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 where you can download the relevant information in PDF format.

May 2017
UIN 206210 A14
## ERP DATA

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### Nominal Heat Output for Space Heating

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### Auxiliary Electricity Consumption

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<th>Part Load</th>
<th>Standby</th>
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<tr>
<td>$e_{elmax}$ kW</td>
<td>$e_{elmin}$ kW</td>
<td>$P_{stby}$ kW</td>
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<tr>
<td>0.134</td>
<td>0.03</td>
<td>0.006</td>
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<td>0.134</td>
<td>0.03</td>
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<td>0.006</td>
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### Seasonal Space Heating Energy Efficiency

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### Emissions

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<th>NOx</th>
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<td>35</td>
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### Annual Energy Consumption

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<th>QHE</th>
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<td>93.0</td>
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<td>185.8</td>
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### Sound Power Level, Indoors

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EVOMAX HEAT BOILER
Ideal Boilers

ERP DATA

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<td>Rated heat output</td>
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<tr>
<td>Seasonal space heating energy efficiency</td>
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<td>Annual energy consumption</td>
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<td></td>
<td>GJ</td>
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<tr>
<td></td>
<td>dB</td>
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**Seasonal Space Heating Energy Efficiency of the Boiler**

Temperature control (from fiche of temperature control)

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<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Class V</th>
<th>Class VI</th>
<th>Class VII</th>
<th>Class VIII</th>
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<tr>
<td>1%</td>
<td>2%</td>
<td>1.5%</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
<td>3.5%</td>
<td>5%</td>
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</table>

Solar Contribution (from fiche of solar device)

Collector Size (in m²)

Tank Volume (in m³)

Collector Efficiency (in %)

Tank rating

A* = 0.95
A = 0.91
B = 0.86
C = 0.83
D-G = 0.81

= \( \left( \text{III} \times + \text{IV} \times \right) \times 0.9 \times \frac{1}{100} \times = \) %

Seasonal Space Heating Energy Efficiency of Package

TOTAL: A+B+C= %

Seasonal Space Heating Energy Efficiency Class of Package

< 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.

EVOMAX - Installation & Servicing
Note.

Natural gas consumption is calculated using a calorific value of 37.8 MJ/m\(^3\) (1038 Btu/ft\(^3\)) gross or 34 MJ/m\(^3\) (910 Btu/ft\(^3\)) nett at 15\(^\circ\)C and 1013.25 mbar.

a. For l/s divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m\(^3\)).

b. For ft\(^3\)/h divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft\(^3\)).

c. For m\(^3\)/h multiply l/s by 3.6.

d. 1kW = 3412 BTU/hr.

e. 1m\(^3\) = 35.3 ft\(^3\)

f. 1mg/kWh (NOx) = 0.568 ppm DAF (natural gas).

Propane gas consumption is calculated using a calorific value of 95.7 MJ/m\(^3\) (2500 Btu/ft\(^3\)) gross or 88.0 MJ/m\(^3\) (2300 Btu/ft\(^3\)) nett at 15\(^\circ\)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.

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### Table 1 Performance Data (Natural Gas)

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<th>40P</th>
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<th>60P</th>
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<th>80P</th>
<th>100</th>
<th>120</th>
<th>150</th>
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<td>30</td>
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<td></td>
</tr>
</tbody>
</table>

* 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.**

Propane gas consumption is calculated using a calorific value of 95.7 MJ/m\(^3\) (2500 Btu/ft\(^3\)) gross or 88.0 MJ/m\(^3\) (2300 Btu/ft\(^3\)) nett at 15\(^\circ\)C and 1013.25 mbar.

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

EVOMAX
30, 40, 60, 80, 100, 120, & 150
30P, 40P, 60P & 80P
Natural Gas & LPG
Destination Countries: GB, IE

<table>
<thead>
<tr>
<th>Boiler size</th>
<th>G.C. Appliance No. (Benchmark No.)</th>
<th>PI No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>41-750-33A</td>
<td>86-CL-166</td>
</tr>
<tr>
<td>40</td>
<td>41-750-34A</td>
<td>86-CL-166</td>
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<tr>
<td>60</td>
<td>41-750-35A</td>
<td>86-CL-166</td>
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<tr>
<td>80</td>
<td>41-750-36A</td>
<td>86-CL-166</td>
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<tr>
<td>100</td>
<td>41-750-37A</td>
<td>86-CL-166</td>
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<tr>
<td>120</td>
<td>41-750-38A</td>
<td>86-CL-166</td>
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<td>150</td>
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<td>41-750-41</td>
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<td>60P</td>
<td>41-750-42</td>
<td>86-CL-166</td>
</tr>
<tr>
<td>80P</td>
<td>41-750-43</td>
<td>86-CL-166</td>
</tr>
</tbody>
</table>

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.
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.
II2H3P = 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

• 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
• 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 II2H and cannot be converted to natural gas operation only using the approved conversion kit supplied by Ideal.

Natural gas variants of the Evomax are Cat I2H 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.13831 Specification for: Expansion vessels using an internal diaphragm, for sealed hot water heating systems.


IGE/UP/1 Soundness testing and purging of industrial and commercial gas installation.

IGE/UP/2 Gas installation pipework, boosters and compressors on industrial and commercial premises.

IGE/UP/10 Installation of gas appliances in industrial and commercial premises.

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:

• 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 a competent person.

An existing meter should be checked, preferably by the gas supplier, to ensure that the meter is adequate to deal with the 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**

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 plumbing 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 wall, above ground or above a roof edge 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

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.
GENERAL

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 11ºC, 15ºC or 20ºC temperature differentials and hydraulic resistances are given in the table below.

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 35ºC 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.

