

Installation and Service Manual

Wall Hung Electric Boiler

BAXI Amptec S

S4 — S6 — S8 — S12 — S14 — S18

Dear Customer,

Thank you very much for buying this appliance.

Please read through the manual carefully before using the product, and keep it in a safe place for later reference. In order to ensure continued safe and efficient operation we recommend that the product is serviced regularly. Our service and customer service organisation can assist with this.

We hope you enjoy years of problem-free operation with the product.

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1 Safety

1.1 General safety instructions



Danger

This boiler can be used by children aged from 3 years and above. It can also be used by persons with reduced physical sensory or mental capabilities or lack of experience and knowledge. They must have been given supervision or instruction concerning use of the appliance. They must be able to use it in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision. Children must be supervised to ensure they do not play with the appliance. Children aged from 3 to 8 years are only allowed to operate the tap connected to the water heater



Caution

- Only competent persons having received adequate training are permitted to work on the appliance and the installation.
- Do not tamper with any of the safety valves or controls supplied with the appliance.
- Do not switch on if there is a possibility that the water in the appliance is frozen.



Warning

Do not operate the appliance until it has been filled with water.



Warning

Do not touch the radiators for long periods. Depending on the boiler settings, the temperature of the radiators may exceed 60°C.



Danger

Before any work, switch off the mains supply to the appliance.



Caution

After maintenance or repair work, check the entire heating installation to ensure that there are no leaks.

1.2 Recommendations



Warning

Installation and maintenance of the boiler must be carried out by a competent person. This must be done in accordance with local and national regulations.



Warning

If the mains lead is damaged, it must be replaced by a competent person in accordance with the current regulations.



Warning

Always isolate the mains supply when working on the boiler.



Caution

- Make sure the boiler can be accessed at all times.
- The boiler must be installed in a frost-free area.
- The Main cable must be connected to the mains supply by a Double Pole Switch for single phase models or 3 phase isolator for 3 phase models, according to EN 60335-1.
- The frost protection does not work if power is not supplied to the boiler.
- The frost protection only protects the boiler, not the system.
- Check the water pressure in the system regularly. If the water pressure is lower than 0.5 bar, the system must be topped up (recommended water pressure between 1 and 2.5 bar).



Important

Keep this document near to the boiler.



Important

Casing panels may only be removed for maintenance and servicing purposes. Refit all panels when maintenance work and servicing are complete.

**Important**

Instruction and warning labels must never be removed or covered. They must be clearly legible throughout the entire service life of the boiler. Replace damaged or illegible instruction and warning labels immediately.

**Important**

The boiler must not be modified in any way as this will invalidate the manufacturer's warranty.

1.3 Specific safety instructions

1.3.1 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 all applicable Directives and Regulations. They are therefore delivered with the **CE** mark and any documents 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.

1.4.3 User's liability

To guarantee optimum operation of the system, you must abide by the following instructions:

- Read and follow the instructions given in the manuals provided with the appliance.
- Call on a qualified professional to carry out installation and initial commissioning.
- Get your installer to explain your installation to you.
- Have the required inspections and maintenance carried out by a qualified installer.
- Keep the instruction manuals in good condition close to the appliance.

2 About this manual

2.1 General

This manual is intended for the installation of a BAXI Amptec S electric boiler



Warning

Installation, repair and maintenance must only be carried out only by a competent person.

The installation must be carried out in accordance with:

- Building regulation G3 (England and Wales)
- Technical standard P3 (Scotland)
- Building regulations P5 (Northern Ireland)
- Water fitting regulations (England and Wales)
- Water byelaws (Scotland)
- Requirements for electrical installations

2.2 Additional documentation

Various timers, external controls, etc. are available as optional extras. Full details are contained in the relevant sales literature.

2.3 Symbols used

2.3.1 Symbols used in the manual

This manual uses various danger levels to draw attention to special instructions. We do this to improve user safety, to prevent problems and to guarantee correct operation of the appliance.



Danger

Risk of dangerous situations that may result in serious personal injury.



Danger of electric shock

Risk of electric shock.



Warning

Risk of dangerous situations that may result in minor personal injury.



Caution

Risk of material damage.



Important

Please note: important information.



See

Reference to other manuals or pages in this manual.

2.4 Abbreviations/Glossary

BS	British Standard
CH	Central heating
DHW	Domestic hot water
GB	Great Britain
IE	Ireland
PCU	PCB for managing burner operation
SU	Safety PCB

3 Technical specifications

3.1 Homologations

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 Standards

Codes of Practice - refer to the most - refer to the most recent version.

Tab.1 In GB the following Codes of Practice apply:

Standard	Scope
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.
BS 4814	Specification for Expansion Vessels using an internal diaphragm, for sealed hot water systems.
BS 7671	Requirements for electrical installations. IEE wiring regulations.

Tab.2 In IE the following Codes of Practice apply:

Standard	Scope
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

3.2 Technical data

3.2.1 Technical information

Tab.3 Electrical boiler specifications

	S4	S6	S8	S12	S14	S18
Max direct kW rating	4	6	8	12	14	18
Weight empty (kg)	20	20	21.5	21.5	22.5	22.5
Weight full (kg) ⁽¹⁾	21	21	23	23	24.5	24.5
Volume (Litres)	1	1	1.5	1.5	2	2
Safety pressure relief valve setting (bar)	2.8	2.8	2.8	2.8	2.8	2.8
(1) at 3 bar water inlet pressure						

Tab.4 Electrical specifications

BAXI Amptec S		S4	S6	S8	S12	S14	S18
Nominal electrical power supply voltage	V	230	230	230	230	400 (3 phase)	400 (3 phase)
Nominal electrical power supply frequency	Hz	50	50	50	50	50	50
Nominal power consumption when running	W	4060	6060	8060	12060	14060	18060
Internal fuse rating	Amp	1.6	1.6	1.6	1.6	1.6	1.6
Internal MCB rating (controls)	Amp	2	2	2	2	2	2
Internal MCB rating (elements)	Amp	10x3	10x3	20x3	20x3	32x3	32x3



Important

Boiler must be connected to an earth supply.

Tab.5 Other specifications

BAXI Amptec S		S4	S6	S8	S12	S14	S18
Degree of protection against humidity (EN 60529)	IP	IPX1	IPX1	IPX1	IPX1	IPX1	IPX1
Dimensions (height / width / depth)	mm	H 718/W 395/D 284	H 718/W 395/D 284	H 718/W 395/D 284	H 718/W 395/D 284	H 718/W 395/D 284	H 718/W 395/D 284

Tab.6 Connections

BAXI Amptec S		S4	S6	S8	S12	S14	S18
Heating flow	mm	22	22	22	22	22	22
Heating return	mm	22	22	22	22	22	22
Pressure relief discharge	mm	15	15	15	15	15	15

Tab.7 Clearances

BAXI Amptec S		S4	S6	S8	S12	S14	S18
Above casing	mm	200	200	200	200	200	200
Below casing (min)	mm	200	200	200	200	200	200
Front — for servicing	mm	450	450	450	450	450	450
Front — for operation	mm	6	6	6	6	6	6
Sides LH (min)	mm	5	5	5	5	5	5
Sides RH (min)	mm	5	5	5	5	5	5

Tab.8 Weights


BAXI Amptec S		S4	S6	S8	S12	S14	S18
Packaged boiler	kg	23.2	23.2	24.7	24.7	25.7	25.7
Boiler lift weight (dry)	kg	20.0	20.0	21.5	21.5	22.5	22.5
Installed weight when filled with water	kg	21.0	21.0	23.0	23.0	24.5	24.5

3.2.2 Technical parameters

The figures in the table below are in accordance with the following European Commission Eco Design regulations:

- 814/2013
- 812/2013

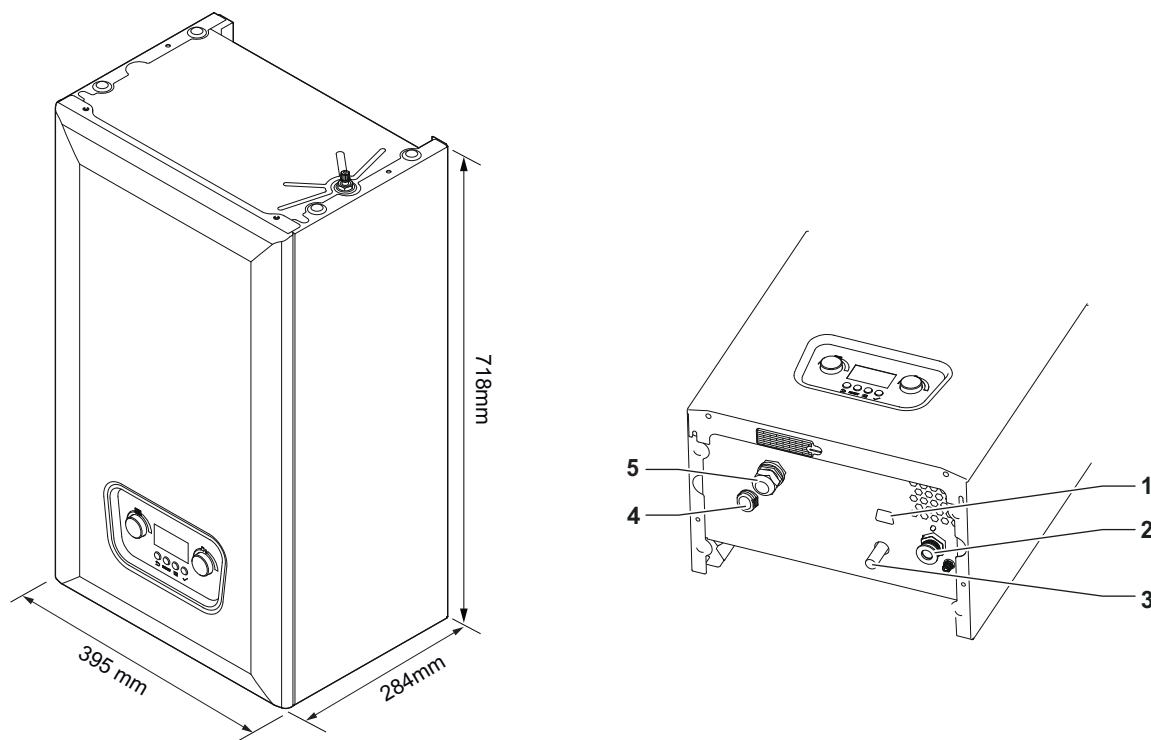
Tab.9 Technical parameters

Supplier's name or trade mark	Amptec S					
Supplier's model identifier	S4	S6	S8	S12	S14	S18
The water heating energy efficiency in %	99.8	99.8	99.8	99.8	99.8	99.8
The annual electricity consumption in kWh	8661	12991.5	17322	25983	30313.5	38974.5
The thermostat temperature settings of the water heater, as placed on the market by the supplier	80 °C	80 °C	80 °C	80 °C	80 °C	80 °C
Specific precautions that shall be taken when the water heater is assembled, installed or maintained and disposed of at end of life	 See pages 3 to 29					

Individual energy consumption will vary depending on usage.

3.3 Dimensions and connections

Fig.1 Dimensions and connections

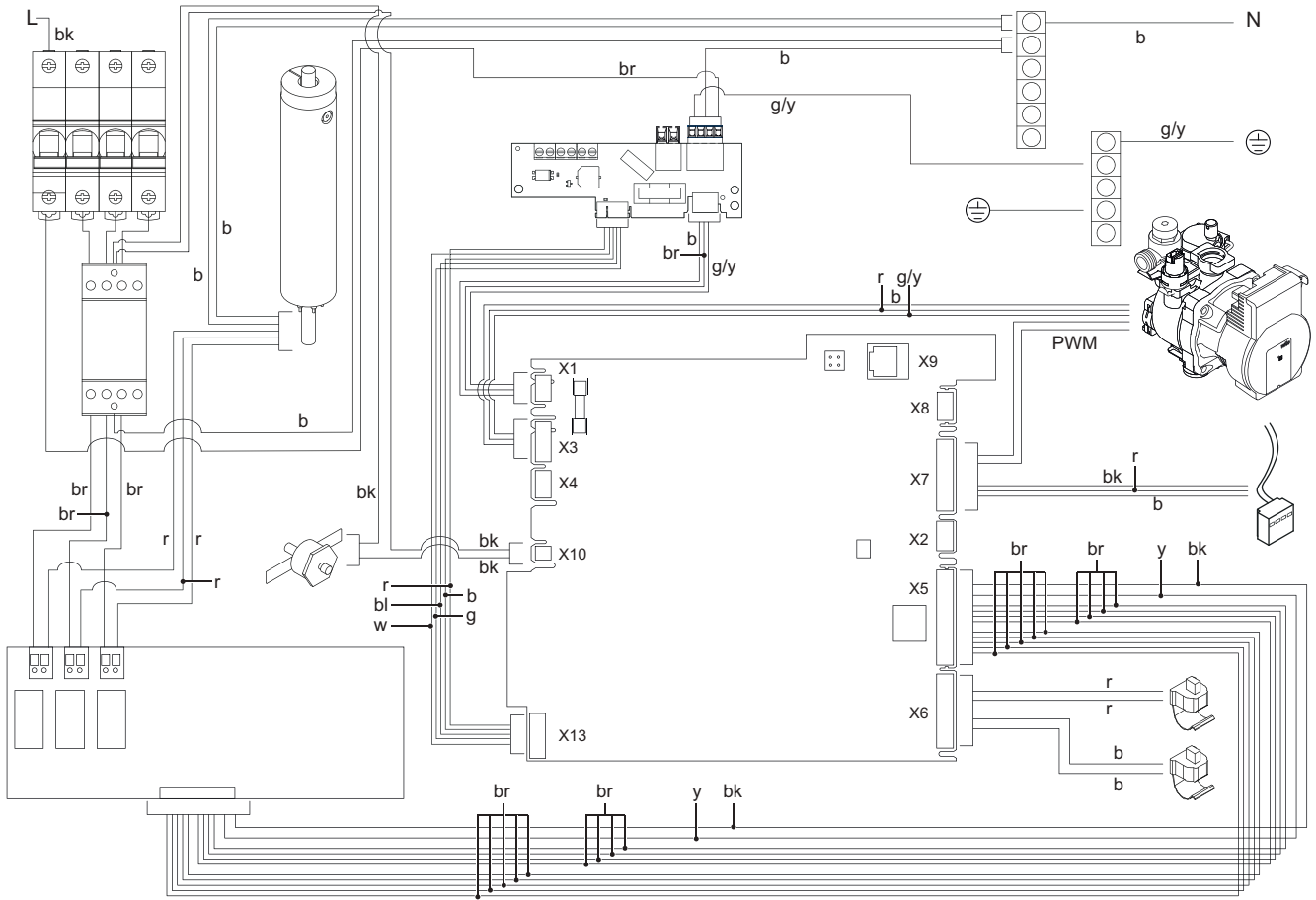


- 1 Accessories grommet
- 2 Heating circuit water return
- 3 Safety pressure relief valve pipe
- 4 Water flow heating circuit
- 5 Cable retention

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3.4 Electrical diagram

Fig.2 Electrical wiring diagram 4 kW - 6 kW

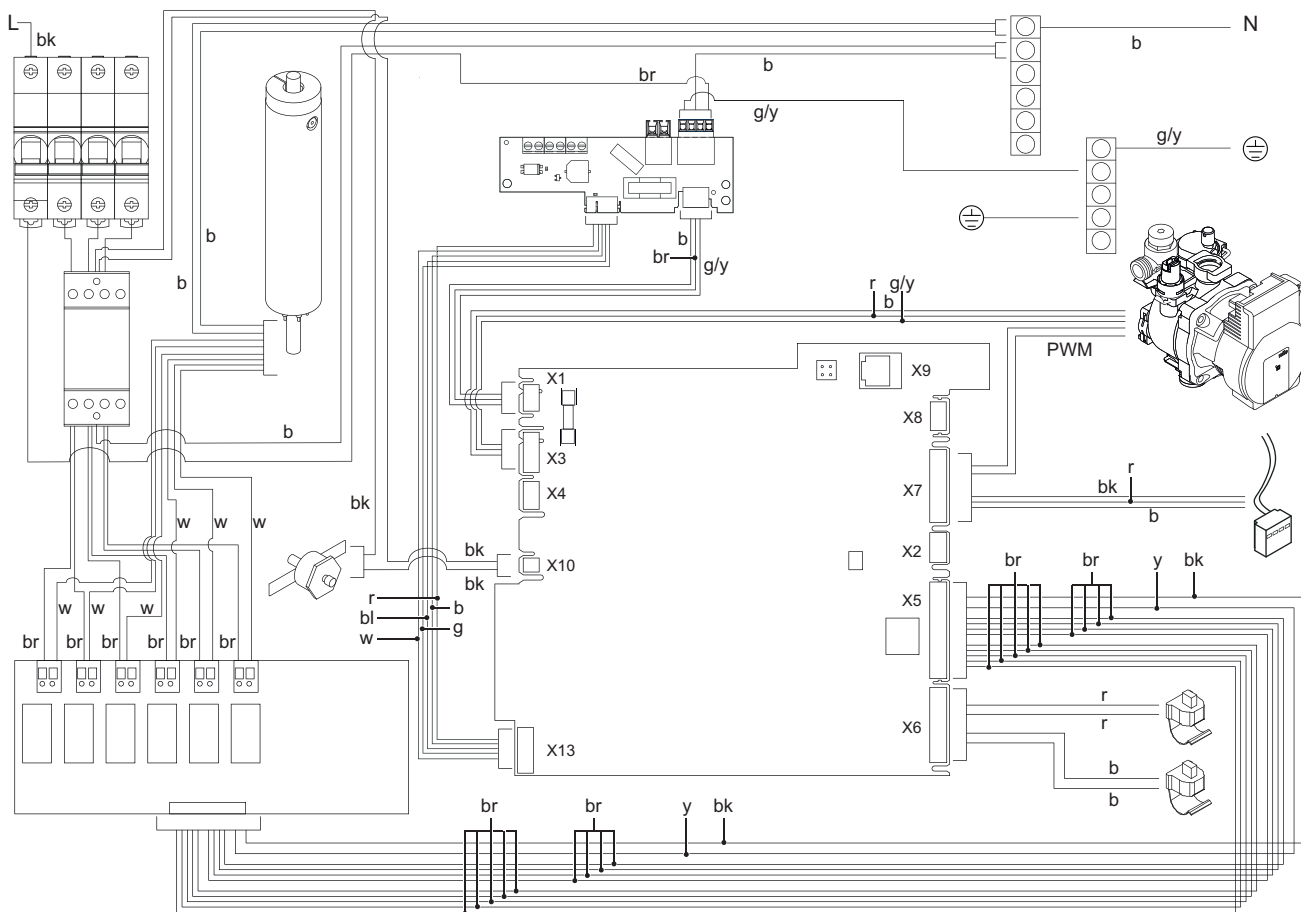


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bk — black	br — brown	b — blue	g — green
r — red	w — white	g/y — green/yellow	gr — grey

