

ROC[®]

Manual for Installation and Maintenance



Condensing Wall Mounted
Gas Fired Combination
Boilers:

ROC COMBI HE 2802
ROC COMBI HE 2810
ROC COMBI HE 4010

G.C.N:47-492-01(28 KW)

G.C.N:47-492-02(40 KW)

Suitable for:

- **Installation Personnel**
- **Service Provider**



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► OVERVIEW

Reading advices

Do not forget the Service Book

These instructions are suitable for ROC wall mounted gas boilers: **ROC COMBI HE 28 and ROC COMBI HE 40**. To ensure the correct installation, commissioning and servicing of domestic central heating system please read the general information provide in these instructions.

To the installer

As part of the commissioning of this appliance it is vital that the Service Book is completed and given to the Householder. Please ensure that your customer is aware of the importance of keeping the Service Book safe as a record of the installation and the appliance service history. Please ensure that your customer is aware of the correct operation of the system, boiler and controls. ROC recommends that protective clothing is used when installing and working on the appliance i.e. protective gloves.

Customer care

ROC, as a leading manufacturer of domestic and commercial water heating appliances is committed to providing high quality products and a high quality after sales service.

Support telephone number: 08452268261

Email: info@rocboilers.co.uk

GUARANTEE

ROC Combi Boilers 2810 and 4010 both come with a Parts and Labour Warranty for 10 years from the date of Installation, ROC Combi boiler 2802 has a 2 Year parts and Labour Warranty from the date of installation. For full details and registration visit www.rocboilers.co.uk.

CAUTION

In the United Kingdom, installation, start-up, adjustments and maintenance, must be performed by a competent person only, in accordance with the current Gas Safety (Installation & Use) Regulations and the instructions provided.

Improper installation may cause damage or injury to individuals, animals and personal property for which the manufacturer will not be held liable. To ensure efficient and safe operation it is recommended that the boiler is serviced annually by a GAS SAFE engineer..

All GAS SAFE registered installers carry a GAS SAFE ID card, and have a registration number. Both should be recorded in your boiler Service Book. You can check your installer is GAS SAFE registered by calling GAS SAFE directly on:-0800 408 5500.

If it is known that a fault exists on the appliance, it must not be used until the fault has been corrected by a GAS SAFE engineer.

The manufacturer will not take any responsibility for the harm and loses which is caused by not following these instructions.

Advice for the installer

The installation and first ignition of the boiler must be performed by qualified personnel in compliance with current national regulations regarding installation, and in conformity with any requirements established by local authorities and public health organizations. After the boiler has been installed, the installer must ensure that the end user receives the declaration of conformity and the operating manual, and should provide all necessary information as to how the boiler and the safety devices should be handled.

This appliance is designed to produce hot water for domestic use. It should be connected to a heating system and a distribution Network for domestic hot water, both of which must be compatible with its performance and power levels.

The use of the appliance for purposes other than those specified is strictly forbidden. The manufacturer cannot be held responsible for any damage caused by improper, incorrect and unreasonable use of the appliance or by the failure to comply with the instructions given in this manual.

Installation, maintenance and all other interventions must be carried out in full conformity with the governing legal regulations and the instructions provided by the manufacturer. Incorrect installation can harm persons, animals and possessions; the manufacturer shall not be held responsible for any damage caused as a result.

The boiler is delivered in a carton. Once you have removed all packaging, make sure the appliance is intact and that no parts are missing. If this is not the case, please contact your supplier.

Keep all package materials (clips, plastic bags, polystyrene foam etc.) out of reach of children as it may present a potential hazard.

In the event of a fault and/or malfunction, turn the appliance off, turn off the gas and do not attempt to repair it yourself. Contact a qualified professional instead.

Before any maintenance or repair work is performed on the boiler, make sure you have disconnected it from the electricity supply by switching the external switch to the "OFF" position and removing the fuse.

All repairs, which should only be performed using original spare parts, should be carried out by a qualified professional. Failure to comply with the above instructions could compromise the safety of the appliance and invalidate all liability on the part of the manufacturer.

In the event of any maintenance or other structural work in the immediate vicinity of the ducts or flue gas exhaust devices and their accessories, switch the appliance off by switching the external switch to the "OFF" position and shutting off the gas control valve. When the work has been completed, ask a qualified technician to check the efficiency of the ducting and the devices.

Clean using a cloth dampened with soapy water. Do not use aggressive detergents, insecticides or toxic products. If the appliance is used in full compliance with current legislation, it will operate in a safe, environmentally-friendly and cost-efficient manner.

If using kits or optional extras, make sure they are authentic.

Turn the boiler off and turn the external switch "OFF" to clean the exterior parts of the appliance.

CE symbol

The CE symbol guarantees that the appliance conforms to the following directives:

-2009/142/CEE

relating to gas appliances

-2004/108/CEE

relating to electromagnetic compatibility

-92/42/CEE

relating to energy efficiency

-2006/95/CEE

relating to electrical safety



Symbols used on the data plate

Name		ROC[®]		
Boiler model				
Gas council number				
Installation type		Gas type		
Appliance for		Gas supply pressure		
Rated voltage		Rated elec. power		
PMS		Max press of DHW		
DHW flow rate		NO _x class		
<i>Nominal heat input</i>		<i>Nominal useful output</i>		
Q_n	Q_r	Condensing	P_n	P_r
CE 0051		<i>Country of destination</i>		

Serial number:

Safety regulations

Key to symbols:

⚠ Failure to comply with this warning implies the risk of personal injury, in some circumstances even fatal.

⚠ Failure to comply with this warning implies the risk of damage, in some circumstances even serious, to property, plants or animals.

Install the appliance on solid wall which is not subject to vibration.

⚠ Noisiness during operation.

When drilling holes in the wall for installation purposes, take care not to damage any electrical wiring or existing piping.

⚠ Electrocutation caused by contact with live wires. Explosions, fires or asphyxiation caused by gas leaking from damaged piping. Damage to existing installations. Flooding caused by water leaking from damaged piping.

Perform all electrical connections using wires which have a suitable section.

⚠ Fires caused by overheating due to electrical current passing through undersized cable.

Protect all connection pipes and wires in order to prevent them from being damaged.

⚠ Electrocutation caused by contact with live wires. Explosions, fires or asphyxiation caused by gas leaking from damaged piping. Flooding caused by water leaking from damaged piping.

Make sure the installation site and any systems to which the appliance must be connected comply with the applicable norms in force.

⚠ Electrocutation caused by contact with live wires which have been installed incorrectly. Damage to the appliance caused by improper operating conditions.

Use suitable manual tools and equipment (make sure in particular that the tool is not worn out and that its handle is fixed properly); use them correctly and make sure they do not fall from a height. Replace them once you have finished using them.

⚠ Personal injury from the falling splinters or fragments, inhalation of dust, shocks, cuts, pricks and abrasions. Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions.

Use electrical equipment suitable for its intended use (in particular, make sure that the power supply cable and plug are intact and that the parts featuring rotary or reciprocating motions are fastened correctly); use this equipment correctly; do not obstruct passageways with the power supply cable, make sure no equipment could fall from a height. Disconnect it and replace it safely after use.

⚠ Personal injury caused by fall splinters or fragments, inhalation of dust, knocks, cuts, puncture wounds, abrasions, noise and vibration. Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions.

Make sure any portable ladders are positioned securely, that they are suitable strong and that the steps are intact and not slippery and do not wobble when someone climbs them. Ensure someone provides supervision at all times.

⚠ Personal injury caused by falling from a height or cuts (stepladders shutting accidentally).

Make sure any rolling ladders are positioned securely, that they are suitable strong, that the steps are intact and not slippery and that the ladders are fitted with handrails on either side of the ladders and parapets on the landing.

⚠ Personal injury caused by falling from a height.

During all work carried out at a certain height (generally with a difference in height of more than two metres), make sure that parapets are used to surround the work area or that individual harness are used to prevent falls. The spare where any accidental fall may occur should be free from dangerous obstacles, and any impact upon falling should be cushioned by semi-rigid or deformable surfaces.

⚠ Personal injury caused by falling from a height.

Make sure the workplace has suitable hygiene and sanitary conditions in terms of lighting, ventilation and solidity of the structures.

⚠ Personal injury caused by knocks, stumbling etc.

Protect the appliance and all areas in the vicinity of the work place using suitable material.

⚠ Damage to the appliance or surrounding objects caused by falling splinters, knocks and incisions

Handle the appliance with suitable protection and with care.

⚠ Damage to the appliance or surrounding objects from shocks, knocks, incisions and squashing.

During all work procedures, wear individual protective clothing and equipment.

⚠ Personal injury caused by electrocution, falling splinters or fragments, inhalation of dust, shocks, cuts, puncture wounds, abrasions, noise and vibration.

Place all debris and equipment in such a way as to make movement easy and safe, avoiding the formation of any piles which could yield or collapse.

⚠ Damage to the appliance or surrounding objects from shocks, knocks, incisions and squashing.

All operations inside the appliance must be performed with the necessary caution in order to avoid abrupt contact with sharp parts.

⚠ Personal injury caused by cuts, puncture wounds and abrasions.

Reset all the safety and control functions affected by any work performed on the appliance and make sure they operate correctly before restarting the appliance.

⚠ Explosions, fires or asphyxiation caused by gas leaks or an incorrect flue gas exhaust. Damage or shutdown of the appliance caused by out-of-control operations.

Before handling, empty all components that may contain hot water, carrying out any bleeding if necessary.

⚠ Personal injury caused by burns.
Descalc the components, in accordance with the instructions provided on the safety data sheet of the product used, airing the room, wearing protective clothing, avoid mixing different products, and protect the appliance and surrounding objects.

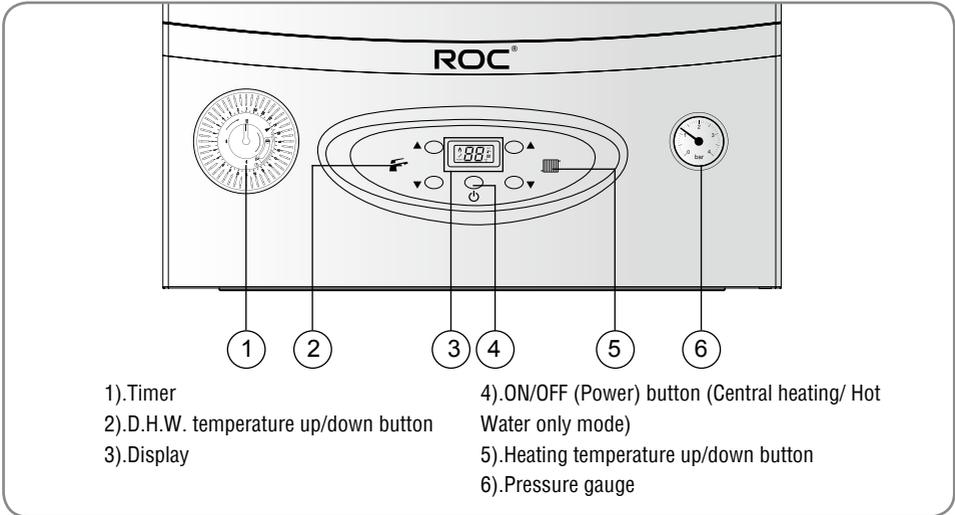
⚠ Personal injury caused by acidic substances coming into contact with skin or eyes; inhaling or swallowing harmful chemical agents. Damage to the appliance or surrounding objects due to corrosion caused by acidic substances.

If you detect a smell of burning or smoke, keep clear of the appliance, disconnect it from the electricity supply, open all windows and contact the technician.

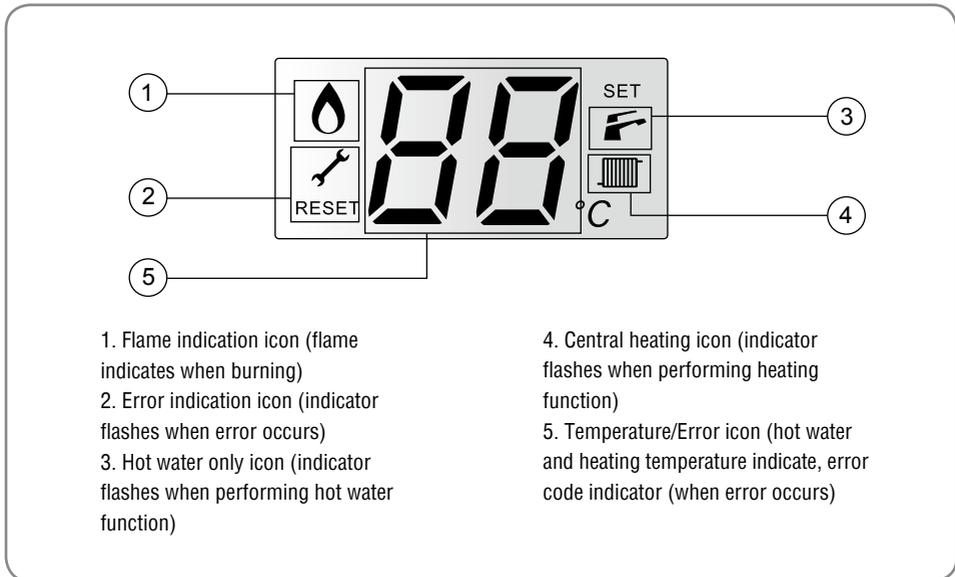
⚠ Personal injury caused by burns, smoke inhalation, asphyxiation.

