



eco hometec

Variable Controlled Output (VCO)

Solar Compatible ★★★★★

Gas Condensing Boilers

EC 16, 23, 31 and 38kW

**INSTALLATION &
USER**

INSTRUCTIONS

PLEASE LEAVE WITH THE END USER



eco hometec
Unit 11E
Carcroft Enterprise Park
Carcroft
Doncaster
DN6 8DD

Tel. 01302 722266
Fax. 01302 728634

e.mail. sales@ecohometec.co.uk
<http://www.eco-hometec.co.uk>

D:\MAY_2001_All_Manuals\1538INST.DOC\30 June 2002

eco hometec has a policy of continuous improvement and reserves the right to change any specification without notice. Your statutory rights are not affected.

eco hometec is committed to design, develop and produce environmentally friendly appliances for both domestic and commercial applications

Contents	
1. Why choose eco hometec?	6
2. Safety Considerations	7
3. Symbols	7
3.1 Gas Safety	7
4. Electrical Supply	7
5. Terms of Warranty	8
6. Commissioning Certificate	8
6.1 Requirements for the system quality	8
7. Existing Installations	8
7.1 Considerations prior to Connection	8
7.2 Expansion Vessels	9
8. Introduction	9
8.1 Variable Controlled Output	9
8.2 Emissions	9
8.3 PPS Plastic Flue System	9
8.4 Approvals	9
8.5 Additional Features	9
9. Description of Appliances	10
9.1 EC 16,23,31 and 38 H	10
9.2 EC 16,23,31 and 38 HS	10
9.3 EC 16,23,31 and 38 S	10
10. Technical Information	11
11. Main Component Specification	13
11.1 Head Height of the Central Heating Circuit. 13	
11.2 Air Fan Details	13
11.3 Gas Control Valve	13
12. Unpacking & Items Supplied	14
13. Accessories	14
14. Operation	15
14.1 Variable Controlled Output	15
14.2 Variable pump	15
14.3 Frost Protection	15
14.4 Year Long Protection	15
15. Siting the Appliance	15
15.1 Timber Framed Dwellings	16
16. Hydraulic Connections	16
16.1 First Fixing Pipe-work	16
16.2 Type 'H' Connections	16
16.3 Type 'HS' Connections	16
16.4 'S' Connections	17
16.5 Clearances	17
16.6 Checks Before Siting	17
16.7 Fixing the boiler	17
16.8 Removing The Casing	17
17. Flues and Ventilation	18
17.1 Maximum Flue Lengths	18
17.2 Available Flue Components	20
17.3 Plumbing	21
17.4 Condensate in the Flue	21
17.5 Flueing Options	21
17.6 Installing a Concentric Flue	21
17.7 Vertical flue Installations	23
17.8 Modular Installations	23
17.9 Fan Flued Terminal Positions	26
18. Gas Supply	26
18.1 Gas Supply	26
18.2 LPG Gas Supply	27
18.3 Setting The Gas Type	27
18.4 Conversion to LPG	27
19. Air Supply	28
19.1 Concentric Flue	28
19.2 Conventionally Flue	28
19.3 Compartment Ventilation	28
20. Hydraulic Requirements	29
20.1 Expansion Vessel	29
20.2 Hydraulic Resistance	30
20.3 Condensate Drain	30
20.4 System By-Pass	30
21. Electrical Connections	33
22. Heating Control Options	33
22.1 240 Volt Connections	33
22.2 Low Voltage Connections	34
22.3 Built-in clock	34
23. Boiler Control panel	34
24. Boiler Control Panel	35
24.1 System water pressure gauge	35
24.2 On / off switch	35
24.3 Lcd control display	35
24.4 Menu - reset button	35
24.5 Summer winter button	35
24.6 Engineers button	35
24.7 Test button	36
24.8 General	36
25. Menu options	36
25.1 Party	36
26. User programming	36
26.1 Hot Water Temperature	36
26.2 Day temperature function	36
26.3 Time/day function	36
26.4 Setting the ch timer	36
26.5 Setting the HW timer	38
26.6 Setting MR03 times	38
26.7 Night-time lower 0°C	38
26.8 Holiday function	38
26.9 Installer	38
27. Installer Programming	39
28. Outside Temperature Control	40
28.1 Flow Temperature at + 20°C	40
28.2 Outside Temp. Control at - 1°C	41

28.3	Minimum pump speed	41	38.9	Holiday function	60
28.4	Maximum pump speed	41	38.10	Installer	60
28.5	Flow temperature secondary circuit	41	Figure 1	Overall Dimensions mm.	12
28.6	Service counter	41	Figure 2	Bottom View Dimensions mm.	12
28.7	Pump continuous	41	Figure 3	Top View Dimensions mm	13
28.8	Eco/eco+	41	Figure 4	Pump Head Height	13
28.9	Post running of pump after HW	41	Figure 5	Air Fan Curve	13
28.10	Post running of pump after CH	41	Figure 6	Gas Valve	13
28.11	Minimum DHW Capacity	42	Figure 7	Pipe-work Layouts	16
28.12	Maximum DHW Capacity	42	Figure 8	Minimum Clearances	17
28.13	Maximum CH capacity	42	Figure 9	Removing the Casing	17
28.14	Function Setting	43	Figure 10	Fixing Dimensions	18
29.	Commissioning	47	Figure 11	Flue Design	19
29.1	Electrical Checks	47	Figure 12	Thermal Lift	20
29.2	Gas Supply	47	Figure 13	Flue Preparation	21
29.3	Connection to Pipe-work	47	Figure 14	Dimensions for cutting flue hole	22
29.4	Water Treatment	47	Figure 15	Wall Terminal	22
29.5	Flushing System Pipe-work	47	Figure 16	Vertical Wall Terminal	23
29.6	Filling and Venting the System	47	Figure 17	Vertical Flue Application	23
30.	Combustion Ratio	48	Figure 18	Modular Installation	23
30.1	Commissioning NG and LPG	48	Figure 19	Vertical Roof Terminals	24
31.	Setting the Maximum CO ₂ Value	48	Figure 20	Concentric flue fittings	25
31.1	Flue System Check	49	Figure 21	Concentric 80mm adaptor	25
31.2	STB Test Button (Green)	49	Figure 22	80mm Flue Tubes	25
32.	Diagnostics	49	Figure 23	Fan Flued Terminal Positions	26
32.1	Control panel	49	Figure 24	H Type Hydraulic system design	31
33.	Fault Finding	50	Figure 25	HS Type Hydraulic system design	31
34.	Handing the boiler over	54	Figure 26	S Type Combi Hydraulic system design	32
34.1	Customer Familiarisation	54	Figure 27	Electrical Connections	32
35.	Annual Servicing	54	Figure 28	Connecting to the Mains	33
35.1	Service Inspection	54	Figure 29	Boiler Control panel	34
35.2	Pre-preventative Maintenance	55	Figure 30	Weather Compensation	40
35.3	Service records	55	Figure 31	O/T Ctrl Flow temp 85°C	40
36.	Decommissioning the boiler	55	Figure 32	O/T Ctrl Flow temp 70°C	40
37.	User Instructions	56	Figure 33	O/T Ctrl Flow temp 50°C	40
37.1	Annual Servicing	56	Figure 34	Internal Wiring	46
37.2	Decommissioning the boiler	56	Figure 35	Gas valve adjustments	49
37.3	Built-in clock	56	Figure 36	Boiler Control panel	56
37.4	Boiler Control Panel	57	Table 1	Dimensions & Connections	11
37.5	System water pressure	57	Table 2	Heating Specifications	11
37.6	On / off switch	57	Table 3	Capacities & Weights	11
37.7	Lcd control display	57	Table 4	Hot Water Specifications	12
37.8	Menu - reset button	57	Table 5	Connection Values	12
37.9	Summer winter button	57	Table 6	Minimum Clearances	17
37.10	Engineers button	57	Table 7	Flue Resistance	19
37.11	Test button	57	Table 8	Flue Terminal Positions	26
37.12	General	57	Table 9	Ventilation	28
38.	Programming Menu options	58	Table 10	Expansion Vessel Req.	29
38.1	Party	58	Table 11	System Contents	30
38.2	Hot Water Temperature	58	Table 12	Programming Functions	39
38.3	Day temperature function	58	Table 13	Installer Functions	39
38.4	Time/day function	58	Table 14	Minimum & Maximum fan speeds	48
38.5	Setting the ch timer	58	Table 15	CO ₂ Outputs	49
38.6	Setting the hw timer	59	Table 16	LCD Display ' NON FLASHING '	50
38.7	Setting MR03 times	60	Table 17	LCD ' NON FLASHING ' burner off	50
38.8	Night-time lower 0°C	60	Table 18	Fault Display FLASHING	51
			Table 19	Non Display Faults and Errors	51
			Table 20	Reasons For Error Display	52

HEALTH & SAFETY INFORMATION FOR THE INSTALLER AND SERVICE ENGINEER

Under the current issue of the Consumer Protection Act and the Health and Safety at Work Act it is a requirement to provide information on substances hazardous to health (COSHH Regulations).

eco hometec takes every reasonable care to ensure that these products are designed and constructed to meet these general safety requirements, when properly used and installed. To fulfil this requirement each boiler is comprehensively tested before despatch.

When working on the appliance it is the Users/Installers responsibility to ensure that any necessary personal protective clothing or equipment is worn appropriate to parts that could be considered as being hazardous to health and Safety.

This appliance may contain some of the items below.

INSULATION AND SEALS

Glass Rope, Mineral Wool, Insulation Pads, Ceramic Fibre, Glass Insulation.

may be harmful if inhaled

may be irritating to the skin, eyes, nose or throat

When handling avoid inhalation and contact with eyes.

Use (disposable) gloves, face masks and eye protection.

After handling, wash hands and other exposed parts.


















When disposing, reduce dust with water spray, ensure parts are securely wrapped.

GLUES, SEALANTS & PAINT

Glues, Sealant and Paints used in the product present no known hazards when used in the manner for which they are intended.

1. Why choose eco hometec?

Features and Benefits at a glance

-  Wall mounted ultra high efficiency gas boilers
-  Suitable for installation into existing systems, new radiator and/or underfloor installations, can also be used with solar heating systems
-  Emissions levels are 90% lower than the “Blue Angel” standards and significantly less than the levels specified in the “Swiss Clean Air Act” and the “Hamburg Development Program” the World’s most stringent regulations. (NOx 20mg\kWh CO 14mg\kWh)
-  Long life Austenitic stainless steel heat exchanger
-  Energy saving modulating fan
-  Energy saving modulating burner
-  Energy saving modulating pump
-  Energy saving modulating system water temperature
-  Plug in components for fast and cost effective servicing
-  Corrosion free PPS plastic flue tubes and fittings offering ease of siting
-  Data logging via PC for analysing, performance, operating times, temperatures and for fine-tuning
-  Built in digital Weather Compensating comfort controller
-  Built in digital central heating and hot water time clock controller
-  HS specification with dual flow temperatures for under floor heating systems
-  The most complete energy efficient home heating appliance available
-  Guarantee periods Heat Exchanger 5 years other components 2 years
-  Free help with technical, design and installation issues

2. Safety Considerations


The installation of this appliance must be carried out by a competent person in accordance with the relevant Gas Safety Regulations (as amended), Building Regulations, Model Water Bylaws and the Building Standards (Scotland) Regulations.


eco hometec shall not be responsible for any damage or loss resulting from failure to carefully observe the instructions given.

The boiler, except for commissioning purposes, should not be left operating without the casing being attached and firmly secured

3. Symbols


In this manual the following symbols are used.

This symbol  is used to indicate points that are important, to ensure compliance with safety regulations or to facilitate installation or operation.

This symbol  is used to highlight points that must be observed for the safety of yourself and others.

3.1 Gas Safety

All gas appliances must, by law, be installed by competent persons, e.g. members of CORGI, in accordance with the Gas Safety Regulations. Failure to install appliances correctly could lead to prosecution

 It is in your own interest and that of safety to ensure that the law is complied with.

Installer training courses are available for CORGI registered installers. Please contact eco hometec for more information.

This installation manual contains all the necessary information required to install and commission the EC VCO 16, 23, 31 and 38kW range of boilers.

Please read this manual thoroughly before commencing installation. The installation must be carried out in accordance with the manual otherwise the warranty will be void.

Use only original parts for service and maintenance.

After installation ensure the manual is kept close to the boiler and available for reference purposes.

The installation should also be in accordance with current editions and comply with the recommendations of the following British Standard Codes of Practice.

CP.331.3 Low pressure installation pipes.

BS.6798 Boilers of rated output not exceeding 60kW.

BS.5546 Installation of gas hot water supplies for domestic purposes.

BS. 5449.1 Forced circulation hot water systems.

BS.5440.1 Flues (for gas appliances of rated input not exceeding 60kW).

BS.5440.2 Air supply (for gas appliances of rated input not exceeding 60kW).

4. Electrical Supply


The wiring must comply with the current I.E.E. Wiring Regulations.

The Health and Safety Document No. 635 and the Electricity at Work Regulations 1989 must be followed where applicable.

The boilers are supplied for 230V +10/-15% 50Hz operation. The method of connection to the mains electrical supply **MUST** facilitate complete electrical isolation of the boiler. This may be achieved using a readily accessible 3 amp fused double pole switch clearly labelled.



THESE APPLIANCES MUST BE EARTHED.

IMPORTANT  This boiler is an EC Certified Appliance and must not be modified or installed in any way contrary to these 'Installation and Servicing Instructions'.

The manufacturers instructions must **NOT** be taken in any way as over-riding statutory obligations.

5. Terms of Warranty

Damages to the appliance resulting from the following causes will invalidate the warranty:

incorrect or unsuitable use of the boiler
Please ring the eco hometec technical department for advice on suitability
faulty installation or servicing by the purchaser or third parties
normal wear and tear
failure to maintain or service appliance in compliance with this manual
in the case of chemical, electrochemical or electric influences in as much as the fault cannot be attributed to the manufacturer
failure to observe installation and/or operating instructions
effects of fitting, servicing or repairing parts with non-genuine origin parts (e.g. non-genuine boiler circuit control)
damage as a result of dust or other foreign matter being sucked into the burner
influence of noxious vapours
installation and operation in inappropriate rooms (e.g. in washrooms, laundrettes, swimming pools or hobby rooms)
continued use when apparatus is defective or requires servicing
in the case of inappropriate alterations or renovation work by the purchaser or by third parties
oxygen corrosion, particularly when not using diffusion-tight plastic pipes in floor heating systems
corrosion as a result of inadequate system water treatment.
interim building conditions with unregulated heating operation (manual operation without boiler protection)
interim building conditions with dust-polluted combustion air

6. Commissioning Certificate

The warranty is only recognised if a completed commissioning certificate (operational test form) is at hand (send in by fax or post), as well as an acknowledgement by eco hometec (u.k.) Ltd.

6.1 Requirements for the system quality

Before commissioning the appliance it is essential to clean the installation in accordance with BS 7593: 1992

Installation of in-line strainers is obligatory.

As a protection from corrosion and impurities the water additive Fernox MB1 has to be used and maintained (4%).

7. Existing Installations

7.1 Considerations prior to Connection.

IMPORTANT 

All eco hometec boilers are low water content units. In order to protect and prolong the working life of the appliance, it is important the general condition of older systems is carefully considered.

When connecting to an existing installation it is important that system deposits are removed and are not allowed to contaminate boiler.

This involves the application of a cleanser and allowing it to circulate around the whole system for a specified time, then flushing to drain.



Consider high pressure flushing to remove all debris in badly contaminated systems.

It is important to select the cleanser appropriate to the installation i.e. for a new installation, or for an existing installation.

It is good practice to clean the system prior to the installation of the new boiler.

The removal of debris, flux residue, grease, metal swarf etc. from new systems and any black magnetic iron oxide sludge and lime scale from old systems is essential.



In-line strainers must be fitted to the return water connections for full protection. All installations must be treated with Fernox MB1 at a concentration of 4%.

If plastic pipes are used to connect the boiler to radiators or under floor heating, it is essential that only those types of plastic pipe that incorporate an oxygen diffusion barrier be used. If such pipes are not used, the eco hometec guarantee will become null and void.

7.2 Expansion Vessels



The EC VCO models are designed for connection to a fully pumped sealed heating circuit only.

Depending on specification chosen the appliance may be fitted with a 10 litre expansion vessel

An additional suitable sized expansion vessel may be required to accommodate volume change (expansion of water) when heated up to maximum operational temperature on larger capacity systems.

Select an expansion vessel that matches the volume of the CH system and the static pressure. Expansion vessels should be connected to the system at a point close to the pump inlet in order to maintain positive pressure throughout the system.

Installation should comply with BS7074 part 1 and BS5449.

8. Introduction

The boiler features the very latest in technology. Developed around an innovative back panel the boiler uses laser welded waterways to interconnect the boilers main components.

To facilitate ease of servicing the high grade austenitic stainless steel coiled heat exchanger and other major components are simply plugged into the panel.

The boilers incorporate the unique eco hometec premixing, fully modulating, radiant gas burner, 3 bar pressure relief valve, manometer and circulating pump.

8.1 Variable Controlled Output

Unlike most boilers that simply switch on and off the boiler incorporates an integral compensating and modulating digital

controller that automatically adjusts the boilers output depending on system load requirements.

This feature, Variable Controlled Output, (VCO) is the very latest from eco hometec in condensing technology and ensures the boiler maintains optimum efficiencies even when operating at part load.

8.2 Emissions.

A further benefit of this very accurate combustion process is the dramatic reduction of the harmful emissions NO_x and CO.

The emissions exceed the "BlueAngel" standards by more than 90% and are also significantly less than the standards specified in the "Swiss Clean Air Act" and the "Hamburg Development Program" the World's most stringent regulations. (NO_x 20mg\kWh CO 14mg\kWh).

8.3 PPS Plastic Flue System

Due to the extremely low temperature flue gases the boiler may be flued using the lightweight and corrosion resistant eco hometec PPS plastic flue system.

8.4 Approvals

The unit has been approved according to the European standards (CE) and the requirements for cleaner combustion (RAL UZ61)

8.5 Additional Features

A unique SPIRANOX corrosion resistant stainless steel condensate heat exchanger.

Integral sensors (PTC) for monitoring flow and return water temperatures.

3 way switching valve and facilities for connection to an eco hometec DHW storage module or similar.

Computer controlled combustion analysis with built in fault diagnosis facility. These readings can be down loaded onto a PC by using the RS 2323 interface cable and software available from eco hometec.

9. Description of Appliances

9.1 EC 16,23,31 and 38 H

The 'H' model is suitable for a central heating system with hot water output controlled using a 3 way diverter valve (spring return to heating).

The appliance produces a low temperature output for under-floor heating or a fixed/variable temperature output for connection to radiators. Flow temperature to hot water cylinder can be set as required (max. 85°C)

Hot water cylinders must be double feed indirect and to aid efficiency and fast recovery times (all appliances are hot water priority) should be of the high recovery type. Recommended minimum coil capacity 25kW.

The unit has a variable capacity of 20 to 100%, while the maximum capacity can be set and adapted to the capacity of the CH system.

9.2 EC 16,23,31 and 38 HS

The 'HS' range are higher specification. With its 4 x 22mm connections it offers a low temperature output, typically 55°C, for under-floor heating or a fixed/variable temperature output for connection to radiators.



Despite the low boiler flow temperatures feature ALL low temperature under floor installations require an obligatory mixing valve installing as part of the system controls.