Key	Description	Key	Description
X1	Power supply L: Live 230 V - 50 Hz N: Neutral ⊕ : Earthing connector	X7	Pressure sensor Pump PWM signal (PWM PUMP)
X3	Pump power supply	X8	Bus connection Connection for Baxi plug and play kits
X4	Room thermostat contact (230 V) (RT)	X10	Overheat temperature sensor
X5	Relay board	X13	Open Therm smart room thermostat (O/T) Outdoor temperature sensor (T/OUT) External tank sensor (T/DHW) - accessory
X6	Flow temperature sensor Return temperature sensor		

Fig.3 Electrical wiring diagram 8 kW - 12 kW

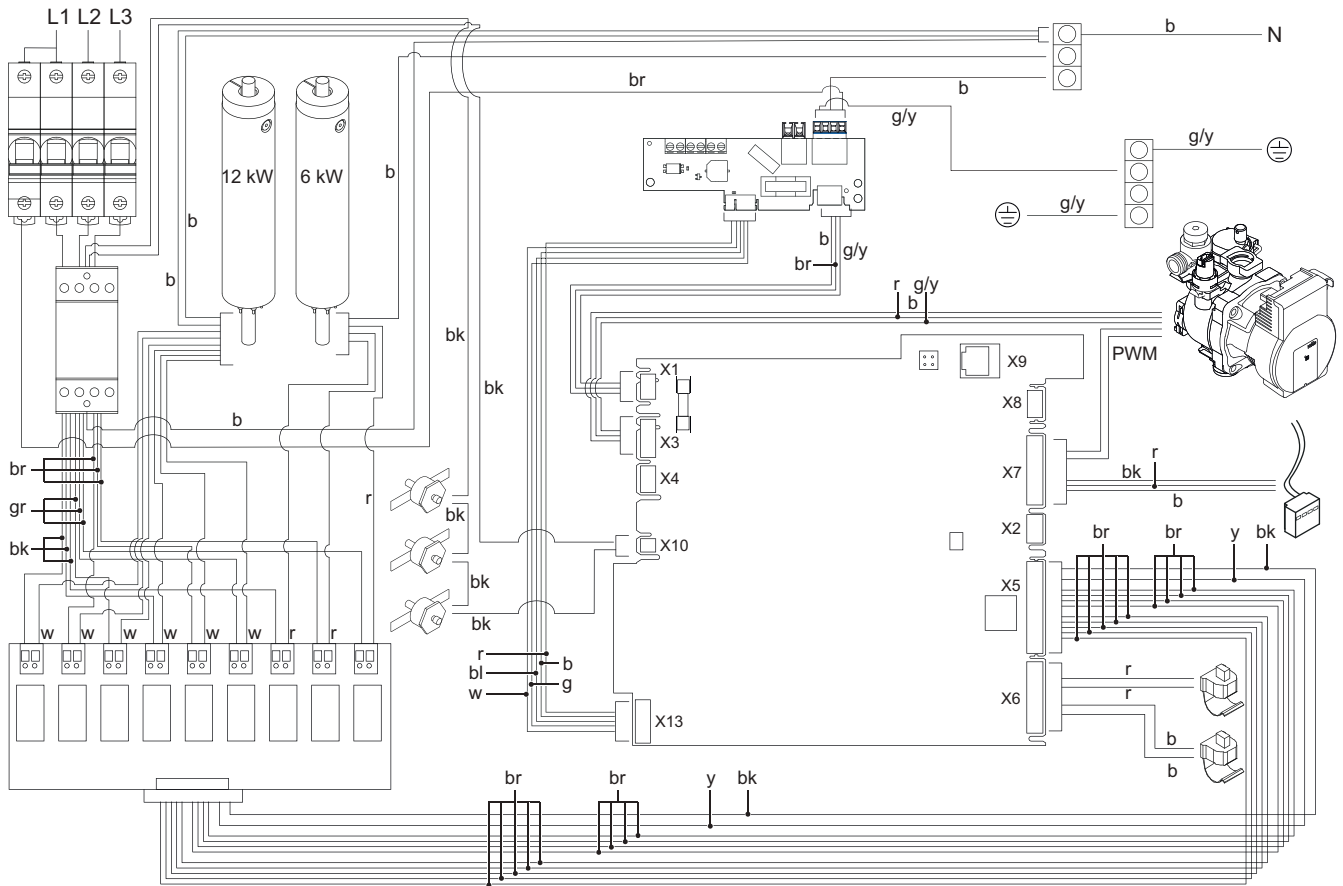


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bk — black	br — brown	b — blue	g — green
r — red	w — white	g/y — green/yellow	gr — grey

Key	Description	Key	Description
X1	Power supply L: Live 230 V - 50 Hz N: Neutral ⊕ : Earthing connector	X7	Pressure sensor Pump PWM signal (PWM PUMP)
X3	Pump power supply	X8	Bus connection Connection for Baxi plug and play kits
X4	Room thermostat contact (230 V) (RT)	X10	Overheat temperature sensor
X5	Relay board	X13	Open Therm smart room thermostat (O/T) Outdoor temperature sensor (T/OUT) External tank sensor (T/DHW) - accessory
X6	Flow temperature sensor Return temperature sensor		

Fig.4 Electrical wiring diagram 14 kW - 18 kW (3 phase)



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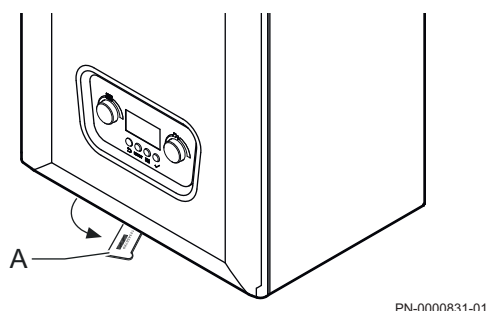
bk — black	br — brown	b — blue	g — green
r — red	w — white	g/y — green/yellow	gr — grey

Key	Description	Key	Description
X1	Power supply L: Live 230 V - 50 Hz N: Neutral ⊕ : Earthing connector	X7	Pressure sensor Pump PWM signal (PWM PUMP)
X3	Pump power supply	X8	Bus connection Connection for Baxi plug and play kits
X4	Room thermostat contact (230 V) (RT)	X10	Overheat temperature sensor
X5	Relay board	X13	Open Therm smart room thermostat (O/T) Outdoor temperature sensor (T/OUT) External tank sensor (T/DHW) - accessory
X6	Flow temperature sensor Return temperature sensor		

4 Description of the product

4.1 General description

Fig.5 Information label



The BAXI Amptec S range of fully automatic electric wall mounted boilers.

A Information label

Model	Output (kW)
S4	4
S6	6
S8	8
S12	12
S14	14
S18	18

An information label is fitted with details of the model and serial number. This is situated on the front middle underside of the outer case. The label is accessed by swinging forward gently.

The data plate is located on the underside of the boiler.

The boiler is intended to be installed in residential/domestic environments on a governed metered supply only.



Important

All systems must be thoroughly cleansed, flushed and treated with inhibitor.

4.2 Operating principle

4.2.1 Heating production

The boiler is used for heating the primary circuit. The appliance contains a number of heating elements to achieve this.

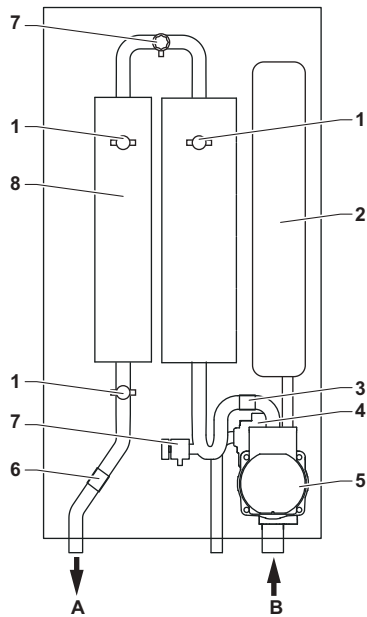
Incoming water passes through the heating elements and is then circulated around the primary circuit and returned to the appliance to be reheated.

Sensors are fitted to the appliance to monitor water temperature.

The appliance will modulate the power according to the heating load demand.

4.2.2 Central heating mode

Fig.6 Operating scheme (two heat exchangers)



PN-0000809-01

With a demand for heating the pump circulates water through the primary circuit.

The element switches on to heat the water. The water temperature is measured by the temperature sensor.

When the flow temperature exceeds the set temperature, one or more elements are switched off to maintain the setpoint. The pump continues to run during this period.

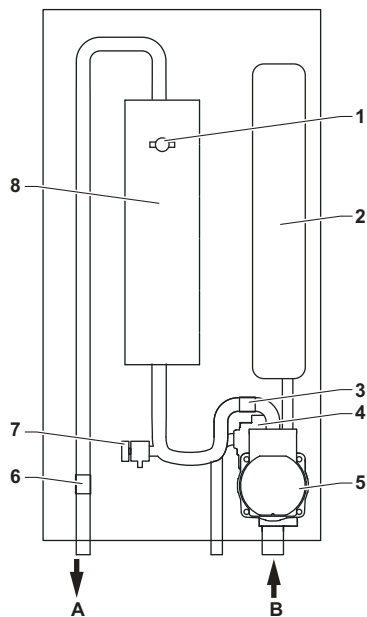
Key to components

- 1. Manual reset overhear thermostat
- 2. Expansion vessel
- 3. Heating return temperature sensor
- 4. Safety pressure relief valve
- 5. Pump with automatic air vent
- 6. Heating flow temperature sensor
- 7. Drain valve
- 8. Heat exchanger (single or dual)

Key to connections

- A Heating flow
- B Heating return

Fig.7 Operating scheme - (one heat exchanger)



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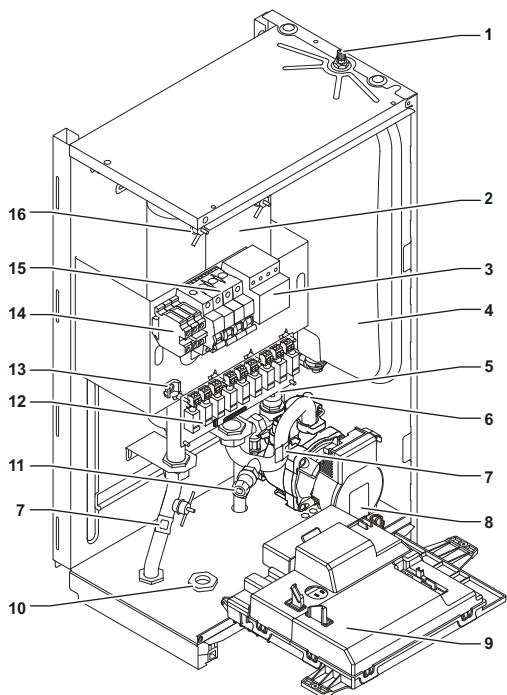
4.2.3 Pump protection

If the boiler has been inactive for a period of 76 hours the pump will automatically operate for 1 minute. This prevents the pump sticking.

4.3 Main components

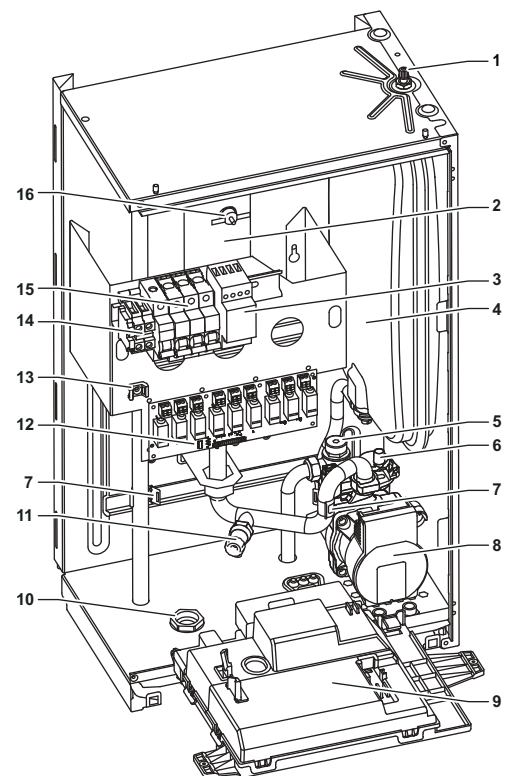
4.3.1 List of components

Fig.8 Heat exchanger (two)



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Fig.9 Heat exchanger (one)



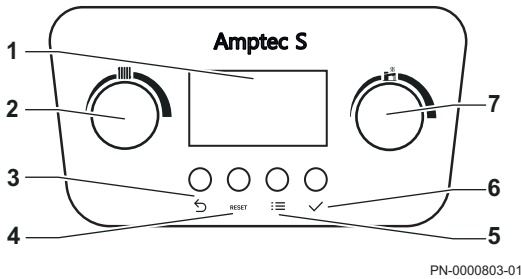
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- 1 Expansion vessel valve
- 2 Heating element (one or two)
- 3 Contactor
- 4 Expansion vessel
- 5 Pressure relief valve
- 6 Pressure sensor
- 7 Flow and Return Sensors
- 8 Pump
- 9 Control PCB
- 10 Cable gland
- 11 Internal Drain Point
- 12 Relay board
- 13 Cable clamp
- 14 Connection block
- 15 MCB
- 16 Overheat thermostat (threaded, dry socket)

4.4 Control panel description

4.4.1 Description of the control panel

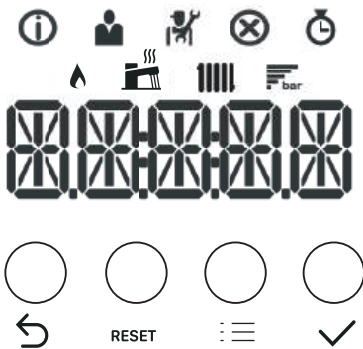
Fig.10 Control panel



- 1 Display
- 3 Back button (previous menu)
- 4 Manual reset button
- 5 Menu button
- 6 Confirm selection or value
- 7 Domestic hot water (DHW) temperature control (if accessory fitted)

PN-0000803-01

Fig.11 Display screen



- System water pressure display.
- DHW 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.
- Element on.

PN-0000804-01

4.5 Standard delivery

4.5.1 Contents of the carton

The boiler is delivered in a carton comprising:

- Wall hung electric boiler
- Wall bracket for fastening the boiler to the wall
- Pressure gauge kit - external
- Fitting kit, including taps
- Literature pack containing:
 - Installation and service manual
 - Quick start guide
 - Template
 - ErP product and package leaflets
 - Serial number stickers

4.6 Accessories and options

4.6.1 Optional accessories

The table shows the accessories available for this boiler range.

Tab.10 Optional accessories

Part number	Accessory
7775937	uSense 2 smart room controller
720330001	Baxi wired weather sensor
720648301	Multifit condensate & PRV combined pump
5121379	Multifit remote secondary PRV kit
248221	Multifit filling loop

Part number	Accessory
7864009	Multifit rear pipework kit - electric boiler
7818249	Multifit pre-plumbing jig
7812374	Cylinder control kit

Any of the above MUST be fitted ONLY by a competent person. You can find more information in the documents that accompany these products.

5 Before installation

5.1 Installation regulations



Warning

Installation, repair and maintenance must only be carried out by a competent person. This document is intended for use by competent persons.

Installation must be carried out in accordance with the following:

- The prevailing regulations
- The code of practice
- Recommendations in these instructions

Installation must also respect the following points:

- This instruction manual and any other applicable documentation
- Building regulations
- British standards
- Electrical safety regulations
- Water supply regulations

5.2 Installation requirements

5.2.1 Electrical supply



Danger

Wiring of the appliance must be carried out in accordance with current IEE wiring regulations.

