



eco hometec

**Variable Controlled Output
(VCO) Solar Compatible ★★★★★
Condensing Boilers
EC 25 COMPACT**

**INSTALLATION &
USER
INSTRUCTIONS**

PLEASE LEAVE WITH THE END USER



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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

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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. 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

2. 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.

2.1 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 25Compact 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).

3. 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.

4. 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, launderettes, 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

5. 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.

5.1 System water 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%).

6. Existing Installations

6.1 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.

6.2 Expansion Vessels



The EC25 Compact is designed for connection to a fully pumped sealed heating circuit only.

A suitable sized expansion vessel is required to accommodate volume change (expansion of water) when heated up to maximum operational temperature.

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.

7. Introduction

The boiler features the very latest in technology.

The boilers incorporate a premixing, fully modulating, gas burner, 3 bar pressure relief valve, manometer and circulating pump.

7.1 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.

7.2 Emissions.

A further benefit of this very accurate combustion process is the dramatic reduction of the harmful emissions NOx 8.1 – 27.1 ppm and CO 2.9 – 66ppm.

7.3 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.

7.4 Approvals

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

7.5 Additional Features

A unique 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 a interface cable and software available from eco hometec.

8. Description of Appliances

8.1 EC 25 H Compact

The 'H' model is suitable for a central heating system with hot water and heating circuit(s) controlled using two or more zone valves.

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 32 to 100%, while the maximum capacity can be

set and adapted to the capacity of the CH system.

8.2 EC 25HS Compact

The 'HS' range are higher specification. With its 4 x 15mm 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 or high temperature cut out thermostat 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 32 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.

8.3 EC EC 25S Compact

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

The unit has a variable capacity of 32 to 100%, while the maximum capacity can be set and adapted to the capacity of the CH system.

9. Technical Information.

Table 1 Dimensions & Connections

Product Identification Number	CE ~ 0063 AT3070
Dimensions (H x W x D)	600mm x 360mm x 300mm
Heating Circuit Connections	15mm
Gas Connection	15mm
Condense Drain Connection	15mm
Air Supply/Flue Connections	60mm-60mm (eccentric) 125/80mm (concentric)

Table 2 Heating Specifications

Models H, HS and S		EC25
Nominal Input To Heating	kW	7.2 – 24.5
Maximum Rated Input (S Type combi only)	kW	28
Nominal Output To Heating 80/60°C	kW	7.1 – 24.2
Nominal Output To Heating 50/30°C	kW	7.9 – 25.9
CO ₂ % content at min/max load	CO ₂ %	8.2 – 8.8%
Dew Point of Flue Gases	0°C	52
Flue Gas Temp @ 80/60°C (Amb 20°C)	0°C	<70°C
* Maximum Flue Resistance	Pa	185
pH value of condensate water	PH	4-5.5
Maximum Flow Temperature	0°C	90
Min/Max filling pressure	bar	1.0 - 3.0
Efficiency @ 80/60°C	%	91.0 – 89.0 % (partial load – full load)
Efficiency @ 50/30°C	%	98.0 – 95.1 % (partial load – full load)
**Efficiency @ 50/30°C	%	109 – 106.1% (partial load – full load)
Hot water efficiency in accordance with CW-test measured over 24 hours	%	85
EPC	%	95.1

* 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		EC25
Heating Water Capacity	litres	1.5
Heating Water Coil Capacity (S models)	Litres	3.1
Weight (empty)	Kg	35

Table 4 Hot Water Specifications

Model		EC25S
Maximum Rated Input	kW	28
Modulating Output	kW	8-28
Hot Water Flow rates at $\Delta\tau$ 30K (S type)	L/min	13
Maximum Tap Water Pressure	bar	8

Table 5 Connection Values

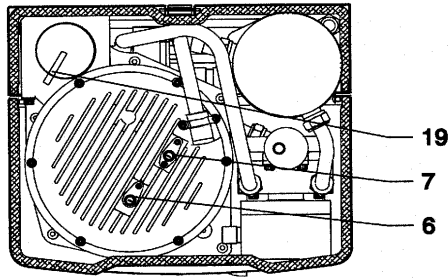
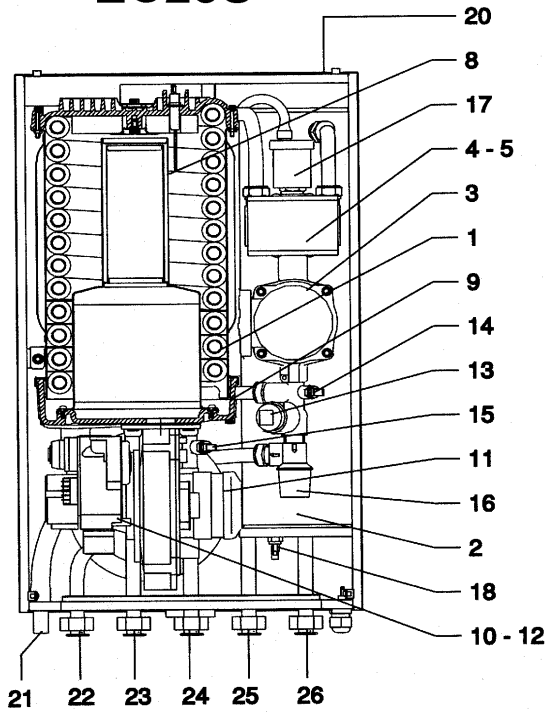
Min/Max Gas Pressure	mbar	20/25
Maximum Input Rate Natural Gas (H & HS Types)	m/h ³	2.58
Maximum Input Rate Natural Gas (S Types)	m/h ³	2.95
Electrical Supply	VAC	230
Power Consumption Average	W	85
Thermostat Voltage	V	24

Table 6 Emission Values

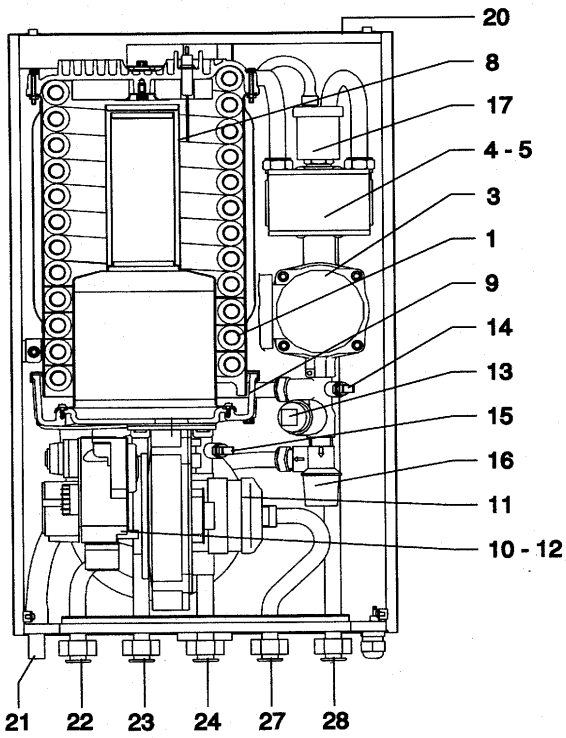
CO ₂	natural gas: 8.2 – 8.8 %
CO (0 % O ₂)	natural gas: 2.9 – 66 ppm
NO _x (0 % O ₂)	natural gas: 8.1 – 27.1 ppm
Noise Levels Pump high speed	50 dB(A)
Noise Levels Pump low speed	34 dB(A)

Figure 1 Component Locations

EC25S



EC25HS



EC 25H

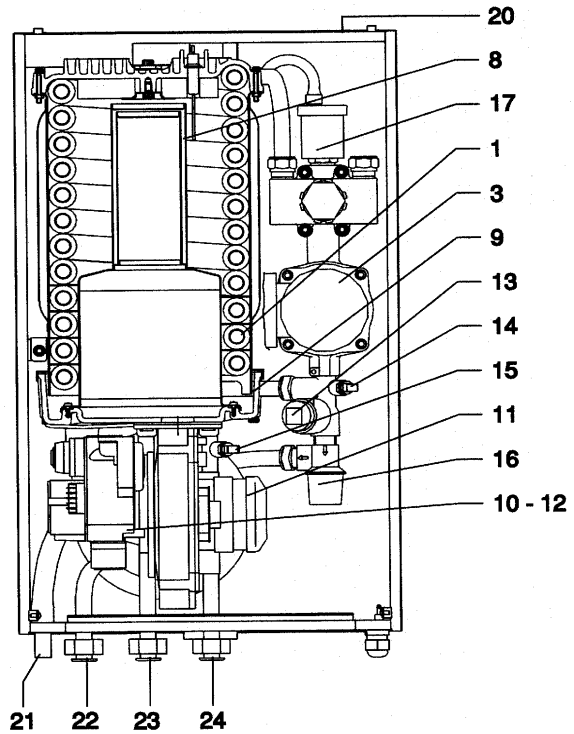


Table 7 Component List

Pos.	Description	Manufacturer	Article code
1	Heat exchanger	Coopra	N 00 S 04 00 00 0009
2	Hot tap water boiler	Coopra	N 00 S 10 00 00 0001
3	Pump	Wilo	N 00 S 11 00 00 0004
4	Three-way valve	Honeywell	N 00 S 11 00 00 0003
5	Three-way valve internal parts	Honeywell	N 00 S 11 00 00 0002
6	Incandescent igniter	Norton	N 00 S 07 00 00 0013
7	Ionization pin	Sapco	N 00 S 07 00 00 0020
8	Burner	Furigas	N 00 S 02 00 00 0000
9	Condensation tray	Coopra	N 00 S 02 01 30 0001
10	Gas valve	Honeywell	N 00 S 02 00 00 0009
11	Fan	RMI	N 00 S 02 00 00 0006
12	Venturi tube	Honeywell	N 00 S 02 00 00 0010
13	Water pressure sensor	Huba	N 00 S 08 00 00 0010
14	Supply sensor	SHI	N 00 S 08 00 00 0011
15	Return sensor	SHI	N 00 S 08 00 00 0011
16	Safety device	Pentec	N 00 S 08 00 00 0008
17	Bleed valve	Honeywell	N 00 S 11 00 00 0001
18	Hot water sensor	SHI	N 00 S 08 00 00 0011
19	Flue Outlet		
20	Boiler back casing		
21	Condensate Discharge		
22	Gas Connection		
23	Heating Flow		
24	Heating Return		
25	Hot water Outlet		
26	Cold water Inlet		
27	Flow to Hot Water Cyl.		
28	Return from Hot Water Cyl.		

10. Unpacking & Items Supplied

10.1 Environment & Packaging

The packaging provided for the purposes of transport and protection of the appliance consists predominantly of the following materials:

cardboard
styropor

Do not include the packaging with the domestic rubbish but find out from your local authority how you can dispose of the material. The styropor elements can also be disposed of separately in this way.

10.2 Appliance

If you need to dispose of an appliance at the end of its useful life, it will usually be taken back by your supplier. If this not is possible, do not deposit the appliance with the domestic rubbish, but find out from your the local authority what possibilities there are for re-cycling or environmentally-friendly processing of the materials.

Before unpacking, check that the type of gas to be used is the same as that specified on the packaging. If there are any queries contact your supplier.

Follow the unpacking instructions on the packaging. Take the handbook out of the plastic packaging around the boiler.

