



Installation and User Manual

High-efficiency floor-standing gas boiler

Gas 220 Ace
160 - 200 - 250 - 300
HMI T-control

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

1.1.1 For the installer

**Danger**

If you smell gas:

1. Do not use naked flames, do not smoke and do not operate electrical contacts or switches (doorbell, lighting, motor, lift etc.).
2. Shut off the gas supply.
3. Open the windows.
4. Trace possible leaks and seal them off immediately.
5. If the leak is upstream of the gas meter, notify the gas company.

**Danger**

If you smell flue gases:

1. Switch the boiler off.
2. Open the windows.
3. Trace possible leaks and seal them off immediately.

**Caution**

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

1.1.2 For the end user

**Danger**

If you smell gas:

1. Do not use naked flames, do not smoke and do not operate electrical contacts or switches (doorbell, lighting, motor, lift etc.).
2. Shut off the gas supply.
3. Open the windows.
4. Report any leaks immediately.
5. Evacuate the property.
6. Contact a qualified installer.

**Danger**

If you smell flue gases:

1. Switch the appliance off.
2. Open the windows.
3. Report any leaks immediately.
4. Evacuate the property.
5. Contact a qualified installer.

**Warning**

Do not touch the flue gas pipes. Depending on the appliance settings, the temperature of the flue gas pipes can rise to over 60 °C.

**Warning**

Do not touch radiators for long periods. Depending on the appliance settings, the temperature of the radiators can rise to over 60 °C.

**Warning**

Be careful when using the domestic hot water. Depending on the appliance settings, the temperature of domestic hot water can rise to over 65 °C.

**Warning**

The use of the appliance and the installation by you as the end-user must be limited to the operations described in the supplied manual. All other actions may only be undertaken by a qualified installer/engineer.

**Warning**

The condensate drain must not be modified or sealed. If a condensate neutralisation system is used, the system must be cleaned regularly in accordance with the instructions provided by the manufacturer.

**Caution**

Ensure that the appliance is regularly serviced. Contact a qualified installer or arrange a maintenance contract for the servicing of the appliance.

**Caution**

Only genuine spare parts may be used.

**Important**

Regularly check for the presence of water and pressure in the heating installation.

1.2 Recommendations

**Danger**

This appliance can be used by children aged eight and above and people with a physical, sensory or mental disability, or with a lack of experience and knowledge, provided they are supervised and instructed in how to use the appliance in a safe manner and understand the associated dangers. Children must not be allowed to play with the appliance. Cleaning and user maintenance should not be carried out by children without adult supervision.

**Warning**

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

**Warning**

The installation and maintenance of the boiler must be undertaken by a qualified installer in accordance with the information in the supplied manual, doing otherwise may result in dangerous situations and/or bodily injury.

**Warning**

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

**Warning**

If the mains lead is damaged, it must be replaced by the original manufacturer, the manufacturer's dealer or another suitably skilled person to prevent hazardous situations from arising.

**Warning**

Always disconnect the mains supply and close the main gas tap when working on the boiler.

**Warning**

Check the entire system for leaks after maintenance and servicing work.

**Danger**

For safety reasons, we recommend fitting smoke alarms at suitable places and a CO detector near the appliance.

**Caution**

- Make sure the boiler can be reached at all times.
- The boiler must be installed in a frost-free area.
- If the power cord is permanently connected, you must always install a main bipolar switch with an opening gap of at least 3 mm (BS EN 60335-1).
- Drain the boiler and central heating system if you are not going to use your home for a long time and there is a chance of frost.
- The frost protection does not work if the boiler is out of operation.
- The boiler protection only protects the boiler, not the system.
- Check the system water pressure regularly. If the water pressure is below the recommended pressure, the system must be topped up.

**Important**

Keep this document near to the boiler.



Important

Only remove the casing for maintenance and repair operations. Refit all panels when maintenance work and servicing are complete.



Important

Instruction and warning labels must never be removed or covered and must be clearly legible throughout the entire service life of the boiler. Damaged or illegible instructions and warning stickers must be replaced immediately.



Important

Modifications to the boiler require the written approval of **Remeha**.

1.3 Liabilities

1.3.1 Manufacturer's liability

Our products are manufactured in compliance with the requirements of the various Directives applicable. They are therefore delivered with the ^{UK}CA and CE marking 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 and maintaining the appliance.
- Failure to abide by the instructions on using the appliance.
- Faulty or insufficient maintenance of the appliance.

1.3.2 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.

1.3.3 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 describes the installation, use and maintenance of the Gas 220 Ace boiler. This manual is part of all the documentation supplied with the boiler.


2.2 Additional documentation

The following documentation is available in addition to this manual:


- Service manual
- Water quality instructions

2.3 Symbols used in the manual


This manual contains special instructions, marked with specific symbols. Please pay extra attention when these symbols are used.




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




Danger of electric shock
Risk of electric shock that may result in serious personal injury.



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




Caution
Risk of material damage.




Important
Please note: important information.


The symbols mentioned below are of lower importance, but they can help you navigate or give useful information.



See
Reference to other manuals or pages in this manual.



Helpful information or extra guidance.



Direct menu navigation, confirmations will not be shown. Use if you are familiar with the system.

3 Description of the product

3.1 General description

The boiler is a high-efficiency standing gas boiler with the following properties:

- High-efficiency heating.
- Cast aluminium heat exchanger.
- Limited emissions of polluted substances.
- Has transport wheels as standard.

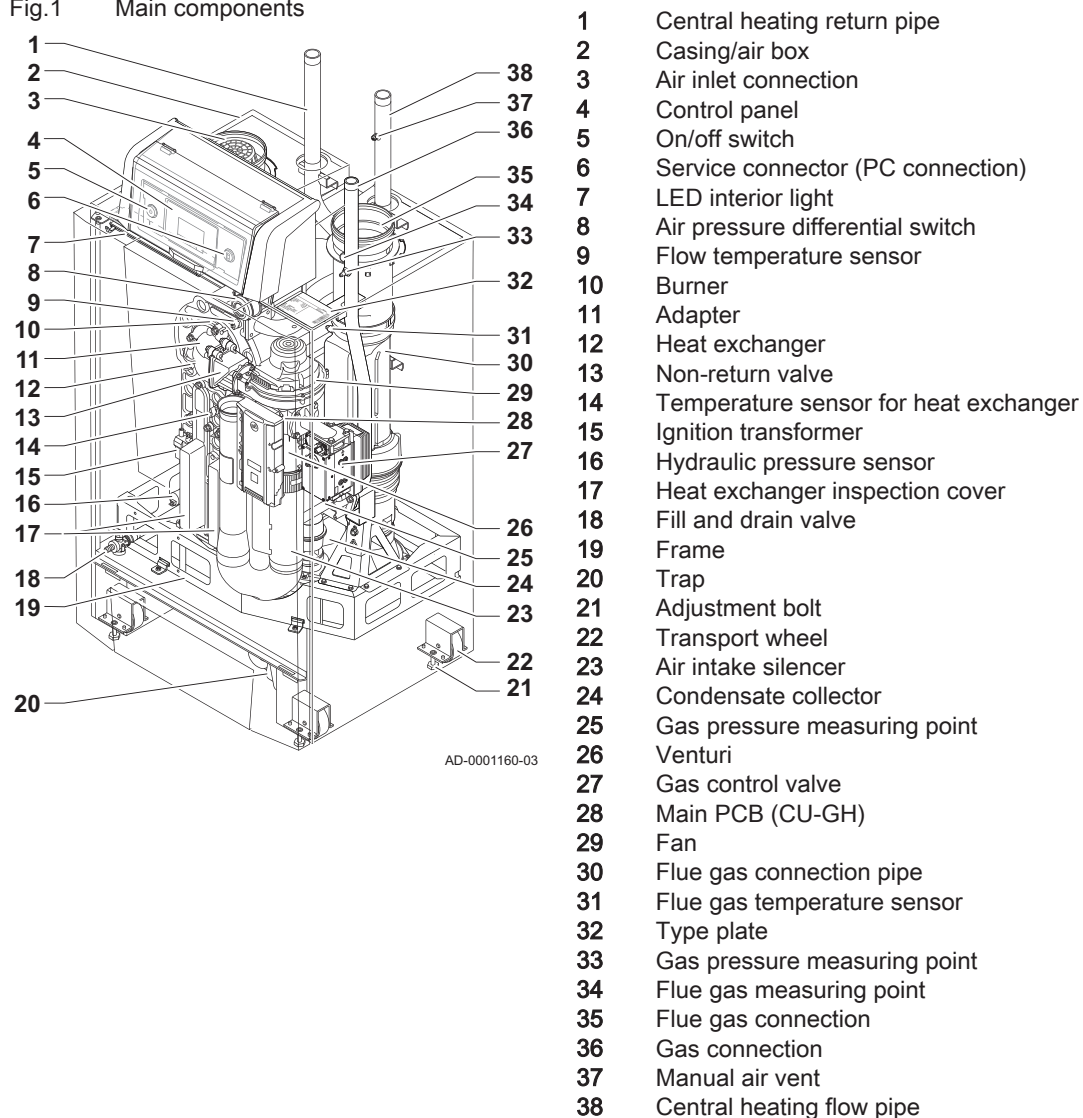
The following boiler types are available:

Tab.1 Boiler types

Name	Output ⁽¹⁾
Gas 220 Ace 160	162 kW
Gas 220 Ace 200	210 kW
Gas 220 Ace 250	261 kW
Gas 220 Ace 300	311 kW
(1) Nominal output P_n 50/30 °C	

3.2 Main components

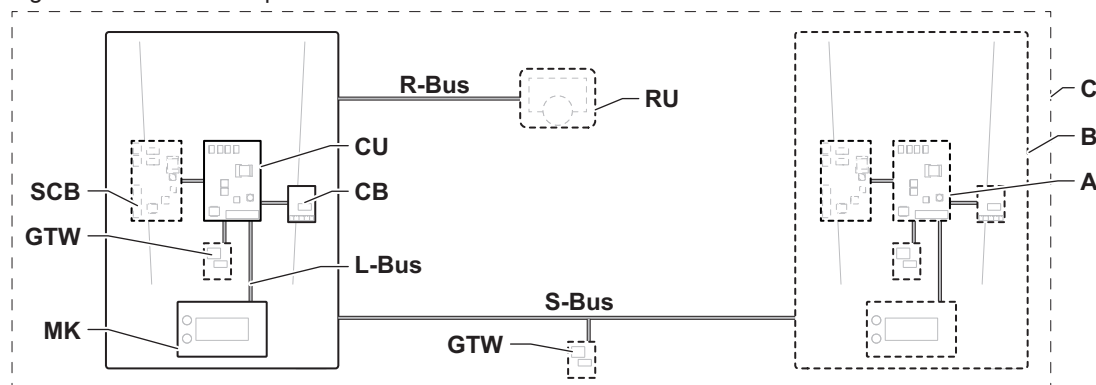
Fig.1 Main components



3.3 Introduction to the e-Smart controls platform

The Gas 220 Ace boiler is equipped with the e-Smart controls platform. This is a modular system, and offers compatibility and connectivity between all products that make use of the same platform.

Fig.2 Generic example



AD-3001366-02

Tab.2 Components in the example

Item	Description	Function
CU	Control Unit: Control unit	The control unit handles all basic functionality of the appliance.
CB	Connection Board: Connection PCB	The connection PCB provides easy access to all connectors of the control unit.
SCB	Smart Control Board: Expansion PCB	An expansion PCB provides extra functionality, like an internal calorifier or multiple zones.
GTW	Gateway: Conversion PCB	A gateway can be fitted to an appliance or system, to provide one of the following: <ul style="list-style-type: none"> • Extra (wireless) connectivity • Service connections • Communication with other platforms
MK	Control panel: Control panel and display	The control panel is the user interface to the appliance.
RU	Room Unit: Room unit (for example, a thermostat)	A room unit measures the temperature in a reference room.
L-Bus	Local Bus: Connection between devices	The local bus provides communication between devices.
S-Bus	System Bus: Connection between appliances	The system bus provides communication between appliances.
R-Bus	Room unit Bus: Connection to a room unit	The room unit bus provides communication to a room unit.
A	Device	A device is a PCB, control panel or a room unit.
B	Appliance	An appliance is a set of devices connected via the same L-Bus
C	System	A system is a set of appliances connected via the same S-Bus

Tab.3 Specific devices delivered with the Gas 220 Ace boiler

Name visible in display	Software version	Description	Function
FSB-WHB-HE-150-300	2.1	Control unit CU-GH06c	The CU-GH06c control unit handles all basic functionality of the Gas 220 Ace boiler.
MK3	1.85	Control panel HMI T-control	The HMI T-control is the user interface to the Gas 220 Ace boiler.
SCB-10	1.04	Expansion PCB SCB-10	The SCB-10 provides functionality for one DHW and three central heating zones, a 0-10 V connection for a PWM system pump and a potential-free contact for status notification.

3.4 Standard delivery

Tab.4 The delivery includes 2 packages

One package with:	One package with:
<ul style="list-style-type: none"> • The boiler, with mains lead 	<ul style="list-style-type: none"> • Trap with condensate drain hose • Connection box with connector for external connections, including: <ul style="list-style-type: none"> - Connection PCB CB-01 - Expansion PCB SCB-10 • Sticker: This central heating unit is set for... • Documentation



Important

This manual only deals with the standard scope of supply. For the installation or mounting of any accessories delivered with the boiler, refer to the corresponding mounting instructions.