Installation and maintenance of the boiler must be carried out by a competent person. This must be done in accordance with local and national regulations. The instructions in this manual must be followed.

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



Important

Before installation, check the incoming mains supply. Ensure there is sufficient current and voltage for the size of the appliance. The correctly sized cable must be used to supply the appliance. A double pole RCD with 30 mA trip level sensitivity must be used. It must be capable of breaking the full load current to BS EN 61008:1994

In order to provide a means of isolation, the appliance must be connected to the mains supply. It must use a two-pole switched switch with a minimum contact gap of 3 mm in all poles. The RCD is suitable for this requirement if mounted near to the boiler.




Important

A correctly rated MCB must be used in the supply. See Technical information, page 10
Before connecting the electrical supply, ensure the appliance is filled with water and the pressure is correct.

i Important

- Heat, oil and flame resistant (HOFR) cable must be used to supply mains power.
- Connect the power cables from the appliance "power" terminals directly to the disconnect switch with live, earth and neutral. Correctly rated cable must be used.
- The mains power terminals in the appliance are suitable for cable up to 10 mm².

 The connections must be tightened to 3 Nm.

- Cable access is under the boiler using the supplied cable gland as follows:
 1. Route the cable through the gland on the left side of the appliance.
 2. Connect the cable to the terminal blocks and MCB (see diagram)
 3. Secure the cable using the supplied cable tie.
- On completion of the work the installation must be tested to IEE regulations
- A NICEIC inspection and completion certificate must be issued.

i Important

The cable gland should securely hold the cable. Within the gland is a removable sealing insert and depending on your product there maybe an alternative diameter insert in the supplied kit.

Fig.12 Single phase units S4 and S6

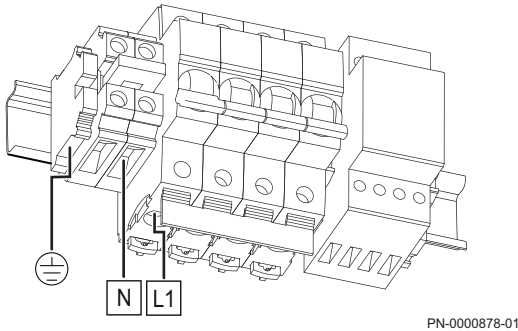
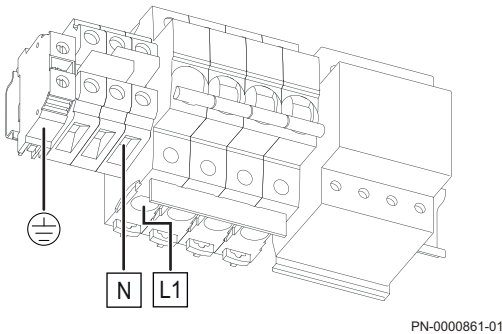


Fig.13 Single phase units S8 and S12



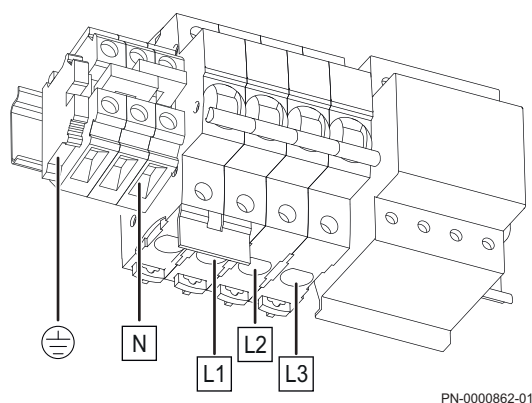
Single phase unit

The voltage power supply must be connected to the lower clamp of the microcircuit MCB in position L1 or L2. The neutral and earth supply must be connected to the neutral and earth connector terminals.

Tab.11 Minimum cable size

Boiler (S4 and S6)	4 mm ² 3 core
Boiler (S8 and S12)	10 mm ² 3 core

Fig.14 Three phase units S14 and S18



Three phase unit

The three phase live supply must be connected to the bottom wire clamp of the MCB in positions L1, L2 and L3. The neutral and earth cables must be connected to the neutral and earth connector terminals.

Tab.12 Minimum cable size

Boiler (S14 and S18)	4 mm ² 5 core
----------------------	--------------------------

5.2.2 Hard water area

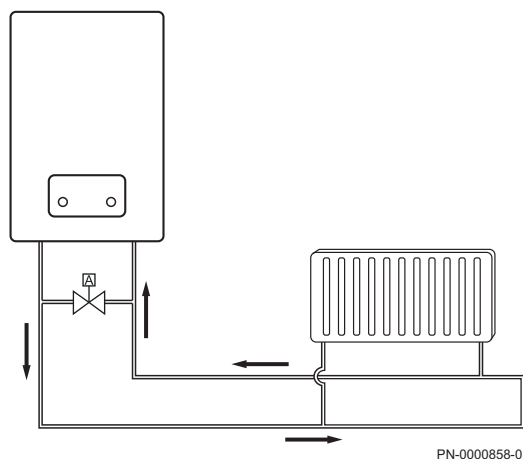


Important

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.

5.2.3 Automatic bypass valve

Fig.15 Automatic bypass valve



It is recommended that an automatic bypass valve is fitted to the system. It must be capable of a flow rate of at least 5 litres per minute.

5.2.4 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 are available. Full details are contained in the relevant Sales Literature.

5.2.5 Frost protection

Where possible, draining the system must be avoided. Changing the water can result in damaging limescale deposits forming inside the boiler and heating elements. If the system is unused during winter months several precautions must be taken:

- Any parts of the system in unheated areas of the dwelling must be fitted with a device. This could be a pipe thermostat or frost protection thermostat.
- Power must remain supplied to the boiler and controls.
- Add a suitable antifreeze solution into the water in the system.

The boiler pump operates if the system temperature drops below 7 °C. If the temperature falls to 4 °C the element switches on and remains on until the temperature reaches 10 °C. At this temperature the element switches off but the pump continues to operate for 15 minutes. This feature protects the boiler and to some extent adjacent parts of the system. Additional devices must be incorporated to guarantee frost protection.



Important

The frost protection function will not work if there is no power being supplied to the boiler.

5.2.6 Treatment of water circulating systems

All re-circulatory 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. This risks damage to the pump and valves and can cause boiler noise and circulation problems.

BS 7593 gives extensive recommendations on system cleansing and water treatment.

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) 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.

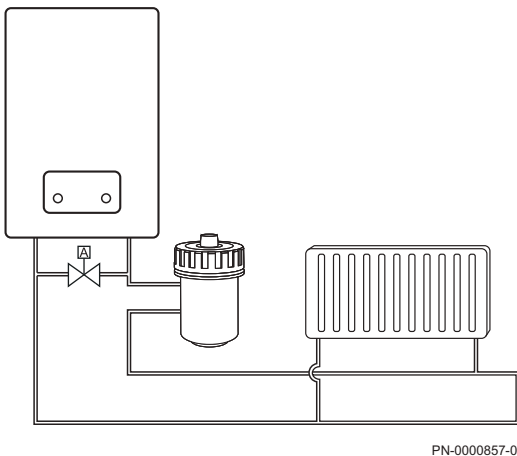
i Important
You must flush and add inhibitor to the system. Failure due to debris in the system is not covered by the warranty.

It is important to check the inhibitor concentration after installation, system modification and at every service. This must be done 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.

A magnetic system filter must be fitted according to BS7593. This must be fitted to the system after the last radiator and before the boiler. The filter must be serviced according to the manufacturers instructions

Fig.16 System and filter



5.2.7 Expansion vessel (CH only)

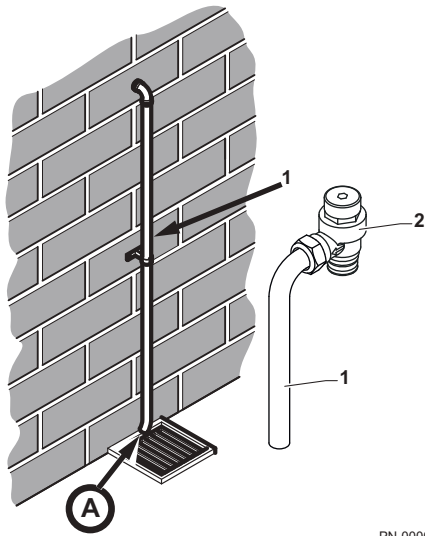
The appliance expansion vessel is pre-charged to 0.7/0.8 bar. Therefore, the minimum cold fill pressure is 1.0 bar. The vessel is suitable for correct operation for system capacities up to 100 litres. For greater system capacities an additional expansion vessel must be fitted.

For GB refer to BS 7074 Pt 1. For IE, see the relevant sections of the current edition of IS 813:2014 Domestic gas installations.

Checking the charge pressure of the vessel - to check the charge accurately ensure the system is cold. It is also necessary to relieve the pressure by draining the boiler. Using a suitable gauge check the pressure at the valve on the top of the vessel. Adjust the pressure as required and re-pressurise the system.

5.2.8 Safety pressure relief valve

Fig.17 Discharge pipe



PN-000815-01

- 1 Discharge pipe
- 2 Safety pressure relief valve
- A The end of the pipe must terminate facing down and towards the wall



See
BS 6798 for full details.

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

The safety pressure relief discharge pipe must be not less than 15 mm diameter, run continuously downward, and discharge outside the building, preferably over a drain. Route the pipe so 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 must be suitably insulated. The end of the pipe must 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.



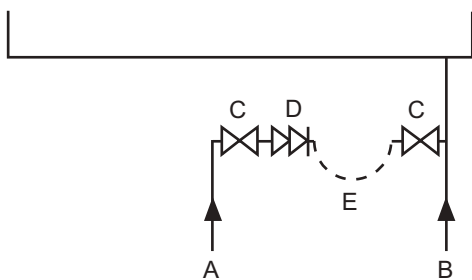
Important
The safety pressure relief valve must never be used to drain the system.

A remote safety pressure relief valve kit is available. This enables the boiler to be installed in cellars or similar locations below outside ground level.

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

5.2.9 Filling information

Fig.18 System filling circuit



PN-0000349

- A Cold mains inlet
- B Central heating return
- C Isolation valve (Not supplied)
- D Double non-return valve (Not supplied)
- E Loop (Not supplied)

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.

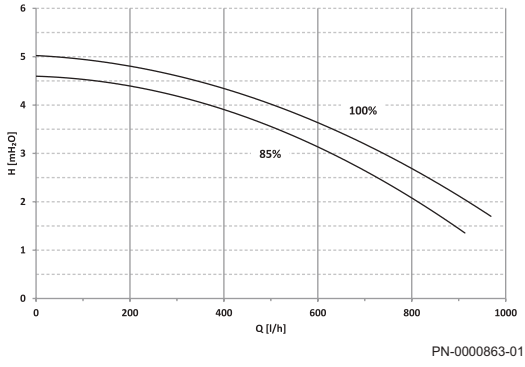
Your attention is drawn to:

- **for GB:** Guidance G24.2 and recommendation R24.2 of the Water Regulations Guide.
- **for IE:** See the relevant sections of the current regulations on electric water heaters.

The sealed primary circuits may be filled or replenished with a temporary connection between the circuit and supply pipe. A "Listed" double non-return valve or other no less effective backflow prevention device must be permanently connected at the circuit inlet. The temporary connection must be removed after use.

5.3 Flow rate/head at the plate characteristics

Fig.19 Graph of flow rate/head at the plate



Tab.13 Description of graph of flow rate/head at the plate

Q	Flow volume
h	Dynamic head
85%	Minimum modulation value in heating mode
100%	Maximum value in heating mode

To prevent flow noise, you must pay attention to the hydraulic design of the heating installation.

The system uses a high-head, modulating pump that is suitable for use on any type of one or two pipe heating system. The automatic air bleed valve built into the pump body enables fast deaeration of the heating system.

Operation of the pump on the heating mode --> modulating by 85% to 100%.


5.4 Choice of the location

5.4.1 Location of the boiler

Fit the boiler to a suitable wall. The boiler must be fitted within the building unless otherwise protected by a suitable enclosure garage or outhouse. (The boiler may be fitted inside a cupboard.)

It is recommended that the permanent live is left on to give the appliance frost protection in the following circumstances:

- Where the boiler is sited in an unheated enclosure
- During periods when the heating system is unused

 This will not protect the system.

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

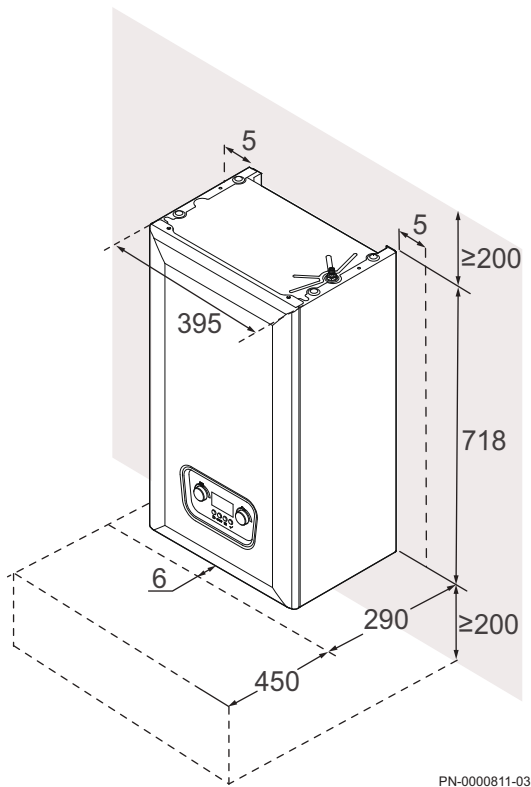
In IE reference must be made to the current edition of the ETCI rules.

5.4.2 Ventilation

If the boiler is installed in a cupboard, the top and bottom panels of the cupboard must be left open.

5.4.3 Clearances

Fig.20 Clearances



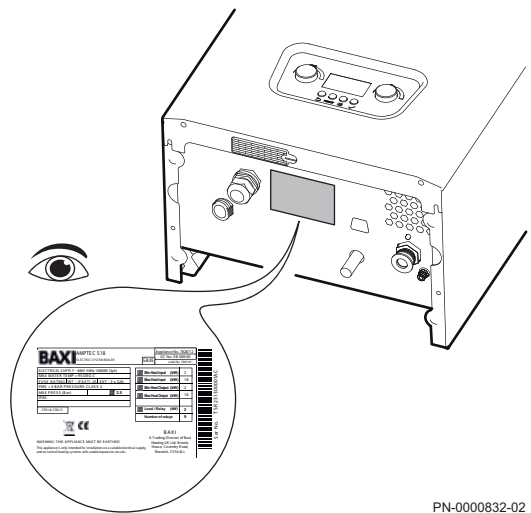
A flat vertical area is required for the installation of the boiler and it should be capable of bearing the weight of the boiler when full of water.

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 aids installation and maintenance.

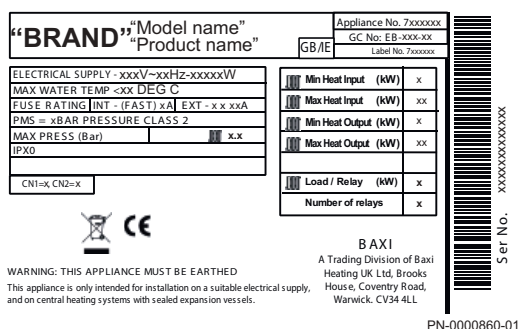
5.4.4 Data plate and service label

Fig.21 Position of the data plate



The data plate provides important information about the appliance (see the sample data plate shown below). The data plate is located on the underside of the boiler.

Fig.22 Data plate



Tab.14 Description of the data plate

"BRAND"	Commercial brand
"AMPTEC SXX"	Model name
"ELECTRIC SYSTEM BOILER"	Product name
"Appliance No."	Product number
GC No: EB-XXX-XX	
"Label No."	Label identification number
"ELECTRICAL SUPPLY" (V-Hz-W)	Power supply and output
"MAX WATER TEMP" (°C)	Maximum water temperature
"FUSE RATING" (A)	Fuse rating (internal/external)
"PMS"	Maximum pressure of the PRV (bar).