10.3 Check the type plate

Check that the details stated on the type plate agree with the present installation and the intended use.

Never use any type of gas other than that which is specified on the type plate.

Never connect the appliance to any other mains voltage than that which is specified on the type plate.

The following items are supplied with the Boiler.

Extra Items and accessories
Installation and User manual (to be left with the end user).

Mounting bracket.

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

For more details please contact the eco hometec technical department.

Table 8 Extra Items and accessories

EC25S	EC25HS	EC25H	Description
X	X	X	Concentric adapter (NL)
X	X	X	Cover (NL)
	X		Cover for boiler construction (N)
X	X	X	Cover with expansion tank (NL)
X	X	X	Cover extended (NL)
X	X	X	Mounting frame with expansion tank (NL)
X	X	X	External sensor
	X		Boiler sensor
X	X	X	Interface
X	X	X	Exhaust gas sensor

eco hometec comprehensive range of PPS flue kits, fittings and accessories. For more information please see section on flues

12. Operation

A key component of the boiler is the premixing gas burner, which is capable of producing a Variable Controlled Output (32% to 100% ratio). For Combi EC25S types (32% to 115% ratio).

A unique feature of the burner is its shape, which has been specially designed to suit the geometry of the combustion chamber. It is composed of a perforated sheet of stainless steel. 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.

12.1 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 burner modulates its output constantly.

To save electricity, a 310Volt DC, 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.

The fan sucks in air for combustion through the air inlet. The airflow causes a negative pressure in the Venturi tube, which results in the correct quantity of gas being sucked into the burner. The gas/air mixture is ignited on the surface of the burner by means of the incandescent ceramic igniter.

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

12.2 Variable pump

A variable speed integral circulating pump is supplied, which operates at two speeds and results in a lower power consumption.

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

13. Siting the Appliance

In siting the boiler, the following limitations **MUST** be observed

The appliance must be mounted on the wall using the separately supplied support bracket.

The connections available on the support bracket depend on the type of appliance to be mounted.

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. 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 (90°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.



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 EC25 Compact 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

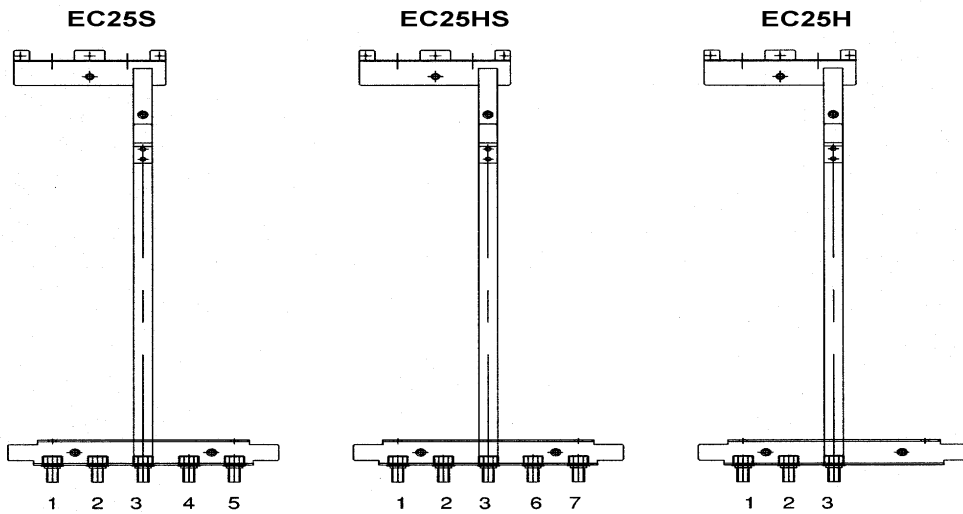
necessary. Detailed guidance on this subject can be found in BS. 6798.

13.1 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.

Figure 2 Pipework Connections



14. Hydraulic Connections

14.1 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 2 shows the order in which to fix the pipe-work.

14.2 Connections

1. Gas
2. Heating Return
3. Heating Flow
4. Domestic Hot Water (Combi)
5. Cold Mains Water (Combi)
6. Flow to Hot Water Cylinder
7. Return Hot Water Cylinder

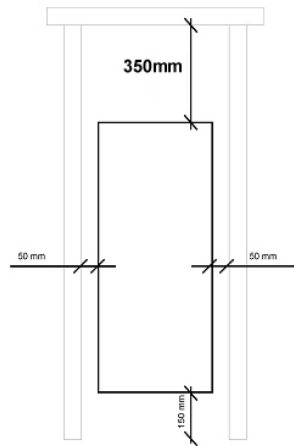
14.3 Clearances

For ease of installation, necessary inspection and commissioning, the following clearances are recommended. To help determine best location use dimensions from figure 6.

Table 9. Minimum Clearances

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

Figure 3 Minimum Clearances



14.4 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.

14.5 Fixing the boiler.

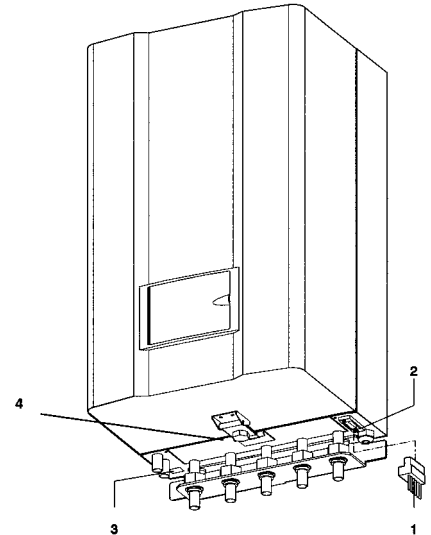
When unpacking the unit for the first time, take adequate precautions to protect the surrounding floor coverings. The boilers are factory tested and contain residues of water that could cause dampness and possible staining if contact with carpets and floor coverings is not prevented.

14.6 Removing The Casing

To remove the casing lay the unit down on the floor with the casing facing upper most.

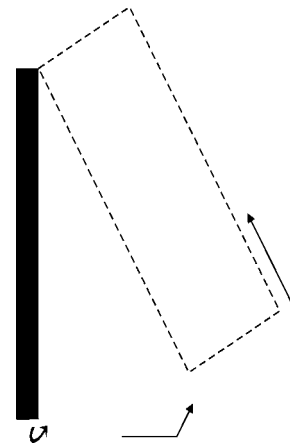
To open the casing, unscrew the clasp (4 in Fig. 4). Using a No. 24 spanner.

Figure 4 Removing Casing



Pull the casing upwards, lifting up and off the locating lugs. Place the casing to one side taking care not to scratch the casing or control panel cover. (see fig. 5.)

Figure 5 Removing the Casing



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

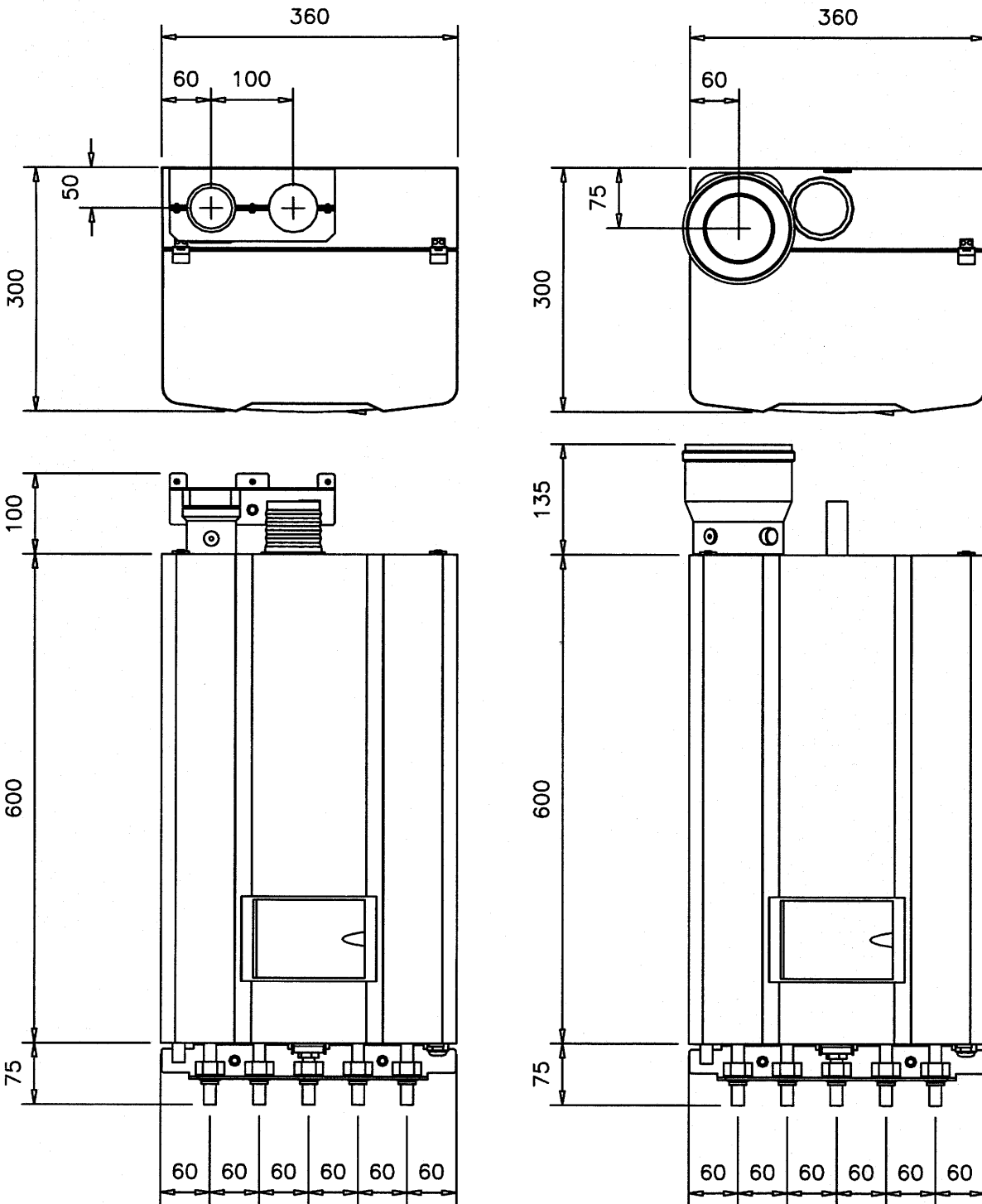
Make one final check on the location; pay particular attention to the flue outlet (consider plumbing) and the condensate discharge pipe route.



Install the combi 'S type' 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 proceed as follows.

Figure 6 Overall Dimensions



14.7 Mounting the support bracket

For mounting the support bracket on a brick wall of sufficient thickness, use the screws and plugs supplied with the bracket. When you have decided where the bracket is to be mounted, proceed as follows (see Fig.7)

Mark the position of the hole (10) in the bracket.
Please remember when using power tools to take all necessary safety precautions and always wear safety goggles.

Use an 8 mm dia. concrete drill to bore a hole in the wall to a sufficient depth.

Align the hole (10) in the support bracket with the hole in the wall and pass one of the plastic plugs (9) delivered with the bracket through the support bracket into the hole.

Align the support bracket with aid of a spirit level.

Drill holes with an 8 mm dia. concrete drill through the two lower holes (11) in the support bracket to a sufficient depth in the wall.

