

Installation and Service Manual & Boiler Fiche

High-efficiency wall-hung condensing gas boiler

400 Combi 2.1
600 Combi 2
800 Combi 2
Assure 500 Combi 2

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1 Safety

1.1 General safety instructions



Danger

This boiler can be used by children aged 8 years and above and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge when they have been given supervision or instruction concerning the safe use of the device and understand the resulting risks. Children must not be allowed to play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.



Danger

If you smell gas:

1. Do not use a naked flame, do not smoke, do not operate electrical contacts or switches (doorbell, light, motor, lift, etc.).
2. Shut off gas supply.
3. Open the windows.
4. Trace possible leaks and seal them immediately.
5. If the gas leak is before the gas meter, contact the supplier
6. Telephone the National Gas Emergency Service on: 0800 111 999.

1.2 Recommendations



Warning

Installation and maintenance of the boiler must be carried out by a competent installer with relevant qualifications and in accordance with local and national regulations.

1.3 Handling

General

The following advice should be adhered to, from when first handling the boiler to the final stages of installation, and also during maintenance. Most injuries as a result of inappropriate handling and lifting are to the back, but all other parts of the body are vulnerable, particularly shoulders, arms and hands. Health & Safety is the responsibility of EVERYONE.

There is no "safe" limit for one person - each person has different capabilities. The boiler should be handled and lifted by TWO PEOPLE. Do not handle or lift unless you feel physically able.

Wear appropriate Personal Protection Equipment e.g. protective gloves, safety footwear etc.

Preparation

Co-ordinate movements - know where, and when, you are both going. Minimise the number of times needed to move the boiler - plan ahead. Always ensure when handling or lifting the route is clear and unobstructed. If possible avoid steps, wet or slippery surfaces, unlit areas etc. and take special care on ladders/into lofts.

Technique

When handling or lifting always use safe techniques - keep your back straight, bend your knees. Don't twist - move your feet, avoid bending forwards and sideways and keep the load as close to your body as possible.

Where possible transport the boiler using a sack truck or other suitable trolley. Always grip the boiler firmly, and before lifting feel where the weight is concentrated to establish the centre of gravity, repositioning yourself as necessary. See the "Installation" section of these instructions for recommended lift points.

Remember

The circumstances of each installation are different. Always assess the risks associated with handling and lifting according to the individual conditions.

If at any time when installing the boiler you feel that you may have injured yourself STOP !! DO NOT "work through" the pain - you may cause further injury.

IF IN ANY DOUBT DO NOT HANDLE OR LIFT THE BOILER — OBTAIN ADVICE OR ASSISTANCE BEFORE PROCEEDING!

1.4 Liabilities

1.4.1 Manufacturer's liability

Our products are manufactured in compliance with the requirements of the appropriate legislation and regulations. They are delivered with CE and/or UKCA marking (CE & UK) and any documents or information necessary. In the interests of the quality of our products, we strive constantly to improve them. We therefore reserve the right to modify the specifications given in this document. Our liability as manufacturer may not be invoked in the following cases:

- Failure to abide by the instructions on installing the appliance.
- Failure to abide by the instructions on using the appliance.
- Faulty or insufficient maintenance of the appliance.

1.4.2 Installer's liability

The installer is responsible for the installation and initial commissioning of the appliance. The installer must observe the following instructions:

- Read and follow the instructions given in the manuals provided with the appliance.
- Install the appliance in compliance with prevailing legislation and standards.
- Carry out initial commissioning and any checks necessary.
- Explain the installation to the user.
- If maintenance is necessary, warn the user of the obligation to check the appliance and keep it in good working order.
- Give all the instruction manuals to the user.

2 Items supplied

2.1 Contents of the package

The boiler is delivered in a package including:

- Wall hung gas boiler
- Wall bracket for fastening the boiler to the wall
- "Easy-Fill" permanent filling link or rigid temporary filling link
- Fitting kit including taps
- Adey Magnaclean Micro 2 magnetic system filter (only with certain models)
- Literature pack containing:
 - Installation & Service Manual
 - User "Quick Start Guide"
 - Template
 - Warranty documents
 - ErP product & package labels

2.2 Accessories and options

Go to: www.baxi.co.uk for full details.

For flue accessories go to baxi.co.uk/FlueGuide or scan the QR code below.



3 Technical specifications

3.1 Technical data

3.1.1 Safety, Performance & Quality

This boiler has been assessed by an appropriate Notified Body and shown to meet the requirements of all Directives and Regulations as applicable. These Directives and Regulations lay down requirements for the safety and efficiency of the appliance, together with its design, construction and use of materials. They also require the production process to be covered by an approved and monitored system of quality assurance.

3.1.2 Certifications

CE Certificate no.	0085CU0338	UKCE Certificate no.	748353
NOx class	6	Boiler type	C ₁₃ , C ₃₃
G.C. nos.			
424-2.1 47-077-74, 430-2.1 47-077-75, 436-2.1 47-077-76 624-2 47-077-55, 630-2 47-077-56, 636-2 47-077-57 824-2 47-077-63, 830-2 47-077-64, 836-2 47-077-65 Assure 524-2 47-077-59, Assure 530-2 47-077-60, Assure 536-2 47-077-61			

3.1.3 Gas category

Gas category	Gas type	Supply pressure (mbar)
I _{2H}	G20 (H natural gas)	20
I _{3P}	G31 (P LPG)	37



Important: This appliance is suitable for G20 gas containing up to 20% hydrogen (H₂).

3.1.4 Standards

Codes of Practice - refer to most recent version

In GB the following Codes of Practice apply

Standard	Scope
BS 6891	Gas Installation.
BS 5546	Installation of hot water supplies for domestic purposes.
BS EN 12828	Heating systems in buildings.
BS EN 12831	Heating systems in buildings — Calculation of load.
BS EN 14336	Installation & commissioning of water based heating systems.
BS 6798	Installation of gas fired hot water boilers.
BS 5440 Pt. 1	Flues
BS 5440 Pt. 1	Ventilation.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.
BS 4814	Specification for Expansion Vessels using an internal diaphragm, for sealed hot water systems.
IGE/UP/7/1998	Guide for gas installations in timber framed housing.

In IE the following Codes of Practice apply

Standard	Scope
IS 813	Domestic Gas Installations.
The following standards give valuable additional information:	
BS 5546	Installation of hot water supplies for domestic purposes.
BS EN 12828	Heating systems in buildings.
BS EN 12831	Heating systems in buildings — Calculation of load.
BS EN 14336	Installation & commissioning of water based heating systems.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

3.1.5 Technical information



Important: All data in these sections are nominal and subject to normal production tolerances.

Technical settings for combination heaters with boilers

	24 Combi	30 Combi	36 Combi
Condensing boiler	Yes	Yes	Yes
Low-temperature boiler ⁽¹⁾	No	No	No
B1 boiler	No	No	No

PCDB index

Model	PCDB Index no.	Model	PCDB Index no.	Model	PCDB Index no.	Model	PCDB Index no.
424-2.1	TBC	524-2	019079	624-2	019076	824-2	019082
430-2.1	TBC	530-2	019080	630-2	019077	830-2	019083
436-2.1	TBC	536-2	019081	636-2	019078	836-2	019084

Go to: www.ncm-pcdb.org.uk/sap/ for full details.

Technical data

			24 Combi	30 Combi	36 Combi
Cogeneration space heater					
Combination heater					
Rated heat output	<i>Prated</i>	kW	20	25	25
Useful heat output at rated heat output and high temp. setting ⁽²⁾	<i>P4</i>	kW	20.0	25.0	25.0
Useful heat output at 30% of heat output and low temp. setting ⁽¹⁾	<i>P1</i>	kW	6.7	8.4	8.4
Seasonal space heating energy efficiency	<i>ηs</i>	%	94	94	94
Useful efficiency at rated heat output and high temp. setting ⁽²⁾	<i>η4</i>	%	88.2	88.1	88.1
Useful efficiency at 30% of heat output and low temp. setting ⁽¹⁾	<i>η1</i>	%	99.0	98.8	98.8
Auxiliary electricity consumption					
Full load	<i>elmax</i>	kW	0.046	0.061	0.071
Partial load	<i>elmin</i>	kW	0.008	0.009	0.009
Standby mode	<i>PSB</i>	kW	0.004	0.004	0.004
Other items					
Heat loss on standby	<i>Pstby</i>	kW	0.04	0.04	0.04
Ignition burner power consumption	<i>Pign</i>	kW	0	0	0
Annual energy consumption	<i>QHE</i>	GJ	62	77	77
Sound power level, indoors	<i>LWA</i>	dB	50	51	51
Nitrogen oxide emissions	<i>NOx</i>	mg/kWh	32	31	31
Domestic hot water parameters					
Declared load profile			XL	XL	XL
Daily electricity consumption	<i>Qelec</i>	kWh	0.146	0.140	0.138
Annual electricity consumption	<i>AEC</i>	kWh	32	31	30
Water heating energy efficiency					
Daily fuel consumption	<i>Qfuel</i>	kWh	20.547	20.438	20.473
Annual fuel consumption	<i>AFC</i>	GJ	16	16	16
(1) Low temperature means for condensing boilers 30 °C, for low temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).					
(2) High temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.					

General

		24 Combi	30 Combi	36 Combi
Rated heat input (Qn) for DHW	kW	24.7	30.9	36.9
Rated heat input (Qn) for CH	kW	20.6	25.7	25.7
Reduced heat input (Qn) 80/60 °C	kW	4.9	6.0	7.4
Rated heat output (Pn) for DHW	kW	24.0	30.0	36.0
Rated heat output (Pn) 80/60 °C for CH	kW	20	25	25
Rated heat output (Pn) 50/30 °C for CH	kW	21.8	27.1	27.1
Reduced heat output (Pn) 80/60 °C	kW	4.8	5.8	7.2
Reduced heat output (Pn) 50/30 °C	kW	5.2	6.3	7.6
Rated efficiency 50/30 °C (Hi)	%	105.8	105.8	105.8

		24 Combi	30 Combi	36 Combi
Rated heat input (Qn) for DHW (G20+20%H2)	kW	24.7	30.9	36.9
Rated heat input (Qn) for CH (G20+20%H2)	kW	20.6	25.7	25.7

Characteristics of the heating circuit

		24 Combi	30 Combi	36 Combi
Maximum pressure	bar	2.5	2.5	2.5
Minimum pressure	bar	0.5	0.5	0.5
Temperature range for CH circuit	°C	25-80	25-80	25-80
Water capacity of expansion vessel	l	7	7	7

Characteristics of the domestic hot water circuit

		24 Combi	30 Combi	36 Combi
Maximum pressure	bar	8.0	8.0	8.0
Minimum pressure	bar	0.8	0.8	0.8
Minimum dynamic pressure	bar	0.15	0.15	0.15
Minimum water flow	l/min	2.0	2.0	2.0
Temperature range for DHW circuit	°C	35-60	35-60	35-60
DHW production with $\Delta T = 25\text{ °C}$	l/min	14.1	17.6	21.0
DHW production with $\Delta T = 35\text{ °C}$	l/min	10.2	12.2	15.0

Characteristics of combustion

		24 Combi	30 Combi	36 Combi
G20 gas consumption (Q max)	m ³ /h	2.61	3.26	3.9
G20 gas consumption (Q min)	m ³ /h	0.52	0.63	0.78
Diameter of coaxial discharge pipes	mm	60/100	60/100	60/100
Flue gas flow rate (max)	kg/sec	0.011	0.014	0.017
Flue gas flow rate (min)	kg/sec	0.002	0.003	0.004

		24 Combi	30 Combi	36 Combi
G31 (LPG) gas consumption (Q max)	kg/h	1.92	2.4	2.86
G31 (LPG) gas consumption (Q min)	kg/h	0.38	0.47	0.58

Electrical characteristics

		24 Combi	30 Combi	36 Combi
Power supply voltage	V	230	230	230
Power supply frequency	Hz	50	50	50
Rated electric power	W	85	88	91

Other characteristics

		24 Combi	30 Combi	36 Combi
Humidity protection rating (EN 60529)	IP	X5D	X5D	X5D
Net weight when empty/filled with water	kg	28/30	29/31	30/31
Dimensions (height/width/depth)	mm	700/395/285	700/395/285	700/395/285

Temperature sensor outdoor sensor (NTC1000 Beta 3688 1 kOhm@25 °)

Temperature [°C]	-20	-16	-12	-8	-4	0	4	8	12	16	20	24
Resistance [Ω]	7578	6166	5046	4152	3435	2857	2387	2004	1690	1433	1217	1040

Temperature flow/heating circuit return sensor (NTC10K Beta 3977 10 kOhm@25 °)

Temperature [°C]	0	10	20	25	30	40	50	60	70	80	90
Resistance [Ω]	32505	19854	12483	9999	8060	5332	3608	2492	1754	1257	915

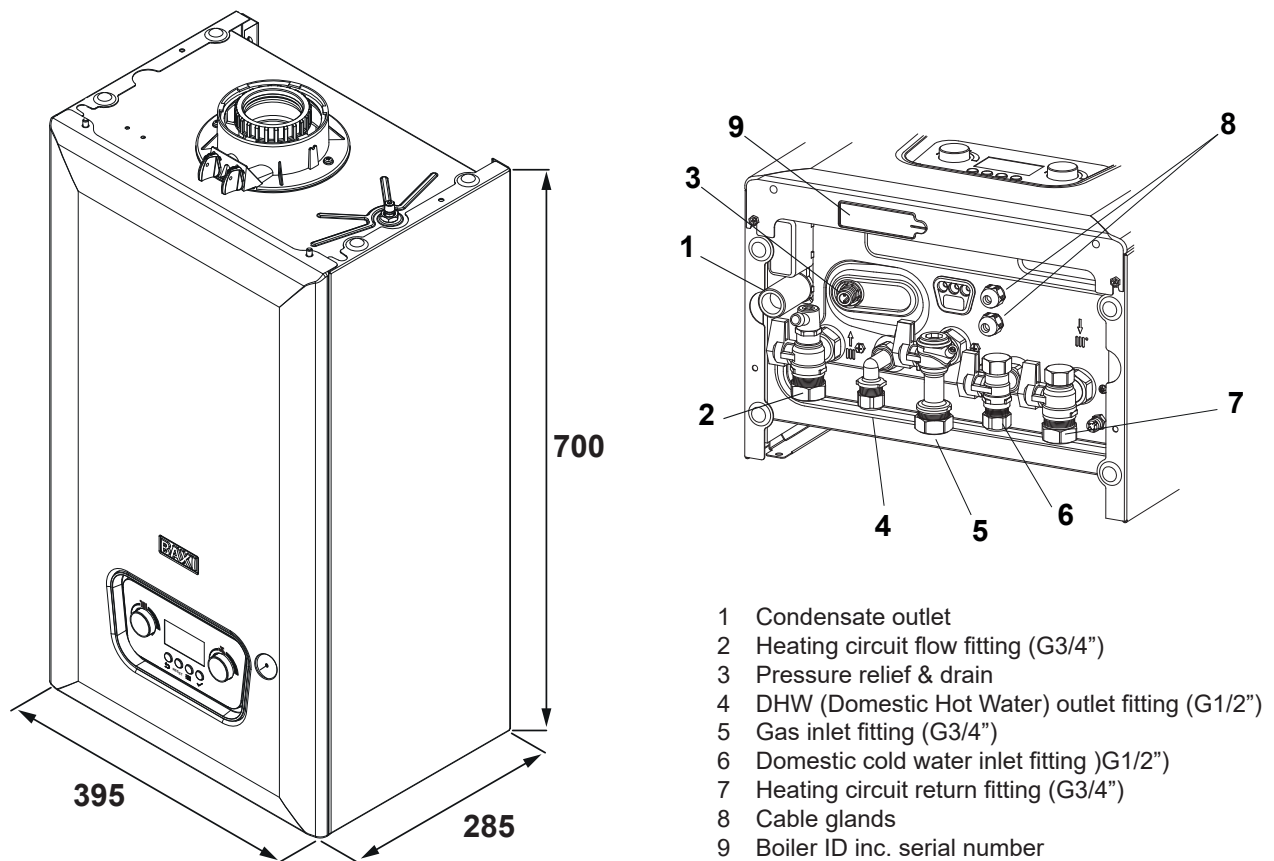
Flue gas temperature sensor (NTC20K Beta 3970 20 kOhm@25 °)

Temperature [°C]	0	10	20	25	30	40	50	60	70	80	90	100
Resistance [Ω]	66050	40030	25030	20000	16090	10610	7166	4943	3478	2492	1816	1344

Temperature [°C]	110	120	130	140	150	160	170	180	190
Resistance [Ω]	1009	768	592	461	364	290	233	189	155

3.2 Dimensions and connections

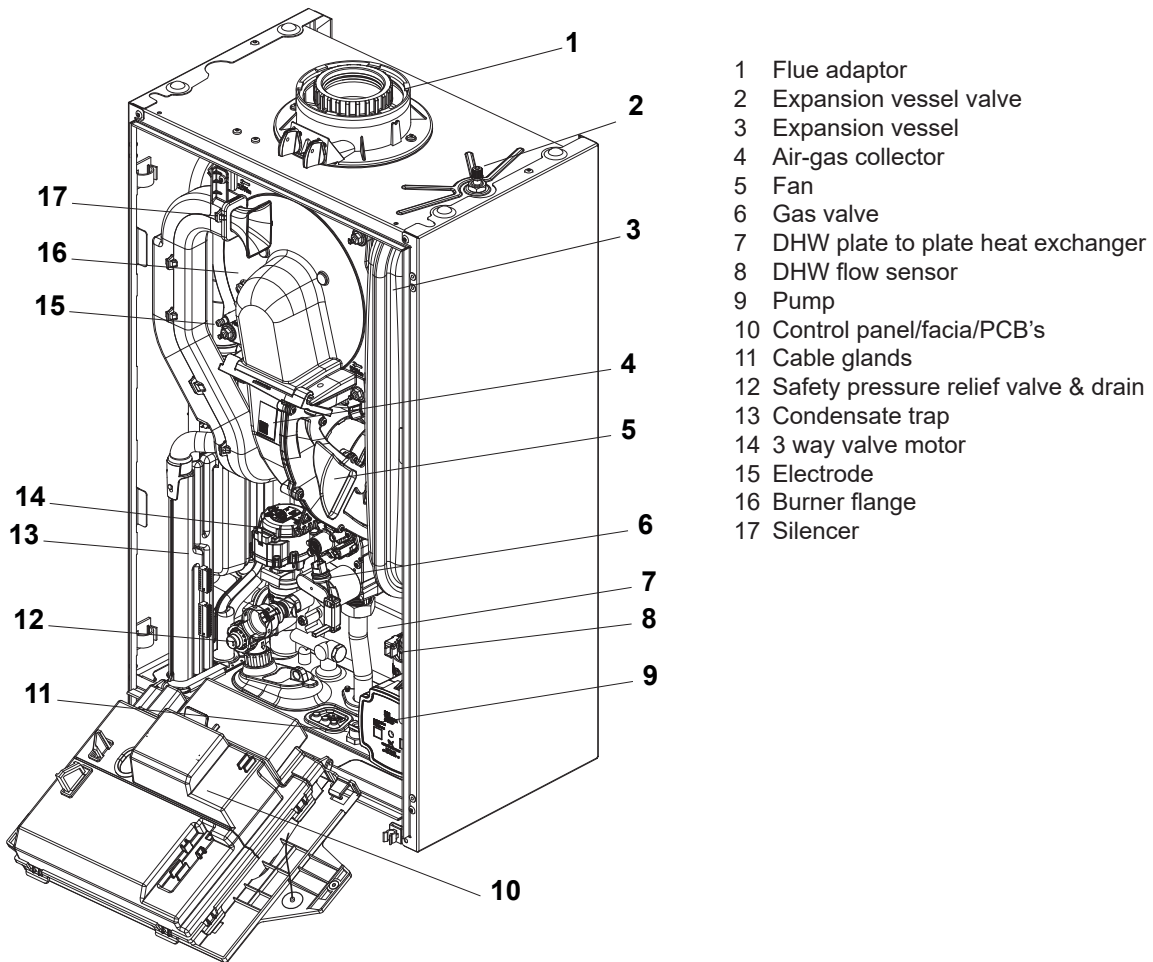
Fig. 1 Dimensions and connections



4 Description of the product

4.1 Main components

Fig. 2 Functional diagram



5 Before installation

5.1 Installation standards and rules



Warning

Installation and maintenance of the boiler must be carried out by a competent installer with relevant qualifications and in accordance with local and national regulations. This document is intended for use by competent installers.

Installation must be carried out in accordance with the prevailing regulations, the codes of practice and the recommendations in these instructions.

Installation must also respect the following points:

This instruction manual and any other applicable documentation

Building Regulations

British or Irish Standards

Gas Safety Regulations

Water Supply Regulations

5.2 Installation requirements

5.2.1 Gas supply

The gas installation should be in accordance with the relevant standards. In GB this is BS 6891 (NG). In IE this is the current edition of IS 813 Domestic Gas Installations.

The connection to the appliance is a 22 mm copper tail located at the rear of the gas service cock.

Ensure that the pipework from the meter to the appliance is of adequate size, and the demands of any other gas appliances in the property are taken into consideration. Do not use pipes of a smaller diameter than the boiler gas connection (22 mm) UNLESS the stated gas rate can be achieved with pipe of lesser diameter and with all other gas appliances operating at maximum rate.

5.2.2 Electrical supply

External wiring must be correctly earthed, polarised and in accordance with relevant regulations/rules. In GB this is the current IEE Wiring Regulations. In IE reference should be made to the current edition of ETCI rules.

The mains supply is 230 V ~ 50 Hz fused at 3 A.



Important

The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance.

Connection must be via a fused double-pole isolator with a contact separation of at least 3 mm in all poles and servicing the boiler and system controls only.

The boiler must be connected to the mains fused 3 A 230 V 50 HZ supply & control system using cable of 3 core 0.75 mm 3183Y multi strand flexible type.



Important

Any wiring to the boiler, from either the mains or an external control, MUST be cable of the following specification:- 0.75 mm 3183/4/5Y (depending on installation) multi strand flexible cable conforming to BS 50525-2-11.

Cable of the above specification is sufficiently flexible to withstand normal regular opening and closing of the fascia/control box as expected during routine servicing and other maintenance work. Use ONLY cable glands supplied with the boiler, or provided as spares by the manufacturer.

Under no circumstances must solid core cable be used as it is not intended for applications where movement may occur. The use of solid core cable could result in situations potentially hazardous to health.

These points must be considered when initially wiring the boiler to the installation, and if replacing any wiring during the service life of the boiler.

5.2.3 Hard water area



Important

Only water that has NOT been artificially softened must be used when filling or re-pressurising the primary system. If the mains cold water to the property is fitted with an artificial softening/treatment device the source utilised to fill or re-pressurise the system must be upstream of such a device.