► PRODUCT DESCRIPTION

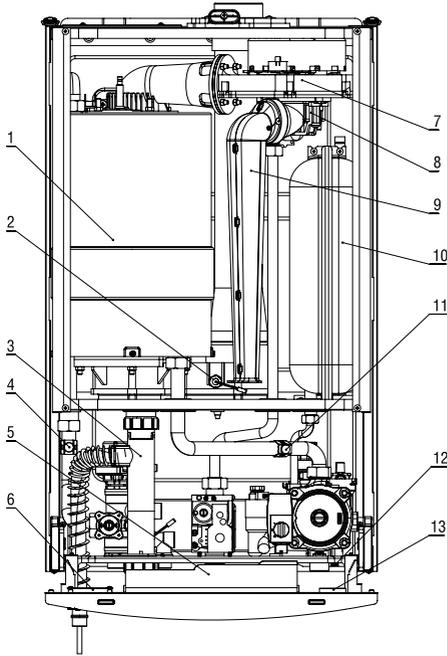
Control panel



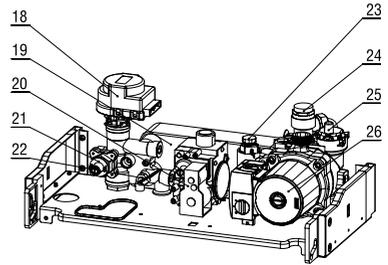
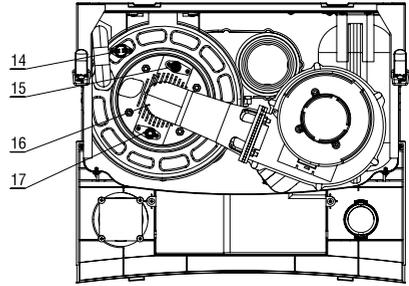
Display



Overall view



1. Main heat exchanger
2. Flue gas temperature sensor
3. Syphon
4. Heating temperature sensor
5. Electric box
6. Timer
7. Fan
8. Gas/air mixed burner
9. Air inlet pipe (burner)
10. Expansion tank
11. Heating water temperature sensor
12. Drain point
13. Pressure gauge

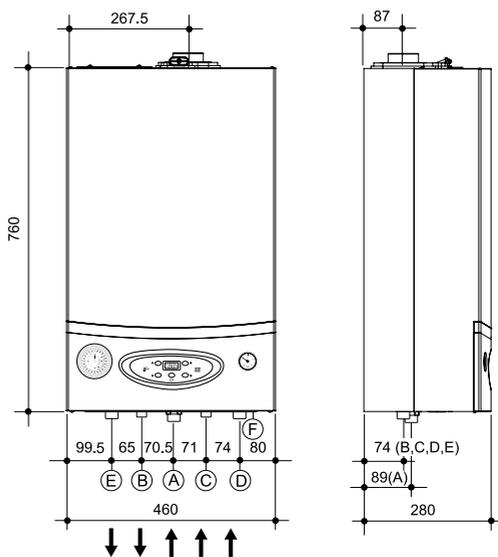


14. Overheat protector
15. Ignition needle
16. Burner
17. Flame detection needle
18. Three way motor
19. Domestic heat exchanger
20. Gas valve
21. Pressure switch
22. Hot water temperature sensor
23. Water flow volume sensor
24. Safety valve
25. Air exhaust valve
26. Pump

Overall dimension

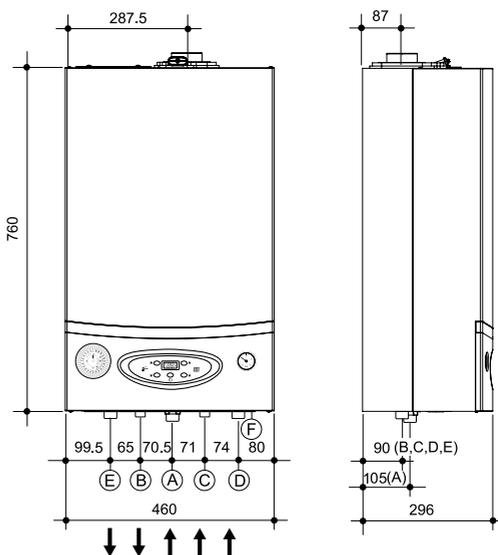
ROC COMBI HE 28

- A. Gas
- B. Domestic hot water
- C. Cold water
- D. Inlet of central heating water
- E. Outlet of central heating water
- F. Pressure relief valve pipe



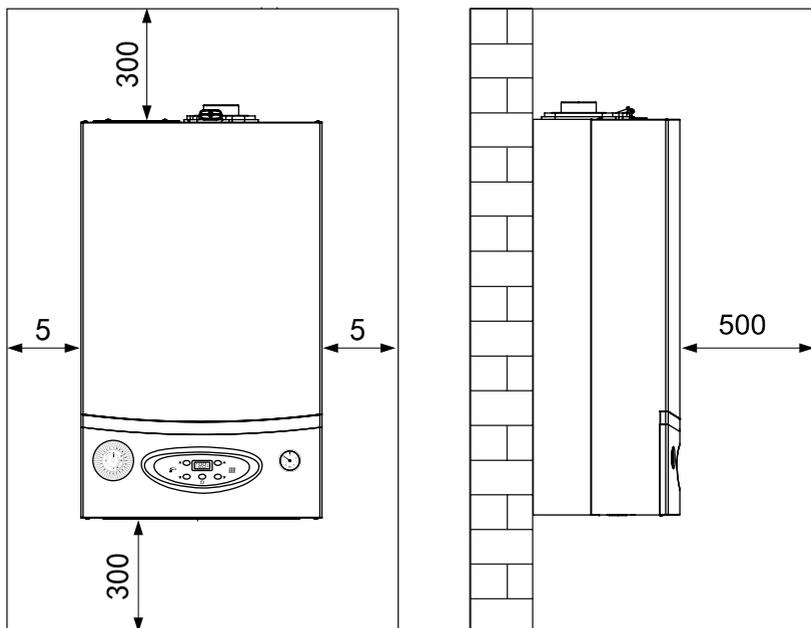
ROC COMBI HE 40

- A. Gas
- B. Domestic hot water
- C. Cold water
- D. Inlet of central heating water
- E. Outlet of central heating water
- F. Pressure relief valve pipe



Minimum clearance

In order to allow easy access to the boiler for maintenance, operation, the boiler must be in accordance with the clearances stated below.



The following minimum distance should be left for equipment's installation and maintenance.

- Distance on the bottom:300mm
- Distance on the side position:5mm
- Distance on the top:300mm
- Distance on the front :500mm

Technical data

Model		ROC COMBI HE 28	ROC COMBI HE 40	
Boiler type	-	C ₁₃ C ₆₃	C ₁₃ C ₆₃	
CE Certification	-	51CN4162(LJLGB26-B28CP)	51CN4162(LJLGB37-B40CP)	
Capacity				
Max/min nominal calorific flow rate(Pci)	Qn	KW	26.0/5.2	36.0/6.0
Max/min nominal calorific flow rate(Pcs)	Qn	KW	28.8/5.8	39.9/6.7
Max/min power output(80°C-60°C)	Pn	KW	25.7/5.1	35.5/5.9
Max/min power output(50°C-30°C)	Pn	KW	27.4/5.5	37.8/6.3
ERP Rating				
Heating	class	A	A	
Hot water	class	A	A	
Noise level	dB	57	62	
Efficiency				
Efficiency rating (dir.92/42/EEC)	STARS	****	****	
SEDBUK class	class	A / 90.6	A / 90.2	
Nominal calorific flow rate efficiency(60/80°C)Hi/Hs	%	98.0/88.4	98.1/88.5	
Nominal calorific flow rate efficiency(30/50°C)Hi/Hs	%	105.4/95.0	105.0/94.7	
Efficiency at 30% at 30°C Hi/Hs	%	108.0/97.4	107.0/96.5	
Efficiency at 30% at 47°C Hi/Hs	%	98.0/88.4	98.1/88.5	
Minimum calorific flow rate efficiency(60/80°C)Hi/Hs	%	98.0/88.4	98.1/88.5	
General data				
NO _x class	class	5	5	
Available air pressure	Pa	100	100	
Flue gas temperature(G20)(80°C-60°C)	°C	64	64	
CO ₂ content(G20)(80°C-60°C)	%	9.0	9.0	
CO ₂ content(0%O ₂)(80°C-60°C)	ppm	100	100	
O ₂ content(G20)(80°C-60°C)	%	4.5	4.5	
Maximum flue gas flow(G20)(80°C-60°C)	kg/h	42.9	59.4	
Excess air(80°C-60°C)	%	27	27	
Anti-frost protection system start temperature	°C	5	5	
Minimum domestic hot water volume	kg/min	2.5	2.5	
Sanitary water maximum pressure	MPa	0.8	0.8	
Sanitary water minimum pressure	MPa	0.02	0.02	
Expansion tank capacity	L	6.5	8	
Expansion tank preset pressure	MPa	0.1	0.1	
Heating system maximum pressure	MPa	0.25	0.25	
NG normal pressure	KPa	2.0	2.0	
Performance				
Heating water maximum temperature	°C	80-30	80-30	
Hot water maximum temperature	°C	60-30	60-30	
Hot water rate (Δ T=35°C)	kg/min	11.5	16.4	
Electrical				
Electric supply	V~/Hz	230/50	230/50	
Input electric power	W	110	150	
Protection level	-	IPX4D	IPX4D	
Weight	KG	38.8	41.9	
Dimension (Lx H x D)	mm	880X515X350	880X515X365	

► APPLIANCE INSTALLATION

Reference standard

In the United Kingdom, the installation and initial start-up of the boiler must be by a Gas Safe registered installer in accordance with the installation standards currently in effect, as well as with any and all local health and safety standards i.e. Gas Safe.

In the Republic of Ireland the installation and initial start-up of the appliance must be carried out by a competent person in accordance with the current edition of I.S.813 "Domestic Gas Installations" and the current Building Regulations, reference should also be made to the current ETCl rules for electrical installation.

The installation of this appliance must be in accordance with the relevant requirement of the Local Building Regulation, the current I.E.E. Wiring Regulations, the by-laws of the local authority. In Scotland, Regulation and Health and Safety document No. 635, "Electricity at Work Regulations 1989" and in the Republic of Ireland with current edition of I.S.813 and the Local Building Regulation (IE).

C.O.S.H.H.

Materials used in the manufacture of this appliance are non-hazardous and no special precautions are required when servicing.

Code of Practice

Installation should also comply with the following British Standards Code of Practice.

- BS 7593** Treatment of water in domestic hot water central heating systems
- BS 5546** Installation of hot water supplies for domestic purposes
- BS 5440-1** Flue
- BS 5440-2** Air supply

- BS EN 12828:2003** Heating systems in buildings. Design for water-based heating systems.
- BS EN 12831:2003** Heating systems in buildings. Method for calculation of the design heat load.
- BS EN 14336:2004** Heating systems in buildings. Installation and commissioning of water-based heating systems.
- BS 6798** Installation of gas fired hot water boilers of rated input not exceeding 70kW
- BS 6891** Installation of low pressure gas pipes up to 35mm
- BS 7671** IEE Wiring Regulations
- BS 4814** Specification for expansion vessels
- BS 5482** Installation of L.P.G

and in the Republic of Ireland in accordance with the following codes of practice:

I.S.813 Domestic Gas Installations

Avoid installing the boiler where the air inlet can be polluted by chemical products such as chlorine (swimming pool area), or ammonia (hair dresser) or alkaline products (launderette).

Flue

Detailed information on flue assembly can be found in the "Connecting the Flue" section. The boiler must be installed so that the flue terminal is exposed to the free passage of external air at all times and must not be installed in a place likely to cause nuisance. It must not be allowed to discharge into another room or space such as an outhouse or closed lean-to.

Condensing boilers have a tendency to form a plume of water vapour from the flue terminal due to the low temperature of the flue gasses. The terminal should therefore be located with due regard for damage or discolouration that may occur to building within the vicinity and consideration must also be given to adjacent boundaries, openable windows should also be taken into consideration when sighting the flue.

It may be necessary to protect the terminal with a guard, if this is the case it will be necessary to purchase a stainless steel terminal guard. Reference should be made to the building Regulations for guidance.