3.5 Accessories and options

Various accessories can be obtained for the boiler.

**Important**

Contact us for more information.

4 Preparation of installation

4.1 Installation regulations

**Important**

The Gas 220 Ace must be installed by a qualified installer in accordance with local and national regulations.

**Warning**

The installer must be registered with Gas Safe and have the correct ACS qualifications.

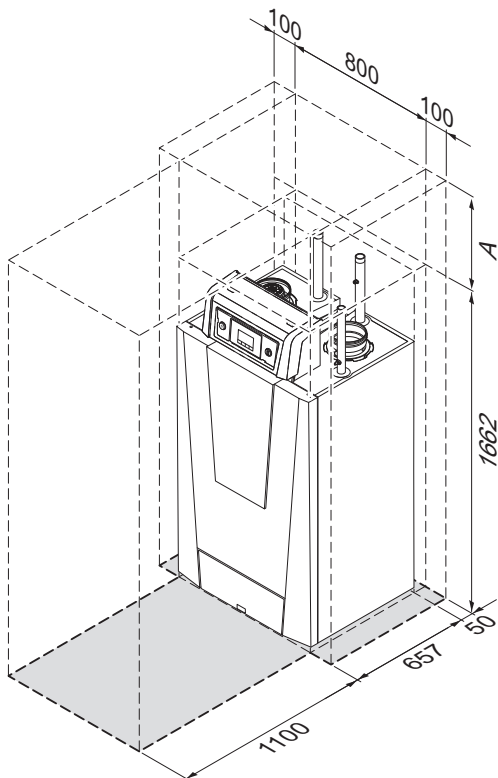
**Important**

Practical guidelines - see the latest version.

4.2 Choice of the location

4.2.1 Location of the boiler

Fig.3 Clearance required



AD-0001163-01

- A** 500 mm (if the air supply filter is used, there must be a clearance of at least 650 mm)

The standard inspection and maintenance operations to the boiler are carried out from the front. This is also where the inspection ports of the heat exchanger are located. The hydraulic connections and the flue gas outlet are located at the front of the boiler. The control panel housing is also on the front of the boiler.

- Use the guidelines and the required installation space as a basis for determining the correct place to install the boiler. When determining the correct installation space, take account of the permitted position of the flue gas discharge and/or air supply outlet.
- Ensure that there is sufficient space around the boiler for good access and ease of maintenance.

**Danger**

It is forbidden to store, even temporarily, combustible products and substances in or near the boiler.

**Caution**

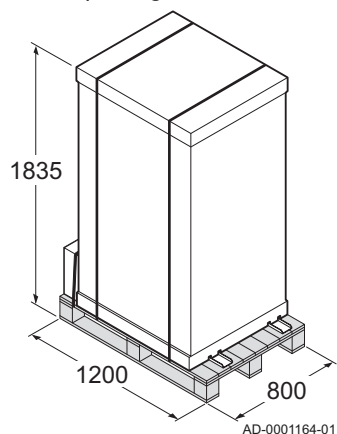
- The boiler must be installed in a frost-free area.
- The boiler must have an earthed electrical connection.
- A connection to the drain must be present for the condensate drain close to the boiler.
- A technical clearance of at least 1100 mm is required at the front (service side) of the boiler. We recommend a clearance of at least 500 mm above the boiler.

**Caution**

If the power supply cable is permanently connected, you must always install a main bipolar switch with an opening gap of at least 3 mm (BS EN 60335-1).

4.2.2 Transport

Fig.4 Boiler package



The boiler is supplied fully assembled and packaged on a pallet. Without the packaging, the boiler will fit through all standard doorways.

The boiler is equipped with integrated transport wheels, meaning it can easily be moved.

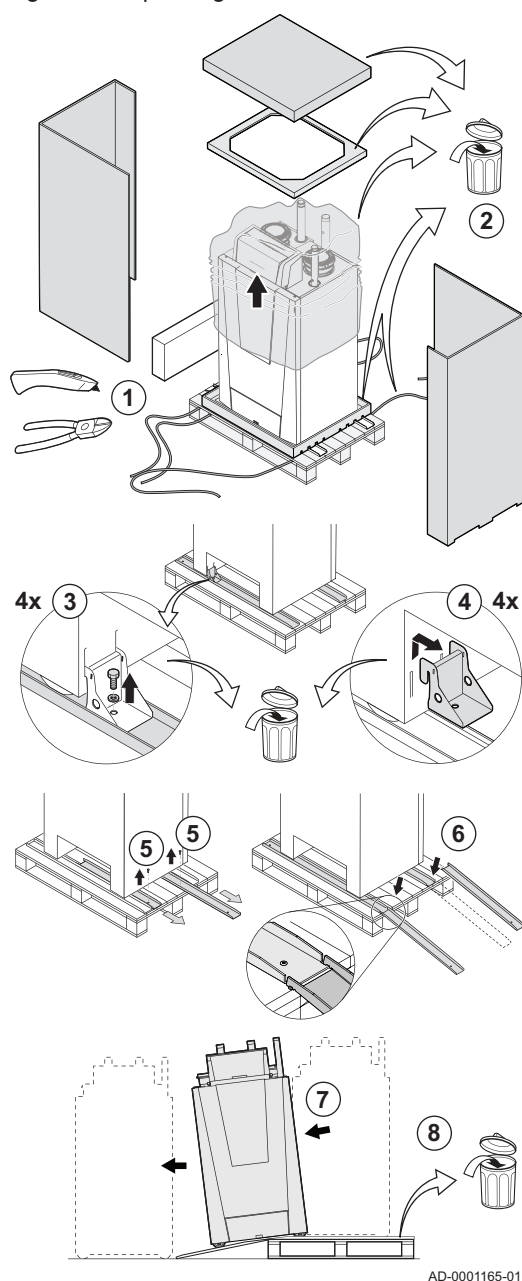


Caution

The transport wheels under the boiler are designed for transport purposes only and not for use when the boiler is in its final position.

4.2.3 Unpacking & initial preparation

Fig.5 Unpacking the boiler



1. Cut the packaging straps and remove.
2. Remove the packaging.
3. Unscrew the boiler anchorage on the pallet.
4. Remove the boiler anchorage.
5. Unscrew the loading ramps on the pallet.
6. Fit the loading ramps in front of the pallet.
7. Move the boiler off the pallet.
8. Remove the pallet and the rest of the packaging.

The boiler can now be moved using the transport wheels.

4.3 Requirements for water connections

- Before installation, check that the connections meet the set requirements.
- Carry out any welding work required at a safe distance from the boiler.
- If using synthetic pipes, follow the manufacturer's instructions.

4.3.1 Requirements for the central heating connections

- We recommend installing a central heating filter in the return pipe to prevent clogging of boiler components.

4.3.2 Requirements for the condensate drain

- The drain pipe must be Ø 32 mm or larger, terminating in the drain.
- Use only plastic material for the discharge pipe due to the acidity (pH 2 to 5) of the condensate.
- Fit a trap in the drain pipe.
- The drain pipe must slope down at least 30 mm per metre, the maximum horizontal length is 5 metres.
- Do not make a fixed connection in order to prevent an overpressure in the trap.

4.3.3 Flushing the system

The installation must be cleaned and flushed in accordance with BS 7593 (2019) and BSRIA BG 33/2014.

Before a new boiler can be connected to a system, the entire system must be thoroughly cleaned by flushing it. The flushing will remove residue from the installation process (weld slag, fixing products etc.) and accumulations of dirt (silt, mud etc.)



Important

- Flush the heating system with a volume of water equivalent to at least three times the volume of the system.
- Flush the domestic hot water pipes with at least 20 times the volume of the pipes.



Important

Due to the presence of an aluminium heat exchanger, suitable chemicals and the correct use of these chemicals should be discussed with specialist water treatment companies.

4.4 Requirements for the gas connection

- Carry out any welding work required at a safe distance from the boiler.
- Before installing, check that the gas meter has sufficient capacity. Take into account the consumption of all appliances. Notify the local energy company if the gas meter has insufficient capacity.
- We recommend installing a gas filter to prevent clogging of the gas valve unit.

4.5 Requirements on the flue gas discharge system

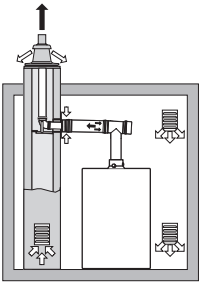
4.5.1 Classification



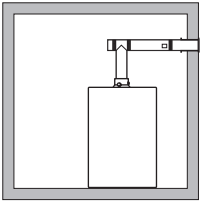
Important

- The installer is responsible ensuring that the right type of flue system is used and that the diameter and length are correct.
- Always use connection materials, roof terminal and/or horizontal flue terminal supplied by the same manufacturer. Consult the manufacturer for compatibility details.
- The use of flue systems from other manufacturers is allowed in addition to the recommended manufacturers listed in this manual. Use is only allowed when all our requirements are met and the description of flue system C₆₃ is respected.

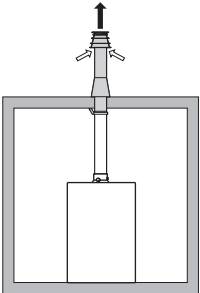
Tab.5 Type of flue system: B_{23P}

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3001055-01</p>	<p>Room-ventilated version.</p> <ul style="list-style-type: none"> • Without down-draught diverter. • Flue gas discharge via the roof. • Air supply from the installation area. • The air inlet connection of the boiler must stay open. • The installation area must be vented to ensure sufficient air supply. The vents must not be obstructed or shut off. • The IP rating of the boiler is lowered to IP20. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Muelink & Grol
(1) The material must also satisfy the material property requirements from the relevant chapter.		

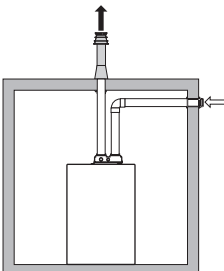
Tab.6 Type of flue system: C₁₃

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3001056-01</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Flue gas discharge in the outside wall. • The air inlet is in the same pressure zone as the flue (e.g. a horizontal flue terminal). • Parallel wall terminal not permitted. 	<p>Horizontal flue terminal and connection material:</p> <ul style="list-style-type: none"> • Remeha, combined with connection material from Muelink & Grol • Muelink & Grol
(1) The material must also satisfy the material property requirements from the relevant chapter.		

Tab.7 Type of flue system: C₃₃

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3001057-01</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Flue gas discharge via the roof. • The air inlet is in the same pressure zone as the flue (e.g. a concentric roof terminal). 	<p>Roof terminal and connection material</p> <ul style="list-style-type: none"> • Remeha, combined with connection material from Muelink & Grol • Muelink & Grol
(1) The material must also satisfy the material property requirements from the relevant chapter.		

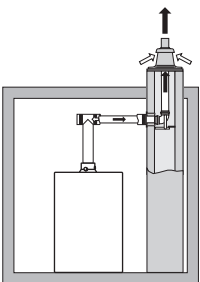
Tab.8 Type of flue system: C₅₃

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3001058-02</p>	<p>Connection in different pressure zones.</p> <ul style="list-style-type: none"> • Closed unit. • Separate air inlet and flue. • Discharging into various pressure areas. • The air inlet and flue must not be placed on opposite walls. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Muelink & Grol
(1) The material must also satisfy the material property requirements from the relevant chapter.		

Tab.9 Type of flue system: C₆₃

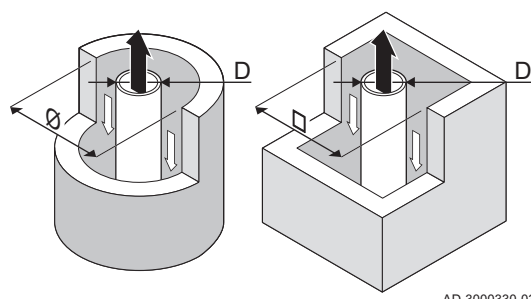
Principle	Description	Recommended manufacturers ⁽¹⁾
	<p>This system is supplied by us without an air inlet and flue. When selecting the material, please note the following:</p> <ul style="list-style-type: none"> • Condensed water must flow back to the boiler. • The material must be resistant to the flue gas temperature of this boiler. • Maximum permissible recirculation of 10%. • The air inlet and flue must not be placed on opposite walls. • Minimum permitted pressure difference between the air inlet and the flue is -200 Pa (including -100 Pa wind pressure). 	<p>Use is only allowed when all our requirements are met and the description of this type of flue system is respected.</p>
(1) The material must also satisfy the material property requirements from the relevant chapter.		

Tab.10 Type of flue system: C₉₃

Principle ⁽¹⁾	Description	Recommended manufacturers ⁽²⁾
 <p>AD-3001059-01</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Air inlet and flue in shaft or duct: <ul style="list-style-type: none"> - Concentric. - Air supply from existing shaft or duct. - Flue gas discharge via the roof. - Air inlet is in the same pressure zone as the flue. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Muelink & Grol
(1) See table for shaft or duct requirements.		
(2) The material must also satisfy the material property requirements from the relevant chapter.		