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

For further information contact:
Fernox Manufacturing Co. Ltd., Cookson Electronics, Forsyth Road, Sheerwater, Woking, Surrey, GU21 5RZ
Tel: +44 (0) 1799 521133
or
Sentinel Performance Solutions, The Heath Business and Technical Park, Runcorn, Cheshire, WA7 4QX
Tel: 0800 389 4670
www.sentinel-solutions.net

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. BS7593:1992 details the steps necessary to clean a domestic heating system.
3. In hard water areas, treatment to prevent limescale 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.

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.

---

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 | n/a* | 95.6 | 71.7 | n/a* | 315 | 134
Evomax 120 | n/a* | n/a* | 86.0 | n/a* | n/a* | 218
Evomax 150 | n/a* | n/a* | 107.5 | n/a* | n/a* | 230

* Models with n/a are due to excessive flow rates which will 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 35ºC. 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.

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10

EVOMAX - Installation & Servicing
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

**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

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### Boiler Dimensions

<table>
<thead>
<tr>
<th>Boiler</th>
<th>Dim. A</th>
<th>Dim. B</th>
<th>Dim. C</th>
</tr>
</thead>
<tbody>
<tr>
<td>30, 40, 60, 80</td>
<td>360</td>
<td>130</td>
<td>118</td>
</tr>
<tr>
<td>100, 120</td>
<td>520</td>
<td>226</td>
<td>118</td>
</tr>
<tr>
<td>150</td>
<td>610</td>
<td>233</td>
<td>120</td>
</tr>
</tbody>
</table>
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 SEAMED 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 4 bar (60 lbf/in²) 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 4 bar (60 lbf/in²).
   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 0-4 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.

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

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

Evomax 80 shown
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.

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 (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 (1/2") masonry drill, insert the plastic plugs provided.
4. Fix the wall bracket into place with 4 M10x70 hex head coach screws provided.

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

10 VENTILATION

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.

- 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.

<table>
<thead>
<tr>
<th>Boiler Size</th>
<th>30 &amp; 30P</th>
<th>40 &amp; 40P</th>
<th>60 &amp; 60P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum vent free area (cm²)</td>
<td>117</td>
<td>167</td>
<td>269</td>
</tr>
</tbody>
</table>

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 80, 80P, 100, 120, 150 and multiple boiler applications**

Detail reference should be made to BS. 6644 for inputs between 70kW and 1.8MW (net). In IE refer to the current edition of I.S.820. 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. In IE refer to the current edition of I.S.820.

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

Open Flued Installations

Required area (cm²) per kW of total rated input (net)

<table>
<thead>
<tr>
<th></th>
<th>Boiler room</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low level (inlet)</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>High level (outlet)</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

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).

Room Sealed Installations

A minimum of 2cm² free area per kW of net heat input at both high and low level is required for boiler rooms. For enclosures refer to BS6644.

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

<table>
<thead>
<tr>
<th>Room Sealed Application - Min. Vent Free Area (cm²)</th>
<th>Open Flue Application - Min. Vent Free Area (cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To a room or internal space</td>
<td>To a room or internal space</td>
</tr>
<tr>
<td>To outside Air</td>
<td>To Outside Air</td>
</tr>
<tr>
<td>Boiler Size</td>
<td>30</td>
</tr>
<tr>
<td>High Level</td>
<td>310</td>
</tr>
<tr>
<td>Low level</td>
<td>310</td>
</tr>
</tbody>
</table>

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.
### 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 20) must be subtracted from the maximum flue extensions allowed for that flue option.

### 12 HORIZONTAL WALL FLUE KIT

<table>
<thead>
<tr>
<th>Model</th>
<th>30/30P</th>
<th>40/40P</th>
<th>60/60P</th>
<th>80/80P</th>
<th>100</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flue length (m)</td>
<td>42</td>
<td>42</td>
<td>7.5</td>
<td>12</td>
<td>14.3</td>
<td>17.6</td>
</tr>
<tr>
<td>Flue Size</td>
<td>80 / 125</td>
<td>100 / 150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall flue kit No</td>
<td>213267</td>
<td>213269</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Model</th>
<th>60/60P</th>
<th>80/80P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flue length (m)</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Flue Size</td>
<td>100 / 150</td>
<td></td>
</tr>
<tr>
<td>Wall flue kit No</td>
<td>213268</td>
<td></td>
</tr>
</tbody>
</table>

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

**Note:** See Frame 18 for elbow equivalent lengths.
14  VERTICAL ROOF FLUE KIT

Evomax vertical concentric flue application ~ maximum lengths and pressure differentials

<table>
<thead>
<tr>
<th>Model</th>
<th>30/30P</th>
<th>40/40P</th>
<th>60/60P</th>
<th>80/80P</th>
<th>100</th>
<th>120</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flue length (m)</td>
<td>42</td>
<td>42</td>
<td>7.5</td>
<td>12</td>
<td>14.3</td>
<td>17.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Flue Size</td>
<td>80 / 125</td>
<td>100 / 150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical flue kit No</td>
<td>213264</td>
<td>213266</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model</th>
<th>60/60P</th>
<th>80/80P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flue length (m)</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Flue Size</td>
<td>100 / 150</td>
<td></td>
</tr>
<tr>
<td>Vertical flue kit No</td>
<td>213265</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model</th>
<th>30/30P</th>
<th>40/40P</th>
<th>60/60P</th>
<th>80/80P</th>
<th>100</th>
<th>120</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max flue length (m)</td>
<td>65</td>
<td>70</td>
<td>25</td>
<td>22</td>
<td>20</td>
<td>49</td>
<td>32</td>
</tr>
<tr>
<td>Max flue press diff (Pa)</td>
<td>140</td>
<td>225</td>
<td>150</td>
<td>312</td>
<td>220</td>
<td>365</td>
<td>430</td>
</tr>
<tr>
<td>Flue Size</td>
<td>80/125</td>
<td>100/150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open flue kit No</td>
<td>158662 + 158771 + 158769</td>
<td>158663 + 158772 + 158770</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
## 17 FLUE KIT ACCESSORIES

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

1. 90° elbow (concentric)
2. 45° elbow (concentric)
3. 90° elbow
4. 45° elbow (pair)
5. Flat Weather Collar
6. Pitched Weather Collar
7. 1m Extension (concentric)
8. 1m Extension (pair)
9. Increaser 80-100
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.