Ventilation

The room in which the boiler is installed does not require specific ventilation. If the boiler is installed in a cupboard or compartment ventilation is not required for cooling purposes.

Gas supply

The gas installation and tightness testing must be in accordance with IGE/UP/1B. Ensure that the pipe size is adequate for demand including other gas appliances on the same supply.

Power supply

The gas boiler requires 230V-50Hz supply in accordance with IEE regulations, and must also allow the appliance to be electrically isolation. The connection should be via 3 amp double pole fuse isolating switch, and the contacts separated by at least 3 mm on both poles. Alternatively a fused 3 amp, 3 pin plug and unswitched socket may be used, provided it is not used in a room containing a bath or shower, it. It should only supply the gas boiler.

Water supply

The boiler is suitable for sealed systems only. The maximum working pressure for the appliance is 6 bar. All fittings and pipework for the appliance should be of the same standard. If there is a possibility of the incoming mains pressure exceeding 6 bar, particularly at night, then a suitable pressure limiting valve must be fitted.

The boiler is designed to provide hot water on demand to multiple outlets within the property. If there is a requirement for greater demands, for example if the house has several bathrooms and cloakrooms, a vented or unvented hot water storage system may be used.

Shower

Any shower valves used with the appliance should be of a thermostatic or pressure balanced type. Refer to the shower manufacturer or performance guidance and suitability.

Flushing and Water Treatment

The boiler is equipped with a stainless steel heat exchanger.

The detailed recommendations for water treatment are given in BS 7593:2006 (Treatment of water in domestic hot water central heating system); the following notes are given for general guidance.

If the boiler is installed on the existing system, any unsuitable additives must be removed.

Under no circumstances should the boiler be fired before the system has been thoroughly flushed; the flushing procedure must be in line with BS 7593:2006.

We strongly recommend the use of a flushing detergent appropriate for the metals used in the circuit. These include cleansers produced by Fernox and Sentinel, Whose function is to dissolve any foreign matter that may be in the system.

In hard water areas or where large quantities of water are in the system the treatment of water to prevent premature scaling of the main heat exchanger is necessary.

The formation of scale heat compromises the efficiency of the thermic exchanger because

small areas of scale cause a high increase of the temperature of the metallic walls and therefore add to the thermal stress of the heat exchanger.

Demineralised water is more aggressive so in this situation it is necessary to treat the water with an appropriate corrosion inhibitor.

Any treatment of water by additives in the system for frost protection or for corrosion inhibition has to absolutely suitable for all metals used in the circuit.

The use of a corrosion inhibitor in the system such as Fernox MB-1, Sentinel X100 or Fernox system Inhibitor is recommended to prevent corrosion (sludge) damaging the boiler and system;

If anti-freezing substances are to be used in system, check carefully that they are compatible with the metals used in the circuit.

ROC suggests that use of suitable anti-freeze products such as Fernox, which will prevent rust and incrustation taking place.

Periodically check the PH balance of water/ anti-freeze mixture of the boiler circuit and replace it when the amount measured is out of range stipulated by the manufacturer ($7 < \text{pH} < 8$). DO NOT MIX DIFFERENT TYPES OF ANTI-FREEZE

In under-floor heating system, the use of plastic without protection against penetration of oxygen through the walls can cause corrosion of the systems metal parts (metal piping, boiler etc.) through the formation of oxides and bacterial agents.

To prevent this problem it is necessary to use the pipes with an “oxygen proof barrier”, in accordance with standard DIN4726/4729. **If pipes of this kind are not used, keep the system separate by installing heating exchangers of those with a specific system water treatment.**

IMPORTANT

Failure to carry out the water treatment procedure will invalidate the appliance guarantee.

System controls

The boiler is electrically controlled and is compatible with most modern electronic time and temperature controls. The addition of such external controls can be beneficial to the efficient operation of the system. The boiler connections for external controls are 12V DC and so only controls of 12V DC that have voltage free contacts should be used. ROC supply a range wire and wireless system controls, please contact your supplier for more information.

Installation position

The boiler can be installed on any suitable internal wall (sound proofing may be required when installing onto a stud partition wall). Provision must be made to allow for the correct routing of the flue and sighting of terminals to allow the safe and efficient removal of the flue products. A compartment or cupboard may be used provided that it has been built or modified for this purpose. It is not necessary to provide permanent ventilation for cooling purposes. Detailed recommendations are given in BS 5440 Part

2. If it is proposed that it is to be installed in a timber framed building then reference should be made to IGEM Document, IGE/UP/7 or advice sought from Gas Safe.

When a room sealed appliance is installed in a room containing a bath or shower, the appliance and any electrical switch or appliance control, utilizing mains electricity should be situated specifically in accordance with current IEE Wiring regulations.

For unusual locations, special procedures may be necessary. BS6798 gives detailed guidance on this aspect.

Condensate Discharge

The condensate discharge hose from the boiler must have a continuous fall of 2.5° and must be inserted by at least 50mm into a suitable acid resistant pipe –e.g. plastic waste or overflow pipe. The condensate discharge pipe must have a minimum diameter 22mm, must have a continuous fall and preferably be installed and terminated to prevent freezing. The discharge pipe must be terminated in a suitable position:

- i) Connecting into an internal soil stack (at least 450mm above the invert of stack). A trap giving a water seal of at least 75mm must be incorporated into the pipe run, there also must be an air beak upstream of trap.

- ii) Connecting into the waste system of building such as a washing machine or sink trap. The connection must be upstream of the washing machine/sink. If the connection is downstream of the waste trap then an additional trap giving a minimum water seal of 75mm and an air break must be incorporated in the pipe run, as above.

iii) Terminating into a gully, below the grid level but above the water level

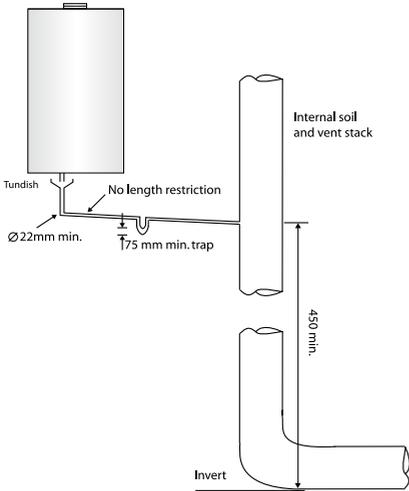
iv) Into a soakaway

Note:

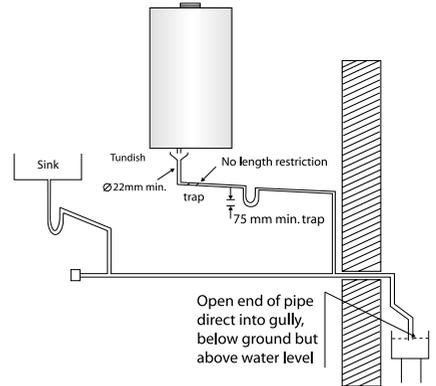
If any condensate pipework is to be installed externally then it should be kept to a minimum and be insulated with a waterproof insulation and have a continuous fall. The total length of external pipe used should not exceed 3 meters.

Some examples of the type of condensate terminations can be found below.

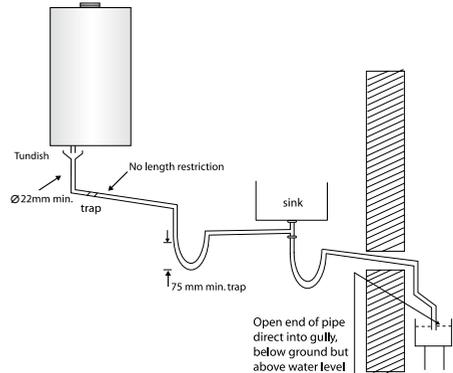
1. Internal termination of condensate drainage pipe to internal stack.



2. External termination of condensate drainage pipe via internal discharge branch (e.g. sink waste) and condensate siphon.



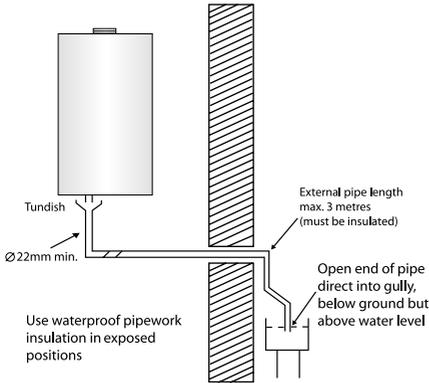
3. External termination of condensate drainage pipe via internal discharge branch (e.g. sink waste-proprietary fitting).



Condensate Discharge

Push fit the flexible condensate pipe into the outlet spigot on the appliance. Cut to length and locate outlet into a tundish

4. External termination of condensate drainage pipe via condensate siphon



Installing the boiler

Please check that you are familiar with the installation requirement before commencing work.

The installation accessories described in the following list are included in the boiler package:

Boiler Box:

- Gas boiler
- Connection valves

Flue Box:

- coaxial 1m terminal flue
- 90°C coaxial elbow

Installation bag:

- Hanging plate
- Expansion screws (used to fix the hanging plate)

Accessory bag:

- User's manual, Installation manual and warranty card
- Sealing cushion
- Paper template

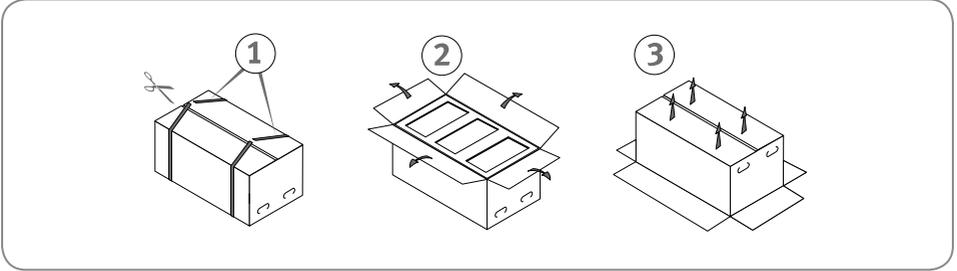
Installation noise

Please comply with the relevant national or region standard or guidelines when installing the wall mounted gas boiler. The noise of installation should be controlled within the local standard requirement, pay special attention to the any noise control time zones.

Appliance should be installed on a flat, firm wall that can support the weight of the boiler, also ensure the wall surface is not combustible.

Opening the box

The appliance was packed in a hard box with foam protection. Pay attention that the arrow in the carton should be down when opening the box. (Refer to below diagram)

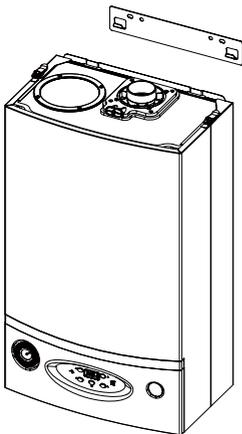


Position the boiler on the wall

Fix the paper template to the wall to ensure the correct position of the hanging bracket and the flue hole.

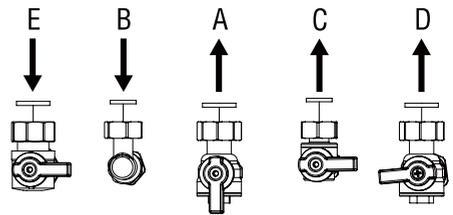
Drill and plug the wall and secure the hanging bracket using the screws provided ensure the hanging bracket is level.

Remove all the protective packaging from the gas boiler and place the boiler on the hanging bracket.



Installation of pipework

Remove the caps and valves from the boiler. Connect the valves to the boiler has shown below and the valves to the heating system.



We would recommend that a street elbow is used when connecting the Cold water, Domestic hot water, gas, central heating inlet and outlet valves to the external pipe work.

Draining the boiler

To drain the water contained within the boiler, attach a pipe (garden hose pipe) to the outlet on the pump – (diagram required). Use a 10/8 mm spanner to open the valve and allow the water to drain out of the boiler into a sink or outside the property. Please ensure the valve is closed before refilling the boiler.

Safety relief valve

Safety relief valve has a discharge pipe which should be connected to a 15 mm suitable plastic or copper pipe using either a compression fitting or a push fit, this pipe should terminate below the boiler safely outside the building; ensure the discharged does not endanger any passerby.

Gas connection

Please ensure, using the labels on the package and the data plate on the appliance itself, that the boiler is in the correct country and that the gas category for which the boiler was designed corresponds to one of the categories available in the country where it will be used.

The gas supply piping must be created and measured out in compliance with specific legal requirements and in accordance with the maximum power of boiler.

Check that the supplied gas corresponds to the type of gas for with the boiler was designed (see the data plate located on the appliance itself).