"MAX PRESS (Bar)"	Maximum heating circuit pressure (bar).
"IP"	Protection rating
"CN1/CN2"	Factory parameters
"Min/Max Heat Input/Output (kW)"	Maximum and minimum heat output of the appliance (in kW)
"Load / Relay (kW)"	The maximum load on each relay (in kW)
"Number of relays"	Number of relays in the appliance

Fig.23 Service label



BO-000012

Tab.15 Service label description

"Code"	Product code
"Product name"	Model name
"s/n"	Serial number

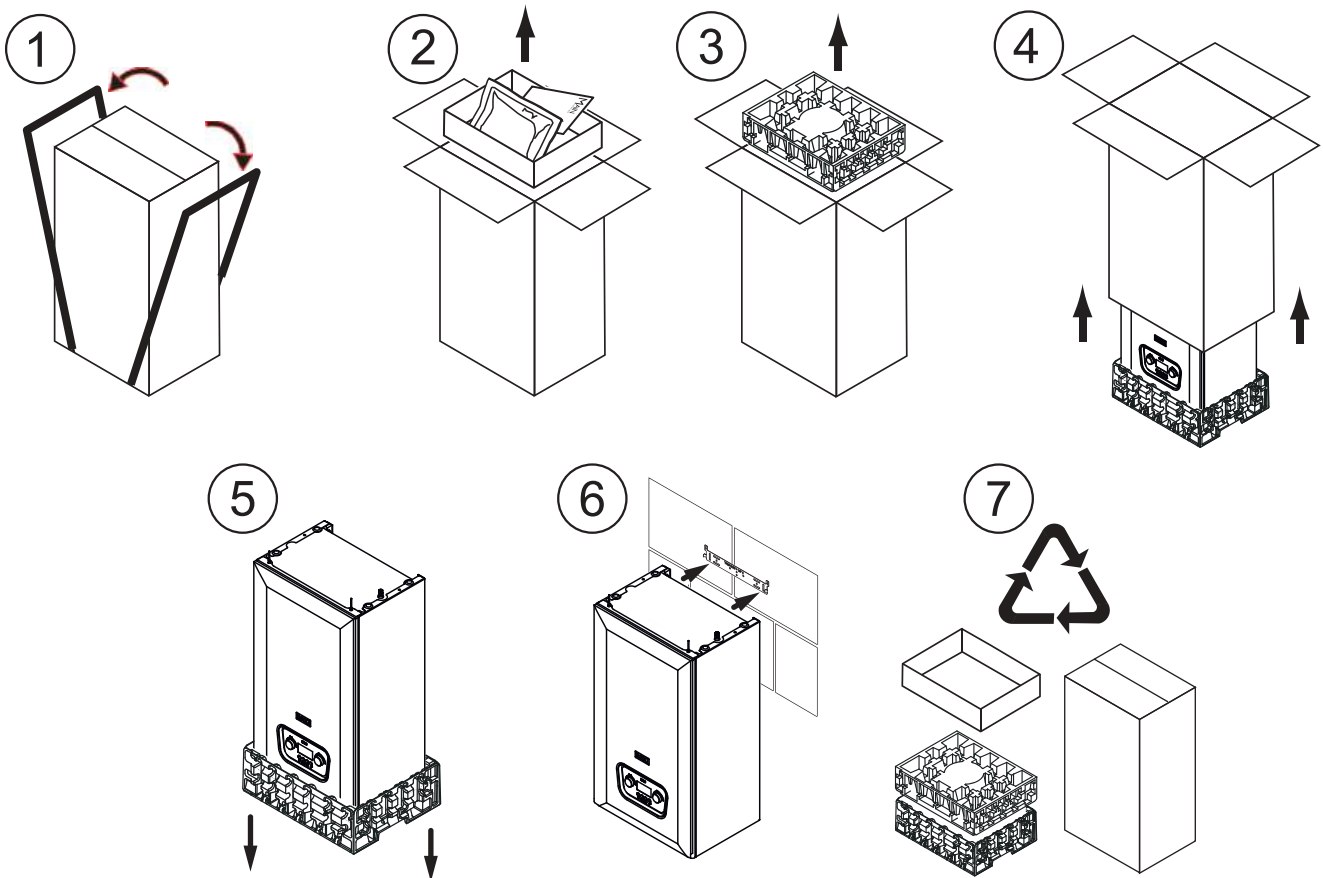
5.5 Transport

This product should be lifted and handled by two people. When lifting always keep your back straight and wear protective equipment where necessary. Carrying and lifting equipment should be used as required. e.g. when installing in a loft.

5.6 Unpacking & initial preparation

5.6.1 Unpacking

Fig.24 Unpacking the boiler



PN-0000812-01

**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.

**See**

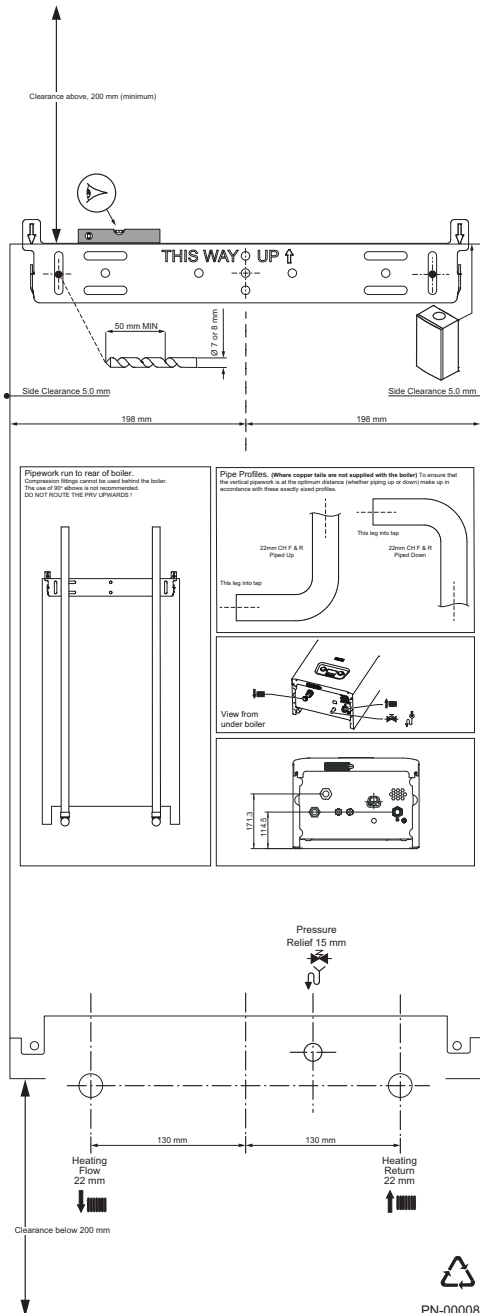
Handling, page 7 before unpacking or lifting the boiler.

**Important**

The sealing caps can be removed after removing the cardboard base. **Care must be taken to avoid damage from any residual water in the boiler.**

5.6.2 Initial preparation

Fig.25 Template

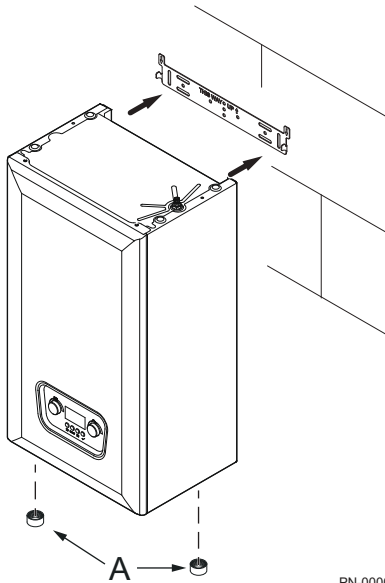


1. After considering the site requirements position the fixing template on the wall ensuring it is level both horizontally and vertically.
2. Mark the position of the two most suitable fixing slots for the wall plate.
3. If required, mark the position of the water pipes. Remove the template.
4. Drill the wall as previously marked to accept the wall plugs supplied (fixing kit).
5. Secure the wall plate using the fixing screws supplied (fixing kit).
6. Use a spirit level to ensure that the plate is level before tightening the screws.

6 Installation

6.1 General

Fig.26 Mounting the boiler



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.

1. Lift the boiler and hook onto the wall plate.
2. Remove the sealing caps from the boiler connections under the boiler.

A Sealing caps

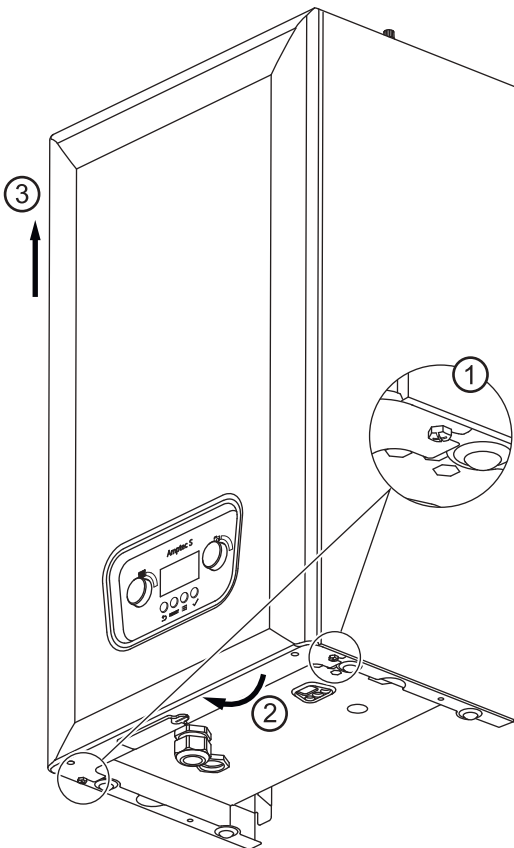


Warning

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

6.1.1 Removing the front panel

Fig.27 Removing the front panel



Warning

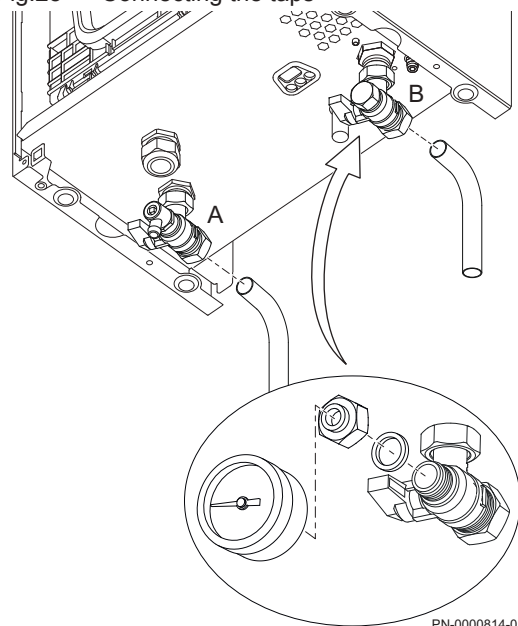
When accessing the inside of the appliance ensure the electrical supply is isolated before any work is started.

To remove the front panel proceed as follows:

1. Loosen the two screws located on the bottom of the appliance.
2. Pull the bottom of the panel forward.
3. Lift the front panel upwards off the locating pins.

6.1.2 Connecting the taps

Fig.28 Connecting the taps



PN-0000814-01

Tab.16 Flow and return identification

Identifier	Direction
A	Flow
B	Return

1. Fit the pressure gauge (optional).
2. Remove the taps and sealing washers from the fitting kit. The taps accept the 22 mm copper tails supplied.
3. Always fit the tap with the drain point to the heating flow.
4. Ensure all joints are tight.
5. If required the pressure gauge can be fitted to the return tap.
6. Remove cap and seal from the tap.
7. Screw the nut provided onto the tap and tighten.
8. Screw in the pressure gauge.

6.2 Assembly

6.2.1 Fitting the pressure relief discharge pipe

Fig.29 Pressure relief pipe connection



PN-0000817-01

1. The discharge pipe (1) is connected to the boiler via the pump. The discharge pipe (1) terminates in a straight connection. This must be connected with a 15 mm compression elbow or straight connection, depending on installation requirement.
2. Determine the routing of the discharge pipe in the vicinity of the boiler.



Important

Make all 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.



See

Safety pressure relief valve, page 23

5. The pipework must be clipped at suitable intervals to support it, commencing as close to the boiler as possible.

6.3 Electrical connections



See
Electrical supply, page 19 for details of the electrical supply.



Warning
Check that the total nominal consumption of the accessories connected to the appliance is less than 1 amp. If it is higher, a relay must be installed between the accessories and the electronic board.

6.3.1 Access to the electrical connections (external controls)

Fig.30 Accessing the circuit board

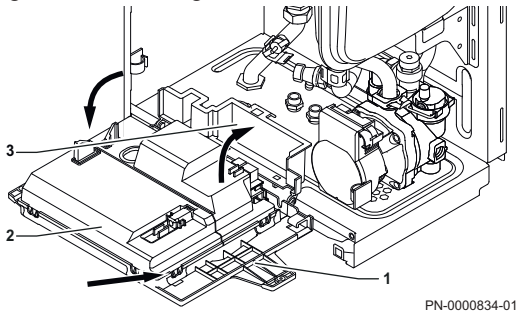
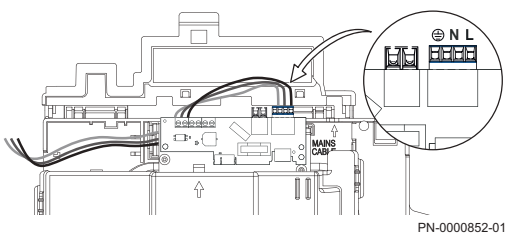


Fig.31 Mains power to the installer board



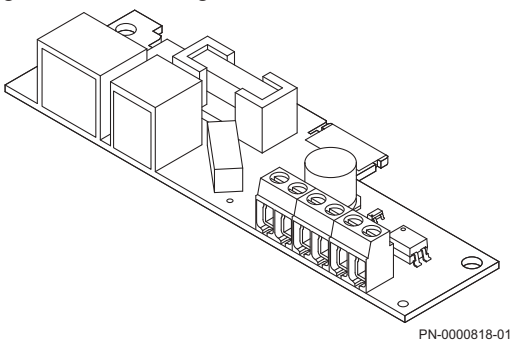
See
Removing the front panel, page 28 for instructions on how to remove the front panel.

To access the installer electrical connection board:

1. Pull the control panel downwards (1).
2. Lift the yellow hinged rear cover (2) to access the installer connections.
3. Loosen cable gland.
4. Feed cable through cable gland.
5. Route cable to terminal board and connect the wires.
6. Ensure cable does not snag and tighten the cable gland.

6.3.2 Connecting the room thermostat

Fig.32 Connecting the room thermostat RT



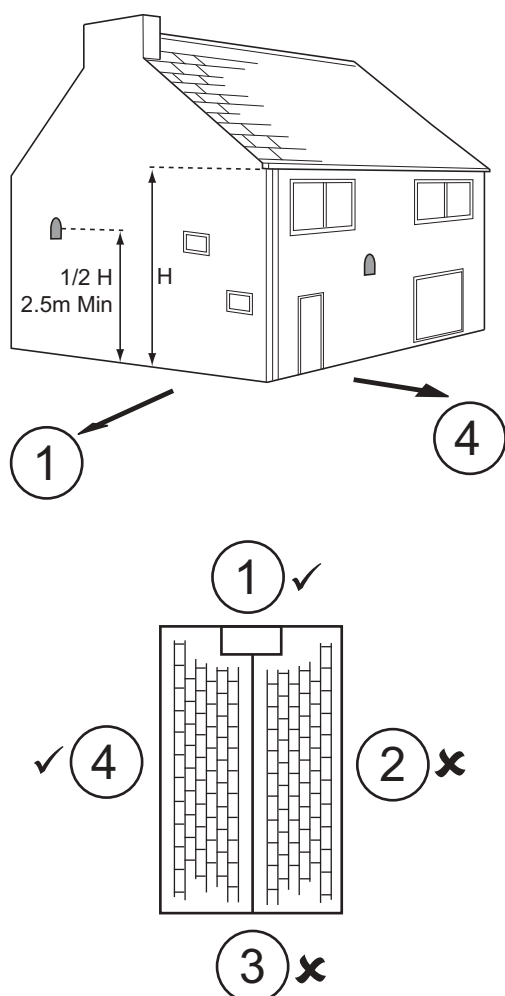
Before connecting the room thermostat (RT) or Open Therm (OT) device, remove the bridge wire on the terminal board as shown.



Important
An ON/OFF low voltage or volt free control can be connected to the RT connector.
On the OT connector it is possible to connect a low voltage or Open Therm, R-BUS, room thermostat.
To use an OT thermostat, remove the link between the OT connector and maintain the link on the RT connector.

6.3.3 Connecting on wall outdoor temperature sensor

Fig.33 Sensor position



PN-0000882-01

Tab.17 Orientation key

Identifier	Compass direction
1	North
2	East
3	South
4	West

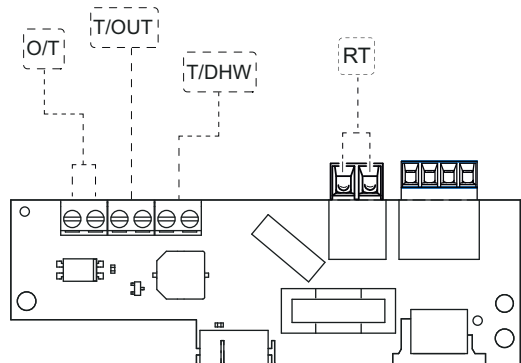
The sensor must be fixed to an external wall surface of the property it is serving. The wall must face north or west. Under no circumstance must it be fixed to a south facing wall in direct sunlight.

The sensor must be positioned approximately at half the height of the living space of the property. This must be a minimum of at least 2.5 metres above ground level.