Tab.11 Minimum dimensions of shaft or duct C₉₃

Version (D)	Without air supply		With air supply	
Rigid 150 mm	Ø 200 mm	□ 200 x 200 mm	Ø 220 mm	□ 220 x 220 mm
Rigid 200 mm	Ø 250 mm	□ 250 x 250 mm	Ø 280 mm	□ 280 x 280 mm
Concentric 150/200 mm	Ø 270 mm	□ 270 x 270 mm	Ø 270 mm	□ 270 x 270 mm

Fig.6 Minimum dimensions of shaft or duct C₉₃

AD-3000330-03

**Important**

The shaft must comply with the airtightness requirements of the local regulations.

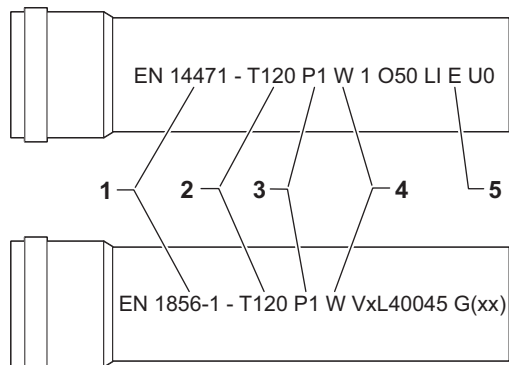
**Important**

- Always clean shafts thoroughly when using flue liners and/or an air supply connection.
- It must be possible to inspect the flue liner.

4.5.2 Material

Use the string on the flue gas outlet material to check whether it is suitable for use on this appliance.

Fig.7 Sample string



AD-3001120-01

- 1 EN 14471 or EN 1856-1:** The material is UKCA and CE approved according to this standard. For plastic this is EN 14471, For aluminium and stainless steel this is EN 1856-1.
- 2 T120:** The material has temperature class T120. A higher number is also allowed, but not lower.
- 3 P1:** The material falls into pressure class P1. H1 is also allowed.
- 4 W:** The material is suitable for draining condensation water (W='wet'). D is not allowed (D='dry').
- 5 E:** The material falls into fire resistance class E. Class A to D are also allowed, F is not allowed. Only applicable to plastic.


**Warning**

- The coupling and connection methods may vary depending on the manufacturer. It is not permitted to combine pipes, coupling and connection methods from different manufacturers. This also applies to roof terminal and common shared flue ducts.
- The materials used must comply with the prevailing regulations and standards.
- Please contact us to discuss using flexible flue gas outlet material.

Tab.12 Overview of material properties

Version	Flue gas outlet		Air supply	
	Material	Material properties	Material	Material properties
Single-wall, rigid	<ul style="list-style-type: none"> • Plastic⁽¹⁾ • Stainless steel⁽²⁾ • Thick-walled, aluminium⁽²⁾ 	<ul style="list-style-type: none"> • With UKCA and/or CE marking • Temperature class T120 or higher • Condensate class W (wet) • Pressure class P1 or H1 • Fire resistance class E or better⁽³⁾ 	<ul style="list-style-type: none"> • Plastic • Stainless steel • Aluminium 	<ul style="list-style-type: none"> • With UKCA and/or CE marking • Pressure class P1 or H1 • Fire resistance class E or better⁽³⁾
(1) according to EN 14471 (2) according to EN 1856 (3) according to EN 13501-1				

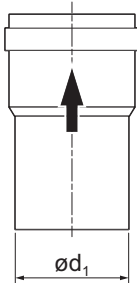
4.5.3 Dimensions of flue gas outlet pipe



Warning

The pipes connected to the flue gas adapter must satisfy the following dimension requirements.

Fig.8 Dimensions of open connection



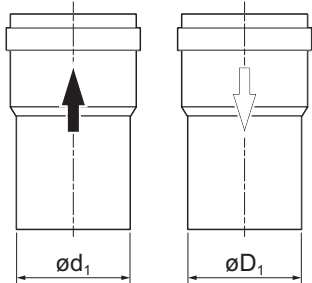
AD-3001094-01

d₁ External dimensions of flue gas outlet pipe

Tab.13 Dimensions of pipe

	d ₁ (min-max)
150 mm	149 - 151 mm
200 mm	199 - 201 mm
250 mm	249 - 251 mm

Fig.9 Dimensions of parallel connection



AD-3000963-01

d₁ External dimensions of flue gas outlet pipe

D₁ External dimensions of air supply pipe

Tab.14 Dimensions of pipe

	d ₁ (min-max)	D ₁ (min-max)
150/150 mm	149 - 151 mm	149 - 151 mm

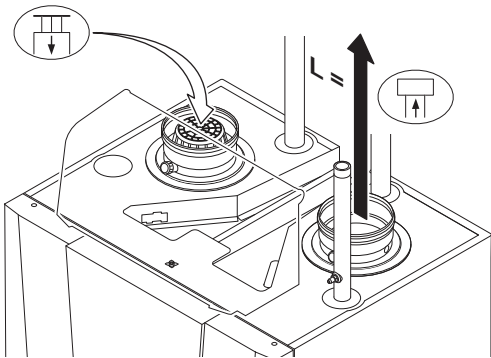
4.5.4 Length of the flue and air supply pipes

The maximum length of the flue and air supply vary per appliance type. Consult the relevant chapter for the correct lengths.

- If a boiler is not compatible with a specific flue system or diameter, it is indicated with "-" in the table.
- When using bends, the maximum flue length (L) must be shortened according to the reduction table.
- Use approved flue reducers for adaptation to another diameter.
- The boiler also supports other flue lengths and diameters than those specified in the tables. Contact us for more information.


■ Room-ventilated model (B_{23P})


Fig.10 Room-ventilated version



AD-0001169-01

L Length of the flue gas outlet channel to roof feed-through

 Flue gas outlet

 Air supply

With a room-ventilated version, the air supply opening stays open; only the flue gas outlet opening is connected. This will ensure that the boiler obtains the necessary combustion air directly from the installation area. Use adapters when using air supply and flue gas discharge pipes with diameters other than the standard 150 or 200 mm.

**Caution**

- The air supply opening must stay open.
- The installation area must be equipped with the necessary air supply openings. These openings must not be obstructed or shut off.
- If the boiler, in room-ventilated operation, has been set up in a (very) dusty room, use the air supply filter (accessory).
- Use of the air inlet filter is compulsory when the boiler is exposed to building dust.

Tab.15 Maximum chimney length (L)

Diameter	130 mm	150 mm	200 mm	250 mm
Gas 220 Ace 160	37 m	50 m ⁽¹⁾	50 m ⁽¹⁾	50 m ⁽¹⁾
Gas 220 Ace 200	16 m	35 m	50 m ⁽¹⁾	50 m ⁽¹⁾
Gas 220 Ace 250	10 m	21 m	50 m ⁽¹⁾	50 m ⁽¹⁾
Gas 220 Ace 300	7 m	15 m	50 m ⁽¹⁾	50 m ⁽¹⁾
(1) With retention of the maximum flue length it is possible to apply an extra 5 times 90° or 10 times 45° elbows.				

■ Room-sealed model (C₁₃, C₃₃, C₆₃, C₉₃)

L Combined length of the flue gas outlet and air supply channel to the roof feed-through



Flue gas outlet



Air supply

With a room-sealed version, both the flue gas outlet and the air supply openings are connected (in parallel). Use adapters when using air supply and flue gas discharge pipes with diameters other than the standard 150 or 200 mm.

Tab.16 Maximum chimney length (L)

Diameter	130 mm	150 mm	200 mm	250 mm
Gas 220 Ace 160	18 m	62 m	100 m ⁽¹⁾	100 m ⁽¹⁾
Gas 220 Ace 200	-	10 m	100 m ⁽¹⁾	100 m ⁽¹⁾
Gas 220 Ace 250	-	-	74 m	100 m ⁽¹⁾
Gas 220 Ace 300	-	-	40 m	100 m ⁽¹⁾
(1) With retention of the maximum flue length it is possible to apply an extra 5 times 90° or 10 times 45° elbows.				

Fig.11 Room-sealed version

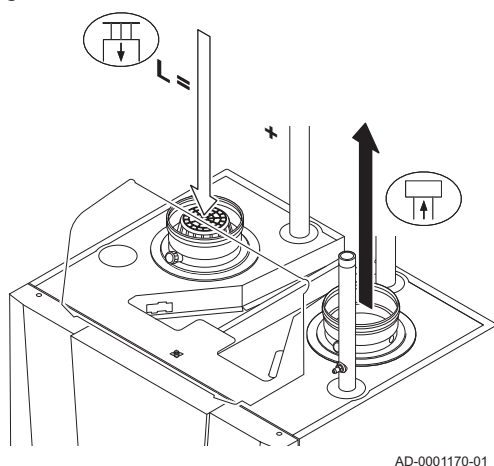


Fig.12 Different pressure zones

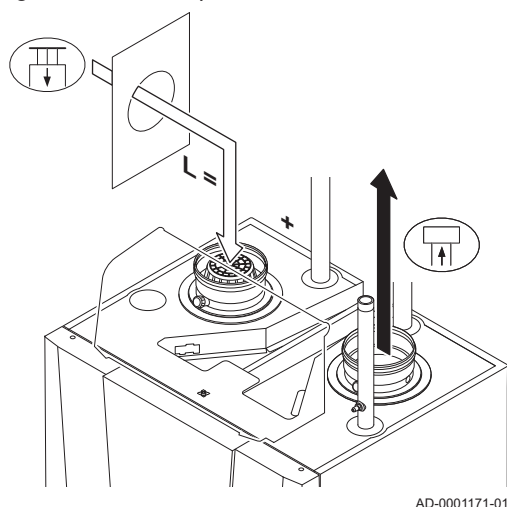


Fig.13 Bend radius $\frac{1}{2}D$

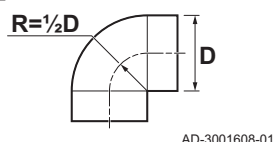
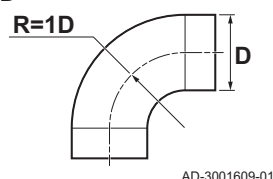


Fig.14 Bend radius 1D



4.5.5 Additional guidelines

- Connection in different pressure areas (C₅₃)

L Total length of the flue gas outlet and air supply duct

 Connecting the flue gas outlet

Connecting the air supply

Combustion air supply and flue gas discharge are possible in different pressure areas and semi-CLV systems, with the exception of the coastal area. The maximum permitted height difference between the combustion air supply and the flue gas outlet is 36 m.

Tab.17 Maximum chimney length (L)

Diameter	130 mm	150 mm	200 mm	250 mm
Gas 220 Ace 160	27 m	64 m	100 m ⁽¹⁾	100 m ⁽¹⁾
Gas 220 Ace 200	7 m	21 m	100 m ⁽¹⁾	100 m ⁽¹⁾
Gas 220 Ace 250	-	11 m	74 m	100 m ⁽¹⁾
Gas 220 Ace 300	-	5 m	48 m	100 m ⁽¹⁾

(1) With retention of the maximum flue length it is possible to apply an extra 5 times 90° or 10 times 45° elbows.

- Reduction table

Tab.18 Pipe reduction for each bend - radius $\frac{1}{2}D$ (parallel)

Diameter	130 mm	150 mm	200 mm	250 mm
45° bend	1.6 m	-	-	-
90° bend	6.2 m	-	-	-

Tab.19 Pipe reduction for each bend - radius 1D (parallel)

Diameter	130 mm	150 mm	200 mm	250 mm
45° bend	1 m	1.2 m	1.6 m	2.0 m
90° bend	1.8 m	2.1 m	2.8 m	3.5 m

■ Installation

- For installing the flue gas outlet and air supply materials, refer to the instructions of the manufacturer of the relevant material. After installation, check at least all flue gas outlet and air supply parts for tightness.



Warning

If the flue gas outlet and air supply materials are not installed in accordance with the instructions (e.g. not leak-proof, not correctly bracketed), this can result in dangerous situations and/or physical injury.

- Make sure that the flue gas outlet pipe towards the boiler has a sufficient gradient (at least 50 mm per metre) and that there is a sufficient condensate collector and discharge (at least 1 m before the outlet of the boiler). The bends used must be larger than 90° to guarantee the gradient and a good seal on the lip rings.

■ Condensation

- Direct connection of the flue gas outlet to structural ducts is not permitted because of condensation.
- If condensate from a plastic or stainless steel pipe section can flow back to an aluminium part in the flue gas outlet, this condensate must be discharged via a trap before it reaches the aluminium.

- Newly installed aluminium flue gas pipes with longer lengths can produce relatively larger quantities of corrosion products. Also casting sand and processing metal chips from new boilers can fill the boiler trap on short term after installation. Check and clean the trap more often for these reasons.

4.6 Requirements for the electrical connections

- Establish the electrical connections in accordance with all local and national current regulations and standards.
- Electrical connections must always be made with the power supply disconnected and only by qualified installers.
- The boiler is completely pre-wired. Never change the internal connections of the control panel.
- Always connect the boiler to a well-earthed installation.
- The wiring must comply with the instructions in the electrical diagrams.
- Follow the recommendations in this manual.
- Separate the sensor cables from the 230 V cables

Make sure the following requirements are met when connecting the cables to the CB and SCB connectors:

Tab.20 PCB connectors

Wire cross section	Stripping length	Tightening torque
solid wire: 0.14 – 4.0 mm ² (AWG 26 – 12)	8 mm	0.5 N·m
stranded wire: 0.14 – 2.5 mm ² (AWG 26 – 14)		
stranded wire with ferrule: 0.25 – 2.5 mm ² (AWG 24 – 14)		

4.7 Water quality and water treatment

The quality of the heating water must comply with the limit values in our **Water quality instructions**. The guidelines in these instructions must be followed at all times. In many cases, the boiler and central heating system can be filled with normal tap water and water treatment will not be necessary.