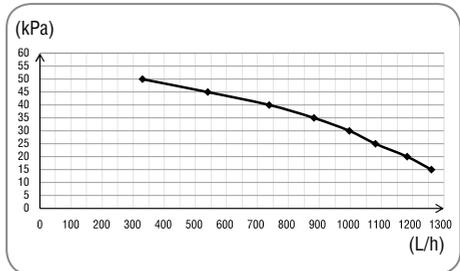
The gas supply pipe should be sized to provide a min 20mbar gas pressure when gas boiler is running on maximum power.

Water connection

Please ensure the pipe system has been flushed completely before connecting the cold supply to the boiler. Please check the maximum water pressure and make sure it does not exceeds 6 bar, if it exceeds 6 bar then a pressure reducing valve should be equipped.

Before connecting the heating pipe to the gas boiler, wash the pipe and radiator cleaning all foreign body in the pipes, otherwise these foreign bodies may cause obstructions. Please ensure the heating system has been pressure tested to ensure there are no leaks. Please be careful when installing the pipe connection, to avoid the appliance leaking.

Circulation pump pressure



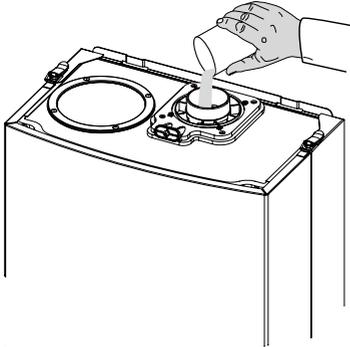
When calculating the size of the heating installations please refer to the above pump pressure diagram.

Note:

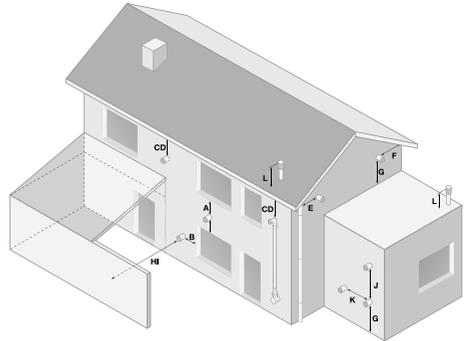
When using for the first time, the trap should be filled with water. To do this add 1/4 litre of water via the flue outlet as shown on the diagram below.

Warning!

Insufficient water in the tank can cause the appliance to smoke for a short time.



Connecting the flue



Note:

The appliance must be installed so that the flue terminal is exposed to outdoor air.

The terminal must not discharge into another room or space such as an outhouse or lean-to. It is important that the position of the terminal allows a free passage of air across it at all times.

The terminal should be located with due regard for the damage or discoloration that might occur on buildings in the vicinity, it must also be located in a place not likely to cause nuisance. In cold or humid weather water vapor may condense on leaving the flue terminal. The effect of such “steaming” must be considered.

If the terminal is less than 2 meters above a balcony, above ground or above a flat roof to which people have access, then a suitable stainless steel terminal guard must be fitted.

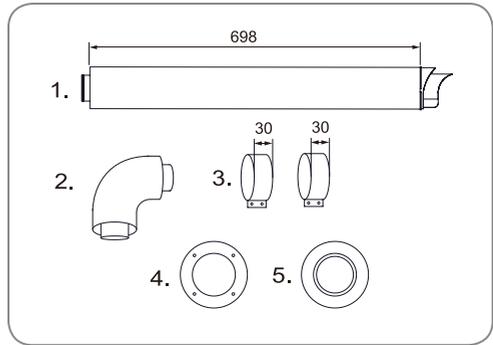
The minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in diagram below.

- A Directly below an opening, window, etc 300mm
- B Horizontally to a window 300mm
- C Below gutters, soils pipes or drain pipes 75mm
- D Below eaves 200mm
- E From vertical drain pipe or soil pipe 75mm
- F From internal or external corner 300mm
- H From a surface facing the terminal 500mm
- I From a terminal facing a terminal 500mm
- J Vertically from a terminal on the same wall 1500mm
- K Horizontally from a terminal on the same wall 300mm
- L Fixed by vertical flue terminal

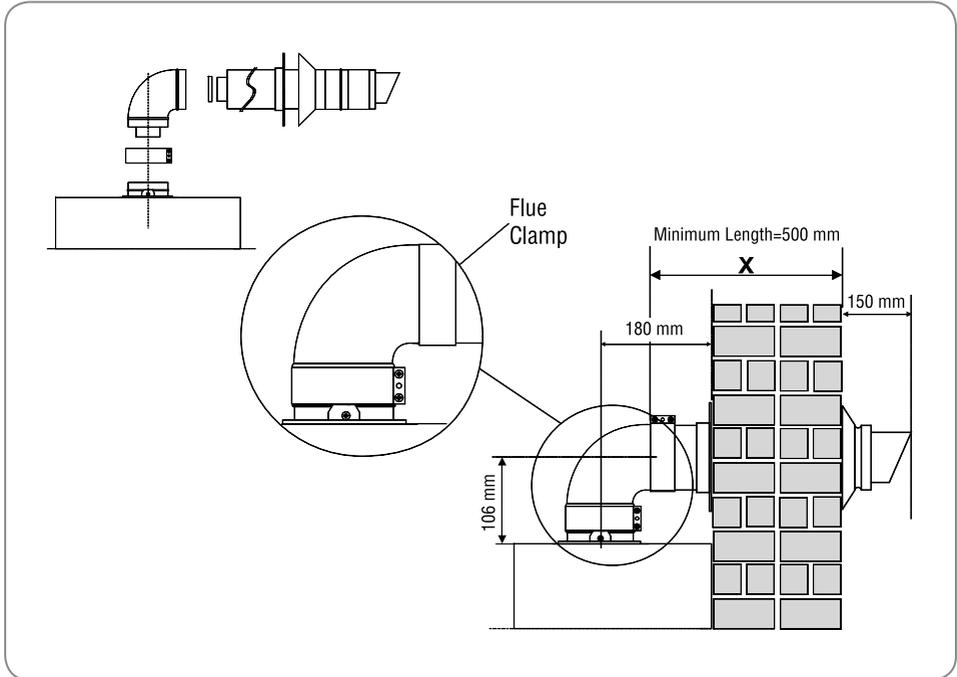
Flue system

Standard 100mm flue system includes:

- 1) Horizontal flue duct with external wall seal
- 2) 90° elbow
- 3) 2X30mm flue duct clamp
- 4) Internal trim ring
- 5) External wall seal



Standard flue installation



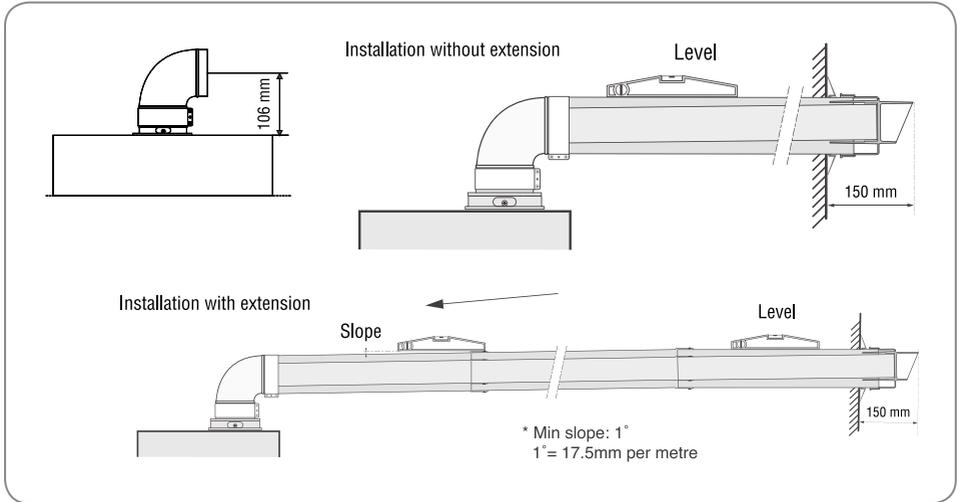
⚠ Warning!

The flue must not be in contact with or close to inflammable material and must not pass through building structures or walls made of inflammable material.

When replacing an old appliance, the flue system must be changed.

Important

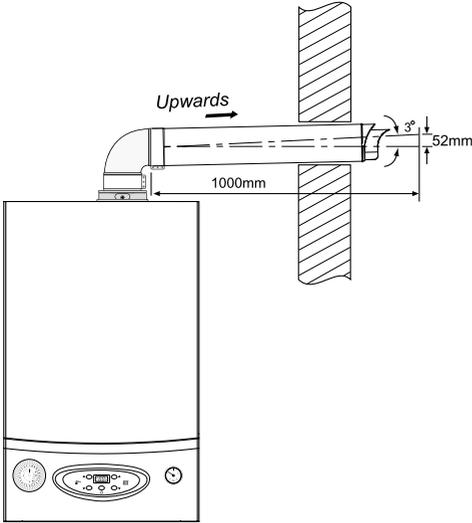
Ensure that the flue is not blocked.
Ensure that the flue is supported and assembled in accordance with these instructions.



Fitting the Coaxial Flue (Ø 60 / 100 Horizontal)

Contents:

- 1x Silicone O-Ring (60mm)
- 1x Elbow (90°)
- 2x Wall Seals (Internal & External)
- 1x Flue Pipe including Terminal (1 metre - 60/100)
- 2x Flue Clamps
- 4x Screws
- 2x Seals



Once the boiler has been secured with the hanging brackets to the wall and the required holes have been made to allow the flue to exit the building. Insert the 90° elbow into the top of the boiler and rotate as required. Please note the elbow can be rotated 360° on its vertical axis.

Using the 30mm clamp to seal and secure the elbow to the boiler.

Measure the required length of the flue; measuring from the surface of the external wall to the face of the elbow. Cut the flue duct to the required length from the plain end, cutting the outer flue ducting first and then the inner and maintaining the length between the inner and outer flue.

Slide the internal trim ring onto the flue duct, push the flue duct through the external wall and attach the other end to the 90° elbow. Using the 48mm clamp to fix the flue duct to the elbow. Fix the internal trim ring to the internal wall. Attach the outer wall seal to the flue duct from the outside wall.

If the flue requires extending, the connections are push fit, but ensure each meter is secured with a flue bracket.

Before installing the flue, ensure the maximum length of flue ducting does not exceed 10m for the 28Kw and 5m for the 40Kw. You should reduce the maximum length of the flue by 1m for each 90° elbow used and 0.5m for each 45° elbow.

Max length for a Horizontal flue

The maximum length for a horizontal flue is 4.0 m which includes the use of one 87° elbow.

The maximum length is reduced by 1.0 for each additional 87° elbow.

The Maximum length of flue is reduced by 0.5 m for each additional 45° elbow.

Max length for a Vertical flue

The maximum length for a vertical flue is 7.0 m.

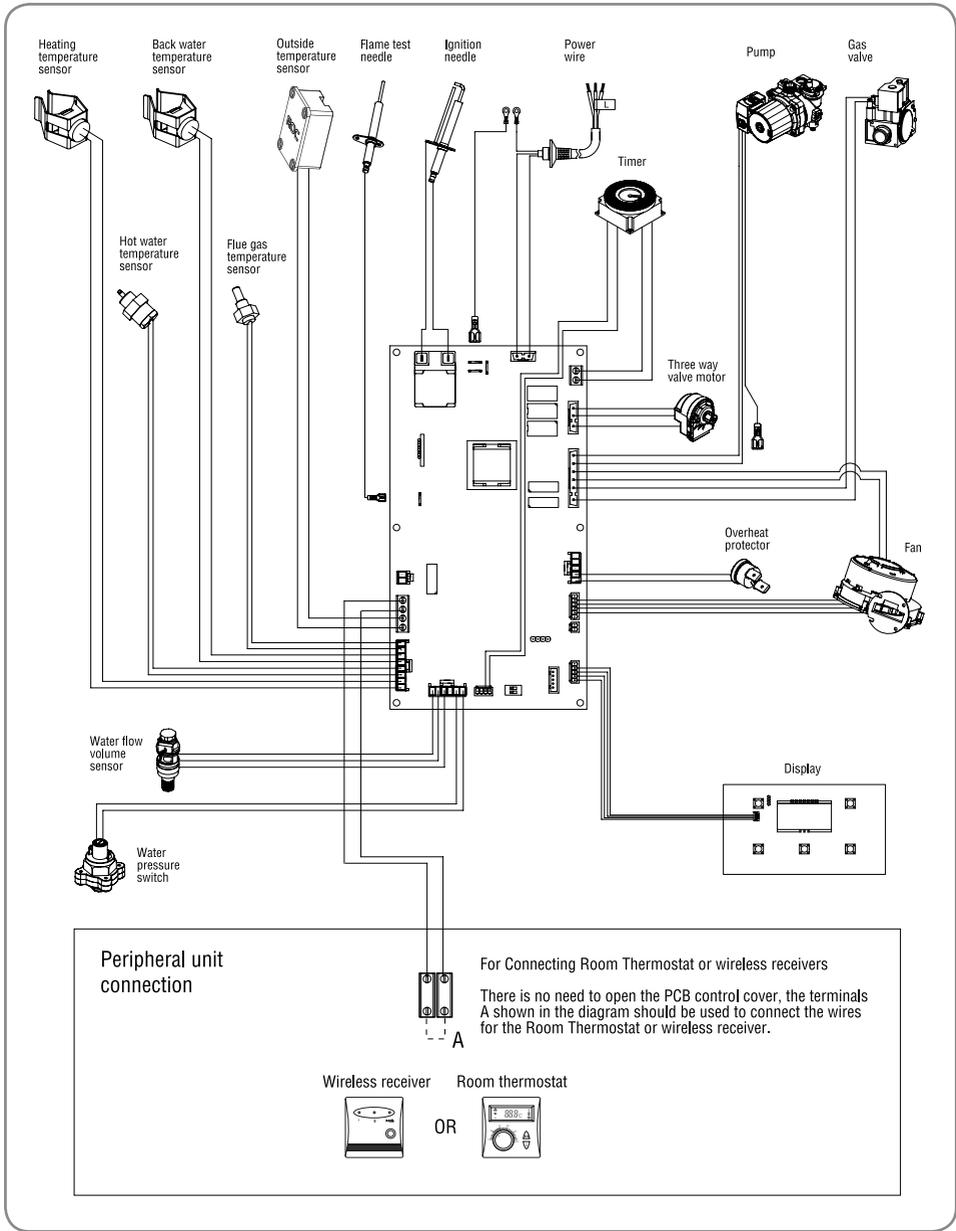
The maximum length is reduced by 1.0 for each additional 87° elbow.