- Once the position has been determined, prise the cover off the sensor. Mark through the sensor body the two fixing holes, and the larger hole for the wiring.
- Drill & plug the two fixing holes (plugs and screws are supplied with the sensor). Also drill the hole for the sensor wiring.
- Insert the sensor wiring through the hole in the wall, leaving sufficient length outside to allow connection. Seal the hole. **Note: 0.5 mm 2 core cable is recommended** (the sensor is a low voltage device). This wiring is NOT supplied in the kit.
- If it is not possible to pass the wiring through the wall directly behind, remove the circular 'knock-out' panel in the sensor base to allow connection.
- Using the screws provided fit the body to the wall. Insert the wires in the two-way connection block and secure them. Replace the sensor cover.
- Hinge down the control box and unclip the connection block cover.
- Pass the wires from the sensor through the grommet in the lower panel.
- Connect the wires from the sensor to T/OUT on the connection board CB-26 (see Fig.34, page 31. Refit the cover and front panel.
- Reinstate the electrical supply to the boiler.
- From the graph (see Setting the heating curve, page 42), determine which is the most appropriate curve for the installation and the expectations of the user. For example if curve 50 is selected, at an outside temperature of 10 °C the boiler flow temperature will be 65 °C. In the event of the outside temperature falling to 0 °C the boiler flow temperature will increase to 85 °C.

6.3.4 Connecting the outdoor temperature sensor (OS)

Fig.34 Connecting the outdoor temperature sensor



PN-0000837-01

Connect the outdoor temperature sensor to the T/OUT port on the connection board.

i Important
Set the type of outdoor temperature sensor used by implementing setting AP056 (see table List of parameters, page 38).

See
The instructions supplied with the sensor

6.3.5 Identifying label



Important

The identifying label (7221476-01) supplied with the outdoor temperature sensor must be signed and affixed on or adjacent to the boiler. The label must be readily accessible without removing the boiler casing or any other disassembly.

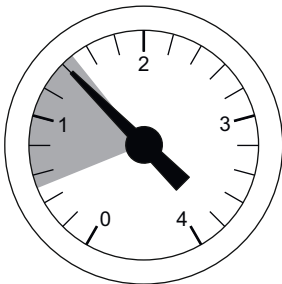
6.4 Filling the system

6.4.1 Flushing the system

Flush thoroughly and treat the system according to guidance given in BS 7593.

6.4.2 Fill the installation

Fig.35 Water pressure



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.



Important

Your attention is drawn to:

- for GB: Guidance G24.2 and recommendation R24.2 of the Water Regulations Guide.
 - for IE: See the relevant sections of the current regulations on electric water heaters.
2. The sealed primary circuits may be filled or replenished using a temporary connection between the circuit and supply pipe. A 'Listed' double non-return valve or similarly effective backflow prevention device is permanently connected at the inlet to the circuit. The temporary connection must be removed after use.
 3. Fill or replenish the sealed primary circuits by means of a temporary connection between the circuit and supply pipe:
 - Permanently connect a 'Listed' double non-return 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.

PN-0000820-01

6.4.3 Bleeding the drain valve



Danger

The electrical supply must be isolated from the appliance before removing the front panel



Warning

Take care that water does not spill on or around the appliance

1. Remove the front panel



See

Removing the front panel, page 28 for more details

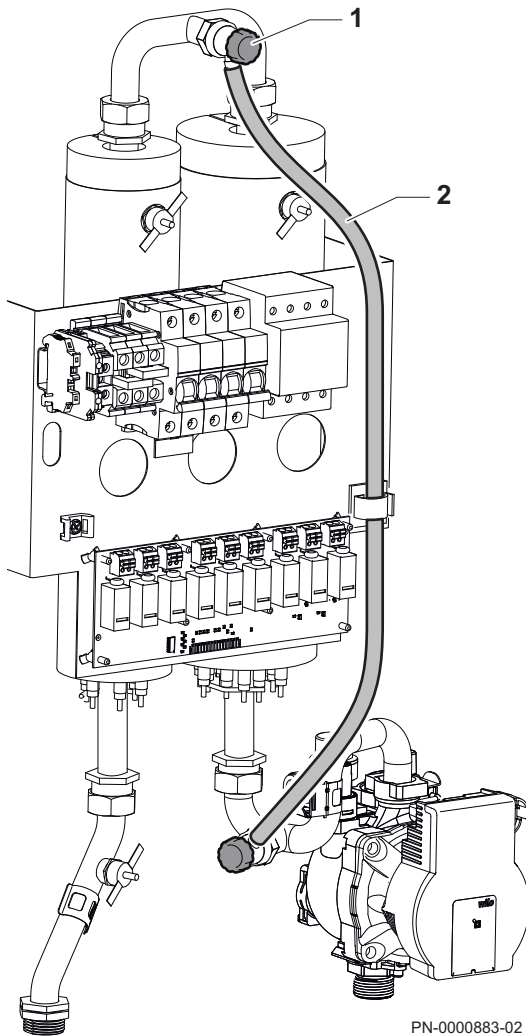
2. Fill the installation



See

Fill the installation, page 32 for more details

3. Disconnect the hose (2) from the lower valve, ensure it is well connected to the upper valve, and move the free end of the hose away from all electric and electronic components.
4. Place the end of the hose (2) into a suitable container.
5. Open the drain valve (1).
6. When water begins to flow from the hose (2) close the drain valve (1).
7. Remove the hose (2) from the container.
8. Remove any excess water from the hose (2).
9. Clip the hose in place and reconnect it to the lower valve.
10. Check the system pressure and top up if required.
11. Fit the front cover.
12. Switch on the electrical supply.



7 Commissioning

7.1 General

Commissioning of the boiler is done under the following circumstances:

1. First time use (new installation),
2. After a complete re-installation of the boiler.

Commissioning the boiler allows the following:

- A review of the various settings
- Checks to start up the boiler safely

7.2 Checklist before commissioning

7.2.1 Preliminary electrical checks



Important

Consideration must be given to Health & Safety Document 635 (The Electricity at Work Regulations, 1989).

- Prior to commissioning the boiler preliminary electrical system checks must be carried out.
- These must be performed using a suitable meter. This must include checks for Earth Continuity, Resistance to Earth, Short Circuit and Polarity.
- Check the power supply connections to the various boiler components.
- Check the electrical connections on the thermostat and the other external components.

7.2.2 Checks

Check:

- That the boiler has been installed in accordance with these instructions.
- Check the hydraulic circuit from the boiler's isolation valves to the heating circuit.
- Check that the hydraulic pressure in the heating installation is between 1.0 and 1.5 bar.

7.3 Commissioning procedure

1. Switch on the electric to the boiler.
2. The message "INIT" will appear on the screen, this indicates that the "Initialisation" phase has begun;
3. The software version **Vxx.xx** is displayed;
4. **DEAIR** is displayed
5. On completion of the "DEAIR" cycle the boiler is ready for operation.



Important

If during the commissioning process the power to the boiler is interrupted the de-aeration sequence will start from the beginning automatically when power is restored.



Caution

If the system is drained in the future (even partly, when replacing a radiator for example) the de-aeration function must be repeated. The inhibitor concentration must be checked and replenished if necessary.

7.4 Final instructions

7.4.1 Handover

Fig.36 People



PN-0000333

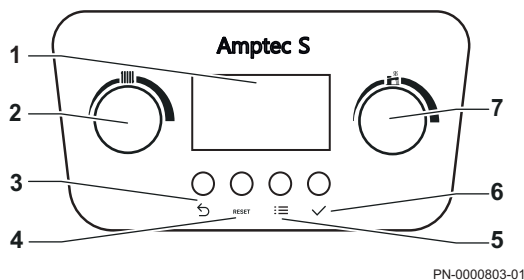
1. This publication must be handed to the user for safe keeping and each subsequent regular service visit recorded.
2. Complete the Package Fiche in the Installation manual.
3. Hand over the Quick Start Guide and Installation and Servicing Instructions, giving advice on the necessity of regular servicing.
4. **For IE**, it is necessary to complete a "Declaration of Conformity" to indicate compliance with the required regulations.
5. 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.
6. Instruct the user in the operation of the boiler controls.
7. Show the user the location of the system control isolation switch, and demonstrate its operation.

8 Operation

8.1 Use of the control panel

8.1.1 Control panel

Fig.37 Control panel



The panel is controlled by two knobs and four buttons:

- 1 Display screen
- 2 CH temperature control knob
- 3 Back button
- 4 Reset button
- 5 Menu button
- 6 Confirm button
- 7 DHW temperature control knob (only applicable if supplied in kit)

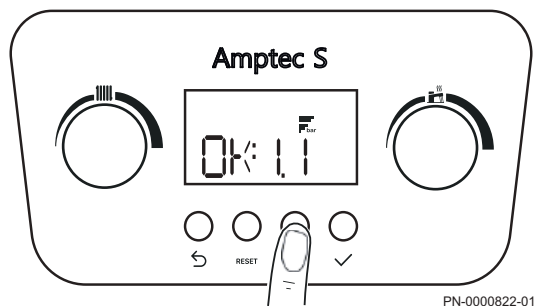



Important

When an OpenTherm controller is connected adjustment of the boiler, e.g. heating temperature, is made using the OpenTherm controller rather than the boiler controls. The boiler controls are overridden by the OpenTherm control. Please check the functionality with the manufacturer of the OpenTherm controller.

8.1.2 Browsing in the menus

Fig.38 Accessing the menus



1. Press the  button to access the menu options. The menu options are displayed along the top of the display.

Tab.18 Available menu options






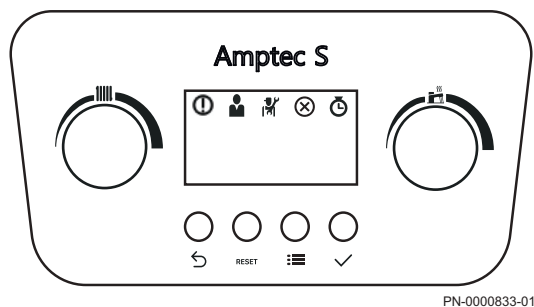


	Information menu
	User menu
	Installer menu
	Error menu
	Counter menu

Fig.39 Viewing the menus



2. Turn either knob to scroll through the menu options. Turn the knob to the right to move left to right along the menu options. Turn the knob to the left to move right to left along the menu options. The current menu flashes to show it is selected.
3. Press the  button to confirm selection of the required menu.
4. Press the  button to return to the menu screen, press again to return to the home screen.



Important

If no buttons are pressed for 60 seconds the home screen is displayed. If this occurs, the procedure above needs to be repeated.

8.1.3 Information menu display

This is a read only menu that gives the value of certain data points, such as:

- Flow temperature
- Return temperature
- Outside temperature if an outdoor temperature sensor is fitted)



See

Information parameters, page 38 for parameters and information.

8.1.4 User menu display

This menu contains parameters that can be modified by the user.

Your installer must be consulted before making any changes to these parameters.



See

User parameters, page 38 for parameters and information.

8.1.5 Installer menu display





This menu allows the installer to custom tune certain appliance parameters to suit the system requirements.



See

Installer parameters, page 39 for parameters and information.

8.1.6 Error menu display

1. Access the error menu. See Browsing in the menus, page 35 for information on how to access the menu.
2. The number of errors is displayed.
3. Press the  button to enter the error code list.
4. The latest error code is displayed.
5. Turn either knob to scroll through the list of error codes. The error codes are numbered.
6. Press the  button to return to the previous screen.
7. Turn either knob to the right, CLR is displayed.
8. Press the  button to clear the errors.
9. Press the  button to return to the menu screen, press again to return to the home screen.



See

Error codes, page 55 for codes and information.

8.1.7 Counter menu display

This is a read only list that displays the appliances stored data, such as:

- Number of run hours
- Pump operations











See

Counter menu, page 40 for parameters and information.

8.1.8 Carrying out an auto-detect

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

1. Press any button to wake the control unit.
2. Press the  button to access the menu options.
3. Press the  button to access the available menu settings.
4. Turn either knob to highlight the  menu.
5. Press the  button to enter the selected menu.
6. The word CODE is displayed. Turn either knob to enter the code 0012.
7. Press the  button to accept the code number.
8. Turn either knob until **AD** is displayed.
9. Press the  button, **-AD-** is displayed.
10. Press the  button to activate the function.
11. Press the  button to return to the menu screen, press again to return to the home screen.

8.2 Start up

If there is no power to the boiler, switch on at the isolation switch and ensure that the time control is in the on position and any other controls (such as, room thermostat) are calling for heat. The boiler will begin its start sequence. This procedure performs a series of tests, after which the installation is purged (this takes approximately five minutes).

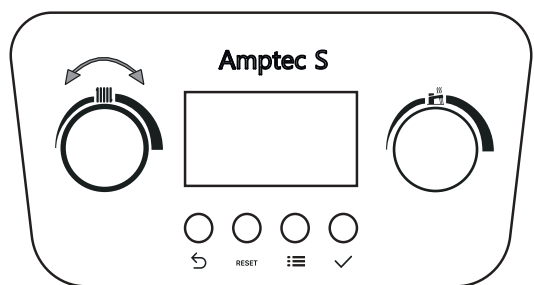
8.2.1 Procedure for first start-up

The following procedure occurs when electric is applied to the boiler:

1. Switch on the electric to the boiler.
2. The message "INIT" will appear on the screen, this indicates that the "Initialisation" phase has begun.
3. The software version Vxx.xx. is displayed.
4. **DEAIR** is displayed
5. On completion of the "DEAIR" cycle the boiler is ready for operation.

8.2.2 Changing the heating flow temperature

Fig.40 Changing the heating 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.

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

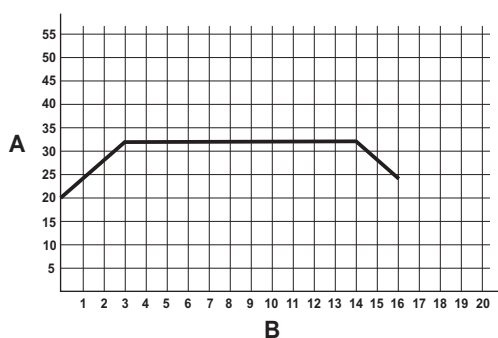
2. Press the key to confirm the value or wait a few seconds until the value is automatically saved.

i Important
The flow temperature is matched automatically when using a:

- Weather-dependent regulator
- **OpenTherm** regulator.

8.2.3 Underfloor screed drying programme

Fig.41 Screed drying diagram



The boiler has a screed drying function for underfloor heating built in. This can be accessed through the parameters.

The default setting is a general setting. The installer will need to adjust the settings depending on the type and depth of screed.

The programme is as follows:

- Start at 20°C and end at 32°C over 3 days
- 11 days at 32°C
- Start at 32°C and end at 24°C over 2 days

8.3 Shutdown

8.3.1 Switching off the central heating (CH)

1. Disable the heating mode by turning the knob anti-clockwise until the word **OFF** appears on the display. .

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

i Important
Heating is disabled but the frost protection function remains activated.

2. Disable the domestic hot water by turning the knob anti-clockwise until the word **OFF** appears on the display.
3. Switch the boiler off completely by switching off the power supply.

i Important
If the mains power supply is completely switched off, the boiler and the heating installation are not protected against frost.

9 Settings

9.1 Accessing the menus


See

Browsing in the menus, page 35 for information on how to access the menus.