Fit two of the plastic plugs supplied with the bracket in the lower holes.

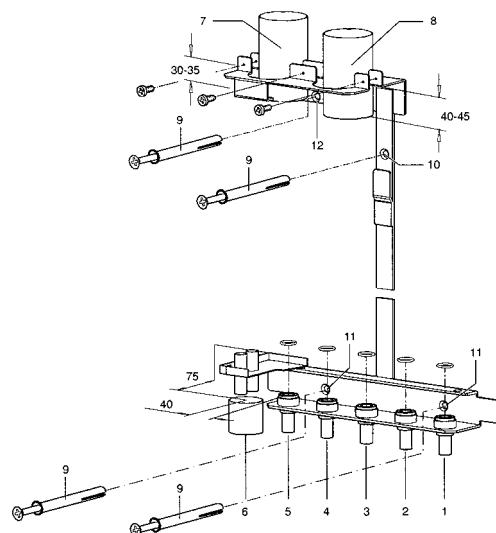
For support brackets with clamping plate for eccentric exhaust gas canal and air supply connection: drill a hole with an 8 mm dia. concrete drill through the hole (12) in the clamping plate to a sufficient depth in the wall and fit a plastic plug in this hole also.

Note: make sure the clamping plate is fixed at right-angles.

Fix the support bracket firmly by tightening all the screws.

The mounting surface must be capable of supporting the weight of the appliance. If you use a mounting surface other than a brick wall of sufficient thickness, you must provide suitable fixing devices to mount the appliance securely.

Figure 7 FixingBracket



14.8 Fitting the O-rings

Before the appliance can be mounted in position, each of connection points (1) to (5) must be fitted with an O-ring.

Place an O-ring in the centre of each of the connections (1) to (5) (Fig. 2.1).

14.9 Mounting of the appliance

After mounting the support bracket and installing the connections, the appliance can be mounted in position.

Take account of the weight of the appliance (approximately 35 kg).

Ensure that you adopt a correct posture while lifting in order to prevent back problems.

Check that the O-rings have been fitted correctly (see paragraph above).

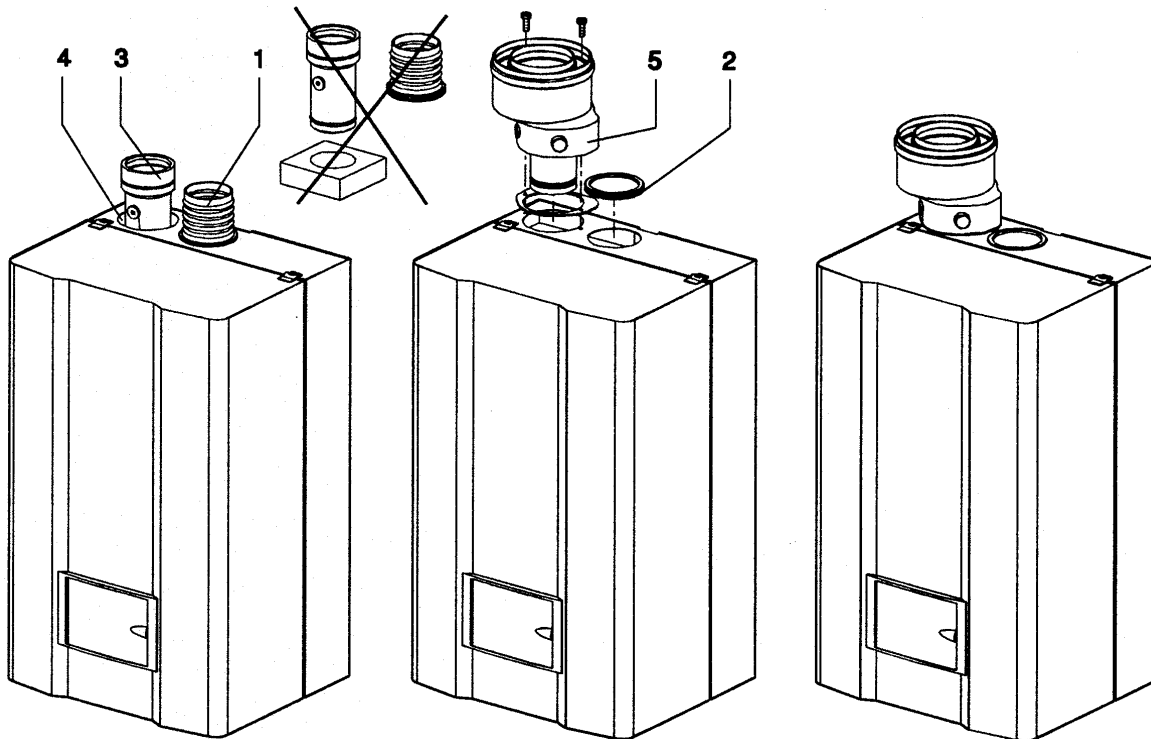
Remove the plugs from the pipes on the appliance.

If a concentric flue system is to be used carry out the necessary conversion

If present, remove the bellows (1) from the opening (Fig.8). Fit the stop (2) on the opening. Remove the slide (3) and the foam part (4) from the opening.

Finally, fit the concentric adapter (5) with packing.

Figure 8 Concentric Flue



Hold the appliance upright against the wall at approximately 5 cm above the place where it will be mounted. Press the appliance into the guides and carefully allow it slide downward, so that the hook on the support bracket falls in the opening at the back of the appliance and the pins below the appliance drop into the corresponding openings in the support bracket.

The connections on the appliance will then mate up with the connection points on the support bracket.

14.10 Connections

Gas and water tighten the gland nuts on each of the connections (1) to (5) firmly.

15. Flues and Ventilation

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

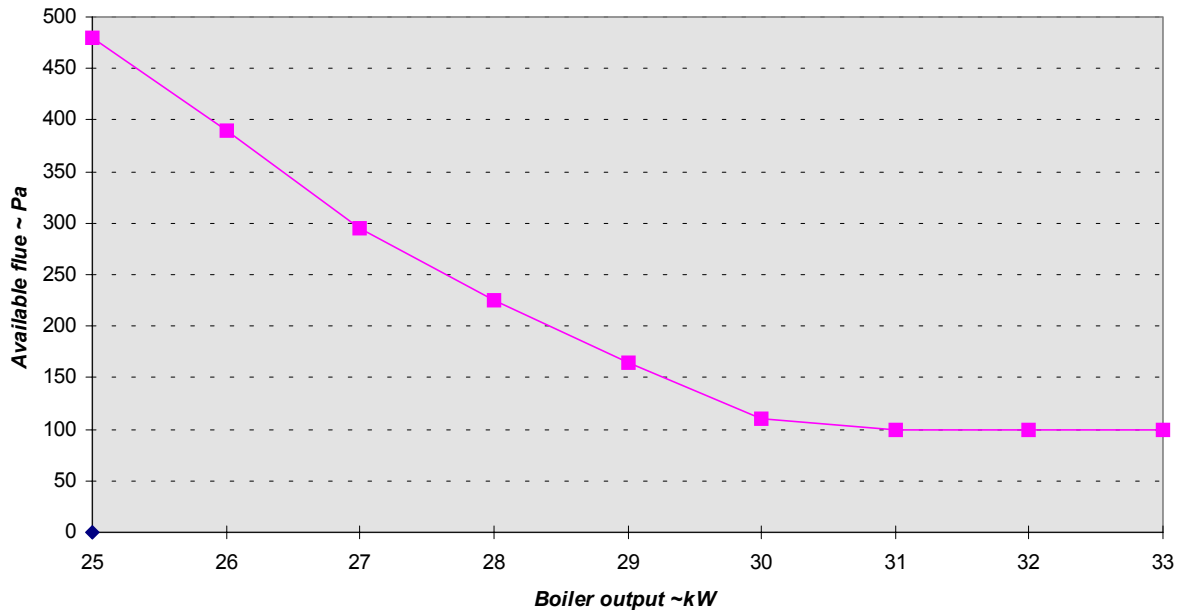
15.1 Maximum Flue Lengths

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 185 p.a.

Figure 9 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.

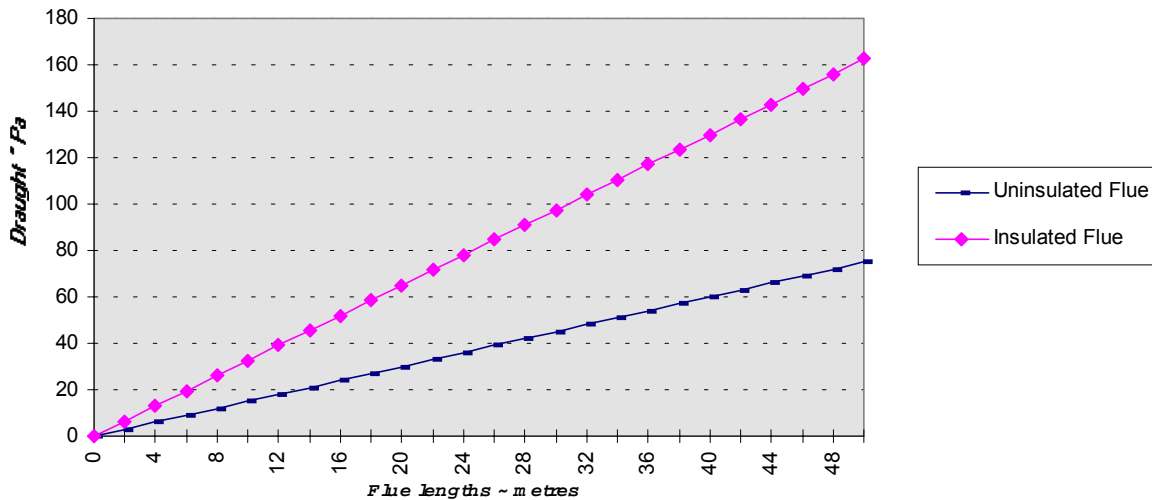
Table 10 Flue Resistance

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° elbow	4.0
80/125 PPS/White Galvanised 45° elbow	2.0
80mm 1000mm PPS flue pipe	2.5
80mm PPS 90° elbow	1.0
80mm PPS 45° 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 10 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.

15.2 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
- A range of 60mm PPS bends, tubes and connectors

If a concentric 125/80 flue system is to be used carry then the appliance will need the conversion kit fitting. Please see previous section 14.9.

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

The flue should terminate with a suitable terminal.

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.

15.3 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.

15.4 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.

15.5 Installing a Concentric Flue

Connect the concentric elbow into the flue/vent connection.

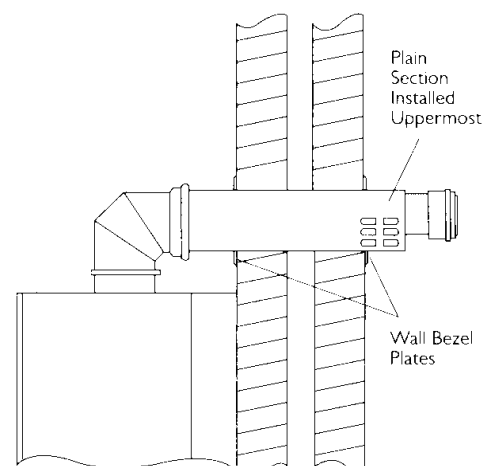
Measure and cut the concentric flue pipe to pass through the previously made hole and into the concentric 90° bend.