5.2.4 Bypass

The boiler utilises the primary side of the DHW plate heat exchanger as an automatic integral bypass. In some cases an additional bypass may be required depending upon system design.

5.2.5 Heating system characteristics

Maximum pressure - 2.5 bar

Minimum pressure - 0.5 bar

Temperature range - 25 to 80 °C

Expansion vessel capacity - 7 litres

5.2.6 Drain & safety pressure relief valve

- 1 Discharge pipe
- 2 Safety pressure relief & drain
- A The end of the pipe should terminate facing down and towards the wall



For installation see

BS 6798 for full details

The pressure relief valve is set at 3 bar, therefore all pipework, fittings, etc. should be suitable for pressures in excess of 3 bar and temperature in excess of 100 °C.

The pressure relief discharge pipe should be not less than 15 mm diameter, run continuously downward, and discharge outside the building, preferably over a drain. It should be routed in such a manner that no hazard occurs to occupants or causes damage to wiring or electrical components.

If it is anticipated that any part of the pipe may be subject to freezing it should be suitably insulated. The end of the pipe should terminate facing down and towards the wall.

The discharge must not be above a window, entrance or other public access. Consideration must be given to the possibility that boiling water/steam could discharge from the pipe.



Important

The relief valve can be used as a drain.

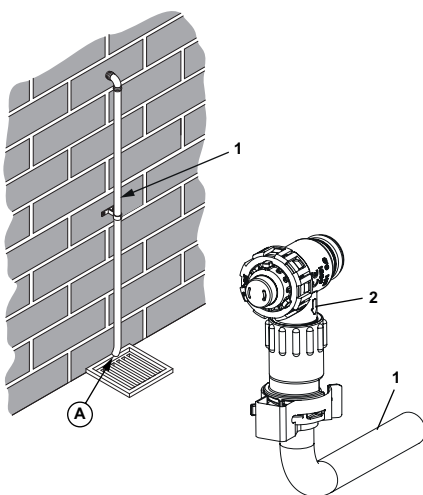


Fig. 3 Discharge pipe

A boiler discharge pump is available which will dispose of both condensate & high temperature water from the relief valve. It has a maximum head of 5 metres.

5.3 Choice of the location

5.3.1 Location of the boiler and filter

Boiler

The boiler may be fitted to any suitable wall with the flue passing through an outside wall or roof and discharging to atmosphere in a position permitting satisfactory removal of combustion products and providing an adequate air supply. The boiler should be fitted within the building unless otherwise protected by a suitable enclosure i.e. garage or outhouse. (The boiler may be fitted inside a cupboard.)

Where the boiler is sited in an unheated enclosure and during periods when the heating system is to be unused it is recommended that the permanent live is left on to give BOILER frost protection. **NOTE: THIS WILL NOT PROTECT THE SYSTEM !**

If the boiler is fitted in a room containing a bath or shower reference must be made to the relevant requirements.

In GB this is the current IEE Wiring Regulations and Building Regulations.

In IE reference should be made to the current edition of IS 813 Domestic Gas Installations and the current ETCL rules.

It is not necessary to protect any surface the boiler is mounted on from heat generated during normal operation unless required by local authority regulations.

If the boiler is to be fitted into a building of timber frame construction then reference must be made to the current edition of Institute of Gas Engineers Publication IGE/UP/7 (Gas Installations in Timber Framed Housing).

Filter

A magnetic system filter (included with some boiler models) must be fitted on the primary return pipework. It must be as close as possible to the boiler after the last radiator in accordance with the filter manufacturer's instructions and BS 7593.

Failure to install a suitable filter correctly will affect the boiler warranty. When the boiler is serviced the filter must be cleaned and inspected with the filter manufacturer's instructions. It is recommended the filter seals are replaced at each service.

5.3.2 Bath and shower rooms

- A Zone 0
- B Zone 1
- C Zone 2
- D Window recess Zone 2
- E Ceiling
- F Outside zones



Important

The boiler has a protection rating of IPX5D and if installed in a room containing a bath or shower can be within Zone 2 (but not 0 or 1).



Important

Bathroom 1 and 2 (in GB only) shows zone dimensions for a bathtub. For other examples refer to the Current IEE Wiring Regulations). Reference must be made to the relevant requirements.

In GB this is the current IEE. Wiring Regulations and Building Regulations.

In IE reference should be made to the current edition of IS 813 "Domestic Gas Installations" and the current ETCL rules.

	Valves		Maximum no. of radiators
	22 mm	28 mm	
Micro2	Y	N/A	up to 15
Pro2	Y	Y	15 to 20
XP	N/A	Y	20 to 30

Notes: Micro2 is the model of filter supplied with some models. An alternative "Adey" brand filter may be more appropriate on larger systems - see table. The number of radiators is nominal and will also depend upon their size, system volume etc. Always fit our supplied or suggested alternative magnetic filter (as appropriate) in line with our testing & BS7953.

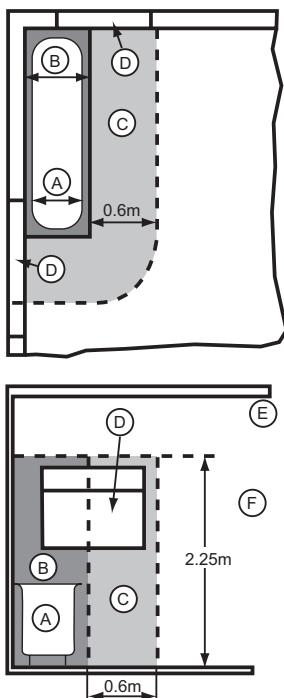


Fig. 4 Bathroom 1 & 2

5.3.3 Ventilation

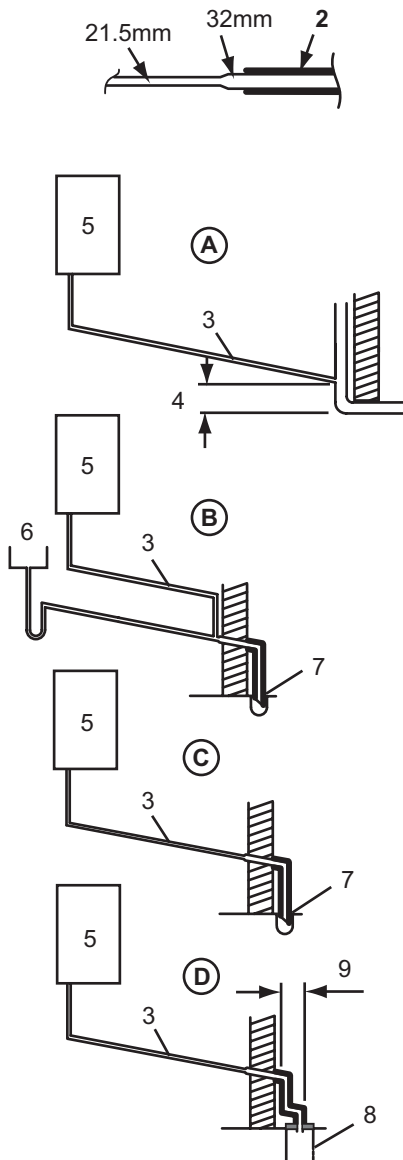
Where the appliance is installed in a cupboard or compartment, no air vents are required. BS 5440: Part 2 refers to room sealed appliances installed in compartments. The appliance will run sufficiently cool without ventilation.

5.3.4 Condensate drain

The condensate drain must be in accordance with BS 6798 and document H1 of the Building Regulations.

It is strongly recommended to discharge internally into the household drainage system. If connecting to a rain water drain, that drain **MUST** discharge into a foul drain.

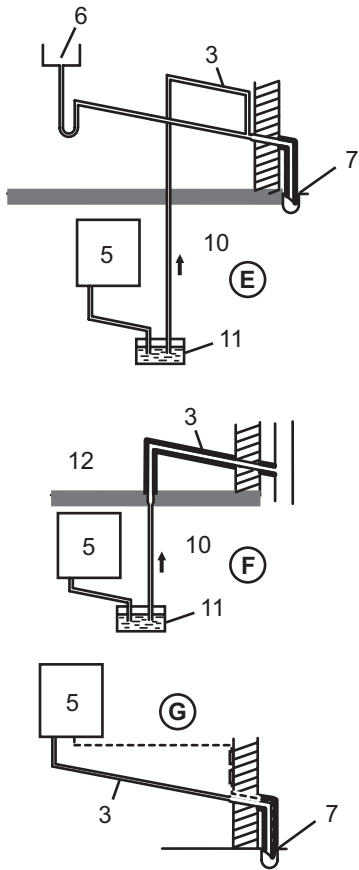
Fig. 5 Pipework & methods of termination



- 1 Pipework.
- 2 Insulation.
- 3 50 mm per metre of pipe run — 2.5° minimum run.
- 4 450 mm minimum is applicable to properties up to 3 storeys. For multi-storey building installations consult BS 6798.
- 5 Boiler.
- 6 Sink.
- 7 Pipe must terminate above water level but below surrounding surface. Cut end at 45°.
- 8 Holes in the soak-away must face away from the building.
- 9 500 mm minimum.
- 10 Basement or similar (heated)
- 11 Condensate pump
- 12 Unheated Location (e.g. Garage)

Key	Description
A	Termination to an internal soil and vent pipe.
B	External termination via internal discharge branch e.g. sink waste — downstream (It is NOT RECOMMENDED to connect upstream of the sink or other waste water receptacle !)
C	Termination to a drain or gully.
D	Termination to a purpose made soakaway Further specific requirements for soakaway design are referred to in BS 6798.
E	Pumped into an internal discharge branch (e.g. sink waste) downstream of the trap
F	Pumped into an external soil and vent pipe.
G	Termination to a drain or gully with extended external run and trace heating. The "Trace Heating" element must be installed in accordance with the instructions supplied. External runs and those in unheated locations still require insulation.

Fig. 6 Methods of termination cont.



Important

Failure to install the condensate discharge pipework correctly will affect the reliable operation of the boiler.

Careful consideration must be given to the possibility of the pipework being subject to freezing conditions and appropriate measures taken to prevent blockage. Correct installation in accordance with this section will considerably minimise the likelihood of block-age and subsequent boiler lock-out.

A condensate discharge pump and pipe “Trace Heating” are available as accessories.

The condensate discharge pipe **MUST NOT RISE** at any point along its length. There **MUST** be a fall of **AT LEAST 2.5°** (50 mm per metre) along the entire run **EXCEPT** when employing a suitable condensate pump in basement and cellar or similar applications.

The boiler condensate trap incorporates a seal of 75 mm, therefore it is unnecessary to install an air break and trap in the discharge pipework.

The condensate outlet will accept 21.5 mm (3/4 in) plastic overflow pipe. **It is strongly recommended that this discharges internally into the household drainage system.** Where this is not possible, discharge into an outside drain is permissible providing every possible precaution is taken to prevent freezing.

Ensure the discharge of condensate complies with any national or local regulations in force. **BS 6798 & Part H1 of the Building Regulations give further detailed guidance.**

The discharge pipe should be run in a proprietary drain pipe material e.g. PVC, PVC-U, ABS, PVC-C or PP.

Metal pipework is **NOT** suitable for use in condensate discharge systems.

The pipe should be a minimum of 21.5 mm diameter and must be supported using suitably spaced clips of the correct design to prevent sagging.

It is advisable that the full length of condensate pipe is run internally and preferably be less than 3 metres.

Internal runs greater than 3 metres or runs in cold areas should use 32 mm waste pipe.

External runs MUST be a MINIMUM of 32 mm and fully insulated with material suitable for external use.

If the boiler is fitted in an unheated location the entire condensate discharge pipe should be treated as an external run and sized and insulated accordingly.

In all cases discharge pipe must be installed to aid disposal of the condensate. To reduce the risk of condensate being trapped, as few bends and fittings as possible should be used and any burrs on cut pipe removed.

When discharging condensate into a soil stack or waste pipe the effects of existing plumbing must be considered. If soil pipes or waste pipes are subjected to internal pressure fluctuations when WC’s are flushed or sinks emptied then backpressure may force water out of the boiler trap and cause appliance lockout.

A boiler discharge pump is available which will dispose of both condensate & high temperature water from the relief valve. It has a maximum head of 5 metres. Follow the instructions supplied with the pump.

Condensate Drain Pipe “Trace Heating” Elements are available in various lengths, 1, 2, 3 & 5 metres. Where the drain is between 3 & 5 metres a 5 metre kit can be used and “doubled back” upon itself.

It is possible to fit the element externally on the condensate drain or internally as detailed in the instructions provided.

The fitting of a “Trace Heating” Element is **NOT** a substitute for correct installation of the condensate drain. **ALL** requirements in this section must still be adhered to.

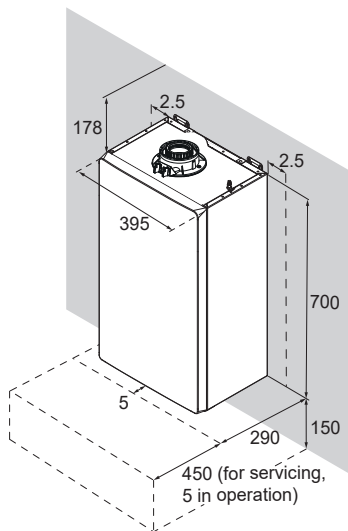


Fig. 7 Clearances

5.3.5 Clearances

A flat vertical area is required for the installation of the boiler and it should be capable of bearing the weight of the boiler when full of water.

These dimensions include the necessary clearances around the boiler for case removal, spanner access and air movement. Additional clearances may be required for the passage of pipes around local obstructions such as joists running parallel to the front face of the boiler.

In the diagram these are **MINIMUM** recommended dimensions. Greater clearance will aid installation and maintenance

5.3.6 Flue/chimney location

For siting balanced flue terminals general requirements see:

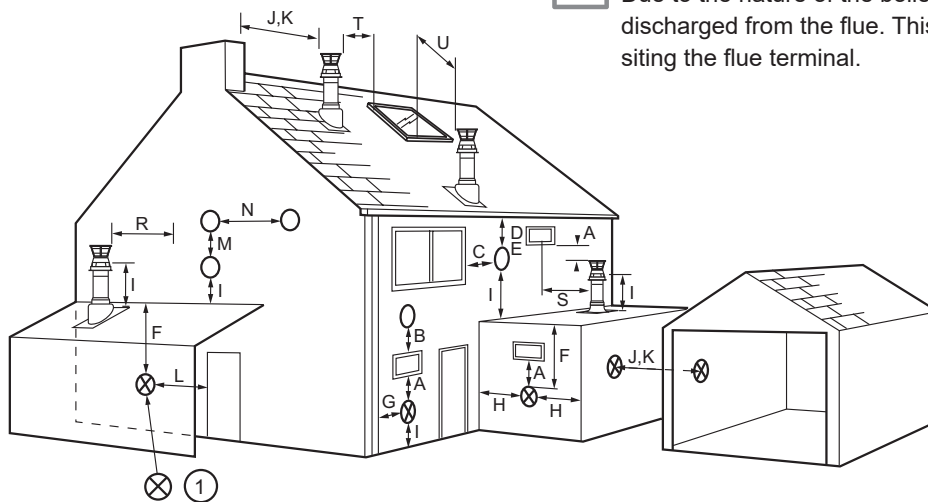
In GB recommendations are given in BS 5440 Pt 1.

In IE recommendations are given in the current edition of I.S. 813 Domestic Gas Installations.



Important

Due to the nature of the boiler a plume of water vapour will be discharged from the flue. This should be taken into account when siting the flue terminal.



Key	Description	mm	Key	Description	mm
A ⁽¹⁾	Directly below an opening, air brick, opening window etc.	300	J	From a surface or boundary line facing a terminal	600
B ⁽¹⁾	Above an opening, air brick, opening window etc.	300	K	From a terminal facing a terminal (horizontal)	1200
				From a terminal facing a terminal (vertical)	600
C ⁽¹⁾	Horizontally an opening, air brick, opening window etc.	300	L	From an opening in a car port (e.g. door, window) into the dwelling	1200
D ⁽²⁾	Below gutters, soil pipes or drain pipes	25 (75)	M	Vertically from a terminal on the same wall	1500
E ⁽²⁾	Below eaves	25 (200)	N	Horizontally from a terminal on the same wall	300
F ⁽²⁾	Below balconies or car port roof	25 (200)	R	From adjacent wall to flue (vertical only)	300
G ⁽²⁾	From a vertical soil pipe or drain pipe	25 (150)	S	From adjacent opening window (vertical only)	1000
H ⁽²⁾	From an internal or external corner	25 (300)	T	Adjacent to windows or openings on pitched and flat roofs	600
I	Above ground, roof or balcony level	300	U	Below windows or openings on pitched and flat roofs	2000

⁽¹⁾In addition, the terminal should be no nearer than 150 mm to an opening in the building fabric for the purposes of accommodating a built-in element such as a window frame.

⁽²⁾Only ONE 25 mm clearance is allowed per installation. If one of the dimensions D, E, F, G or H is 25 mm then the remainder **MUST** be as shown in brackets, in accordance with B.S. 5440 - Part 1



Important

Under car ports the use of a plume displacement kit is recommended. The terminal position must ensure the safe and nuisance-free dispersal of combustion products.

If the terminal discharges onto a pathway or passageway, check that combustion products will not cause a nuisance and that the terminal will not obstruct the passageway.

If a terminal is less than 2 metres above a balcony, above ground or above a flat roof to which people have access, then a suitable terminal guard must be provided.

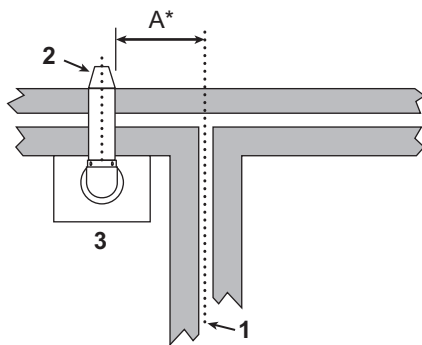


Fig. 8 Boundary

1. Property boundary line
 2. Terminal assembly
 3. Top view rear flue
- A 300 mm minimum*

* Reduction to the boundary is possible down to 25 mm but the flue deflector must be used.

i Important
The distance from a fanned draught appliance terminal installed parallel to a boundary may not be less than 300 mm in accordance with the diagram opposite.

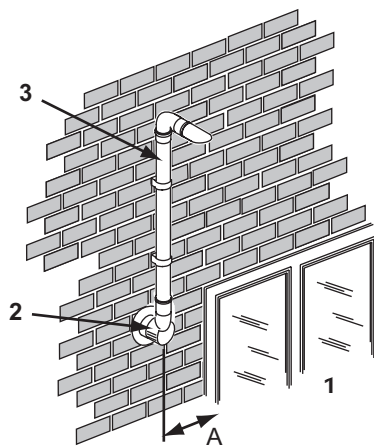


Fig. 9 Plume Displacement

1. Opening window or door
 2. Air inlet
 3. Plume displacement kit
- A 150 mm minimum

i Important
If fitting a Plume Displacement Flue Kit, the air inlet must be a minimum of 150 mm from any opening windows or doors.

i Important
The Plume Displacement flue gas discharge terminal and air inlet should always terminate in the same pressure zone i.e. on the same facing wall. In the event that this is not possible, the additional accessory Diffuse Terminal Kit for PDK (7213532) must be fitted.

It is preferable that only the flue terminal protrudes from the wall. However, where circumstances dictate, it is permissible for the air duct (white tube) to be visible outside the property up to a maximum distance of 100 mm (Fig. 10), providing the flue is adequately supported and conforms to the appropriate sections of B.S.5440:1, the boiler Installation Manual, flue guide and guidance below.

If the flue is greater than 25 mm below a balcony, car port or similar the flue may protrude up to a maximum distance of 500 mm 'V' (Fig. 11).

Where the flue will terminate beyond a balcony, car port or similar and the distance between the flue and underside of the balcony, car port or similar is only 25 mm at 'Z' it must protrude 100 mm 'Y' beyond the outer edge (Fig. 12).

Where the flue exits under a balcony, car port or similar in excess of 500mm, the distance between the flue and underside of the balcony, car port or similar MUST be 25 mm at 'Z' and this can be achieved with the use of elbows (Fig. 13). It is also a requirement that the flue must protrude 100 mm 'Y' beyond the outer edge (Fig 12).

The horizontal 60/100 & 80/125 flue systems, including bends and extensions, are UV stable.

If any flue joint is external to the property, seal the joint with silicone sealant suitable for external use, not the tape supplied.

The maximum equivalent flue lengths as stated in the appropriate boiler Installation & Service Manual must not be exceeded.

The flue must always be installed with a fall of at least 1.5° from the terminal to allow condensate to run back to the boiler.

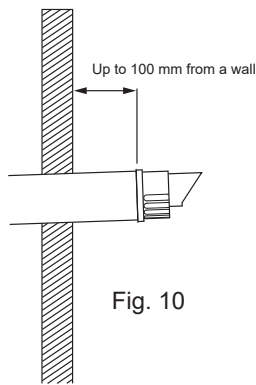


Fig. 10

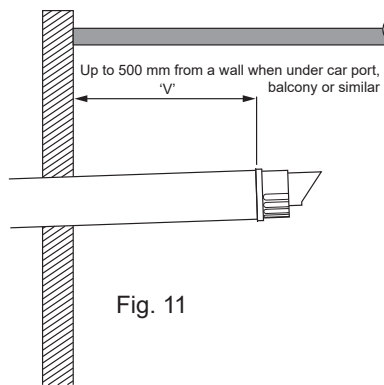


Fig. 11

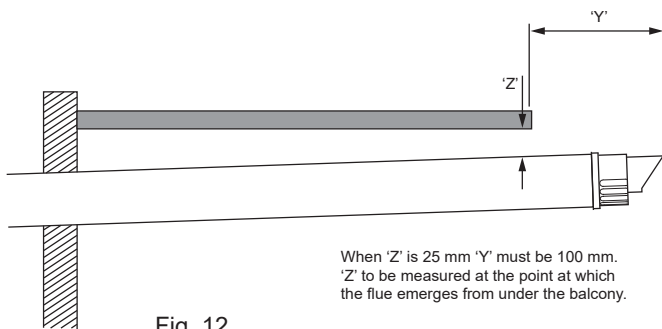


Fig. 12

NOTE: For clarity support brackets are not shown in these illustrations.