**Table X**

<table>
<thead>
<tr>
<th>Max Permissible Equivalent Flue Length (inc terminal resistance) meters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flue Size</strong></td>
</tr>
<tr>
<td>80/125</td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>40/40P</td>
</tr>
<tr>
<td>60/60P</td>
</tr>
<tr>
<td>80/80P</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>

**Table xx**

<table>
<thead>
<tr>
<th>Equivalent Length of Elbows (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td>80/125</td>
</tr>
<tr>
<td>45°</td>
</tr>
<tr>
<td>90°</td>
</tr>
</tbody>
</table>

**19 Examples of Flue Length Calculation**

<table>
<thead>
<tr>
<th>Example</th>
<th>Max Permissible Equivalent Length (Table X)</th>
<th>Elbows</th>
<th>Max permissible Straight Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 60</td>
<td>Flue Type 80/125</td>
<td>7.5</td>
<td>90</td>
</tr>
<tr>
<td>60</td>
<td>100/150</td>
<td>30</td>
<td>90</td>
</tr>
<tr>
<td>80</td>
<td>80/125</td>
<td>12</td>
<td>90</td>
</tr>
<tr>
<td>120</td>
<td>100/150</td>
<td>17.6</td>
<td>90</td>
</tr>
</tbody>
</table>
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 $1.5^\circ$ - $3^\circ$ 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.

![Diagram of flue assembly](image)

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.
Due to the high efficiency of these boilers plumbing 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.

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. In IE refer to I.S.820.2000.
21 BOILER FRAME AND HEADER KITS

Heat output to a maximum of 600kW 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
2. Safety valve
3. Service valve
4. Mixing header
5. System pump
6. Modulating Sequencer kit complete with outdoor sensor and flow sensor
7. Flue gas terminal
8. Drain cock
9. Shunt pump
10. Room Sensor
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.

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:

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

---

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)

- Boiler with 75mm sealed condensate trap
- Min Ø 19mm Internal pipe
- Visible air break
- Condensate pump (install in accordance with manufacturers instructions)

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

- Boiler with 75mm sealed condensate trap
- Min Ø 30mm Internal pipe
- Combined foul/rainwater drain
- Minimum connection height up to 3 storeys

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

- Boiler with 75mm sealed condensate trap
- Min Ø 19mm Internal pipe
- Min Ø 30mm Internal pipe
- Water/weather proof insulation
- 43mm 90º male/female bend
- 68mm Ø PVCU Strap on fitting
- Termination and cut at 45º

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

- Boiler with 75mm sealed condensate trap
- Min Ø 19mm Internal pipe
- Visible air break at plug hole
- Water/weather proof insulation
- Minimum 30mm internal pipe
- 45º pipe termination
- 25mm centres, 50mm from the bottom of the tube, facing away from the house

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

- Boiler with 75mm sealed condensate trap
- Min Ø 19mm Internal pipe
- Water/Weather proof insulation
- Max 3m external pipework
- Limestone chippings

---

Boilers without 75mm sealed condensate trap must be fitted with a 75mm trap and visible air break.
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).

<table>
<thead>
<tr>
<th>Evomax Gas Line Pressure Drop (Natural Gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler Model</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>

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$^2$ (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 ETCI 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 ETCI 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.
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.

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

LEGEND
b - blue
bk - black
br - brown
r - red
pk - pink
y - yellow
w - white
y/g - yellow/green
gry - grey
or - orange
v - violet
32 BASIC CONTROLS DISPLAY

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.

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.

Summer Mode
If the boiler has been switched to Summer Mode a screen similar to the following will be displayed.
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.

Winter Mode
If there is no current Heat Demand a screen similar to the following will be displayed.
Line 5 indicates "Switched Live" or "OpenTherm" or "0-10V" depending on which controls are connected to the boiler.

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.

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.
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

<table>
<thead>
<tr>
<th>Central Heating</th>
<th>Central Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH Switched Live On</td>
<td>Burner Power 100%</td>
</tr>
<tr>
<td>Burner On</td>
<td>Outside Temp’ 10°C</td>
</tr>
<tr>
<td>Flow Setpoint 80°C</td>
<td>Flow Setpoint 80°C</td>
</tr>
<tr>
<td>Flow Temp 80°C</td>
<td>Flow Temp 80°C</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Boiler Frost Protect</th>
<th>Boiler Frost Protect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burner Power</td>
<td>100%</td>
</tr>
<tr>
<td>Burner On</td>
<td></td>
</tr>
<tr>
<td>Frost Setpoint</td>
<td>5°C</td>
</tr>
<tr>
<td>Flow Temp</td>
<td>80°C</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>System Frost Protect</th>
<th>System Frost Protect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Temp</td>
<td>80°C</td>
</tr>
<tr>
<td>Burner On</td>
<td></td>
</tr>
<tr>
<td>Frost Setpoint</td>
<td>-10°C</td>
</tr>
<tr>
<td>Outside Temp’</td>
<td>10°C</td>
</tr>
</tbody>
</table>

Cylinder Frost Protection Mode
If a Domestic Hot Water Thermistor is connected to the boiler and the DHW temperature drops below 5°C 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

<table>
<thead>
<tr>
<th>Cylinder Frost Protect</th>
<th>Cylinder Frost Protect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burner Power</td>
<td>100%</td>
</tr>
<tr>
<td>Burner On</td>
<td></td>
</tr>
<tr>
<td>Frost Setpoint</td>
<td>5°C</td>
</tr>
<tr>
<td>Hot Water Temp’</td>
<td>4°C</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>0-10V Operation</th>
<th>0-10V Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10V Input = 10.0V</td>
<td>Burner Power 100%</td>
</tr>
<tr>
<td>Burner On</td>
<td>Burner On</td>
</tr>
<tr>
<td>Burner Setpoint Target</td>
<td>100%</td>
</tr>
<tr>
<td>Flow Temp</td>
<td>Flow Temp</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>0-10V Operation</th>
<th>0-10V Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10V Input = 10.0V</td>
<td>Burner Power 100%</td>
</tr>
<tr>
<td>Burner On</td>
<td>Burner On</td>
</tr>
<tr>
<td>Flow Setpoint</td>
<td>Flow Setpoint</td>
</tr>
<tr>
<td>Flow Temp</td>
<td>Flow Temp</td>
</tr>
</tbody>
</table>

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 on the maximum output of the boiler.