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 11.

Installed correctly, with a slight fall back to the boiler, the flue pipe will self drain back through the boilers internal condensate route. 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.

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

Figure 11 Wall Terminal



The final location of the Flue Outlet terminal should comply with figure 17 and table 11.

In certain circumstances the location of the boiler may leave the flue outlet in a position that does not comply with figure 17, or where plumbing is a nuisance.

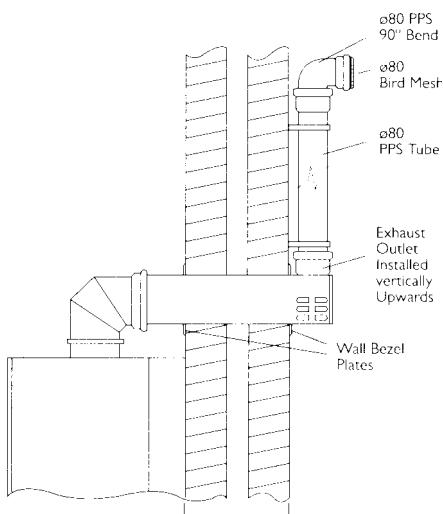
The eco hometec flue system has been designed to overcome this and the 80mm P.P.S. flue pipe may be simply re-routed to terminate in a more suitable location. To do this simply remove the 80mm stainlesssteel flue grill and insert either a 90° or 45° bend

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 12 Vertical Wall Terminal



15.6 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 13 Vertical Flues

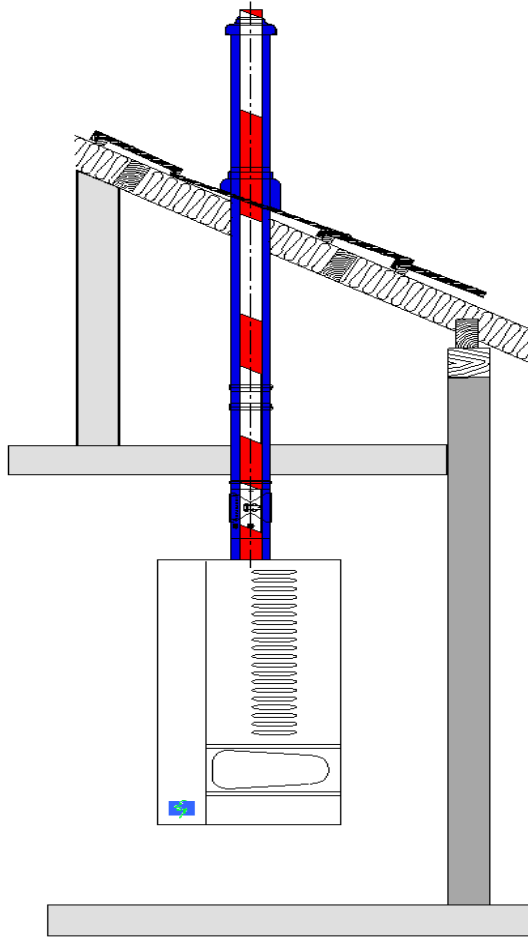
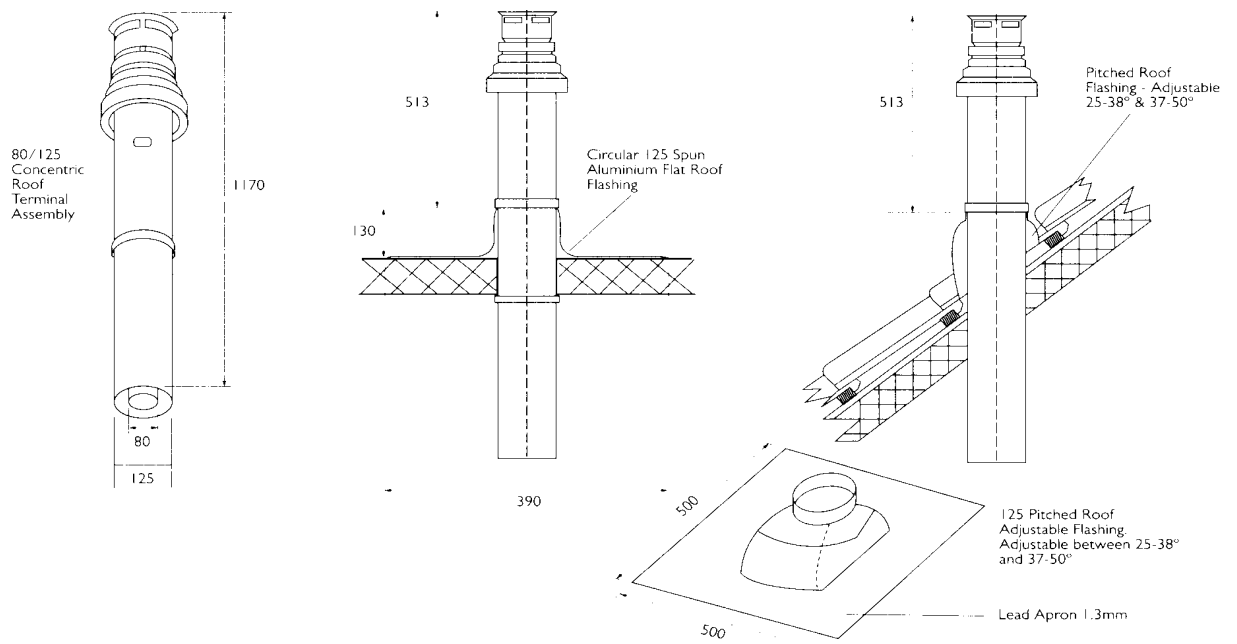


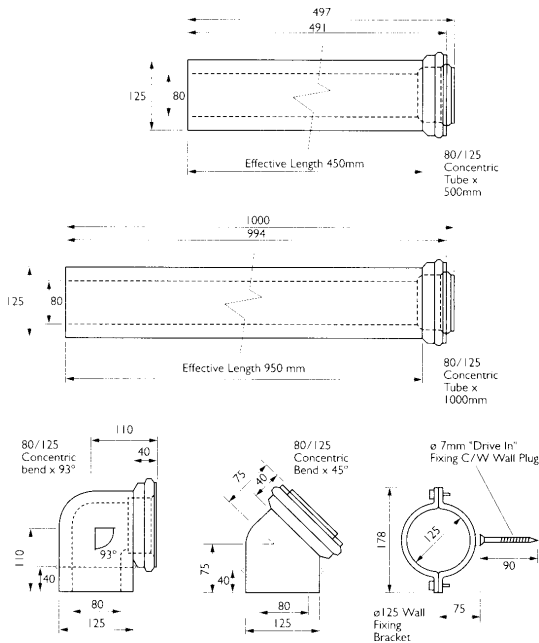
Figure 14 Vertical Terminals



Concentric vertical flue fittings are available from eco hometec.

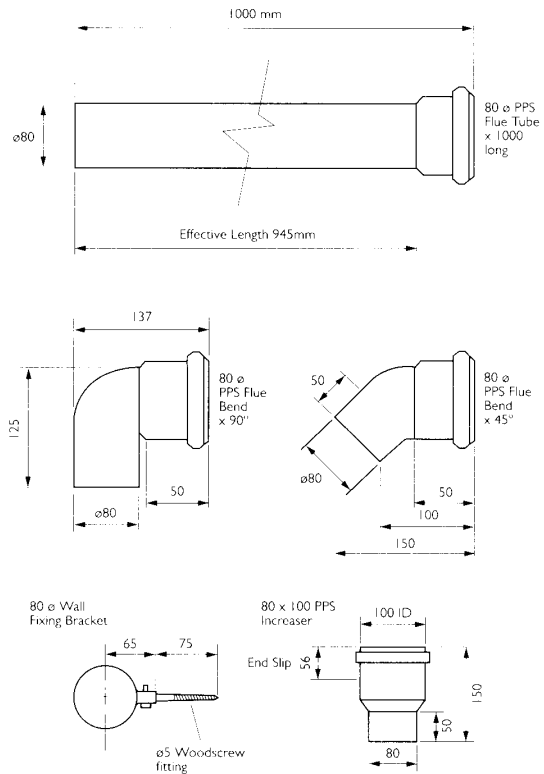
Concentric flue components have push together spigot and socket joints. The inner PPS flue gas tube has silicone seal rings located in the socket component. The outer air tube has EPDM rubber seal rings located in the socket component. To aid assembly and assurance that the joints have been fully pushed 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 15 Concentric flues



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

Figure 16 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

15.7 Terminal Positions

Figure 17 Fan Flued Terminal Positions.

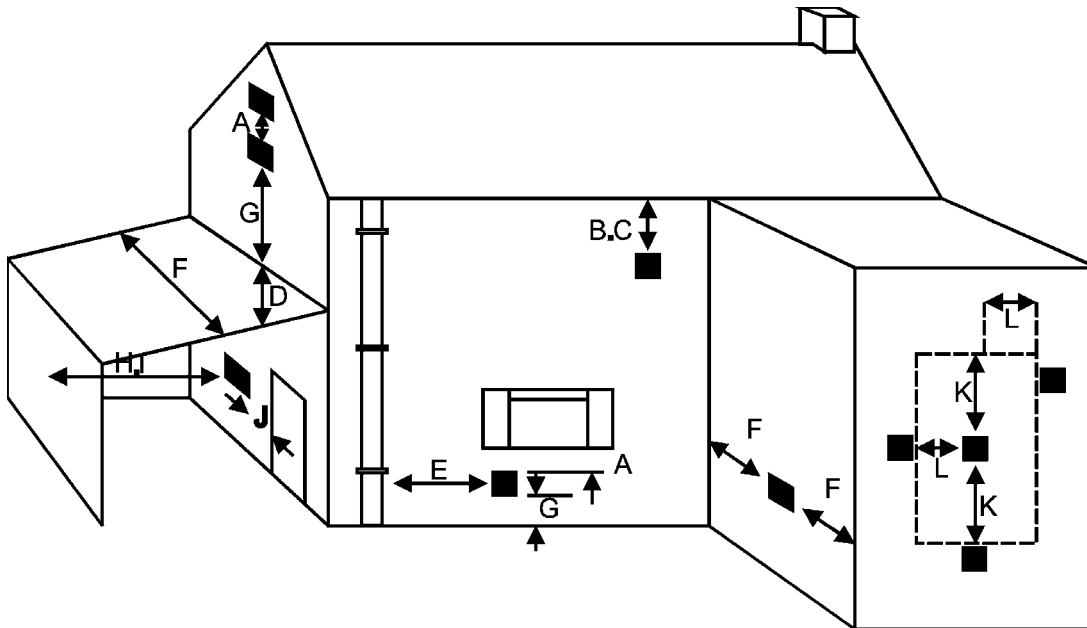


Table 11. Flue Terminal Positions.

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

Fanned flues terminals should be at least 2m from any opening in a building which is directly opposite and should not discharge products of combustion across adjoining boundaries.

16. Gas Supply

The boiler is set for use with either natural gas or LPG.

16.1 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.

16.2 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.

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

17. Air Supply

17.1 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.

17.2 Conventionally Flue

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 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 12 should be used. Permanent openings are based on the total maximum rated input.

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

Table 12 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

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.

17.3 Compartment Ventilation

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

18. 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.