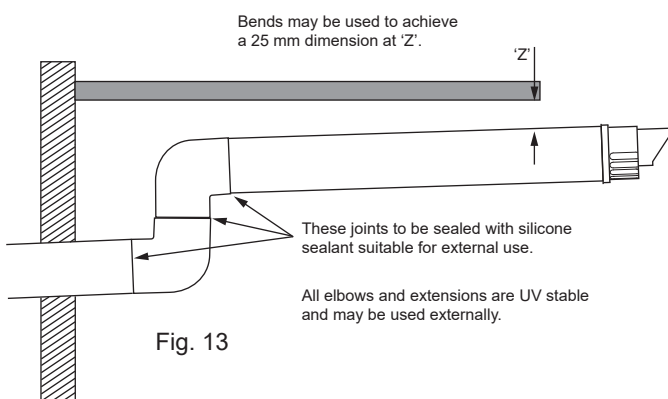


Fig. 13

5.3.7 Connecting the flue/chimney

When installing internal fit telescopic flue & elbow kits 7778296 & 7778299 refer to the instructions supplied with them.

The internal fit kits allow installation of the flue without the need to 'make good' externally. They also reduce the overall height of the boiler and elbow by 16 mm.

HORIZONTAL TELESCOPIC FLUE 720598701 (concentric 60/100)

- 1 315 mm to 500 mm
- 2 Connection assembly
- 3 Terminal assembly

There are two telescopic sections, the terminal assembly and the connection assembly, a roll of sealing tape and two self tapping screws. A 93° elbow is also supplied.

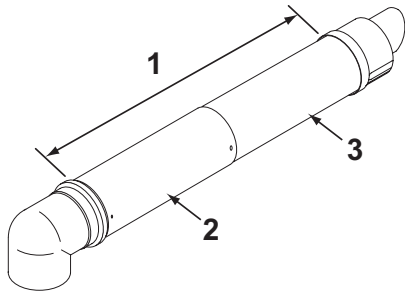


Fig. 14 Telescopic flue

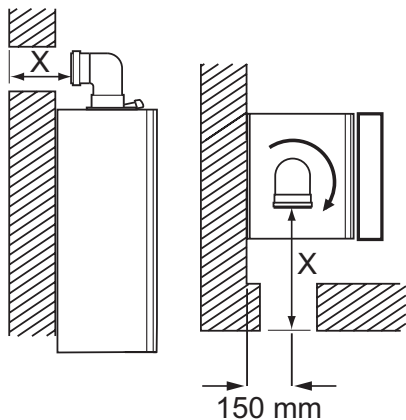


Fig. 15 Flue dimensions 'X'

The two sections can be adjusted to provide a length between 315 mm and 500 mm when measured from the flue elbow (there is 40 mm engagement into the elbow).

1. Locate the flue elbow on the adaptor at the top of the boiler. Set the elbow to the required orientation.



Important

The flue elbow is angled at 93° to ensure a fall back to the boiler.

2. Measure the distance from the outside wall face to the elbow. This dimension will be known as "X".

3. If the distance from the flue elbow to the outside face of the wall is less than 250 mm the connection assembly can be discarded and the terminal assembly fitted directly into the elbow.

4. In instances where the dimension "X" is between 250 mm and 315 mm it will be necessary to shorten the terminal assembly by careful cutting to accommodate walls of these thicknesses.

5. To dimension "X" add 40 mm. This dimension to be known as "Y".

- 1 TOP label
- 2 Sealing tape
- 3 Securing screw
- 4 Peak to be uppermost

6. Adjust the two telescopic sections to dimension "Y" and seal the joint with the tape provided. Ensure that the labels marked "TOP" on the terminal and connection assemblies are uppermost.

7. Using the clearance holes in the connection assembly secure it to the terminal assembly using the screws supplied with the telescopic flue.

8. Remove the flue elbow and insert the flue through the hole in the wall. Fit the flue trims if required, and refit the elbow to the boiler adaptor, ensuring that it is pushed fully in. Secure the elbow with the screws supplied in the boiler fitting kit.

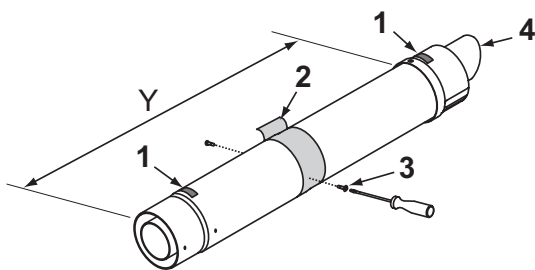


Fig. 16 Flue dimensions 'Y'

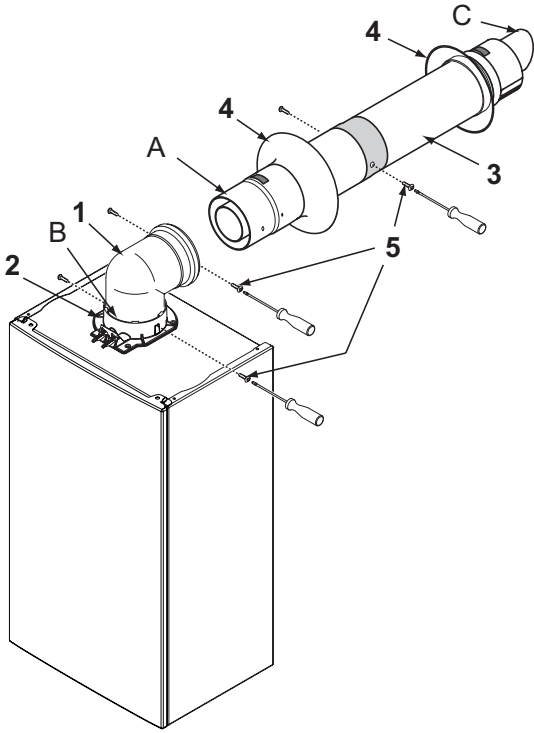


Fig. 17 Attaching the flue

- 1 Flue elbow
- 2 Boiler adaptor
- 3 Telescopic flue
- 4 Flue trim
- 5 Securing screw
- A Apply the lubricant supplied for ease of assembly (**do not use any other type**). Ensure flue is fully engaged into elbow.
- B Apply the lubricant supplied for ease of assembly (**do not use any other type**). Ensure elbow is fully engaged into boiler adaptor.
- C Peak to be uppermost

9. Draw the flue back through the wall and engage it in the elbow. It may be necessary to lubricate to ease assembly of the elbow and flue.

10. Ensure that the terminal is positioned with the slots to the bottom. Secure to the elbow with the screws supplied with the telescopic flue.



Important

It is essential that the flue terminal is fitted as shown to ensure correct boiler operation and prevent water entering the flue.

11. Make good between the wall and air duct outside the building, appropriate to the wall construction and fire rating.

12. If necessary fit a terminal guard.



Important

For details of all flue accessories go to baxi.co.uk/FlueGuide or scan the QR code below.

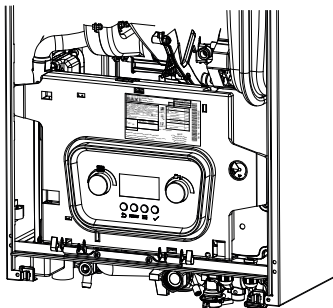


Fig. 18 Position of data plate

5.3.8 Data plate and boiler service label

The data plate is located above the boiler controls. The data plate provides important information about the appliance (see the sample data plate shown in the figure). Also note the LPG conversion label which must be amended when converting to LPG

BAXI CONDENSING BOILER		Appliance No. XXXXXX
GB/IE		GC No: XXXXXX
		Label No. xxxxxx
ELECTRICAL SUPPLY - 230V-50Hz-90W		
MAX WATER TEMP < 95 DEG C		
FUSE RATING [INT - (FAST) 2A] EXT - 3A		
PMS = 3 BAR PRESSURE CLASS 2		
MAX PRESS (Bar)	8.0	2.5
IPX5D	TYPE C13 G33	
CAT II 2H3P	admixture 0 - 20% H2 allowed, see manual	
2H-G20-20mbar	CN1=x,x, CN2=x	
3P-G31-37mbar	CN1=x,x, CN2=x	
PIN : 0085CU0338		
BAXI A Trading Division of Baxi Heating UK Ltd, Brooks House, Coventry Road, Warwick. CV34 4LL		
WARNING: THIS APPLIANCE MUST BE EARTHED This appliance is only intended for installation on a governed supply, and on central heating systems with sealed expansion vessels.		

Fig. 19 Typical data plate & LPG conversion label

TNC230100002AG-C+7

This Appliance is factory set for use with NG	X
This Appliance has been converted for use with LPG	
This Appliance has been reverted for use with NG	

Model Name
Ser No. XXXYYYY00001ZZ
GC No: XX-XXX-XX

Fig. 20 User information label

5.3.9 Unpacking and initial preparation

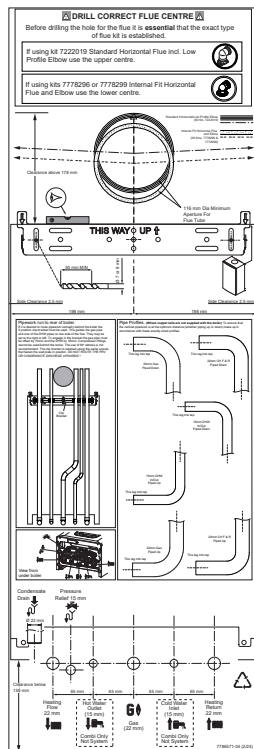
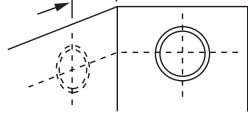


Caution

RISK ASSESSMENT - Before commencing the installation it is recommended that the “Five Steps to Risk Assessment” document published by the HSE is consulted, and an assessment performed as described. **GAS SUPPLY** - The gas supply, gas type and pressure must be checked for suitability before connection.

Fig. 21 Template

150 mm



5.3.10 Initial preparation

1. After considering the site requirements position the fixing template on the wall ensuring it is level both horizontally and vertically.
2. Mark the position of the two most suitable fixing slots for the wall bracket.
3. Mark the position of the centre of the flue hole (rear exit). For side flue exit, mark as shown.
4. If required, mark the position of the gas and water pipes. Remove the template.
5. Cut the hole for the flue (minimum diameter 116 mm).
6. Drill the wall as previously marked to accept the wall plugs supplied. Secure the wall bracket using the fixing screws.
7. Using a spirit level ensure that the bracket is level before finally tightening the screws.

5.4 Connecting diagrams

5.4.1 Filling information

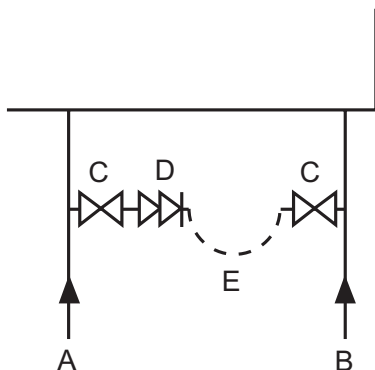


Fig. 22 System filling circuit

- A Domestic hot water mains inlet
- B Central heating return
- C Stop valve
- D Double check valve (Not supplied)
- E Loop (Temporary or Permanent)

A filling point connection on the central heating return pipework must be provided to facilitate initial filling and pressurising and also any subsequent water loss replacement/refilling.

The filling method adopted must be in accordance with all relevant water supply regulations and use approved equipment.

Your attention is drawn to:

If the boiler is fitted in a room containing a bath or shower reference must be made to the relevant requirements.

In GB: Guidance G24.2 and recommendation R24.2 of the Water Regulations Guide.

In IE: the current edition of I.S. 813 Domestic Gas Installations.

- A Cold mains in
- B Central heating return

The sealed primary circuits may be filled or replenished by means of a temporary connection between the circuit and a supply pipe, provided a “Listed” double check valve or some other no less effective backflow prevention device is permanently connected at the inlet to the circuit and the temporary connection is removed after use.

Where a permanent filling link is supplied with the boiler (not all models) it is not necessary to remove any part of it after filling or re-pressurising.

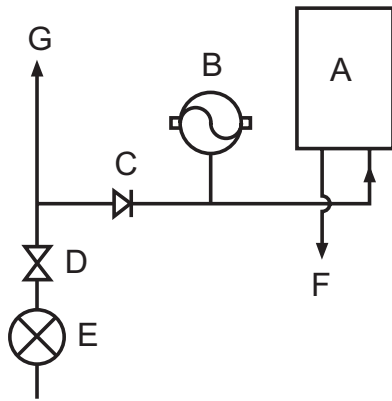


Fig. 23 Circuit plan

5.4.2 Domestic hot water circuit

- A Boiler
- B Expansion vessel
- C Check valve
- D Pressure reducer
- E Stop tap
- F To hot tap
- G Other tap outlets

All DHW circuits, connections, fittings, etc. should be fully in accordance with relevant standards and water supply regulations.

Your attention is drawn to:

In GB: Guidance G17 to G24 and recommendation R17 to R24 of the Water Regulations Guide.

In IE: the current edition of I.S. 813 Domestic Gas Installations.

The Water Regulations recommendations for England and Wales prohibits backflow from appliances into the wholesome water supply due to thermal expansion. However this type of instantaneous combination boiler, with less than 15 litres of stored capacity, does not require any backflow prevention device as any thermal expansion is accommodated within the appliance. It is possible in certain circumstances that other cold water demands (e.g. washing machines, flushing of WCs) may affect the DHW function of the boiler. In these instances the fitting of a backflow prevention device and expansion vessel is recommended.

i Important

In instances where the mains water supply incorporates a non-return backflow prevention device, or any other device that includes one*, it is possible for a build-up of pressure to occur. This may result in damage to the boiler and other appliances. To prevent damage to the boiler a suitable mini expansion vessel must be fitted on the mains water inlet between the boiler and the non-return device.

6 Installation

6.1 General

Fig. 24 Mounting the boiler

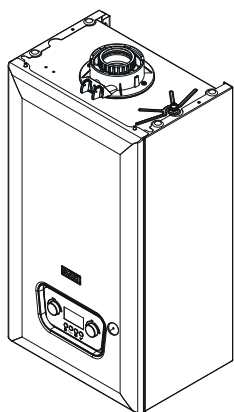
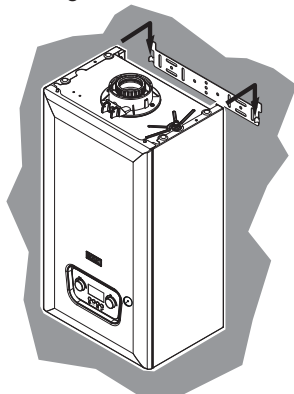


Fig. 25 Taps



6.2 Assembly

Fig. 26 Safety pressure relief connection

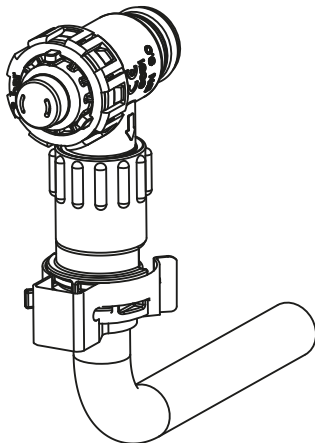
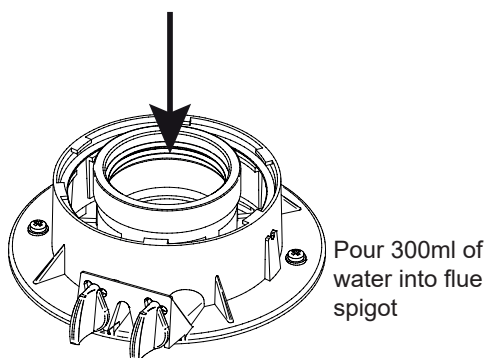


Fig. 27 Priming



Installation must be carried out in accordance with the prevailing regulations, codes of practice and the recommendations in this manual.



Danger

If the boiler is installed in a compartment do not use it for storage purposes. Do not obstruct any purpose provided ventilation openings.



Warning

Some residual water may escape when removing the sealing caps. Take precautions to avoid damage to components!

1. Lift the boiler and hook onto the wall bracket.
2. Remove the sealing caps from the connections under the boiler.
3. Remove the taps, elbow and sealing washers from the fitting kit. The taps and elbow accept 15 mm or 22 mm copper pipe as appropriate — see template.
4. Connect the appropriate tap to the heating flow and return pipework, gas supply and mains cold inlet.
5. Connect the elbow to the DHW flow outlet.
6. Using the sealing washers provided connect the taps and elbow to the boiler.
7. Ensure all joints are tight.

6.2.1 Fitting the pressure relief discharge pipe

1. Connect the pressure relief discharge before any other pipework.



Important

Make all soldered joints before connecting to the pressure relief valve. Do not adjust the position of the valve. The discharge pipe must be installed before pressurising the system.

2. Push the discharge elbow onto the valve outlet spigot (2) until a 'click' is felt indicating correct location.
3. Complete the discharge pipework and route it to the outside discharge point.

6.2.2 Connecting and priming the condensate drain

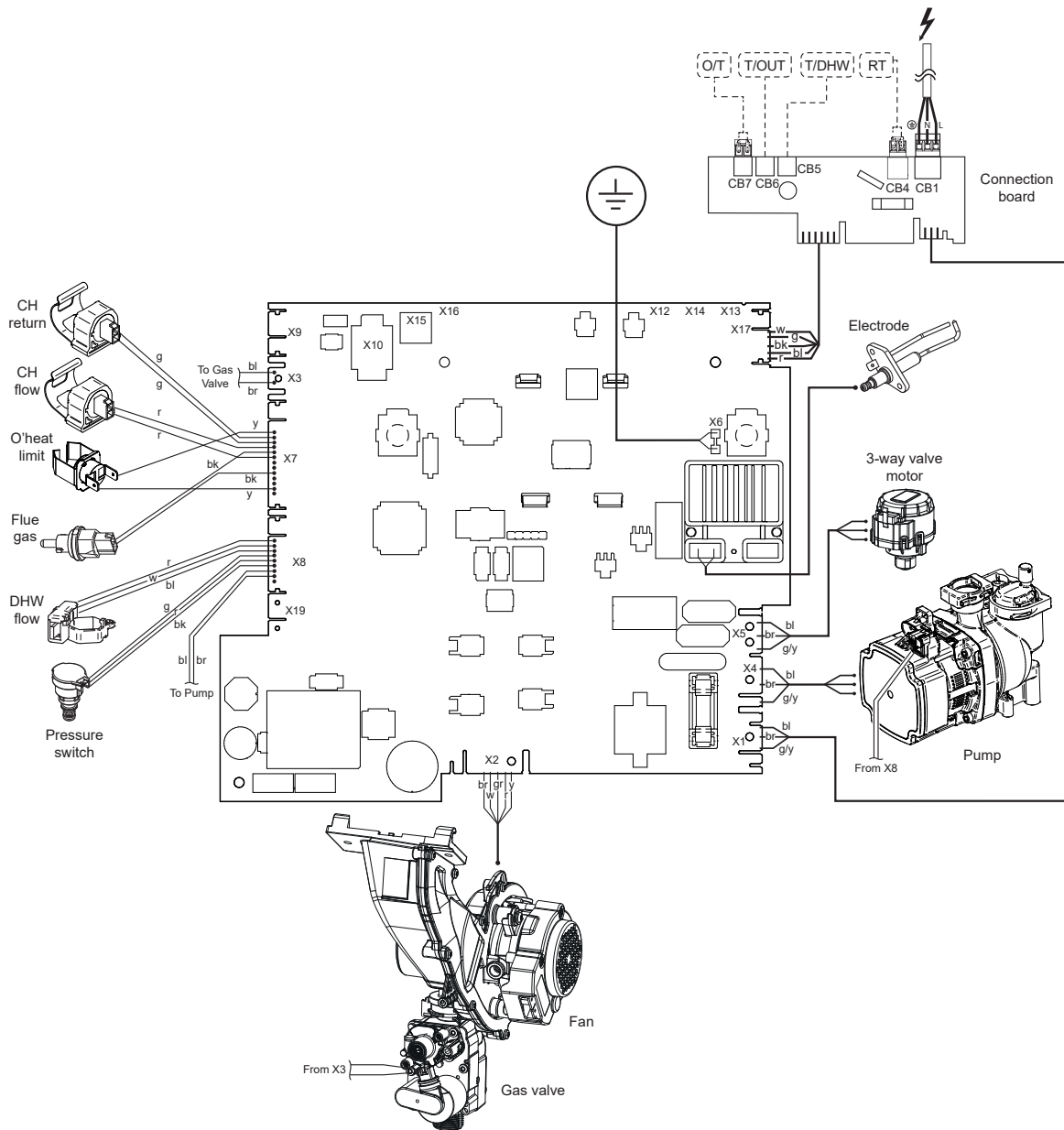
1. Remove the blanking cap. Refer to the wall template and using the straight rubber coupling supplied, connect the condensate drain.



Important

The boiler condensate trap must be primed by pouring approximately 300 ml of water into the flue spigot. Do not allow any water to fall into the air inlet.

6.3.1 Boiler wiring diagram



X1	Power supply: L: Live 230 V – 50 Hz N: Neutral ⊕: Earthing connector
X2	Fan supply (FAN)
X3	Gas valve (GV)
X4	Pump power supply
X5	3-way valve motor power supply
X6	Earth connections
X7	Sensors: Limit thermostat (ST) Installation return temperature (SRT) Installation flow temperature (SFL) Flue gas temperature (FS)
X8	Sensors: DHW flowmeter (HS) Heating circuit pressure switch (SP) Pump PWM signal (PWM PUMP)

X9	CAN connection
X10	Service interface
X17	OpenTherm unit (OT)
X17	Outside sensor (OS)
X17	External tank sensor - accessory (BS)
X15	Boiler stoppage (with open contact)
RT	Room thermostat contact (230 V)

6.3.2 Connection - general

The electrical safety of the equipment is only ensured when it is correctly connected to an effective earthing system in accordance with the prevailing safety standards for installations.

The boiler must be connected to a suitable power supply as described in section 5.2.2.



Caution

This connection must be made using a two-pole switch with contact opening of at least 3 mm.

Refer to section 5.3.2 for bath and shower room installations.

