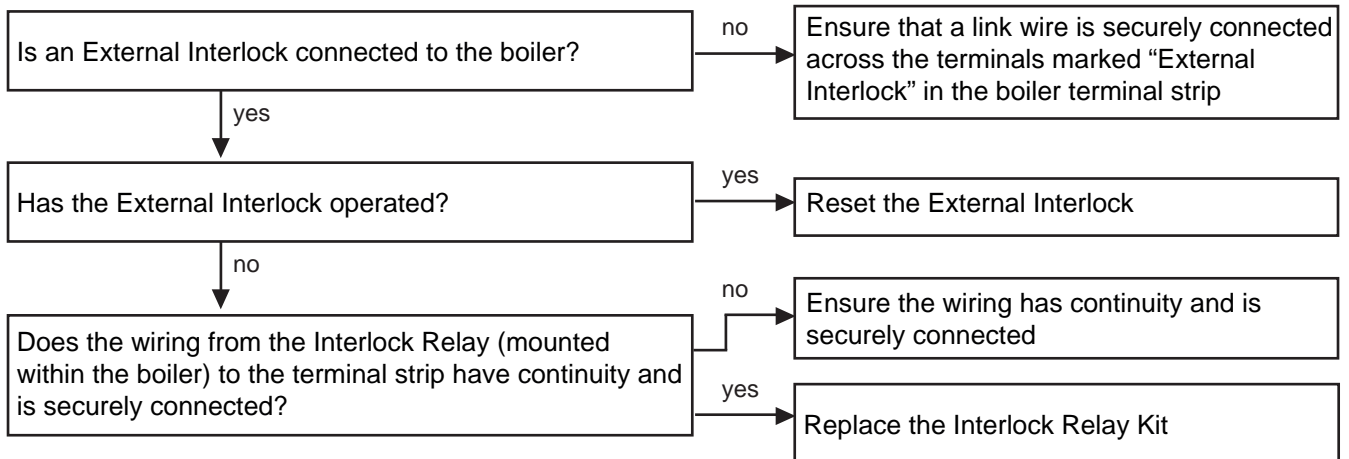


## FAULT FINDING

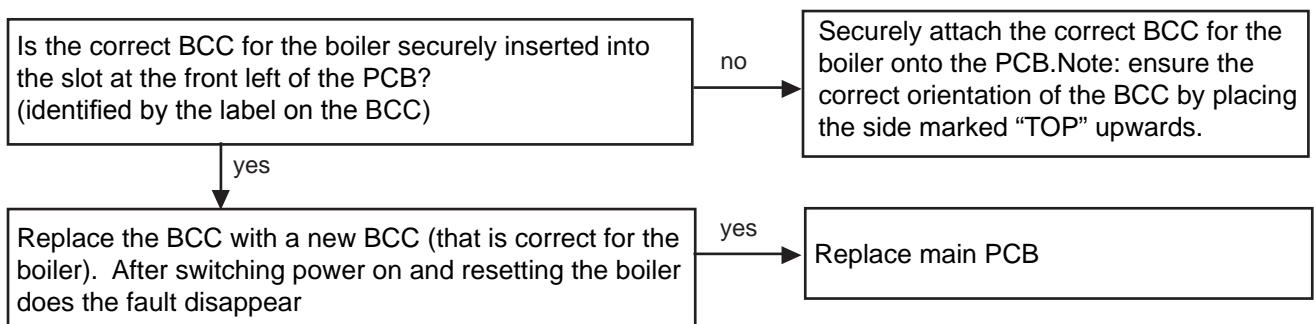
### 80 CYLINDER THERMISTOR FAULT



### 81 