Flow temperature to hot water cylinder can be set as required (max. 85°C)

The unit has a variable capacity of 20 to 100%, while the maximum capacity can be set and adapted to the capacity of the CH system.

Hot water cylinders must be double feed indirect and to aid efficiency and fast recovery times (all appliances are hot water priority) should be of the high recovery type.

Recommended minimum coil capacity 25kW.

9.3 EC 16,23,31 and 38 S

This unit has a built-in heat primary heat exchanger and Hot water production is continuous.

The unit has a variable capacity of 20 to 100%, while the maximum capacity can be set and adapted to the capacity of the CH system.

EC38S Combi with integral 10Litre store

This appliance requires an expansion vessel and a 3 bar pressure relief valve fitting to the system

10. Technical Information

Table 1 Dimensions & Connections

Product Identification Number	CE ~ 0085AR0057
Appliance Category	2ELL3B/P
Dimensions (H x W x D)	950mm x 458mm x 355mm
Heating Circuit Connections	22mm
Gas Connection	15mm
Condense Drain Connection	¾ BSP
Air Supply/Flue Connections	125/80mm

Table 2 Heating Specifications

Models H, HS and S		EC16	EC23	EC31	EC38
Maximum Rated Input	kW	15	22	28	36
Nominal Output To Heating 80/60°C	kW	14.3	21.4	28.4	35.1
Minimum Output To Heating 80/60°C	kW	2.5	3.1	4.5	6.0
Nominal Output To Heating 50/30°C	kW	15.8	23.1	30.7	38.0
Minimum Output To Heating 50/30°C	kW	3.1	3.6	5.1	6.8
CO ₂ % content at max/min load	CO ₂ %	9	9	9	9
Dew Point of Flue Gases	0°C	52	52	52	52
Flue Gas Temp @ 80/60°C (Amb 20°C)	0°C	75	75	75	75
* Maximum Flue Resistance	Pa	100	100	100	100
pH value of condensate water	PH	4-5.5	4-5.5	4-5.5	4-5.5
Pump Pressure @ 30kW and 20K Bar		0.2	0.15	0.1	0.075
Maximum Flow Temperature	0°C	85	85	85	85
Min/Max filling pressure	bar	0.5 - 3.0	0.5 - 3.0	0.5 - 3.0	0.5 -3.0
**Efficiency @ 75/60°C	%	104	104	104	104
**Efficiency @ 40/30°C	%	108.5	108.5	108.5	108.5

* At this resistance, the load will remain within the limits indicated on the data plate.

** European calculation methods are based on efficiency of 100% in units that do not condense the flue gases, and of 110% in condensing units.

Table 3 Capacities & Weights

Model		EC16	EC23	EC31	EC38
Heating Water Capacity	litres	1.5	1.8	2.1	2.4
Heating Water Coil Capacity (S models)	Litres	1	1.3	1.5	10
Weight (empty)	Kg	35	37	39	50

Table 4 Hot Water Specifications

Model		EC16	EC23	EC31	EC38
Maximum Rated Input	kW	22.0	28.0	36.0	46.0
Modulating Output	kW	2.9-22.0	3.4-28	4.8-36.0	6.4-46.0
Hot Water Flow rates at $\Delta\tau$ 30K (S type)	L/min	10.5	13.4	17.2	22
Maximum Tap Water Pressure	bar	10	10	10	10

Table 5 Connection Values

Min/Max Gas Pressure	mbar	15/50	15/50	15/50	15/50
Minimum Input Rate Natural Gas	m/h ³	0.31	0.36	0.5	0.68
Maximum Input Rate Natural Gas	m/h ³	2.10	2.67	3.44	4.77
Electrical Supply	VAC	230	230	230	230
Power Consumption Average	W	60	60	60	60

Figure 1 Overall Dimensions mm.

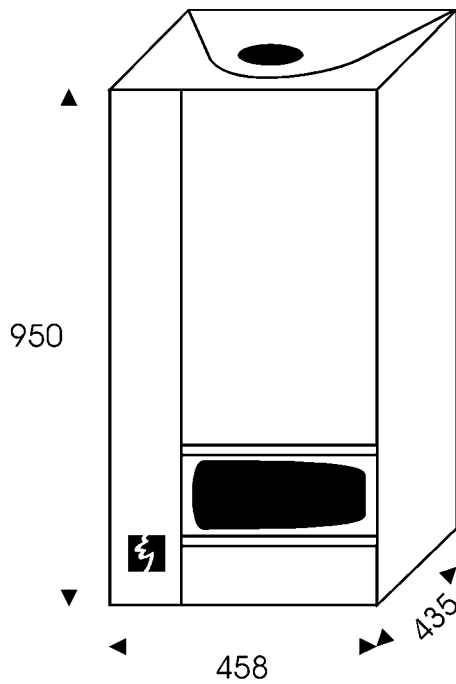


Figure 2 Bottom View Dimensions mm.

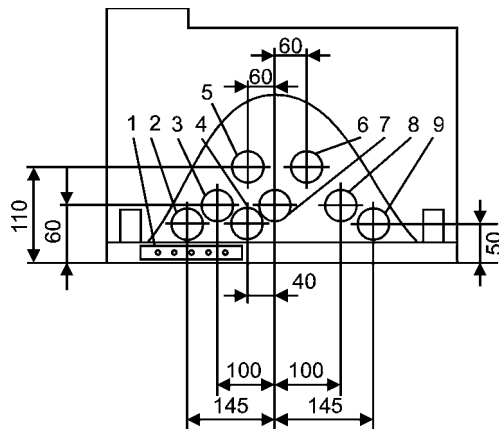
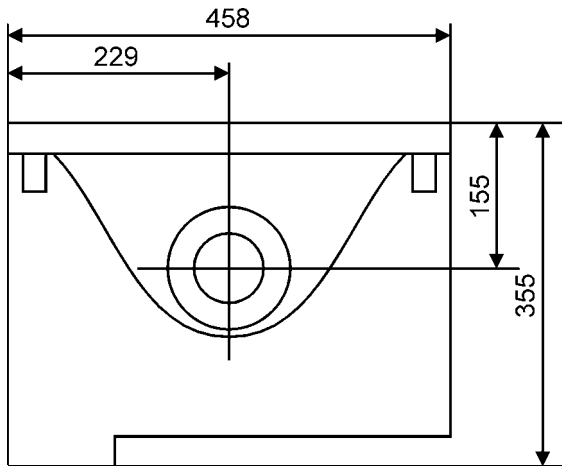


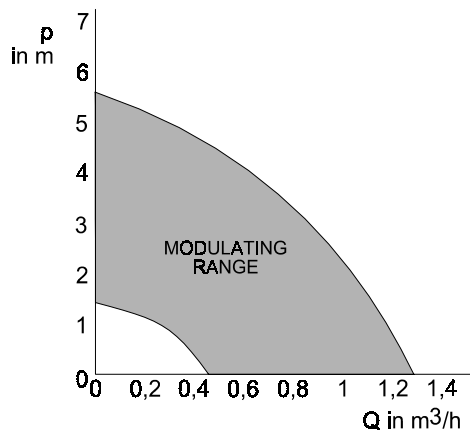
Figure 3 Top View Dimensions mm



11. Main Component Specification

11.1 Head Height of the Central Heating Circuit.

Figure 4 Pump Head Height



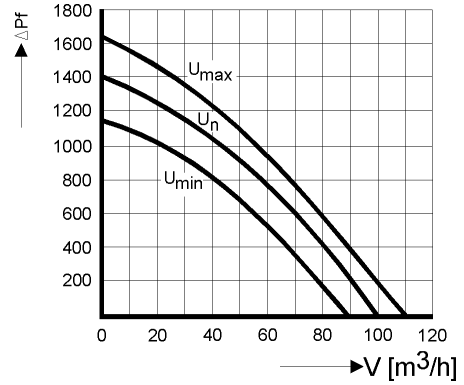
Volume of Water in Cu. Mts/ph. (m3/h.)

Grundfoss 240 Volt ~ 50Hz
Wattage 59 ~ 115 W

11.2 Air Fan Details.

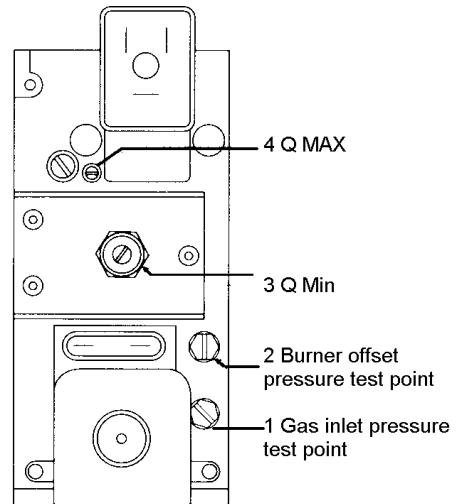
Type. EBM GIG128~13~13

Figure 5 Air Fan Curve



11.3 Gas Control Valve.

Figure 6 Gas Valve



Adjustments

Turning 3 clockwise increases min output & CO2%

Turning 4 Anti clockwise increases max output CO2%

12. Unpacking & Items Supplied

The following items are supplied with the Boiler.

Installation manual (to be left with the boiler).
Replacement fuses (located top left of control panel).
Vent key.
Mounting bracket.
Outside air temperature sensor

13. Accessories

The following items are also available from eco hometec at extra cost.

Colour coded 1/4 Turn Isolating Valves.

Stainless Steel Flexible Pipe Connections.

In line Filter/Strainers.

Condensate sump pump for below ground installations. N.B. LPG installations must not be installed below ground level.

eco hometec comprehensive range of PPS flue kits, fittings and accessories.

80/125 Concentric 500 mm Fanned Flue Kit
80/125 1000mm length PPS/White Galvanised Concentric Flue
80/125 500mm length PPS/White Galvanised Concentric Flue
80/125 PPS/White Galvanised 90 degree elbow
80/125 PPS/White Galvanised 45 degree elbow
80mm 1000mm PPS flue pipe
80mm PPS 45 degree PPS Elbow
80mm PPS 45 degree connector
80/125 Roof Terminal
Pitched roof tile flashing
Aluminium flat roof terminal/chimney top flashing
80mm Wall Fixing Clamp
125mm Wall Fixing Clamp
80mm PPS flexible flue liner (per metre)
80mm PPS flexible flue liner 360 degree spacers
80mm PPS flexible flue liner chimney terminal
80mm PPS flexible flue liner chimney terminal clamp
80mm PPS flexible flue liner boiler flue connector

eco hometec servicing software and RS 2323 interface cable for connection to a PC.

eco hometec RE2132 modulating room sensor.

eco hometec EC30H Cable for connecting three way diverter valve (external to boiler).

eco hometec cascade manager for controlling multiple boiler installations supplying heat to the same system. A maximum of five boilers can be connected.

eco hometec PRO1 wall mounted pump control box to control one or more pumps in serial with the built in boiler pump.

eco hometec MR 03 mixing valve control unit

For more details please contact the eco hometec technical department.

14. Operation

A key component of the boiler is the ECONOX premixing, radiant, gas burner, which is capable of producing a Variable Controlled Output (20% to 100% ratio).

A unique feature of the ECONOX burner is

its radiation cylinder, which has been specially designed to suit the geometry of the combustion chamber. It is composed of a perforated sheet of stainless steel with a metal fleece on its surface. On the surface of this burner, accurate quantities of premixed gas and air are burnt almost without a visible flame

As a result of the extremely low combustion temperatures produced during this process, emissions of harmful atmospheric pollutants are dramatically reduced, (NO_x 20mg\kWh CO 14mg\kWh).

14.1 Variable Controlled Output

The eco hometec on-board computerised V.C.O. system with integral fault diagnostic facility, ensures that optimum efficiency is maintained when operating in both heating and DHW modes.

According to the required flow temperature, the premixing radiant burner modulates.

To save electricity, a 24-Volt, high efficiency fan is used with a variable speed and power capacity; if the heat demand decreases, the fan will turn at a lower speed, which results in a lower power consumption.

The fan is programmed to supply given amounts of air for specific burner outputs.

This air pressure then controls the gas valve which in turn, matches the gas pressure to the required gas to air ratio (1:1).

The combustion gases are then passed down through the SPIRANOX stainless steel heat exchanger to atmosphere.

During their passage these hot gases are used to preheat both the return water to the boiler and the incoming combustion air, thus

ensuring that all of the available energy is used as efficiently as possible.

14.2 Variable pump

A variable speed integral circulating pump is supplied, which operates at different speeds and results in a lower power consumption (between 30 and 119 Watts).

This feature is to help maintain a temperature difference of 20°C between the flow and return temperatures on systems using radiators.

14.3 Frost Protection

If the flow temperature falls below 8°C, in order to provide frost protection, the pump will run even though there may be no demand for heat. If the temperature continues to fall, at 5°C, the burner will also ignite. At 10°C the appliance will return to standby mode.

14.4 Year Long Protection

During summer months, the pump and mixer valve (if fitted) are exercised daily. This prevents seizure of internal components thus reducing maintenance costs.



Remember when handing over the appliance to advise the end user on the precautions necessary to prevent frost damage to the system during frosty conditions. Stress the importance of leaving the system turned on e.g continuous low temperature setting in extremely cold weather.

15. Siting the Appliance



In siting the boiler, the following limitations MUST be observed

The boiler is not suitable for external use.

The position selected for installation MUST allow adequate space for servicing in front and below the boiler and for the circulation of ventilation air around the boiler. Figure 8 shows the minimum clearances required for safety and subsequent service. The position must allow for the correct routing of a flue system.

The room must be dry and protected from frost.

All eco hometec appliances are condensing and plumbing at the flue is a normal occurrence. Flue terminal positions where this, or the noise of flue gases discharging from the flue could be a nuisance must be avoided.

Normally no part of the appliance, other than the water pipe-work (85°C) and flue pipe (75°C), will exceed 65°C. However, any combustible material near to the boiler or its flue system and water pipe-work must be protected to ensure it does not exceed 65°C.



In certain locations the flue outlet may be susceptible to high winds or air turbulence. Sudden gusts may create a negative flue pressure. Flue terminal outlets in such exposed conditions should be avoided. When operating at low fan speeds flame lift may occur. This can be overcome by raising the minimum fan speed.



It is advisable when installing the boiler to use an eco hometec P.P.S. plastic concentric flue system. This not only ensures that there is sufficient combustion air, but also reduces room ventilation requirements thus increasing the number of possible suitable locations.

The EC VCO MODELS may be installed on the inner face of an external wall and some internal walls providing they are flat, vertical, of a non-combustible material and are capable of supporting the weight of the boiler and any other ancillary equipment. Where installation will be in an unusual location, special procedures may be necessary. Detailed guidance on this subject can be found in BS. 6798.

15.1 Timber Framed Dwellings



When installing the EC VCO MODELS into a timber framed dwelling, it must be fitted in accordance with the British Gas publication 'Guide for Gas Installations in Timber Framed Housing' ref. DM2.

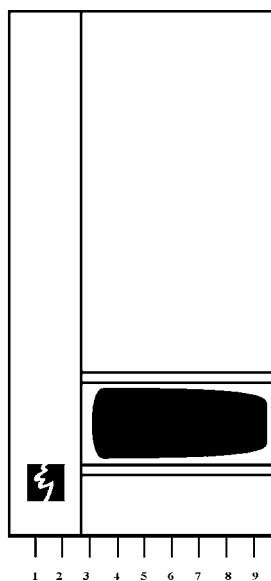
For further advice contact the eco hometec Technical Helpline.

16. Hydraulic Connections

16.1 First Fixing Pipe-work

All the pipe-work and wiring connections enter at the bottom of the unit. To ensure a tidy installation it is important to consider at the first fixing stage the order you arrange the pipe-work and if applicable any cable trunking. Figure 7 shows the order in which to fix the pipe-work.

Figure 7 Pipe-work Layouts



16.2 Type 'H' Connections

- 1) Cable Gland
- 2) Syphon Flush (No permanent connection required)
- 3) Heating Flow ~ 22mm
- 4) Additional Cable Entry Point
- 5) Not applicable to H model
- 6) Gas Inlet ~ 15mm.
- 7) Not applicable to H model
- 8) Heating Return ~ 22mm.
- 9) Condensate Discharge ~ 3/4 M.I.

16.3 Type 'HS' Connections.

- 1) Cable Gland
- 2) Syphon Flush (No permanent connection required)
- 3) Heating Flow ~ 22mm
- 4) Additional Cable Entry Point
- 5) Flow Domestic Hot Water 22mm
- 6) Gas Inlet ~ 15mm
- 7) Return Domestic Hot Water 22mm
- 8) Heating Return ~ 22mm
- 9) Condensate Discharge ~ 3/4 M.I.

16.4 'S' Connections.

- 1) Cable Gland
- 2) Syphon Flush (No permanent connection required)
- 3) Heating Flow ~ 22mm.
- 4) Additional Cable Entry Point
- 5) Flow Domestic Hot Water 22mm
- 6) Gas Inlet ~ 15mm
- 7) Cold Mains Water ~ 22mm
- 8) Heating Return ~ 22mm
- 9) Condensate Discharge ~ ¾ M.I.

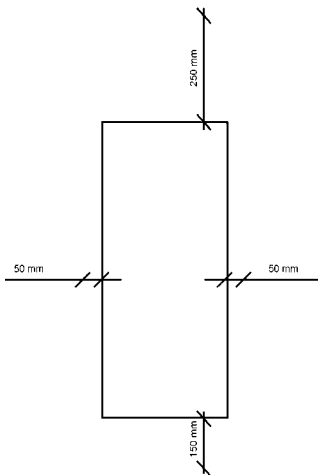
16.5 Clearances

For ease of installation, necessary inspection and commissioning, the following clearances are recommended.

Table 6 Minimum Clearances

Sides	50mm
Above	250mm
Below	150mm
Front	455mm

Figure 8 Minimum Clearances



16.6 Checks Before Siting

Before commencing to install this appliance ensure the design specification complies with all of the requirements contained in these installation and servicing instructions and any statutory documents which may apply.



The manufacturers instructions must not be allowed to override statutory

requirements. More than one person may be required to install the appliance.

16.7 Fixing the boiler.

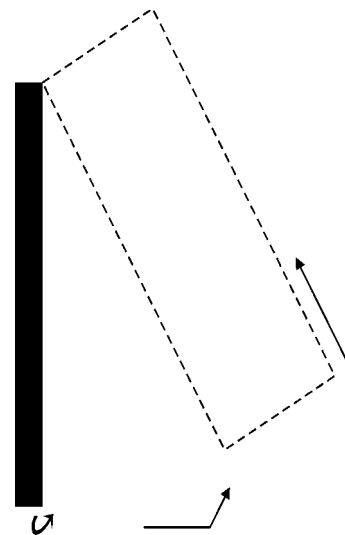
When unpacking the unit for the first time, take adequate precautions to protect the surrounding floor coverings. The boilers are factory tested and contain residues of water that could cause dampness and possible staining if contact with carpets and floor coverings is not prevented.

Unpack the appliance and ensure that the items listed on page 14 have been supplied.

16.8 Removing The Casing

To remove the casing lay the unit down on the floor with the casing facing upper most. Loosen the centre screw and undo the two toggle casing clips located on the bottom of the unit. Pull the casing upwards, lifting up and off the internal locating lugs. Place the casing to one side taking care not to scratch the casing or control panel cover. (see figure 9.)

Figure 9 Removing the Casing



Take any necessary precautions to protect the surrounding working area and decorations from dust and damage.