Fig. 28 PCB access

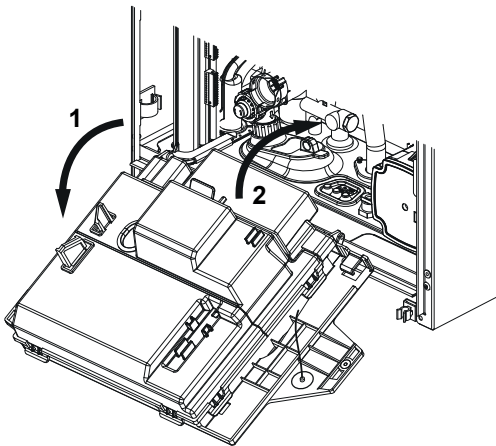
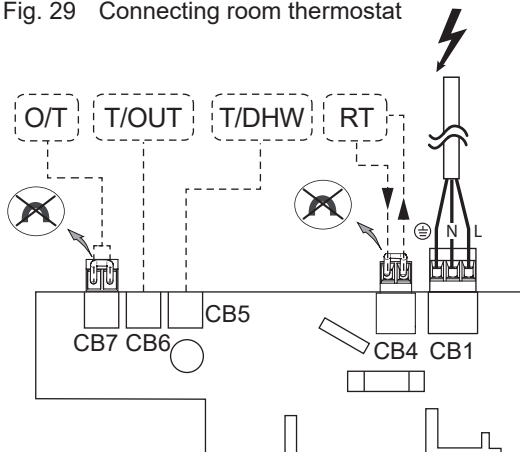


Fig. 29 Connecting room thermostat



6.3.3 System control

Further external controls (e.g. room thermostat sensors) **MUST** be fitted to optimise the economical operation of the boiler in accordance with Part L of the Building Regulations. A range of optional controls is available. Full details are contained in the relevant Sales Literature. Any proprietary OpenTherm control **MUST** allow individual adjustment of CH and DHW temperature.

6.3.4 Accessing the connections

To access the electrical connection board:

1. Pull the control panel downwards (1).
2. Lift the rear cover (2).

The supply cable is connected to the connection PCB using the CB1 connection.

The connections are as follows:

L: 230 V (brown wire)

N: Neutral (blue cable)



: Earth connection

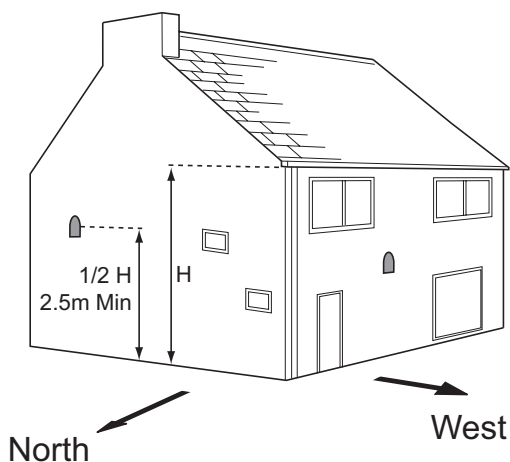
6.3.5 External connections

When connecting a 240 V control (RT), remove the link in CB4.

When connecting an OpenTherm control (OT), remove the link in CB7.

Leave the link in place for an unused control connection.

Fig. 30 Outdoor sensor position



6.3.6 Connecting on wall outdoor sensor

The sensor must be fixed to an external wall surface of the property it is serving. The wall must face north or west. Under no circumstance must it be fixed to a south facing wall in direct sunlight.

Refer to the instructions supplied with the sensor for fitting.

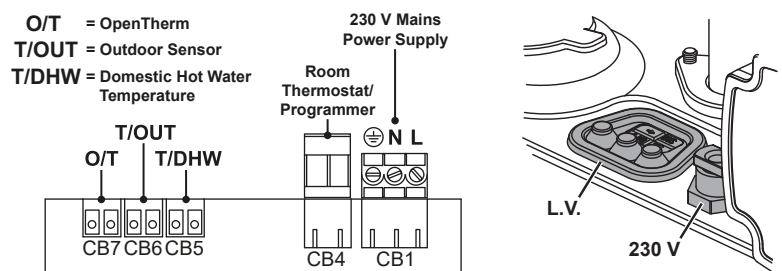


Fig. 31 Connecting outdoor sensor

6.4.1 Treatment of the water circulating system

All recirculatory water systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.

When fitting new systems flux will be evident within the system, which can lead to damage of system components.

BS 7593 is a regulatory requirement within Building Regulations, Part L. All systems must be thoroughly drained and flushed out using appropriate proprietary flushing agent.

A suitable inhibitor must then be added to the system.

All system additives (flushing agents, cleansers, inhibitors etc.) must comply with the requirements of BS 7593. Full instructions are supplied with the products and for further information contact the additive manufacturer directly or consult their website.

i Important
Failure to flush and add inhibitor to the system will invalidate the appliance warranty.

It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the inhibitor manufacturer. (Test kits are available from inhibitor stockists.) For information or advice regarding any of the above contact Baxi Customer Support 0344 871 1545.

6.4.2 Filling the installation

A filling point connection on the central heating return pipework must be provided to facilitate initial filling and pressurising and also any subsequent water loss replacement/refilling.

1. Fill the installation using approved equipment and in accordance with all relevant water supply regulations.

i Important
Your attention is drawn to:
In GB: Guidance G24.2 and recommendation R24.2 of the Water Regulations Guide.
In IE: the current edition of I.S. 813 Domestic Gas Installations.

2. The sealed primary circuits may be filled or replenished by means of a temporary connection between the circuit and a supply pipe, provided a 'Listed' double check valve or some other no less effective backflow prevention device is permanently connected at the inlet to the circuit and the temporary connection is removed after use.

3. Fill or replenish the sealed primary circuits by means of a temporary connection between the circuit and a supply pipe:

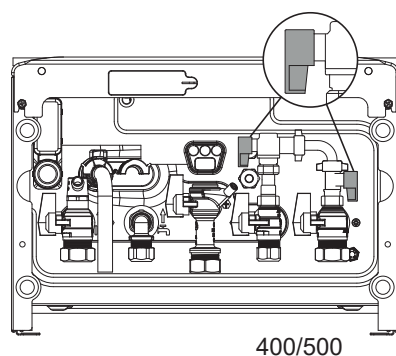
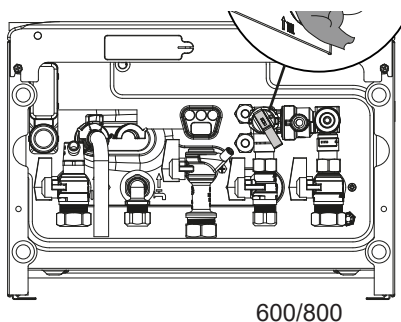
- Permanently connect a 'Listed' double check valve or some other no less effective backflow prevention device at the inlet to the circuit.
- Remove the temporary connection after use except if where a permanent connection is used.

Check all hydraulic connections for leaks.

6.4.3 Filling the condensate trap

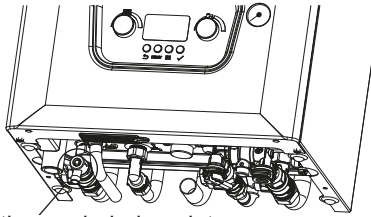
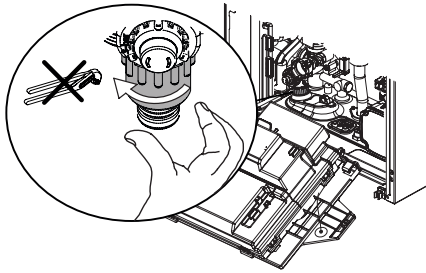
1. Check that the boiler condensate trap has been primed before commissioning the boiler.

Fig. 32 Filling link



6.5 Draining the installation

Fig. 33 Draining



CH isolation cock drain point

The boiler can be drained via the pressure relief valve which incorporates a drain valve. Check routing is suitable for draining primary system water.

1. Remove the front panel and lower the controls.
2. Slowly open the drain anti-clockwise by hand. Do not use tools.
3. Close the drain by turning clockwise. Do not over tighten.

There is also a drain point fitted on the central heating flow isolation cock.

7 Initial commissioning

7.1 Benchmark

7.1.1 Building Regulations and the Benchmark Commissioning Checklist

Building Regulations (England & Wales) require notification of the installation of a heating appliance to the relevant Local Authority Building Control Department. This can be achieved via a Competent Persons Self Certification Scheme as an option to notifying the Local Authority directly.

The Health & Safety Executive operates the 'Gas Safe Register', a self certification scheme for gas heating appliances.

This company is a member of the Benchmark initiative and fully supports the aims of the programme. Its aim is to improve the standards of installation and commissioning of central heating systems in the UK and to encourage the regular servicing of all central heating systems to ensure safety and efficiency.

Building Regulations require that installations should comply with manufacturer's instructions. It is therefore important that the commissioning checklist is completed by the installer. The relevant section of Building Regulations only relates to dwellings. Therefore the checklist only applies if the appliance is being installed in a dwelling or some related structure.

The flowchart in 7.1.4 gives guidance for installers on the process necessary to ensure compliance with Building Regulations.

7.1.2 The Benchmark Scheme

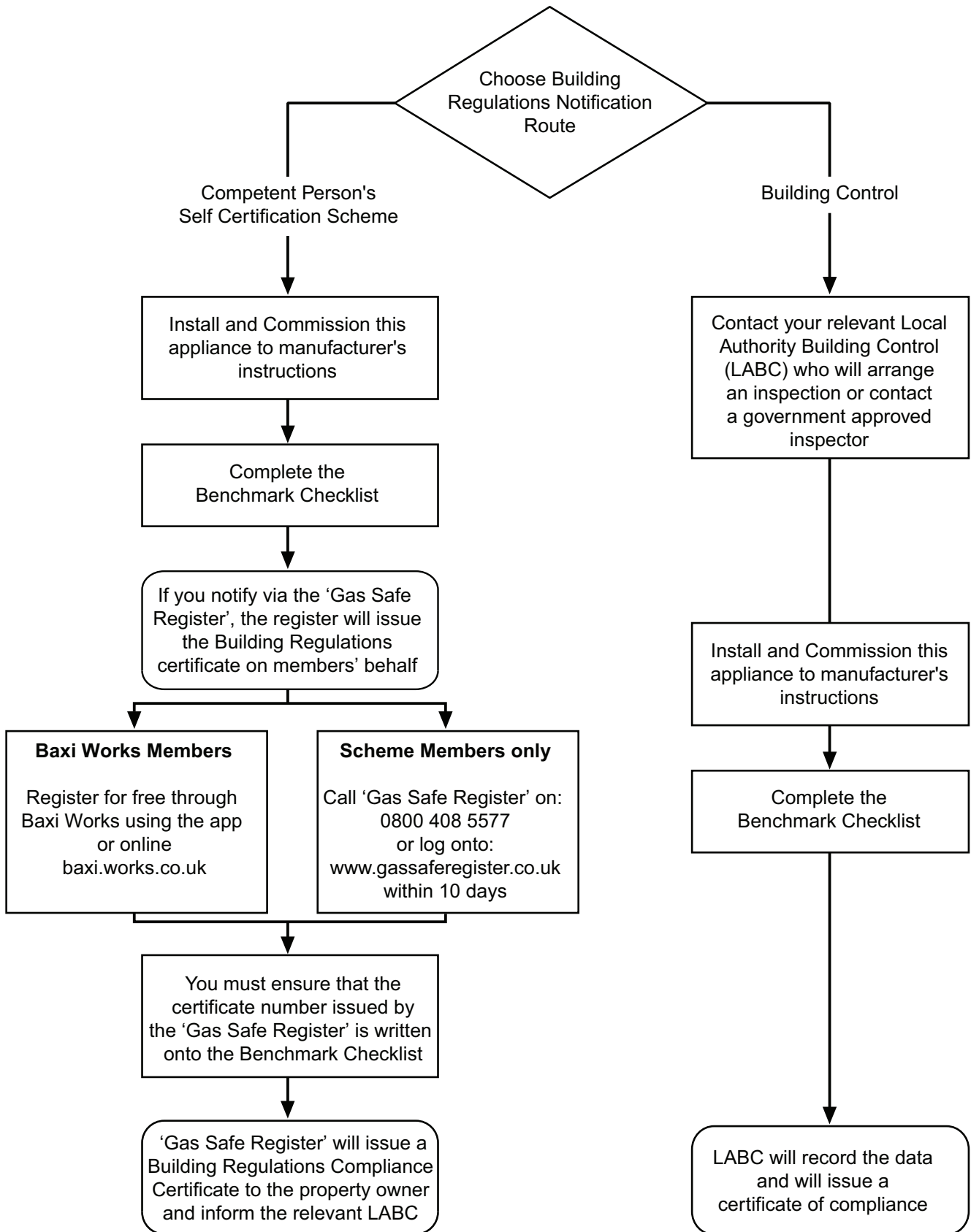
Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit www.centralheating.co.uk for more information.

7.1.3 The Benchmark Checklist

The Benchmark Checklist at the back of this manual should be completed during commissioning. If the boiler is moved within the property it needs to be recommissioned and a new Benchmark must be completed.





7.1.5 Control panel description

Fig. 34 Control panel

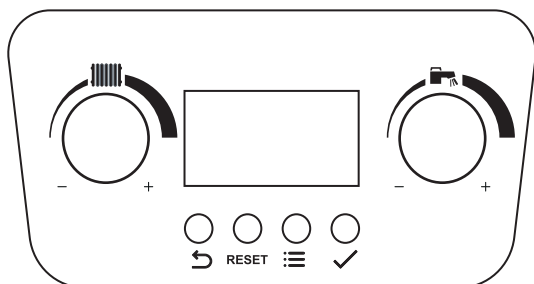
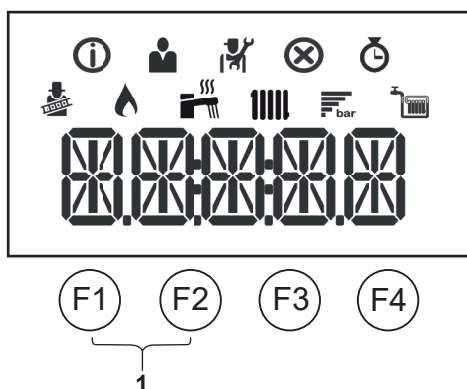




Fig. 35 Display screen



Knobs


 **HEATING:** Using this knob you can modify the flow temperature for the heating installation (heating setpoint 25-80 °C).


- Turn the knob anti-clockwise to reduce the temperature or to scroll through the menus. With an outside sensor connected it is possible to limit the setpoint value.
- Turn the knob clockwise to increase the temperature or to scroll through the menus.
- Recommended flow temperature for central heating is around 60 °C. However, this can vary based on the home's insulation, weather conditions and personal preference.

 **DOMESTIC HOT WATER:** Using this knob you can modify the domestic hot water temperature (DHW setpoint 35-60 °C) or scroll through the menus to the left and right.

- Turn anti-clockwise to reduce the temperature.
- Turn clockwise to increase the temperature.

Icons

 Chimney sweep mode is enabled (forced full load or low load for CO₂ measurement).

 The burner is on.

 Display of the system water pressure.

 DHW operation is enabled.


 CH operation is enabled.

 Information menu: read out various current values.

 User menu: user-level parameters can be configured.

 Installer menu: installer-level parameter can be configured.

 Error menu: errors can be read out.

 Counter menu: various counters can be read out.

Buttons:

F1 Back (previous menu)

F2 Manual reset

F3 Menu


F4 Confirms selection or value

1 Chimney sweep mode

Press **F1** & **F2** simultaneously

7.1.6 Procedure for first start-up

The following information appears on the display when the boiler is electrically powered:

1. The message "INIT" appears, indicating that the "Initialisation" phase is active (a few seconds);
2. The software version "Vxx.xx." appears (two seconds);
3. The software version for boiler settings "Pxx.xx." appears (two seconds);
4. The boiler and heating installation venting phase has started. During operation, the display shows in alternate mode "-----", the word "DEAIR" and the pressure value for the heating circuit. This phase lasts 6 minutes and 20 seconds, at the end the boiler is ready for operation;
5. The  symbol and the "x.x" installation water pressure value appear. In the event of a power outage the procedure will be repeated from the beginning.

All controls must be set to demand heating to ensure complete deaeration of the boiler and system.

Proceed as described below to commission the boiler:

- Open the main gas cock.
- Open the gas cock on the boiler.
- Open the front panel as described in the chapter entitled "Accessing the boiler electrical connection board".
- Check the gas supply pressure at the pressure point at the inlet of the appliance.
- Check the leak tightness of the gas connections in the boiler upstream of the gas valve.
- Check the tightness of the gas pipe, including the gas valves. The test pressure must not exceed 60 mbar (6 kPa).
- Purge the gas supply pipe by unscrewing the pressure socket on the gas valve. Reclose the socket once the pipe has been sufficiently bled.
- Check that the siphon is full of water as described in the chapter entitled "Filling the siphon".
- Check that there are no leaks in the hydraulic connections.
- Check the seal/condition of the flue gas pipes.
- Use the two-pole switch to supply voltage to the boiler.

i Important
For instructions on igniting the boiler, see the following chapter entitled "Procedure for first start-up".

7.2 Gas settings

Fig. 36 Gas inlet test point

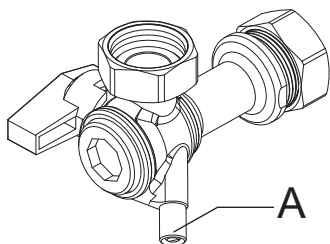


Fig. 37 Gas meter to valve (N.G.)

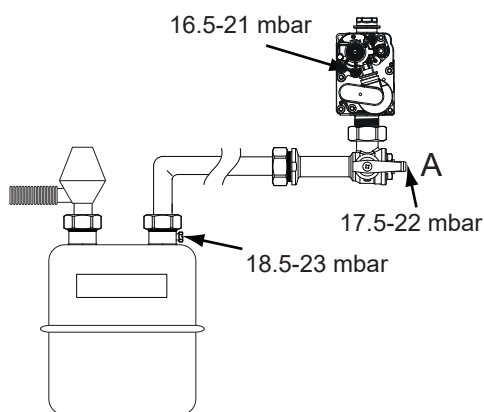
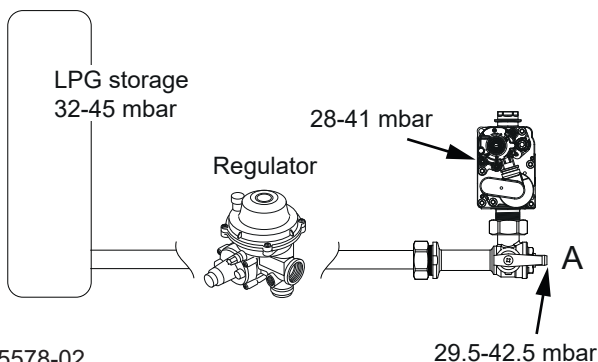


Fig. 38 Storage vessel to valve (L.P.G.)



7.2.1 Checking the working gas inlet pressure and gas rate

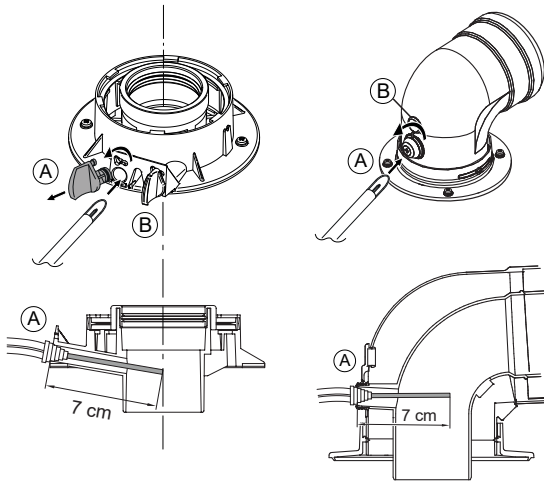
i Note
If the pressure drops are greater than shown in the diagram opposite, a problem with the pipework or connections is indicated. Permissible pressure drop across system pipework ≤ 1 mbar. Carry out chimney sweep function.

See
Activating the chimney sweep function, section 7.2.3.

1. With the boiler operating in the maximum rate condition check that the operational (working) gas pressure at the inlet gas pressure test point is in accordance with BS 6798 & BS 6891. This must be AT LEAST 17.5 mb (Natural Gas) or 29.5 mb (LPG) !
2. Ensure that this inlet pressure can be obtained with all other gas appliances in the property working. The pressure should be measured at the gas test point on the gas inlet (A).
3. Measure the gas rate. With any other appliances & pilot lights turned OFF the gas rate can be measured. It should be:-

	Natural Gas	LPG
24	2.61 m ³ /h	1.92 kg/h
30	3.26 m ³ /h	2.40 kg/h
36	3.90 m ³ /h	2.86 kg/h

Fig. 39 Flue gas measuring points



7.2.2 Combustion parameters

The boiler has two dedicated sockets in order to measure the combustion efficiency and cleanliness of the combustion exhaust gases during operation. One socket is connected to the flue gas exhaust circuit (A) which is used to detect the cleanliness of the combustion exhaust gases and the combustion efficiency. The other is connected to the combustion air intake circuit (B) which is used to check for the possible recirculation of the combustion exhaust gases in the case of coaxial pipes. The following parameters can be measured when using the socket connected to the flue gas circuit:

- temperature of the combustion exhaust gases;
- concentration of oxygen O_2 or alternatively carbon dioxide CO_2 ;
- concentration of carbon monoxide CO .

The temperature of the combustion air must be measured using the socket connected to the air intake circuit (B), inserting the measurement probe approx. 7 cm.

In order to analyse the combustion exhaust gases, the chimney sweep function must be activated, as described below.



Caution

To analyse the products of combustion, ensure adequate heat exchange in the system in heating mode or in domestic water mode (by opening one or more domestic hot water cocks) to avoid the boiler shutting down as a result of overheating. For correct boiler operation, the CO_2 (O_2) content in the combustion gases must be within the tolerance range in section 7.2.5.

Fig. 40 Minimum power

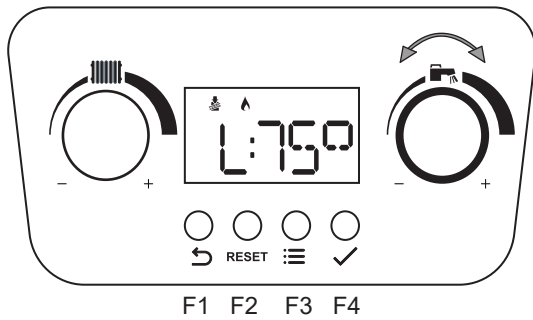


Fig. 41 Maximum power in C.H. mode

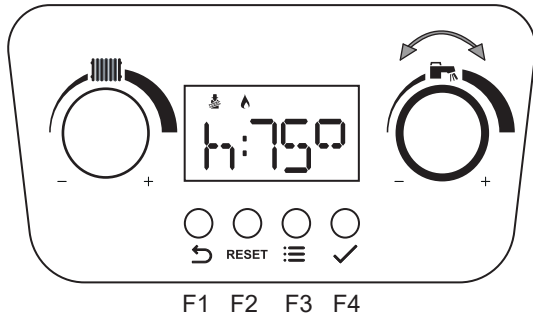
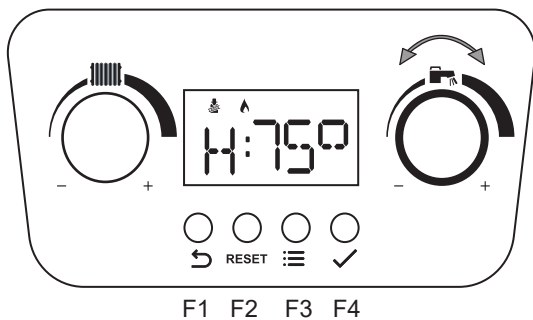




Fig. 42 Maximum power in D.H.W. mode



7.2.3 Activating the chimney sweep mode

1. Press the two **F1 + F2** keys until the function activates. When the letter **L** appears on the display (followed by the flow temperature) the boiler is working at minimum power.