The Maximum length of flue is reduced by 0.5 m for each additional 45° elbow.

Instruction and precautions for power connection

- The boiler should not have a plug socket only a flex
- Voltage/frequency for the gas boiler:230 V~/50Hz
- Please obey the following steps when operate the gas boiler:
 - Do not touch the appliance with parts of the body that are wet or damp and/or bare feet.
 - Do not pull the power cable.
 - Do not expose the appliance to direct sun and rain.
 - Do not allow children or inexperienced people to operate the appliance.
- User should not change the power cables. If the power cable has been damage, turn off the appliance. Ask an installer/engineer to change the power cable.
- For electrical safety, please make the correct earth connection with accordance to local safety rules.
- The above safety requirements must be checked. If you have any questions, please ask the installer/engineer to check the appliance carefully. The manufacturer will not take any responsibility for any losses caused by not earthing the appliance.
- Ask the installer/engineer to check the circuit line, make sure the circuit can match the maximum power capacity of the appliance. The maximum capacity is indicated in the technical section.
- Please do not use multi plugs, extension leads or adaptors. Use a two-phase switch when connecting to the power grid, the distance between the contact points should be at least 3mm, which as stipulated in the current safety rules regulations.

Connecting additional controls



Appliance commissioning

⚠ Warning!

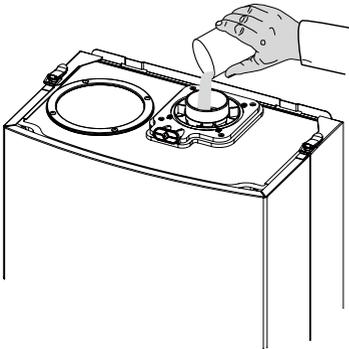
This boiler can only be used for domestic hot water and indoor heating!

The gas boiler was designed for inside room installation according to the current laws and regulations so cannot be installed and used outdoors. If installed in outdoor environment, it may not work and can be damaged!

Appliance should only be installed on a flat, firm wall that can support the weight of the boiler, also ensure the wall surface is not combustible.

👉 Note:

When using for the first time, the water tank should be filled with water. Therefore, before fixing the flue, 1/4 litre of water should be poured into the flue outlet (see diagram below).



⚠ Warning!

Insufficient water in the tank can cause the appliance to smoke for a short time.

The boiler heats the heating water/ hot water/ domestic hot water (DHW) to a certain temperature. Before supplying heating/ domestic hot water to the users, the boiler should be connected to a heating supplying network, heat dissipation device and/ or domestic hot water supplying network which match the function and capacity of the gas boiler. Before connecting the gas boiler to the system, please ask the installer/engineer to make the following operation:

- a). Heating system pipe line must be completely rinsed and cleaned. Any residues left in the pipe will affect the appliance's operation.
- b). Check if the current gas type is suitable for the gas boiler. Check the technical data of the applicable gas type in the packing instruction and data plate to see if it is consistent with the current gas type
- c). Check if the ventilation flue pipe is applicable and if there are any blockages. The appliance cannot be connected to a public chimney. The gas boiler and the flue pipe connector can only be installed after all the above steps are carried out.

► APPLIANCE ADJUSTMENT

Check the circuit and power

Check if the voltage matches with the requirements, if the polarity of power is correct, if the earth connection is correct and if the resistance to ground is normal.

Any problems with the power supply will lead to improper working and even damage of the appliance, and it may cause injuries.

Cleaning of heating system

Carefully rinse the entire heating system to remove all residues that might be left in the system before it is put into operation, to avoid blockage and damage to the system during operation.

Fill water to the D.H.W.

Close all hot water draw off taps.

Open the cold water inlet cock supplied with the connection kit, slowly open each draw off tap and close them only when clear water which is free of bubbles is visible.

- Open the central heating flow and return cock supplied with the connection kit.
- Lift the cap on the automatic air release valve and leave open permanently.
- Close all air release valves on the central heating system.
- Gradually open the valves at the filling loop until you can hear water flowing, do not open the valve fully.
- Open each of the air release taps on the radiator starting with the lowest point and close them only when clear water free of air bubbles are visible.
- Purge the air from the pump by unscrewing the pump plug anti-clockwise, also manually rotate the pump shaft in the direction indicated by the pump label to ensure the pump is free, refit the pump plug.
- Continue filling the system until at least 1.0 to 1.5 bar registers on the pressure gauge.
- Inspect the system for water leaks and remedy any that are discovered.

Warning!

The system pressure should not exceed 1.5 bar. Always remember to turn off the filling loop immediately after filling the system.

Gas Supply

Inspect the entire installation including the gas meter and test for tightness. The entire installation should be in accordance with the relevant standards. In the UK this is BS 6891. The connection on the appliance is a 15mm (22mm on the 40kW) nut and olive located at the rear of the gas service cock.

If the gas supply serves other appliances, ensure that an adequate supply is available both to the boiler and the other appliances when they are in use at the same time.

Pipe work must be of an adequate size. The final pipes size must not be smaller than the appliance inlet size.

Open the gas cock (supplied with the connection kit) to the appliance and check the gas connection on the appliance for leaks.

Water Treatment

The boiler is equipped with a stainless steel heat exchanger.

The detailed recommendations for water treatment are given in BS 7593:2006: the following notes are given for general guidance; If the boiler is installed on an existing system, any unsuitable additives must be removed; Under no circumstances should the boiler be fired before the system has been thoroughly flushed; the flushing procedure must be in line with BS 7593:2006.

Firstly fill the central heating system with the power off, and flush through cold, fill the central heating system again, adding a flushing detergent, run the boiler on central heating until it reaches its operating temperature and flush the system, refill the system with a suitable corrosion inhibitor.

Checks before operation

The installer/engineer will instruct you on how to use the appliance when commissioning the boiler or service for the first time.

Precautions before operation

The first ignition must be performed by the installer/engineer.

Please check the following steps before turn on the gas boiler:

- Technical data on the data plate must match the supply of electricity, water, and gas supply.
 - Flue pipes should be unobstructed and installed as instructed.
 - Ensure the minimum space for maintenance when there is furniture, walls or other obstacles surrounds.
- Make sure all the heating system pipes and DHW pipes connecting to the boiler have been cleaned carefully.
- Check the gas pipe line and water pipe connection to see if there is any leakage.

Note:

Strictly prohibit children and people who do not know how to operate the gas boiler.

Please read “manual for installation and maintenance” and “user’s guide for domestic gas boiler” carefully before using. If you have any queries, please contact the after-service department.

Opening the valves

- Make sure the cold water inlet valve has already been opened. This can be tested by turn on the tap of D.H.W. until there is water flowing out.
- Confirm the heating return water valve and valve on the gas pipe are all opened.
- The safety valve is only for safety purpose, you should not touch it.

Test the pressure of system

Test the pressure of system on the pressure gauge. The pointer on the gauge should be between 1.0-1.2bar. If the pointer stayed below 1.0 bar when the appliance is cooled, please add water to the system, see “adding water to appliance”

Add water to appliance

If you notice that the pressure on the pressure gauge is below 1.0~1.2 bar, you will have to add water to the appliance.

When the boiler is operated for the first time, there may be some air stored in the system. During operation the air will be removed, and the system pressure will go down, so you may need to add more water to the appliance if the pressure goes below 1.0 bar. This is a normal procedure.

Note:

If you are still adding water frequently after a long period use, there may be a leak in the heating system. Please check the system and seal the leakage.

Precautions for gas adjustment

The gas boiler must be installed by an installer/engineer according to the current laws and regulations. Property loses and person harm may occur because of incorrect installation. The manufacturer will not take any responsibility for that.

Before installation, ensure the new gas pipes that are installed are clean.

The gas installer must make the following checks before the first operation:

- a). check the leak tightness of the gas pipe.
- b). Adjust the gas pressure according to the requirement of gas boiler.
- c). The gas type must match the gas requirement indicated in technical tag.
- d). Gas supply pressure must match the requirement indicated in technical tag.
- e). Gas supply must match the requirement of gas boiler, must be equipped with safety and test system requested by the laws and regulations.

Instruction of gas use:

The gas pipe cannot be used as the earth connection of electrics.

Please close gas main valve when the user is not at home for long periods, you should also drain out the water from heating and hot water system to avoid water freezing in the system.

What to do if you smell gas

If there is a smell of gas in the building, proceed as follows:

Avoid rooms that smell of gas.

If possible, open doors and windows fully and ensure air is circulating.

Avoid the use of naked flames.

Do not smoke.

Do not use any electrical switches, plugs, doorbells, telephones or other communication systems in the building.

turn off your gas supply at the meter (and leave it switched off until you're sure it's safe to turn it back on again).

If possible, close the gas stop cock on the unit.

Warn the occupants in the building.

Leave the building.

If you can actually hear gas leaking, leave the building immediately and ensure that no third parties enter the building.

Alert the police and fire brigade when you are outside the building.

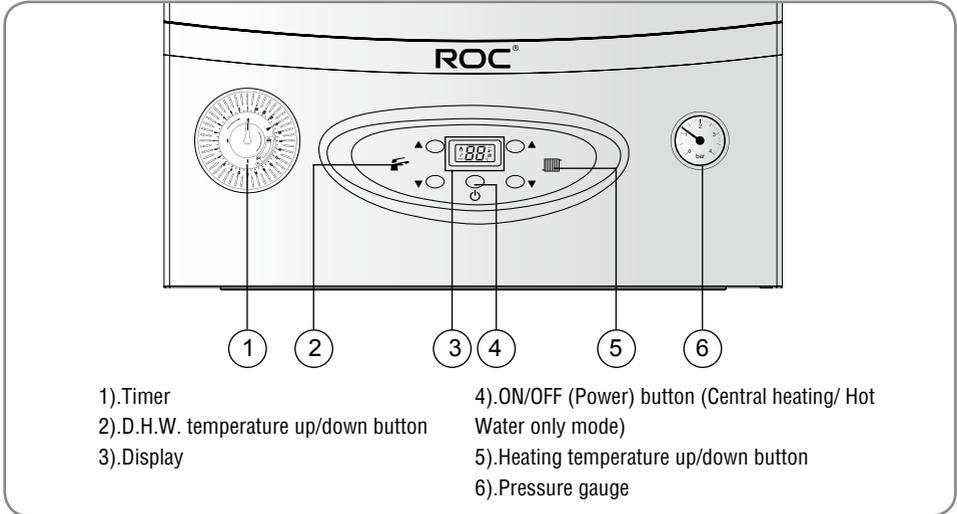
Use a telephone outside the building to inform the gas supply company or National Grid Transco 0800 111999.

First operation

The installer is responsible for conducting the first ignition and showing the user how to use the appliance. The gas pressure must be checked when conducting the first ignition.

Warning!

When in heating mode, the gas boiler will need two minutes to reach its nominal capacity after ignition. Within these two minutes, the gas volume will be lower than the nominal capacity gas volume; this setting is for the purpose of safety ignition.



Heating

The display will show  when the boiler has power. Press ON/OFF  button for 5 seconds, the boiler will be turned on and work under Central heating, and the display

will show . If you need to turn off the boiler, press ON/OFF  button for 5 seconds.