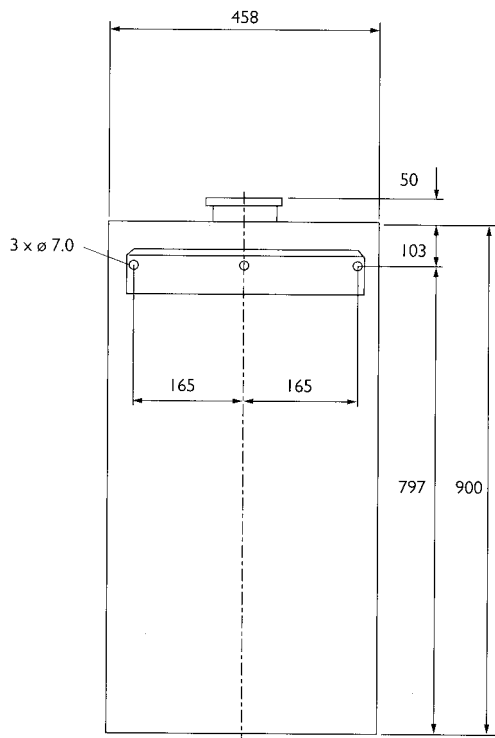
Make one final check on the location pay particular attention to the flue outlet (consider plumbing) and the condensate discharge pipe route.



Install the combi model as close as possible to the hot water taps to avoid the hot water pipes from becoming too long. This prevents long delays and unnecessary waste of water.

When you are satisfied the location meets all the required criteria mark out the wall for required fixing points. Use the fixing bracket as a template.

Figure 10 Fixing Dimensions



Check for horizontal and vertical alignment and drill 4 holes as marked using a No.14 masonry drill.

Clear the surrounding area of any dust and debris and secure the mounting frame to the wall using suitable screws and plugs.

Locate the boiler on the mounting frame.



The appliance should be 10mm off the wall measured at the base of the panel. Failure to observe this will result in condensate becoming trapped inside the heat exchanger. Component failures as a result of incorrect installation will not be covered by the boiler's normal warranty.

Please remember when using power tools to take all necessary safety precautions and always wear safety goggles.

17. Flues and Ventilation

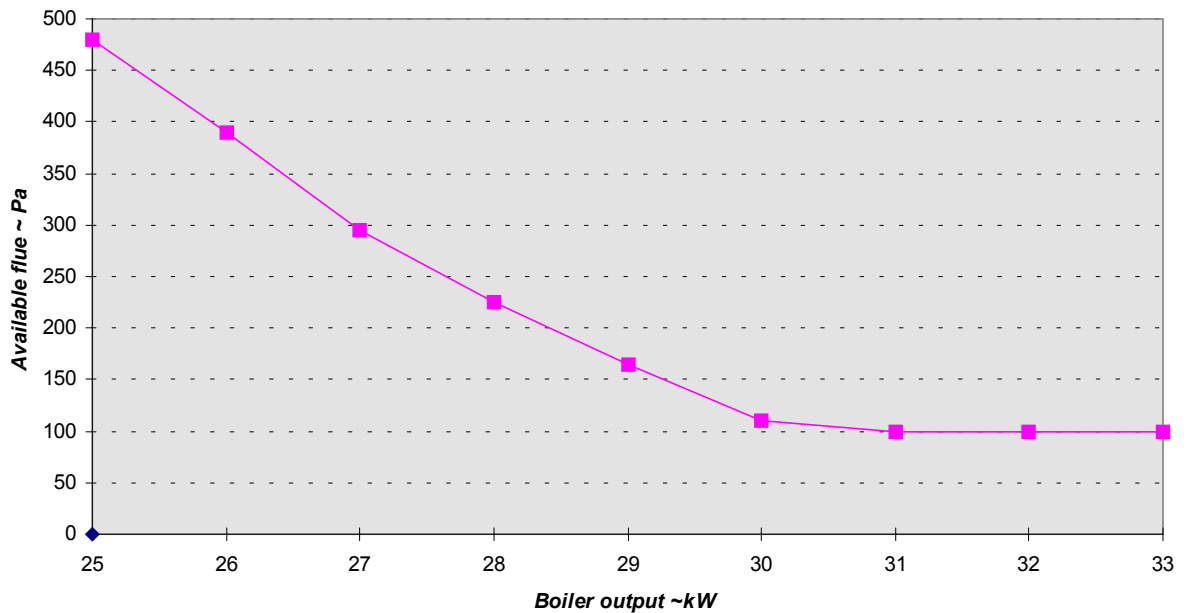
The internal boiler flue system is manufactured in P.P.S plastic and the flue outlet may be connected to an external P.P.S plastic or stainless steel flue system.

17.1 Maximum Flue Lengths

The flue materials, flue insulation, the amount of vertical and horizontal pipe and the amount of bends incorporated determine the maximum permissible flue length. The excess fan pressure available for overcoming the frictional resistance of the flue system is 100 p.a.

Figure 11 Flue Design

Boiler output in relation to available flue Pa
 lower outputs = more Pa and longer flue lengths



For the purposes of flue design when using the eco hometec PPS 125mm/80mm concentric flue system then refer to the table below for component resistances.

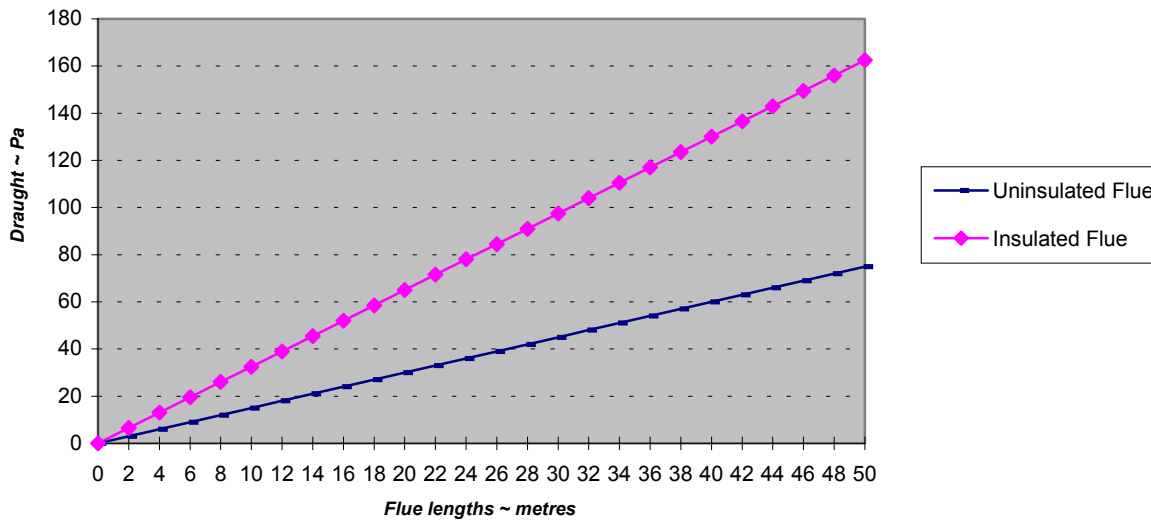
Table 7 Flue Resistance

COMPONENT RESISTANCE	P.a
80/125 Concentric 500 mm Fanned Flue Kit	5.0
80/125 1000mm length PPS/White Galvanised Concentric Flue	4.5
80/125 500mm length PPS/White Galvanised Concentric Flue	2.25
80/125 PPS/White Galvanised 90 ⁰ elbow	4.0
80/125 PPS/White Galvanised 45 ⁰ elbow	2.0
80mm 1000mm PPS flue pipe	2.5
80mm PPS 90 ⁰ elbow	1.0
80mm PPS 45 ⁰ elbow	.5
80/125 Roof Terminal	7.5
Open terminal with stainless steel mesh	2.5

For vertical external and internal flues there is a further gain from thermal lift. This can be calculated from the graph below.

Figure 12 Thermal Lift

**Thermal lift when
flue gas temp 80C and outside temp 10C**



Thermal lift is generated naturally in the vertical part of a flue system, reducing the overall resistance of the system.

The available lift may be calculated from the Thermal lift graph and deducted from the total calculated flue resistance.

17.2 Available Flue Components

- 80/125 Concentric 500 mm Fanned Flue Kit
- 80/125 1000mm length PPS/White Galvanised Concentric Flue
- 80/125 500mm length PPS/White Galvanised Concentric Flue
- 80/125 PPS/White Galvanised 90 degree elbow
- 80/125 PPS/White Galvanised 45 degree elbow
- 80mm 1000mm PPS flue pipe
- 80mm PPS 45 degree PPS Elbow
- 80mm PPS 45 degree connector
- 80/125 Roof Terminal
- Pitched roof tile flashing
- Aluminium flat roof terminal/chimney top flashing
- 80mm Wall Fixing Clamp
- 125mm Wall Fixing Clamp
- 80mm PPS flexible flue liner (per metre)
- 80mm PPS flexible flue liner 360-degree spacers
- 80mm PPS flexible flue liner chimney terminal
- 80mm PPS flexible flue liner chimney terminal clamp
- 80mm PPS flexible flue liner boiler flue connector

For installations requiring greater flue lengths - please contact the eco hometec technical department for advise.

The flue should terminate with a suitable terminal.

17.3 Plumbing

The siting of the terminal is not critical with regard to the performance of the appliance. However In certain locations the flue outlet may be susceptible to high winds or air turbulence. Sudden gusts may create a negative flue pressure. Flue terminal outlets in such exposed conditions should be avoided. When operating at low fan speeds flame lift may occur. This can be overcome by raising the minimum fan speed.

In certain conditions plumbing from the flue, although harmless, may cause a nuisance.



Please site the flue outlet to minimise any inconvenience the discharge of combustion products or possible plumbing may cause.

Where a terminal is so sited to be less than 2m above the level of any ground, balcony, flat roof, or place to which people have access, or there is a likelihood of accidental contact by persons or damage to the terminal, a suitable guard **MUST** be fitted. Terminal guards are available from eco hometec.

17.4 Condensate in the Flue

Condensate formed must be cleared from the flue system and adequate care is required to ensure all flue pipes are self draining. All internal and external potential collecting points must be drained. In addition to avoid freezing external flue ductwork must be insulated.

To ensure the safe and satisfactory operation of the boiler the chimney system must be capable of the complete evacuation of combustion products at all times.

17.5 Flueing Options

The boiler may be installed either as a room sealed, fanned flued appliance using the

eco hometec P.P.S plastic 125mm/80mm concentric flue system or alternatively, conventionally flued, using a single skin 80mm P.P.S. plastic pipe.

17.6 Installing a Concentric Flue

Connect the concentric elbow into the flue/vent connection.

Mark the wall around the flue, remove the concentric elbow cover the appliance and cut or drill a 130mm diameter hole through the wall.

Measure and cut the concentric flue pipe to pass through the previously made hole and into the concentric 90° bend.

Figure 13 Flue Preparation

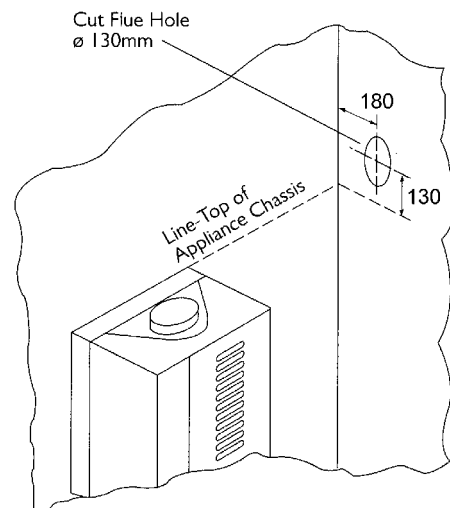
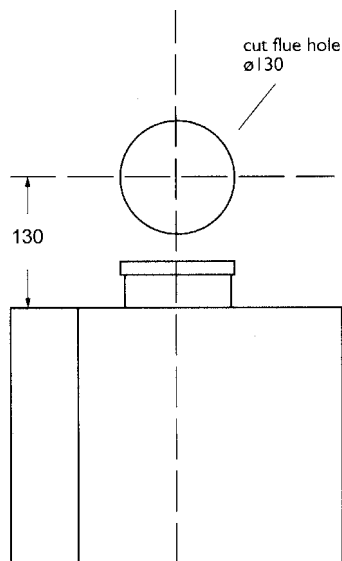


Figure 14 Dimensions for cutting flue hole



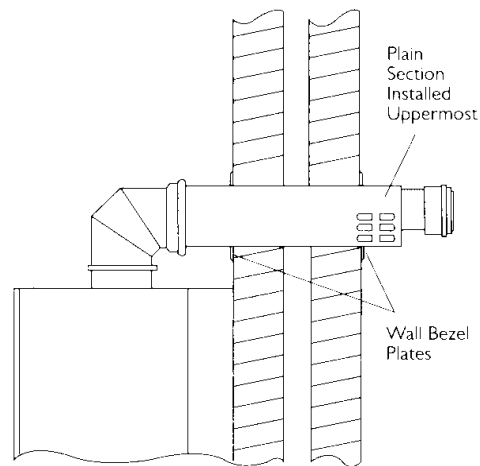
Apply a chamfered edge to the cut ends, apply silicone lubricant and insert through the wall and into the flue/air socket. The overall projection of the finished pipe should leave the air holes 20mm clear of the surrounding wall as per figure 15.

NOTE: When fitted, it is important to position the flue outlet with a slight fall so that the 80mm flue pipe is sloped back towards the boiler.

Failure to observe this requirement will result in condensate running out of the flue pipe and over the external brickwork causing possible staining and or freezing. Installed correctly the flue pipe will self drain back through the boilers internal condensate route.

Make good to internal and external walls and fix an external stainless steel terminal guard if required.

Figure 15 Wall Terminal



The final location of the Flue Outlet terminal should comply with figure 23 and table 8.

In certain circumstances the location of the boiler may leave the flue outlet in a position that does not comply with figure 23, or where plumbing is a nuisance.

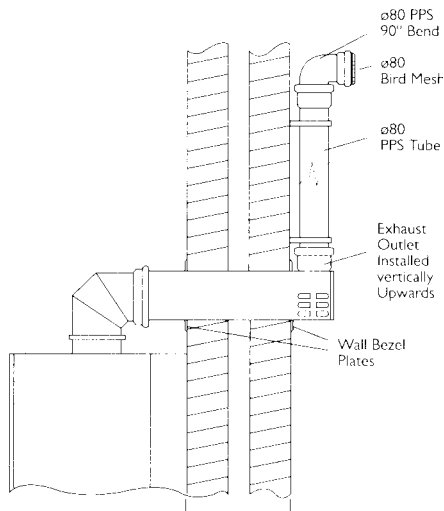
The eco hometec flue system has been designed to overcome this and the 80mm P.P.S. flue pipe may be simply re-routed to terminate in a more suitable location. To do this simply remove the 80mm stainless steel flue grill and insert either a 90° or 45° bend

Note: two 45° may be used to form a swan neck returning the flue pipe back to the wall for clipping.

Route the pipe to the desired location and terminate with a suitable bend to direct the flue gases away from the wall or any obstruction. When you are satisfied that the location complies with the requirements of figure 23 replace the stainless steel 80mm flue grill..

Alternatively a 90° terminal fitting may be purchased from eco hometec and the flue routed vertically.

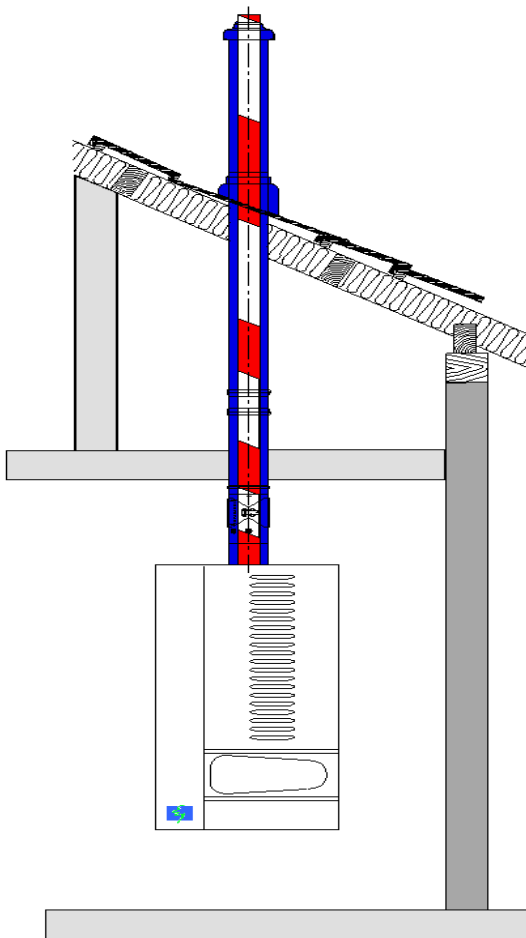
Figure 16 Vertical Wall Terminal



17.7 Vertical flue Installations

For vertical flue applications a range of fittings for both pitched and flat roofs are available. Please contact eco hometec for further advice.

Figure 17 Vertical Flue Application



17.8 Modular Installations

For multiple boiler (modular) installations eco hometec supply a range of larger diameter flues.

Sizes are available in 150mm, 200mm and 250mm. For assistance in flue design and specification please call the eco hometec technical department.