2. Turn the  knob one notch to the right. When the letter **h** appears on the display (followed by the flow temperature) the boiler is working at maximum power in HEATING MODE.

3. Turn the  knob another notch to the right. When the letter **H** appears on the display (followed by the flow temperature) the boiler is working at maximum power in DOMESTIC HOT WATER MODE.



Important

For instructions on igniting the boiler, see the following chapter entitled "Procedure for first start-up".

To activate the domestic water mode, configure the setting to **GP082=1**. Once finished, return the setting to

To finish and exit the function press the **F1** key.



Caution

Remember to return the setting to **GP082=0** once the chimney sweep function is no longer in use.



Warning

Ensure that both flue test point plugs are in place after checking combustion.

Fig. 43 L.P.G. setting control panel displays

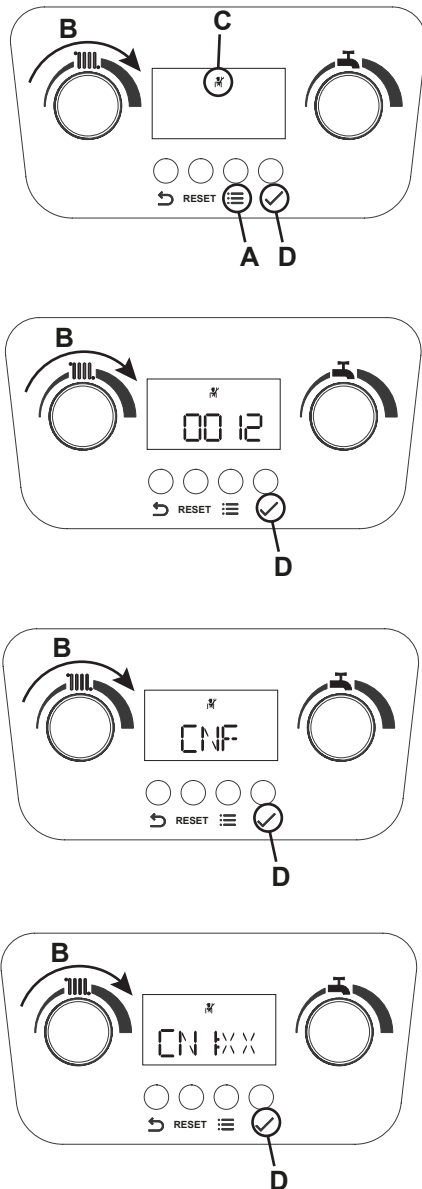
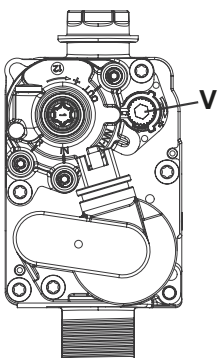


Fig. 44 Gas valve - L.P.G. setting



Frontal panel closed - Combi 24 & 30			
CO ₂ % nominal & range of tolerance		O ₂ % nominal & range of tolerance	
Max	Min	Max	Min
10.3% (10.2 to 10.7)	9.7% (9.2 to 9.8)	5.2% (5.4 to 4.6)	6.1% (6.9 to 6.0)

Frontal panel closed - Combi 36			
CO ₂ % nominal & range of tolerance		O ₂ % nominal & range of tolerance	
Max	Min	Max	Min
10.0% (10.0 to 10.5)	9.6% (9.2 to 9.8)	5.7% (5.7 to 4.9)	6.3% (6.9 to 6.0)

TNC230100002AC-C+7

This Appliance is factory set for use with NG	X
This Appliance has been converted for use with LPG	
This Appliance has been reverted for use with NG	

7.2.4 LPG conversion procedure

Note: G20 = NG G31 = LPG

1. Press the Menu button (A). Scroll using the heating knob (B) until just the installer-level parameter icon (C) is shown on the top row of the display. **Press the confirm button (D).**

2. Scroll using the heating knob (B) until '0012' is displayed. **Press the confirm button (D).** AP001 is displayed.

3. Scroll using the heating knob (B) until 'CNF' is displayed. **Press the confirm button (D).** A boiler-specific value will be displayed, e.g. 'CN 1:51'

4. With the boiler-specific value displayed scroll the heating knob (B) until the appropriate value for LPG operation is displayed - see 'CN1' value on the boiler data label. **Press the confirm button (D).**

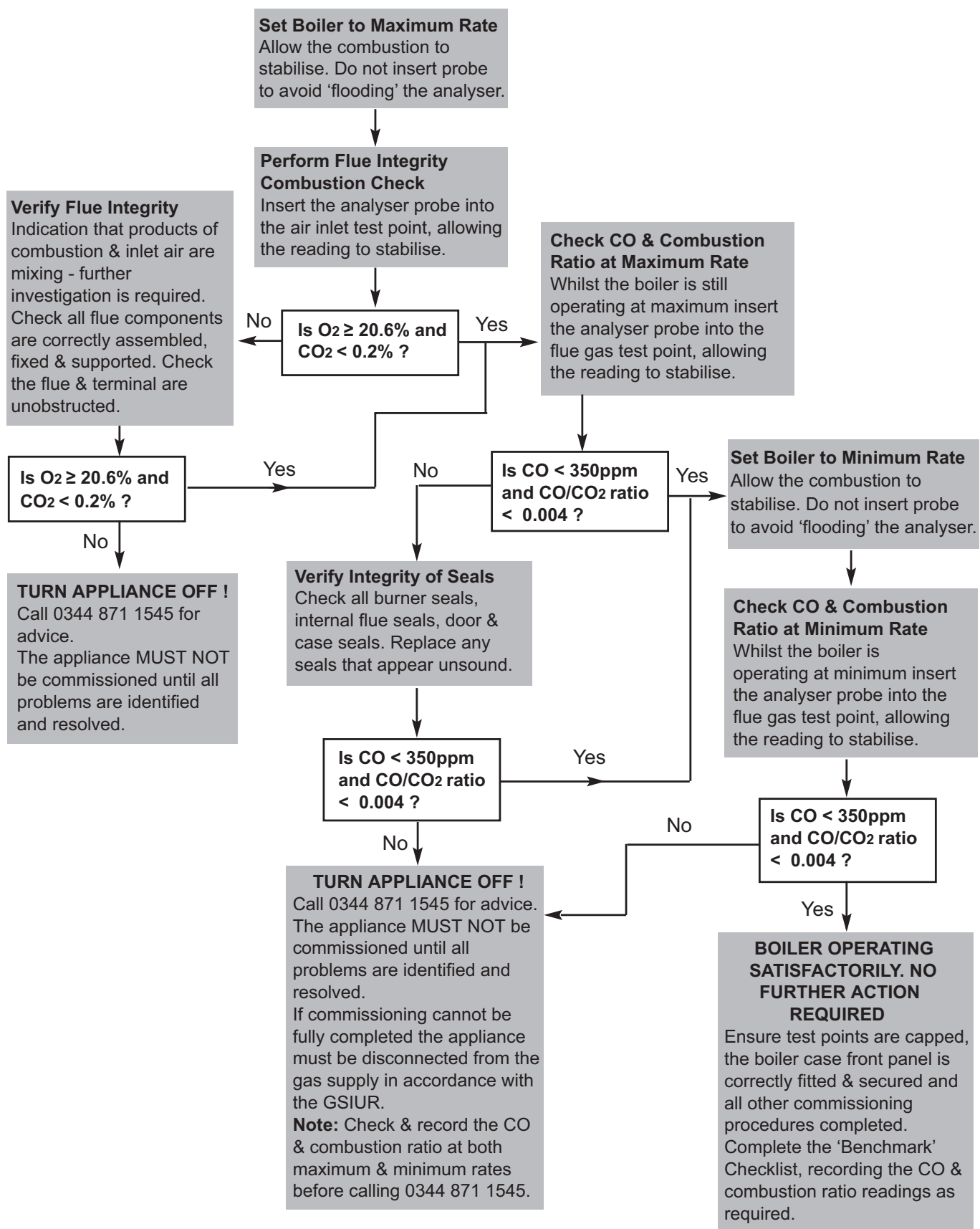
BAXI CONDENSING BOILER		Appliance No. XXXXXX
		GC No: XXXXXX
		Label No. xxxxxx
ELECTRICAL SUPPLY - 230V-50Hz-90W		UK CA 0086-22
MAX WATER TEMP < 95 DEG C		
FUSE RATING INT - (FAST) 2A EXT - 3A		D (l/min) XX
PMS = 3 BAR PRESSURE CLASS 2		
MAX PRESS (Bar) 8.0 2.5		Q _{rw} (kW) XX
IPX5D TYPE G13 G33		Q _n (Hs)(kW) XX
CAT II 2H3P admixture 0 - 20% H ₂ allowed, see manual		P _n (80/60)(kW) XX
2H-G20-20mbar CN1=xx, CN2=x		P _{nc} (50/30) (kW) XX
3P-G31-37mbar CN1=xx, CN2=x		NOx CLASS 6
WARNING: THIS APPLIANCE MUST BE EARTHED		PIN : 0085CU0338
This appliance is only intended for installation on a governed supply, and on central heating systems with sealed expansion vessels.		BAXI A Trading Division of Baxi Heating UK Ltd, Brooks House, Coventry Road, Warwick, CV34 4LL

5. When 'CN2' is displayed press the confirm button (D) to accept. The boiler will enter the initialisation and de-aeration mode. When this is complete the gas flow rate setting screw must be adjusted. Using a 4 mm hexagon key rotate screw 'V' one full turn anticlockwise.

6. Check the boiler combustion. If it is not correct adjust the flow rate screw again in small increments until satisfactory combustion is achieved.

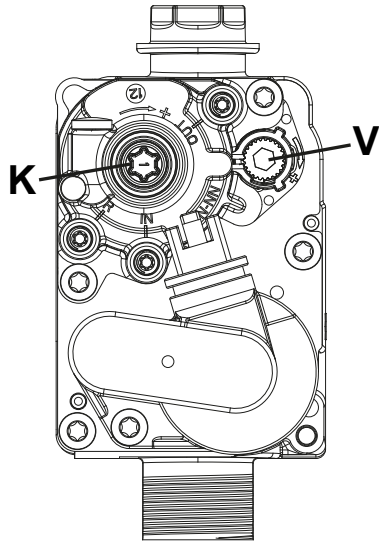
7. Using a suitable indelible pen delete the NG line from the conversion label and mark the box for LPG to indicate conversion. It is possible to convert the appliance back to NG if required as described above.

Fig. 45 Procedure at commissioning



7.2.6 Adjusting the gas valve

Fig. 46 Gas valve adjustment



IMPORTANT:
IF CO <350ppm &
CO/CO₂ ratio <0.004
NO ADJUSTMENT REQUIRED

i Important

Always adjust the maximum CO₂ before making any alteration to the minimum value.

V Gas flow rate setting screw - 4 mm Allen key

K OFFSET setting screw - Torx 40 (T40)

Remove the boiler door to take measurements or make adjustments.

Calibration of the MAXIMUM heat input:

Check that the CO₂ measured in the flue gas, with the boiler operating at maximum heat input, is as indicated in the table entitled "Service settings".

If incorrect:

Put the boiler into chimney sweep high mode "H". Let the CO₂ value stabilise.

i Important

Remove the Allen key to stabilise the CO₂ value if adjustment is required.

Adjust the setting screw (V) located on the gas valve as shown. Turn the screw clockwise to increase the content of CO₂ and anti-clockwise to decrease it.

		24 - 30 - 36
CO ₂	% (maximum)	8.8 to 9.4

* Values for G20 gas type only. For G20+20%H₂ calibration of the gas valve refer to O₂%.

Calibration of the REDUCED heat input:

Check that the measurement in the exhaust pipe, with the boiler operating at minimum heat input, is as indicated in the table entitled "Service settings".

If incorrect:

Remove the Offset setting screw plug (K) using the Torx driver. The Offset setting screw is accessible after removing the Offset setting screw plug (K).

Put the boiler into chimney sweep low mode. Let the CO₂ value stabilise.

i Important

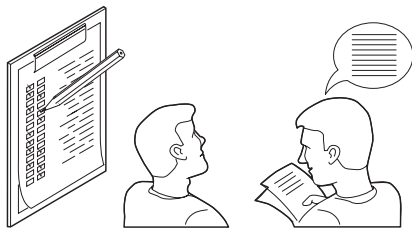
Remove the Torx driver to stabilise the CO₂ value if adjustment is required.

Adjust the Offset setting screw located on the gas valve. Turn the screw clockwise to increase the content of CO₂ and anti-clockwise to decrease it.

		24 - 30 - 36
CO ₂	% (minimum)	8.1 to 8.6

* Values for G20 gas type only. For G20+20%H₂ calibration of the gas valve refer to O₂%.

Fig. 47 Handover



7.3.1 Handover

Carefully read and complete all sections of the Benchmark Commissioning Checklist at the rear of this publication or the online electronic version that are relevant to the boiler and installation. These details will be required in the event of any warranty work.



Important

The warranty will be invalidated if the Benchmark section is incomplete.

1. The publication must be handed to the user for safe keeping and each subsequent regular service visit recorded.
2. Hand over the User Quick Start Guide, Installation and Servicing Manual, giving advice on the necessity of regular servicing.
3. For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance with I.S. 813. An example of this is given in I.S. 813 "Domestic Gas Installations". This is in addition to the Benchmark Commissioning Checklist.
4. Set the central heating and hot water temperatures to the requirements of the user. Instruct the user in the operation of the boiler and system, including the locations of the system control isolation switch.
5. Instruct the user in the operation of the boiler controls.
6. Demonstrate to the user the action required if a gas leak occurs or is suspected. Show them how to turn off the gas supply at the meter control, and advise them not to operate electric light or power switched, and to ventilate the property.
7. Show the user the location of the system control isolation switch, and demonstrate its operation.
8. Advise the user that they may observe a plume of vapour from the flue terminal, and that it is part of the normal operation of the boiler.
9. Show the updated package fiche at the back of the manual so your customer understands the energy rating for their complete system.

8 Operation

8.1 Use of the control panel

Fig. 48 Accessing the menus

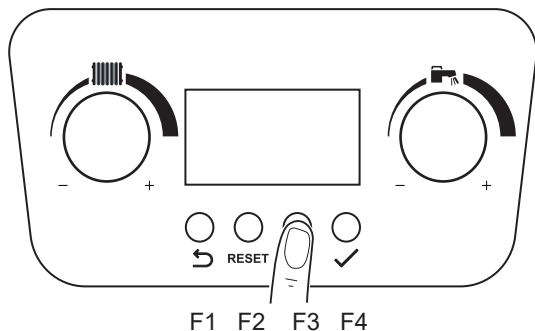
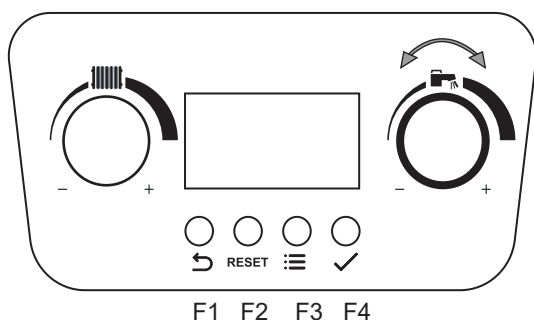


Fig. 49 Scrolling through the menus & settings



8.1.1 Browsing the menus

1. To activate the control unit, press any button.
2. To access the settings available from the menu, press the **F3** key.

Available menu options:

	Information menu
	User menu
	Installer menu
	Error menu
	Counter menu

3. Turn the knob to select the menu or to scroll through the settings.
4. Press the **F4** key to confirm selection of the required menu.
5. Turn the knob to scroll through the list of settings. Press the **F4** key to confirm selection of the setting.
6. Turn the knob to modify the setting. Press the **F4** key to confirm the setting has been changed.
7. Press the **F1** key to return to the home screen.



Important

The display shows the home screen if no keys are pressed for two minutes. If this happens, the procedure needs to be repeated.

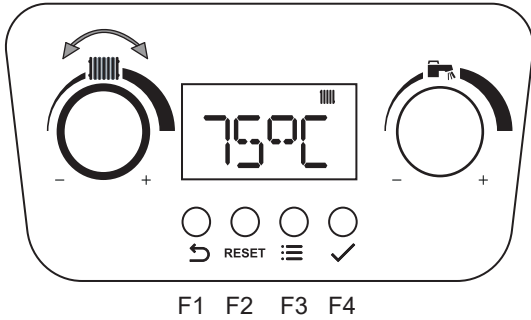
8.1.2 Running the automatic detection function

After removing or replacing a PCB accessory board (not main PCB), an auto-detect must be carried out.


1. Select the installer menu and type in the password to enter.
2. Turn the knob until **AD** is displayed.
3. Press the **F4** key and **-AD-** appears on the display.
4. Press the **F4** key again to activate the function.

8.2 Changing temperature

Fig. 50 Scrolling through the menus & settings



8.2.1 Changing the heating flow temperature

1. Use the  knob to adjust the flow temperature in heating mode.
 - Turn the knob anti-clockwise to reduce the temperature value.
 - Turn the knob clockwise to increase the temperature value.
 - Recommended flow temperature for central heating is around 60 °C. However, this can vary based on the home's insulation, weather conditions and personal preference.



Important

With an outside sensor connected it is possible to lower the setpoint value.

2. Press the **F4** key to confirm the value or wait a few seconds until the value is automatically saved.

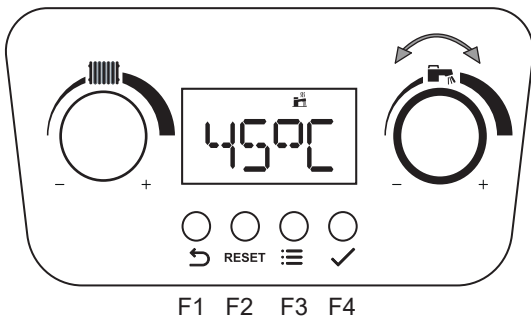


Important


The flow temperature is matched automatically when using a:

- Weather-dependent regulator.
- OpenTherm regulator.

Fig. 51 Scrolling through the menus & settings




8.2.2 Changing the domestic hot water temperature

1. Use the  knob to adjust the flow temperature in heating mode.
 - Turn the knob anti-clockwise to reduce the temperature value.
 - Turn the knob clockwise to increase the temperature value.
2. Press the **F4** key to confirm the value or wait a few seconds until the value is automatically saved.

8.3 Shutdown

8.3.1 Switching off the heating and domestic hot water

Heating mode can also be disabled by turning the  knob anti-clockwise until the word **OFF** appears on the display.




Important

When heating mode is re-enabled check, by turning the knob, that the comfort temperature is that requested.



Important

Heating is disabled but the boiler frost protection function remains activated.

Domestic hot water mode can also be disabled by turning the  knob anti-clockwise until the word **OFF** appears on the display.

To switch the boiler off completely, turn off the power supply to the appliance and close the gas cock.




Important

In this condition, the boiler and the heating installation are not protected against frost.

8.4 Deaeration function

The purpose of this function is to deaerate the heating installation. After installing the boiler, the function activates immediately when the boiler is first started up. The function automatically activates each time the boiler power supply is turned off and then on again.

To start the function manually:

- Access the installer menu and enter the password.
- Turn the  knob until “**DEAIR**” is displayed.
- Press the **F4** knob and **-AIR-** appears on the display
- Press the **F4** knob again to activate the function.

8.5 Frost protection

Where possible, draining the system should be avoided. If the system is to be unused during periods of low temperature several precautions must be taken: Any parts of the system that are in unheated areas of the dwelling should be fitted with a device such as a pipe thermostat or frost thermostat.

Power must remain supplied to the boiler and controls. Gas must remain supplied to the boiler.

The boiler pump will operate if the system temperature drops below 7°C. If the temperature falls to 4°C the burner will ignite and remain lit until the temperature reaches 10°C. This feature will protect the boiler and to some extent adjacent parts of the system but additional devices must be incorporated to ensure complete frost protection.



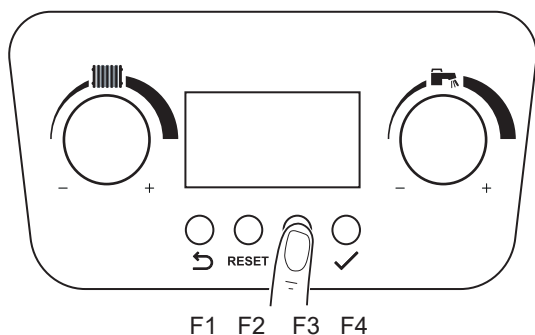
Important

If power does not remain supplied to the boiler and controls and gas to the boiler frost protection will not operate.