EXTERNAL INTERLOCK OFF

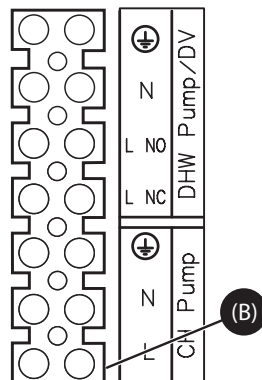
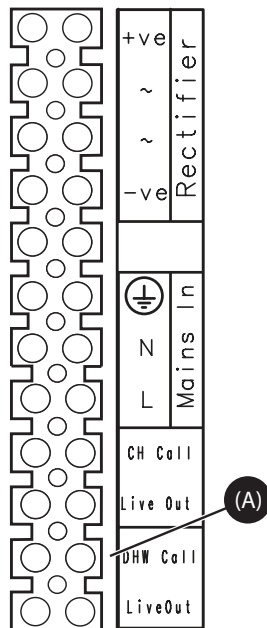
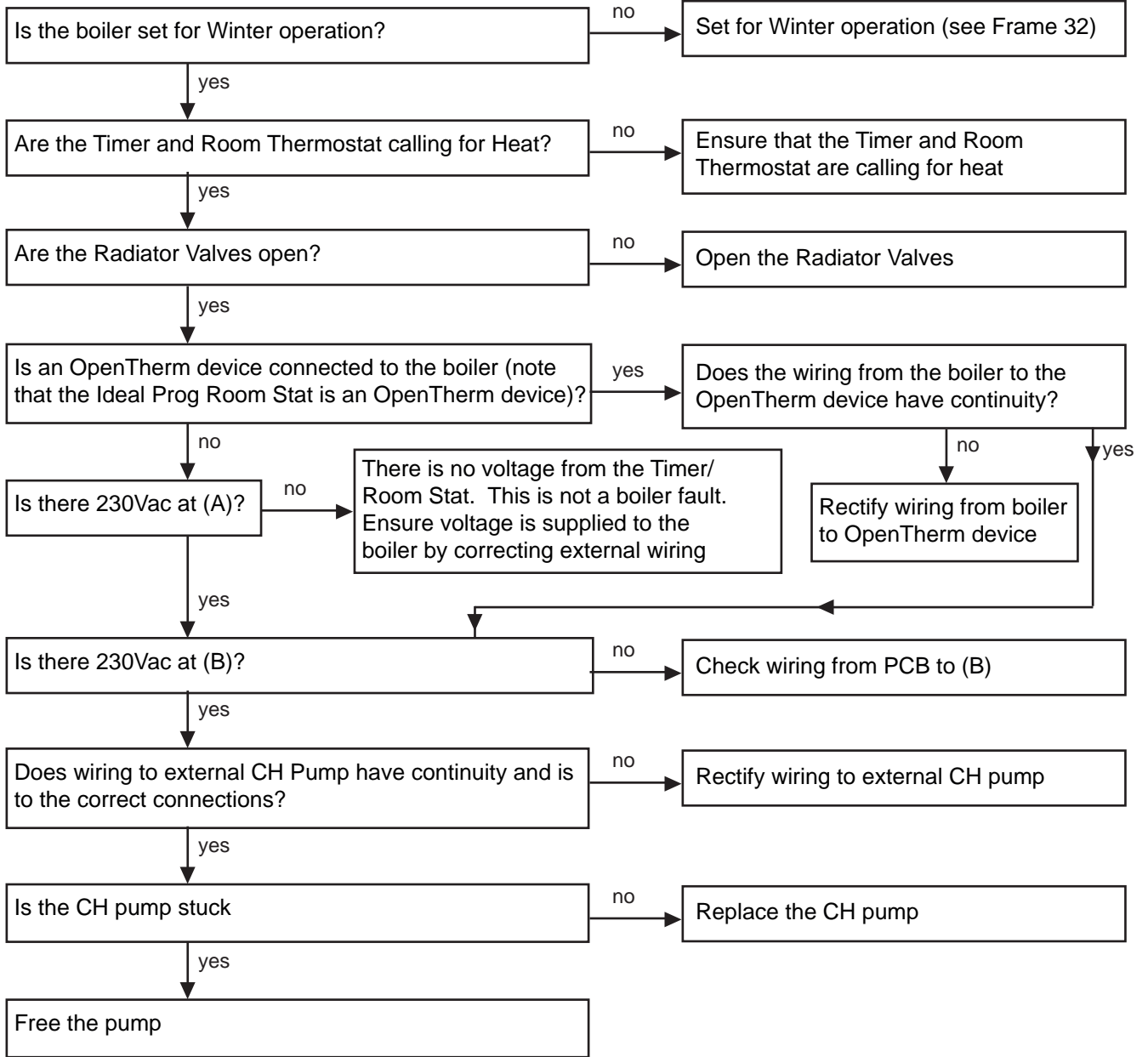