EC25S 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.

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).

18.1 Expansion Vessel



An expansion vessel must be fitted to all systems.

Table 13 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 14 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.

18.2 Condensate Drain



The condensate discharge pipe should be continued in $\frac{3}{4}$ 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 in to 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.

18.3 System By-Pass

The boiler is designed to operate at a minimum flow rate. If zone valves are fitted to all the heating circuits then an adequate bypass (Honeywell DU 145 suggested) should be installed across the flow and return so that it is the first flow after the pump and the last return to the boiler.

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

19. Electrical Connections



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.

Using the 3 core cable supplied connect the boiler to the mains electrical supply. An on/off switch is located on the underside of the boiler casing.

For the proper functioning of the appliance, it is necessary that live and neutral be correctly connected. Check the status code on the display if the display shows a U, you must reverse the connections to the mains plug in the power supply socket.

20. Heating Control Options

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

Hot water cylinder sensor.

External temperature sensor.

Room thermostat.

All of the above are available from eco hometec


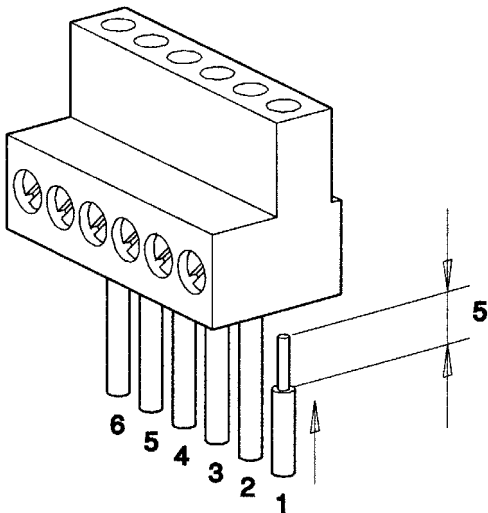
 **WARNING** Low Voltage Connections do not connect 240 volts to the low voltage terminal strip.

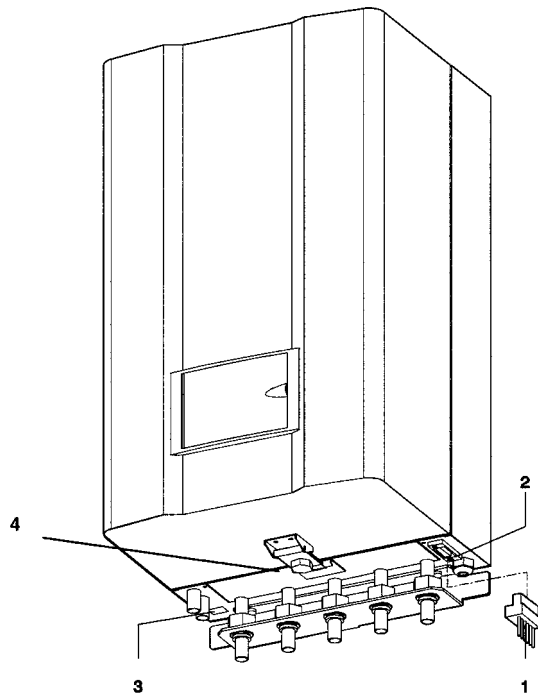
Figure 18 Controls Terminal



The boiler control inputs are all low voltage and must not be connected directly to the mains.

The connection terminal block plug (fig. 18) is located underneath the boiler see fig 19.

Figure 19 Connection Terminal Block



20.1 Connecting Room Thermostat

Strip approximately 5 mm of the insulation from the connecting wires for the room thermostat .

Insert the stripped ends of the connecting wires in the connections (1) and (2) of the terminal block (Fig. 18). Ensure that the wires do not cause a short circuit.

Tighten the screws firmly in the terminal block.

20.2 External temperature sensor.

External sensor (optional) available from eco hometec.

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.

This temperature sensor must be an NTC with a resistance of 12 kΩ at 25 °C (see also the list of accessories).

Strip approximately 5 mm of the insulation from the connecting wires for the sensor. Insert the stripped ends of the connecting wires in the connections (3) and (4) of the terminal block (Fig. 18). Ensure that the wires do not cause a short circuit. Tighten the screws firmly in the terminal block.

20.3 Cylinder Thermostat

Temperature sensor for hot water cylinder (if applicable)

DHW sensor (optional) available from eco hometec.

This temperature sensor must be an NTC with a resistance of 10 or 12 kΩ at 25 °C.

Alternatively a standard cylinder thermostat may be used.

Strip approximately 5 mm of the insulation from the connecting wires for the sensor. Insert the stripped ends of the connecting wires in the connections (5) and (6) of the terminal block (Fig. 18). Ensure that the wires do not cause a short circuit. Tighten the screws firmly in the terminal block.

20.4 Terminal block

When the connections have been made, insert the terminal block (1) in the connector (2) (Fig. 19).

20.5 Laptop Serial Connection

For an extended diagnosis and display of functions, a PC or laptop computer can be connected to connector (3) (Fig. 19). The required connecting cable and software is available from eco hometec as an option.

21. Commissioning and Testing

21.1 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.

21.2 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.

21.3 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.

21.4 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%.

21.5 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.

21.6 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:

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.

CHECK TO MAKE SURE AN EXPANSION TANK 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.

22. Combustion Ratio

Due to the precise combustion processes it is imperative that flue gas analysis equipment be used when setting up the burner.

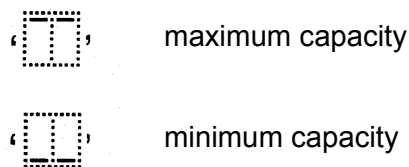
23. Output test function

The output test function can be activated by pressing the '+' and the '-' pushbuttons together for 5 seconds. The burner will now immediately ignite and burn at full capacity. Pressing the '+' or '-' pushbutton will cause the burner to burn at maximum or minimum capacity respectively.

Pressing the set/reset pushbutton will result in the function being switched off. Also, 20 minutes after the last time one of the pushbuttons was pressed, the burner will revert to normal operation.

While the output test function is active, the following codes will appear in the display, alternating with the measured flame strength.

Figure 20 Output Test Display



23.1 Commissioning NG and LPG

Measure the standing gas pressure at the measuring nipple on the gas tap. Nominal pressure should be 20 mbar in the case of natural gas, and 37 mbar in the case of propane gas.

Remove the measuring cap from the exhaust gas canal.

Insert the measuring probe of an exhaust gas analysis device (CO₂ meter) in the measurement opening of the exhaust gas outlet canal.

Adjust the central heating capacity to the maximum setting (See Section 8).

Make sure there is sufficient heat removal by turning on the central heating system.

Activate the chimney sweeper function (See Section 24. The burner will now operate at maximum capacity.

Read the CO₂ value displayed on the exhaust gas analysis equipment. If this value does not agree with the correct value as specified in the following table, you must carefully adjust the screw (1) (Fig. 5.1).

Turn it counter clockwise in order to increase the CO₂ value and clockwise in order to reduce it.

Set the burner to minimum capacity (See Section 23).

Read the CO₂ value displayed on the exhaust gas analysis equipment. If the value does not agree with the correct value specified in the following table you must

carefully adjust the Torx-Screw (2) with aid of a Torx screwdriver.

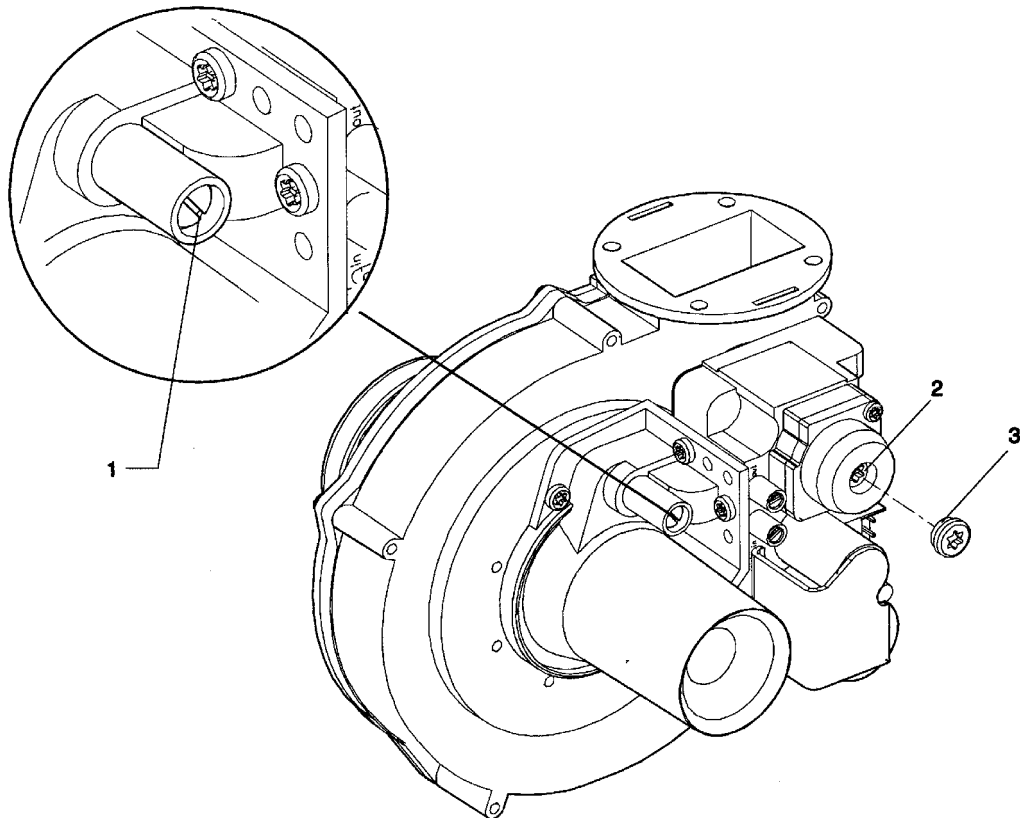
For this purpose you must temporarily remove the plug (3). Turn it clockwise in order to increase the CO₂ value and counter clockwise in order to reduce it.

Switch off the output test function again and adjust the central heating capacity to the original value. See Section 23.

CO ₂	natural gas	propane gas
maximum capacity	8.8%	9.8%
minimum capacity	8.2%	9.2%

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

Figure 21 Gas valve adjustments

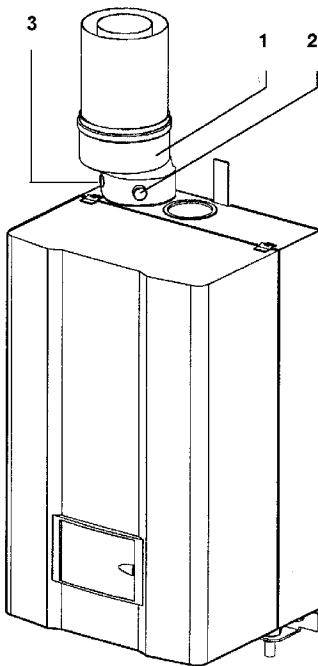


23.2 Flue System Check

In order to examine the flue pipe sealing, with the boiler running, it is essential that an O₂ or CO₂ reading is taken from the sample point 3 (fig 21) positioned on the left of the concentric adaptor.