Setting heating temperature

Press heating temperature up  /down  button to set the temperature of central heating (press “up” button to increase the temperature and press “down” button to decrease the temperature)

Note:

The boiler has a built-in anti-short time circle energy saving control program. in central heating mode, it will prevent the boiler from starting frequently in a short space of time to save energy. So when the boiler has just switched off, it will not start again for several minutes even if you adjust the heating temperature to higher level.

At the water usage point (such as basin, sink, etc), the boiler will run and supply hot water automatically when you open the hot water tap regardless to if the boiler is in Central heating/ Hot water mode.

The boiler will turn off the hot water function automatically when you close the hot water tap (it will continue to supply heating as requested).

The boiler can be switched from mode (Hot water/ Central heating) by pressing the heating up button and the hot water up button together for 3 seconds.

Setting the hot water temperature

Press hot water temperature up  / down  button to set the temperature of hot water (press “up” button to increase the temperature and press “down” button to decrease the temperature)

Note:

The above operation is used for adjusting the temperature of D.H.W. If it still has not reached your use request when press the “up” button to the maximum temperature, you may need to turn down the hot water tap a little in order to reach the requested temperature.

Warning!

If there is a danger of freezing, the gas and power supply should be left on, so the boilers anti-freezer system can function. But if no one is at home for a long period, please drain out water from the appliance, heating and hot water system, and then turn off the gas and power supply.

ECS Control Operations

Activate the parameter menu

To activate the parameter menu, you must continually press ON/OFF  button, “Heating temperature up”  and “Heating temperature down”  for at least for 10 seconds at the same time. Pr01 will show on the LCD display. You must be extremely careful with when in the parameter menu.

Select the parameter from the menu

After activating the menu, the users can use “Heating temperature up”  and “Heating

temperature down”  button to select a parameter, then press ON/OFF  and “Heating temperature up”  at the same time to show the real value of the selected parameter. See **ECS Parameter Chart**

Change the parameter on the menu

To change the actual value of the selected parameter, users’ can use “Heating temperature up”  and “Heating temperature down”  button (refer to the ECS parameter chart) to choose a new value, press ON/OFF  button to confirm (and store) the new selected value.

Exit the parameter menu

To exit the parameter menu, the user must continually press ON/OFF  button, “Heating temperature up”  and “Heating temperature down”  button for at least 10 seconds at same time.

Set fan speeds

Press ON/OFF  button and  for more than 5 seconds to enter into the setting of Max. speed of the fan when the boiler is under normal working state, the display shows FH, press ON/OFF  button again to enter into the parameter setting mode, use  and  button to set the speed. The setting range is from 4000 to 7200 rpm.

Set the Min. speed of the fan

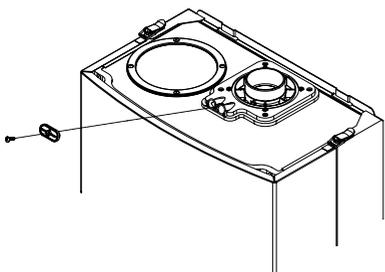
Press ON/OFF  button and  for less than 5 seconds to enter into the setting of Min. speed of the fan when the boiler is under normal working state, the display shows FL, press ON/OFF  button again to enter into parameter setting mode, use  and  button can set the speed. The speed range is from 900~2500 rpm.

ECS Parameter Chart

Program number	Description	Default Value	Value
Pr07	Highest heating temperature setting	80	50/60/80/85°C
Pr09	Scanning test function activation	00	01=Minimum power scanning test 04=heating power scanning test
Pr10	Anti-circulating time	06 (1 minute)	03=30 Seconds 06=60 Seconds 18=180 Seconds
Pr12	Max. heating power	99	The % power required this is done in the following example i.e. if you require 18KW then the calculation is as follows $100 / 28 \times 18 = 64$ (for a 28KW boiler) or $100 / 40 \times 18 = 45$ (for a 40KW boiler)
Pr13	Working mode of heating pump	04	04=running all the time
Pr14	Ignition power	$FL+(FH-FL)/2$	FL, FH are both the values after setting
Pr15	OTC option	00	01~12 External temperature factor option
Pr20	Heating return difference temperature	15	10. 15. 20. 25°C
Pr21	Max. temperature for DHW	55	50. 55. 60°C
Pr22	DHW starting signal	00	00 pulse signal
Pr23	Water pressure detection way	00	00 water pressure switch
Pr24	Heat exchange mode	01	01 two heat exchangers

Flue gas analysis

The boiler is equipped with two pressure access points, from which you can observe the temperature of the combustion gas, flammable air and the mixture of oxygen and carbon dioxide outside the top of flue pipe enter into the pressure holes, unscrew fixed flue pipe cap and sealing gasket



When conducting flue gas analysis or power adjustment, the CO₂ of the flue gas and revolving speed of the fan should correspond with the following table:

ROC COMBI HE 28		
Power	Air speed (rpm)	CO ₂ %
Max. power	6200-6600	9.2±0.2
Min. power	1700-2400	8.8±0.2

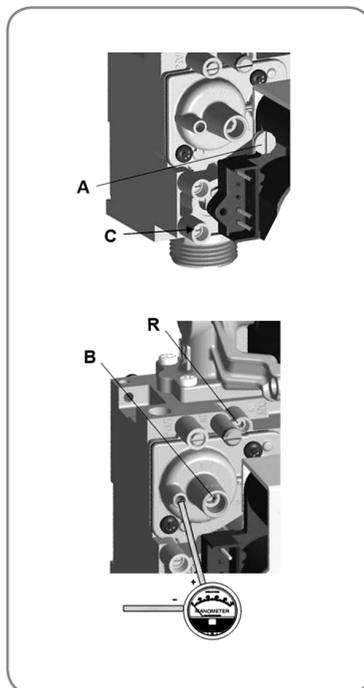
ROC COMBI HE 40		
Power	Air speed (rpm)	CO ₂ %
Max. power	7200-7800	9.2±0.2
Min. power	1700-2400	8.8±0.2

⚠ Warning!

It is forbid to operate power adjustments when the gas inlet pressure is not between 17-25. The tightness of all the control points must be checked after adjusting the power.

Capacity adjustment

1.) Preparation: unscrew the gas valve inlet and connect the pressure gauge (picture-C) and unscrew plug A with 6.5mm flat screwdriver which is covering B (see below pictures) .



2.) Gas pressure test, Turn on the boiler, open the hot water to maximum water flow. Enter ECS menu (see page 32) select "Pr09 parameter 04", test the gas inlet pressure, and the pressure should be between 17~25 mbar.

3.) Maximum power adjustment: re-enter ECS menu "PR09 parameter 04" (you may have to reenter this menu several times as the program only lasts for 20 seconds) Now adjust the screw with 2.5mm spanner (picture-R) and make the value of CO₂ achieve the required point (CO₂ %=9.2±0.2).

4.) Minimum power adjustment: enter ECS menu and select Pr09 parameters 01, adjust the screw (picture-A),and make the value of CO₂ achieve the required point (CO₂ %=8.8±0.2). (you may have to reenter this menu several times as the program only lasts for 20 seconds)

5.) Due to the interactional effect, you should recheck the maximum and minimum power to ensure the CO₂ levels are still within range, and adjust as necessary.

► MAINTENANCE

Precautions

● Installation and maintenance of the gas boiler must be performed by the installer/engineer according to the operation instructions of the manufacturer and local current standard operation rules.

Note:

The installer/engineer must be Gas Safe registered for installation and maintenance of domestic heating and hot water appliances.

- Any maintenance must only be performed by a Gas Safe registered installer/engineer and can only use original components from the manufacturer.
- If the ownership of the appliance is transferred, or the appliance is moved or reinstalled, the <User's guide> and <Manual for installation and maintenance> should accompany the appliance.
- All accessories of the appliance should be the original components from the manufacturer or the manufacturer's warranty will be void.
- The appliance should be only used for domestic heating and hot water just as indicated in User's guide.
- The manufacturer will not take any responsibility for any property losses and persons harmed caused by incorrect installation and operation.
- Do not use the appliance if a problem emerges during installation and operation, please contact the supplier or local after-sales service department.
- Please use a wet cloth and soapy water to clean the externals of the appliance. Other cleaning liquids should not be used.

Anti-freeze function

The gas boiler has anti-freeze function.

If the gas and power is on, the boiler will start to work automatically when the heating water temperature is below 5°C, and heat the water in the system to about 30°C.

Warning!

The anti-freeze function may not ensure water will circulate the whole heating system.

If the gas boiler stop running for several hours in very cold weather, it may lead to the system becoming frozen. If you are not at home during freezing period, be sure to keep the heating function running, and keep the temperature of every room above the freezing point.

However, when there is some external failure, such as gas or, power outage or air exhaust system are abnormal, the inner inspection device will turn off the boiler automatically, so it can't protect against freezing. To avoid such situation, if there are no people at home for long periods, you may ask the installer/engineer to drain out the water in heating system and gas boiler.

Warning!

When the gas boiler is executing the anti-freeze function, it may need to conduct combustion work. So the gas supply must be sure smooth and water in the heating system.

Error Codes

No.	Description	Code
1	Flame cannot be detected after ignition (Ignition fault)	Er 01 + RESET
2	Overheat inside	Er 02 + RESET
3	Residual flame fault (Flame signal can be detected after the gas valve is closed)	Er 03 + RESET
4	Water pressure fault in pipeline	Er 04 + 
5	Fan control fault/Air pressure switch fault/flue system fault	Er 05 + 
6	NTC-temperature sensor fault (Heating)	Er 06 + 
7	NTC-temperature sensor fault (DHW)	Er 07 + 
8	External temperature sensor fault	Er 08 + 
9	Flue system temperature sensor fault	Er 09 + 
10	Overheat (>90°C) of flue exhaust system	Er 10 + RESET
11	Fake flame (flame can be detected before the boiler is turned on)	Er 11 + RESET
12	Return-back water temperature sensor fault	Er 12 + 
13	EEPROM fault	Er 13 + 
14	The heating water is overheated (>93°C)	Er 14 + RESET
15	Gas valve circuits fault	Er 15 + 
16	Continuous flameout fault, continue to flameout 8 times in 5 minutes	Er 16 + 
17	Electric supply voltage fault, supply voltage is too low	Er 17 + RESET
18	Power frequency fault, the deviation between power supply frequency and reference frequency >2Hz	Er 18 + RESET

Er 01 Fault:

When the display shows Er01 fault, it means the flame cannot be detected. Check if the gas elements and pressure; if there is any air inside the gas pipe; if the gas valve, igniter, ignition needle or the flame detecting needle is damaged.

Er 02 Fault:

When the temperature of heat exchange condensing system is anomalous, the Er 02 will occur. This error appears when the temperature of water over 100°C, the overheat protector will activate. You should examine if the heating pipe has been become blocked, check all the valves in heating pipe are opened, also to check if the discharging of condensing water is normal.

Er 03 Fault:

Er03 fault occurs when the flame signal can be detected after the gas valve is closed. Generally caused by damp in flame detecting needle or circuit board, please dry them.

Er 04 Fault:

The display indicated Er04 means there is not enough water in the heating pipe. Check the pressure gauge and add water if there is less than 1.0 bar pressure (water pressure needs to be between 1.0 and 1.2 bar), or test the water pressure switch for damage.

Er 05 Fault:

Er 05 means there is a fault with the flue system, it maybe cause by the fan, please check the fan and the connecting wires to see if they are loose or damaged.

Er 06 Fault:

Er 06 indicated that the temperature of heating water is unusual, it could be caused by extremely cold water, or damage of the heating NTC temperature sensor. Check if the water temperature less than -20°C. Else the NTC temperature sensor maybe damaged.

Er 07 Fault:

Er 07 indicated that the temperature of DHW water is unusual, it could be caused by extremely cold water, or damage to the DHW NTC temperature sensor. Check if the water temperature less than -20°C. Else the NTC temperature sensor maybe damaged.

Er 08 Fault:

Er08 indicated that the external temperature sensor is out of order or disconnection. Check the connection or replace the external temperature sensor, or stop the function in the ECS menu.

Er 09 Fault:

Er09 means the temperature sensor of the flue system is out of order or disconnected, check the connection wire or replace the sensor.

Er 10 Fault:

Er10 means the temperature of flue system is too hot, check the flue system or clean the heat exchanger.

Er 11 Fault:

Er11 flame can be detected before the boiler is turned on, there maybe be a fault one the circuit or flame detection

Er 12 Fault:

Er12 means return-back water temperature sensor is anomalous. Check the connection wires or replace the return-back water temperature sensor.

Er 13 Fault:

Er13 means EEPROM fault has occurred on the inner circuit board. Please replace the circuit board.

Er 14 Fault:

Er14 means the temperature of heating water is $\geq 93^{\circ}\text{C}$, please check if the heating pipeline is blocked or if all the valves in the heating pipeline are opened or if the discharge of condensing water is normal.