Figure 18 Modular Installation

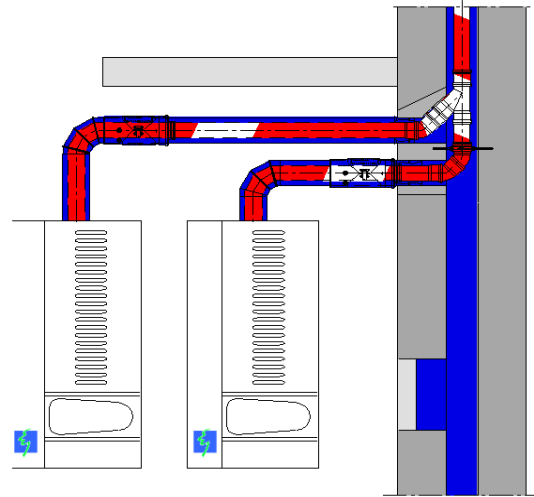
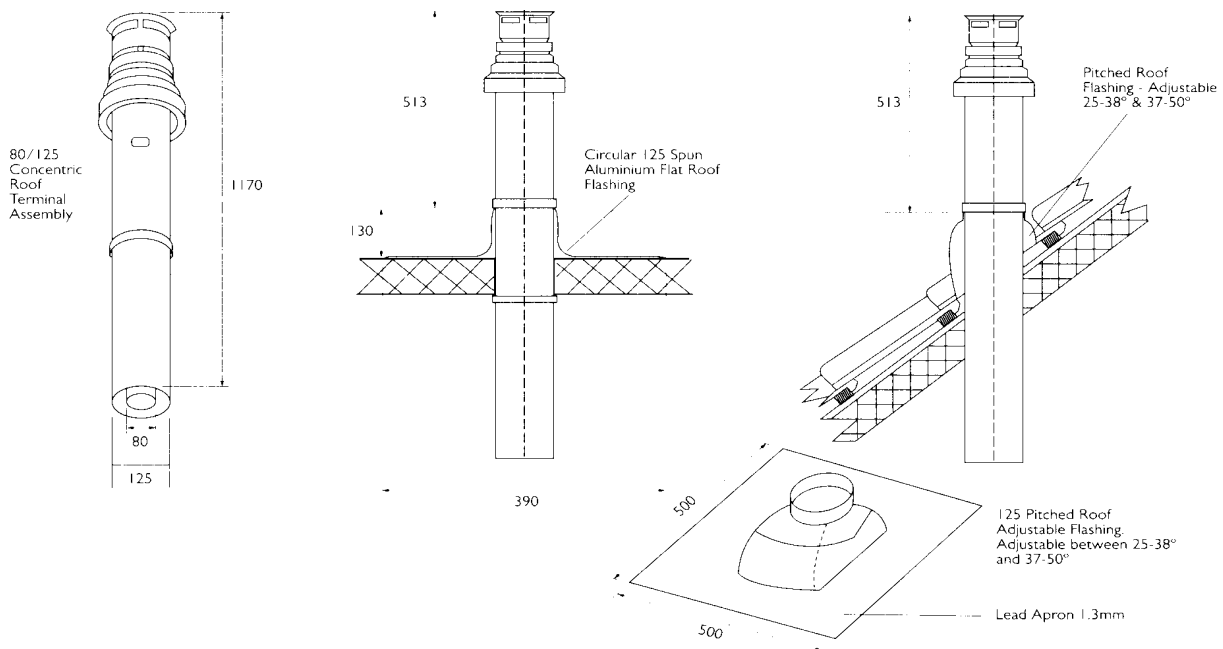


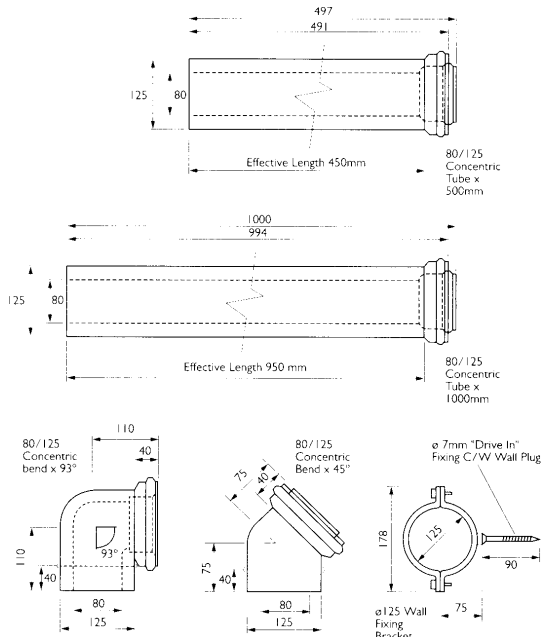
Figure 19 Vertical Roof Terminals



Concentric vertical flue fittings are available from eco hometec.

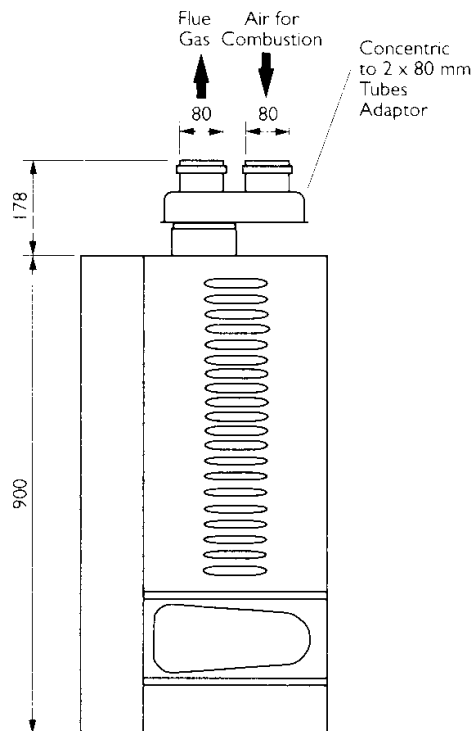
Concentric flue components have push together spigot and socket joints. The inner PPS flue gas tube has silicone seal rings located in the socket component. The outer air tube has EPDM rubber seal rings located in the socket component. To aid assembly and assurance that the joints have been fully pushed home, the seal rings and make ends of tubes and fittings should be lightly lubricated with silicone grease. Additional 80/125mm concentric flues tubes and fittings are available from eco hometec details below:

Figure 20 Concentric flue fittings



- 80/125 1000mm length PPS/White Galvanised Concentric Flue
- 80/125 500mm length PPS/White Galvanised Concentric Flue
- 80/125 PPS/White Galvanised 90 degree elbow
- 80/125 PPS/White Galvanised 45 degree elbow
- 125mm Wall Fixing Clamp

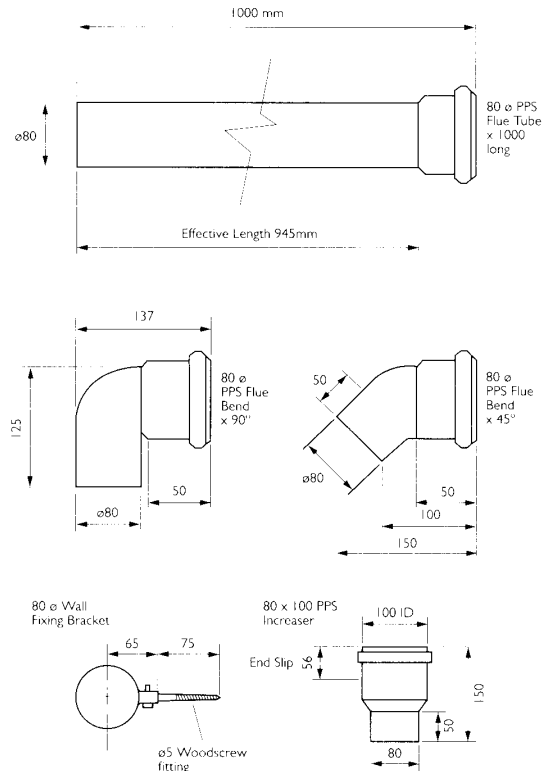
Figure 21 Concentric 80mm adaptor



The concentric 80mm double adaptor is used to separate the air flue gas tubes. Both air and flue gas may be piped separately and if required in different directions.

Additional 80 PPS flues tubes and fittings are available from eco hometec details below:

Figure 22 80mm Flue Tubes



- 80mm 1000mm PPS flue pipe
- 80mm PPS 45 degree PPS Elbow
- 80mm PPS 45 degree connector
- 80mm Wall Fixing Clamp
- 80mm – 100mm increaser

A range of Flexible Flue liners are also available details below.

- 80mm PPS flexible flue liner (metre)
- 80mm PPS flexible flue liner 360-degree spacers
- 80mm PPS flexible flue liner chimney terminal
- 80mm PPS flexible flue liner chimney terminal clamp
- 80mm PPS flexible flue liner boiler flue connector

17.9 Fan Flued Terminal Positions

Figure 23 Fan Flued Terminal Positions

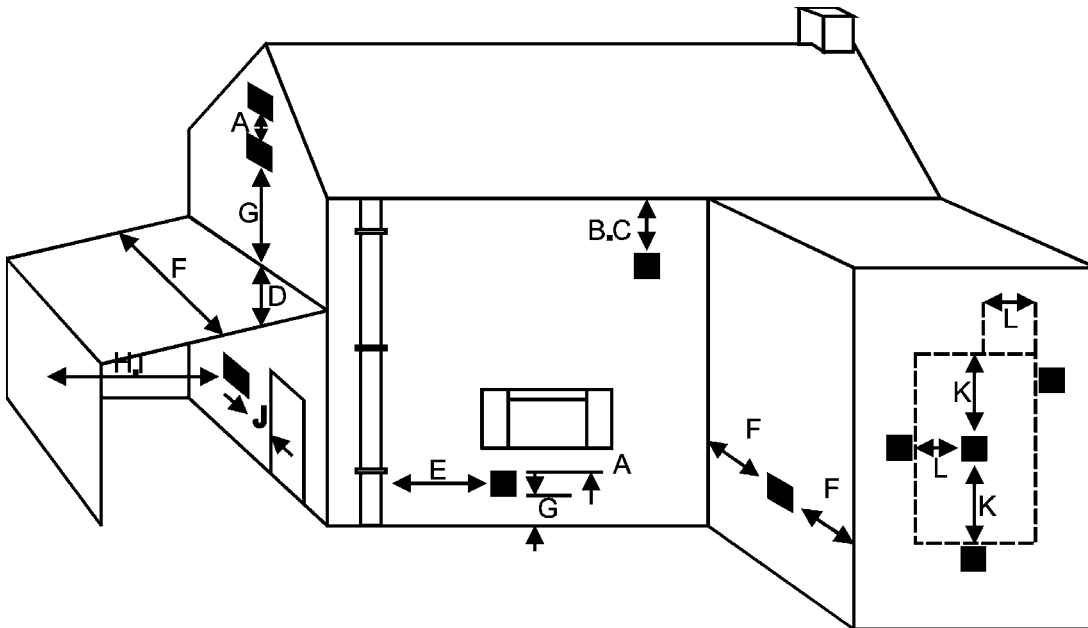


Table 8 Flue Terminal Positions.

Terminal Positions	Min.Distance
A: Directly below an opening window or other opening, e.g. air brick	300mm
Directly above an opening window or other opening, e.g. air brick	300mm
B: Below gutters, soil pipes or drain pipes.	75mm
C: Below eaves	200mm
D: Below balconies or car port roof	200mm
E: From vertical drain pipes and soil pipes	150mm
F: From internal and external corners	300mm
G: Above ground roof or balcony	300mm
H: From a surface facing a terminal	600mm
J: From an opening in a car port (e.g. door, window) into a dwelling	1200mm
K: Vertically from a terminal on the same wall	1500mm
L: Horizontally from a terminal on the same wall	300mm

18. Gas Supply

The boiler is set for use with natural gas.

18.1 Gas Supply

Pipe-work from the meter to the boiler **MUST** be of an adequate size.

DO NOT use pipes of smaller size than the boiler inlet gas connection.

The gas supply to the boiler must be capable of maintaining a minimum pressure of 20 mbar measured at the inlet to the boiler, with all other gas appliances working.

The installer should install a pressure test point adjacent to the gas inlet connection.

18.2 LPG Gas Supply

For LPG the gas supply to the boiler must be capable of maintaining a minimum pressure of 37 mbar measured at the inlet to the boiler, with all other gas appliances working.



The complete installation **MUST** be tested for soundness and purged in accordance with C.P. 331.3



The gas valve fitted to the boiler is not designed to withstand pressures in excess of 60 mbar.

When carrying out the pressure test on the service pipe-work it is essential that the gas cock fitted to the boiler is in the closed position, failure to do so will result in serious damage to the boiler.

18.3 Setting The Gas Type



When the EC VCO MODELS leaves the factory it set up for use with Natural Gas. It can however be easily adjusted for use with LPG

18.4 Conversion to LPG

If the appliance is being used with LPG then a conversion kit is available from eco hometec.

The contents of the LPG conversion kit include the following items:

- 1 x Propane injector 5.7mm
- 1 x Injector 3.5mm
- 1 x 10mm plastic air box plug
(for EC 16 & 23)
- 1 x 15mm plastic air box plug (for EC 31)
- 1 x 13mm plastic air box plug (for EC 38)

To convert the appliance to LPG complete the following procedure.

Isolate the boiler from the gas and electricity supplies.

Disconnect the unions either side of the gas valve.

Screw the 3.5 injector into the gas inlet side of the valve and the 5.7mm injector into the gas outlet side of the valve.

Close the hole in the front of the air box (attached to the air fan assembly) using a plastic plug included in the conversion kit.
EC38 only close the hole in the rear of the air box (attached to the air fan assembly) using a plastic plug included in the conversion kit.

Re-connect the gas valve making sure the sealing washers are located properly.

Turn on gas supply and check for gas soundness.

Write on the identification plate that the appliance has been converted for LPG.

All gas service pipe-work from the meter to the boiler should be either mild steel pipe or copper.

19. Air Supply

19.1 Concentric Flue

If installed with a concentric flue and as a room sealed appliance the boiler does not require that room or internal space to have a permanent air supply.

19.2 Conventionally Flued

Safe, efficient and trouble-free operation of conventionally flued gas boilers is vitally dependant on the provision of an adequate supply of fresh air to the room in which the appliance is installed. Ventilation by grilles

Position ventilation grilles to avoid the risk of accidental obstruction by blocking or flooding. BS 5540.2

Table 9 Ventilation

Vent Position	Into room or internal space	Direct to outside air
High level	9 cm ² per kW of input	4.5 cm ² per kW of input
Low level	9 cm ² per kW of input	4.5 cm ² per kW of input
In a room or internal space	None required	None required
Conventionally flued appliance		
Vent Position	Into room or internal space	Direct to outside air
High level	9 cm ² per kW of input	4.5 cm ² per kW of input
Low level	18 cm ² per kW of input	9.0 cm ² per kW of input

Any air vent, which is to supply air to an open flued appliance, must not communicate with any room/space containing a bath or shower or private garage.

If further guidance on ventilation is required then consult BS. 5440.2.

Detailed recommendations for air supply requirements are given in BS.5440.2. and can also be found in the CORGI Gas

communicating directly with the outside air or a ventilated adjacent room is required.

Where the combustion air is being taken from an adjoining room the room itself must be ventilated to satisfy the combustion air requirement of the appliance. Where the appliance is to be installed as a conventionally flued appliance sufficient combustion air should also be allowed. To calculate the amount of free combustion air required for the appliance table 9 should be used. Permanent openings are based on the total maximum rated input.

Installer Manual. The following notes are intended for general guidance only. Where open flued appliances total input ratings exceed 7 kW the room or internal space containing them must have an air vent of minimum effective area 4.5 cm² for every 1 kW in excess of 7 kW.

19.3 Compartment Ventilation

Due to the low standing losses compartment ventilation is not required.

20. Hydraulic Requirements



The boilers are intended to be used in conjunction with FULLY PUMPED, SEALED systems subject to the requirements below. They are NOT SUITABLE for use on gravity circulation systems. The boiler must NOT be used for direct hot water supply.

Underfloor Systems



Despite the low boiler flow temperatures feature, in the event of control and/or mechanical failure or incorrect adjustment, to prevent damage to the installation or associated pipe work ALL low temperature under floor installations require an obligatory mixing valve installing as part of the system controls or a high limit thermostat set at 60°C to interrupt the demand for heat signal from the underfloor heating controls.

EC38S and all Combi Types

In hard water areas suitable protection should be provided to prevent the build up of deposits in the primary hot water heat exchanger. The appliance guarantee does not extend to failure as a result of lime scale or other contamination.

38kW Models Only.

These appliance requires an expansion vessel and a 3 bar pressure relief valve to be fitted to the system



MAKE SURE ASUITABLE SIZED EXPANSION TANK AND A 3BAR PRESSURE RELIEF VALVE ARE FITTED TO THE SYSTEM AND THE DISCHARGE PIPE TERMINATES TO A SAFE LOCATION

The central heating system should be in accordance with the recommendations given in BS. 6798 and BS. 5449.



Hot water cylinders must be double feed indirect and to aid efficiency and fast recovery times (all appliances are hot water priority) should be of the high recovery type.

Recommended minimum coil capacity 25kW.

The boiler must be capable of being adequately vented of air. Drain taps MUST be located in accessible positions, which permit the draining of the whole system - including the boiler and hot water storage vessel. Drain taps should be at least 1/2 inch BSP nominal size and be in accordance with BS. 2879.



In order to facilitate servicing of the unit, full flow isolating valves must be fitted to all water and gas connections, (these valves can be supplied by eco hometec as an optional extra if required).

20.1 Expansion Vessel

Depending on specification chosen the appliance may be fitted with a 10 litre expansion vessel.



An expansion vessel must be fitted to all systems and for those boilers supplied with an expansion vessel if the system water content exceeds the limit an additional vessel will be required. For systems having a larger water capacity, multiply the total water content (boiler and system) by the factor to obtain vessel size in litres.

Table 10 Expansion Vessel Req.

*Vessel Charge & Initial System Pressure

*VC&ISP	0.5 bar	1.0 bar	1.5 bar
Factor	0.08 bar	0.11 bar	0.16 bar

EXAMPLE 1.

Central heating system filled to 1 bar.
Total system water content 60 litres
Multiply 60 (water content litres) x 0.11 (factor from chart) = 6.6 litres.
Vessel required 6.6 litres.
Vessel supplied 10 litres.
Vessel adequate.

EXAMPLE 2.

Central heating system filled to 1 bar.
Total system water content 150 litres

Multiply 150 (water content litres) x 0.11 (factor from chart) = 16.5 litres.
 Vessel required 16.5 litres.
 Vessel supplied 10 litres.
 Vessel inadequate.
 Additional vessel 6.5 litres required.

When system content unknown or difficult to determine the following table can assist with calculating water content.

Table 11 System Contents

	Approx. Litres per kW
New Radiators	9
Old Radiators	13
U/Floor Heating	22

Expansion vessels should be connected to the system at a point close to the pump inlet in order to maintain positive pressure throughout the system.
 The central heating system should be in accordance with the recommendations given in BS. 6798 and BS. 5449.

20.2 Hydraulic Resistance

The integral boiler pump is designed to provide an adequate flow rate through the boiler at all times. Therefore, if an additional duty pump is to be fitted to the system, the boiler resistance can be ignored.

A PRO1 pump control box is available from eco hometec. When connected directly to the boiler control panel it will control external duty pumps via the boiler. This feature maintains the built in summer and winter pump protection.

20.3 Condensate Drain



The condensate discharge pipe should be continued in 3/4 inch **plastic waste pipe** into the household drainage system or out through the wall to an existing gully or soak

away. To minimise the risk of freezing all condensate waste pipe-work fitted externally should be 32mm. (The existing drainage system should be corrosion resistant).



In order to avoid damage to the boiler caused by a blocked drainage system, the condensate disposal pipe should **include a tundish**. In these cases the pipe-work connected to the internal household drainage system should be fitted with a deep seal running trap.



Horizontal runs of condensate discharge pipe must fall at a rate of 40mm per metre and any external sections of pipe must be protected against the risk of freezing. Due care should be taken when installing the condensate disposal system to minimise the risk of blockage, as this would cause the condensate to back up inside the boiler.

eco hometec will not accept any liability for damage caused to the boiler should this situation occur.
 If the connection to an existing drain is not possible, the condensate may be discharged into a purpose-built soak away. For further information regarding the construction of a soak away, please contact the eco hometec Technical Support Department.

When the boiler is installed below ground level, i.e. a basement or cellar, **(NB the appliance must not be installed below ground when using LPG)** provision should be made for the disposal of the condensate via a sump pump arrangement.

20.4 System By-Pass

The boiler incorporates a bypass making it unnecessary to fit a system bypass.

Please contact eco hometec Technical Department for more information if required.

Figure 24 H Type Hydraulic system design

Typical EC H installation serving domestic hot water and heating using integral expansion vessel and modulating circulating pump. Hot water production has priority controlled by spring return to heating divertor valve wired to boiler. Flow temperature to hot water is constant temperature to heating may be fixed or variable (weather compensated).