4.8 Installation examples

4.8.1 How to use the installation examples

In this chapter, a few installation examples are given. Each example provides a quick overview of a simple hydraulic set-up, together with the connections that have to be made and the parameters to be set on the PCB's.



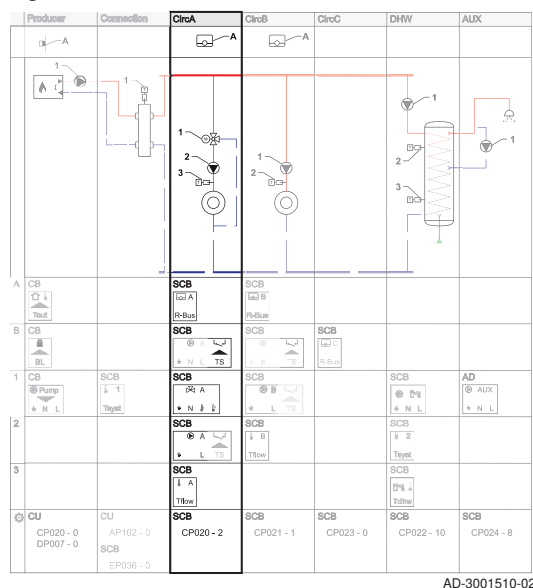
Important

- To use these examples, basic installation knowledge is needed.

The installation example tables are laid out as follows:

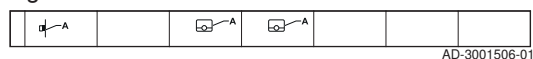
4 Preparation of installation

Fig.15 Zone



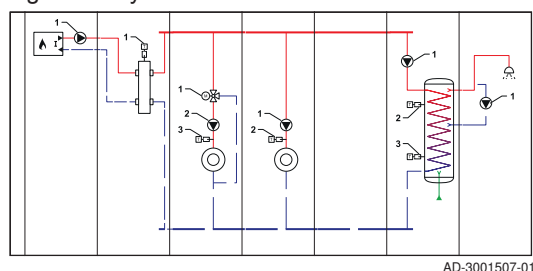
The schemes are divided in columns. All relevant connections and settings are grouped per column.

Fig.16 Heat demand



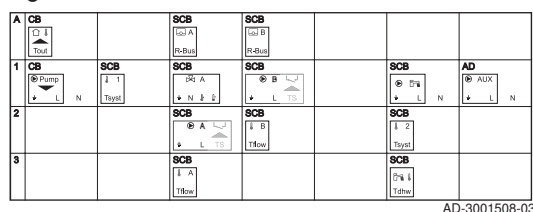
Heat demand: The top row shows the heat demand (if applicable) for the zone.

Fig.17 Hydraulic connections



Hydraulic connections: Only the essential parts are shown, parts to be connected to a PCB are numbered.

Fig.18 Electrical connections to be made

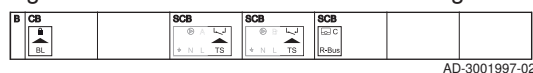


Electrical connections: The numbers in the hydraulic connections refer to the connectors on this row. There are multiple digits to identify the type of connection:

A Heat demand device.

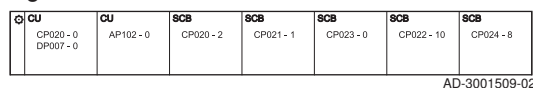
1,2,... The numbers in the hydraulic connections refer to the connectors on this row. Connect component no. 1 from the hydraulic scheme to the connector shown on line 1.

Fig.19 Electrical connections to be bridged



Electrical connections to be bridged: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for the specific installation example.

Fig.20 Parameters to be set



Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.

Fig.21 Parameter list

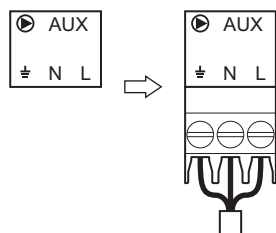
Code	Display text	Menu path	Set to
CP020	Zone Function	Installation Setup > CU-QH08 > CIRCA > Parameters, counters, signals > Parameters	0 = Disable
AP102	Boiler Pump function	Installation Setup > CU-QH08 > Gas fired appliance > Parameters, counters, signals > Parameters	0 = No
DP007	Dhw 3wv Standby	Installation Setup > CU-QH08 > Internal DHW > Parameters, counters, signals > Parameters	0 = CH position

AD-3001998-01

Parameter list: The parameters from the table above are repeated in this list to show their display text, navigation paths, and settings.

The connectors can be found on the mentioned PCB. Take the following into account when making the connections:

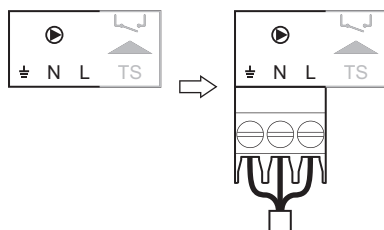
Fig.22 Normal connector



AD-3001511-01

These connectors can be connected normally.

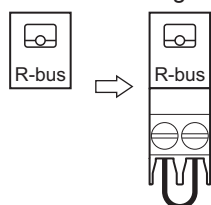
Fig.23 Combined connector



AD-3001512-01

These connectors combine two plugs into one connector. In the installation examples they appear with one highlighted part, which is to be used.

Fig.24 Connector to be bridged

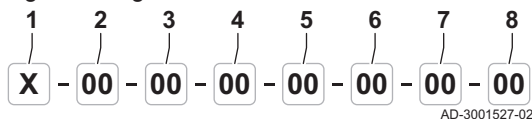


AD-3001513-01

Row **B** shows all connectors to be bridged. Connect a bridge to this connector.

4.8.2 How to find the desired installation example

Fig.25 Eight sections



AD-3001527-02

Each example has a code describing the hydraulic set-up. The hydraulic code consists of eight sections. The first section is a letter, and the following sections consist of two numbers each:

Tab.21 Meaning of the letter and numbers

Numbers	Scheme type H (Hydraulic)
1	Letter for scheme type
2	Number for the producer
3	Number for the connection
4	Number for zone 1
5	Number for zone 2
6	Number for zone 3
7	Number for DHW zone
8	Number for DHW extension

Fig.26 Zone name examples

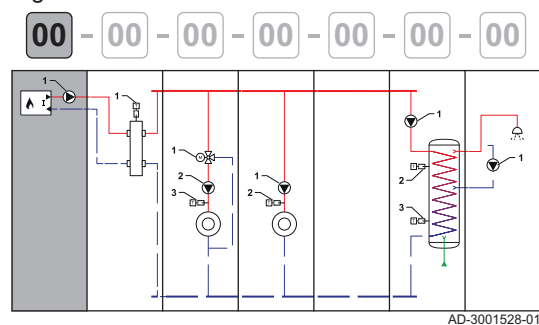
CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
CircA	CircA 1		DHW	
CircB 1	CircA 1		DHW	

AD-3002008-01

The zones, DHW zone, and DHW extension zone can have different names, depending on the devices used. A "1" after the zone name means that the zone is controlled by an expansion PCB, of which the rotary switch has been set to "1". The zone name is shown on top of the columns.

The numbers of each section are linked to a specific configuration. Please see the following tables for the configuration:

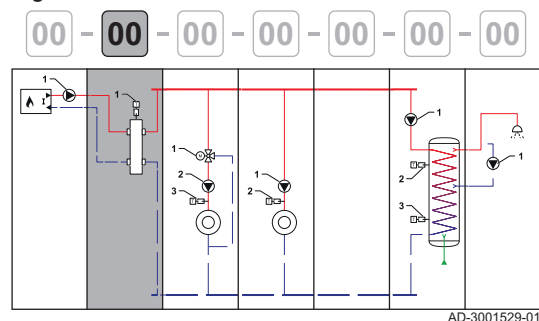
Fig.27 Producer



Tab.22 Producer

Number	Description
00	Unknown / undefined producer
01	Boiler with primary heating circuit (no pump)
02	Boiler with primary heating circuit (internal pump)
03	Boiler with primary heating circuit (external pump)
04	Boiler with heating and domestic hot water (internal pump)
05	Boiler with heating and domestic hot water (external pump)
06	Boiler with primary and secondary heating circuit (internal pump)
07	Boiler with primary and secondary heating circuit (external pump)
08	Cascade of two boilers with primary heating circuit (no pump)
09	Cascade of three boilers with primary heating circuit (no pump)
10	Cascade of two boilers with primary heating circuit (internal pump)
11	Cascade of three boilers with primary heating circuit (internal pump)
12	Cascade of two boilers with primary heating circuit (external pump)
13	Cascade of three boilers with primary heating circuit (external pump)
14	Cascade of two boilers with primary and secondary heating circuit (internal pump)
15	Cascade of three boilers with primary and secondary heating circuit (internal pump)
16	Cascade of two boilers with primary and secondary heating circuit (external pump)
17	Cascade of three boilers with primary and secondary heating circuit (external pump)
18	Cascade of two boilers with primary heating circuit (no pump) + hydraulic valves
19	Cascade of two boilers with primary heating circuit (external pump) + hydraulic valves
20	Gas boiler and heat pump serial connected
21	Gas boiler and heat pump parallel connected

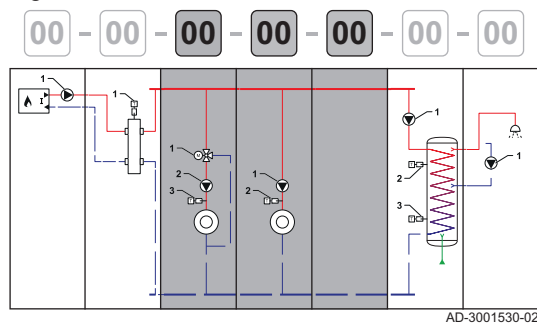
Fig.28 Connection



Tab.23 Connection

Number	Description
00	Empty (no connection)
01	Direct connection
02	Low loss header
03	Plate heat exchanger
04	Buffer tank with one sensor
05	Buffer tank with two sensors
06	Buffer tank with electrical heating
07	Buffer tank with solar heating
08	Low loss header with Tflow sensor

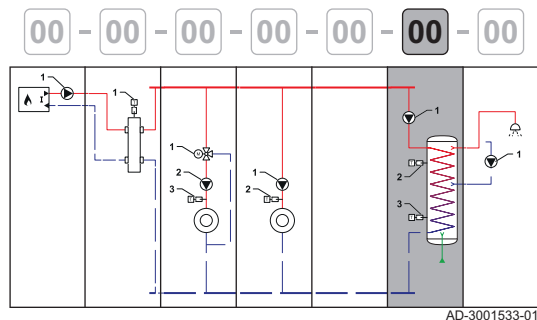
Fig.29 Zones



Tab.24 Zones

Number	Description
00	Empty (no zone)
01	Direct circuit
02	Mixing circuit
03	Swimming pool (direct)
04	High temperature
05	Fan convector (direct)
06	Domestic hot water tank
07	Domestic hot water tank (electrical)
08	Time program
09	Process heat
10	Domestic hot water tank (layered)
11	Domestic hot water tank (internal)
12	Underfloor heating (mixing)
13	Heat interface unit
14	Direct circuit (without pump)
15	Direct circuit with diverter valve (without pump)

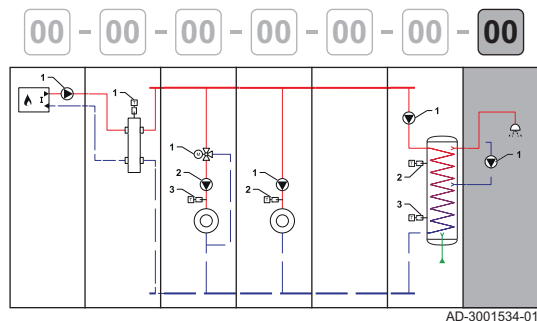
Fig.30 DHW Zone



Tab.25 DHW Zone

Number	Description
00	Empty (no zone)
01	Domestic hot water tank with one sensor and pump
02	Domestic hot water tank with two sensors and pump
03	Domestic hot water tank with solar heating
04	Domestic hot water tank with electrical heating
05	Domestic hot water tank with one sensor

Fig.31 DHW Extension zone



Tab.26 DHW Extension zone







Number	Description
00	Empty (no zone)
01	Domestic hot water loop (with pump)
02	Domestic hot water (without pump)
03	Time program (on/off pump output)
04	Process heat (24/7 only this zone possible)
05	Domestic hot water tank (internal)

4.8.3 Symbols used




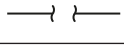
Tab.27 Tubing

Symbol	Explanation	Symbol	Explanation
	Flow pipe		Return pipe
	Flow collector pipe		Return collector pipe
	Drinking water supply		


Tab.28 Hydraulic components

Symbol	Explanation	Symbol	Explanation
	Mixing valve or diverter valve		Valve, electronically actuated
	Plate heat exchanger		Low loss header
	Pump		Safety group



Tab.29 Sensors and contacts

Symbol	Explanation	Symbol	Explanation
	Outdoor temperature sensor		Temperature sensor
	Safety thermostat		Electrical cable