### 82 BCC FAULT



# FAULT FINDING

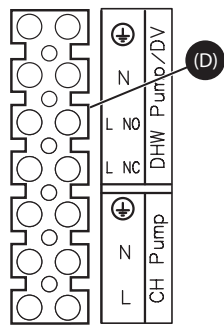
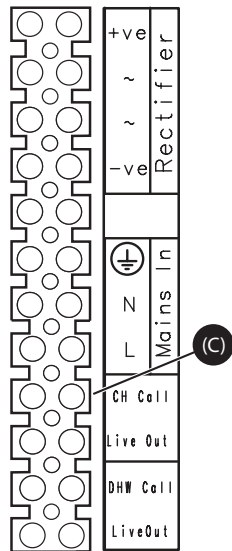
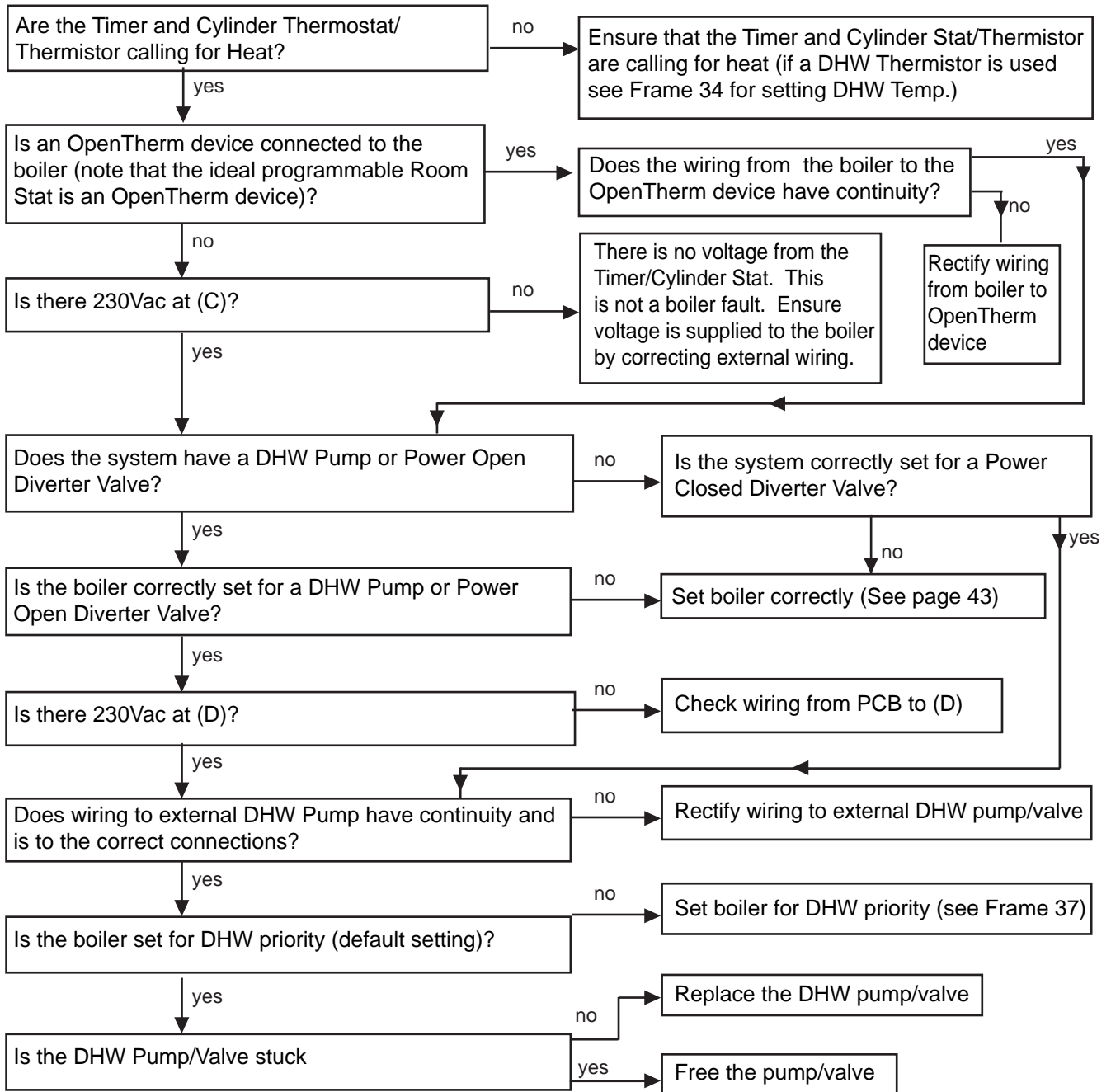
## 83 NO CH BUT DHW OK