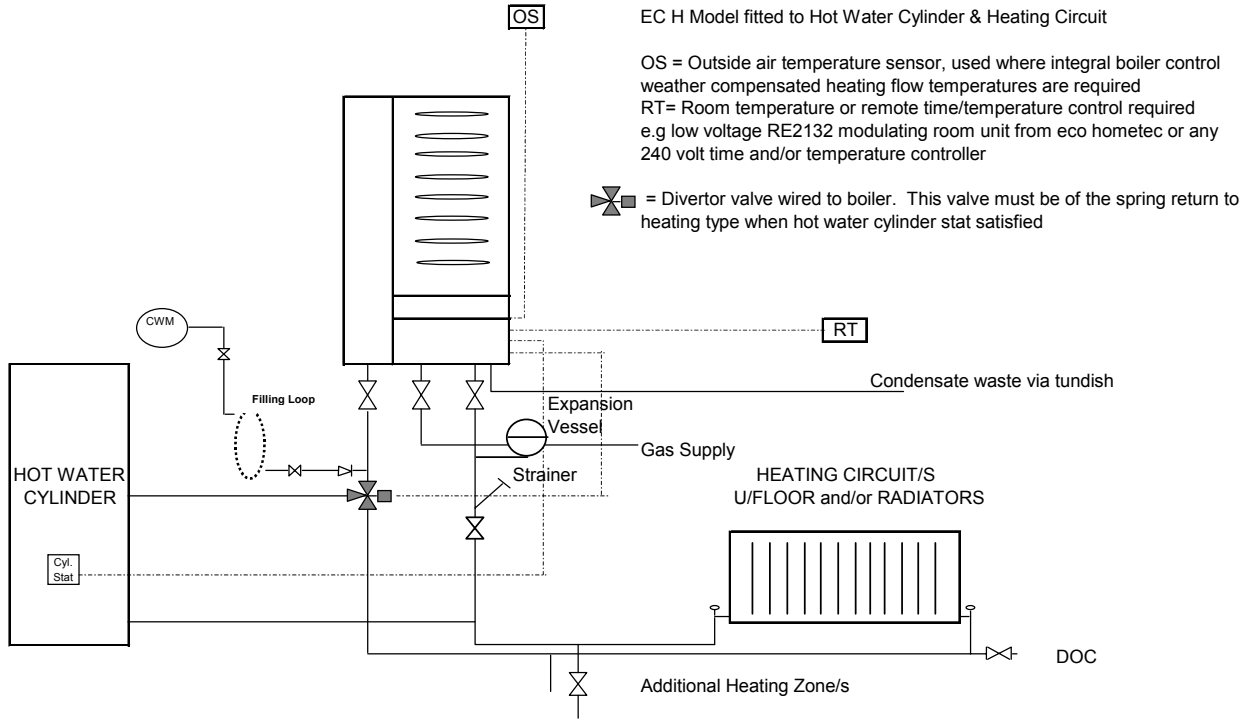


Figure 25 HS Type Hydraulic system design

Typical EC HS installation serving domestic hot water and heating using integral expansion vessel and modulating circulating pump. Hot water production has priority controlled by on boiler spring return divertor valve and cylinder thermostat wired to boiler. Flow temperature to hot water is constant; temperature to heating may be fixed or variable (weather compensated).

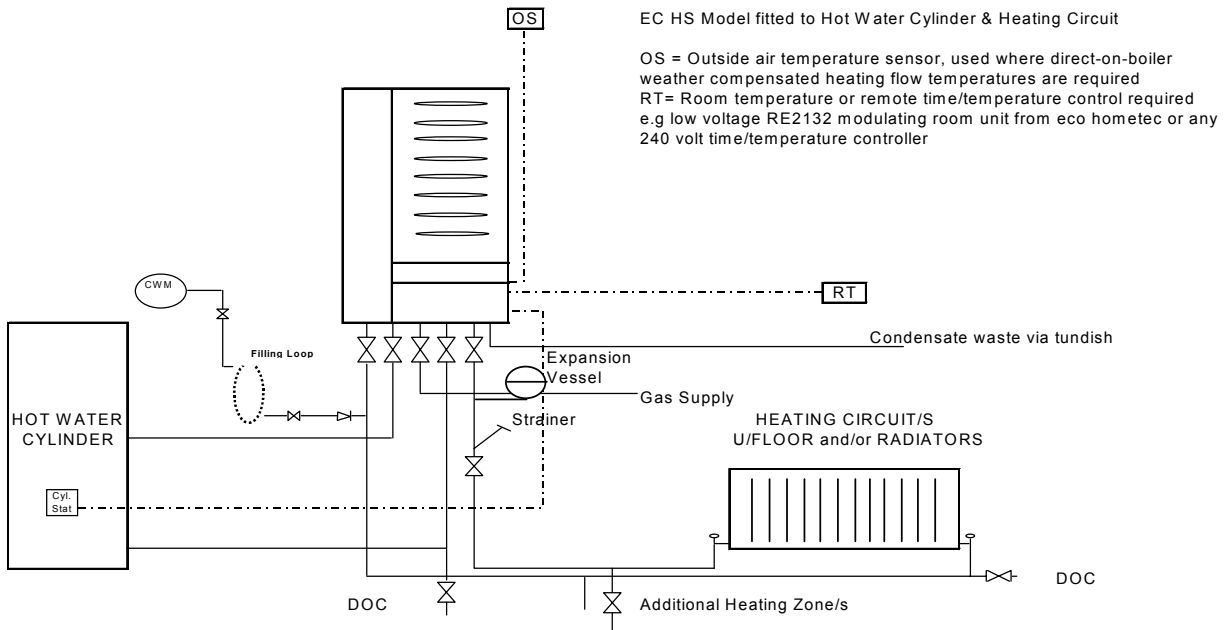


Figure 26 S Type Combi Hydraulic system design

(IMPORTANT SEE NOTE REF: 38/46kW model) Typical EC S (Combi) installation serving domestic hot water and heating using integral expansion vessel and modulating circulating pump. How water production has priority. Maximum flow temperature of hot water is constant temperature to heating may be fixed or variable (weather compensated).

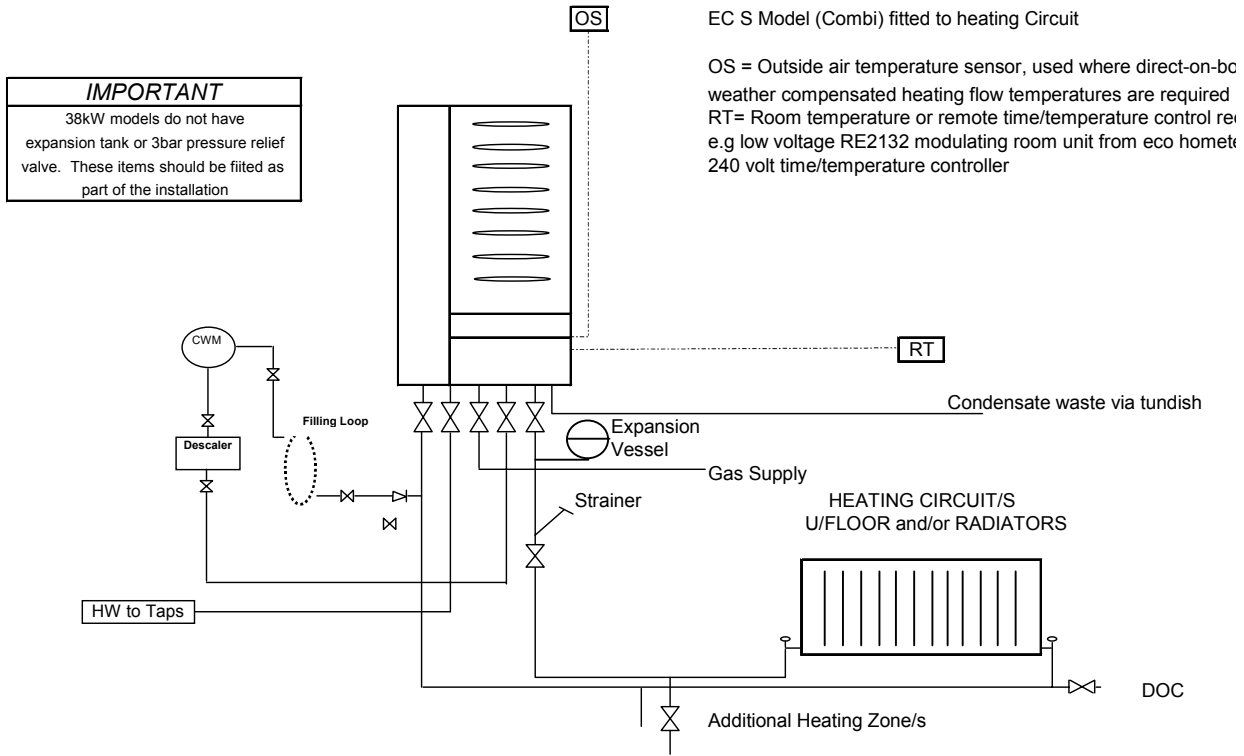
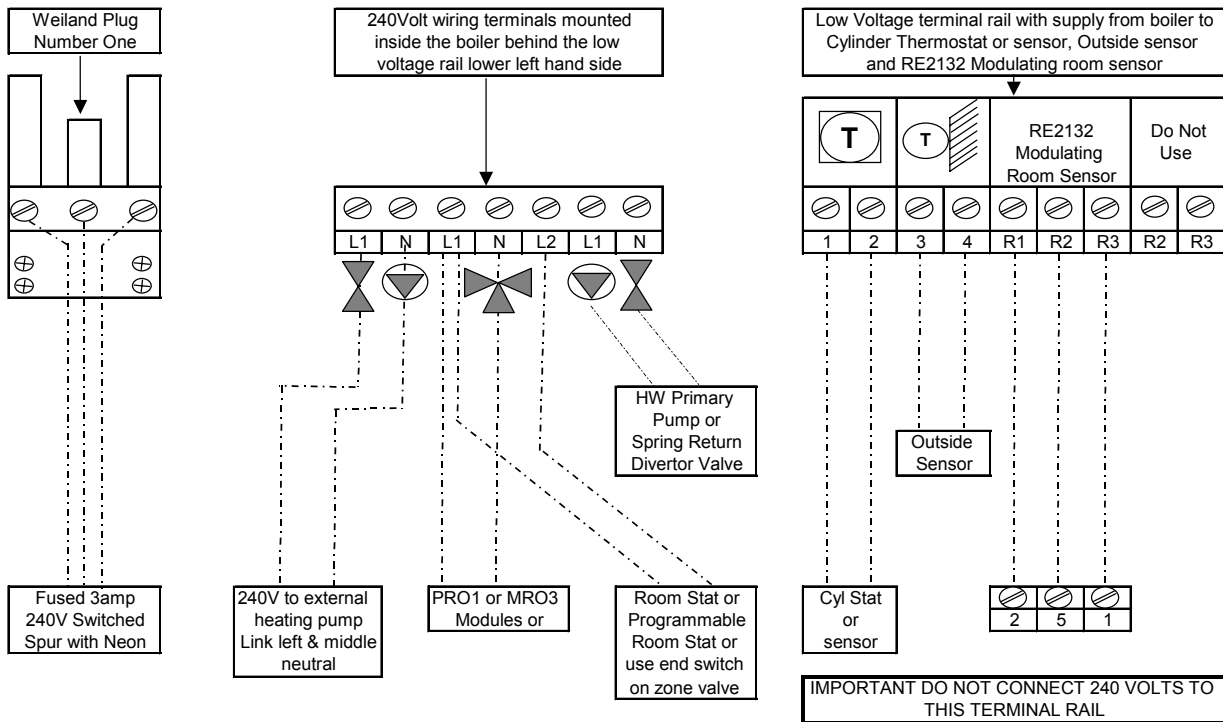


Figure 27 Electrical

Connections



21. Electrical Connections

The boiler has a “Wieland” plug connector for connection to the mains as part of the wiring centre located at the bottom left hand side of the boiler.



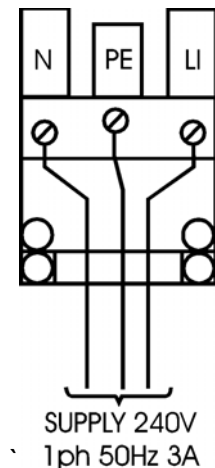
Any external wiring to the boiler must be carried out in accordance with the IEE Wiring Regulations and any local regulations.

The EC VCO MODELS is designed for 230 ~ 240v 50Hz single phase operation. The method of connection to the mains supply should allow for complete electrical isolation of the boiler, preferably by labelled double pole switched spur. The boiler must be protected by a 3 amp fuse.

The point of connection to the mains should be readily accessible and adjacent to the boiler. If the boiler is to be sited in a bathroom the connection should be outside the room.

It is essential that the electrical supply in the property should be properly earthed in accordance with current IEE Wiring Regulations.

Figure 28 Connecting to the Mains



Using 3 core 1.5mm² cable connect the boiler to the mains electrical supply by passing the cable through the cable duct and connecting to the Wieland connector as shown in figure 28.

22. Heating Control Options

There are various ways of controlling the heating system from the boiler.

Using a regular room thermostat.

If a room thermostat is installed there must not be any thermostatic radiator valves on the radiator in that room.

Using a RE2132 room unit

With this special type of room thermostat, available only from eco hometec, the boiler can be regulated in a modulating fashion. Please contact the eco hometec technical department for more information.

If a RE2132 room unit is installed there must not be any thermostatic radiator valves on the radiator in that room.

Using the built-in weather compensating control

This only requires an outside temperature sensor. (**Mounted on North facing wall**)

The on board boiler weather compensating controller is adjusted so the relationship between the outside temperature and the boilers flow temperature is sufficient to maintain the building temperature.

As the outside air temperature rises and falls a modulating control is achieved. Set up this way the temperature for the house is not controlled from one room, but on the basis of the outside temperature.

Using a regular room thermostat, it is also possible to change the relationship between the outside temperature and the supply temperature. Outside temperature is the preferred control if control from one room is not required or not possible. If outside temperature control is used, the radiators must be fitted with thermostatic valves.

22.1 240 Volt Connections

The 240 volt terminal strip can be used to connect the following.

External pump(s) with a maximum of 500 Watt. This connection will supply external pump(s) when the boilers integral pump is running.

A 240 Volt room thermostat.

Switch over three way valve (spring return type) or loading pump for the hot water cylinder.

Three way modulating mixing valve for a secondary circuit. The mixing valve and pump for this circuit has to be wired back to the control unit MR03 (available from eco hometec) an additional pump greater than 500watts may also be connected to the control unit PR01 both the MR03 or the PR01 should be connected to L1 & N

22.2 Low Voltage Connections


The low voltage terminal strip can be used to connect the following.

Hot water cylinder sensor.

External temperature sensor.

RE2132 Modulating room sensor.

All of the above are available from eco hometec

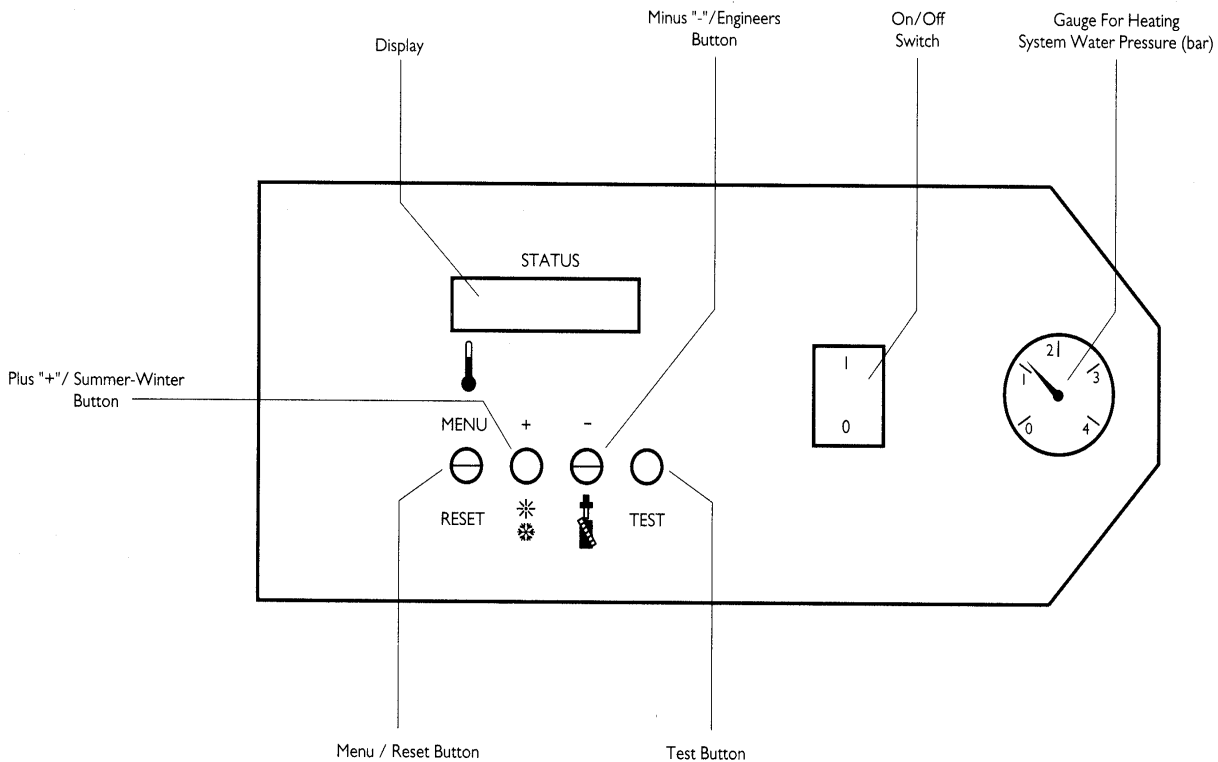
 Do not connect 240 volts to the low voltage terminal strip.

22.3 Built-in clock

The appliance has a unique built-in 3 channel programmable time clock. This enables not only the setting of the heating times for various temperatures, but also the heating times for hot water. During programmed off periods Combi models ('S' types) will maintain a minimum storage temperature of 40°C. For H and HS type appliances connected to hot water cylinder for this function to operate temperature control has to be provided with a sensor (available from eco hometec). When hot water temperature control is provided by a cylinder thermostat this function is not recognised.

23. Boiler Control panel

Figure 29 Boiler Control panel



24. Boiler Control Panel

The boiler control panel incorporates the following features.

24.1 System water pressure gauge

Informs user of current system water pressure.

24.2 On / off switch

Boiler isolating switch.



Always switch to the OFF position when working on the unit.

24.3 Lcd control display

The display has two lines:

the upper line indicates the current operating status e.g HW DEMAND and either "S" (summer) or "W" (winter / "D" (day) or "n" (night).

b. the lower line indicates on the left-hand side the current boiler water temperature, and on the right-hand side the time.

If the button is pressed briefly, the following data may be viewed in the following order:

Press 1 x T1 supply temperature in the system

Press 2 x T3 tap water temperature

Press 3 x T4 return temperature in the system

Press 4 x T5 water, if connected, or the maintained temperature of the built-in tap water exchanger of the boiler

Press 5 x T6 outside temperature

Press 6 x Room 1 - heat demand value of connected room unit

Press 7 x Speed 1 - fan speed

Press 8 x Pump - % pump speed in relation to maximum

Only the values of connected components are shown.

24.4 Menu - reset button

A pressure operated switch activated by pressing with finger until sensor below casing facia clicks or display changes.

This button when pressed allows:

Access to 3 layer menu programming options.

Access to current boiler status displays.



Confirms an entry when programming control.

Reset the boiler after lockout.

For meaning of lockout "FLASHING" display please refer to installer manual.



24.5 Summer winter button

+ Advances (scrolls forwards through menu and programming options).

 Increases a value in the LCD display.
 Sets boiler control to either summer (hot water only) or winter (hot water and heating both on mode)

24.6 Engineers button

- Reverses (scrolls backwards through menu and programming options).

 Reduces a value in the LCD display.
 Places appliance into engineers mode for servicing purposes.