Tab.30 Heat demand sources

Symbol	Explanation	Symbol	Explanation
	Room thermostat	0-10V	0-10V input

Tab.31 Heat producers


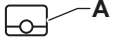
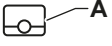
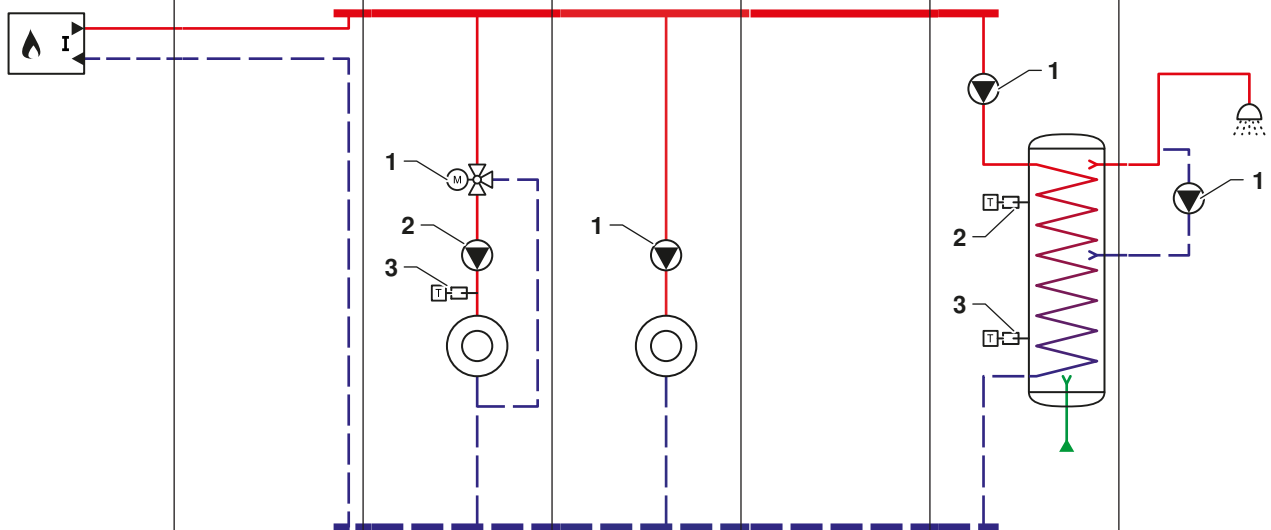
Symbol	Explanation	Symbol	Explanation
	(Gas) Fueled boiler		Heat pump
I	Primary heating circuit		

Tab.32 Heat consumers












Symbol	Explanation	Symbol	Explanation
	Heating zone		Hot air heating zone
	Radiator		Underfloor heating
	Water tap		Shower

4.8.4 SCB-10 Installation example H-01-01-02-01-00-02-01







Tab.33 Hydraulic scheme

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
H	01 ⁽¹⁾	01 ⁽²⁾	02 ⁽³⁾	01 ⁽⁴⁾	00 ⁽⁵⁾	02 ⁽⁶⁾	01 ⁽⁷⁾
	 AD-3001435-01		 AD-3001437-01	 AD-3001437-01			
							
	AD-3001484-01	AD-3001475-01	AD-3001432-01	AD-3001464-02	AD-3001436-01	AD-3001433-01	AD-3001434-01
<p>(1) 01: Boiler with primary heating circuit (no pump)</p> <p>(2) 01: Direct connection</p> <p>(3) 02: Mixing circuit</p> <p>(4) 01: Direct circuit</p> <p>(5) 00: Empty (no zone)</p> <p>(6) 02: Domestic hot water tank with two sensors and pump</p> <p>(7) 01: Domestic hot water loop (with pump)</p>							


Tab.34 Electrical connections to be made on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
A	CB-01  Tout		SCB-10  R-Bus	SCB-10  R-Bus			
1			SCB-10  N L	SCB-10  N L TS		SCB-10  N L	AD249  N L
2			SCB-10  N L TS			SCB-10  2 Tsyst	
3			SCB-10  Tflow			SCB-10  Tdhw	

Tab.35 Electrical connections to be bridged on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
B (1) 	CB-01 		SCB-10 	SCB-10 	SCB-10  AD249 		
(1) Bridge: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for this specific installation example.							

Tab.36 Parameters to be set

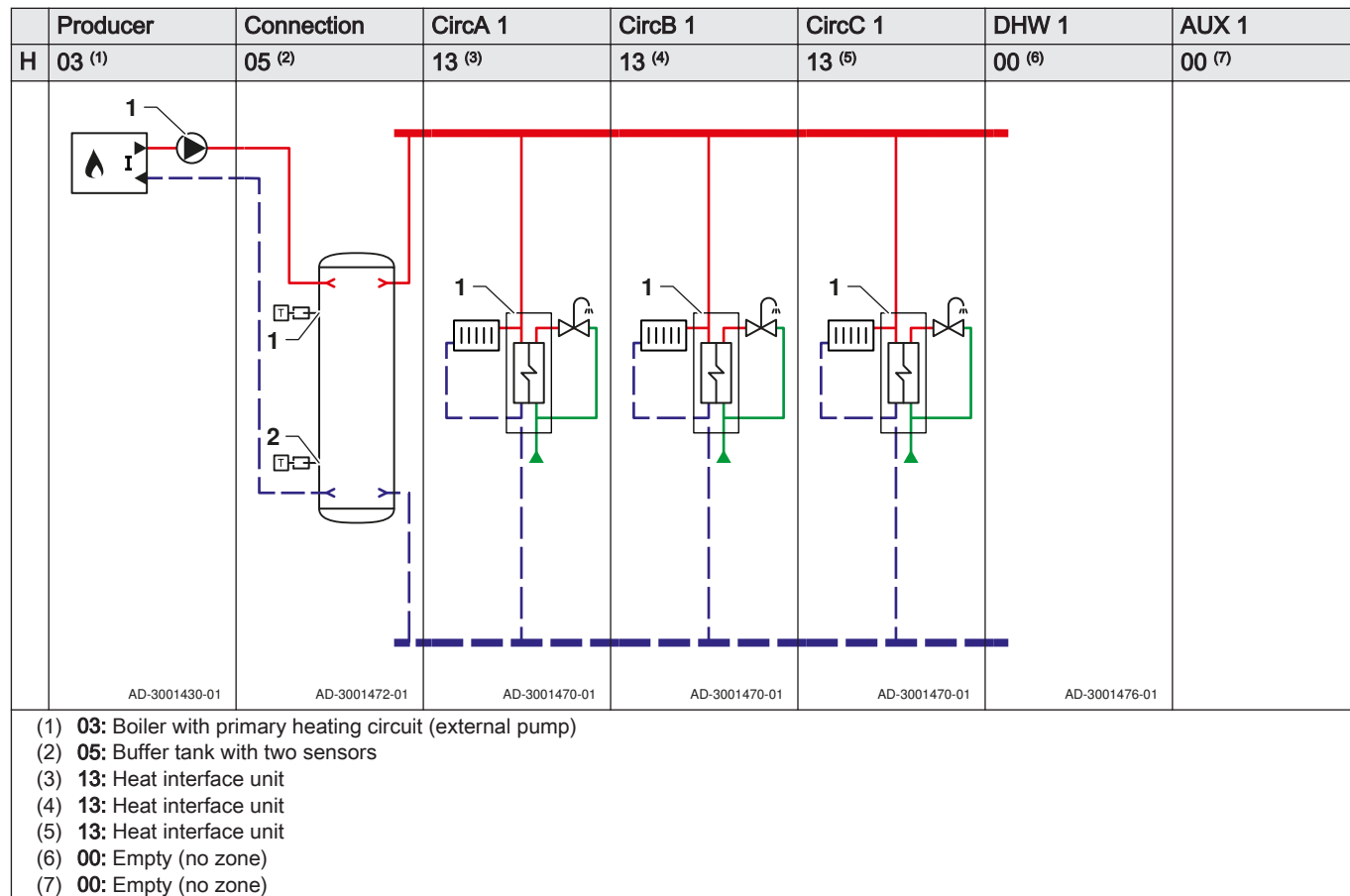
	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
 (1)	CU-GH06c AP102 = 0 CP020 = 0 DP007 = 0		SCB-10 CP020 = 2	SCB-10 CP021 = 1	SCB-10 CP023 = 0	SCB-10 CP022 = 10 EP037 = 2	SCB-10 CP024 = 0 CP294 = 8
(1) Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.							

Tab.37 Parameter list




Code	Display text	Menu path	Set to
AP102	Boiler Pump function	≡ > Installation Setup > FSB-WHB-HE-150-300 > Gas fired appliance > Parameters, counters, signals > Parameters > General	0 = No
CP020	Zone Function	≡ > Installation Setup > FSB-WHB-HE-150-300 > CIRCA > Parameters, counters, signals > Parameters > General	0 = Disable
DP007	Dhw 3wv Standby	≡ > Installation Setup > FSB-WHB-HE-150-300 > Internal DHW > Parameters, counters, signals > Parameters > General	0 = CH position
CP020	Zone Function	≡ > Installation Setup > SCB-10 > CIRCA 1 > Parameters, counters, signals > Parameters > General	2 = Mixing Circuit
CP021	Zone Function	≡ > Installation Setup > SCB-10 > CIRCB 1 > Parameters, counters, signals > Parameters > General	1 = Direct
CP023	Zone Function	≡ > Installation Setup > SCB-10 > CIRCC 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP022	Zone Function	≡ > Installation Setup > SCB-10 > DHW 1 > Parameters, counters, signals > Parameters > General	10 = DHW Layered
EP037	Sensor input config	≡ > Installation Setup > > Analogue input > Parameters, counters, signals > Parameters > Advanced	2 = DHW tank top
CP024	Zone Function	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP294	ConfigZonePump-Out	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	8 = DHW looping

4.8.5 SCB-10 Installation example H-03-05-13-13-13-00-00






Tab.38 Hydraulic scheme



Tab.39 Electrical connections to be made on CB-01, SCB-10


	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
1	CB-01  N L	SCB-10  1 Tsyst					
2		SCB-10  2 Tsyst					

Tab.40 Electrical connections to be bridged on CB-01, SCB-10

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
B ⁽¹⁾ 	CB-01  BL		SCB-10  A R-Bus	SCB-10  B R-Bus	SCB-10  C R-Bus		

(1) Bridge: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for this specific installation example.

Tab.41 Parameters to be set

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
 (1)	CU-GH06c AP102 = 0 CP020 = 0 DP007 = 0	SCB-10 BP001 = 2	SCB-10 CP020 = 0	SCB-10 CP021 = 0	SCB-10 CP023 = 0	SCB-10 CP022 = 0	SCB-10 CP024 = 0

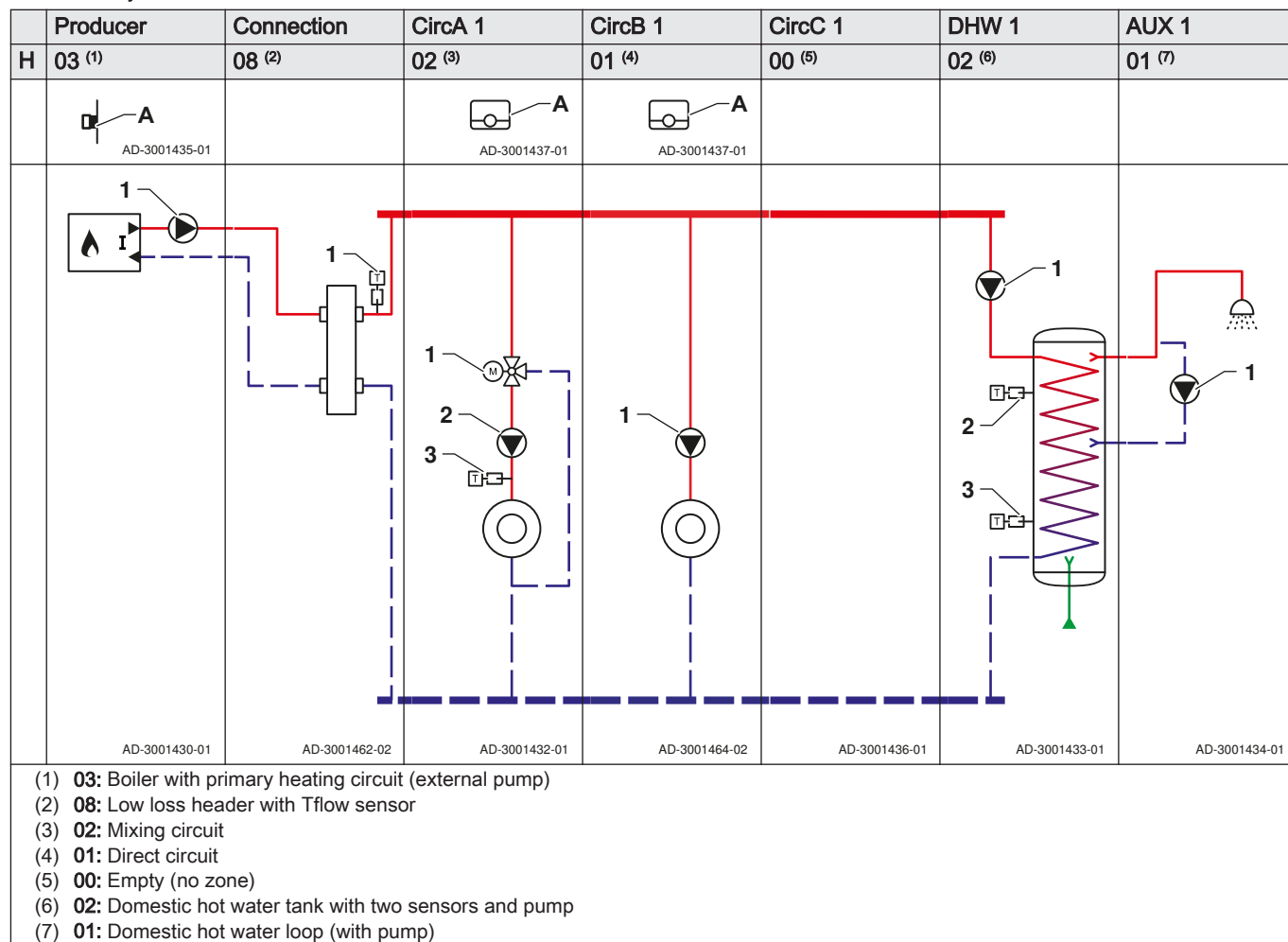
(1) Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.