9 Settings

9.1 Accessing the settings

Fig. 52 Accessing settings



To display/change the list of SERVICE settings, proceed as follows:







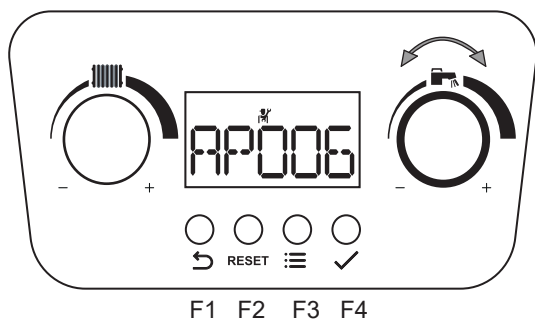

- Press the **F3** key - the  symbol on the menu bar will start to flash
- Turn the  knob until the  symbol is reached to access user settings
- Turn until the  symbol is reached to access installer settings then press **F4** key to confirm
- If accessing the installer menu use the  knob to enter code **0012** and confirm by pressing **F4** the key
- Turn the  knob until the desired setting is reached then press **F4** key to confirm

Fig. 53 Modifying settings



- Modify the value of the setting using the  knob
- Press **F4** to confirm
- Press **F1** to exit

9.2 List of parameters

Name	Description	Factory value	Minimum	Maximum	Level
AP073	Average external temperature [°C] when switching from summer/winter mode (with outside sensor)	22	10	30	User
AP079	Building insulation level (with outside sensor) 0: Poorly insulated building 15: Well insulated building	3	0	15	Installer
CP000	Max. settable heating setpoint temperature [°C]	80	25	80	Installer
CP020	Zone function 0: Disabled 1: Enabled	1	-	-	Installer
CP210	Comfort mode heating curve offset (with outside sensor)	15	15	90	Installer
CP230	Heating curve slope (with outside sensor)	1.5	0	4	Installer
CP470	Number of days required for the screed drying program	0	0	30	Installer
CP480	Screed drying starting temperature [°C]	20	20	50	Installer
CP490	Screed drying stop temperature [°C]	20	20	50	Installer
CP780	Zone control strategy selection 0: Automatic 1: Room Temp. based 2: Outdoor Temp. based 3: Outdoor & room based	0	-	-	Installer

9.3 Setting the parameters

Fig. 54 Outdoor sensor connection

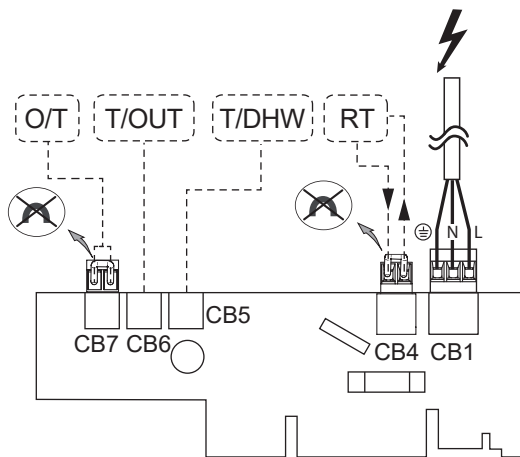
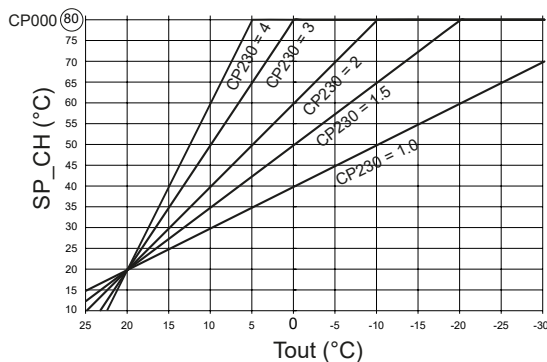
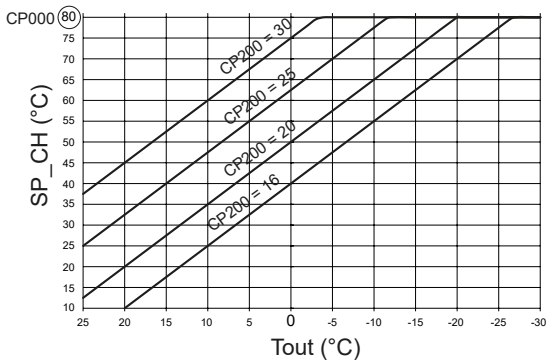


Fig. 55 Heating curve graphs



Tout: temperature detected by the outside sensor (°C)
SP_CH: Heating flow temperature setpoint (°C)

9.3.1 Setting the heating curve

Connect the outside sensor to terminal CB6 and connect the “On/Off” type room thermostat or the “OpenTherm” type room unit to terminal CB7 of the connection board after having removed the jumper.

Important
 If the heat curve is set via an OpenTherm room unit, do not set the heat curve with these parameters.

The procedure for accessing the settings is the same as that described in the previous section. To set the curve, change the following settings:

- CP000: Heating flow maximum temperature set point.
- CP210: comfort mode climatic curve offset from 15 to 90 (with external probe). Do not change the slope of the curve.
- CP230: setting of the slope of the climatic curve from 0.0 to 4.0.

To set the curve, follow the procedures below:

CP 200 sets the base curve that would be required for the user, the higher the value the higher the flow temperature at any given outside temperature.

Consider what the customer would want the actual flow temperature to be at an outside temperature of 20°C, graph gives the CP value.

Recommended CP200 Value = 25

CP230 is to change the gradient of the curve to suit winter months.

If the property has a low heat loss a low value can be set. If the heat loss is high the value should be set higher.

Recommended CP230 Value = 3



Danger

For low temperature heating installations modify setting CP000 according to the maximum flow temperature required for the system, e.g. lower temperatures for underfloor heating.

10 Maintenance

10.1 General

Warning

When changing components ensure that both the gas and electrical supplies to the boiler are isolated before any work is started. When the component has been changed recommission the boiler. Always examine any seals or gaskets, replacing where necessary. The case front panel **MUST** seal effectively against the boiler side panels.

Warning

After servicing or performing any maintenance on the boiler ensure that:

- Both flue test point plugs are in place
- The front cover is correctly fitted
- The front cover securing screws are fully tightened

For reasons of safety, economy and maintenance of warranty it is recommended that the boiler is serviced annually. Servicing must be performed by a competent person in accordance with BS 7967-4.

Important

During routine servicing, and after any maintenance or change of part of the combustion circuit, the following must be checked:-

- The integrity of the complete flue system and the flue seals by checking air inlet sample to eliminate the possibility of recirculation. **O₂ ≥ 20.6% & CO₂ < 0.2%**
- The integrity of the boiler combustion circuit and relevant seals.
- The operational gas inlet pressure and the gas rate.
- The combustion performance as described in “Check the Combustion Performance” below.

Competence to carry out checking combustion performance BS 6798 “Specification for Installation & Maintenance of Gas Fired Boilers not exceeding 70 kWh” advises that:-

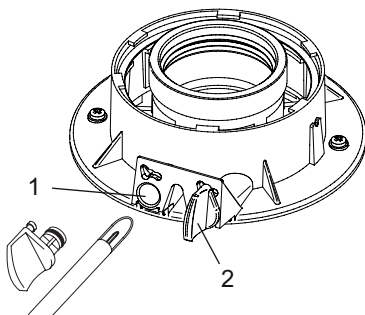
- The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and the interpretation of the results.
- The flue gas analyser used should be one meeting the requirements of BS 7927 or BS-EN50379-3 and be calibrated in accordance with the analyser manufacturers’ requirements.
- Competence can be demonstrated by satisfactory completion of the CPA1 ACS assessment, which covers the use of electronic portable combustion gas analysers in accordance with BS 7967, Parts 1 to 4.

Check the Combustion Performance (CO/CO₂ ratio). Set the boiler to operate at maximum rate.

See

Checking combustion - chimney sweep mode, section 7.2.3 for details.

Fig. 56 Flue gas test point



Remove the plug from the combustion test point, insert the analyser probe and obtain the CO/CO₂ ratio. **This must be less than 0.004.** If the combustion reading (CO/CO₂ ratio) is greater than this, and the integrity of the complete flue system and combustion circuit seals has been verified, and the inlet gas pressure and gas rate are satisfactory either:

- Perform the “Standard Inspection and Maintenance”
- Perform “Setting the Gas Valve”
- Replace and set the gas valve

- 1 Combustion test point
- 2 Incoming air for combustion test point

Warning

Ensure that both flue test point plugs are in place after checking combustion.

10.2.1 Basic safety and general appliance checks



Caution

Always examine any seals or gaskets, replacing where necessary. Where a seal or gasket is supplied with a spare part it should be used, irrespective of the condition of the original. Use only original spare parts that are intended for use with this type of boiler.



Important

When performing any inspection or maintenance, personal protective equipment must be used where appropriate.

1. Note the user control settings. Ensure that both the gas and electrical supplies to the boiler are isolated and that the boiler is cool.
2. Remove the case front panel and hinge down the control panel.
3. Carefully examine all seals and gaskets, replacing if necessary. Look for any evidence of leaks or corrosion and if found determine and rectify the cause.

10.2.2 Checking the water pressure

In order for the boiler to operate correctly, the pressure of the water in the heating circuit, shown on the display, must be between **1.0** and **1.5** bar.

If necessary, restore the water pressure as described in the chapter entitled "Filling the installation".

10.2.3 Checking the expansion vessel

Check the expansion vessel and replace it if necessary. Check the pre-charge annually and restore the pressure to 1 bar if necessary.

10.2.4 Checking the flue gas discharge and the air supply

Check the condition of flue components, joints and terminal. Ensure the flue system is adequately supported.

10.2.5 Checking the combustion

Measure the O_2/CO_2 contents and the temperature of the flue gases at the flue gas measuring point. To do this, proceed as follows:

- Operate the boiler at a temperature of approx. 70 °C. Remove the plug from the combustion test point.
- Measure the content of O_2/CO_2 in the flue gas using a suitable analyser. Compare this with the control value.

10.2.6 Checking the automatic air vent

Check that the pump automatic air vent is open. In the event of a leak replace the vent.

10.2.7 Cleaning the condensate trap

The front panel must be removed to extract the trap. Proceed as described below:

- Remove the screw (2);
- Remove the clip (1);
- Unfasten the pipe from the heat exchanger (4);
- Remove the trap (3) and clean it;
- Replace any gaskets as necessary;
- Fill the trap with water.
- Assemble in reverse order.

Fig. 57 Dismantling the condensate trap

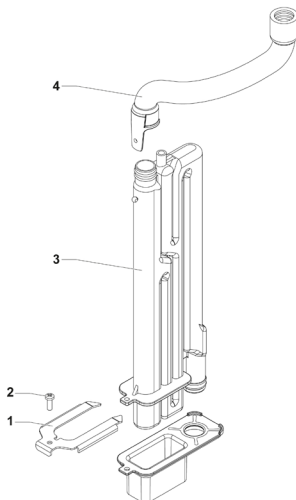
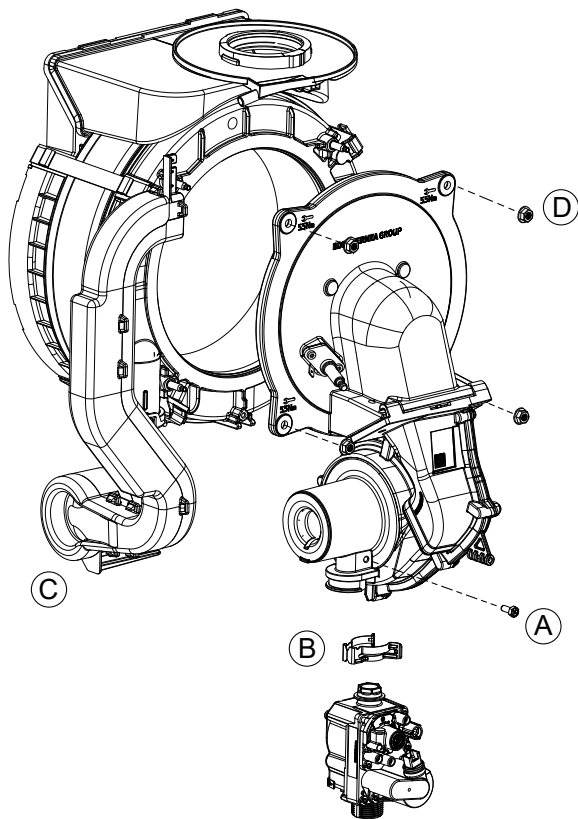


Fig. 58 Heat exchanger cleaning



10.2.8 Checking the burner and cleaning the heat exchanger



Warning

Dust released from the front insulation panel and the rear insulation panel can harm your health.

Proceed as described below for cleaning:

1. Isolate the unit from the power supply (disconnect the boiler from the main power supply).
2. Cut off the gas supply to the boiler.
3. Close the hydraulic cocks.
4. Remove the front panel.
5. Undo the 4 M6 locknuts (D) on the burner door.
6. Remove the air-gas unit. Undo screw (A) and clip (B) located between the fan and the gas valve.
7. Remove the silencer (C).
8. Check the condition of the detection/ignition electrode. Replace the electrode if necessary.
9. Check the condition of the burner, the gasket and the insulation panel, replacing if necessary.
10. The burner does not require any maintenance, it is self-cleaning.
11. Check that there are no cracks and/or other damage on the surface of the dismantled burner. If the burner is damaged, replace it.
12. Replace the burner flange gasket.
13. Check the front insulation panel for cracks, damage, moisture, ageing and deformation. Replace the insulation panel if in doubt.
14. To clean the heat exchanger, use a vacuum cleaner and a brush with plastic bristles.
15. Thoroughly clean with the vacuum cleaner again without the end piece (brush).
16. DO NOT clean the heat exchanger with any unauthorised chemical products and, in particular, ammonia, hydrochloric acid, sodium hydroxide (caustic soda) etc.
17. Re-assemble in reverse order

Fig. 59 Electrode

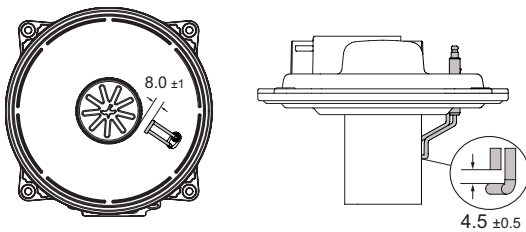
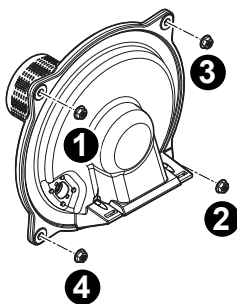


Fig. 60 Tightening sequence



- It is essential that the burner door is secured such that an effective seal is made between it and the heat exchanger.
- After routine maintenance or component replacement always check the condition of the sealing gasket.
- It is strongly recommended that a torque wrench is used to tighten the securing nuts to 5.5 Nm.
- In the absence of a torque wrench a suitable spanner or socket can be used to ensure a satisfactory seal.
- Care must be taken to prevent overtightening which could damage components.
- Always tighten the nuts in a 'cross tightening' sequence as shown.

10.2.9 Water unit



Caution

Do not use tools to remove components from inside the water unit (e.g. filter).

For certain user areas, where domestic water hardness values exceed 20 °F (200 mg of calcium carbonate per litre of water) it is recommended to install a polyphosphate batcher or equivalent system complying with the prevailing standards.

10.2.10 Cleaning/replacing the DHW filter

The domestic water filter is housed inside a suitable removable cartridge positioned on the cold water inlet. Proceed as follows to clean:

1. Disconnect the power supply to the boiler;
2. Close the domestic water inlet cock;
3. Empty the water from the domestic water circuit by opening a hot tap;
4. Remove the hall sensor (1).
5. Unscrew the cartridge (2) containing the filter, taking care not to apply excessive force;
6. Remove any impurities and deposits from the filter;
7. Check the filter and replace if necessary;
8. Re-fit the filter into the cartridge and tighten;
9. Re-fit the hall sensor (1)



Note

If the O-rings in the water unit need to be replaced and/or cleaned do not use oil or grease as a lubricant, with the exception of Molykote 111.

Fig. 61 Water unit

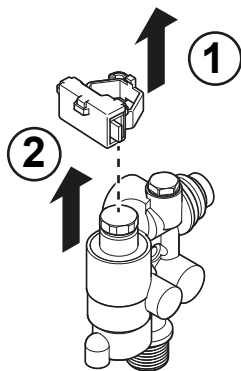
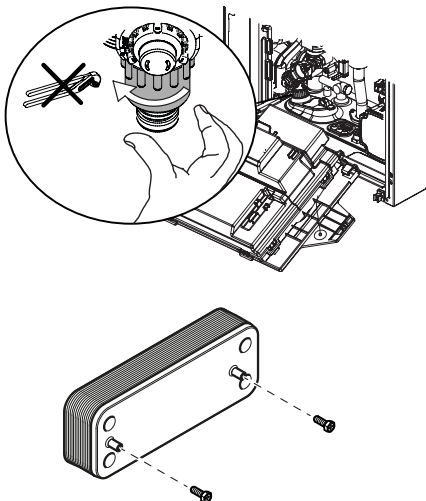


Fig. 62 Draining & plate heat exchanger



10.2.11 Removing limescale

The domestic water circuit can be cleaned after removing the plate heat exchanger from its seat, by unscrewing the two front screws.

To clean:

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Close the domestic water inlet cock.
5. Empty the DHW circuit by opening the lowest hot tap.
6. Remove the plate exchanger by undoing the two screws.
7. Clean the plate heat exchanger with a descaling product (e.g. formic or citric acid with a pH value of around 3). After cleaning, rinse thoroughly under running water.
8. Re-assemble in reverse order.



Note

After servicing, complete the relevant Service Interval Record section of the Benchmark Commissioning Checklist at the rear of this publication.

11 Troubleshooting

11.1 Temporary and permanent faults

The codes on the display indicate two types of fault: temporary and permanent. The first item shown on the display is a letter followed by a two-digit number. The letter indicates the type of fault: temporary (**H**) or permanent (**E**). The number indicates the group in which the fault that has occurred is classified according to its impact on safe and reliable operation. The second item shown flashes alternately with the first and consists of a two-digit number that indicates the type of fault which has occurred (see the following fault tables).

TEMPORARY FAULT (A/H.x.x.)

A temporary fault is shown on the display by the letter “**A**” or “**H**” followed by a number (group). A temporary fault is a type of fault that does not cause a permanent stoppage of the boiler. It has the following characteristics:

A: The appliance continues to operate. It disappears as soon as the cause has been resolved.

H: Disappears when the error condition is removed, in some cases even after 10 minutes.

PERMANENT FAULT (E.x.x)

A permanent fault is shown on the display by the letter “**E**” followed by a number (group). Press the RESET button for one second. If faults are shown frequently, contact our authorised technical assistance centre.

E: Stoppage, reset required.

11.2 Error codes

Short list of faults

Boiler display		Description	Cause - Check/Solution An installer is required for most checks and solutions
Group code	Specific code		
H.02	.07	Low pressure in heating circuit (permanently)	Check the system pressure and restore it
H.03	.02	Temporary flame loss	Check the electrode, gas supply and flue pipe
H.01	.05	Maximum temperature difference value between flow and return reached.	Check the boiler/installation circulation Check the installation pressure
E.04	.10	Burner failed to ignite after 4 attempts	Check the electrode, gas supply and flue pipe
H.01	.21	Flow temperature increase during domestic hot water operation too fast	Check the boiler/installation circulation Check the installation pressure
H.00	.42	Pressure sensor open/faulty	Check the operation of the pressure sensor and system pressure
H.01	.08	Flow temperature increase in heating mode too quick. Temporary stoppage of 10 minutes.	Check the boiler/installation circulation Check the installation pressure
H.01	.18	No water circulation (temporary).	Check the boiler/installation circulation Check the installation pressure
E.04	.03	Maximum flow temperature exceeded or flow temperature sensor short circuited	Check the boiler/installation circulation Check the installation pressure

List of temporary faults

Boiler display		Description	Cause - Check/Solution An installer is required for most checks and solutions
Group code	Specific code		
A.00	.28	Solar temperature sensor is either removed or measures a temperature below range	Check the solar temperature sensor wiring. Replace the sensor if necessary. In case of removal of the solar tank, set the parameter DP150=1.
A.00	.29	Solar temperature sensor is either shorted or measures a temperature above range	Check the solar temperature sensor wiring. Replace the sensor if necessary.
A.00	.34	Outdoor temperature sensor expected but not detected	OUTDOOR SENSOR NOT DETECTED Enter the correct value of the parameter AP091 (AP091=0) Connect the outdoor sensor Outdoor sensor is not connected correctly
A.02	.06	Low system pressure in heating circuit	Check the installation pressure and restore Check the expansion vessel pressure Check for boiler/installation leaks
A.02	.18	OBD error	CONFIGURATION ERROR Re-enter the CN1 and CN2 values, check the information shown on the data plate
A.02	.36	Functional device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
A.02	.37	Passive functional device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
A.02	.45	Connection error	COMMUNICATION FAULT Start the auto-detect function (parameter AD))
A.02	.46	Device priority error	COMMUNICATION FAULT Start the auto-detect function (parameter AD)
A.02	.48	Unit function configuration error	ELECTRICAL CONNECTION ERROR Start the auto-detect function (parameter AD)) Check electrical connections of external devices
A.02	.49	Failed node initialisation	ELECTRICAL CONNECTION ERROR Start the auto-detect function (parameter AD)) Check electrical connections of external devices
A.02	.54	Open Therm bus power supply error	Check the devices connected to contact X17 - Terminal board M2 (7-8) Replace the main PCB (CU-GH)
A.02	.55	Incorrect or missing serial number	Replace the main PCB (CU-GH)
A.02	.76	Internal memory reserved for full customisation of settings. No further changes can be made	CONFIGURATION ERROR Re-enter the values CN1 and CN2 Replace the CU-GH board
H.00	.42	Pressure sensor open/faulty	SENSOR/CONNECTION PROBLEM Check the operation of the pressure sensor Check the sensor/PCB connection
H.00	.81	Room unit disconnected	Check the operation of the room unit. Check the room unit/PCB connection. When removing the room unit, switch the power supply off and on again and set parameter CP780 =0 to remove the error.
H.01	.00	Temporary communication failure between gas valve and boiler PCB.	MAIN PCB ERROR Configure CN1/CN2 Replace the main PCB
H.01	.05	Maximum temperature difference value between flow and return reached.	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual venting cycle Check the installation pressure OTHER CAUSES Check the cleanliness of the exchanger Check the operation of the temperature sensors Check the connection of the temperature sensors
H.01	.08	Flow temperature increase in heating mode too quick. Temporary stoppage of 10 minutes.	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual venting cycle Check the installation pressure OTHER CAUSES Check the cleanliness of the exchanger Check the operation of the temperature sensors Check the temperature sensor connection