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

Set Flow Temp’
80°C

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

SETTING 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 on the maximum output of the boiler.

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
</tbody>
</table>

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

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

Set DHW Temp’
65°C

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

SETTING 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 on the maximum output of the boiler.

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
<tr>
<td>Out’ Sensor Slope</td>
</tr>
<tr>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
<tr>
<td>Out’ Sensor Slope</td>
</tr>
<tr>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DHW Temp’</td>
</tr>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
</tbody>
</table>

Out’ Sensor Slope
1.5

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>State of Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Outputs</td>
</tr>
<tr>
<td>Fault History</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>State of Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Temp’</td>
</tr>
<tr>
<td>Return Temp’</td>
</tr>
<tr>
<td>Flue Temperature</td>
</tr>
<tr>
<td>Press - for more</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>State of Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault History</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>State of Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler Pump</td>
</tr>
<tr>
<td>DHW Pump/Valve</td>
</tr>
<tr>
<td>Fan</td>
</tr>
<tr>
<td>Press - for more</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>State of Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault History</td>
</tr>
<tr>
<td>Show Hours Run</td>
</tr>
<tr>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Fault History: Max 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault 1 [latest]</td>
</tr>
<tr>
<td>Ignition Lockout [16]</td>
</tr>
<tr>
<td>23 days ago</td>
</tr>
<tr>
<td>Press - for more</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Ideal Evomax 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate KNOB clockwise until a screen similar to following is displayed

<table>
<thead>
<tr>
<th>Fault History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show Hours Run</td>
</tr>
<tr>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Show Hours Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Hours</td>
</tr>
<tr>
<td>Flame On</td>
</tr>
<tr>
<td>Press - for more</td>
</tr>
</tbody>
</table>

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]

<table>
<thead>
<tr>
<th>Normal Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed

![Installer Mode]

<table>
<thead>
<tr>
<th>Show Hours Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set to 0-10V Input</td>
</tr>
<tr>
<td>Set Night Setback</td>
</tr>
<tr>
<td>DHW Pump / Valve</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed

![Set to 0-10V Input]

<table>
<thead>
<tr>
<th>0-10V Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10V Capacity</td>
</tr>
<tr>
<td>0-10V Temperature</td>
</tr>
</tbody>
</table>

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

![Capacity Control Diagram]

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

![Temperature Control Diagram]
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]
[Normal Operation]
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

[Installer Mode]
Set to 0-10V Input
Set Night Setback
DHW Pump / Valve
Set Booster

Press SELECT and the following screen will be displayed

Set Night Setback
On
Off

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

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]
Normal Operation
Set Flow Temp'
Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed

[Installer Mode]
DHW Pump / Valve
Set Booster
CH/DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

Set Booster
On
Off

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

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

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]
Normal Operation
Set Stat 1 Temp
Set Stat 2 Temp

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

[Installer Mode]
Set Booster
2nd SL DHW / CH
CH / DHW Priority
Set Max Flow Temp'

Press SELECT and the following screen will be displayed

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

continued . . . . . . .
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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH/DHW Priority</td>
</tr>
<tr>
<td>Set Booster</td>
</tr>
<tr>
<td>Set Max Flow Temp'</td>
</tr>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority = DHW</td>
</tr>
<tr>
<td>Priority = CH</td>
</tr>
<tr>
<td>Priority = Equal</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Max Flow Temp'</td>
</tr>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Max Flow Temp'</td>
</tr>
</tbody>
</table>

30°C

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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

O/S Room Temp'

Press + and - to change to the required setting. Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

-10°C

Press + and - to change to the required setting. Press ENTER to store.

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

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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH/DHW Priority</td>
</tr>
<tr>
<td>Set Booster</td>
</tr>
<tr>
<td>Set Max Flow Temp'</td>
</tr>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority = DHW</td>
</tr>
<tr>
<td>Priority = CH</td>
</tr>
<tr>
<td>Priority = Equal</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH/DHW Priority</td>
</tr>
<tr>
<td>Set Booster</td>
</tr>
<tr>
<td>Set Max Flow Temp'</td>
</tr>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority = DHW</td>
</tr>
<tr>
<td>Priority = CH</td>
</tr>
<tr>
<td>Priority = Equal</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

Press + and - to change to the required setting. Press SELECT and the following screen will be displayed.

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Min Flow Temp'</td>
</tr>
<tr>
<td>Sys Frost Protect</td>
</tr>
<tr>
<td>Soft Start Time</td>
</tr>
</tbody>
</table>

Press + and - to change to the required setting. Press ENTER to store.

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

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

39  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
- Normal Operation
- Set Flow Temp'
- Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed:

- Installer Mode
- Sys Frost Protect
- Soft Start Time
- 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
- Normal Operation
- Set Flow Temp'
- Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed:

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

Press SELECT and the following screen will be displayed:

- DHW Sensor
- Heating Only
- DHW Thermistor
- 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.