9.2 List of parameters

9.2.1 Information parameters

Tab.19 List of information parameters (read only)

Setting (read only)	Description	Value
AM001	DHW 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 central heating	bar
AM022	On/off heat demand	
AM027	Outside temperature	°C
AM037	3-way valve status	
AM040	Outgoing DHW temperature check	°C
AM091	Season mode (0: winter, 3: summer)	0/3
CM030	Current room temperature for zone	°C
CM060		
CM120	Current operating mode in the zone (0: disabled, 1: enabled)	0/1
CM130	Current active zone activity	
CM190	Zone ambient setpoint	°C
CM210	Outside temperature in the zone	°C
DM009	Primary operating mode (0:standby, 1:heat demand, 2: DHW)	0/1/2
DM019	DHW mode active	1/2/3/4
DM029	DHW temperature setpoint	°C
Vxx.xx	Software version	Version
Pxx.xx	Device version	Version

9.2.2 User parameters

Tab.20 List of user parameters

User Setting	Description	Value
AP016	CH Function On (0:disabled, 1:enabled)	1
AP017	DHW Function On (0:disabled, 1:enabled)	1
AP073	Summer Winter	30.00
AP074	Force Summer Mode (0:disabled, 1:enabled)	0
CP010	Tflow Setpoint Zone	80.00
CP060	RoomT Holiday	5.00
CP070	Max Reduced Room Temperature limit	16.00
CP080	User T.Room Activity	16.00

CP081	User T.Room Activity	20.00
CP082	User T.Room Activity	5.00
CP083	User T.Room Activity	21.00
CP084	User T.Room Activity	22.00
CP085	User T.Room Activity	20.00
CP200	Manual	20.00
CP250	CalSondeAmbZone	0.00
CP320	Operating Zone Mode (0:scheduling, 1:manual, 2:off)	0
CP510	Temporary Room Setpoint	20.00
CP550	Zone, Fireplace	0
DP060	DHW Time Program Select (0:schedule 1, 1:schedule 2, 2:schedule 3)	Schedule 1
DP070	DHW Comfort Setpoint	60.00
DP080	DHW Reduced Setpoint	60.00
DP200	DHW Mode (0:scheduling, 1:manual, 2:off)	0
DP337	DHW Holiday Setpoint	10.00

9.2.3 Installer parameters

Tab.21 List of installer parameters

Installer parameters	Description	Factory Value	Minimum	Maximum
AP001	Function blocking input (1:not used, 2:full blocking, 3:partial blocking)	0	1	3
AP006	Minimum water pressure	5	0	30
AP009	Interval burner hours between service	3000	0	25500
AP010	Notify for service	0	0	2
AP011	Interval operating hours between service	17500	0	25500
AP056	Selector for the outdoor temperature sensor type connected to the zone (1: AF60, 2: QAC34)	2	1	2
AP063	Maximum flow temperature setpoint of the appliance	80.00	20.00	80.00
AP079	Building insulation level (with outdoor temperature sensor) °C	3	0	15
AP080	Outside temperature below which the antifreeze protection is activated	-10.00	-60.00	25.00
AP082	Enable daylight saving for the system (0: off, 1: on)	0	0	1
AP091	Outdoor temperature sensor source (0:auto, 1:wired, 2: wireless, 3:in-ternet measured, 4: none)	0	0	4
AP101	Deaeration cycle enable /disable (0:no de-air at start up, 1:always de-air at start up, 2: de-air only at first start)	2	0	2
CP000	Zone maximal flow temperature setpoint	80.00	70.0	80.00
CP020	Functionality of the zone (zone function) (0: disable, 1:direct)	1	0	1
CP210	Comfort mode heating curve offset (with outdoor temperature sensor)	150	150	900
CP220	Curve base temperature in reduced mode	150	150	900
CP230	Gradient of the heating curve of the zone	15	0	40
CP240	Influence of the room sensor of the zone	3	0	10
CP730	Par zone heat up speed	0	0	5
CP740	Cool down speed selection	0	0	4
CP750	Par zone max pre heat time	0	0	240
CP780	Zone control strategy selection	0	0	3
DP004	Enum legionella mode (0: disabled, 1: weekly, 2: daily)	1	0	2
DP007	Standby 3-way valve position (0: CH, 1: DHW)	1	0	1
DP150	Par zone DHW primary boiler switch (0: off, 1: on)	1	0	1
DP160	Par zone DHW primary anti-legionella setpoint	65.00	50.00	65.00
DP410	Duration of the function of anti-legionella (minutes)	60	0	360
DP420	Maximum continuous running time of anti-legionella (minutes)	120	0	360

Installer parameters	Description	Factory Value	Minimum	Maximum
DP430	day to start the DHW anti-legionella (day)	6	1	7
DP440	starting time for the DHW anti-legionella program (10 minute intervals from midnight)	18	0	143
PP015	Pump post run time	3	0	99
ZP000	Setting of the number of days spent in the first drying step	3	0	30
ZP010	First step of Zone Screed Drying Start Temperature	20.00	7.00	-
ZP020	Setting of the end temperature of the first step in the screed drying program of the zone	32.00	7.00	60.00
ZP030	Setting of the number of days spent in the second drying step	11	0	30
ZP040	Setting of the start temperature of the second step in the screed drying program of the zone	32.00	7.00	60.00
ZP050	Setting of the end temperature of the second step in the screed drying program of the zone	32.00	7.00	60.00
ZP060	Setting of the number of days spent in the third drying step	2	0	30
ZP070	Setting of the start temperature of the third step in the screed drying program of the zone	32.00	7.00	60.00
ZP080	Setting of the end temperature of the third step in the screed drying program of the zone	24.00	7.00	60.00
ZP090	Enable the screed drying of the zone (0: disabled, 1: enabled)	0	1	0
DEAIR	Manual deaeration function	-	-	-
CNF	Configuration cn1 and cn2	-	-	-
AD	Searching for services connected to the boiler PCB	-	-	-

**Danger**

For low temperature heating instructions, modify the **CP000** parameter according to the maximum flow temperature. The factory settings for certain settings may differ based on the market the product is destined for.

9.2.4 Counter menu

Tab.22 List of counters (read only)

Meters	Description	Level
AC001	Number of boiler power supply hours	User
AC002	Number of boiler operating hours after last maintenance operation	Installer
AC003	Number of boiler power supply hours after last maintenance operation	Installer
AC004	Failed start-up attempts after last maintenance operation	Installer
AC005	Indicative energy consumption [kW/h] in heating mode	User
AC006	Indicative energy consumption [kW/h] in domestic hot water (DHW) mode	User
AC026	Number of pump operating hours	Installer
AC027	Number of pump start-ups	Installer
AM033	Next service indication, the service indication after the upcoming.	User
CC001	Numbers of hours pump has to run	User
CC010	Numbers of pump starts	User
CLR	Resetting of all meters (to be confirmed by pressing the F4 key) NOTE: This parameter is only displayed if AP010 :t: 0	Installer
DC002	Number of domestic hot water cycles (3-way valve switching)	Installer
DC003	Number of hours in domestic hot water mode (3-way valve switching)	Installer
DC004	Number of start-ups for domestic hot water mode	Installer
DC005	Number of start-up hours for domestic hot water mode	Installer

GC007	Failed start-up attempts	User
PC002	Number of start-ups for heating and domestic hot water mode	Installer
PC003	Number of start-up hours for heating and domestic hot water mode	Installer
ZC000	Time remaining for active screed drying sequence	Installer

9.3 Status and sub-status

- 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**.



See

Information parameters, page 38, for parameter information.

Tab.23 List of statuses

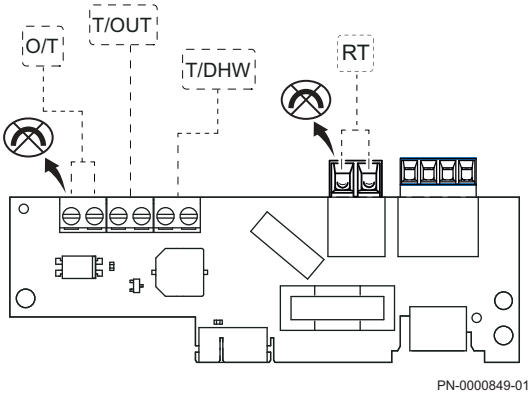
STATUS	
Standby	0
Heat demand	1
Operation in heating mode	3
Operation in domestic water mode	4
Pump post circulation	6
Temporary fault	9
Permanent fault (fault to be reset manually)	10
Manual heat demand	15
Frost protection function active	16
Deaeration function active	17
Boiler reset in progress	19

Tab.24 List of sub-statuses

SUB-STATUS	
Standby	0
Anti-cycle time	1
Operation at set temperature setpoint	30
Operation at required output	32
Level 1 gradient detected	33
Level 2 gradient detected	34
Level 3 gradient detected	35
Stabilisation time	37
Operation in heating mode has been interrupted by a domestic hot water request. Restart from power output in which it was interrupted.	39
Operation at reduced temperature setpoint	48
Pump post circulation	60

9.4 Setting the heating curve

Fig.42 Setting the heating curve



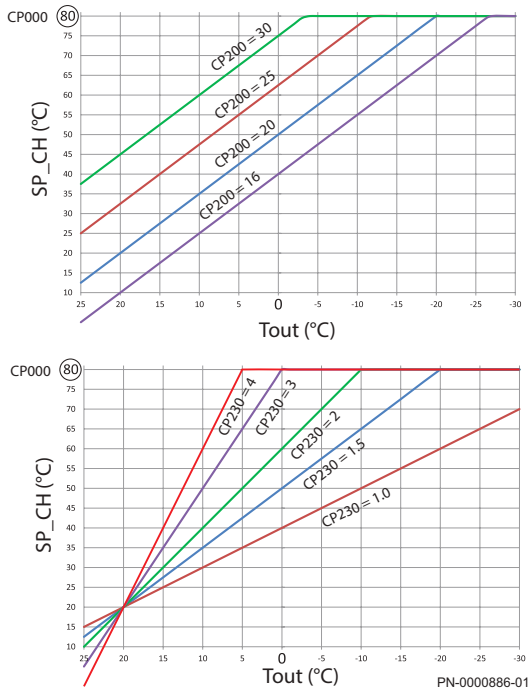
To set the heating curve do the following:

1. Remove the jumper.
2. Connect the outdoor temperature sensor to the T/OUT port on the connection board.
3. Connect the "on/off" type room thermostat or the Open Therm room thermostat to the O/T port on the installer board.

i Important
 An "on/off" room thermostat (also H.V. 230 V) can be connected to the RT connector.
 On the OT connector it is possible to connect a low voltage or Open Therm, R-BUS, smart room thermostat
 To use a H.V. thermostat remove the link between the RT connector and maintain the link on the OT connector.
 If you want to use an OT thermostat, remove the link between OT connector and maintain the link on the RT connector

i Important
 If the heating curve is set via an Open Therm room thermostat, do not set the heating curve with these parameters.

Fig.43 Heating curve graph



4. To set the curve, follow the procedure below:
 - CP200: This 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.
 - **Recommended CP200 value = 25**
 - CP230: This changes the gradient of the curve to suit the winter months. If the house has a low heat loss a number could be set. If the house has a high heat loss the value will be higher.
 - **Recommended CP230 value = 3**

i Important
 Explain to the user how to select a different temperature curve. Also explain how the outdoor temperature sensor regulates the boiler flow temperature.

i Important
 When an Open Therm room thermostat is connected adjustment of the boiler, for example heating temperature, is made using the Open Therm room thermostat rather than the boiler controls. The boiler controls are overridden by the Open Therm room thermostat. Please check the functionality with the manufacturer of the Open Therm room thermostat.

9.5 Resetting the factory settings

To reset the factory settings, modify the CN1 and CN2 settings with the data on the boiler data plate

Caution
 Please note that resetting the CN1 and CN2 settings with data on the data plate deletes any previous setting.

10 Maintenance

10.1 General



Warning

When changing components ensure that the electrical supply to the boiler is isolated before any work is started. When the component has been changed recommission the boiler. Always examine any seals or gaskets, replacing where necessary.



Warning

After servicing or performing any maintenance on the boiler ensure that

- The front cover is correctly fitted
- The front cover securing screws are fully tightened

For reasons of safety and economy, it is essential that the boiler is serviced annually.

10.2 Standard inspection and maintenance operations

10.2.1 Annual servicing



Warning

Ensure that the boiler is cool. Ensure that the electrical supply to the boiler is isolated.



Warning



Caution

Always use the seals or gaskets supplied with an original part. The seals or gaskets must be changed regardless of the condition of the existing ones. 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. Ensure that the electrical supply to the boiler is isolated and that the boiler is cool.
2. Remove the case front panel and hinge down the control panel.



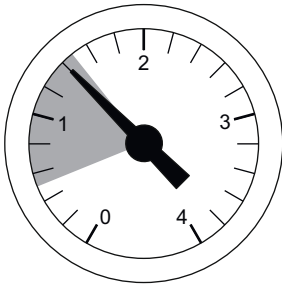
See

Removing the front panel, page 28 for information on removing the front 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.
4. Reassemble in reverse order.

10.2.2 Checking the water pressure

Fig.44 Boiler pressure value



In order for the boiler to operate correctly the water pressure in the heating circuit must be between 0.5 and 1.5 bar. The current water pressure is displayed on the LCD display panel. Restore the water pressure when it falls below the recommended value.



See

Fill the installation, page 32 for further information on filling the appliance.

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10.2.3 Checking the expansion vessel

Check the expansion vessel and recharge or replace it if necessary.



See

Replace the expansion vessel, page 48 for more information.

Check its pre-charge every year and restore the pressure to 1 bar if necessary.

10.3 Specific maintenance operations

10.3.1 Removing the front panel



See

Removing the front panel, page 28 for information on removing the front panel.

10.3.2 Draining the system



Caution

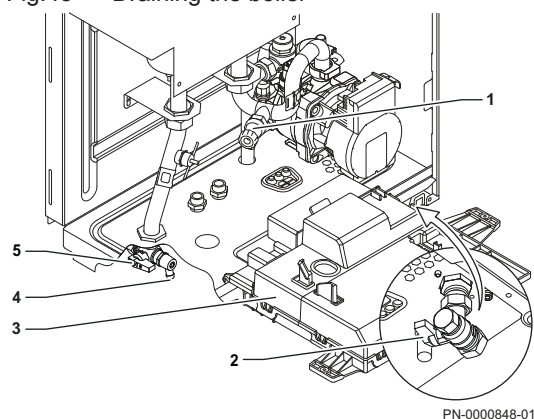
Ensure the water in the appliance is cool before draining.



Danger

The electrical supply must be isolated from the appliance before removing the front panel.

Fig.45 Draining the boiler



To drain the system:

1. Remove the front panel.



See

Removing the front panel, page 28 for more information.

2. Close the flow cock (5).
3. Close the return cock (2).
4. Attach a suitable pipe to the flow drain valve (4).
5. Open the flow drain valve (4) and empty the boiler.
6. Close the flow drain valve (4).
7. Remove the pipe from the flow drain valve (4).
8. Pull down the control panel (3).
9. Attach a suitable pipe to the internal heater drain point (1).
10. Open the internal heater drain point (1) and empty the remaining water from the boiler.
11. Close the internal heater drain point (1).
12. Remove the pipe from the internal heater drain point (1).

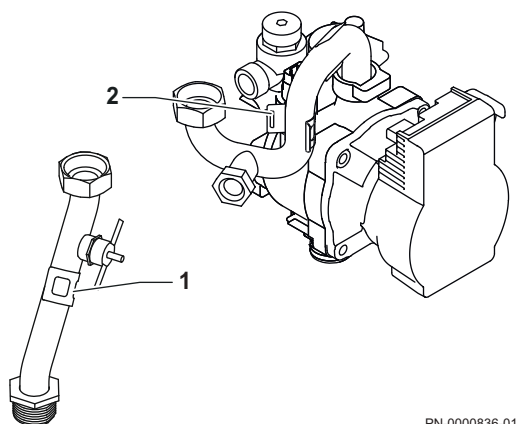
10.3.3 Replace the flow or return sensors



Danger

The electrical supply must be isolated from the appliance before removing the front panel.

Fig.46 Flow and return temperature sensor location



There are two sensors attached to the boiler pipework:

- 1 Flow temperature sensor (red wires)
- 2 Return temperature sensor (blue wires)

To replace a flow temperature sensor:

1. Remove the front cover.



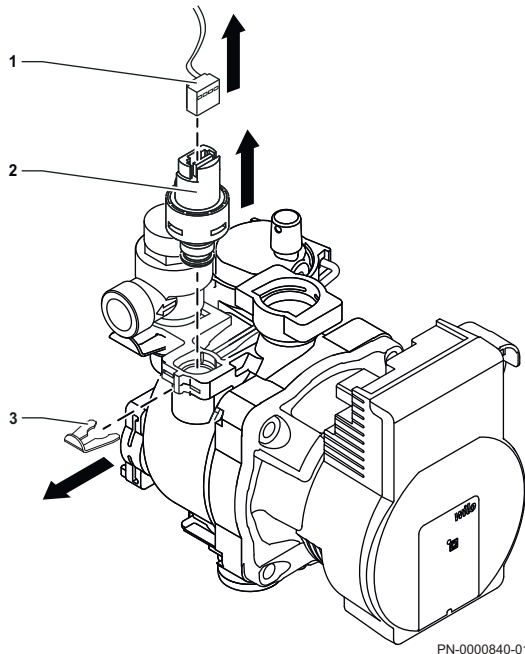
See

Removing the front panel, page 28 for more information.

2. Pull down the control panel.
3. Identify the sensor to be removed.
4. Note the position of the sensor on the pipe.
5. Remove the sensor from the pipe.
6. Disconnect the connector plug from the sensor.
7. Attach the connector plug to the new sensor.
8. Ease the new sensor onto the pipe in its original position.
9. Close the control panel.
10. Fit the front panel.
11. Switch on the electrical supply.

10.3.4 Replace the pressure sensor

Fig.47 Remove pressure sensor



Danger
 The electrical supply must be isolated from the appliance before removing the front panel.

To replace the pressure sensor:

1. Remove the front panel.

See
 Removing the front panel, page 28 for more information.

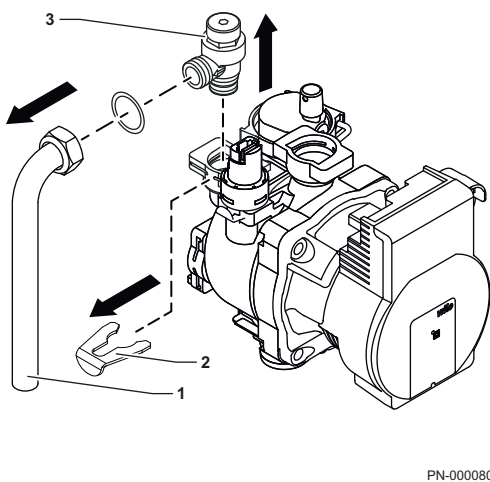
2. Pull down the control panel.
3. Drain the system

See
 Draining the system, page 45 for further information.

4. Disconnect the sensor connector (1) from the sensor (2).
5. Remove the clip (3) from the sensor (2). Note the orientation of the clip .
6. Remove the sensor (2).
7. Install the new sensor (2).
8. Refit the clip (3) in the correct orientation.
9. Attach the sensor connector (1) to the sensor (2).
10. Refill the appliance.
11. Close the control panel.
12. Fit the front panel.
13. Switch on the electrical supply.

10.3.5 Replace the safety pressure relief valve

Fig.48 Replace safety pressure relief valve



Danger
 The electrical supply must be isolated from the appliance before removing the front panel.

To replace the safety pressure relief valve:

1. Remove the front panel.

See
 Removing the front panel, page 28 for more information.