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

Figure 22 Sample Points



24. Control Setup

24.1 External temperature control

During central heating use the capacity of the appliance is adjusted continuously to match the heating demand, so that the flow temperature ($T_{\text{central heating}}$) is variable between 20 and 90 °C.

The on/off signal from the room thermostat is converted into a modulating heating demand by the on board digital control system (by means of the applicable algorithm $T_{\text{central heating}}$).

24.2 Switching on the appliance

Turn on the appliance using the on/off switch located underneath the boiler casing to the right of the casing latch.

With a closed room thermostat and a difference between the set value $T_{\text{central heating}}$ and a water temperature of more than 10°C, the burner will be ignited.

The status display will show 'C' if the central heating water temperature increases by 3°C above $T_{\text{central heating}}$, the burner will stop burning, while the pump will continue to run. The status display will show 'C'.

When the room thermostat opens, the overrun function of the pump will be started. While the pump continues to run, the status display will show 'c'. The overrun time for central heating operation and the set value $T_{\text{central heating}}$ can be set using the keys on the display.

24.3 Setting the Output

When the room thermostat is closed and the burner is ignited the capacity is modulated between minimum and maximum capacity by means of a variable fan speed.

As soon as the burner is ignited, it will remain at the starting speed for the first minute.

At the end of this 10 second period the burner will switch to low load for 10 minutes. Thereafter, the capacity will be increased in a linear manner.

When the supply temperature is 30°C below $T_{\text{central heating}}$ the control system will switch immediately to a linear increase in the capacity. Shortly before reaching the maximum set capacity, the appliance will start modulating.

From the moment that the measured central heating temperature $t_{\text{central heating}}$ reaches the set point $T_{\text{central heating}}$, the temperature will be controlled by the opening and closing of the room thermostat.

The maximum burner capacity is limited by the minimum central heating water circulation through the appliance.

24.4 Pump operation

The pump has two speeds: low (1750 rpm) and high (2200 rpm). Normally the pump runs at low speed. When a value for Δt of 30 °C is reached, the pump switches to high speed. If Δt is lower than 10 °C, the pump

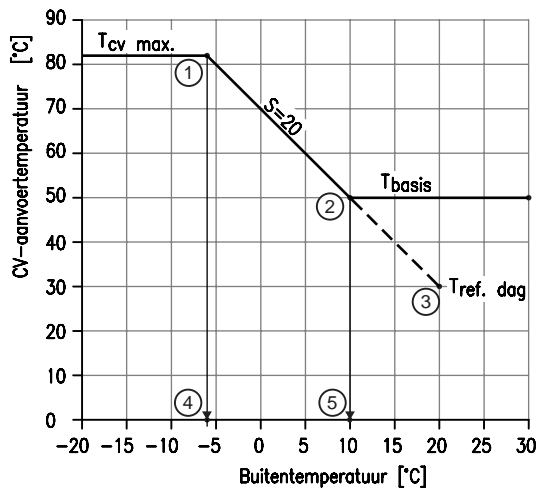
switches back to low speed. When the heating demand is removed, the pump continues to run for the pre-set overrun time, at the end of which it is switched off.

24.5 8.1.5 Frost protection

If the temperature detected by the supply sensor falls below 8 °C, the pump will be switched on and will circulate water through the central heating circuit. If the temperature detected by the supply sensor falls below 3 °C, the burner will be ignited. As soon as the return temperature reaches 15 °C, the burner will be switched off. The pump will continue to run for the pre-set overrun time. It is also possible to set the pump to run continuously.

24.6 Weather compensation

This function is only available if the optional external sensor is connected. The external temperature control determines the optimum set value of the central heating temperature in relation to the prevailing external temperature.



24.7 Setting the Heat Slopes

Depending on the installation, determine the maximum supply temperature for the lowest expected external temperature (set-point $T_{\text{central heating max}}$).

Draw a horizontal line at this central heating temperature to the point where it intersects the external temperature concerned (point (1) in the foregoing graph).

Determine the minimum desired central heating temperature ($T_{\text{basis}} = O/b$). and draw a horizontal line at this value.

Determine $T_{\text{ref. day}}$. This is the desired central heating temperature for an external temperature of 20 °C. Mark a point (3) by the values concerned.

Draw a line between points (1) and (3).

The point where this line cuts T_{basis} is point (2).

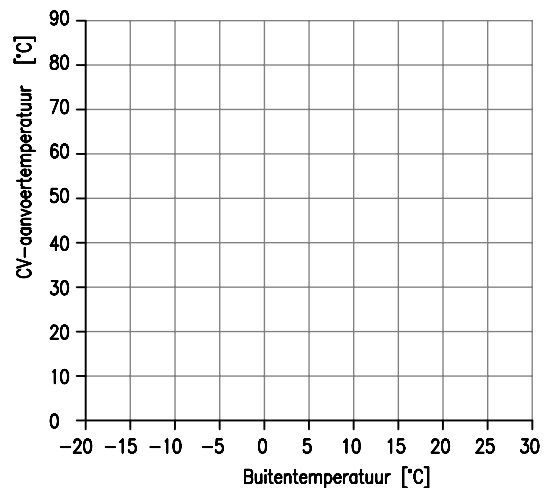
Draw vertical lines from point (1) and from point (2) to the x-axis. The points of intersection with the x-axis are points (4) and (5) respectively.

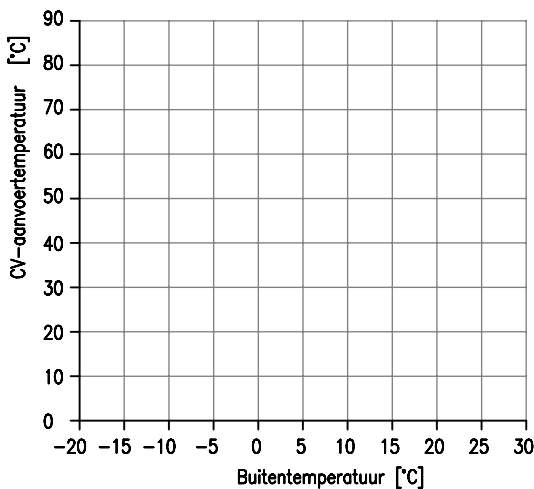
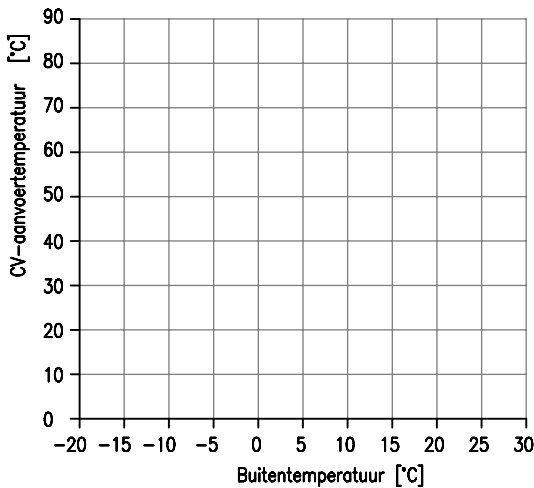
The S-factors can now be determined by dividing the difference between $T_{\text{central heating max}}$ and T_{basis} by the difference in external temperature represented by points (5) and (4):

$$O/S = \frac{T_{\text{central heating max}} - T_{\text{basis}}}{T_{(5)} - T_{(4)}} \times 10$$

The foregoing example follows from a $T_{\text{central heating max}}$ of 80 °C, a T_{basis} of 50 °C and a $T_{\text{ref. day}}$ of 30 °C for an external temperature of 20 °C and gives an O/S of 20.

Next you will find a number of empty graphs that you can fill in yourself.





25. Hot water production

25.1 Combi Type 'S' Tap boiler

The appliance is provided with an integral hot water store that keeps a limited quantity of hot water at a pre-set temperature (tap boiler set-point, $T_{\text{tap boiler}}$).

This means that hot water is always available. As soon as the temperature in the tap boiler falls below $T_{\text{tap boiler}} - 5\text{ °C}$, the burner ignites and functions on low load.

The status display shows 'd'. As soon as the water temperature increases above 93 °C , the burner is switched off.

The pump continues to circulate water through the hot water circuit.

The burner will again be ignited in order to heat the contents of the tap boiler when the return temperature falls below 70 °C .

If the temperature in the tap boiler is higher than $T_{\text{tap boiler}}$, the heating demand will be removed and the overrun function for hot water operation will be activated (30

seconds continuous pumping through the hot water circuit). During this period the status display shows 'h'.

$T_{\text{tap boiler}}$ can be set with the aid of the keys on the display.

25.2 General operation

For hot water operation the burner is activated by means of a sensor that is fitted in the hot water cylinder which measures the temperature of the cold water supply t_{cold} .

There will be a burner demand for hot water production in the following cases:

$$t_{\text{cold}} < T_{\text{boiler}} - 5\text{ °C}$$

t_{cold} falls more than 50 °C/min

As soon as one of the foregoing conditions is satisfied, the burner will be ignited. The status display shows 'd'. The burner modulates the return temperature to a value that is dependent on the pre-set water temperature ($T_{\text{set point}}$) chosen by the user.

The burner will be switched off when:

- $T_{\text{return}} > T_{\text{set point}} + 5\text{ °C}$
- $t_{\text{set point}}$ has increased by 10 °C
- $t_{\text{set point}} > T_{\text{boiler}} + 5\text{ °C}$

If the burner no longer burns while there is still a heating demand, the appliance will continue to circulate water through the hot water circuit until the return temperature falls below

$T_{\text{set point}} - 0\text{ °C}$. The status display shows 'd'.

If t_{cold} is higher than $T_{\text{tap boiler}} - 5\text{ °C}$, the heating demand will be removed and the overrun function for hot water operation will be activated (30 seconds continuous pumping via the hot water circuit).

During this period the status display shows 'h'.

25.3 Pump operation

The pump has two speeds: low (1750 rpm) and high (2200 rpm). Normally the pump runs at low speed. When a value for Δt of 30 °C is reached, the pump switches to high speed. Only when Δt is smaller than 10 °C does the pump switch back to low speed.

When the heating demand is removed, the pump continues to run for the pre-set overrun time, at the end of which it is switched off.

25.4 Hot Water Cylinder

A hot water cylinder boiler can be directly connected to the EC25HS. The cylinder temperature can be regulated by means of a thermostat or an NTC temperature sensor. When an NTC-sensor is used, the appliance will modulate during the boiler heating cycle. In the following process description it is assumed that regulation takes place by means of an NTC-sensor.

The NTC sensor measures the temperature of the cold water supply. The hot water cylinder is heated when the temperature falls 5°C below the set temperature or the temperature drops greater than 1°C per minute.

As soon as there is a demand, the burner will be ignited. The burner modulates the return temperature to the set value $T_{\text{ext_boiler}}$. (temp. of the hot water cylinder) The status display shows 'b'. $T_{\text{ext_boiler}}$ can be set with the aid of the keys on the display.

The burner will be switched off when:

$$\begin{aligned} t_{\text{supply}} &> T_{\text{central heating max}} \\ t_{\text{return}} &> T_{\text{ext_boiler}} + 5^{\circ}\text{C} \end{aligned}$$

When the burner is off and there is still a heating demand, the appliance will continue to circulate water through the boiler circuit until the return temperature falls below $T_{\text{ext_boiler}} - 5^{\circ}\text{C}$. The status display shows 'b'.