Boiler display		Description	Cause - Check/Solution An installer is required for most checks and solutions
Group code	Specific code		
H.01	.14	Maximum flow or return temperature value reached.	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual venting cycle
H.01	.18	No water circulation (temporary).	INSUFFICIENT CIRCULATION Check the installation pressure Activate a manual venting cycle Check the operation of the pump Check the boiler/installation circulation TEMPERATURE SENSOR ERROR Check the operation of the temperature sensors Check the temperature sensor connection
H.01	.21	Flow temperature increase during domestic hot water operation too fast.	INSUFFICIENT CIRCULATION Check the installation pressure Activate a manual venting cycle Check the operation of the pump Check the boiler/installation circulation TEMPERATURE SENSOR ERROR Check the operation of the temperature sensors Check the temperature sensor connection
H.02	.00	Reset in progress	
H.02	.02	Waiting for configuration settings to be entered (CN1,CN2).	CN1/CN2 CONFIGURATION MISSING Configure CN1/CN2
H.02	.03	Configuration settings (CN1,CN2) not entered correctly.	Check configuration CN1/CN2 Configure CN1/CN2 correctly
H.02	.04	PCB settings cannot be read.	MAIN PCB ERROR Configure CN1/CN2 Replace the main PCB
H.02	.05	Setting memory not compatible with the boiler PCB type	Reset CN codes. Replace main PCB
H.02	.07	Low pressure in heating circuit (permanently)	Check the system pressure and restore it Check the pressure of the expansion vessel Check for any system/boiler leaks
H.02	.09	Partial stoppage of the boiler (antifreeze function active)	SIGNAL INDICATING BLOCKING INPUT Contact X15 open, check connected devices Parameter configuration error: Check AP001
H.02	.10	Total stoppage of the boiler (antifreeze function not active)	SIGNAL INDICATING BLOCKING INPUT Contact X15 open, check connected devices Parameter configuration error: Check AP001
H.02	.70	External unit heat recovery test failed	PCB accessory error SCB-09 Check the device connected to contact X9
H.03	.00	No identification data for boiler safety device.	MAIN PCB ERROR Replace the main PCB
H.03	.02	Temporary flame loss	ELECTRODE PROBLEM Check the electrode connection and wiring Check the condition of the electrode GAS SUPPLY Check the gas supply pressure Check the gas valve calibration FLUE GAS PIPES Check the pipes and the terminals
H.03	.05	Power supply voltage too low	Check the mains voltage
H.03	.54	Temporary flame loss Shutdown due to the power supply voltage being too low	ELECTRODE PROBLEM Check the electrode electrical connections Check the condition of the electrode GAS SUPPLY Check the gas inlet pressure Check the gas valve calibration FLUE GAS EXHAUST PIPE Check the air intake and flue gas exhaust terminal Check the power supply voltage

List of permanent faults (boiler stoppage, reset required)

Boiler display		Description	Cause - Check/Solution An installer is required for most checks and solutions
Group code	Specific code		
E.00	.04	Return temperature sensor disconnected	SENSOR/CONNECTION PROBLEM Check the operation of the temperature sensor Check the sensor/PCB connection
E.00	.05	Return temperature sensor short circuited	SENSOR/CONNECTION PROBLEM Check the operation of the sensor Check the sensor/PCB connection
E.00	.16	DHW tank temperature sensor not connected	SENSOR OPEN Check the operation of the sensor Check the sensor/PCB connection When removing a domestic hot water tank, set parameter DP150=1
E.00	.17	DHW tank temperature sensor short-circuited	SENSOR CLOSED Check the operation of the sensor Check the sensor/PCB connection
E.00	.20	The flue gas temperature sensor is not connected or measured a temperature below the range	SENSOR OPEN Check the operation of the sensor Check the sensor/PCB connection
E.00	.21	The flue gas temperature sensor has short-circuited or measured a temperature above the range	SENSOR CLOSED Check the operation of the sensor Check the sensor/PCB connection
E.01	.04	Flame loss detected five times in 24 hours	GAS SUPPLY Check the gas supply pressure Check the gas valve calibration ELECTRODE PROBLEM Check the electrode connection and wiring Check the condition of the electrode FLUE GAS PIPES Check the air intake and flue gas exhaust pipes EXCHANGER ON FLUE GAS SIDE BLOCKED Check the cleanliness of the exchanger MAINS VOLTAGE Check the power supply voltage
E.01	.12	Temperature measured by return sensor greater than flow temperature	SENSOR/CONNECTION PROBLEM Check that the sensors are positioned the correct way around Check that the flow sensor is in the correct position Check the return temperature in the boiler Check the operation of the sensors
E.01	.17	No water circulation (permanent)	INSUFFICIENT CIRCULATION Check the installation pressure Activate a manual venting cycle Check the operation of the pump Check the boiler/installation circulation SENSOR ERROR Check the operation of the temperature sensors Check the temperature sensor connection
E.01	.20	Maximum flue gas temperature reached	EXCHANGER ON FLUE GAS SIDE BLOCKED Check the cleanliness of the exchanger
E.02	.13	Total stoppage of the boiler (antifreeze function not active)	SIGNAL INDICATING BLOCKING INPUT Contact X15 open, check connected devices Parameter configuration error: Check setting AP001
E.02	.17	Permanent communication failure between gas valve and boiler PCB	MAIN PCB ERROR Check for any electromagnetic interference Replace the main PCB
E.02	.35	Critical safety device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
E.02	.39	Minimum pressure not reached after 6 minutes of automatic filling	Check automatic filling is working (if fitted)
E.02	.47	Connection to external device unsuccessful	ELECTRICAL CONNECTION ERROR Start the auto-detect function (parameter AD) Check the electrical connections of external devices.

Boiler display		Description	Cause - Check/Solution An installer is required for most checks and solutions
Group code	Specific code		
E.04	.01	Flow temperature sensor short circuited	SENSOR/CONNECTION PROBLEM Check the sensor/PCB connection Check the operation of the sensor
E.04	.02	Flow temperature sensor disconnected	SENSOR/CONNECTION PROBLEM Check the sensor/PCB connection Check the operation of the sensor
E.04	.03	Maximum flow temperature exceeded or flow temperature sensor short circuited	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual venting cycle Check the operation of the sensors
E.04	.08	Maximum safe temperature value reached	INSUFFICIENT CIRCULATION Check the pressure in the installation Switch on the manual de-aeration function Check that the pump is working Check the circulation in the boiler/installation OTHER POSSIBLE CAUSES Check the safety thermostat connection Check that the safety thermostat is working correctly
E.04	.10	Burner failed to ignite after 4 attempts	GAS SUPPLY Check the gas supply pressure Check the gas valve electrical connection Check the gas valve calibration Check the operation of the gas valve ELECTRODE PROBLEM Check the electrode electrical connections Check the electrode condition OTHER CAUSES Check the operation of the fan Check the condition of the flue gas exhaust (blockages)
E.04	.12	Ignition failure -flame monitoring	Check the earth circuit Check the power supply voltage Check the electrode conditions
E.04	.13	Fan impeller blocked or maximum rpm exceeded	FAN/PCB PROBLEM Check the PCB-fan connection Check the fan operation
E.04	.17	Fault in gas valve control circuit	MAIN PCB ERROR Check the electrical connections for the gas valve Replace the main PCB
E.04	.18	The flow temperature is below the minimum temperature or the flow temperature sensor is not connected	SENSOR/CONNECTION PROBLEM Check the sensor/PCB connection Check the operation of the sensor
E.04	.23	Communication internal stoppage	Switch the power supply off and on again and then RESET
E.04	.254	Fault in gas valve control circuit	MAIN PCB ERROR Check the electrical connections
E.04	.29	Communication internal stoppage	Switch the power supply off and on again and then RESET
E.04	.54	Fault in gas valve control circuit	Check the wiring on the gas valve Replace the gas valve or PCB

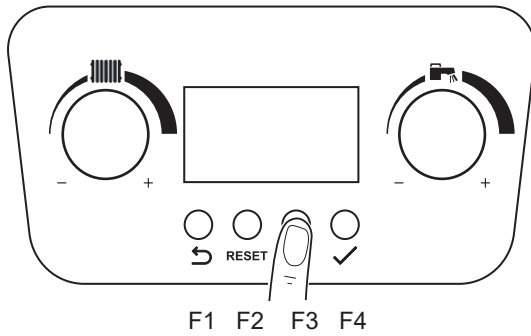


Important

When connecting a non-Baxi Room Unit the code “**254**” may be shown in the event of a fault. Read the fault code shown on the boiler display.


11.3 Reading out measured values

Fig. 63 INFO menu access




Proceed as described below to access the info menu:

Press the **F3** key;

The  symbol flashes on the display;

Press the **F4** key to access the **INFO** menu;

Turn the  knob to view the settings;

Press the **F1** key to exit.

Read-only list of operating parameters

Setting (read only)	Description	Value
AM001	DHW (Domestic Hot Water) mode enabled (0: Disabled, 1: Enabled)	0/1
AM010	Pump speed (0 ÷ 100%)	%
AM011	Service required (0: Disabled, 1: Enabled)	0/1
AM012	Status of appliance	List of statuses
AM014	Sub Status of appliance	List of sub-statuses
AM015	Pump operation (0: Disabled, 1: Enabled)	0/1
AM016	Flow temperature	°C
AM018	Return temperature	°C
AM019	Actual water pressure in central heating system	bar
AM024	Current output of the boiler	0/100%
AM027	Outside temperature	°C
AM036	Flue gas temperature	°C
AM037	Status of the 3-way valve (0: Heating, 1: DHW)	0/1
AM040	Outgoing DHW temperature check	°C
AM091	Season mode (0: winter, 3: summer)	0/3
AM101	Internal set point	°C
BM000	DHW temperature	°C
CM030	Current room temperature for zone	°C
CM120	Current operating mode in the zone (0: Disabled, 1: Enabled)	0/1
CM190	Zone ambient set point	°C
CM210	Outside temperature in the zone	°C
CM280	Zone calculated set point	°C
DM001	Temperature of the DHW tank	°C
DM002	Outgoing DHW flow speed	l/min
DM005	Solar system DHW temperature	°C
DM009	Primary operating mode (0: Programming, 1: Manual, 2: Antifreeze/Holiday)	0/1/2
DM019	DHW mode active (1: Comfort, 2: Low, 3: Holiday, 4: Antifreeze)	1/2/3/4
DM029	DHW temperature set point	°C
GM001	Actual fan RPM	rpm
GM002	Actual fan RPM setpoint	rpm
GM003	Flame detected (0: Not detected, 1: Detected)	0/1
GM004	Gas valve (0: Open, 1: Closed, 2: Off)	0/1/2
GM007	Start-up (0: Off, 1: On)	0/1
GM008	Actual flame current measured	µA
GM012	Contact release signal X16 (0: No; 1: Yes)	0/1
GM013	Boiler shutdown signal input (0: Open, 1: Closed)	0/1
GM044	Reason for shutdown checked (0: None) 1. Heating Stoppage 2. DHW Stoppage 3. Awaiting burner ignition 4. Heating flow temperature above maximum value 5. Heating flow temperature above the starting value 6. Heat exchanger temperature above the starting value 7. Average heating flow temperature value above the starting value 8. Heating flow temperature above the setpoint value 9. Temperature difference between flow and return too great 10. Heating flow temperature above the shutdown value 11. Heat request before the minimum wait time between two consecutive requests 12. Shutdown caused by flame value being too low 13. Solar temperature above the shutdown value	0/13

11.4 Statuses and sub-statuses

- The **STATUS** is the operating phase of the boiler at the moment of display. To view the status, select the parameter **AM012**.
- The **SUB-STATUS** is the instantaneous operation the boiler is performing at the moment of display. To view the sub-status, select the parameter **AM014**.

List of statuses

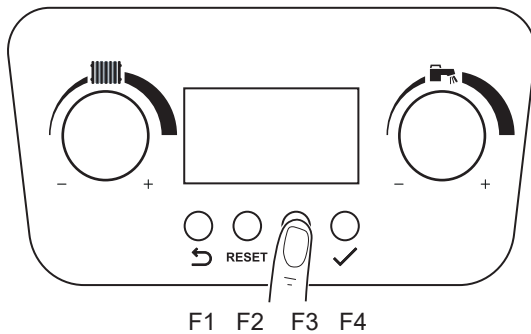
STATUS	
Standby	0
Heat request	1
Burner ignition	2
Operation in heating mode	3
Operation in domestic water mode	4
Burner off	5
Pump post circulation	6
Burner shutdown to reach the temperature setpoint	8
Temporary fault	9
Permanent fault (fault to be reset manually)	10
Chimney sweep function at minimum output	11
Chimney sweep function at maximum output in heating mode	12
Chimney sweep function at maximum output in domestic water mode	13
Manual heat request	15
Frost protection function active	16
Venting function active	17
Boiler reset in progress	19

List of sub-statuses

SUB-STATUS	
Standby	0
Wait time until next ignition in heating mode	1
Pre-ventilation	13
Burner ignition signal sent to safety core	15
Burner pre-ignition	17
Burner ignition	18
Flame check	19
Fan operation during ignition attempts	20
Operation at set temperature setpoint	30
Operation at limited temperature setpoint	31
Operation at required output	32
Level 1 gradient detected	33
Level 2 gradient detected	34
Level 3 gradient detected	35
Flame protection active	36
Stabilisation time	37
Boiler start at minimum output	38
Operation in heating mode has been interrupted by a domestic hot water request. Restart from power output in which it was interrupted.	39
Post ventilation	41
Fan off	44
Output reduction due to high flue gas temperature	45
Pump post circulation	60

11.5 Reading counters

Fig. 64 Counter menu access





Proceed as described below to access the counter menu:


Press the **F3** key;


The  symbol flashes on the display;

Turn the  knob to view until the  symbol is displayed then press the **F4** key to confirm;

Turn the  knob to view until the required counter is displayed then press the **F4** key to confirm;

To access the meters at the installer level, turn the  knob until **SVC** is displayed then press the **F4** key to confirm;

Use the  knob to enter code **0012** then press the **F4** key to confirm;

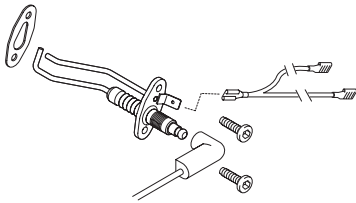
Turn the  knob to view until the required counter is displayed then press the **F4** key to confirm;

Press the **F1** key to exit.

Meters	Level	Description
AC001	User	Number of boiler power supply hours
AC016	Installer	Filling counter, counts the amount of filling cycles
AC002	Installer	Number of boiler operating hours after last maintenance operation
AC003	Installer	Number of boiler power supply hours after last maintenance operation
AC004	Installer	Failed start-up attempts after last maintenance operation
AC005	User	Indicative energy consumption [kW/h] in heating mode
AC006	User	Indicative energy consumption [kW/h] in domestic hot water (DHW) mode
AC026	Installer	Number of pump operating hours
AC027	Installer	Number of pump start-ups
CLR	Installer	Resetting of all meters (to be confirmed by pressing the F4 key) NOTE: This parameter is only displayed if AP010 ≠ 0
DC001	Installer	Total energy consumption used by domestic hot water (DHW)
DC002	Installer	Number of domestic hot water cycles (three-way valve switching)
DC003	Installer	Number of hours in domestic hot water mode (three-way valve switching)
DC004	Installer	Number of burner start-ups for domestic hot water mode
DC005	Installer	Number of burner start-up hours for domestic hot water mode
GC007	User	Failed start-up attempts
PC001	Installer	Indicative electrical energy consumption [kW/h] in heating mode
PC002	Installer	Number of burner start-ups for heating and domestic hot water mode
PC003	Installer	Number of burner start-up hours for heating and domestic hot water mode
PC004	Installer	Burner flame leaks

11.6 Changing components

Fig. 65 Electrode replacement



11.6.1 Detection/ignition electrode

Replace the detection//ignition electrode in the following cases:

1. Ionisation current $<4 \mu\text{A}$. To do this, activate the "chimney sweep function" ("Combustion settings" section) and set the boiler to minimum power. The ionisation value is given in setting GM008 ("Reading out measured values" section).
2. Electrode worn.
3. Distances out of range (chapter "Electrode distance").

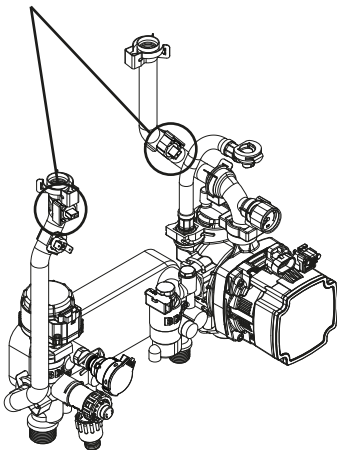
To replace the electrode:

1. Disconnect the power and gas supplies to the boiler.
2. Remove the boiler front panel. Disconnect the electrode lead and earthing cable.
3. Undo the 2 screws on the ignition electrode and remove it.
4. Fit the new electrode with the gasket. Re-assemble in reverse order.

11.6.2 Plate heat exchanger

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Close the domestic water inlet cock.
5. Empty the DHW circuit by opening the lowest hot tap.
6. Remove the plate exchanger by undoing the two screws.
7. Re-assemble in reverse order.

Fig. 66 Flow & return sensor replacement

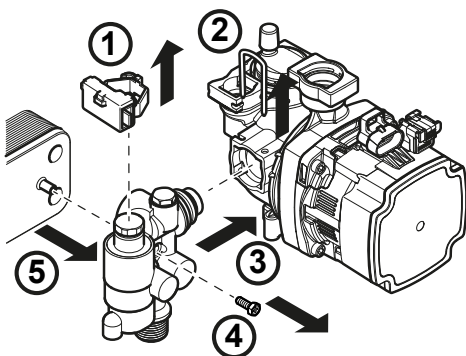


11.6.3 Flow and return sensors

There is one sensor on the flow (red wires) and one sensor on the return (blue wires).

1. After noting the position of each sensor, prise the sensor clip off the pipe and disconnect the plug.
2. Connect the plug to the new sensor and ease the clip onto the pipe in its original position.

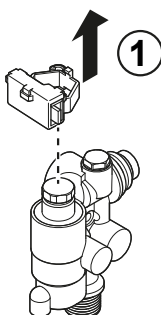
Fig. 67 Return valve replacement



11.6.4 Return valve

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Close the domestic water inlet cock.
5. Empty the DHW circuit by opening the lowest hot tap.
6. Disconnect any pipe connections.
7. Remove the hall effect sensor (1).
8. Remove the clip (2).
9. Disconnect the pump (3).
10. Remove the fastener (4).
11. Remove the valve from the heat exchanger (5).
12. Re-assemble in reverse order.

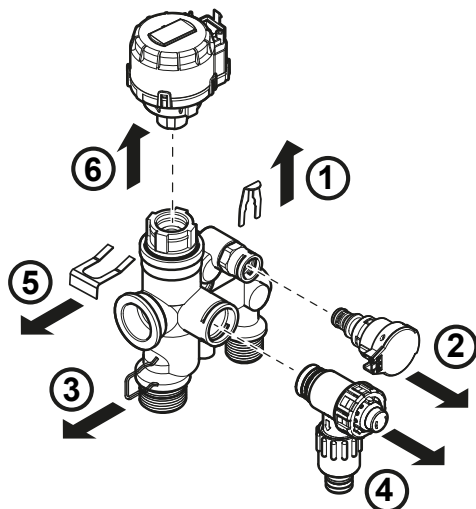
Fig. 68 Hall effect sensor replacement



11.6.5 Hall effect sensor

1. Disconnect the power and gas supplies to the boiler.
2. Ease the sensor upwards off the hydraulic inlet manifold assembly.
3. Disconnect the electrical plug from the sensor.
4. Connect the plug to the new sensor.
5. Carefully fit the new sensor to the hydraulic assembly, ensuring it is fully down.
6. Re-assemble in reverse order.

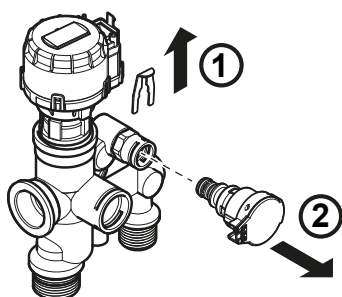
Fig. 69 3 way valve replacement



11.6.6 3 way valve

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Close the domestic water inlet cock.
5. Empty the DHW circuit by opening the lowest hot tap.
6. Disconnect any pipe connections.
7. Remove the clip (1).
8. Remove the pressure sensor (2).
9. Remove the fixing spring (3).
10. Remove the safety valve (4).
11. Remove the motor fixing spring (5).
12. Remove the motor (6).
13. Re-assemble in reverse order.

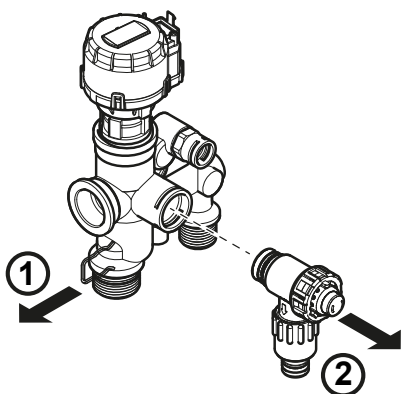
Fig. 70 Pressure sensor replacement



11.6.7 Pressure sensor

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Close the domestic water inlet cock.
5. Empty the DHW circuit by opening the lowest hot tap.
6. Disconnect any pipe connections.
7. Remove the clip (1).
8. Remove the pressure sensor (2).
9. Re-assemble in reverse order.

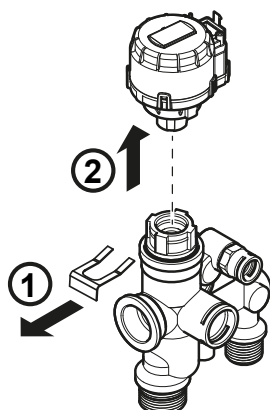
Fig. 71 Safety pressure relief valve replacement



11.6.8 Safety pressure relief valve

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Disconnect any pipe connections.
5. Remove the clip (1).
6. Remove the pressure relief valve (2).
7. Re-assemble in reverse order.

Fig. 72 Diverter valve replacement



11.6.9 Diverter valve motor

1. Disconnect the power and gas supplies to the boiler.
2. Disconnect the multi-pin plug from the diverter valve motor.
3. Hold the motor in place against the spring pressure of the valve assembly. Remove the securing clip (1).
4. Remove the motor (2).
5. When fitting the new motor it will be necessary to hold the unit firmly while depressing the valve assembly spring to refit the securing clip.
6. Reconnect the multi-pin plug.
7. Re-assemble in reverse order.

Fig. 73 Pump replacement

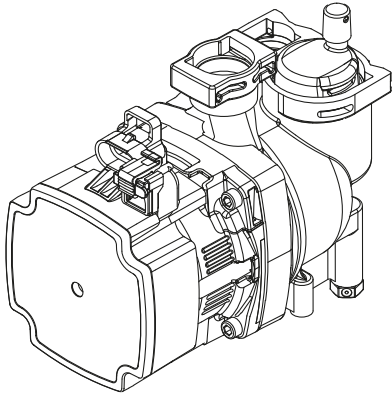


Fig. 74 Expansion vessel replacement

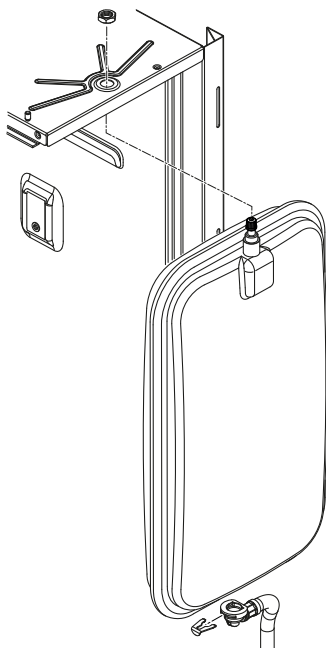
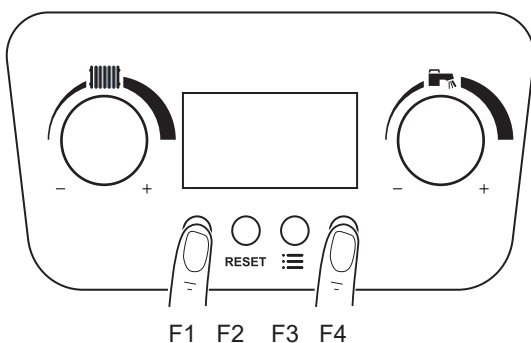


Fig. 75 Setting new PCB



11.6.10 Pump



Warning

Take precautions to protect other components from water damage when removing the pump and auto air vent.