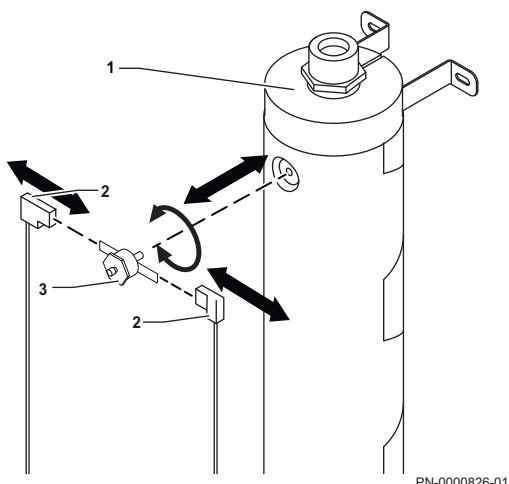
2. Pull down the control panel.
3. Drain the system

See
 Draining the system, page 45 for further information.

4. Disconnect the discharge pipe (1) from the safety pressure relief valve.
5. Remove the clip (2) from the safety pressure relief valve. Note the orientation of the clip.
6. Remove the safety pressure relief valve (3).
7. Install the new safety pressure relief valve (3).
8. Refit the clip (2) in the correct orientation.
9. Attach the discharge pipe (1) to the safety pressure relief valve.
10. Refill the appliance.
11. Close the control panel.
12. Fit the front panel.
13. Switch on the electrical supply.

10.3.6 Replace the safety overheat thermostat

Fig.49 Replacing the safety overheat thermostat



PN-0000826-01



Danger

The electrical supply must be isolated from the appliance before removing the front panel.

Remove the front panel and lower the control panel.



See

Removing the front panel, page 28 for more information.

To replace the safety overheat thermostat:

1. Remove the two spade connectors (2) from the safety overheat thermostat (3).
2. Unscrew the safety overheat thermostat (3) from the heat exchanger (1) and remove it.



Important

Do not use the electrical connectors to remove the thermostat. Do not overtighten.

3. Screw the new safety overheat thermostat (3) into the heat exchanger (1).



Important

Do not use the electrical connectors to tighten the thermostat. Do not overtighten.

4. Connect the two spade connectors (2) to the safety overheat thermostat (1).



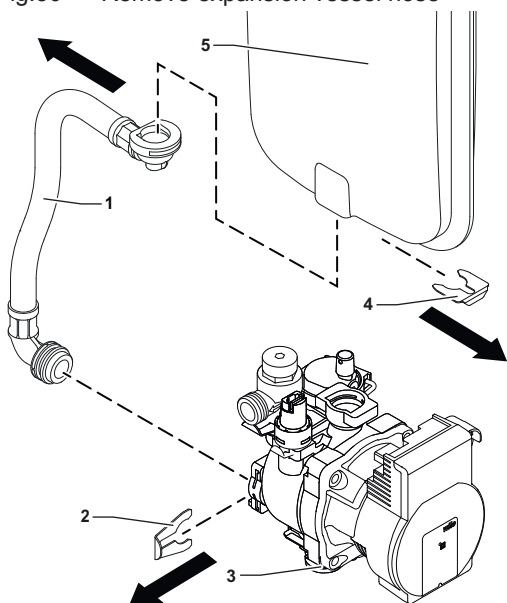
Warning

Ensure the spade connectors (2) are pushed on fully. Failure to engage the connectors correctly can cause overheating.

5. Close the control panel.
6. Fit the front panel.
7. Switch on the electrical supply.

10.3.7 Replace the expansion vessel hose

Fig.50 Remove expansion vessel hose



PN-0000830-01



Danger

The electrical supply must be isolated from the appliance before removing the front panel.



Warning

Take precautions to protect other components from water damage when removing the expansion vessel.

To replace the expansion vessel hose:

1. Remove the front panel.



See

Removing the front panel, page 28 for more information.

2. Pull the control panel down.
3. Drain the system



See

Draining the system, page 45 for further information.



Warning

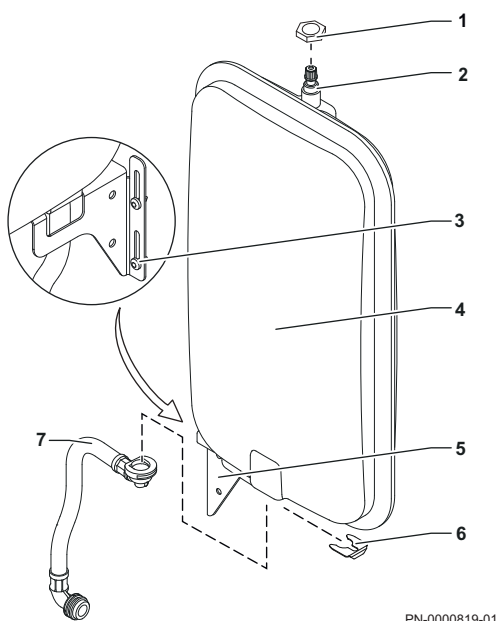
Take care as water may still be in the expansion vessel (5) and the expansion vessel hose (1).

4. Remove the clip (4) from the expansion vessel (5). Note the orientation of the clip.
5. Remove the expansion vessel hose (1) from the expansion vessel (5).
6. Remove the clip (2) from the pump (3). Note the orientation of the clip.

7. Remove the expansion vessel hose (1) from the pump (3).
8. Check the expansion vessel hose (1) is not blocked or damaged.
 - 8.1. If the expansion vessel hose (1) is blocked clear the obstruction.
 - 8.2. If the expansion vessel hose (1) is damaged replace the hose.
9. Reverse the steps above to connect the expansion vessel hose (1) to the expansion vessel (5) and the pump (3). Make sure the clips are orientated correctly.
10. Refill the appliance.
11. Close the control panel.
12. Fit the front panel.
13. Switch on the electrical supply.

10.3.8 Replace the expansion vessel

Fig.51 Remove expansion vessel



Danger

The electrical supply must be isolated from the appliance before removing the front panel.



Warning

Take precautions to protect other components from water damage when removing the expansion vessel.

To replace the expansion vessel:

1. Remove the front panel.



See

Removing the front panel, page 28 for more information.

2. Pull the control panel down.

3. Drain the system



See

Draining the system, page 45 for further information.

4. Loosen the two screws (3) on the mounting bracket (5) and slide the mounting bracket (5) downwards.

5. Remove the clip (6) from the expansion vessel (4). Note the orientation of the clip.



Warning

Take care as water may still be in the expansion vessel (4) and the expansion vessel hose (7).

6. Disconnect the expansion vessel hose (7) from the expansion vessel (4).

7. Remove the lock nut (1) from the valve mounting boss (2), while supporting the expansion vessel (4).

8. Remove the expansion vessel (4).

9. Reverse the steps above to fit the new expansion vessel (4). Make sure the clip (6) is orientated correctly.

10. Refill the appliance.

11. Close the control panel.

12. Fit the front panel.

13. Switch on the electrical supply.

10.3.9 Replace the pump

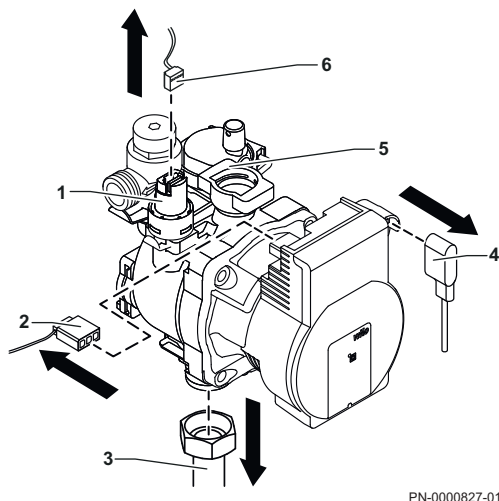


Danger

The electrical supply must be isolated from the appliance before removing the front panel.

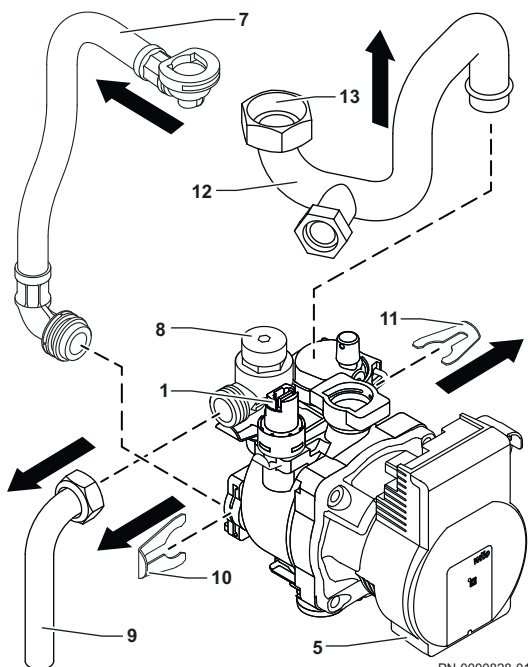
To replace the pump:

Fig.52 Replace the pump



PN-0000827-01

Fig.53 Remove the hoses



PN-0000828-01

1. Remove the front panel

**See**

Removing the front panel, page 28 for more information.

2. Pull the control panel down.

3. Drain the system

**See**

Draining the system, page 45 for further information.

4. Disconnect the power connector (2) from the pump (5).

5. Disconnect the PWM connector (4) from the pump (5).

6. Disconnect the connector plug (6) from the pressure sensor (1).

7. Disconnect the nut (13) from the heat exchanger.

8. Disconnect the return pipe (3) from the bottom of the pump (5).

9. Remove the discharge pipe (9).

10. Remove the clip (11) from the inlet pipe (12). Note the orientation of the clip.

11. Remove the inlet pipe (12) from the pump (5).

12. Remove the clip (10) from the expansion vessel hose (7). Note the orientation of the clip.

13. Remove the expansion vessel hose (7) from the pump (5).

14. Remove the pump (5) from the boiler.

15. Remove the safety pressure relief valve (8).

**See**

Replace the safety pressure relief valve, page 46 for information on removing the safety pressure relief valve.

16. Remove the pressure sensor (1).

**See**

Replace the pressure sensor, page 46 for information on removing the pressure sensor.

17. Reverse the steps above to install and connect the new pump (5). Make sure all clips are orientated correctly.

18. Refill the appliance.

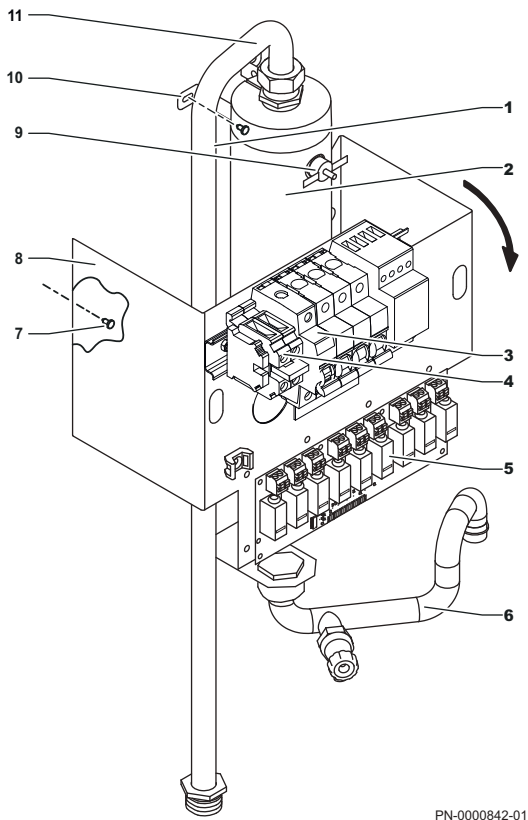
19. Close the control panel.

20. Fit the front panel.

21. Switch on the electrical supply.

10.3.10 Replace the heat exchanger (one heat exchanger)

Fig.54 Replace the heat exchanger (single unit system)



Danger

The electrical supply must be isolated from the appliance before removing the front panel.

To replace the heat exchanger:

1. Remove the front panel.



See

Removing the front panel, page 28 for more information.

2. Pull the control panel down.
3. Drain the system



See

Draining the system, page 45 for further information.

4. Remove the element connector cables from the relay board (5).
5. Loosen the two screws (7) from the electronics bracket (8).
6. Lift the electronics bracket (8), tilt forward and lower on to the bottom of the boiler.
7. Disconnect the inlet pipe (6) from the heat exchanger (2).



Warning

Take care as water may still be in the heat exchanger (2) and inlet pipe (6).

8. Disconnect the flow pipe (11) from the heat exchanger (2).



Warning

Take care as water may still be in the heat exchanger (2) and the flow pipe (11).

9. Support the heat exchanger (2) and remove the two screws (1) from the mounting bracket (10).
10. Remove the heat exchanger (2) from the boiler.
11. Reverse the steps above to install the new heat exchanger.
12. Refill the appliance.
13. Close the control panel.
14. Fit the front panel.
15. Switch on the electrical supply.

10.3.11 Replacing the heat exchanger (two heat exchangers)



Danger

The electrical supply must be isolated from the appliance before removing the front panel.



Important

If two heat exchangers are fitted inside the boiler, test each one to identify which is faulty.

To replace the heat exchanger:



Warning

Take precautions to protect other components from water damage when removing the expansion vessel.

1. Remove the front panel.

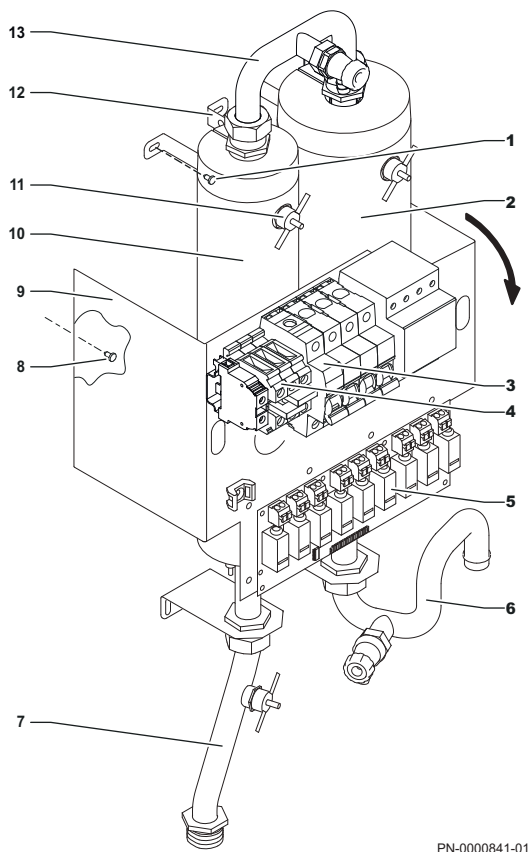


See

Removing the front panel, page 28 for more information.

2. Pull the control panel down.

Fig.55 Replace the heat exchanger



PN-0000841-01

3. Drain the system

**See**

Draining the system, page 45 for further information.

4. Disconnect the incoming earth, neutral and live cables from the MCB (3) and connector blocks (4).
5. Remove the element connector cables from the relay board (5).
6. Remove the two screws (8) from the electronics bracket (9).
7. Lift the electronics bracket (9), tilt forward and lower on to the bottom of the boiler.
8. If the primary (right) heat exchanger (2) is faulty do the following:
 - 8.1. Disconnect the inlet pipe (6) from the heat exchanger (2).

**Warning**

Take care as water may still be in the heat exchanger (2) and inlet pipe (6).

- 8.2. Disconnect the mid-pipe (13) from the heat exchanger (2).
9. If the secondary (left) heat exchanger (10) is faulty do the following:
 - 9.1. Disconnect the mid-pipe (13) from the heat exchanger (10).
 - 9.2. Disconnect the flow pipe (7) from the heat exchanger (10).

**Warning**

Take care as water may still be in the heat exchanger (10) and flow pipe (7).

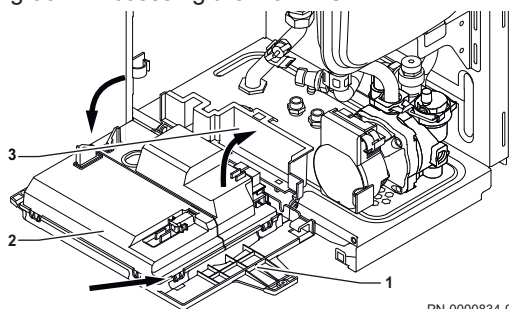
10. Support the heat exchanger (2) or (10) and remove the two screws (1) from the mounting bracket (12).
11. Remove the heat exchanger (2) or (10) from the boiler.
12. Reverse the steps above to install the new heat exchanger.
13. Refill the appliance.
14. Close the control panel.
15. Fit the front panel.
16. Switch on the electrical supply.

10.3.12 Replacing the electrical main board

**Danger**

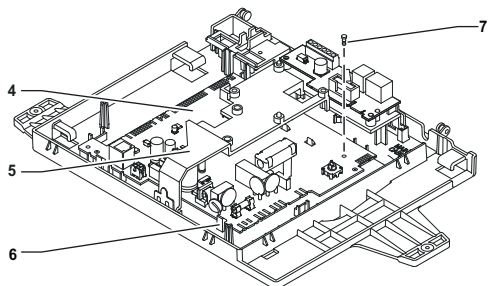
The electrical supply must be isolated from the appliance before removing the front panel.