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
- Normal Operation
- Set Flow Temp'
- Set DHW Temp'

Rotate the KNOB clockwise until the following screen is displayed:

- Installer Mode
- O/S Room Temp'
- DHW Sensor
- Factory Settings

Press SELECT and the following screen will be displayed:

- DHW Sensor
- Heating Only
- DHW Thermistor
- 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.
**INSTALLATION**

**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

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Settings</td>
</tr>
<tr>
<td>Anti-Legion Temp’</td>
</tr>
<tr>
<td>Anti-Legion Enable</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed

<table>
<thead>
<tr>
<th>Factory Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset?</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Factory Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you sure?</td>
</tr>
</tbody>
</table>
Press Enter to Reset
Press Select not to
| Reset |

Press Select then 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

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Legion Temp’</td>
</tr>
<tr>
<td>Anti-Legion Enable</td>
</tr>
<tr>
<td>BUS Address</td>
</tr>
<tr>
<td>Flame/LPG Relay</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed

<table>
<thead>
<tr>
<th>Anti-Legion Enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
</tr>
<tr>
<td>Off</td>
</tr>
</tbody>
</table>

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 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

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Settings</td>
</tr>
<tr>
<td>Anti-Legion Temp’</td>
</tr>
<tr>
<td>Anti-Legion Enable</td>
</tr>
<tr>
<td>BUS Address</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed

<table>
<thead>
<tr>
<th>Anti-Legion Temp’</th>
</tr>
</thead>
<tbody>
<tr>
<td>70°C</td>
</tr>
</tbody>
</table>

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

**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

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp’</td>
</tr>
<tr>
<td>Set DHW Temp’</td>
</tr>
</tbody>
</table>

Rotate the KNOB clockwise until the following screen is displayed

<table>
<thead>
<tr>
<th>Installer Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS Address</td>
</tr>
<tr>
<td>Flame/LPG Relay</td>
</tr>
<tr>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

Press SELECT and the following screen will be displayed

<table>
<thead>
<tr>
<th>Flame/LPG Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame On</td>
</tr>
<tr>
<td>LPG Gas Valve</td>
</tr>
</tbody>
</table>

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
**EVOMAX WITH S PLAN SYSTEM**

Note that a hydraulic bypass is required to allow pump overrun.
Note that a Frost Stat can be connected into CH call.

Note that the boiler can use an Outside Sensor, which is available from Ideal as a Weather Compensation Kit. In this case the link from position 9 to position 10 in the installer terminal block should be removed and a wire added from position 10 to the DHW call input on the boiler.

**EVOMAX WITH Y PLAN SYSTEM**

Note that a Frost Stat can be connected into CH call.
**EVOMAX WITH BOILER CONTROL OF CH AND DHW PUMPS**

Note 1. The boiler can use an Outside Sensor, which is available from Ideal as a Weather Compensation Kit.

Note 2. The boiler can use a Tank Sensor rather than a Cylinder Thermostat, which is available from Ideal as a kit.

Note 3. The boiler can use a Tank Sensor rather than a Cylinder Thermostat, which is available from Ideal as a kit.

Note 4. A Frost Thermostat can be connected into CH Call.

Note 5. A Frost Thermostat can be connected into CH Call.

**EVOMAX WITH BOILER CONTROL OF PUMP AND DIVERTER VALVE**

Note 1. The boiler must be configured to control a Power Open Diverter Valve (the factory setting is for it to control CH and DHW Pumps. See page 34)

Note 2. The boiler can use an Outside Sensor, which is available from Ideal as a Weather Compensation Kit.

Note 3. The boiler can use a Tank Sensor rather than a Cylinder Thermostat, which is available from Ideal as a kit.

Note 4. A Frost Thermostat can be connected into CH Call.

Note 5. A Frost Thermostat can be connected into CH Call.
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.

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.

The boiler must be set for 0-10V input. (See Frame 40)

The boiler will automatically configure itself to an Opentherm input.
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.

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 CO₂ % 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

Diagram:

- **Standby**
  - Heat demand on? yes
  - Pump On
    - Temp. < setpoint? yes
      - Fan On 20s Fan Pre-purge
      - Spark Generator On
      - Gas Valve On 3s Ignition Period
      - Flame detected? no
        - Spark Generator Off 1st Stabilisation Period
        - Burner Output controlled relative to Heat Demand by varying Fan Speed
          - Burner On
            - Demand off or Temp. > setpoint? yes
              - Gas Valve Off Pump Overrun
              - Heat Demand Off? no
            - Fan off. Pump off
              - Standby
  - no
- Demand On & Temp. < Set point & Anti-cycle done? no
  - Standby
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/CO₂ content. The CO/CO₂ ratio of the flue gas should not be greater than 0.004 ratio & the CO should not exceed 350ppm. The CO₂ 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/CO₂ ratio of the flue gas should not be greater than 0.004 ratio and the CO₂ 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.

<table>
<thead>
<tr>
<th>Ideal 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
</tr>
<tr>
<td>Set Flow Temp'</td>
</tr>
<tr>
<td>Set DHW Temp'</td>
</tr>
</tbody>
</table>

Rotate KNOB clockwise until the following screen is displayed

<table>
<thead>
<tr>
<th>Ideal 80kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Off/Sum/Win</td>
</tr>
<tr>
<td>Out Sensor Slope</td>
</tr>
<tr>
<td>State of Inputs</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Fan</th>
<th>Venturi</th>
<th>Valve</th>
<th>Injector</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>176272</td>
<td>176359</td>
<td>176313</td>
<td>176368</td>
</tr>
<tr>
<td>30P</td>
<td>176272</td>
<td>176359</td>
<td>176313</td>
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<tr>
<td>40</td>
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<td>176360</td>
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<td>176369</td>
</tr>
<tr>
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<td>176360</td>
<td>176313</td>
<td>176559</td>
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<td>176370</td>
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<td>100</td>
<td>176273</td>
<td>175232</td>
<td>176358</td>
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<td>120</td>
<td>176274</td>
<td>174381</td>
<td>176358</td>
<td>176373</td>
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<tr>
<td>150</td>
<td>176274</td>
<td>173682</td>
<td>176313</td>
<td>176371</td>
</tr>
</tbody>
</table>
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).
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.
8. 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.
**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.