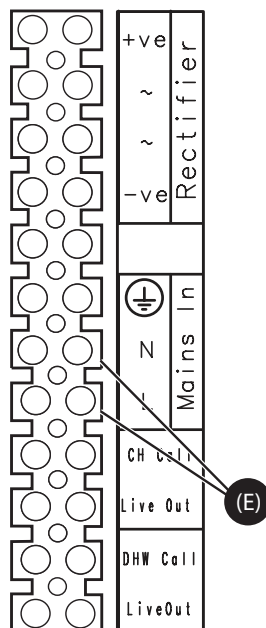
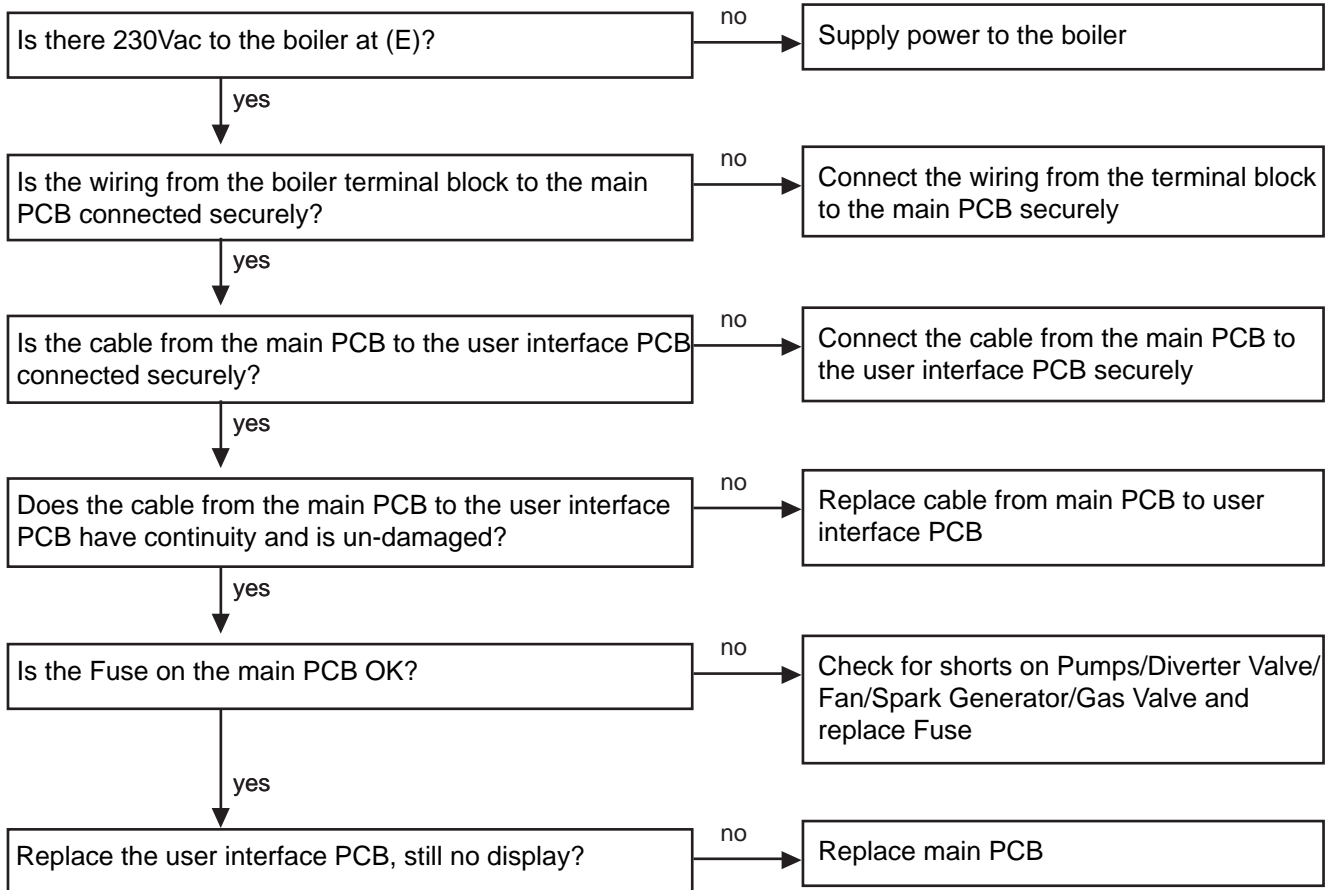
## FAULT FINDING