1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Disconnect the electrical plugs from the pump motor.
5. Remove the clip securing the pump return pipe. Pull away the pipe.
6. Remove the clip securing the pump body to the hydraulic inlet assembly.
7. Remove the clip and disconnect the braided hose from the pump body, taking care as water may still be in the hose.
8. Remove the screws securing the pump to the boiler bottom panel.
9. Remove the clip and extract the automatic air vent, transferring it to the new pump body.
10. Examine all 'O' ring seals, replacing if necessary.
11. Re-assemble in reverse order.

11.6.11 Expansion vessel


1. Disconnect the power and gas supplies to the boiler.
2. Close the heating system flow and return cocks.
3. Drain the boiler primary circuit using the pressure relief drain.
4. Remove the clip securing the braided hose to the vessel. Disconnect the hose.
5. On the boiler top panel undo the nut from the vessel locating stud.
6. Lower the vessel and remove from the boiler.
7. Re-assemble in reverse order.

11.6.12 PCB

After replacing the main board, power up the boiler electrically.

Parameters **CN1** and **CN2** will automatically appear on the display.

Modify the parameters with the data shown on the serial number plate:

- Turn  knob to modify the parameters;
- Press the F4 key to store the set value.

Parameters **CN1** and **CN2** can also be accessed from the main menu to carry out the replacement. Press the two external buttons on the control panel simultaneously for about 40 seconds.

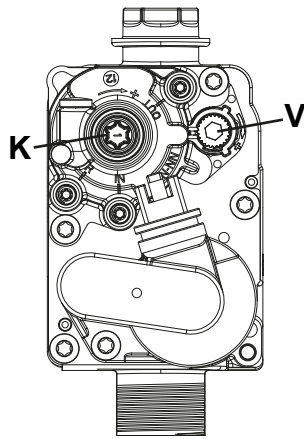


Caution

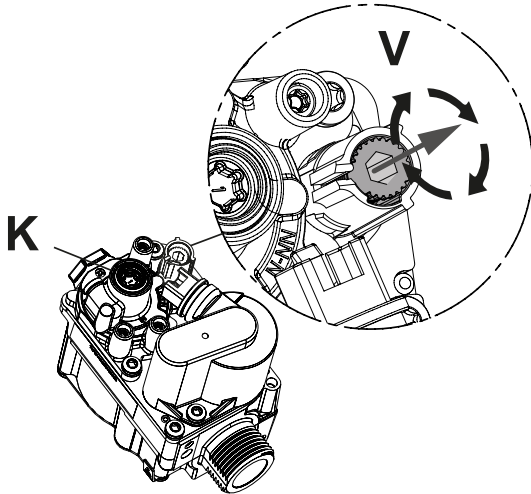
Please note that resetting the **CN1** and **CN2** settings with data on the data plate deletes any previous setting. If changing the gas, for example, remember to set the correct calibration for the gas valve

Fig. 76 Gas valve adjustment

The gas flow adjustment screw (V) requires a 4 mm Allen key. A T40 'Torx' screwdriver is required for the offset screw (K) cap & adjustment screw.



Reset of the gas flow adjustment screw



IMPORTANT:
IF CO <350ppm &
CO/CO₂ ratio <0.004
NO ADJUSTMENT REQUIRED

11.6.13 Setting an uncalibrated gas valve



Caution

If it is necessary to adjust the gas valve, always remove the Allen key while waiting for the CO₂ /O₂ values to stabilize.



Important

Only qualified installers can carry out the commissioning of the product and, if necessary, the gas change.

The boiler factory setting is foreseen for operation with Natural Gas and LPG: G20 and G31.

When the gas-air ratio is completely out of setting, it is possible to use the adjustment procedure as explained below:

1. With the boiler off, turn the adjustment screw (V) clockwise till the stop. The screw head is flush with the surrounding plastic tube as shown in the figure opposite.



Caution

Screw (V) is plastic material - do not use excessive force when adjusting with an Allen key.

2. To restore the appliance to factory conditions, turn the adjustment screw (V) anticlockwise as described in the table below for each model of boiler and for each type of gas.

Number of turns - gas flow adjustment screw V

Model	Gas Type	
	Natural Gas (G20)	LPG (G31)
Combi 24	6.5	6
Combi 30	6	7
Combi 36	5	6

3. Switch on the boiler. If the boiler remains on, go to point 7. If the boiler does not remain lit, follow the procedure described in the following points
4. Remove the protective screw from the offset screw (K).
5. Turn the offset screw (K) clockwise until the stop is reached.
6. Turn the offset screw (K) anti-clockwise four complete turns.



Caution

The number of turns of the gas flow adjustment screws and the offset adjustment screws (K) is only indicative; proceed with point 7 and check the combustion values at maximum [H] and at minimum [L] power.

7. Measure the CO₂/O₂ at the flue sampling point as shown in 7.2.2. Compare it with the value as indicated in the table in 7.2.6. If necessary adjust the gas valve calibration as described in 7.2.6.

12 Decommissioning

12.1 Disassembly



Warning

Only qualified professionals are authorised to work on the boiler and the heating system.

If the boiler was in operation, wait for the water contained in the heating installation to cool down.

Moving the boiler is a job for two people.

12.2 Recommissioning

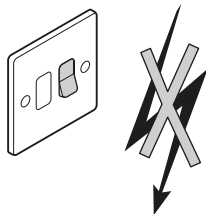


Warning

Only qualified professionals are authorised to work on the boiler and the heating system.

13 Disposal

13.1 Disposal and recycling



The appliance is composed of multiple components made from various different materials, such as steel, copper, plastic, fibreglass, aluminium, rubber, etc.

These materials may be highly pollutant. This means that the boiler must be disposed of correctly by contacting staff at the nominated disposal facility or by taking it to a centre that is authorised to dispose of bulky waste (domestic appliances).



Warning

Removal and disposal of the boiler must be carried out by a qualified installer in accordance with local and national regulations.

Benchmark Commissioning & Warranty Validation Service Record

It is a requirement that the boiler is installed and commissioned to the manufacturers' instructions and the data fields on the commissioning checklist completed in full.

To instigate the boiler warranty the boiler needs to be registered with the manufacturer within one month of the installation. The warranty rests with the end-user (consumer), and they should be made aware it is ultimately their responsibility to register with the manufacturer, within the allotted time period.

It is essential that the boiler is serviced in line with the manufacturers' recommendations, at least annually. This must be carried out by a competent Gas Safe registered engineer. The service details should be recorded on the Benchmark Service and Interim Boiler Work Record and left with the householder. Failure to comply with the manufacturers' servicing instructions and requirements will invalidate the warranty.



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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 according to the manufacturers' instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

* 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.

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GAS BOILER SYSTEM COMMISSIONING CHECKLIST & WARRANTY VALIDATION RECORD

Address:													
Boiler make and model:													
Boiler serial number:													
Commissioned by (PRINT NAME):						Gas Safe registration number:							
Company name:						Telephone number:							
Company email:						Company address:							
										Commissioning date:			
Heating and hot water system complies with the appropriate Building Regulations?											Yes		
Optional: Building Regulations Notification Number (if applicable):													
Time, temperature control and boiler interlock provided for central heating and hot water											Yes		
Boiler Plus requirements (tick the appropriate box(s))													
Boiler Plus option chosen for combination boiler in ENGLAND						Weather compensation			Smart thermostat with automisation and optimisation				
						Load compensation			Flue Gas Heat Recovery				
Time and temperature control to hot water			Cylinder thermostat and programmer/timer						Combination boiler				
Zone valves		pre-existing				Fitted				Not required			
Thermostatic radiator valves		pre-existing				Fitted				Not required			
Automatic bypass to system		pre-existing				Fitted				Not required			
Underfloor heating		pre-existing				Fitted				Not required			
Water quality													
The system has been flushed, cleaned and a suitable inhibitor applied upon final fill, in accordance with BS7593 and boiler manufacturers' instructions											Yes		
What system cleaner was used?						Brand:			Product:				
What inhibitor was used?						Brand:			Product:				
Primary water system filter		pre-existing				Fitted				Not required			
CENTRAL HEATING MODE measure and record (as appropriate)													
Gas rate (for combination boilers complete DHW mode gas rate)						m ³ /hr			or			ft ³ /hr	
Central heating output left at factory settings?						Yes						No	
If no, what is the maximum central heating output selected?												kW	
Dynamic gas inlet pressure												mbar	
Central heating flow temperature												°C	
Central heating return temperature												°C	
System correctly balanced/rebalanced?												Yes	
COMBINATION BOILERS ONLY													
Is the installation in a hard water area (above 200ppm)?						Yes						No	
Water scale reducer/softener		pre-existing				Fitted				Not required			
What type of scale reducer/softener has been fitted?						Brand:			Product:				
Water meter fitted?						Yes						No	
If yes- DHW expansion vessel		pre-existing				Fitted				Not required			
Pressure reducing valve		pre-existing				Fitted				Not required			
DOMESTIC HOT WATER MODE Measure and record													
Gas rate						m ³ /hr			or			ft ³ /hr	
Dynamic gas inlet pressure at maximum rate												mbar	
Cold water inlet temperature												°C	
Hot water has been checked at all outlets						Yes			Temperature			°C	
CONDENSATE DISPOSAL													
The condensate drain has been installed in accordance with the manufacturers' instructions and/or BS5546/BS6798											Yes		
Point of termination						Internal			External (only where internal termination impractical)				
Method of disposal						Gravity			Pumped				
ALL INSTALLATIONS													
Record the following		At max rate:		CO ppm		CO ₂ %		CO/CO ₂		Ratio			
		At min rate (where possible)		CO ppm		CO ₂ %		CO/CO ₂		Ratio			
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?											Yes		
The operation of the boiler and system controls have been demonstrated to and understood by the customer											Yes		
The manufacturers' 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 manufacturers' 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.

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SERVICE & INTERIM BOILER WORK RECORD

It is recommended that your boiler and heating system are regularly serviced and maintained, in line with manufacturers' instructions, and that the appropriate service / interim work record is completed.

Service provider

When completing a service record (as below), please ensure you have carried out the service as described in the manufacturers' instructions. Always use the manufacturers' specified spare parts.

SERVICE/INTERIM WORK ON BOILER <small>delete as appropriate</small>					Date:
Engineer name:		Company name:			
Telephone N°:		Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂
Min rate	CO	ppm	CO ₂	%	CO/CO ₂
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?*					yes
Gas rate:	m ³ /h	OR	ft ³ /h		
Were parts fitted? <small>delete as appropriate</small>		Yes	No		
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER <small>delete as appropriate</small>					Date:
Engineer name:		Company name:			
Telephone N°:		Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂
Min rate	CO	ppm	CO ₂	%	CO/CO ₂
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?*					yes
Gas rate:	m ³ /h	OR	ft ³ /h		
Were parts fitted? <small>delete as appropriate</small>		Yes	No		
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER <small>delete as appropriate</small>					Date:
Engineer name:		Company name:			
Telephone N°:		Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂
Min rate	CO	ppm	CO ₂	%	CO/CO ₂
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?*					yes
Gas rate:	m ³ /h	OR	ft ³ /h		
Were parts fitted? <small>delete as appropriate</small>		Yes	No		
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER <small>delete as appropriate</small>					Date:
Engineer name:		Company name:			
Telephone N°:		Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂
Min rate	CO	ppm	CO ₂	%	CO/CO ₂
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?*					yes
Gas rate:	m ³ /h	OR	ft ³ /h		
Were parts fitted? <small>delete as appropriate</small>		Yes	No		
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes n/a
Comments:					
Signature:					

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Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?*					yes
Gas rate:	m ³ /h	OR	ft ³ /h		
Were parts fitted? <small>delete as appropriate</small>		Yes	No		
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes n/a
Comments:					
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SERVICE & INTERIM BOILER WORK RECORD

It is recommended that your boiler and heating system are regularly serviced and maintained, in line with manufacturers' instructions, and that the appropriate service / interim work record is completed.

Service provider

When completing a service record (as below), please ensure you have carried out the service as described in the manufacturers' instructions. Always use the manufacturers specified spare parts.

SERVICE/INTERIM WORK ON BOILER <small>delete as appropriate</small>				Date:
Engineer name:		Company name:		
Telephone N°:		Gas Safe registration N°:		
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Gas rate:	m ³ /h	OR	ft ³ /h	
Were parts fitted? <small>delete as appropriate</small>		Yes	No	
Parts fitted:				
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Comments:				
Signature:				

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Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes
Gas rate:	m ³ /h	OR	ft ³ /h	
Were parts fitted? <small>delete as appropriate</small>		Yes	No	
Parts fitted:				
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Comments:				
Signature:				

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Were parts fitted? <small>delete as appropriate</small>		Yes	No	
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Product fiche for combination boilers

Baxi 400 Combi 2.1		424	430	436
Space heating - Temperature application		Medium	Medium	Medium
Water heating - Declared load profile		XL	XL	XL
Seasonal space heating energy efficiency class		A	A	A
Water heating energy efficiency class		A	A	A
Rated heat output (<i>Prated or Psup</i>)	kW	20	25	25
Space heating - Annual energy consumption	kWh GJ	62	77	77
Water heating - Annual energy consumption	kWh GJ	16	16	16
Seasonal space heating energy efficiency	%	94.0	94.0	94.0
Water heating energy efficiency	%	93.0	93.0	93.0
Sound power level L_{WA} indoors	dB	50	51	51

Baxi Assure 500 Combi 2		524	530	536
Space heating - Temperature application		Medium	Medium	Medium
Water heating - Declared load profile		XL	XL	XL
Seasonal space heating energy efficiency class		A	A	A
Water heating energy efficiency class		A	A	A
Rated heat output (<i>Prated or Psup</i>)	kW	20	25	25
Space heating - Annual energy consumption	kWh GJ	62	77	77
Water heating - Annual energy consumption	kWh GJ	16	16	16
Seasonal space heating energy efficiency	%	94.0	94.0	94.0
Water heating energy efficiency	%	93.0	93.0	93.0
Sound power level L_{WA} indoors	dB	50	51	51

Baxi 600 Combi 2		624	630	636
Space heating - Temperature application		Medium	Medium	Medium
Water heating - Declared load profile		XL	XL	XL
Seasonal space heating energy efficiency class		A	A	A
Water heating energy efficiency class		A	A	A
Rated heat output (<i>Prated or Psup</i>)	kW	20	25	25
Space heating - Annual energy consumption	kWh GJ	62	77	77
Water heating - Annual energy consumption	kWh GJ	16	16	16
Seasonal space heating energy efficiency	%	94.0	94.0	94.0
Water heating energy efficiency	%	93.0	93.0	93.0
Sound power level L_{WA} indoors	dB	50	51	51

Baxi 800 Combi 2		824	830	836
Space heating - Temperature application		Medium	Medium	Medium
Water heating - Declared load profile		XL	XL	XL
Seasonal space heating energy efficiency class		A	A	A
Water heating energy efficiency class		A	A	A
Rated heat output (<i>Prated or Psup</i>)	kW	20	25	25
Space heating - Annual energy consumption	kWh GJ	62	77	77
Water heating - Annual energy consumption	kWh GJ	16	16	16
Seasonal space heating energy efficiency	%	94.0	94.0	94.0
Water heating energy efficiency	%	93.0	93.0	93.0
Sound power level L_{WA} indoors	dB	50	51	51



See

For specific precautions about assembling, installing and maintaining consult the relevant section as

Package fiche for boilers indicating the space heating energy efficiency of the package

Seasonal space heating energy efficiency of boiler

(1)
'I' %

Temperature control

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%

(2)
 + %

Supplementary boiler

from fiche of boiler

Seasonal space heating energy efficiency (in %)

(3)
 $(\text{span style="border: 1px solid black; padding: 2px;"> - 'I') \times 0.1 = \pm \text{span style="border: 1px solid black; padding: 2px;"> %$

Solar contribution

from fiche of solar device

Collector size (in m²)

Tank volume (in m³)

Collector efficiency (in %)

Tank rating ⁽¹⁾
 A* = 0.95, A = 0.91,
 B = 0.86, C = 0.83,
 D - G = 0.81

$(\text{'III'} \times \text{span style="border: 1px solid black; padding: 2px;"> + \text{'IV'} \times \text{span style="border: 1px solid black; padding: 2px;">) \times 0.9 \times (\text{span style="border: 1px solid black; padding: 2px;"> / 100) \times \text{span style="border: 1px solid black; padding: 2px;"> = + \text{span style="border: 1px solid black; padding: 2px;"> %$

(1) If tank rating is above A, use 0.95

Supplementary heat pump

from fiche of heat pump

Seasonal space heating energy efficiency (in %)

(5)
 $(\text{span style="border: 1px solid black; padding: 2px;"> - 'I') \times \text{'II'} = + \text{span style="border: 1px solid black; padding: 2px;"> %$

Solar contribution AND Supplementary heat pump

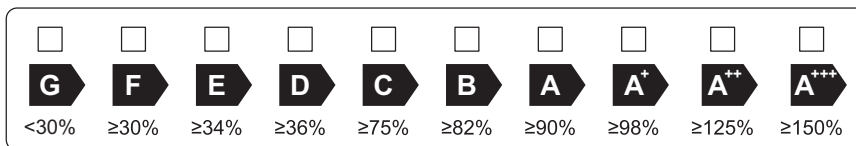
select smaller value

$0.5 \times \text{span style="border: 1px solid black; padding: 2px;"> \text{ OR } 0.5 \times \text{span style="border: 1px solid black; padding: 2px;"> = - \text{span style="border: 1px solid black; padding: 2px;"> %$

Seasonal space heating energy efficiency of package

(7)
 %

Seasonal space heating energy efficiency class of package



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

from fiche of heat pump

(7)
 $\text{span style="border: 1px solid black; padding: 2px;"> + (50 \times \text{'II'}) = \text{span style="border: 1px solid black; padding: 2px;"> %$

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

- I The value of the seasonal space heating energy efficiency of the preferential space heater, expressed in %.
- II The factor for weighting the heat output of preferential and supplementary heaters of a package as set out in the following table.
- III The value of the mathematical expression: $294 / (11 \cdot \text{Prated})$, whereby 'Prated' is related to the preferential space heater.
- IV The value of the mathematical expression $115 / (11 \cdot \text{Prated})$, whereby 'Prated' is related to the preferential space heater.

Weighting of boilers

$P_{sup} / (Prated + P_{sup})^{(1)(2)}$	II, package without hot water storage tank	II, package with hot water storage tank
0	0	0
0.1	0.3	0.37
0.2	0.55	0.70
0.3	0.75	0.85
0.4	0.85	0.94
0.5	0.95	0.98
0.6	0.98	1.00
≥ 0.7	1.00	1.00

(1) The intermediate values are calculated by linear interpolation between the two adjacent values.
 (2) Prated is related to the preferential space heater or combination heater.

Package efficiency

Baxi Combi 2/2.1		24	30	36
Temperature control X	%			
Temperature control Y	%			

Package fiche for combination heaters (boilers or heat pumps) indicating the water heating energy efficiency of the package

Water heating energy efficiency of combination heater

①
 %

Declared load profile:

Solar contribution

from fiche of solar device

Auxiliary electricity

②
 $(1.1 \times 'I' - 10\%) \times 'II' - 'III' - 'I' = +$ %

Water heating energy efficiency of package under average climate

③
 %

Water heating energy efficiency class of package under average climate

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	G	F	E	D	C	B	A	A⁺	A⁺⁺	A⁺⁺⁺
<input type="checkbox"/> M	<27%	≥27%	≥30%	≥33%	≥36%	≥39%	≥65%	≥100%	≥130%	≥163%
<input type="checkbox"/> L	<27%	≥27%	≥30%	≥34%	≥37%	≥50%	≥75%	≥115%	≥150%	≥188%
<input type="checkbox"/> XL	<27%	≥27%	≥30%	≥35%	≥38%	≥55%	≥80%	≥123%	≥160%	≥200%
<input type="checkbox"/> XXL	<28%	≥28%	≥32%	≥36%	≥40%	≥60%	≥85%	≥131%	≥170%	≥213%

Water heating energy efficiency under colder and warmer climate conditions

Colder: ^③ - 0.2 x ^② = %

Warmer: ^③ + 0.4 x ^② = %

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

- I The value of the water heating energy efficiency of the combination heater, expressed in %.
- II The value of the mathematical expression $(220 \cdot Q_{ref})/Q_{nonsol}$, where Q_{ref} is taken from Regulation EU 811/2013, Annex VII Table 15 and Q_{nonsol} from the product fiche of the solar device for the declared load profile M, L, XL or XXL of the combination heater.
- III The value of the mathematical expression $(Q_{aux} \cdot 2,5)/(220 \cdot Q_{ref})$, expressed in %, where Q_{aux} is taken from the product fiche of the solar device and Q_{ref} from Regulation EU 811/2013, Annex VII Table 15 for the declared load profile M, L, XL or XXL.

Baxi Customer Support



0330 678 0917

Opening hours

Monday - Friday, 8.00am-6.00pm

Saturdays and Bank Holidays, 8.30am-2.00pm

Please note calls may be recorded for training and monitoring purposes



baxi.co.uk

Register now to activate your warranty:

www.baxi.co.uk/registration

For the warranty to be maintained, please make sure...

- 1 Benchmark checklist is completed
- 2 Warranty is registered within 30 days
- 3 The boiler has an annual service

For full terms and conditions, visit www.baxi.co.uk/terms. Failure to adhere to terms and conditions will void your manufacturer's warranty.



Baxi
Brooks House,
Coventry Road,
Warwick, CV34 4LL



Please ensure the boiler is installed in accordance with these installation instructions and that you adhere to the Building Regulations.

e&oe

All descriptions and illustrations provided in this document have been carefully prepared but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information contained in this leaflet. All goods are sold subject to our standard Conditions of Sale which are available on request.

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All technical and technological information contained in these technical instructions, as well as any drawings and technical descriptions supplied, remain our property and shall not be multiplied without our prior consent in writing. Subject to alterations.

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Please note calls may be recorded for training and monitoring purposes



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