Er 15 Fault:

Er15 means the gas valve circuit inside the circuit board is out of order. Check if the circuit is damp.

Er 16 Fault:

If flameout occurred during the combustion operation process (the gas valve close in one second), the system will try to reignite automatically. If the unexpected flameout has been detected for 8 times continuously in 5 minutes, then the flameout fault will be occurred and it will be locked which need to be reset manually.

Er 17 Fault:

If the electric supply voltage is lower than 130V for 10 seconds after the boiler is connected to the power, then it will be considered as over-low voltage, and the boiler will enter into failure status. Meanwhile, other components will be closed except the pump and fan will run for once to ensure the safe operation of the boiler (when the voltage is too low, the executive components cannot guarantee to be started safely, so the gas valve has to be kept in close state). When the voltage is higher than 155V, the electric supply voltage fault will be solved automatically.

Er 18 Fault:

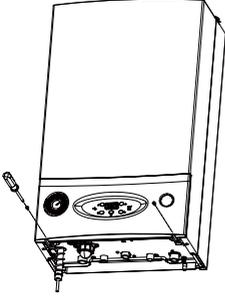
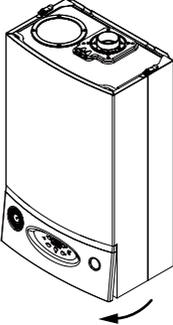
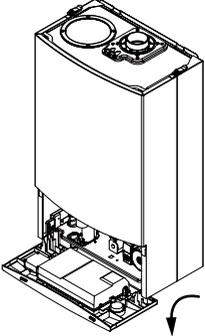
Test the actual working frequency of the power within the beginning 5 seconds before connecting to the power to confirm the reference working frequency.

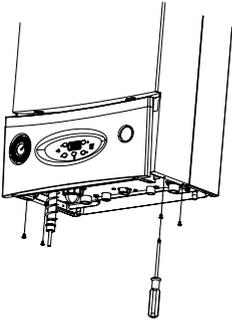
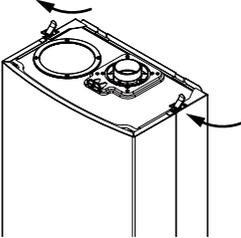
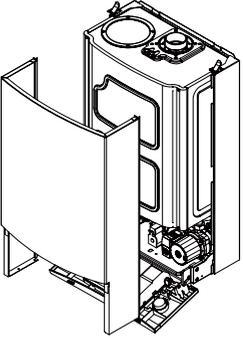
If the working frequency is around $50\pm 3\text{Hz}$, then the power reference working frequency is considered to be 50Hz; if the working frequency is around $60\pm 3\text{Hz}$, then the power reference working frequency is considered to be 60Hz.

When confirm the power reference working frequency, if the power working frequency is 2Hz lower or higher than the reference working frequency for 5 seconds, then it will be considered to be abnormal power working frequency and the boiler will enter into failure status. Meanwhile, other components will be closed except the pump and fan will run for once to ensure the safe operation of the boiler. When the power working frequency is $\pm 2\text{Hz}$ than the reference working frequency, the power frequency fault will be solved automatically.

► GAS BOILER DISMANTLING INSTRUCTION

General access

General access		
Tools:  		Time: 3 min 
1. 		
Use screw driver unscrew the two screws of bottom plate.	Lift the plastic panel from bottom.	Turn around the plastic panel

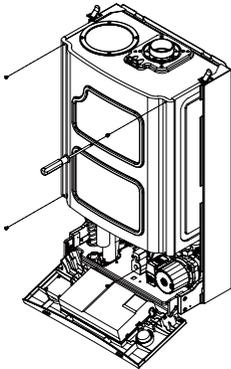
General access		
Tools:  		
2. 		
Unscrew the 4 screws of plastic panel from the bottom plate.	Unlock the upper buckle.	Dismantle the facing cover from front.

General access

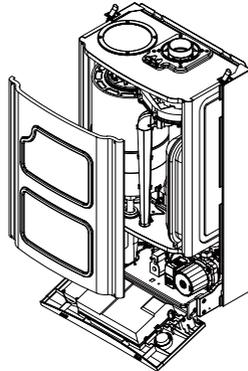
Tools:



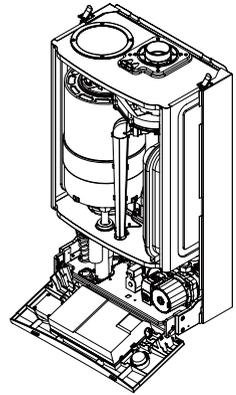
3.



Unscrew the 4 screws of the sealing cover of combustion system



Dismantle the facing cover from front.



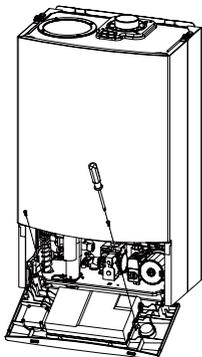
Circuit component

Electrical box operation

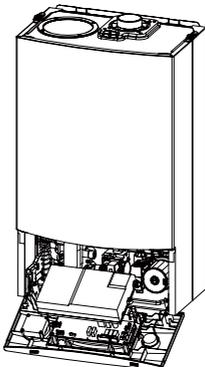
Tools:  

Time: 4 min 

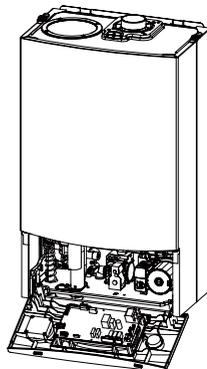
1.



Take out the screws on the both sides of Electrical box



Take out the Electrical box back cover upward.

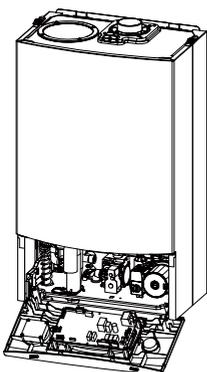


Fuse replacement

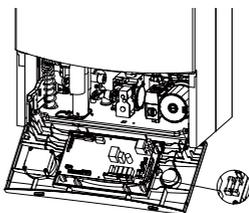
Tools:  

Time: 4 min 

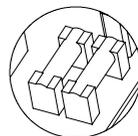
1.



Open the Electrical box as shown above

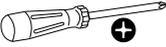


Remove the fuse



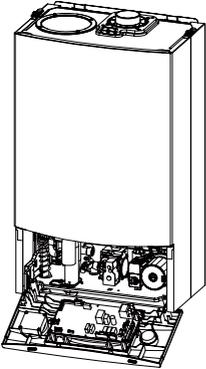
PCB and Display

PCB replacement

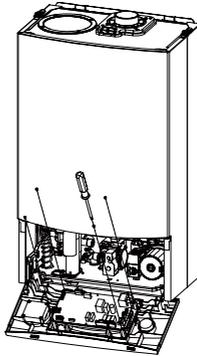
Tools:  

Time: 6 min 

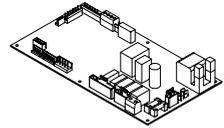
1.



Operate Electrical box as shown above



Dismantle the 4 screws on the PCB



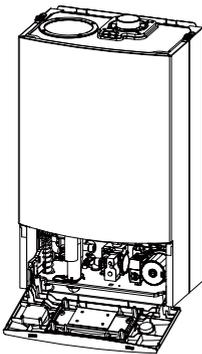
Remove the PCB

Display Replacement

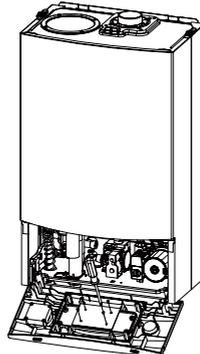
Tools:  

Time: 7 min 

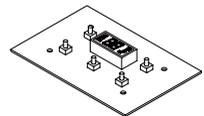
1.



Operate PCB as shown above



Dismantle the 4 screws on the PCB



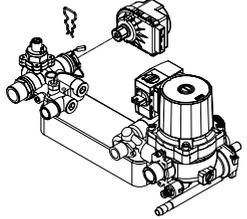
Remove the display

Water system

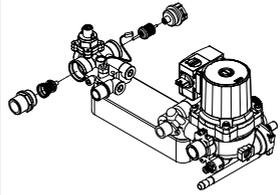
Three way valve dismantling

Tools:   Time: 5 min 

1.



First take out the motor clip radial, and then take out the motor axially.

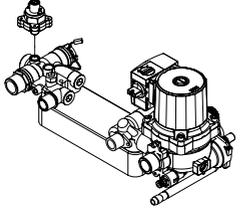


Unscrew the motor connector by spanner, take out the inside three way component axially.

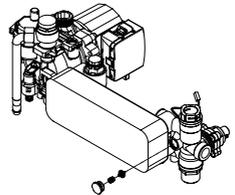
Bypass valve dismantling

Tools:   Time: 5 min 

1.



Spin and take out the water pressure switch manually.



Unscrew the bypass valve cover axially by spanner and take it out.

Safety valve and Exhaust valve

Safety valve dismantling

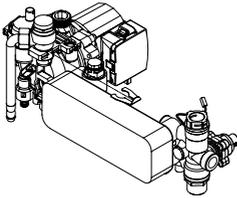
Tools:



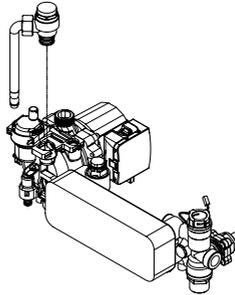
Time: 5 min



1.



Take out the safety valve clip



Take out the safety valve manually.

Exhaust valve dismantling

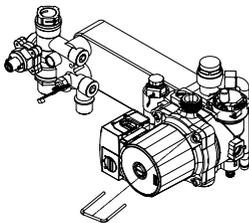
Tools:



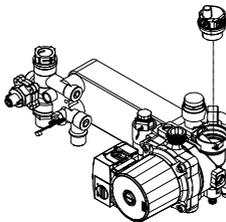
Time: 5 min



1.



Take out the exhaust valve clip



Take out the exhaust valve manually.

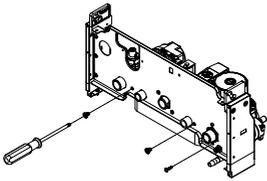
Pump and Plate heat exchanger

Pump dismantling

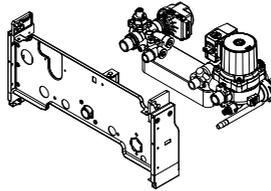
Tools:  

Time: 12 min 

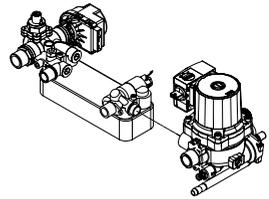
1.



Dismantle the front two screws which for connecting water system.



Separate the bottom plate and water system.



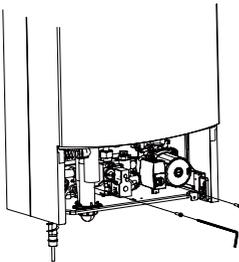
Take out the pump from right side.

Plate heat exchanger dismantling

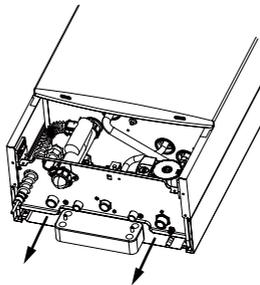
Tools:  

Time: 3 min 

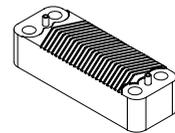
1.



Dismantle the 2 screws on plate heat exchanger by 5mm Hex key.

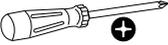


Pull the domestic heat exchange out of the bottom plate.



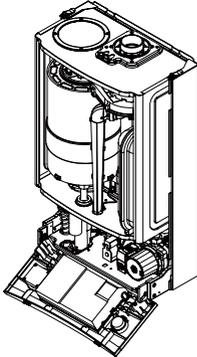
Combustion system

Combustion system dismantling

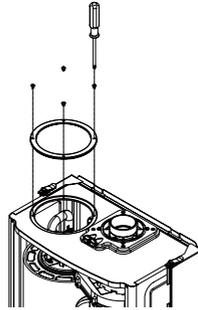
Tools:  

Time: 5 min 

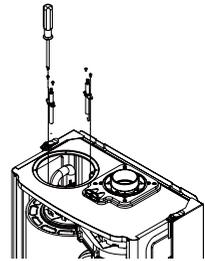
1.



Dismantle the combustion chamber sealing cover following the basic dismantling method.



Dismantle the 4 screws of maintain cover on top, and take out the maintain cover.

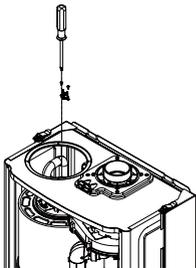


Dismantle the 2 installation screws flame testing needle or ignition needle as shown above, then take out the flame testing needle or ignition needle manually.