When t_{cold} is higher than $T_{\text{ext_boiler}} - 5^{\circ}\text{C}$, the heating demand will be removed and the pump-overrun function for external-boiler operation will be activated (30 seconds overrun pumping via the boiler circuit). The status display then shows 'b'.

26. Safety devices

26.1 Electronic ignition

The electronic ignition is protected against overload. The maximum glow time per ignition is 7 seconds (2 seconds pre-incandescence and 5 seconds in the ignition phase). The incandescent ignition

can be operated a maximum of 5 times in a short period. After these 5 attempts the control system allows 1 ignition attempt every minute. When the electronic ignition is not used for 5 consecutive minutes, 5 consecutive ignition attempts will again be possible. When the ignition of the burner is delayed by the control system, the status symbol changes to an 'o'.

26.2 Flow protection

The appliance is provided with a water pressure sensor, which is used in combination with the supply and return sensors to protect the appliance against a no flow situation.

For every burner start, the pump is stopped and after a 2 second delay the static system pressure is measured. Hereafter the pump is restarted at high speed. The fan runs and the pre-incandescence phase begins.

At the end of the ignition phase the system pressure is measured again.

The following situations are possible:

Pressure difference < 0.06 bar:

1. Air in the appliance
Pump or pump connection is broken. The control system switches to the pump test phase, in which the pump is switched on for 30 seconds and then off for 30 seconds. During this test phase the control system waits until a sufficient pressure difference is created. The display shows 'P' continuously and all heating demands are disregarded.

Pressure difference > 0.44 bar:

Too little flow. In this case the control system also switches to the pump test phase. During this test phase the control system continues to wait until the pressure difference is between 0.06 and 0.44 bar.

Pressure difference > 0.06 and < 0.44 bar:
The burner ignites and the flow monitoring is taken over by the supply and return sensor logic.

The pump is forced to switch over to low speed until there is an increase in temperature. In this way the pump is tested

at both speeds: high speed with the aid of a pressure difference, low speed by means of a temperature increase.

If, when the burner is ignited, the pressure rises or falls by more than 0.1 bar within 4 seconds, then the burner will be switched off. The control system then switches to the pump test phase until sufficient pressure difference has been created.

For central heating and hot water operation the appliance modulates back when $\Delta T > 32$ °C. The ΔT regulation in the programme functions as follows:

ΔT	
< 32	complete capacity utilization
$32 < \Delta T < 40$	capacity is reduced linearly to low load at 40 °C
$40 < \Delta T < 45$	low load
> 45	off


If the appliance is in central heating use and $T_{\text{return}} > T_{\text{supply}} + 5$ °C, the burner will be switched off. For hot water operation, this check will only be carried out 20 seconds after ignition in connection with the heat in the tap boiler.

26.3 Max. temperature protection

The maximum temperature protection is obtained with the aid of the supply and return sensors. If one of these sensors registers a temperature in excess of 93 °C, the burner will always be switched off.

If one of these sensors registers a temperature in excess of 105 °C, the control system blocks all further heating demand and starts pumping through the central heating circuit in order to remove the superfluous heat as quickly as possible. 'H' appears in the status display and the temperature display will show the supply temperature.

If during burning, one of these sensors registers a temperature in excess of 105 °C, the appliance will be immediately blocked with a flashing 'H' on the status display and the supply temperature on the temperature display. Pressing the reset pushbutton on the display can only discontinue this

blocking. With a temperature in excess of 118 °C,  will be displayed.

The control system will then perform the following three measurements.

1. Before the control system ignites the burner, the difference between supply and return temperatures must be less than 20°C.

2. The following check measurement will be carried out each time the burner is ignited. Both the supply temperature and the ΔT will be measured just before the burner is ignited. If the control system does not detect an increase of three degrees in the supply temperature or in ΔT after 10 seconds of burning, the burner will be immediately shut down. The control system will wait until ΔT is less than 5 °C and (if there still a demand) will then make another attempt at ignition. If this test is not successful after three attempts, the control system will block further operation with a flashing '2' on the status display and the supply temperature on the temperature display.

Once in every two hours the difference between supply and return temperatures must have been less than 5 °C. Is this not the case, than the burner will not be ignited until this is the case.

While the system is waiting for this condition to occur, the status display will show a '2' continuously, and the temperature display will show the supply temperature. A combustion cycle will not be interrupted by this protection.

26.4 Static pressure

The static pressure P in the appliance is monitored. The following situations can occur:

$$P \leq 0.2 \text{ bar}$$

All heating demand will be blocked, the pump will be switched off and the status display will show a P continuously.

The static pressure will be shown in the temperature display. This is a indication that the user must top up the appliance.

The blocking will only be discontinued when the pressure exceeds 1.3 bar. This offers the possibility to read the pressure in the appliance during topping up.

$$0.2 \text{ bar} < P < 0.5 \text{ bar}$$

The capacity of the appliance is limited to low load so that the user can still obtain heat, but because of a reduced level of comfort will realize that something is not in order. In the status display, the letter indicating the condition of the appliance (rest, central heating use or hot water operation) will alternate with 'P'. The temperature display will show the system pressure. This condition will be discontinued as soon as the pressure exceeds 1.3 bar.

$$P > 0.5 \text{ bar}$$

The appliance will function without limitations

$$P > 3.5 \text{ bar}$$

All heating demand will be blocked and the pump will be switched off. This blocking will only be discontinued when the pressure falls below 3.0 bar. The pressure can be read from the display.

26.5 Air supply monitoring

The speed of the fan is measured and monitored. If this varies by more than 5 percent from the correct speed for a period of more than 60 seconds, the control system will be blocked and a flashing '5' will appear in the status display. This indicates that there is a problem with the air supply to the appliance or with the fan.

26.6 Exhaust gas sensor (optional)

The appliance can be fitted in the factory with an optional exhaust gas sensor that is connected to the control system. This exhaust gas sensor switches the appliance off if the exhaust gasses reach too high a temperature.

The following situations are possible:

$$T_{\text{exhaust gas}} < 80 \text{ }^{\circ}\text{C}$$

The appliance will function without limitations

$$80 \text{ }^{\circ}\text{C} < T_{\text{exhaust gas}} < 90 \text{ }^{\circ}\text{C}$$

The appliance functions normally but the capacity will be limited to low load. On the status display the normal status will be replaced by 'A'.

The temperature display will show the supply temperature.

This condition will only be discontinued when the exhaust gas temperature falls below 60 °C.

$$90 \text{ }^{\circ}\text{C} < T_{\text{exhaust gas}} < 95 \text{ }^{\circ}\text{C}$$

The control system locks-out all heating demand.

The status display shows the letter 'A' continuously. The temperature display shows the exhaust gas temperature. This blocking will only be discontinued when the exhaust gas temperature falls below 70 °C.

$$T_{\text{exhaust gas}} > 95 \text{ }^{\circ}\text{C}$$

The control system locks-out operation, the status display shows a flashing 'A'.

The temperature display shows the current exhaust gas temperature and the appliance will require manually resetting.

26.7 Display

For normal burner operation the central heating water temperature or the water pressure will be displayed on the 2-character display.

The status of the burner is shown on the status display. After the '-' pushbutton (down) has been pressed, the version number of the software will be displayed. Example : U 21 means software version 055_21.

The following status codes may be displayed during normal operation.

Code	Meaning
. (point)	burner in operation
0	ready for use
C	central heating use
c	central heating pump overrun
d	Hot water operation
b	boiler operation
h	Hot water pump overrun
o	frost protection
P	system water pressure

If the control system detects a fault, the burner will be switched off and every heating demand will be blocked.

The fault indications are divided into two different groups:

blocking and interlocking.

The interlocks give a flashing code on the status display, the blocks give a non-flashing code.

Once operation is locked out, the control system will wait until the fault is removed. After this the control system will return to

27. Menu structure

Several parameters can be set by pressing the set/reset pushbutton on the display for longer than 5 seconds. This brings you into the settings menu.

In order to see/change the following parameter, the set/reset pushbutton must be pressed once. The value of the parameter can be changed by pressing the +/- pushbutton.

The menu contains the following parameters:

The following blocking codes are possible:








Malfunction code	Description of malfunction
1 or 1.	Supply sensor open or short-circuit(ed)
2 or 2.	Return sensor open or short-circuit(ed)
6 or 6.	Tank sensor open / short-circuit(ed)
4 or 4.	External sensor open or short-circuit(ed)
F / F.	Burner does not ignite or goes out
A	Exhaust gas sensor > 80 °C
E	Control system internal fault
U	Neutral or Live reversed
P	Pump Test
q	Supply sensor > 105 °C

The following lockout codes are shown as flashing symbols:

Code	Meaning
F	Too many ignition attempts
1	Supply sensor failure
2	Too many flame faults detected
3/ 7/E	Control system internal fault
5	Fan malfunction
A	Exhaust gas sensor > 95 °C
7	Gas valve malfunction

normal operation. A lockout action can only be cancelled by pressing the reset pushbutton.

Table 15 Control Menu

Letter	Description	Range	Standard
C	maximum central heating water temperature	40 - 90 °C	82
O	overrun time for the central heating pump	1, 5, 10, 15, 20, 25 min CO = continuous	5
P	maximum central heating capacity	30-100 % 30% = min. capacity 100% = max. capacity	80
h	hot water supply	00 = off (N30C) 01 = internal tank (N30K) 02 = external boiler (12k) (N30B)	
d ¹	pre-set hot water temperature	40 -70 °C	60
t ¹	tank holding temperature	40 - 50 °C	40
b ²	external boiler holding temperature	40 - 70 °C	60
O/b ³	external sensor basic temperature	10 - 70 °C	50
O/S ³	external sensor factor x 10	1 - 100 °C	20
O/d ³	external sensor reference temperature	10 - 70 °C	30
r	return to standard setting: by pressing the '+' pushbutton the standard values are restored (apart from h and S)	 = active changed  = factory setting changed	
S	pumping rate (after a reset this is always 00)	00 = speed indicated by software  = always high  = always low	
P/S	Max. Pressure Increase	 = 0,54 bar  = 0,44 bar  = 0,34 bar	
V	window menu	1 = Central heating supply temperature 2 = Central heating return temperature 3 = T _{cold} 4 = Tank temperature 5= External boiler temperature 6 = Exhaust gas temperature 7 = Ionization value 8 = Water pressure (bar) 9 = Last interlocking A = Last blocking	

When the window menu mode is active, the normal display mode can be restored by pressing the reset pushbutton again. If no entry is made for a period of three minutes, the display will revert automatically to the normal display mode.

1 = These values are only visible as h = 01 (see above)

2 = These values are only visible as h = 02 and when a boiler sensor is connected

3 = These values are only visible when an external sensor is connected

28. Laptop Connection

The EC25 has a special serial connection that can only be used by the installer for diagnosis with a PC.

The special cable and software required are available to the installer as an option. Never use a standard cable; this will result in damage to the PC!

The software possibilities are:

28.1 Display current status

This screen gives the installer the possibility to display an overview of the complete status of the control system. This screen gives the following information:

- current temperatures as measured by the control system
- current and requested fan speed
- status of the control system
- measured ionization level
- parameters that can be modified by the installer

The status screen has a number of pushbuttons with which several parameters can be changed, such as the minimum and maximum fan speeds.