Fig.56 Accessing the main PCB



PN-0000834-01

Fig.57 Removing the main PCB



PN-0000843-01

To replace the main PCB.

1. Remove the front panel.

**See**

Removing the front panel, page 28 for more information.

2. Lower the control panel (1).
3. Lift the rear cover (2).
4. Release the 4 tabs and remove the cover (3).
5. Release the 3 tabs and remove the crosshead (5).
6. Disconnect all connectors from the main PCB (4).
7. Remove the 4 screws (7).

8. Release the clips (6) holding the main PCB (4) and remove the main PCB (4).
9. Reverse the steps above to install the new main PCB.



See
Electrical diagram, page 12 for information on connections.

10. Close the control panel.
11. Fit the front panel.
12. Switch on the electrical supply.

10.3.13 Replace the installer PCB



Danger
The electrical supply must be isolated from the appliance before removing the front panel.

Fig.58 Accessing the installer PCB

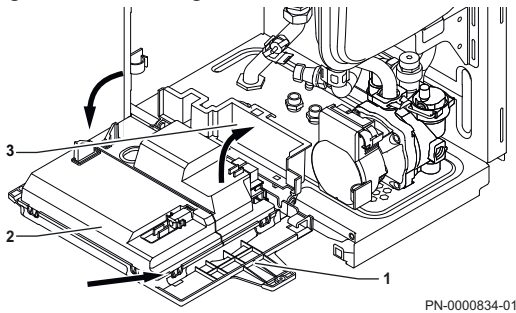
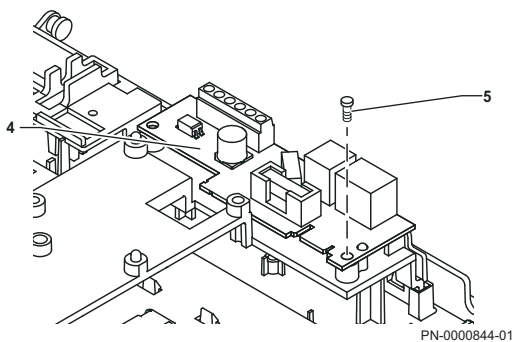


Fig.59 Removing the installer PCB



To replace the installer PCB:

1. Remove the front panel.



See
Removing the front panel, page 28 for more information.

2. Lower the control panel (1).
3. Lift the rear cover (3).
4. Release the 4 catches and remove the cover (2).
5. Disconnect all cables and connectors from the installer PCB (4).
6. Remove the two screws (5).
7. Remove the installer PCB (4).
8. Reverse the steps above to install the new installer PCB (4).



See
Electrical diagram, page 12 for information on connections.

9. Close the control panel.
10. Fit the front panel.
11. Switch on the electrical supply.
12. After removing or replacing a PCB accessory board (not the main PCB), an auto-detect must be carried out.



See
Carrying out an auto-detect, page 36 for further information.

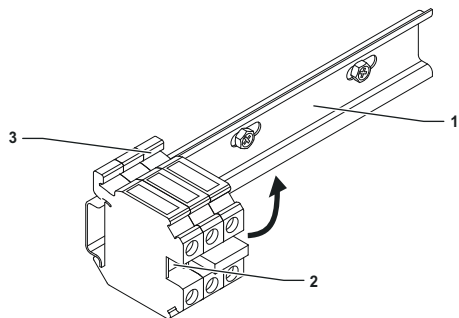
10.3.14 Replace the connector block



Danger
The electrical supply must be isolated from the appliance before removing the front panel.

There are two types of connector block fitted to the mounting bar, each has a different method of removal as described below.

Fig.60 Replacing the connector block



PN-0000846-01

To replace the earth connector block:

1. Remove the front panel.

**See**

Removing the front panel, page 28 for more information.

2. Remove all cables from the connector block (3).
3. Loosen the screw (2) in the centre of the connector block (3).
4. Hold the connector block (3), pull forward and rotate upwards to remove the connector block (3) from the mounting rail (1).
5. Reverse the steps above to install the new connector block (3).

**See**

Electrical diagram, page 12 for information on connections.

To replace the neutral connector blocks:

6. Remove all cables from the connector block (3).
7. Hold the connector block (3), pull forward and rotate upwards to remove the connector block (3) from the mounting bar (1).
8. Reverse the steps above to install the new connector block (3).

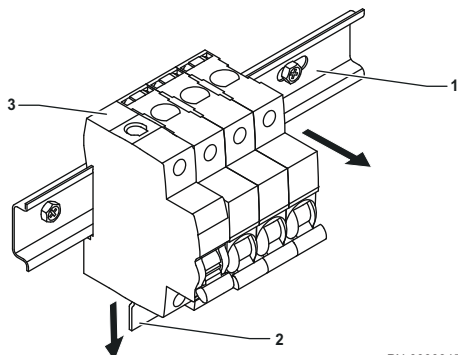
**See**

Electrical diagram, page 12 for information on connections.

9. Fit the front panel.
10. Switch on the electrical supply.

10.3.15 Replace the MCB

Fig.61 Replace the MCB



PN-0000845-01

**Danger**

The electrical supply must be isolated from the appliance before removing the front panel.

To replace the MCB:

1. Remove the front panel.

**See**

Removing the front panel, page 28 for more information.

2. Remove all cables from the MCB (3).
3. Pull the tab (2) at the back of the MCB (3) downwards.
4. Remove the MCB (1) from the mounting rail (1).
5. Reverse the steps above to install the new MCB (3).

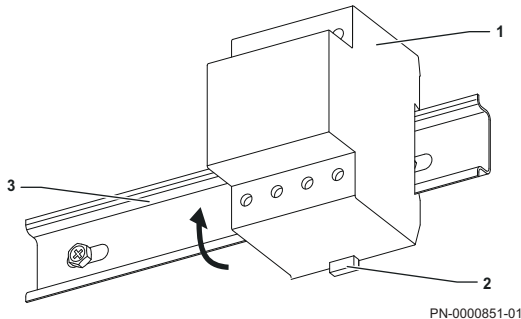
**See**

Electrical diagram, page 12 for further information.

6. Fit the front panel.
7. Switch on the electrical supply.

10.3.16 Replace the contactor

Fig.62 Replace the contactor

**Danger**

The electrical supply must be isolated from the appliance before removing the front panel.

To replace the contactor:

1. Remove the front panel.

**See**

Removing the front panel, page 28 for more information.

2. Remove all cables from the contactor (1).
3. Pull the tab (2) at the back of the contactor (1) downwards.
4. Remove the contactor (1) from the mounting rail (3).
5. Reverse the steps above to install the new contactor (1).

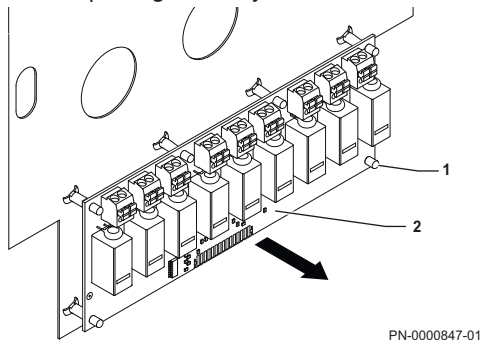
**See**

Electrical diagram, page 12 for further information.

6. Fit the front panel.
7. Switch on the electrical supply.

10.3.17 Replace the relay board

Fig.63 Replacing the relay board

**Danger**

The electrical supply must be isolated from the appliance before removing the front panel.

To replace the relay board:

1. Remove the front panel.

**See**

Removing the front panel, page 28 for more information.

2. Pull the control panel down.
3. Remove all cables and connectors from the relay board (2).
4. Release the retaining clips (1) holding the relay board (2).
5. Remove the relay board (2).
6. Reverse the steps above to install the new relay board (2).

**See**

Electrical diagram, page 12 for information on connections.

7. Close the control panel.
8. Fit the front panel.
9. Switch on the electrical supply.

11 Troubleshooting

11.1 Temporary and permanent faults

When an error occurs a code is displayed on the control panel.

The code is split into two parts as follows:

- Group code - **L.NN**
- Specific code - **.NN**

Where **L** = Letter and **N** = number

The code will flash on the control panel, alternating between the group code and the specific code.

There are two types of faults that can occur; temporary or permanent as follows:

- **A / H** are temporary faults
- **E** is a permanent fault

A temporary fault does not cause a permanent stoppage of the boiler.

The following happens when a temporary fault occurs:

- **A** - The appliance continues to operate. The fault disappears as soon as the cause has been resolved.
- **H** - The appliance does not operate. The fault disappears when the error condition is removed.

A permanent fault stops the appliance.

Correct the fault and then press the  key for 1 second.

If faults occurs frequently, contact the authorised BAXI service network.

11.2 Error codes

11.2.1 Initial error fault finding checks

- Check that water and electrical supplies are available at the boiler.
- Electrical supply = 230V ~ 50 Hz.
- Carry out electrical system checks, i.e. Earth Continuity, Resistance to Earth, Short Circuit and Polarity with a suitable meter.
- Ensure all external controls are calling for heat and check all external and internal fuses.



Important

These checks must be repeated after any servicing or fault finding.

11.2.2 Error codes

Tab.25 List of temporary faults

DISPLAY		DESCRIPTION OF TEMPORARY FAULTS	CAUSE – Check/Solution <i>An installer is required for most checks and solutions.</i>
Group code	Specific code		
H.00	.42	Pressure sensor open/faulty	SENSOR/CONNECTION PROBLEM Check the operation of the pressure sensor Check the sensor/PCB connection
H.01	.08	Flow temperature increase in heating mode too quick.	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual deaeration cycle Check the installation pressure Check the operation of the pump OTHER CAUSES Check the cleanliness of the exchanger Check the operation of the temperature sensors Check the temperature sensor connection
H.01	.14	Maximum flow or return temperature value reached.	INSUFFICIENT CIRCULATION Check the boiler/installation circulation Activate a manual deaeration cycle
H.01	.21	Flow temperature increase in domestic water mode too quick. Temporary stoppage of 10 minutes.	INSUFFICIENT CIRCULATION Check the installation pressure Activate a manual deaeration cycle Check the operation of the pump Check the boiler/installation circulation TEMPERATURE SENSOR ERROR Check the operation of the temperature sensors Check the connection of the temperature sensors
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.	Contact a qualified professional
H.02	.07	Low pressure in heating circuit (water filling required).	Check the installation pressure and restore Check the expansion vessel pressure Check for boiler/installation 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

Tab.26 List of permanent faults (boiler stoppage, reset required)

Display		DESCRIPTION OF PERMANENT FAULTS (reset)	CAUSE – <i>Check/Solution An installer is required for most checks and solutions.</i>
Group code	Specific code		
E.00	.00	Flow temperature sensor is either removed or measure a temperature below range	Sensor or wire disconnected
E.00	.01	Flow temperature sensor is either shorted or measure a temperature above range	Sensor broken
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	.06	Return temperature sensor was expected but not detected	Check sensor/wiring
E.00	.16	DHW cylinder temperature sensor not connected	SENSOR OPEN Check the operation of the sensor Check the sensor/PCB connection
E.00	.17	DHW cylinder temperature sensor short-circuited	SENSOR CLOSED Check the operation of the sensor Check the sensor/PCB connection
E.01	.12	Temperature measured by return temperature sensor greater than flow temperature	SENSOR/CONNECTION PROBLEM Check that the sensors are positioned the correct way around Check that the flow temperature sensor is in the correct position Check the return temperature in the boiler Check the operation of the sensors
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	.35	Critical safety device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
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.
E.02	.88	Safety Input is activated. High limit sensor error. Flow temperature exceeded safe temperature range.	Reset safety, check pump and system for flow and blockage

Tab.27 List of warnings

DISPLAY		DESCRIPTION OF WARNINGS BEFORE A FAULT IS DETECTED	CAUSE - Check/solution
Group code	Specific code		
A.00	.34	Outdoor temperature sensor expected but not detected	OUTDOOR TEMPERATURE SENSOR NOT DETECTED Enter the correct value of the parameter AP091 Connect the outdoor temperature sensor Outdoor temperature sensor is not connected correctly

A.00	.81	Room Temperature sensor was expected but not detected	Check sensor/wiring
A01	.05	Maximum allowed difference between Flow temperature and Return temperature has been exceeded. (Tf- Tr>parHeMaxAbsTfTr). During this error, the Deair is blocked.	Check pump and system for flow and blockage
A02	.06	Low pressure in heating circuit	Check the installation pressure and restore Check the expansion vessel pressure Check for boiler/installation leaks
A02	.18	OBD error	CONFIGURATION ERROR Re-enter the CN1 and CN2 values, check the information shown on the data plate
A02	.36	Functional device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
A02	.37	Passive functional device disconnected	COMMUNICATION FAULT Start the auto-detect function (parameter AD) Check the devices connected to contact X9
A02	.45	Connection error	COMMUNICATION FAULT Start the auto-detect function (parameter AD))
A02	.46	Device priority error	COMMUNICATION FAULT Start the auto-detect function (parameter AD))
A02	.48	Unit function configuration error	ELECTRICAL CONNECTION ERROR Start the auto-detect function (parameter AD)) Check electrical connections of external devices
A02	.49	Failed node initialisation	ELECTRICAL CONNECTION ERROR Start the auto-detect function (parameter AD)) Check electrical connections of external devices
A02	.55	Incorrect or missing serial number	Contact a qualified professional
A02	.69	Fair mode active. On exhibition mode (parApOperationalModeSw = 2) the HMI display a warning the first 10 s at power on	Contact a qualified professional
A02	.76	Internal memory reserved for full customisation of settings. No further changes can be made	Contact a qualified professional



Important

When connecting a Room Unit/"Open Therm" Control Unit to the boiler, the code "254" is always shown in the event of a fault. Read the fault code shown on the boiler display.

12 Decommissioning

12.1 Decommissioning procedure



Warning

Only competent persons are authorised to work on the appliance and system to decommission.



Warning

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



Warning

Moving the boiler is a task for two people

If your boiler needs to be decommissioned either temporarily or permanently the following should be performed:

1. Switch off the boiler's electrical connection and isolate.
2. Drain the primary circuit.
3. Disconnect the filling device and isolate.
4. Remove the boiler from the wall mounting frame.

- Remove the wall mounting frame.

12.2 Recommissioning procedure



Important

Only competent persons are authorised to work on the boiler and the heating installation.

Should you need to recommission the boiler, follow the instructions for disassembly in the reverse order.

13 Disposal

13.1 Disposal and recycling

Fig.64 Recycling



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

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 competent person. This must be done in accordance with local and national regulations.

14 Spare parts

14.1 Short parts list

The following spares are available:

Tab.28 Part number and description of spare parts

Key No.	Description	Manufacturer's Spare Part No.
1	2 Amp MCB	7846856
2	10Amp MCB	7846861
3	ECU2-40-4P	7846870
4	ECU-25-4P	7846866
5	6 kW heater element	7846872
6	12 kW heater element	7846873
7	RB01 relay PCB	7846877
8	RB02 relay PCB	7846878
9	RB03 relay PCB	7846879
10	Overheat stat	7846882
11	Expansion vessel	7846883
12	Main PCB controller	7846884
13	Installer PCB	7846892
14	Pump	7846886
15	NTC thermistor	7846887
16	Pressure relief valve	7846888
17	Auto air vent	7846889
18	Low water pressure cut off switch	7846890
19	Boiler drain valve	7846891

15 Warranty

15.1 General

For the warranty to be maintained, it is essential that:

1. The warranty is registered within 30 days.
2. The boiler has an annual service.

Failure to adhere to the terms and conditions will void your manufacturer's warranty.

For full terms and conditions please visit:

<http://www.baxi.co.uk/terms>

16 Appendix

16.1 Product fiche – System boilers

Tab.29 Product fiche for electric boilers

E-system		S4	S6	S8	S12	S16	S18
Space heating – Temperature application		Medium	Medium	Medium	Medium	Medium	Medium
Space heating – Seasonal energy efficiency class		D	D	D	D	D	D
Rated heat output (<i>Prated or Psup</i>)	kW	4	6	8	12	16	18
Annual energy consumption	kWh ⁽¹⁾	8661	12991.5	17322	25983	30313.5	38974.5
Space heating – Seasonal energy efficiency	%	37	37	37		37	37
Water heating energy efficiency	%	99.8	99.8	99.8	99.8	99.8	99.8
Sound power level L_{WA} indoors	dB	41	41	41	41	41	41
(1) Electricity							

16.2 Package fiche - Boilers

Fig.65 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
 (- 'I') x 0.1 = ± %

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

('III' x + 'IV' x) x 0.9 x (/100) x = + %

④

(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
 (- 'I') x 'II' = + %

Solar contribution AND Supplementary heat pump
 select smaller value

0.5 x OR 0.5 x = - %

⑥

Seasonal space heating energy efficiency of package ⑦
 %

Seasonal space heating energy efficiency class of package

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

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

⑦
 + (50 x 'II') = %

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.

Tab.30 Weighting of boilers

$P_{sup} / (P_{rated} + P_{sup})^{(1)(2)}$	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.

Tab.31 Package efficiency

Brand name - Product name		Product A	Product B	Product C	Product D
Temperature control X	%	90	92	95	97
Temperature control Y	%	92	95	97	99

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baxi.co.uk

Register now to activate your warranty:

www.baxi.co.uk/registration

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

- 1** Warranty is registered within 30 days
- 2** 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.



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