### 84 NO DHW BUT CH OK



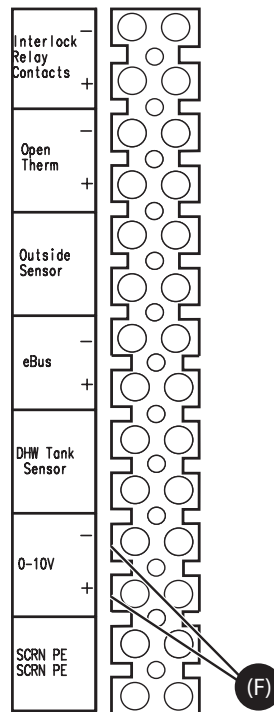
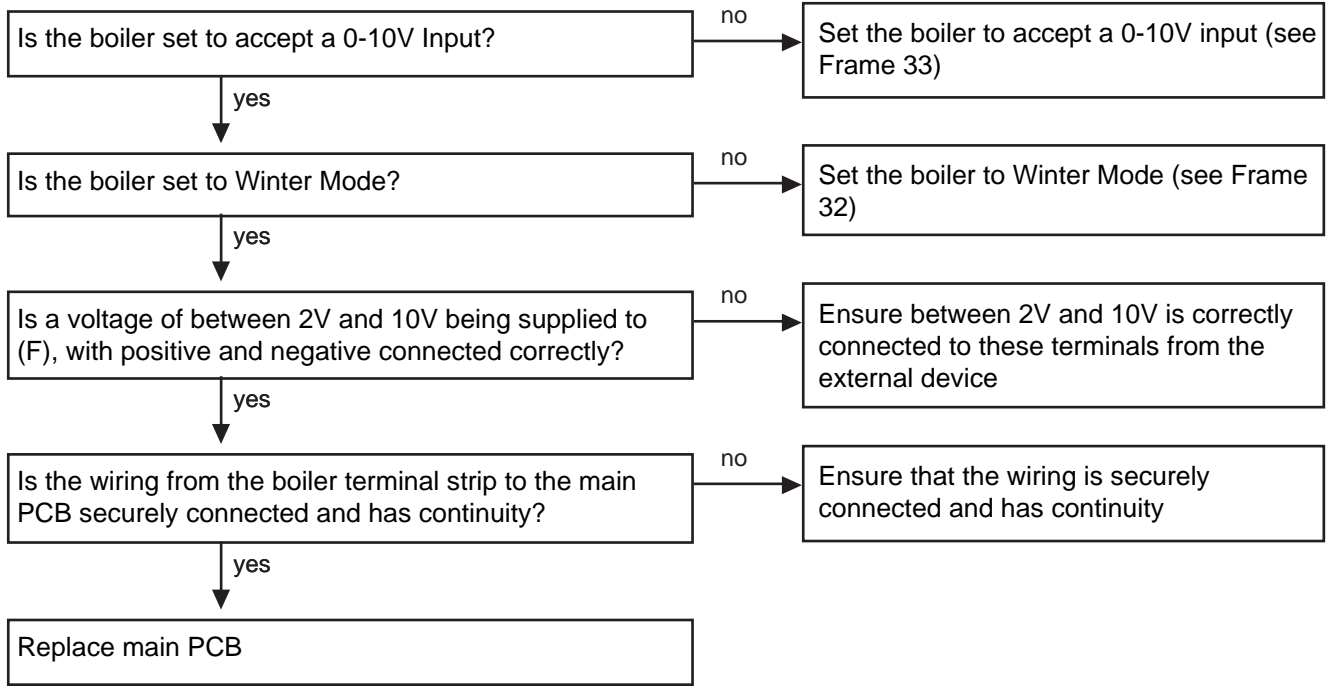
# FAULT FINDING

## 85 NO DISPLAY



# FAULT FINDING

## 86 0-10V INTERFACE



## 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 e.g. Evomax 120
- Appliance GC Number e.g. 41-750-38A
- Boiler Serial Number e.g. ACK 205962000000480101

### **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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