Tab.42 Parameters to be set

Code	Display text	Menu path	Set to
AP102	Boiler Pump function	≡ > Installation Setup > FSB-WHB-HE-150-300 > Gas fired appliance > Parameters, counters, signals > Parameters > General	0 = No
CP020	Zone Function	≡ > Installation Setup > FSB-WHB-HE-150-300 > CIRCA > Parameters, counters, signals > Parameters > General	0 = Disable
DP007	Dhw 3wv Standby	≡ > Installation Setup > FSB-WHB-HE-150-300 > Internal DHW > Parameters, counters, signals > Parameters > General	0 = CH position
BP001	Type Buffer Tank	≡ > Installation Setup > > Disabled buffer tank > Parameters, counters, signals > Parameters > General	2 = Two sensors
CP020	Zone Function	≡ > Installation Setup > SCB-10 > CIRCA 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP021	Zone Function	≡ > Installation Setup > SCB-10 > CIRCB 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP023	Zone Function	≡ > Installation Setup > SCB-10 > CIRCC 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP022	Zone Function	≡ > Installation Setup > SCB-10 > DHW 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP024	Zone Function	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	0 = Disable

4.8.6 SCB-10 Installation example H-03-08-02-01-00-02-01







Tab.43 Hydraulic scheme




Tab.44 Electrical connections to be made on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
A	CB-01 		SCB-10 	SCB-10 			
1	CB-01 	SCB-10 	SCB-10 	SCB-10 		SCB-10 	AD249
2			SCB-10 			SCB-10 	
3			SCB-10 			SCB-10 	

Tab.45 Electrical connections to be bridged on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
B (1) 	CB-01 		SCB-10 	SCB-10 	SCB-10  AD249 		
(1) Bridge: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for this specific installation example.							

Tab.46 Parameters to be set

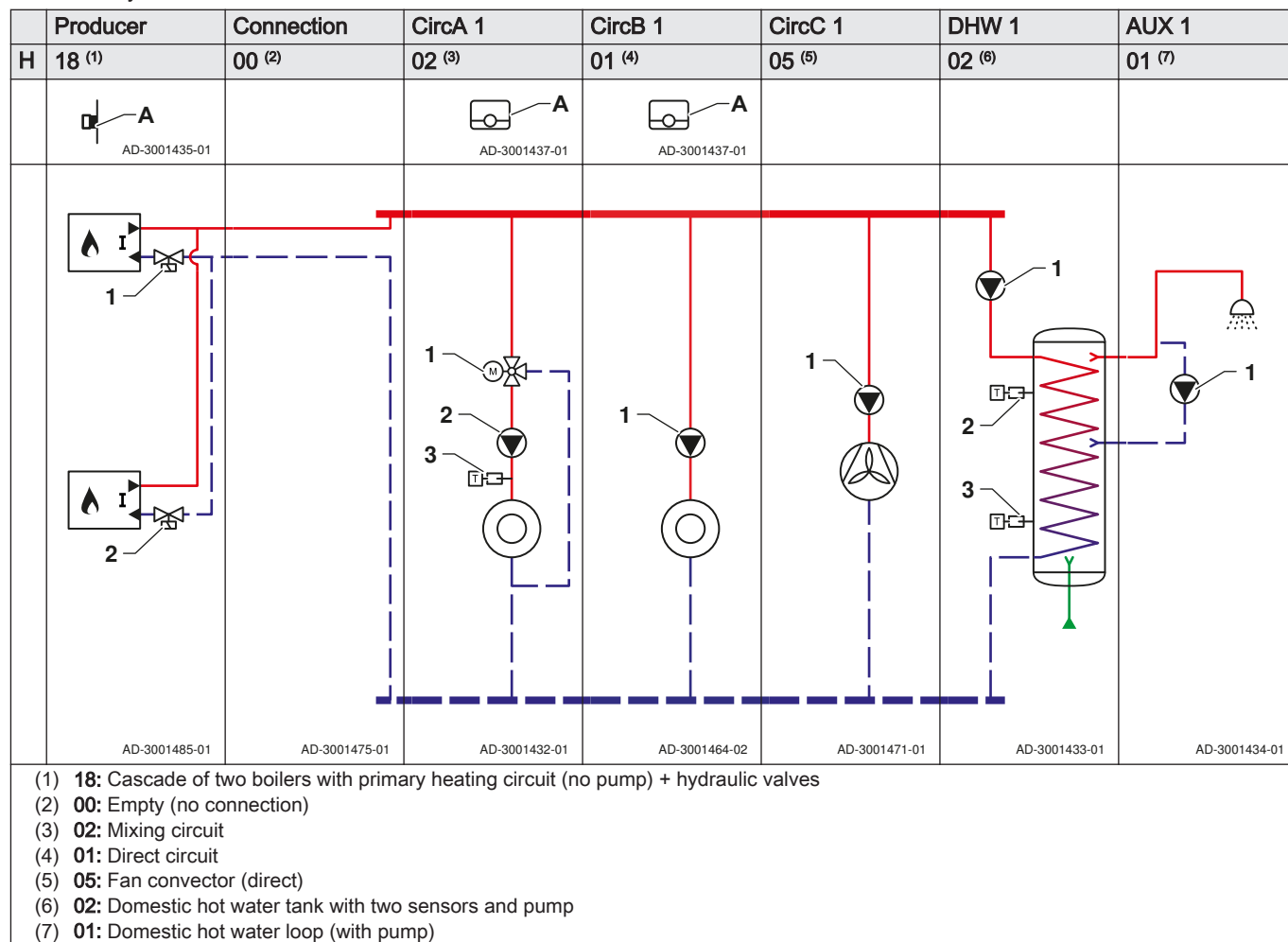
	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
 (1)	CU-GH06c AP102 = 0 CP020 = 0 DP007 = 0		SCB-10 CP020 = 2	SCB-10 CP021 = 1	SCB-10 CP023 = 0	SCB-10 CP022 = 10 EP037 = 2	SCB-10 CP024 = 0 CP294 = 8
(1) Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.							

Tab.47 Parameter list

Code	Display text	Menu path	Set to
AP102	Boiler Pump function	≡ > Installation Setup > FSB-WHB-HE-150-300 > Gas fired appliance > Parameters, counters, signals > Parameters > General	0 = No
CP020	Zone Function	≡ > Installation Setup > FSB-WHB-HE-150-300 > CIRCA > Parameters, counters, signals > Parameters > General	0 = Disable
DP007	Dhw 3wv Standby	≡ > Installation Setup > FSB-WHB-HE-150-300 > Internal DHW > Parameters, counters, signals > Parameters > General	0 = CH position
CP020	Zone Function	≡ > Installation Setup > SCB-10 > CIRCA 1 > Parameters, counters, signals > Parameters > General	2 = Mixing Circuit
CP021	Zone Function	≡ > Installation Setup > SCB-10 > CIRCB 1 > Parameters, counters, signals > Parameters > General	1 = Direct
CP023	Zone Function	≡ > Installation Setup > SCB-10 > CIRCC 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP022	Zone Function	≡ > Installation Setup > SCB-10 > DHW 1 > Parameters, counters, signals > Parameters > General	10 = DHW Layered
EP037	Sensor input config	≡ > Installation Setup > > Analogue input > Parameters, counters, signals > Parameters > Advanced	2 = DHW tank top
CP024	Zone Function	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP294	ConfigZonePump-Out	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	8 = DHW looping

4.8.7 SCB-10 Installation example H-18-00-02-01-05-02-01





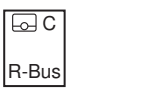

Tab.48 Hydraulic scheme




Tab.49 Electrical connections to be made on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
A	CB-01 (Master) 		SCB-10 	SCB-10 			
1	SCB-13 (Master) 		SCB-10 	SCB-10 	AD249 	SCB-10 	AD249
2	SCB-13 (Slave) 		SCB-10 			SCB-10 	
3			SCB-10 			SCB-10 	

Tab.50 Electrical connections to be bridged on CB-01, SCB-10, AD249

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
B (1) 	CB-01 (Master & Slave) 		SCB-10 	SCB-10 	SCB-10  AD249 		
(1) Bridge: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for this specific installation example.							

Tab.51 Parameters to be set

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
 (1)	CU-GH06c AP102 = 0 CP020 = 0 DP007 = 0		SCB-10 CP020 = 2	SCB-10 CP021 = 1	SCB-10 CP023 = 5	SCB-10 CP022 = 10 EP037 = 2	SCB-10 CP024 = 0 CP294 = 8
(1) Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.							

Tab.52 Parameter list

Code	Display text	Menu path	Set to
AP102	Boiler Pump function	≡ > Installation Setup > FSB-WHB-HE-150-300 > Gas fired appliance > Parameters, counters, signals > Parameters > General	0 = No
CP020	Zone Function	≡ > Installation Setup > FSB-WHB-HE-150-300 > CIRCA > Parameters, counters, signals > Parameters > General	0 = Disable
DP007	Dhw 3wv Standby	≡ > Installation Setup > FSB-WHB-HE-150-300 > Internal DHW > Parameters, counters, signals > Parameters > General	0 = CH position
CP020	Zone Function	≡ > Installation Setup > SCB-10 > CIRCA 1 > Parameters, counters, signals > Parameters > General	2 = Mixing Circuit
CP021	Zone Function	≡ > Installation Setup > SCB-10 > CIRCB 1 > Parameters, counters, signals > Parameters > General	1 = Direct
CP023	Zone Function	≡ > Installation Setup > SCB-10 > CIRCC 1 > Parameters, counters, signals > Parameters > General	5 = Fan Convactor
CP022	Zone Function	≡ > Installation Setup > SCB-10 > DHW 1 > Parameters, counters, signals > Parameters > General	10 = DHW Layered
EP037	Sensor input config	≡ > Installation Setup > > Analogue input > Parameters, counters, signals > Parameters > Advanced	2 = DHW tank top
CP024	Zone Function	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP294	ConfigZonePump-Out	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	8 = DHW looping

4.8.8 SCB-10 Installation example H-21-04-02-02-00-00-00



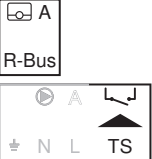
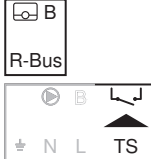
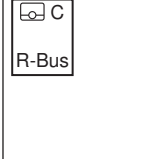
Tab.53 Hydraulic scheme

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
H	21 ⁽¹⁾	04 ⁽²⁾	02 ⁽³⁾	02 ⁽⁴⁾	00 ⁽⁵⁾	00 ⁽⁶⁾	00 ⁽⁷⁾
	<p>(1) 21: Gas boiler and heat pump parallel connected (2) 04: Buffer tank with one sensor (3) 02: Mixing circuit (4) 02: Mixing circuit (5) 00: Empty (no zone) (6) 00: Empty (no zone) (7) 00: Empty (no zone)</p>						


Tab.54 Electrical connections to be made on CB-01, SCB-10

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
A	CB-01 						
1	CB-01 	SCB-10 	SCB-10 	SCB-10 			
2	See heat pump manual		SCB-10 	SCB-10 			
3			SCB-10 	SCB-10 			

Tab.55 Electrical connections to be bridged on CB-01, SCB-10

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
B (1) 	CB-01 		SCB-10 	SCB-10 	SCB-10 		
(1) Bridge: These connectors must be bridged. Some bridges are already factory-fitted, some need to be fitted for this specific installation example.							

Tab.56 Parameters to be set

	Producer	Connection	CircA 1	CircB 1	CircC 1	DHW 1	AUX 1
 (1)	CU-GH06c AP102 = 0 CP020 = 0 DP007 = 0		SCB-10 CP020 = 2	SCB-10 CP021 = 2	SCB-10 CP023 = 0	SCB-10 CP022 = 0	SCB-10 CP024 = 0
(1) Parameters to be set: The parameters are separated per PCB, and must be set on that specific PCB.							