28.2 History screen

The control system keeps a record of the following data:

- date of manufacture
- number hours that the control system has been active
- number of successful ignition attempts
- number of failed ignition attempts
- number of flame faults
- number of hours of burning for central heating use
- last 16 blockages
- last 15 interlocks

These data will be saved in the memory of the control system and will be maintained, even when the power supply is switched off.

28.3 Graphic screen

This part of the programme gives the installer the possibility to see a graphic presentation of all measured temperatures and other variables (such as fan speed). If desired the measured values can be saved on a diskette.

The saved information can later be displayed or printed.

29. Fault Finding

The following fault codes (blocking and interlocking) are saved. The last blocking code is displayed in view mode A. (See Section 27 and table 15).

29.1 Blocking actions

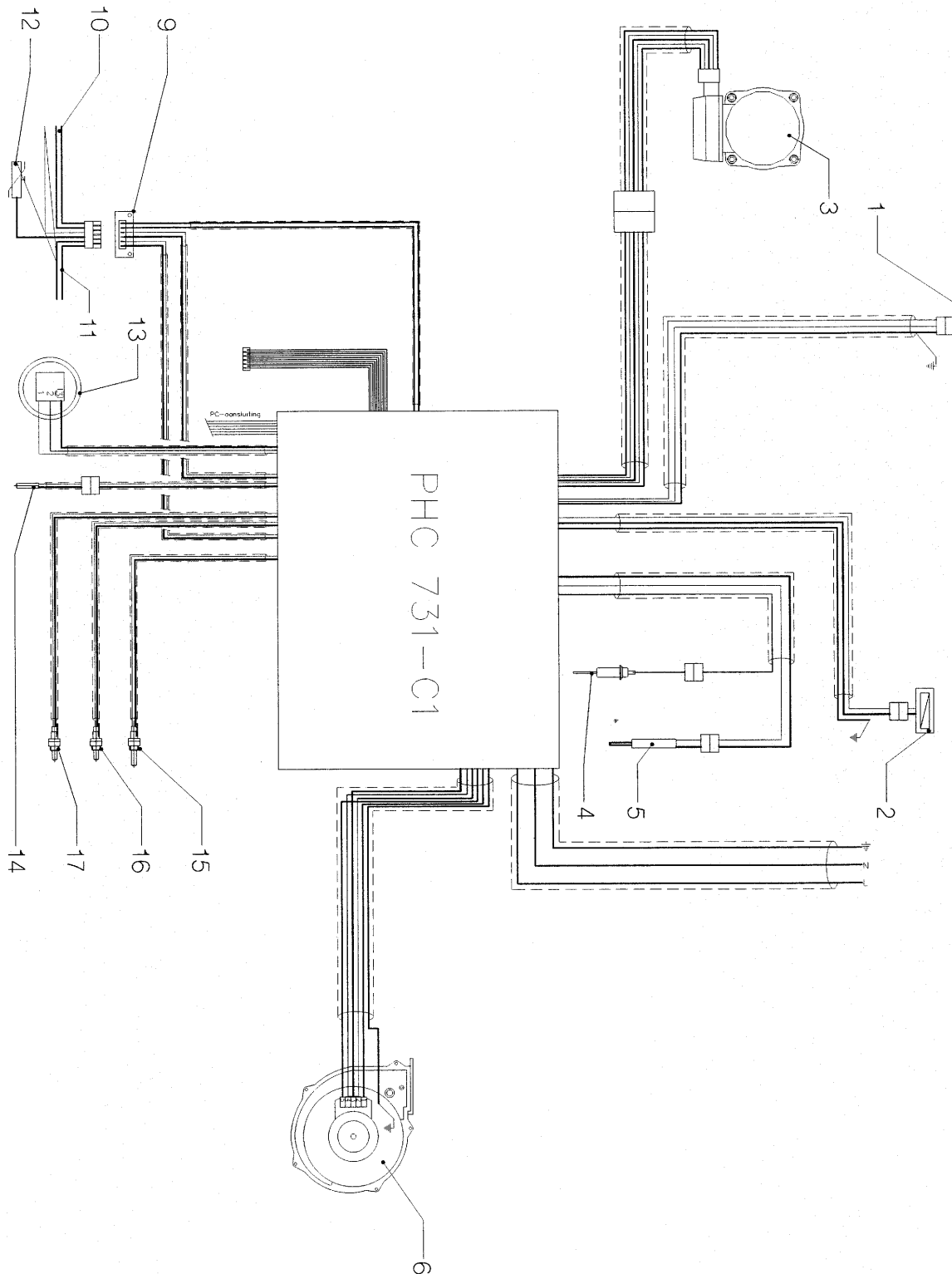
Internal number	Description	Display code
49, 58	Supply sensor open	1
65, 74	Supply sensor short-circuited	1.
43	Return sensor open	2
59	Return sensor short-circuited	2.
45	External sensor open	4
61	External sensor short-circuited	4.
50	Hot water supply sensor open	6
66	Hot water supply sensor short-circuited	6.
30	Flame detected with a closed gas valve	F
40	Flame sensor short-circuited	F.
38	Phase and zero reversed	U
36	Supply sensor > 100 °C	q
25, 26, 27, 28	Reference AD fault	E
31, 34, 35	Sample fault	E
39	50 Hz fault	E
0	E2PROM reading error	E
29	Exhaust gas sensor > 80 °C	A
41	Watchdog communication error	E
32	Water pressure error	P

29.2 Interlocks

The last interlock code is displayed in view mode 9 (See Section 27 and table 15).

Internal number	Description	Display code
1	Ignition fault	F
2	Supply sensor fault	1
24	Too many flame faults	2
21	Flame out	2
3	Unknown fault	3
4	Watchdog fault	3
10	E2PROM fault	3
12	Faulty E2PROM Identification	3
19	Stack fault	3
9	Flame out	3
8	Fan fault	5
5	Gas valve relay fault	7
6	Safety relay fault	E
7	Ignition relay fault	E
11	Supply sensor > 105 °C	E
20	Flame not out in time	E
14	Exhaust gas sensor > 95 °C	A

Figure 23 Wiring Diagram



30. Electrical circuit diagram

1	Three-way valve
2	Gas valve
3	Central heating pump
4	Ionization pin
5	Incandescent igniter
6	Fan
7	Display
8	PC connection
9	Connection block installer
10	Room thermostat 24 V
11	External boiler
12	External temperature sensor
13	Water pressure sensor
14	Exhaust gas sensor
15	Temperature sensor for boiler
16	Temperature sensor for central heating supply
17	Temperature sensor for central heating return

30.1 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.

CORGI REGISTERED INSTALLER OPPORTUNITIES

As a result of their incredible efficiency and technical superiority the demand for eco hometec appliances has surpassed all expectations.

To cope with the increasing request for installations and technical advice we are looking to recruit additional eco hometec approved installers.

If you or your company would like to be considered then please call our technical sales department for a **FREE** information pack or alternatively visit our web site eco-hometec.co.uk

31. User Instructions

32. 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.

A service has to be carried out when every 12 months

33. 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.

33.1 General

The appliance combines a maximum of comfort with extremely simple operation.

As a user you need to adjust nothing other than the desired times and temperatures on the room thermostat or programmer, irrespective of the time of year.

Depending on the value that you choose as being the most comfortable, together with the lowest possible use of energy, the following tips can help to make the optimum use of your appliance:

In order to limit the energy used, it is recommended that all radiator valves should be of the thermostatic type and in the rooms to be heated be adjusted to provide a comfortable temperature.

Close the radiator valves in rooms where you require no heating.

Set the room thermostat to a lower temperature some time before you retire to bed.

For more information, please consult your installer.

33.2 Holiday

Also during long-term absence, for example in the holiday period, it is recommended that you leave the appliance switched on.

Every 24 hours the appliance performs a number of checks.

If the occurrence of frost can be excluded, you should adjust the room thermostat to a low temperature.

If the occurrence of frost cannot be excluded, you should adjust the room thermostat to a temperature of 12 °C or higher.

Although the appliance is provided with internal frost protection this does not protect the rest of the installation against freezing.

NEVER isolate the mains and NEVER close the gas tap.

33.3 Cleaning

Wipe the outside of the appliance regularly with a soft, damp cloth. For this it is not necessary to close the gas tap or to switch off the electricity supply.

Never use aggressive or flammable cleaning materials.

Remember that the pipes can reach high temperatures.

33.4 Control system codes

During operation, the display (1) indicates the status of the appliance in the form of a code (Fig. 24).

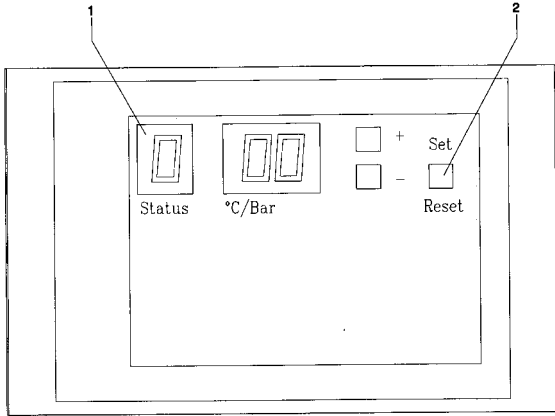
Open the door for the display in order to read the codes.

Status code	Meaning
0	ready for use
C	central heating use
c	central heating pump overrun
d	hot water operation
b	boiler operation
h	hot water pump overrun
P	installation pressure
. (Decimal point)	burner in operation

33.5 Malfunction codes

If any code other than those mentioned above appears in the display, this will be a malfunction code.

Figure 24 Status Display



Code	Meaning
F	Too many ignition attempts
1	Supply sensor failure
2	Too many flame faults detected
3/ 7/E	Control system internal fault
5	Fan malfunction
A	Exhaust gas sensor > 95 °C
7	Gas valve malfunction

Press the set/reset key (2). This may end the malfunction. The lock function will then be ended and the malfunction code will disappear from the display. If the malfunction is not cured or keeps recurring, you should contact your installer.

Malfunction code P: Water pressure
 The last two positions in the display give an indication of the measured water pressure. The optimum water pressure is 2.0 bar. With a pressure above 3.5 bar heat will no longer be supplied. Contact your installer. With a pressure under 0.5 bar the capacity of the appliance will be limited while under 0.2 bar heat will no longer be supplied. In both cases the water must be topped up in the manner specified by your installer (to a pressure of approximately 2 bar).

If the pressure lies between 0.5 and 3.5 bar, this is an indication that there is air present in the central heating installation. The appliance will attempt to expel this air by means of a bleed programme.

If this condition persists, you should contact your installer.

Malfunctions that can only be remedied by a service technician

The display lights continuously.

Malfunction code	Description of malfunction
1 or 1.	Supply sensor open or short-circuit(ed)
2 or 2.	Return sensor open or short-circuit(ed)
6 or 6.	Tank sensor open / short-circuit(ed)
4 or 4.	External sensor open or short-circuit(ed)
F / F.	Burner does not ignite or goes out
A	Exhaust gas sensor > 80 °C
E	Control system internal fault
U	Neutral or Live reversed
P	Pump Test
q	Supply sensor > 105 °C

In the event of one of the above codes being displayed contact your installer or the eco hometec service department.

33.6 Topping up

Check periodically to determine whether the water pressure is high enough. If the water pressure is too low, a P will appear in the display, alternating with another letter. Add water in the manner specified by your installer.

33.7 Bleeding air from the system

Approximately 1 week after the system is installed, the radiators should be vented.

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