"-" and "chimney sweep" symbols

The "-" button is used in combination with the menu button for programming purposes. The "chimney sweep" symbol (meant for the fitter).

Press once: The unit will operate continuously at 50%; sensors or room units will not switch it off, only the maximum control thermostat.

This mode is meant for measuring emissions (CO, CO, NOx).

Press twice: The unit can now operate at all loads, by pressing the "+" and "-" buttons if the menu button is also pressed seven times, the display will show the speed. This

mode is used to set the gas valve, both at minimum and at maximum load.

24.7 Test button

Checks overheat safety feature. When the burner is on and the button depressed, the burner will shut down when button released, the unit will start up again. . If the unit does not switch off, the wiring harness must be checked for short circuits, or the maximum thermostat must be replaced.

Checks pump function. When the burner is off and the button depressed, the pump will run at 100% speed for approx 2 seconds.

24.8 General

To access the programming mode for times, temperatures, etc., the "Menu" button must be depressed for **3 seconds** the screen will briefly display "-MENU-" and display a menu option. Use the "+" and "-" buttons to scroll through the various options and the "MENU" button to select and confirm changes.

25. Menu options

25.1 Party

This function allows you to extend the current heating period. To access the party option press the "-MENU-" button once and " hours" will flash on the screen, press "+" or "-" to enter a value then press "-MENU-" button once to confirm entry.

After expiry of the extension time set, the night-time temperature will start; if the lower night temperature had already started at the time of setting the party time, the daytime temperature will be obtained for the duration of the time set, after which the night-time temperature will be resumed.

Range 0 – 24 hours. Default 0 hours.

26. User programming

26.1 Hot Water Temperature

For S type appliances (COMBIS) this function allows you to select the maximum hot water temperature. For H and HS type appliances connected to hot water cylinder where temperature control is provided with a sensor (available from eco hometec) this

function allows you to select the maximum temperature for the water in the cylinder.

To access the "TEMP DHW" option press the "MENU" button until " " °C flashes on the screen. press "+" or "-" to enter a value then press "-MENU-" button once to confirm entry.

Temperature range 40 - 60°C. Default 60°C.

26.2 Day temperature function

When the boiler is set up for outside temperature control (with or without a room thermostat or room unit) adjusting this setting raises or lowers the heating curve.

This has the effect of increasing or lowering the boiler water temperature and ultimately increasing or lowering the room temperatures as the cooler or warmer water circulates through the heat emitters.

Raising or lowering the building ambient temperature is possible without adjusting the setting of the room thermostat or room unit. If the boiler is set up to work without outside temperature reference then the feature has no function. To access press "MENU" button as before then press "+" or "-" to enter a value then press "-MENU-" button once to confirm entry. The default value for this setting is 20°C

26.3 Time/day function

Having selected this function, there is a subprogram with two options:

the correct time, in minutes

To change the time press "-MENU-" button once and the use the press "+" or "-" to change the time then press "-MENU-" button once to confirm entry.

the day

To change the day press "-MENU-" button once and the use the press "+" or "-" to set the day then press "-MENU-" button once to confirm entry.

26.4 Setting the ch timer

When a RE2132 room unit is fitted the built in timer function takes priority over the boilers timer control. In this case the boiler timer should be set to 00.00 hours.

This programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower room temperatures.

This menu has two submenus:

- a. the days of the week
- b. the start and end times of each block

To access this function from the main menu display press "MENU" button for three seconds.

You will arrive at "PARTY 0 HOURS" in the display.

Press the "+" button three times to arrive at SET CH TIMER

Press the "MENU" button once and the first display will be "Monday" use the "+" and "-" buttons to scroll through this submenu to reach the day you want to change.

Having found the correct day, press the "MENU" button once to arrive at "CopySU>MO" ignore this and press the "+" button once to arrive at "SWITCH ON 1" "MO 00:00"

Press the "MENU" button once and the hours "00" part of the display will start flashing.

This sets the hour the heating will start for the first of three possible on times per day Adjust the hour by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once and the minutes part of the display "00" will start flashing.

Adjust the minutes by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once. Press the "+" button once to arrive at "SWITCH OFF 1" "MO 00:00"

This sets the hour the heating will switch off for the first of three possible off times per day.

Adjust the hour by pressing the "+" and "-" buttons.

When the correct time is displayed confirm by pressing "MENU" button once and the minutes part of the display "00" will start flashing.

Adjust the minutes by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once.

Press the "+" button once to arrive at "SWITCH ON 2" "MO 00:00"

Repeat as above to programme all 3 start and 3 end times

If you wish to ignore any periods then simply enter "0.00".

Please note due to the nature of the pre-programmed boiler software there may be a half-hour delay in the CH system start and off times.

This period can be offset by adjusting the on and off times.

e.g. if you leave the house at 10:00 then enter 9:30 and if you are returning at 12:30 enter 12.00.

Always confirm the times with the "MENU" button.

Programming all periods - note: you may ignore any blocks by entering 00:00 with the exception of "SWITCH ON 1" and "SWITCH OFF 1" for which you must enter a real time.

After you have programmed all three on and off period's press the "+" button to arrive at "<-BACK" Press the MENU button and you will arrive at TUESDAY.

Press the MENU button again and you will arrive at COPY "MO -> TU"

You can now copy the previous days program onto the next day e.g. Mondays times to Tuesday by pressing MENU or alternatively program in new times by pressing "+" button and repeating the process described in the previous section.

To copy the previous days program Press the "MENU" button, you arrive at:

"MON -> TUESDAY"

Press the "MENU" button once to copy and the display will change to "WEDNESDAY".

Press the "MENU" button, you arrive at:

"TU -> WEDNESDAY"

Press the "MENU" button once to copy and the display will change to "THURSDAY"
Repeat the process until all day have been copied or changed as required and you arrive at <- BACK.

To exit this second submenu, from <-BACK press "MENU" button once and you will arrive at SET HW TIMER

From here you can either continue to programme the unit or return to the operating display menu by pressing "+" repeatedly until you arrive at <-BACK then exit by pressing menu.

26.5 Setting the HW timer

This programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower temperatures of the supply of tap water.

This menu has two submenus:

- a. the days of the week
- b. the start and end times of each block

For programming, repeat as for section CH timer.

During programmed off periods Combi models ('S' types) will maintain a minimum storage temperature of 40°C.

For H and HS type appliances connected to hot water cylinder for this function to operate temperature control has to be provided with a sensor (available from eco hometec). When hot water temperature control is provided by a cylinder thermostat this function is not recognised.

26.6 Setting MR03 times

When a MR 03 secondary circuit control unit has been fitted then this programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower temperatures for a second central heating circuit. Note unless a MR 03 is connected this function will not be seen.

26.7 Night-time lower 0°C.

This is used to programme the value for the night time set back temperature in relation to the room temperature during the day.

NOTE ! If the difference between the daytime temperature and night time setback temperature is considerable, the start time of the central heating unit must be set earlier than required to compensate.

Statistically, it has been proven that a night time decrease of 5°C is best; if a lower night-time temperature is set, heating in the morning requires too much energy.

With "SETBACK" displayed on the screen press "MENU" button until "_____" °C flashes on the screen. press "+" or "-" to enter a value then press "-MENU-" button once to confirm entry.

26.8 Holiday function

Use the "+" and "-" buttons to set the number of days of the holiday period.

During this period, the night time temperature will be maintained, while the tap water temperature will be set at a minimum of 20°C.

If you are away for an extended period then to save energy adjust the night time temperature to 10°C.

After the number of days has expired, the unit will start operating according to the clock programme set.

Remember when you return to re-adjust the night time temperature to it's original setting. Having completed the setting, press the "MENU" button to confirm the new value.

26.9 Installer

This function is for the service engineer only and is code protected.

The Main Menu contains the following sections:

Table 12 Programming Functions

Programme Number	Programme Name	Setting Range
	- MENU -	
1	Party	0-24 hours
2	Hot Water Temperature	40 - 60°C
3	Day Temperature	10 – 30°C
4	Time / Day	Mon-Sun 0.00 – 24.00
5	Set Central Heating Timer	3 x time blocks
6	Set Hot Water Timer	3 x time blocks
7	Set Mixing Valve Timer	3 x time blocks
8	Night Setback Temperature	0 - 10°C less than daytime
9	Service In	365 Days
10	Holidays	0 – 99 days
11	Installer access code	21
12	Back	

27. Installer Programming

A number of programming options are provided for the installer. These can only be accessed and programmed by means of a code. If this code is entered (21) the following parameters can be changed:

Table 13 Installer Functions

Programme No.	Programme name	Setting range
1	Heating plan at +20°C outside temperature	0 - 40°C
2	Heating plan at -15°C outside temperature	10 - 85°C
3	* Minimum pump speed	20 - 50%
4	* Maximum pump speed	50 - 100%
5	Flow Temp at +20°C outside for secondary circuit	0 - 40°C
6	Service counter	0 - 1500 days
7	Pump continuous	0 or 1
8	ECO/ECO	
9	Post running of pump after hot water demand	0 – 5 minutes
10	Post running of pump after central heating demand	0 – 5 minutes
11	Minimum output Hot Water supply	20 – 50%
12	Maximum output Hot Water supply	20 – 100%
14	Maximum output Central Heating	20 – 83%
15	Function	
16	Back	

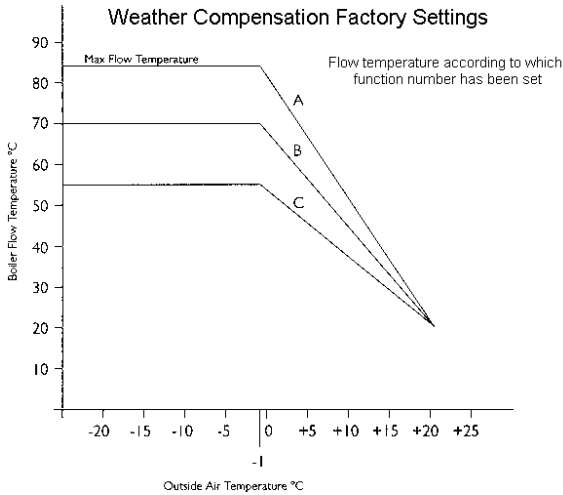
* can only be set if an outside temperature sensor has been installed.

* can only be set if a modulating pump has been installed.

28. Outside Temperature Control

The weather compensating factory settings are as figure 30 below.

Figure 30 Weather Compensation



The flow temperatures are achieved by setting the required function number. See above. The relationship between flow temperature and outside temperature may be changed but the limiting factor will be the function number setting and corresponding flow temperature..

28.1 Flow Temperature at + 20°C

Setting the flow temperature when outside air temperature is + 20°C.

When control by outside air temperature is required the relationship between the outside temperature and the flow temperature can be changed. This line can be drawn between two points (- 1°C and + 20°C outside air temperature). Two temperatures, the flow temperature and the outside temperature define each point.

When the outside air temperature reaches 20°C then normally no heating would be necessary and the setting should be 20°C adjust if necessary.

Confirm by pressing the "MENU" button

Figure 31 O/T Ctrl Flow temp 85°C.

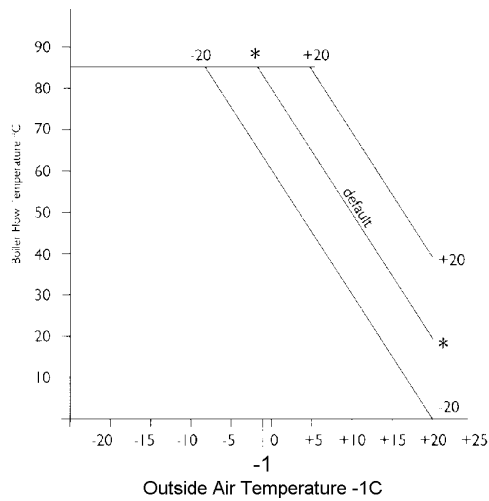


Figure 32 O/T Ctrl Flow temp 70°C

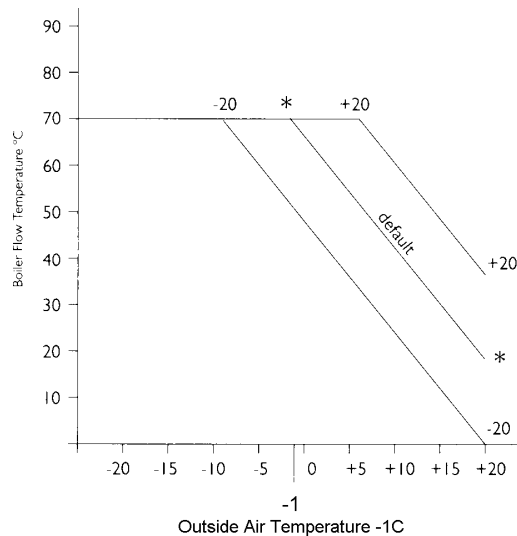
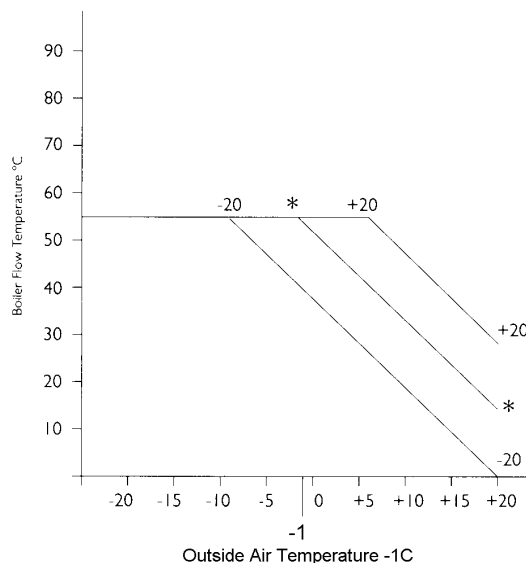


Figure 33 O/T Ctrl Flow temp 50°C



28.2 Outside Temp. Control at -1°C

Setting the flow temperature when outside air temperature is -1°C

Enter here the flow temperature at -1°C outside temperature. The flow temperature is normally dependent on the size of the radiators and the calculated mean water temperature (generally 80°C). The limiting factor will be the function number setting.

Confirm by pressing the "MENU" button.

The supply temperature will automatically adapt to any changes in the outside temperature in relation to this outside temperature.

28.3 Minimum pump speed

If a modulating pump has been installed in the boiler, this function can be used to set the minimum pump speed. Normally, this value is 38%, but if the system resistance is high the minimum value must be set higher.

Use the "+" and "-" buttons to change the minimum percentage.

Confirm by pressing the "MENU" button.

28.4 Maximum pump speed

Normally the pump speed is 100%; if the water velocity or the noise from the radiators is too high, it is recommended to decrease the speed, taking into account the radiators that are furthest from the boiler must still maintain a sufficient flow.

28.5 Flow temperature secondary circuit

When a secondary circuit control has been connected (MR 03 available from eco hometec) to the boiler, the heating curve between the flow temperature of this circuit has to be set.

Enter the required flow temperature when outside air temperature is + 20°C, normally no heating would be necessary and the setting should be 20°C adjust if necessary.

The flow temperature -1°C is set at the MR 03 control unit.

28.6 Service counter

The boiler programme has a service counter, which is programmed at 365 days; after this period the message: "INSPECTION" appears. No other displays are shown until the fitter has reset the value of 365 days, or a different number of days, by pressing the "+" button.

If necessary, this message can be removed from the system.

28.7 Pump continuous

Pressing the "+" button will cause the pump to operate continuously, except if the Summertime Mode is selected. Pressing "-" indicates that a pump switch is present.

28.8 Eco/eco+

If a modulating pump has been installed, the pump will modulate automatically in order to maintain the 20°C difference between the supply and return water temperatures.

After heating in the morning, this modulation will only start after the desired supply temperature has been reached.

If the resistance in the system is high, it is often desirable to obtain a higher pump pressure: if "ECO" is selected, the pump will start modulating when a return temperature of 50°C or higher has been reached.

In the "ECO+" mode, the pump will modulate at any water temperature, with the exception of the heating cycle in the morning.

28.9 Post running of pump after HW

This function is used to set the post running time for the pump after the boiler has reached the required temperature. The default is 2 minutes, unless there is a demand from the CH system.

28.10 Post running of pump after CH

This function is used to set the post running time for the pump after the boiler has been switched off. The default is 1 minute.

28.11 Minimum DHW Capacity

Using this function the default setting can be changed. In certain locations at low fan speeds the influence of the wind across the flue terminal outlet can lead to flame lift.

The minimum fan speed should be increased until burner pressure is equalised. This minimum is also the minimum output for central heating.

28.12 Maximum DHW Capacity

If the boiler starts to cycle during hot water production then a lower value could be set. However due to the boiler's modulating control this is rarely necessary.

28.13 Maximum CH capacity

If the boiler starts to cycle when in heating mode then a lower value could be set. However due to the boiler's modulating control this is rarely necessary.

28.14 Function Setting

This “FUNCTION” number has to be set ALWAYS

Outside temperature controlled without mixing circuit

Function No.	Room Temp Control	Max Flow Temperature
1	RE 2132	55°C
2	RE 2132	70°C
3	RE 2132	85°C
4	240v Room Stat	55°C
5	240v Room Stat	70°C
6	240v Room Stat	85°C
7	TRV's	55°C
8	TRV's	70°C
9	TRV's	85°C

Outside temperature controlled with mixing circuit

Function No.	Room Temp Control	Max Flow Temperature
10	With two RE 2132	70°C primary
11	With two RE 2132	85°C primary
12	With one RE 2132	70°C primary
13	With one RE 2132	85°C primary
14	240v Room Stat	70°C primary
15	240v Room Stat	85°C primary
16	TRV's	70°C primary
17	TRV's	85°C primary

Room temperature controlled without mixing valve

Function No.	Room Temp Control	Max Flow Temperature
18	RE 2132	55°C
19	RE 2132	70°C
20	RE 2132	85°C
21	240v Room Stat	55°C
22	240v Room Stat	70°C
23	240v Room Stat	85°C

Room temperature controlled with mixing valve

Function No.	Room Temp Control	Max Flow Temperature
24	With two RE 2132	70°C primary
25	With two RE 2132	85°C primary
26	With one RE 2132	70°C primary
27	With one RE 2132	85°C primary
28	240v Room Stat	70°C primary
29	240v Room Stat	85°C primary

Without room unit, thermostat or outside temperature control, constant flow temperatures without a mixing or secondary circuit.

Function No.	Room Temp Control	Max Flow Temperature
30	None	55°C
31	None	70°C
32	None	85°C

Without room unit, thermostat or outside temperature control, constant flow temperatures with a mixing or secondary circuit.

Function No.	Room Temp Control	Max Flow Temperature
33	None	70°C primary
34	None	85°C primary

eco hometec cascade manager KKM2 Settings (for controlling up to nine boilers)

Function No.	Cascade manager	Max Flow Temperature
35	KKM2	CH temp on KKM2

Analogue cascade manager with signal 0...3 Volts.