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**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.
69 FAULT FINDING CHART - MAIN MENU

Overheat Lockout
Fill System to 1 Bar
Vent System
Check Pump Spins Free
Reset Boiler

Go to Frame 70
Overheat Lockout

Ignition Lockout
Check Gas to Boiler
Check Condensate Pipe
Refer to Instructions
Reset Boiler

Go to Frame 71
Ignition Lockout

Too Many Resets
Turn Boiler Power Off
Turn Boiler Power On

5 resets within 15 mins
Turn power off and on

False Flame Lockout
Check Flame Sense
Electrode
Check Flame Sense
Electrode Wiring

Go to Frame 72
False Flame Lockout

Low Water Pressure
Fill System to 1 Bar
Vent System

Go to Frame 73
Low Water Pressure

Flame Loss
Check Gas to Boiler
Check Condensate Pipe
Check Flue System

Go to Frame 74
Flame Loss

Fan Fault
Check Fan Wiring
Check Fan

Go to Frame 75
Fan Fault

Flow Thermistor Fault
Check Flow Thermistor
Wiring
Check Flow Thermistor
(10K @ 25°C,2K at 66°C)

Go to Frame 76
Flow Thermistor Fault

No CH but DHW OK
No DHW but CH OK

Blind Display

CH Continues to run when Timer is off

Flow Temperature Setpoint cannot be increased to 82°C

Ensure Flow Temp is not limited within Installer Mode. See Frame 38

Return Thmr Fault
Check Return Thermistor Wiring
Check Return Thmr
(10K @ 25°C,2K at 66°C)

Go to Frame 77
Return Thermistor Fault

Outside Sensor Fault
Check Outside Sensor Wiring
Check Outside Sensor
(10K @ 25°C,2K at 66°C)

Go to Frame 78
Outside Sensor Fault

Low Mains Voltage
Less than 160V
Check Local Generator
Contact Electricity Provider

Contact Electricity Provider

False Flame Lockout
Check Flame Sense Electrode
Check Flame Sense Electrode Wiring

Go to Frame 72
False Flame Lockout

Cylinder Thermistor Fault
Check Cylinder Thermistor Wiring
Check Cylinder Thmr
(10K @ 25°C,2K at 66°C)

Go to Frame 80
Cylinder Thermistor Fault

Ext' Interlock Off
External Interlock Operated
Reset Interlock

Go to Frame 81
Ext' Interlock Off

Flow/Return Reversed
Check Pump
Check System Pipework

Go to Frame 79
Flow/Return Reversed

PCB Fault
Ensure BCC fitted
Replace PCB

Replace Main PCB

BCC Fault
Ensure BCC fitted correctly
Replace BCC

Go to Frame 82
BCC Fault

No CH but DHW OK
No DHW but CH OK

Blank Display

Go to Frame 85
Blank Display

Error 20

Boiler does not respond to 0-10V Input

Ensure boiler set for DHW Thermistor
See Frame 39

Flow Temperature Setpoint cannot be reduced to 80°C

Ensure Flow Temp is not limited within Installer Mode. Go to Frame 38

Pump runs during the night

Ensure system Frost Protection Temp Setpoint is not set too high. Go to Frame 33

DHW Thermistor used and DHW does not end

Ensure boiler set for DHW Thermistor
See Frame 39


EVOMAX - Installation & Servicing
70 OVERHEAT LOCKOUT

**Has PCB just been replaced?**
- **yes** → Reset Boiler
- **no**
  - **Are the boiler and CH/DHW system filled with water and are all isolation valves and radiator valves open?**
    - **no** → Fill and vent the system and open all isolation valves, then reset the boiler.
    - **yes**
      - **Is the flow/return differential across the boiler in excess of 30°C?**
        - **no** → Check the flow and return thermistors (refer to Frame 76 & 77)
        - **yes** → Check that the pump is rotating freely. Is the differential now below 20°C?
          - **no** → Replace the pump, then reset the boiler
          - **yes** → Reset the boiler

71 IGNITION LOCKOUT

**If the boiler is reset, does it ignite for a short time and then extinguish?**
- **yes** → Check the detection electrode and associated harness for continuity, visual condition and position (refer to Frame 63). Check if the condensate pipe is blocked.
- **no**
  - **Is the gas pressure available at the boiler > 18mbar?**
    - **no** → Check gas supply and rectify fault
    - **yes**
      - **Is the following voltage available at the Gas Valve?**
        - **no** → Check wiring from Gas Valve to PCB and replace if necessary, otherwise replace the main PCB
        - **yes**
          - **Unplug the Gas Valve, is the resistance between the outside pins between 1kΩ and 10kΩ?**
            - **no** → Replace Gas Valve
            - **yes**
              - **Check Spark Generator and associated Harness for continuity, visual condition and position (refer to Frame 54). Are these functioning correctly?**
                - **no** → Replace Spark Generator and Harness as necessary
                - **yes**
                  - **Check Ignition Electrode and associated Harness for continuity, visual condition and position (refer to Frame 62). Are these functioning correctly?**
                    - **no** → Replace Ignition Electrode and associated Harness as necessary
                    - **yes**
                      - **Check Syphon and condensate drain pipework for blockage and rectify if necessary. Boiler now working OK?**
                        - **no** → Replace Gas Valve

*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

<table>
<thead>
<tr>
<th>Fault</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset the boiler, does boiler work OK? yes</td>
<td>Check routing and integrity of internal boiler wiring is OK. Check condition of Flame Sense Electrode and replace if deteriorated.</td>
</tr>
<tr>
<td>no</td>
<td>Disconnect the electrical connection to the Flame Sense Electrode. Is there continuity between the Electrode and earth? yes</td>
</tr>
<tr>
<td>no</td>
<td>Check routing and integrity of internal boiler wiring</td>
</tr>
</tbody>
</table>