Combustion system dismantling

Tools:  

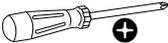
2.



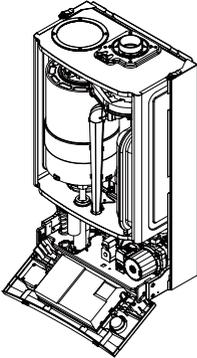
Unscrew the Heating temperature sensor by 15 mm spanner and take it out.

Fan

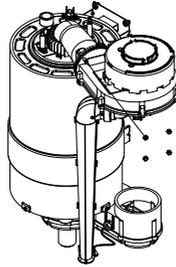
Fan dismantling

Tools:    Time: 8 min 

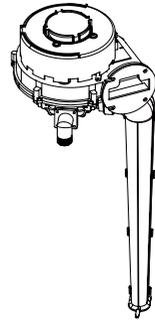
1.



Dismantle the combustion chamber sealing cover following the basic dismantling method.



Dismantle the 4 nuts connected with fan by 8mm spanner, and then dismantle the connected gas pipe by 24mm spanner.



Take out the whole fan and silencer.

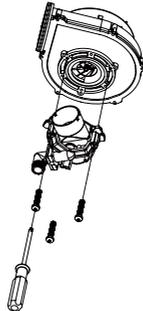
Fan dismantling

Tools:  

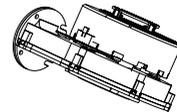
2.



Unscrew the Heating temperature sensor by 15 mm spanner and take it out.

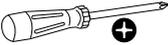


Take out the silencer after dismantled the 3 screws connected with it.



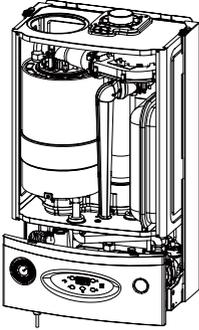
Main heat exchanger

Heat exchanger dismantling

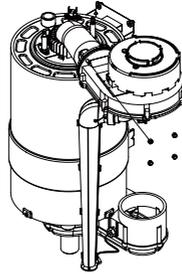
Tools:   

Time: 23 min 

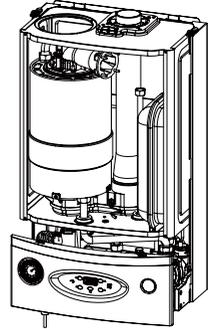
1.



Dismantle the combustion chamber sealing cover following the basic dismantling method.



Dismantle the 4 nuts connected with fan by 8mm spanner, and then dismantle the connected gas pipe by 24mm spanner.

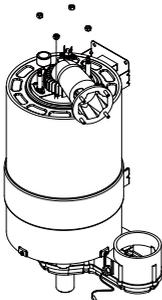


Take out the whole fan and silencer.

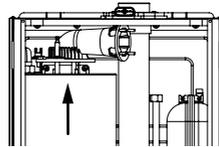
Heat exchanger dismantling

Tools:   

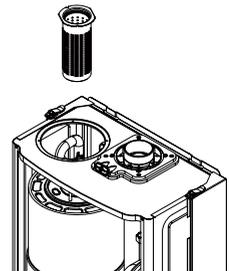
2.



Unscrew the 4 nuts on the mix air inlet elbow by 10mm spanner.



Take out the mix air inlet elbow upwardly.

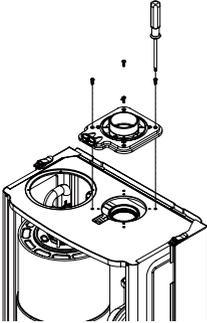


Take out the combustor upwardly.

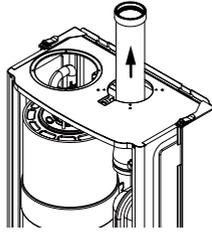
Heat exchanger dismantling

Tools: 

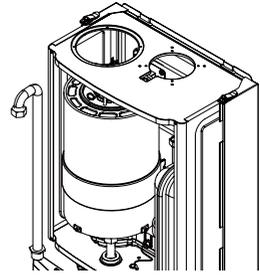
3.



Dismantled the 4 screws on the smoke pipe outlet by screwdriver and take out the outlet flange.



Take out the inside smoke pipe connection pipe upwardly.

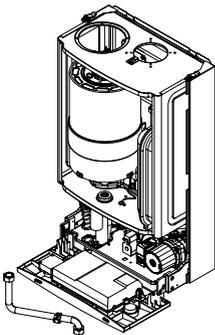


Unscrew the 2 heating outlet water pipe connection nuts by 30mm spanner; take heating outlet water pipe out.

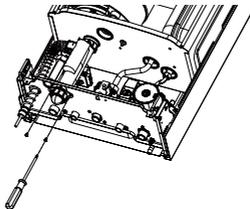
Heat exchanger dismantling

Tools: 

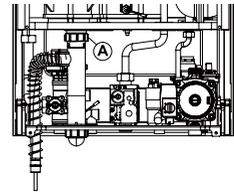
4.



Unscrew the 2 heating inlet water pipe connection nuts by 30mm spanner; take heating inlet water pipe out.



Dismantled the 2 screws on the bottom of siphon pipe.



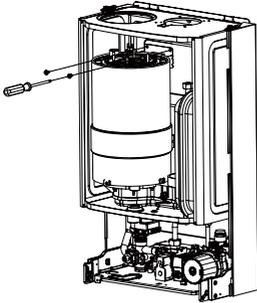
Dial-out the pipe clip, and unscrew the nut on 'A', and take out the siphon pipe.

Heat exchanger dismounting

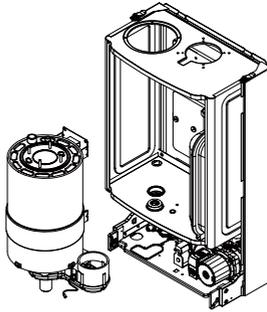
Tools:



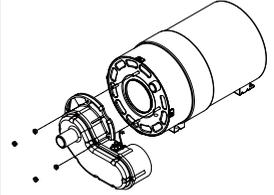
5.



Dismantled the 2 screws on heat exchanger.

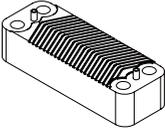
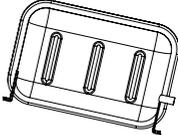


Take out the whole heat exchange and smoke collector.



Dismantle the screws connected with heat exchange and smoke collector and separate them.

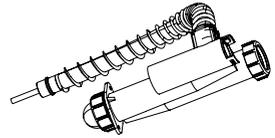
Annual Maintenance

<p>Plate type heat exchanger. Maintenance interval: Yearly. Method: Visual inspection for leaks</p>	
<p>Safety valve Maintenance interval: Yearly. Method: Visual inspection/Clean if necessary.</p>	
<p>Water flow sensor Maintenance interval: Yearly. Method: Visual inspection/Clean if necessary/ Check the flow.</p>	
<p>Expansion tank Maintenance interval: Yearly. Method: The pressure should be 1 bar in the air(system drainage).</p>	
<p>Flame test needle and ignition needle Maintenance interval: Yearly. Method: Visual inspection/clean if necessary distance with combustor/ electric ion current larger than 1 μ A.</p>	
<p>Fan Maintenance interval: Yearly. Methods: Visual inspection/Clean if necessary.</p>	

Condensate water collector

Maintenance interval: Yearly (or after cleaning the main heat exchanger).

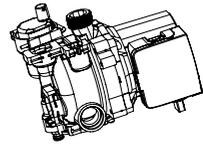
Method: Visual inspection/clean if necessary (add water before clean).



Pump

Maintenance interval: Yearly after the first ignition.

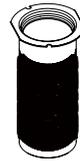
Method: Check the AAV if it's open/visual inspection/clean if necessary.



Burner combustion chamber

Maintenance interval: Yearly (or after cleaning the main heat exchanger).

Method: Visual inspection/clean or replace if necessary. inspect the seals and replace the seals if needed.



GAS BOILER SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Customer Name _____ Telephone Number _____
 Address _____
 Boiler Make and Model _____
 Boiler Serial Number _____
 Commissioned by (print name) _____ Gas Safe Register Number _____
 Company Name _____ Telephone Number _____
 Company Address _____
 _____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number (if applicable) _____

CONTROLS Tick the appropriate boxes

Time and Temperature Control to Heating	Room Thermostat and Programmer/Timer <input type="checkbox"/>	Programmable Room Thermostat <input type="checkbox"/>	Load/Weather Compensation <input type="checkbox"/>	Optimum Start Control <input type="checkbox"/>
Time and Temperature Control to Hot Water	Cylinder Thermostat and Programmer/Timer <input type="checkbox"/>		Combination Boiler <input type="checkbox"/>	
Heating Zone Valves	Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>		
Hot Water Zone Valves	Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>		
Thermostatic Radiator Valves	Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>		
Automatic Bypass to System	Fitted <input type="checkbox"/>	Not Required <input type="checkbox"/>		
Boiler Interlock			Provided <input type="checkbox"/>	

ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer's instructions Yes

What system cleaner was used? _____

What inhibitor was used? _____ Quantity litres

CENTRAL HEATING MODE Measure and Record:

Gas Rate <input type="text"/>	m ³ /hr	OR	<input type="text"/>	ft ³ /hr
Burner Operating Pressure (if applicable) <input type="text"/>	mbar	OR	Gas Inlet Pressure <input type="text"/>	mbar
Central Heating Flow Temperature <input type="text"/>	°C			
Central Heating Return Temperature <input type="text"/>	°C			

COMBINATION BOILERS ONLY

Is the installation in a hard water area (above 200ppm)? Yes No

If yes, has a water scale reducer been fitted? Yes No

What type of scale reducer has been fitted? _____

DOMESTIC HOT WATER MODE Measure and Record:

Gas Rate <input type="text"/>	m ³ /hr	OR	<input type="text"/>	ft ³ /hr
Burner Operating Pressure (at maximum rate) <input type="text"/>	mbar	OR	Gas Inlet Pressure (at maximum rate) <input type="text"/>	mbar
Cold Water Inlet Temperature <input type="text"/>	°C			
Hot water has been checked at all outlets <input type="checkbox"/>	Yes	Temperature <input type="text"/>	°C	
Water Flow Rate <input type="text"/>	l/min			

CONDENSING BOILERS ONLY

The condensate drain has been installed in accordance with the manufacturer's instructions and/or BS5546/BS6798 Yes

ALL INSTALLATIONS

If required by the manufacturer, record the following CO₂ % OR CO ppm OR CO/CO₂ Ratio

The heating and hot water system complies with the appropriate Building Regulations Yes

The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions Yes

The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes

The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes

Commissioning Engineer's Signature _____

Customer's Signature _____

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.



SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service Record is completed.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

SERVICE 1 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 2 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 3 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 4 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 5 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 6 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 7 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 8 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 9 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

SERVICE 10 Date _____
Energy Efficiency Checklist completed? Yes No
Engineer Name _____
Company Name _____
Telephone Number _____
Gas Safe Register Number _____
Comments _____
Signature _____

Seasonal space heating energy efficiency of boiler **1**
□ %

Temperature control **2**
□ %

From fiche of temperature control Class I = 1 %, Class II = 2 %, Class III = 1,5 %,
Class IV = 2 %, Class V = 3 %, Class VI = 4 %, Class VII = 3,5 %, Class VIII = 5 % + □ %

Supplementary boiler Seasonal space heating energy efficiency (in %)

From fiche of boiler $(\square - 'I') \times 0,1 = \pm \square \%$ **3**

Solar contribution **4**
□ %

From fiche of solar device

Collector size
(in m²)
↓
□

Tank volume
(in m³)
↓
□

Collector efficiency
(in %)
↓
□

Tank rating
A*=0,95,A=0,91,
B=0,86,C=0,83,
D-G=0,81
↓
□

$('III' \times \square + 'IV' \times \square) \times 0,9 \times (\square /100) \times \square = + \square \%$

Supplementary heat pump Seasonal space heating energy efficiency (in %)

From fiche of heat pump $(\square - 'I') \times 'II' = + \square \%$ **5**

Solar contribution AND Supplementary heat pump

Select smaller value $0,5 \times \square$ OR $0,5 \times \square = - \square \%$ **6**

Seasonal space heating energy efficiency of package **7**
□ %

Seasonal space heating energy efficiency class of package

□	□	□	□	□	□	□	□	□	□
G	F	E	D	C	B	A	A*	A**	A***
< 30%	≥ 30%	≥ 34%	≥ 36%	≥ 75%	≥ 82%	≥ 90%	≥ 98%	≥ 125%	≥ 150%

Boiler and supplementary heat pump installed with low temperature heat emitters at 35 °C?

From fiche of heat pump $\square + (50 \times 'II') = \square \%$ **7**



A large, vertically oriented rectangular area with rounded corners, enclosed by a thin gray border. This area contains 18 horizontal lines, evenly spaced, providing a template for writing or drawing.

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