Function No.	Cascade manager	Max Flow Temperature
36	Analogue 0...3 Volts	CH temp on manager

The following function numbers are valid when a **pump** is used to load the hot water cylinder
Outside temperature controlled without mixing circuit

Function No.	Room Temp Control	Max Flow Temperature
37	RE 2132	55°C
38	RE 2132	70°C
39	RE 2132	85°C
40	240v Room Stat	55°C
41	240v Room Stat	70°C
42	240v Room Stat	85°C
43	TRV's	55°C
44	TRV's	70°C
45	TRV's	85°C

Outside temperature controlled with mixing circuit

Function No.	Room Temp Control	Max Flow Temperature
46	With two RE 2132	70°C primary
47	With two RE 2132	85°C primary
48	With one RE 2132	70°C primary
49	With one RE 2132	85°C primary
50	240v Room Stat	70°C primary
51	240v Room Stat	85°C primary
52	TRV's	70°C primary
53	TRV's	85°C primary

Room temperature controlled without mixing valve

Function No.	Room Temp Control	Max Flow Temperature
54	RE 2132	55°C
55	RE 2132	70°C
56	RE 2132	85°C
57	240v Room Stat	55°C
58	240v Room Stat	70°C
59	240v Room Stat	85°C

Room temperature controlled with mixing valve

Function No.	Room Temp Control	Max Flow Temperature
60	With two RE 2132	70°C primary
61	With two RE 2132	85°C primary
62	With one RE 2132	70°C primary
63	With one RE 2132	85°C primary
64	240v Room Stat	70°C primary
65	240v Room Stat	85°C primary

Without room unit, thermostat or outside temperature control, constant flow temperatures without a mixing or secondary circuit.

Function No.	Room Temp Control	Max Flow Temperature
66	None	55°C
67	None	70°C
68	None	85°C

Without room unit, thermostat or outside temperature control, constant flow temperatures with a mixing or secondary circuit.

Function No.	Room Temp Control	Max Flow Temperature
69	None	70°C primary
70	None	85°C primary

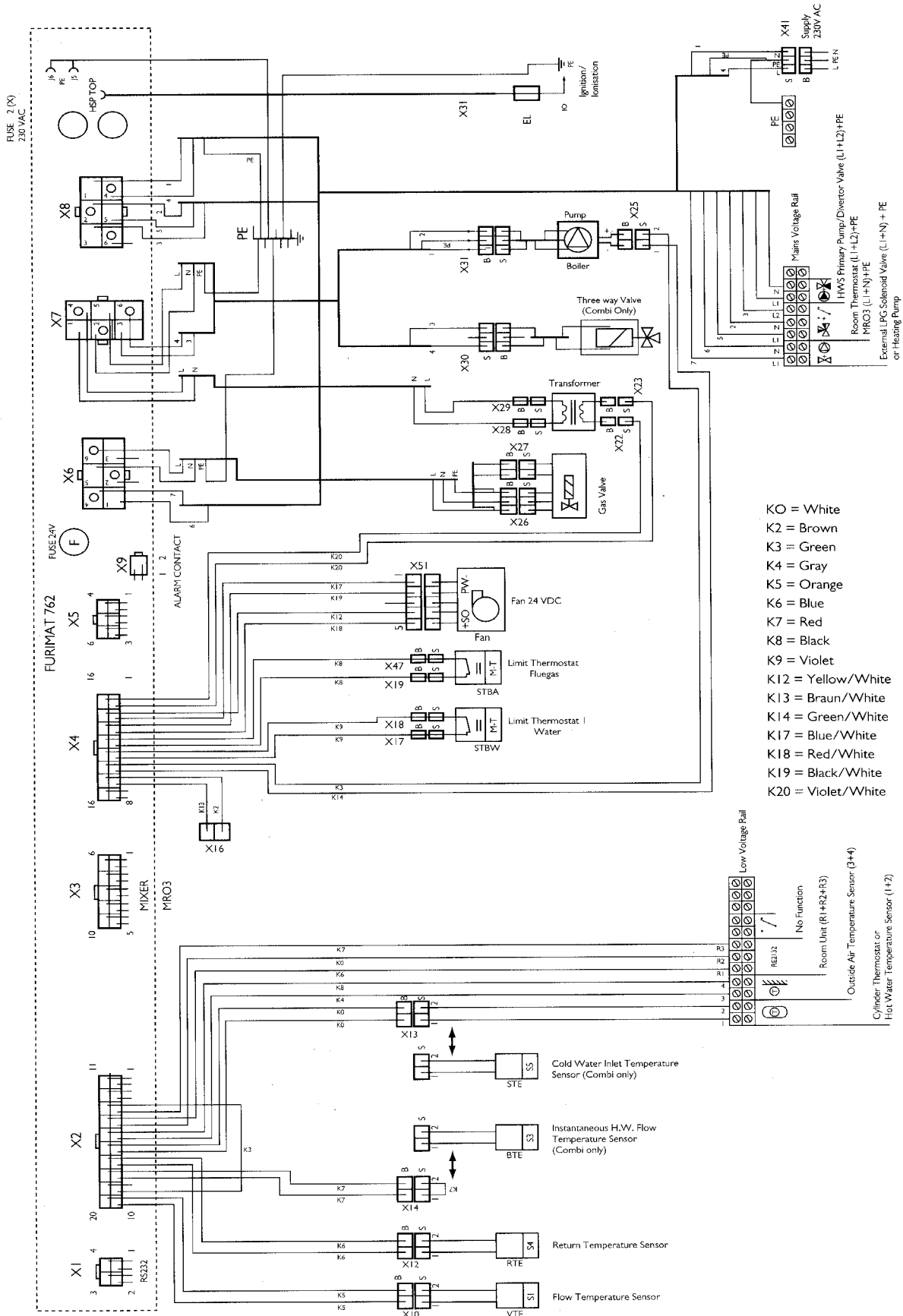
eco hometec cascade manager KKM2 Settings (for controlling up to nine boilers)

Function No.	Cascade manager	Max Flow Temperature
71	KKM2	CH temp on KKM2

Analogue cascade manager with signal 0...3 Volts.

Function No.	Cascade manager	Max Flow Temperature
72	Analogue 0...3 Volts	CH temp on manager

Figure 34 Internal Wiring



29. Commissioning

29.1 Electrical Checks

A "Preliminary Electrical System Check" should be carried out to ensure earth continuity, short circuit, polarity and resistance to earth using a suitable multi meter.

29.2 Gas Supply

Check the gas installation and purge the supply in accordance with current Gas Safety Regulations.



The gas valve fitted to the boiler is not designed to withstand pressures in excess of 60 mbar. When carrying out the pressure test on the service pipe-work it is essential that the gas cock fitted to the boiler is in the closed position, failure to do so will result in serious damage to the boiler.

If using LPG, care should be taken to ensure that the storage tank has been correctly vented.

29.3 Connection to Pipe-work

The boiler is a low water content unit. When connecting to an existing installation it is important that old system deposits are removed and are not allowed to contaminate the appliance.

29.4 Water Treatment

In order to protect and prolong the working life of the appliance, it is important the general condition of older systems is carefully considered.

The removal of debris, flux residue, grease, metal swarf etc. from new systems and any rust, black magnetic iron oxide sludge and lime-scale from old systems is essential. Consider high pressure flushing to remove all debris in badly contaminated systems.



Fit in-line filters for full protection. All installations should be treated and maintained with Fernox MB1 at a concentration of 4%.

29.5 Flushing System Pipe-work

Before the final flow and return connections are made to the boiler, the system must be thoroughly flushed.

Ensure that all radiator valves are open.

Flush the system with clean water until the discharge runs clear.

Make good final connections to boiler.

29.6 Filling and Venting the System

Using a suitably approved filling loop connected to the incoming mains cold water supply, fill the system.

The correct filling pressure is between 1 and 2 bar.

Depending on the type of unit, the following steps must be completed:

Venting is achieved automatically after switching on the appliance or after a reset. The boiler control has a special start-up programme for venting the unit.

This programme is started when the unit is powered for the first time and there is a heat demand present. This start-up venting programme takes 1 minute to complete.

This feature however does not remove the need for traditional venting techniques and the following venting procedure should be completed in all cases.

The boiler has a manual bleed valve located on the top right hand side along with a short piece of clear plastic hose. Open the manual bleed valve and run water into hose pipe until air bubbles stop.

All the air should be vented via this point.

If necessary, this bleeder can be replaced with an automatic air vent.

Check the filling pressure of the unit shortly after start-up, add water if necessary in order to maintain the correct pressure. Filling is only complete when the boiler, and the heating system are completely vented.

The heating system should be fitted with manual air vents at all high points.

‘S’ Type 38kW Combination Boiler Only.

The AQUA BOOSTER TANK IS VENTED VIA AN AIR VENT MOUNTED ON THE TOP RIGHT HAND SIDE OF THE AQUABOOSTER PLEASE ENSURE YOU REMOVE ALL THE AIR FROM THIS POINT DURING VENTING PROCEDURES.

CHECK TO MAKE SURE AN EXPANSION TANK AND A 3BAR PRESSURE RELIEF VALVE HAS BEEN FITTED TO THE SYSTEM AND THE DISCHARGE PIPE TERMINATES TO A SAFE LOCATION

Check for water soundness at design operating temperature.

After commissioning, the system should be thoroughly flushed whilst system water is still warm.

Drain down system and make good to any leaks.

Refill, add a suitable corrosion inhibitor Fernox MB 1 at 4%.

For further information about filling the system contact the eco hometec Technical Support Department.

30. Combustion Ratio

Due to the precise Variable Controlled Output of the boiler it is highly recommended that flue gas analysis equipment be used when setting up the burner.

The setting up of the boiler using gas pressures should be used as a temporary or emergency measure only.

30.1 Commissioning NG and LPG

Measure the standing gas pressure at the measuring nipple on the gas valve. This should be done at test point (32) on the gas valve (see figure 35). Nominal pressure should be 20 mbar in the case of natural gas, and 37 mbar in the case of propane gas.

Turn up the boiler controls to call for heat. Switch on the boiler, if the boiler fails to start check the LCD display for a flashing [FAULT CODE], if this occurs turn the adjusting screw (31) in the centre of the gas valve ½ a turn to the right and press the reset button. The boiler should now fire.

After the boiler has fired and ran for five minutes press the flue emissions button with the chimney sweep icon twice.

The status display will show the [partial load]. Using the "+" or "-" button, the fan speed can be increased or decreased.

Keep pressing the "MENU" button until the fan speed is shown.

To obtain the minimum load, press the "-" button until the minimum speed has been obtained.

To obtain the maximum load, press the "-" button until the maximum speed has been obtained.

If measuring is done for more than 10 minutes, the unit will return to automatic mode; press the chimney sweep button twice again for subsequent measurements

Table 14 Minimum & Maximum fan speeds

Unit	16	23	31	38
Min	900	900	900	1050
Max	6000	6000	6000	7500

31. Setting the Maximum CO₂ Value

Press the flue emissions button with the chimney sweep icon twice.

To obtain the maximum load, press the "-" button until the maximum fan speed has been obtained. (See table 14).

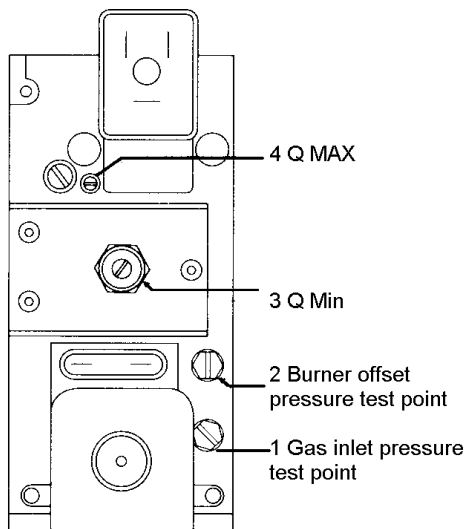
The boiler will now operate at 100% output for approximately 10 minutes.

From the measuring point located at the top right hand corner of the heat exchanger remove the plastic sealing nut and fibre washer. Insert the probe of the gas

analyser 2cm into the heat exchanger and measure the CO₂ level. The burner will have a red surface. If necessary fine tune using the adjusting screw 4 Q Max until the required CO₂ (see table 15) value is reached. Turn the screw clockwise to lower the CO₂ reading and anti clockwise to increase the CO₂.

Remember to allow 2 minutes for the analyser to respond to any adjustments.

Figure 35 Gas valve adjustments



Adjustments

Turning 3 clockwise increases min output & CO₂%

Turning 4 Anti clockwise increases max output CO₂%

To obtain the minimum load, press the "-" button until the minimum speed has been obtained

Measure the CO₂ level. (This reading should be 9.2% for NG and 11.0 for LPG). The colour of the flame should be red/blue with small sharp cones and without any flame lifting. If necessary fine tune using the adjusting screw 3 Q Min until the CO₂ value is reached. Turn the screw anti clockwise to lower the CO₂ reading and clockwise to increase the CO₂.

Remember to allow 2 minutes for the analyser to respond to any adjustments.

Table 15 CO₂ Outputs

Gas Type	Natural	LPG
Injector Dia. Min	None	5.7mm
Wo (MJ/m3)	15.0	24.3
CO ₂ % partial load	9.0 – 9.5	11.5 – 12.0
CO ₂ % full load	8.5 – 8.8	15.5 – 11.0
CO ppm partial load	<15	<20
CO ppm full load	<50	<150

The measured CO₂ and Co values are for partial load (20%) and full load (100%) with the casing removed.

When the setting is correct press the flue emissions test button once and the boiler will revert to normal operation.

31.1 Flue System Check

In order to examine the flue pipe sealing it is essential that an O₂ or CO₂ reading is taken from the 8mm plastic pipe that should be positioned from the Grey Vent/Flue adapter led down and through the bottom boiler plate.

The flue seal is satisfactory when the CO₂ value is no more than 0.2% and the O₂ value no more than 20.6%

31.2 STB Test Button (Green).

This button is used to test the correct operation of the overheat thermostat (high limit thermostat).

32. Diagnostics

32.1 Control panel

The control panel of the unit has a LCD screen displaying two lines of data. This screen provides information about the operation of the boiler it displays operation messages (non-flashing) and fault messages (flashing display).

The first line contains textual information on the operating status of the unit. It shows:

Table 16 LCD Display 'NON FLASHING'**Status Display Messages 'NON FLASHING'**

IDLE	This display shows that there is no heat demand
CH OPERATION	The boiler is operating in central heating mode
TAP WATER OPERATION	The boiler is operating to produce DHW
10MIN. PARTIAL LOAD	The boiler is operating in chimney sweep mode for 10 minutes

In the following cases, there may be a heat demand, but the burner is not working, for one of the following reasons:

Table 17 LCD 'NON FLASHING' burner off**Status Display Messages 'NON FLASHING' with the burner off.**

MAXIMUM WATER TEMP	The boiler water temperature has reached the set point
FAN OFF-ON	The fan has switched off. Unit will try to reset automatically.
FAN TOO LOW	Detected fan speed to low. Unit will try to reset automatically. Check wiring terminals on top of transformer
FLAME IDENTIFICATION	Flame detected. . Unit will try to reset automatically.
BLEED	Boiler going through automatic venting cycle

33. Fault Finding.

Fault Indicator (flashing display)

To a certain extent the boiler will attempt to automatically overcome some of the faults that occur.

For example, it will attempt 4 ignition sequences before going to lock out.

In situations where it has not been successful, the boiler will lock out and can only be re-started by pressing the manual (Red) reset button.

When in lock out mode, the error is displayed in the LCD display as a flashing message.

The following list indicates the messages shown and the descriptions of the faults. The numbers shown in the left hand column, suggest the possible cause.

By using the numbered lists attached, the cause of the fault can be quickly identified and a repair effected.

Table 18 Fault Display FLASHING

Display message FLASHING	Type of fault	Check table row number
STB- supply	Maximum flow temperature has been reached	2,4,5,21,23,24,29,30
STB- fluegas	Maximum flue gas temperature has been reached	4,5,23,24,29,33
Fanspd high	Fan speed is too high	7,8,9,39,40
Fanspd low	Fan speed is too low	7,8,9,39,40
Ignit fault	No flame after 4 attempts	10,11,16,18,22,25
No flame	Flame failed during operation	11,12,16,22,25,26,32,44
False flame	False flame detection	18,35
S1 disconnect	Sensor or cable interrupted	3,41,42,43
S3 disconnect	Sensor or cable interrupted	3,41,42,43
S4 disconnect	Sensor or cable interrupted	3,41,42,43
S7 disconnect	Sensor or cable interrupted	3,41,42,43
Program end	Sensor or cable interrupted	3,41,42,43
Gasvalve	No phase connection for gas valve	34,20
Softw Fault	A software error has occurred	34
Reset-Key	Reset button is stuck	34
Eeprom	EEPROM test failed	34
Intern fault		
Test fault		

In addition, there is a number of faults that cannot be reported by means of a textual display:

Table 19 Non Display Faults and Errors

water inside casing	leak
load is too low discharge resistance	Fan speed
CO-content is too high	bad combustion
CO2 % is too low	too little gas or too much air
CO2 % is too high	too much gas
tap water temperature too low	leaking three-way valve
to little tap water	blockage, lime scale deposit
no CH operation	leaking hot water pipe or dripping tap
Display has illegible text	moisture problems in unit controller, or an incorrect ignition plug used on the electrode
Water pressure constantly low	leak in system, or internal leak in expansion vessel

Table 20 Reasons For Error Display

	Fault	Suggested Remedy
1	room thermostat connected incorrectly	check or replace cable
2	room thermostat fails to switch off	Replace room thermostat or replace cable
3	Relevant sensor short-circuits in cable or internally	Replace sensor or identify fault in cable
4	Pump not running; or sticks	Try to release pump shaft or replace pump power unit
5	Water pressure in CH installation is too low	Top up water and find leak, also check for internal leak in expansion vessel
6	Water pressure in CH installation is too high	Too much water added, check expansion vessel pressure, or replace expansion vessel
7	Fan not connected (plug not inserted)	Install connector
8	Fan is contaminated or dirty	Clean fan blades
9	Fan is defective	Replace fan
10	Gas tap has not been opened	Open gas tap
11	Gas pressure is too low	Check pipes and gas meter
12	Diameter gas pipe is insufficient	Modify gas pipe
13	Fuse A1 defective	Replace fuse
14	Fuse A2 defective	Replace fuse
15	Fuse A3 defective	Replace fuse
16	Gas valve setting high/low incorrect	Set up gas valve with gas analyser
17	Gas valve has no or incorrect electrical connection	Use the wiring diagram to check the wiring, check the gas valve connection, check for any moisture
18	Ignition cable not connected correctly	Check cable for short circuit, overheating, too close to or crushed by casing
19	Transformer defective	Replace transformer
20	Connector to gas valve not connected, or moisture inclusion	Moisture inclusion, check the cable sockets, which must be inserted into connectors properly, check position of the cable socket, set if necessary, before moving connector
21	Pump connector not connected correctly	Check whether the connector(s) fit together properly, with the appropriate pressure
22	Syphon blocked	Open the flushing pipe (bottom left of the back panel) by taking the cap off. Hold a bowl underneath to collect any water that may escape. Pinch pipes to both to the upper left and the upper right. Rinse syphon trap. If necessary, take the burner unit from the unit and pour water into the heat exchanger to rinse the syphon.
23	Open and close manual bleed valve after bleeding	Bleed and vent as required
24	Three-way valve contaminated	Isolate and drain boiler water. Disassemble the three-way valve by tilting the mounting springs 90°. Remove the motor by pulling the hairpin spring from the house and inspect the three connecting feet of the three-way valve.
25	Too much resistance in the flue system or flue system blocked	Check the supply and discharge pipes for blockages

26	Flue system leaks into the air supply system or re-circulation of flue gases in concentric flue	Check the air supply and flue system
27	Supply system leaks in	See 26
28	Flow limiter is contaminated	Remove the cold-water connection from the unit, remove the flow limiter and clean it
29	Heat exchanger is blocked	Remove the heat exchanger from the unit by releasing the mounting springs (2) and the clamp at the front. Use pressurised air to blow the exchanger clean; if necessary, rinse with a slightly (10%) hydrochloric acid solution
30	High limit thermostat defective	Replace the maximum thermostat
31	Maximum load is too high	Check the minimum setting of the unit and the nozzle for a proper diameter.
32	Incorrect nozzle	Replace by correct nozzle
33	Flue gas thermostat defective	Replace
34	Controller defective	Replace entire boiler control box
35	Ignition electrode incorrect	Replace
36	Moisture on gas valve cables	Dry, if necessary using hot air (hair dryer) and check for proper functioning; replace if necessary
37	Moisture on electronics box	See 36
38	Moisture in pump wiring	See 36
39	Moisture on fan or and/or connections	Remove the connection and dry by blowing or using hair dryer
40	Fan connector incorrectly connected	Connector must point in the direction of the outside of the ventilator and one side must fit into the slot in the printed circuit
41	Connector incorrectly connected	Check connectors and fit into one another properly
42	Cable damaged	Check cables for possible damage or kinks
43	Sensor defective	Check cable pipe connections
44	Flue gas re-circulation from behind heat exchanger	Check heat exchanger seal on flue gas box, replace if necessary.