### 73 LOW WATER PRESSURE

<table>
<thead>
<tr>
<th>Fault</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the boiler and CH system filled with water and all isolation and Radiator Valves open? no</td>
<td>Fill and vent the system and open all Isolation Valves</td>
</tr>
<tr>
<td>yes</td>
<td>Does the wiring from the Water Pressure Switch to the PCB have continuity and is it securely connected? no</td>
</tr>
<tr>
<td>yes</td>
<td>Replace Water Pressure Switch</td>
</tr>
</tbody>
</table>

### 74 FLAME LOSS

<table>
<thead>
<tr>
<th>Fault</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the boiler is Reset, does the boiler Ignite for a short time and then Extinguish yes</td>
<td>Check the Detection Electrode and associated Harness for continuity, visual condition and position (refer to Frame 63). Check if the Condensate Pipe is blocked. Check if the Flue is blocked. Replace as necessary</td>
</tr>
<tr>
<td>no</td>
<td>Is the Gas Pressure available at the boiler &gt; 18mBar? no</td>
</tr>
<tr>
<td>yes</td>
<td>Is the following voltage available at the Gas Valve? (approximately 215Vdc for 30, 40, 60, 80 and 150kW) (approximately 240Vac for 100 and 120kW) (*See note) no</td>
</tr>
<tr>
<td>yes</td>
<td>Check Spark Generator and associated Harness for continuity, visual condition and position (refer to Frame 54). Are these functioning correctly? no</td>
</tr>
<tr>
<td>yes</td>
<td>Check Ignition Electrode and associated Harness for continuity, visual condition and position (refer to Frame 62). Are these functioning correctly? no</td>
</tr>
<tr>
<td>yes</td>
<td>Check Syphon and condensate drain pipework for blockage and rectify if necessary. Boiler now working OK? no</td>
</tr>
</tbody>
</table>

* 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

75 FAN FAULT

Does the wiring from the Fan to the PCB have secure connections at both ends and has not deteriorated? Does the wiring have continuity?

Yes ➔ Replace Fan

No ➔ Rectify wiring & connections

Is there 230Vac at the blue and brown connections to the 3 way connection on the Fan?

Yes ➔ Replace Fan

No ➔ Rectify wiring & connections

76 FLOW THERMISTOR FAULT

Disconnect the electrical connection to the Flow Thermistor and check the resistance using a suitable multimeter connected across the thermistor’s terminal pins.

At 25°C expect 9,700 - 10,300 Ω
At 60°C expect 2,400 - 2,600 Ω
At 85°C expect 1,000 - 1,100 Ω

Is the thermistor value correct?

Yes ➔ Replace main PCB

No ➔ Check and replace wiring as necessary

Is there continuity between the PCB and the Thermistor?

Yes ➔ Replace main PCB

No ➔ Check and replace wiring as necessary

77 RETURN THERMISTOR FAULT

Remove the Return Thermistor from the CH return pipe and disconnect the wires. Check the resistance using a suitable multimeter connected across the thermistor’s terminal pins.

At 25°C expect 9,700 - 10,300 Ω
At 60°C expect 2,400 - 2,600 Ω
At 85°C expect 1,000 - 1,100 Ω

Is the thermistor value correct?

Yes ➔ Replace main PCB

No ➔ Check and replace wiring as necessary

Is there continuity between the PCB and the Thermistor?

Yes ➔ Replace main PCB

No ➔ Check and replace wiring as necessary
78 OUTSIDE SENSOR FAULT

Is the wiring securely connected at both the boiler and Outside Sensor?

- **no** Securely connect the wiring at both the boiler and Outside sensor

- **yes**

  Disconnect the wires to the Outside Sensor. Check the resistance using a suitable multimeter connected across the thermistor’s terminal pins.
  At 0°C expect 32,000 - 33,000 Ω
  At 10°C expect 19,000 - 21,000 Ω
  At 20°C expect 12,000 - 13,000 Ω
  Is the thermistor value correct?

- **no** Fit a new outside sensor

- **yes**

  Does the Outside Sensor wiring between the boiler terminal strip and the PCB have continuity and is securely connected?

- **no** Ensure the wiring has continuity and is securely connected

- **yes**

  Replace main PCB

79 FLOW/RETURN REVERSED

Is the Pump connected the correct way?

- **no** Reverse Pump

- **yes**

  Check that the system pipework is correct
**80 CYLINDER THERMISTOR FAULT**

- **Is a DHW Thermistor connected to the boiler?**
  - yes: **Change menu setting for DHW Sensor to “Switched Live” (See Frame 32)**
  - no: **Securely connect the wiring at both the boiler and cylinder thermistor**

- **Is the wiring securely connected at both the boiler and cylinder thermistor?**
  - yes: **Replace main PCB**
  - no: **Fit a new cylinder thermistor**

- **Disconnect the wires to the cylinder thermistor. Check the resistance using a suitable multimeter connected across the thermistor’s terminal pins.**
  - At 25°C expect 9,700 - 10,300 Ω
  - At 60°C expect 2,400 - 2,600 Ω
  - At 85°C expect 1,000 - 1,100 Ω
  - Is the thermistor value correct?
  - yes: **Ensure the wiring has continuity and is securely connected**
  - no: **Replace main PCB**

**81 EXTERNAL INTERLOCK OFF**

- **Is an External Interlock connected to the boiler?**
  - yes: **Reset the External Interlock**
  - no: **Ensure that a link wire is securely connected across the terminals marked “External Interlock” in the boiler terminal strip**

- **Has the External Interlock operated?**
  - yes: **Replace the Interlock Relay Kit**
  - no: **Ensure the wiring has continuity and is securely connected**