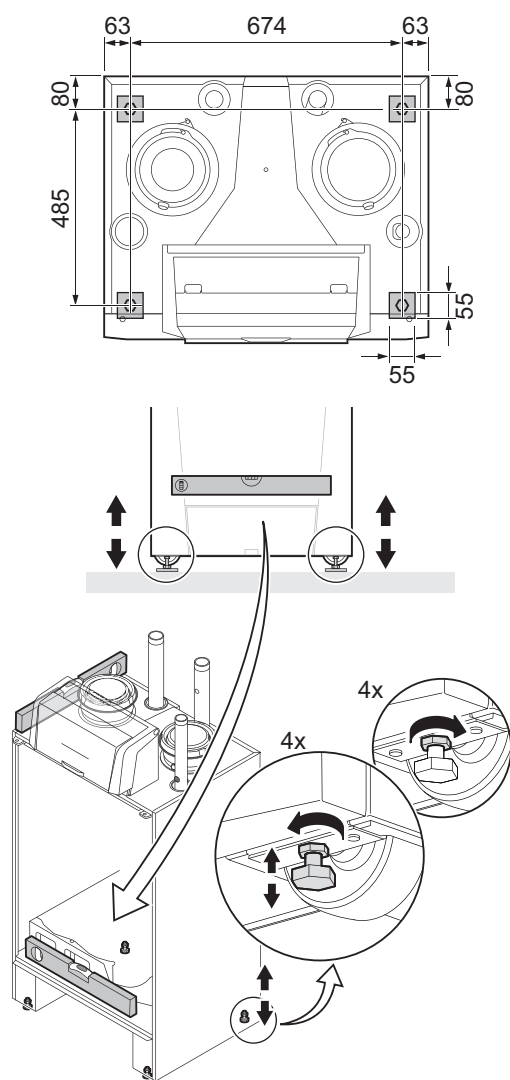
Tab.57 Parameter list

Code	Display text	Menu path	Set to
AP102	Boiler Pump function	≡ > Installation Setup > FSB-WHB-HE-150-300 > Gas fired appli- ance > Parameters, counters, signals > Parameters > General	0 = No
CP020	Zone Function	≡ > Installation Setup > FSB-WHB-HE-150-300 > CIRCA > Parameters, counters, signals > Parameters > General	0 = Disable
DP007	Dhw 3wv Standby	≡ > Installation Setup > FSB-WHB-HE-150-300 > Internal DHW > Parameters, counters, signals > Parameters > General	0 = CH position
CP020	Zone Function	≡ > Installation Setup > SCB-10 > CIRCA 1 > Parameters, counters, signals > Parameters > General	2 = Mixing Circuit
CP021	Zone Function	≡ > Installation Setup > SCB-10 > CIRCB 1 > Parameters, counters, signals > Parameters > General	2 = Mixing Circuit
CP023	Zone Function	≡ > Installation Setup > SCB-10 > CIRCC 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP022	Zone Function	≡ > Installation Setup > SCB-10 > DHW 1 > Parameters, counters, signals > Parameters > General	0 = Disable
CP024	Zone Function	≡ > Installation Setup > SCB-10 > AUX 1 > Parameters, counters, signals > Parameters > General	0 = Disable

5 Installation

5.1 Positioning the boiler

Fig.32 Position of the adjustment bolts



AD-0001166-02

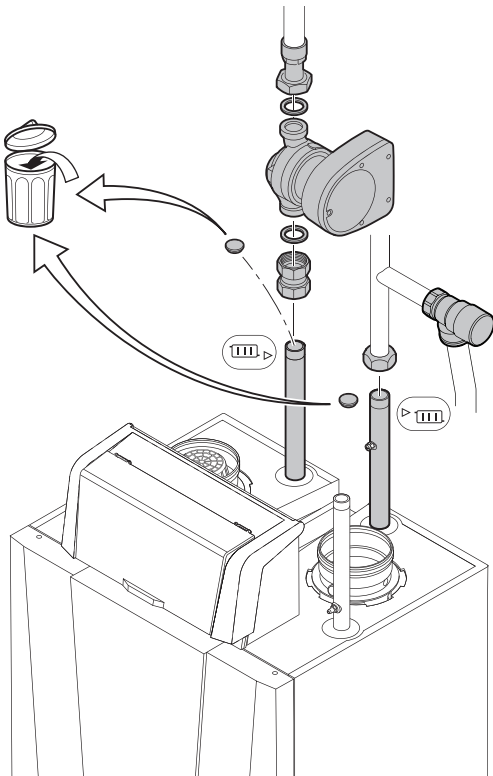
1. Place the boiler in the right position using the transport wheels.
2. Loosen the adjustment bolts and ensure that the boiler is completely level.

The figure also shows the support surface of the boiler (this is the position of the adjustment bolts).

5.2 Hydraulic connections

5.2.1 Connecting the heating circuit

Fig.33 Supply and return connections



AD-0001167-01

1. Remove the dust cap on the central heating flow connection ►(III).
2. Remove the dust cap on the central heating return connection (III)►.
3. Fit the outlet pipe for CH water to the CH flow ►(III).
4. Fit the inlet pipe for CH water to the CH return (III)►.
5. In the supply directly above the boiler, establish a connection for a overpressure valve of sufficient capacity.
6. Connect the pump to the boiler's return connection.

Always connect the boiler in a way that will guarantee the water flow through the unit during operation. When the boiler is used in a system with two return pipes, the return pipe must be used as a cold return. The second return pipe is then used as a hot return. Contact us for more information.

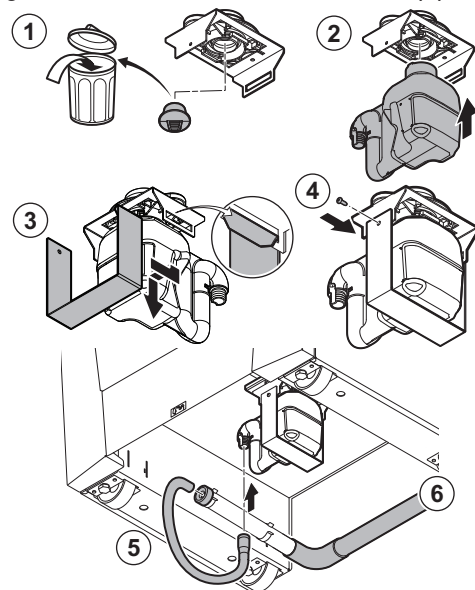


Caution

If using plastic pipes, follow the manufacturer's (connection) instructions.

5.2.2 Connecting the condensate drain pipe

Fig.34 Connect the condensate drain pipe



AD-0001168-03

The condensate trap and flexible plastic drain hose are supplied unassembled.

1. Remove the dust cap from the trap connection at the bottom of the boiler.
2. Push the trap firmly in the holder.
3. Hook the bracket onto the base.
4. Fasten the screw on the side of the bracket.
5. Attach the flexible trap hose to the output of the trap and insert the other end into the plastic drain pipe on the left underneath the boiler.
6. Fit a plastic drain pipe of Ø 40 mm or larger to this, terminating in the drain.



Important

The air opening on the trap prevents siphoning when the drain pipe is securely connected to the drain.



Danger

The trap must always be filled with water. This prevents flue gases from entering the room.

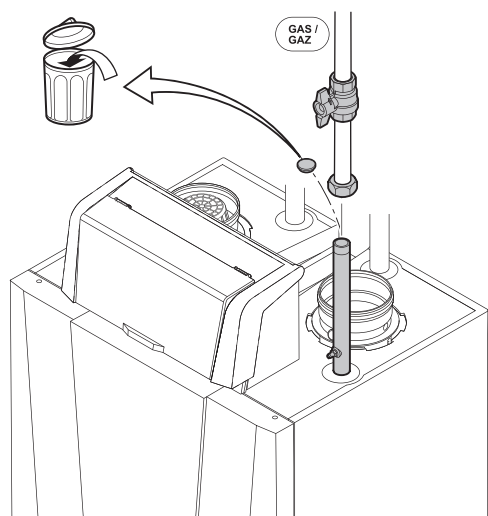


Caution

- The drain pipe must slope down at least 30 mm per metre.
- Condensed water must not be discharged into a gutter.

5.3 Gas connection

Fig.35 Gas connection



AD-0001174-01



Warning

- Before starting work on the gas pipes, turn off the main gas tap. Before installing, check that the gas meter has sufficient capacity. Take into account the consumption of all appliances.
- Notify the local energy company if the gas meter has insufficient capacity.

1. Remove the dust cap on the gas connection $\frac{\text{GAS}}{\text{GAZ}}$.
2. Fit the gas supply pipe.



Caution

- Always perform welding work at a sufficient distance from the boiler.
- Remove dirt and dust from the gas pipe.



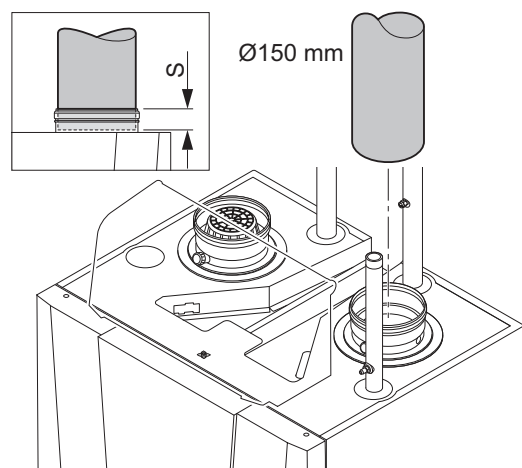
Important

We recommend installing a gas filter to prevent clogging of the gas valve unit.

3. Also fit a gas isolation valve in this pipe, near the boiler.

5.4 Connecting the flue gas outlet

Fig.36 Connecting the flue gas outlet



AD-0001172-01

S Insertion depth 30 mm

1. Fit the flue gas outlet pipe to the boiler.
2. Fit the successive flue gas outlet pipes seamlessly together.

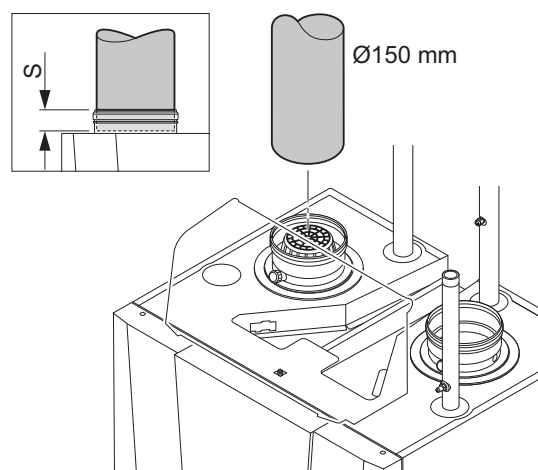


Caution

- The pipes must be flue gas-tight and corrosion-resistant.
- The flue gas outlet pipe must be smooth and deburred.
- Connect the pipes so that they are stress-free.
- The pipes must not rest on the boiler.
- Fit the horizontal parts sloping down towards the boiler, with a slope of 50 mm per metre.

5.5 Connecting the air supply

Fig.37 Connecting the air supply



AD-0001173-01

S Insertion depth 30 mm

1. Fit the air supply pipe to the boiler.
2. Fit the successive air supply pipes seamlessly together.



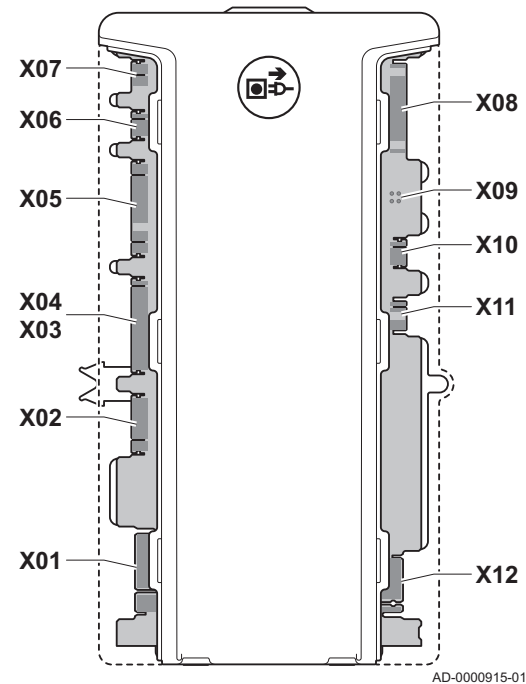
Caution

- The pipes must be airtight and corrosion-resistant.
- The air supply pipe must be smooth and deburred.
- Connect the pipes so that they are stress-free.
- The pipes must not rest on the boiler.
- Fit the horizontal parts sloping down towards the air supply outlet.

5.6 Electrical connections

5.6.1 Control unit

Fig.38 Connectors from the control unit CU-GH (front view)



The table gives important connection values for the control unit.

Tab.58 Connection values for control unit

Supply voltage	230 VAC/50 Hz
Main fuse value F1 (230 VAC)	6.3 AT
Fuse value F2 (230 VAC)	1.6 AT
Fan	230 VAC

Danger of electric shock

The following components of the boiler are connected to a 230 V power supply:

- Electrical connection to circulating pump.
- Electrical connection to gas combination block.
- Electrical connection to fan.
- Control unit.
- Ignition transformer.
- Power supply cable connection.
- Various connections in the connection box.

The mains lead of the boiler has an earthed plug (lead length 1.5 m) and is suited for a 230 VAC/50 Hz with a phase/neutral/earth system.