34. Handing the boiler over

34.1 Customer Familiarisation



Before leaving the installation, it is important to familiarise the customer with the operating principles of the boiler. Their attention should also be drawn to the safety precautions.

Familiarise the customer with the control panel layout.

35. Annual Servicing



It is a condition of the boiler warranty that all servicing and maintenance be carried out annually by eco hometec approved engineers only. When the word [SERVICE] is displayed in the LCD display on the control panel, a full service of the unit is required.

A service has to be carried out when :

The appliance tells so by the LCD that inspection is needed;
Every 12 months

Before maintenance is started the appliance has to be inspected.

35.1 Service Inspection

The following is the eco hometec approved service schedule:

Interview with the user about possible problems or complaints with the appliance or it's use. The remarks of the user should be taken seriously and the reason for any complaints or anomalies should be found and rectified.

Check the water pressure of the system. System pressure of the installation should be between 1 and 2 bar; any cause for pressure loss should be found and rectified.

Lift the casing of the boiler and inspect all pipes for water leaks or water damage. Sweating joints or leaks should be repaired immediately.

Inspect the top of the boiler for water-leak or traces or evidence of water leaking from

the 125mm air inlet tube or the automatic air separator.

The cause of any water or moisture entering the boiler through the 125mm air inlet tube should be found and rectified. Check the air and flue duct for proper alignment, and the air and flue duct terminal.

Set the appliance burning at maximum output and measure the CO₂. Adjust the maximum setting of the gas valve as required.

Set the appliance burning at medium output and measure the CO₂. Adjust the setting of the gas valve as required.

Pay attention to the sound of the circulator. Check for air in the shaft and vent if required.


For the comibi 'S' boilers, measure by a fully-opened tap, the flow rate and the temperature of the DHW. If the flow rate is less than 9 litres/min check the mains cold water supply. If the mains pressure is not the cause, the flow restrictor needs to be checked for blockages. If the flow restrictor is clean then there could be calcium in the AQUA-BOOSTER. The AQUA-BOOSTER needs to be replaced. Due to it's construction, cleaning of the heat exchanger is not possible, one might think it is, but experience has shown that after cleaning, the lifetime of the component is very short, making cleaning uneconomical.

Check, during hot water supply, the temperature of the flow to the central heating system. If during the hot water cycle the flow to the c/h system goes up in temperature, this indicates that the three-way valve has an internal leak and needs to be cleaned. The boiler needs to be drained and the three-way valve can be dismantled.

Remove the ignition cable and then disconnect the fan. Take off the burner by removing 6 x M6 nuts. Check the inside of the heat exchanger, look for any irregularities. When the SPIRANOX main heat exchanger has dirt on the inside of the elements, clean with a hard brush (no steel), or with lemon acid. Afterwards use a vacuum cleaner to remove all the dirt. **The burner itself should never be cleaned.**

When the condensate water out of the cleaning tube of the syphon is dirty, the syphon requires cleaning.

Rinse the syphon through the syphon flush connection or with the burner dismantled flush cold water through the syphon heat exchanger connection or with access to the flue, flush the heat exchanger and syphon through by pouring water down the 70mm inner flue duct.

15.  After flushing ensure that the condensate syphon is refilled with water, otherwise flue products may be passed through the condensate pipe-work into the building.

Take off the plastic mixing box at the inlet side of the fan, inspect the fan impeller for damage. When the impeller of the fan is dirty every blade has to be carefully cleaned until the original plastic material is clearly visible.

When dirt is left on the blades the fan will run out of balance and, due to the fast fan speeds (>6000 rpm), additional and unnecessary loads will be placed on the fan bearings significantly reducing the lifetime of the component.

Check the distance of the electrode to the burner; this should be a 3mm ~ 4mm gap. Bend the electrode, without touching the burner surface, very carefully until a space of 3mm ~ 4mm is achieved.

Check the seals on the gas connections and ensure that the gas service is sound by completing a gas soundness test.

Check the wiring and fuse at the spur is no greater than 3amp.

35.2 Pre-preventative Maintenance

Depending on the result of the inspection, further action may be required to complete the pre-preventative maintenance schedule.

Pre-preventative maintenance is a unique feature of all eco hometec boilers and is incorporated to further enhance their excellent reputation for reliability.

The following components should be replaced on an hours run basis.

Connect the P.C. Notebook to the boiler. Following the instructions in the P.C servicing software download a readout of the service log; pay particular attention to the various lockouts and re-ignitions.

Look carefully at the service screen of the P.C. notebook and identify and replace any parts which have caused any problems.

The pump ~ should be replaced after 50,000 running hours (the total of CH and HW on 50% load), or when the pump is noisy, especially when the running time is more than 40,000 hours, or if the pump is 5 years or older.

The actuator on the three-way valve ~ should be replaced after 50,000 switches.

The fan ~ after 40,000 running hours.

35.3 Service records

Complete the appliance service record, ask the user to sign it and hand them the second copy. Return the top copy to eco hometec and service company or service engineer to retain copy on file for their/your records.

Complete an appliance service label and attach to underside of appliance case.

36. Decommissioning the boiler

When decommissioning the boiler, precautions should be taken to avoid frost damage. Therefore it is essential that both the boiler and the central heating system are completely drained down.

To do this remove the front casing and connect a hose to the central heating drain point. The system should be vented by opening the DHW valve and /or the manual air vent on the central heating circuit.

Tag the boiler "DO NOT USE SYSTEM DRAINED" and remove the fuse at the isolating switch.

37. User Instructions

37.1 Annual Servicing.



It is a condition of the boiler warranty that all servicing and maintenance be carried out annually by eco hometec approved engineers only.

When the word [INSPECTION] is displayed in the LCD display on the control panel, a full service of the unit is required.

A service has to be carried out when :

The status display appears INSPECTION
or

Every 12 months

37.2 Decommissioning the boiler.

When decommissioning the boiler, precautions should be taken to avoid frost damage. Therefore it is essential that both

the boiler and the central heating system are completely drained down.

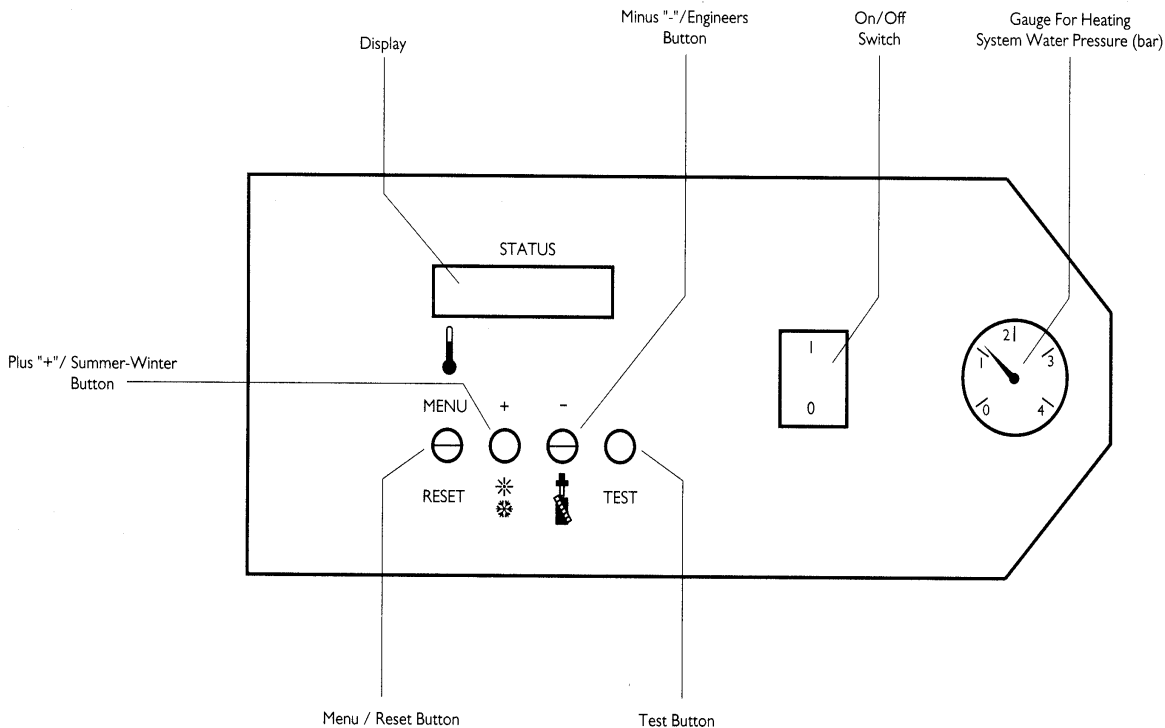
37.3 Built-in clock

The appliance has a unique built-in 3 channel programmable time clock. This enables not only the setting of the heating times for various temperatures, but also the heating times for hot water. During programmed off periods Combi models ('S' types) will maintain a minimum storage temperature of 40°C. For H and HS type appliances connected to hot water cylinder for this function to operate temperature control has to be provided with a sensor (available from eco hometec). When hot water temperature control is provided by a cylinder thermostat this function is not available.

For convenience it is possible to ignore the built in programmer and alternatively control the boiler using a remote programmer.

Please check with your installer to confirm which option has been installed.

Figure 36 Boiler Control panel



37.4 Boiler Control Panel

The boiler control panel incorporates the following features.

37.5 System water pressure

Informs user of current system water pressure.

37.6 On / off switch

Boiler isolating switch.



Always switch to the OFF position when working on the unit.

37.7 Lcd control display

The display has two lines:

the upper line indicates the current operating status e.g HW DEMAND and either "S" (summer) or "W" (winter / "D" (day) or "n" (night).

b. the lower line indicates on the left-hand side the current boiler water temperature, and on the right-hand side the time.

If the button is pressed briefly, the following data may be viewed in the following order:

Press 1 x T1 supply temperature in the system

Press 2 x T3 tap water temperature

Press 3 x T4 return temperature in the system

Press 4 x T5 water, if connected, or the maintained temperature of the built-in tap water exchanger of the boiler

Press 5 x T6 outside temperature

Press 6 x Room 1 - heat demand value of connected room unit

Press 7 x Speed 1 - fan speed

Press 8 x Pump - % pump speed in relation to maximum

Only the values of connected components are shown.

37.8 Menu - reset button

A pressure operated switch activated by pressing with finger until sensor below casing facia clicks or display changes.

This button when pressed allows:

Access to 3 layer menu programming options.

Access to current boiler status displays.


Confirms an entry when programming control.

Reset the boiler after lockout.

For meaning of lockout "FLASHING" display please refer to installer manual.

37.9 Summer winter button


+ Advances (scrolls forwards through menu and programming options).

 Increases a value in the LCD display. Sets boiler control to either summer (hot water only) or winter (hot water and heating both on mode)



37.10 Engineers button

- Reverses (scrolls backwards through menu and programming options).

 Reduces a value in the LCD display. Places appliance into engineer's mode for servicing purposes.



37.11 Test button

Checks overheat safety feature. When the burner is on and the button depressed, the burner will shut down when button released, the unit will start up again.

Checks pump function. When the burner is off and the button depressed, the pump will run at 100% speed for approx 2 seconds.

37.12 General

To access the programming mode for times, temperatures, etc., the "Menu" button must be depressed for **3 seconds** the screen will briefly display "-MENU-" and display a menu option. Use the "+" and "-" buttons to scroll through the various options and the "MENU" button to select and confirm changes.

38. Programming Menu options

38.1 Party

This function allows you to extend the current heating period. To access the party option press the “-MENU-“ button once and “_____hours” will flash on the screen, press “+” or “-“ to enter a value then press “-MENU-“ button once to confirm entry.

After expiry of the extension time set, the night-time temperature will start; if the lower night temperature had already started at the time of setting the party time, the daytime temperature will be obtained for the duration of the time set, after which the night-time temperature will be resumed.

Range 0 – 24 hours. Default 0 hours.

38.2 Hot Water Temperature

For S type appliances (COMBIS) this function allows you to select the maximum hot water temperature. For H and HS type appliances connected to hot water cylinder where temperature control is provided with a sensor (available from eco hometec) this function allows you to select the maximum temperature for the water in the cylinder.

To access the “TEMP DHW” option press the “MENU” button until “_____” °C flashes on the screen. press “+” or “-“ to enter a value then press “-MENU-“ button once to confirm entry.

Temperature range 40 - 60°C. Default 60°C.

38.3 Day temperature function

When the boiler is set up for outside temperature control (with or without a room thermostat or room unit) adjusting this setting raises or lowers the heating curve.

This has the effect of increasing or lowering the boiler water temperature and ultimately increasing or lowering the room temperatures as the cooler or warmer water circulates through the heat emitters.

Raising or lowering the building ambient temperature is possible without adjusting the setting of the room thermostat or room unit. If the boiler is set up to work without outside temperature reference then the feature has no function. To access press “MENU” button as before then press “+” or “-“ to enter a value then press “-MENU-“

button once to confirm entry. The default value for this setting is 20°C

38.4 Time/day function

Having selected this function, there is a subprogram with two options:

the correct time, in minutes

To change the time press “-MENU-“ button once and then use the press “+” or “-“ to change the time then press “-MENU-“ button once to confirm entry.

the day

To change the day press “-MENU-“ button once and then use the press “+” or “-“ to set the day then press “-MENU-“ button once to confirm entry.

38.5 Setting the ch timer

When a RE2132 room unit is fitted the built in timer function takes priority over the boilers timer control. In this case the boiler timer should be set to 00.00 hours.

This programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower room temperatures.

This menu has two submenus:

- a. the days of the week
- b. the start and end times of each block

To access this function from the main menu display press “MENU” button for three seconds.

You will arrive at “PARTY O HOURS” in the display.

Press the “+” button three times to arrive at SET CH TIMER

Press the “MENU” button once and the first display will be “Monday” use the “+” and “-“ buttons to scroll through this submenu to reach the day you want to change.

Having found the correct day, press the “MENU” button once to arrive at

"CopySU>MO" ignore this and press the "+" button once to arrive at "SWITCH ON 1" "MO 00:00"

Press the "MENU" button once and the hours "00" part of the display will start flashing.

This sets the hour the heating will start for the first of three possible on times per day Adjust the hour by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once and the minutes part of the display "00" will start flashing.

Adjust the minutes by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once. Press the "+" button once to arrive at "SWITCH OFF 1" "MO 00:00" This sets the hour the heating will switch off for the first of three possible off times per day.

Adjust the hour by pressing the "+" and "-" buttons.

When the correct time is displayed confirm by pressing "MENU" button once and the minutes part of the display "00" will start flashing.

Adjust the minutes by pressing the "+" and "-" buttons. When the correct time is displayed confirm by pressing "MENU" button once.

Press the "+" button once to arrive at "SWITCH ON 2" "MO 00:00"

Repeat as above to programme all 3 start and 3 end times

If you wish to ignore any periods then simply enter "0.00".

Please note due to the nature of the pre-programmed boiler software there may be a half-hour delay in the CH system start and off times.

This period can be offset by adjusting the on and off times.

e.g. if you leave the house at 10:00 then enter 9:30 and if you are returning at 12:30 enter 12.00.

Always confirm the times with the "MENU" button.

Programming all periods - note: you may ignore any blocks by entering 00:00 with the

exception of "SWITCH ON 1" and "SWITCH OFF 1" for which you must enter a real time.

After you have programmed all three on and off period's press the "+" button to arrive at "<-BACK" Press the MENU button and you will arrive at TUESDAY.

Press the MENU button again and you will arrive at COPY "MO -> TU"

You can now copy the previous days program onto the next day e.g. Mondays times to Tuesday by pressing MENU or alternatively program in new times by pressing "+" button and repeating the process described in the previous section.

To copy the previous days program Press the "MENU" button, you arrive at: "MON -> TUESDAY"

Press the "MENU" button once to copy and the display will change to "WEDNESDAY".

Press the "MENU" button, you arrive at: "TU -> WEDNESDAY"

Press the "MENU" button once to copy and the display will change to "THURSDAY" Repeat the process until all day have been copied or changed as required and you arrive at <- BACK.

To exit this second submenu, from <-BACK press "MENU" button once and you will arrive at SET HW TIMER

From here you can either continue to programme the unit or return to the operating display menu by pressing "+" repeatedly until you arrive at <-BACK then exit by pressing menu.

38.6 Setting the hw timer

This programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower temperatures of the supply of tap water. This menu has two submenus:

- a. the days of the week
- b. the start and end times of each block

For programming, repeat as for section CH timer.

During programmed off periods Combi models ('S' types) will maintain a minimum storage temperature of 40°C.

For H and HS type appliances connected to hot water cylinder for this function to operate temperature control has to be provided with a sensor (available from eco hometec). When a cylinder thermostat provides hot water temperature control this function is not recognised.

38.7 Setting MR03 times

When a MR 03 secondary circuit control unit has been fitted then this programme enables the setting of 3 time blocks (3 start and 3 end times) per day (24 hours) for higher and lower temperatures for a second central heating circuit. Note unless a MR 03 is connected this function will not be seen.

38.8 Night-time lower 0°C

This is used to programme the value for the night time set back temperature in relation to the room temperature during the day.

NOTE! If the difference between the daytime temperature and night time setback temperature is considerable, the start time of the central heating unit must be set earlier than required to compensate.

Statistically, it has been proven that a night time decrease of 5°C is best; if a lower night-time temperature is set, heating in the morning requires too much energy.

With "SETBACK" displayed on the screen press "MENU" button until "_____" °C flashes on the screen. press "+" or "-" to enter a value then press "-MENU-" button once to confirm entry.

38.9 Holiday function

Use the "+" and "-" buttons to set the number of days of the holiday period.

During this period, the night time temperature will be maintained, while the tap water temperature will be set at a minimum of 20°C.

If you are away for an extended period then to save energy adjust the night time temperature to 10°C.

After the number of days has expired, the unit will start operating according to the clock programme set.

Remember when you return to re-adjust the night time temperature to it's original setting. Having completed the setting, press the "MENU" button to confirm the new value.

38.10 Installer

This function is for the service engineer only and is code protected.

Save gas Save money Only boilers from eco hometec are fitted with Variable Controlled Output

eco hometec
Unit 11E
Carcroft Enterprise Park
Carcroft
Doncaster
DN6 8DD

Tel. 01302 722266
Fax. 01302 728634