- **Does the wiring from the Interlock Relay (mounted within the boiler) to the terminal strip have continuity and is securely connected?**
  - yes: **Replace the Interlock Relay Kit**
  - no: **Reset the External Interlock**

**82 BCC FAULT**

- **Is the correct BCC for the boiler securely inserted into the slot at the front left of the PCB? (identified by the label on the BCC)**
  - yes: **Replace the BCC with a new BCC (that is correct for the boiler). After switching power on and resetting the boiler does the fault disappear**
  - no: **Securely attach the correct BCC for the boiler onto the PCB. Note: ensure the correct orientation of the BCC by placing the side marked “TOP” upwards.**

- **Replace main PCB**
83 NO CH BUT DHW OK

Is the boiler set for Winter operation?  
- yes: Set for Winter operation (see Frame 32)  
- no: Ensure that the Timer and Room Thermostat are calling for heat

Are the Timer and Room Thermostat calling for Heat?  
- yes: Open the Radiator Valves  
- no: Is the boiler set for Winter operation?

Are the Radiator Valves open?  
- yes: Open the Radiator Valves  
- no: Is the boiler set for Winter operation?

Is an OpenTherm device connected to the boiler (note that the Ideal Prog Room Stat is an OpenTherm device)?  
- yes: Does the wiring from the boiler to the OpenTherm device have continuity?  
- no: There is no voltage from the Timer/Room Stat. This is not a boiler fault. Ensure voltage is supplied to the boiler by correcting external wiring

Is there 230Vac at (A)?  
- yes: There is no voltage from the Timer/Room Stat. This is not a boiler fault. Ensure voltage is supplied to the boiler by correcting external wiring  
- no: Check wiring from PCB to (B)

Is there 230Vac at (B)?  
- yes: Does wiring to external CH Pump have continuity and is to the correct connections?  
- no: Check wiring from PCB to (B)

Does wiring to external CH Pump have continuity and is to the correct connections?  
- yes: Replace the CH pump  
- no: Rectify wiring to external CH pump

Is the CH pump stuck  
- yes: Replace the CH pump  
- no: Free the pump
84 NO DHW BUT CH OK

Are the Timer and Cylinder Thermostat/Thermistor calling for Heat?
  yes
  no

Is an OpenTherm device connected to the boiler (note that the ideal programmable Room Stat is an OpenTherm device)?
  yes
  no

Is there 230Vac at (C)?
  yes
  no

Does the system have a DHW Pump or Power Open Diverter Valve?
  yes
  no

Is the boiler correctly set for a DHW Pump or Power Open Diverter Valve?
  yes
  no

Is there 230Vac at (D)?
  yes
  no

Does wiring to external DHW Pump have continuity and is to the correct connections?
  yes
  no

Is the boiler set for DHW priority (default setting)?
  yes
  no

Does the Timer and Cylinder Stat/Thermistor are calling for heat (if a DHW Thermistor is used see Frame 34 for setting DHW Temp.)
  yes
  no

Ensure that the Timer and Cylinder Stat/Thermistor are calling for heat (if a DHW Thermistor is used see Frame 34 for setting DHW Temp.)

There is no voltage from the Timer/Cylinder Stat. This is not a boiler fault. Ensure voltage is supplied to the boiler by correcting external wiring.

Rectify wiring from boiler to OpenTherm device

Is there 230Vac at (C)?

There is no voltage from the Timer/Cylinder Stat. This is not a boiler fault. Ensure voltage is supplied to the boiler by correcting external wiring.

Rectify wiring from boiler to OpenTherm device

Is the system correctly set for a Power Closed Diverter Valve?
  yes
  no

Set boiler correctly (See page 41)

Check wiring from PCB to (D)

Rectify wiring to external DHW pump/valve

Set boiler for DHW priority (see Frame 37)

Replace the DHW pump/valve

Is the DHW Pump/Valve stuck

Free the pump/valve
85 NO DISPLAY

Is there 230Vac to the boiler at (E)?
- no → Supply power to the boiler
- yes

Is the wiring from the boiler terminal block to the main PCB connected securely?
- no → Connect the wiring from the terminal block to the main PCB securely
- yes

Is the cable from the main PCB to the user interface PCB connected securely?
- no → Connect the cable from the main PCB to the user interface PCB securely
- yes

Does the cable from the main PCB to the user interface PCB have continuity and is un-damaged?
- no → Replace cable from main PCB to user interface PCB
- yes

Is the Fuse on the main PCB OK?
- no → Check for shorts on Pumps/Diverter Valve/Fan/Spark Generator/Gas Valve and replace Fuse
- yes

Replace the user interface PCB, still no display?
- no → Replace main PCB
86 0-10V INTERFACE

Is the boiler set to accept a 0-10V Input?

- yes: Set the boiler to accept a 0-10V input (see Frame 33)
- no: Is the boiler set to Winter Mode?

Is the boiler set to Winter Mode?

- yes: Set the boiler to Winter Mode (see Frame 32)
- no: Is a voltage of between 2V and 10V being supplied to (F), with positive and negative connected correctly?

Is a voltage of between 2V and 10V being supplied to (F), with positive and negative connected correctly?

- yes: Ensure between 2V and 10V is correctly connected to these terminals from the external device
- no: Is the wiring from the boiler terminal strip to the main PCB securely connected and has continuity?

Is the wiring from the boiler terminal strip to the main PCB securely connected and has continuity?

- yes: Ensure that the wiring is securely connected and has continuity
- no: Replace main PCB

![Diagram of boiler terminal strip connections](image)
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

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

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

- Boiler Model
- Appliance GC Number
- Boiler Serial Number
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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Registered Office
Ideal Boilers Ltd., PO Box 103, National Avenue, Kingston Upon Hull, HU5 4JN
Tel 01482 492251  Fax 01482 448858
Registration No. London 322 137

Ideal Technical Helpline: 01482 498376
Ideal Consumer Helpline: 01482 498376
www.idealcommercialboilers.com