The boiler is not phase sensitive. The boiler is completely pre-wired

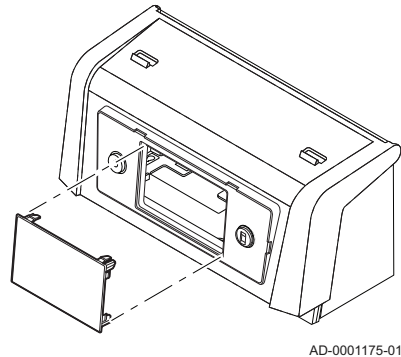
Caution

- Always order a replacement mains lead from Remeha. The power supply cable should only be replaced by Remeha , or by an installer certified by Remeha .
- The plug of the boiler must always be accessible.

The control panel must still be fitted in the control panel housing. The connection box with the terminals of the connector for external connections is located behind the control panel. The optional PCBs are also placed in the connection box. The wiring for the external connections is fed through a cable duct to the back of the boiler.

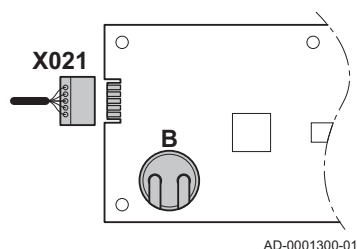
5.6.2 Assembly of the control panel

Fig.39 Control panel housing



The Gas 220 Ace boiler is supplied with a separate control panel. The control panel is fitted in the control panel housing. The cable behind the control panel with connector **X021** must be slid onto the connector pin (5 pins, 24V) of the PCB.

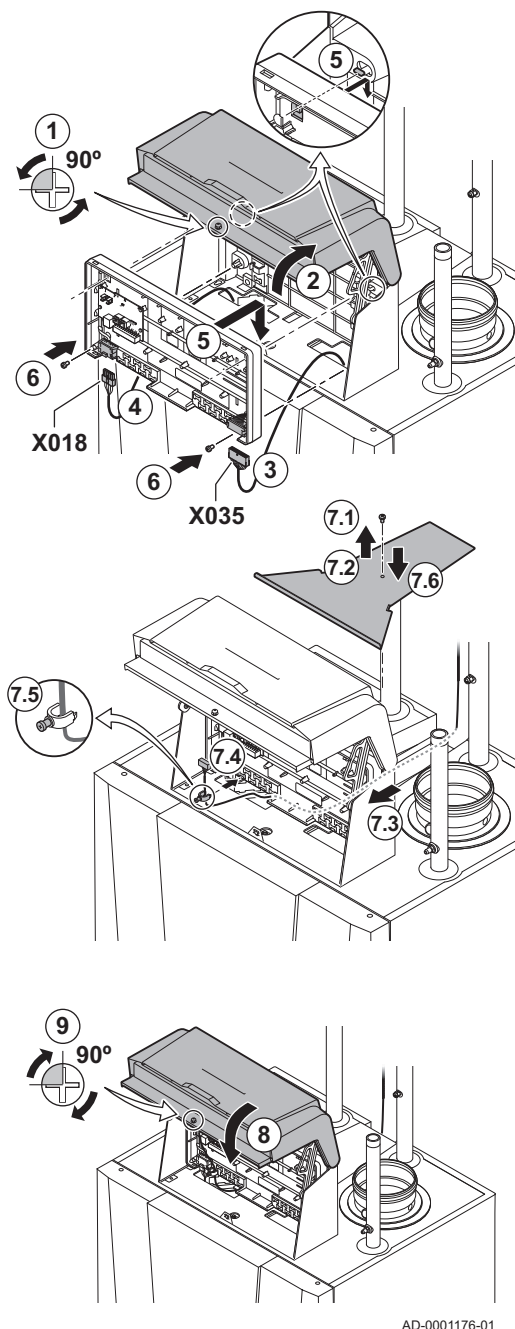
Fig.40 PCB

**B Battery**

There is also a back-up battery on the PCB for the internal clock. Check the battery voltage if the date and time are not displayed clearly.

5.6.3 Installation of the connection box

Fig.41 Installing and connecting the connection box

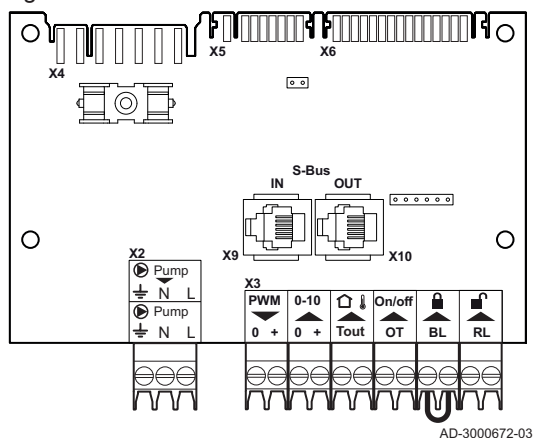


The connection box contains the standard PCB **CB-01** and the optional PCB(s) for the external connections. The connection box is included with the delivery of the boiler as standard. Use the connection cables supplied to connect the connection box to the control unit. Proceed as follows:

1. Unscrew the retaining screw on the front of the housing.
2. Open the front flap of the housing.
3. Connect the connection cable **X035** to the connector from the boiler.
4. Connect the connection cable **X018** to the connector from the boiler.
5. Place the connection box for the mounting clips in the housing.
6. Carefully push the connection box downwards over the mounting clips and tighten the two screws.
7. Now connect the desired external controllers to the other connectors. Proceed as follows:
 - 7.1. Unscrew the retaining screw on the cable duct cover.
 - 7.2. Remove the cable duct cover.
 - 7.3. Route the cable of the external controllers or the sensor through the cable duct.
 - 7.4. Lay the cable under the strain relief clip.
 - 7.5. Turn the strain relief clip firmly into place.
 - 7.6. Replace the cable duct cover and tighten the retaining screw.
8. Close the front flap of the housing.
9. Retighten the retaining screw on the front of the housing.

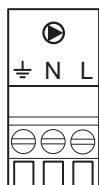
5.6.4 The CB-01 connection PCB

Fig.42 Connection PCB CB-01



The **CB-01** is placed in the control box. It provides easy access to all the standard connectors.

Fig.43 System pump



■ Connecting the system pump

1. Connect a system pump to the **Pump** terminals of the connector.



Important

The maximum power consumption is 300 VA.

The function of the system pump can be changed using parameters **PP015**, **PP016** and **PP018**.

■ Connecting a PWM system pump

A PWM system pump can be connected to the boiler and can be controlled in a modulating way from the boiler

1. Connect the PWM pump to the **PWM** terminals of the connector.



Important

Contact us for more information.

Fig.44 PWM system pump



■ Connecting an outdoor temperature sensor

An outdoor temperature sensor can be connected to the **Tout** connector. Always connect the sensor to the PCB that controls the zones. For example: when the zones are controlled by an SCB-10, connect the sensor to that PCB.

1. Connect the two-wire cable to the **Tout** connector.

Use below mentioned sensors, or sensors with identical characteristics. Set parameter **AP056** to the installed outdoor temperature sensor type.

- AF60 = NTC 470 Ω /25°C
- QAC34 = NTC 1000 Ω /25°C

When an on/off thermostat is also connected, the boiler will control the temperature with the set point from the internal heating curve. **OpenTherm** controllers can also use the outdoor temperature sensor. In that case, the desired heating curve must be set on the controller.

Fig.45 Tout connector

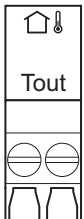
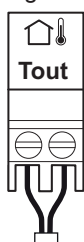


Fig.46 Outdoor sensor



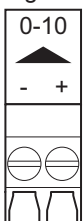
AD-3000973-02

Fig.47 Modulating thermostat



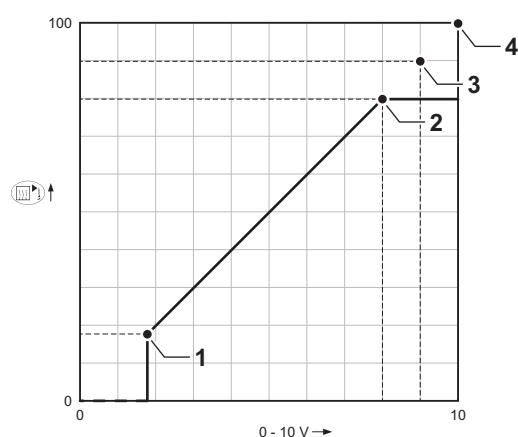
AD-3001310-01

Fig.48 Analogue input



AD-3001304-02

Fig.49 Temperature regulation graph



AD-0001156-03

■ Frost protection combined with outdoor sensor

The central heating system can also be protected against frost in combination with an outdoor sensor. The radiator valve in the frost-sensitive room must be open.

1. Connect the outdoor sensor to the terminals **Tout** of the connector.

The frost protection works as follows with an outdoor sensor:

- At outside temperatures below -10°C : the circulation pump switches on.
- At outside temperatures above -10°C : the circulation pump continues to run and then switches off.

■ Connecting the modulating regulator

OT OpenTherm thermostat

The boiler is fitted with an **OpenTherm** connection as standard. As a result, modulating **OpenTherm** thermostats (room-temperature, weather-compensated and cascade thermostats) can be connected without further modifications. The boiler is also suitable for OpenTherm Smart Power.

1. In the case of a room thermostat: install the thermostat in a reference room.
2. Connect the two-wire cable to the **On/Off OT** terminals of the connector. It does not matter which wire is connected to which cable clamp.

■ Analogue input

This input has two modes: control based on temperature or based on heat output. If this input is used, the OT communication from the boiler is ignored.

1. Connect the input signal to terminals **0-10** of the connector.

Change the mode of the analogue input using the parameter **EP014**.

– 0-10 Volt analogue temperature regulation ($^{\circ}\text{C}$)

The appliance can be controlled by a 0-10 Volt input signal. When configured to temperature-based, the 0-10 V signal controls the boiler supply temperature.

- 1 Boiler on
- 2 Parameter **CP010**
- 3 Maximum flow temperature
- 4 Calculated value

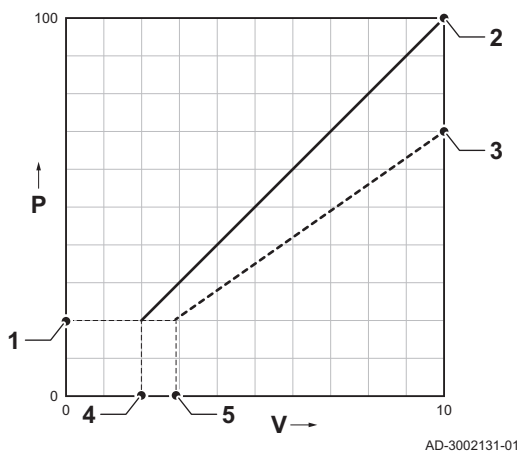
Tab.59 Temperature regulation

Input signal (V)	Temperature $^{\circ}\text{C}$	Description
0-1.5	0-15	Boiler off
1.5-1.8	15-18	Hysteresis
1.8-10	18-100	Desired temperature

– 0-10 Volt analogue output-based control

The appliance can be controlled by a 0-10 Volt input signal. When configured to output-based, the 0-10 Volt signal controls the boiler output.

Fig.50 Output regulation graph

**Important**

The start voltage depends on the relation between the fan speed range and the actual set maximum fan speed. An estimate of the start voltage can be calculated.

V Voltage

P Boiler output

1 Minimum output

2 Maximum output

3 Reduced maximum output (example)

4 Start voltage

5 Start voltage for reduced output (example)

The formula for calculating the start voltage is:

$$V_{start} = ((10.3 * GP008) - (0.5 * GP007_{factory})) / GP007_{current}$$

Vstart Start voltage.

GP008 The fan speed set with parameter GP008.

GP007factory The fan speed set from factory with parameter GP007.

GP007current The fan speed currently set with parameter GP007.

■ Blocking input

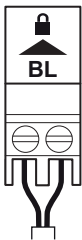
**Caution**

Only suitable for potential-free contacts (dry contact).

**Important**

First remove the bridge if this input is used.

Fig.51 Blocking input



AD-3000972-02

The boiler has a blocking input. A potential-free contact can be connected to the **BL** terminals of the connector. If the contact is opened, the boiler will be blocked.

Change the function of the input using parameter **AP001**. This parameter has the following 3 configuration options:

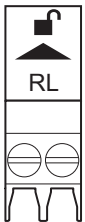
- Complete blocking: no frost protection with the outdoor sensor and no boiler frost protection (pump does not start and burner does not start)
- Partial blocking: boiler frost protection (pump starts when the temperature of the heat exchanger is < 6°C and the burner starts when the temperature of the heat exchanger is < 3°C)
- Lock out: no frost protection with outdoor sensor and partial boiler frost protection (pump starts when the temperature of the heat exchanger is < 6°C, the burner does not start when the temperature of the heat exchanger is < 3°C).

■ Release input

**Caution**

Only suitable for potential-free contacts (dry contact).

Fig.52 Release input



AD-3001303-02

The boiler has a release input. A potential-free contact can be connected to the **RL** terminals of the connector.

- If the contact is closed during a heat demand, the boiler will be blocked immediately.
- If the contact is closed when there is no heat demand, the contact does nothing until the main PCB receives a 'start burner'- command. After that command, a waiting time starts. If the contact is closed during this waiting time, the burner does not start and the boiler will be blocked. Set the waiting time with parameter **AP008**. A waiting time of 0 will disable the contact.

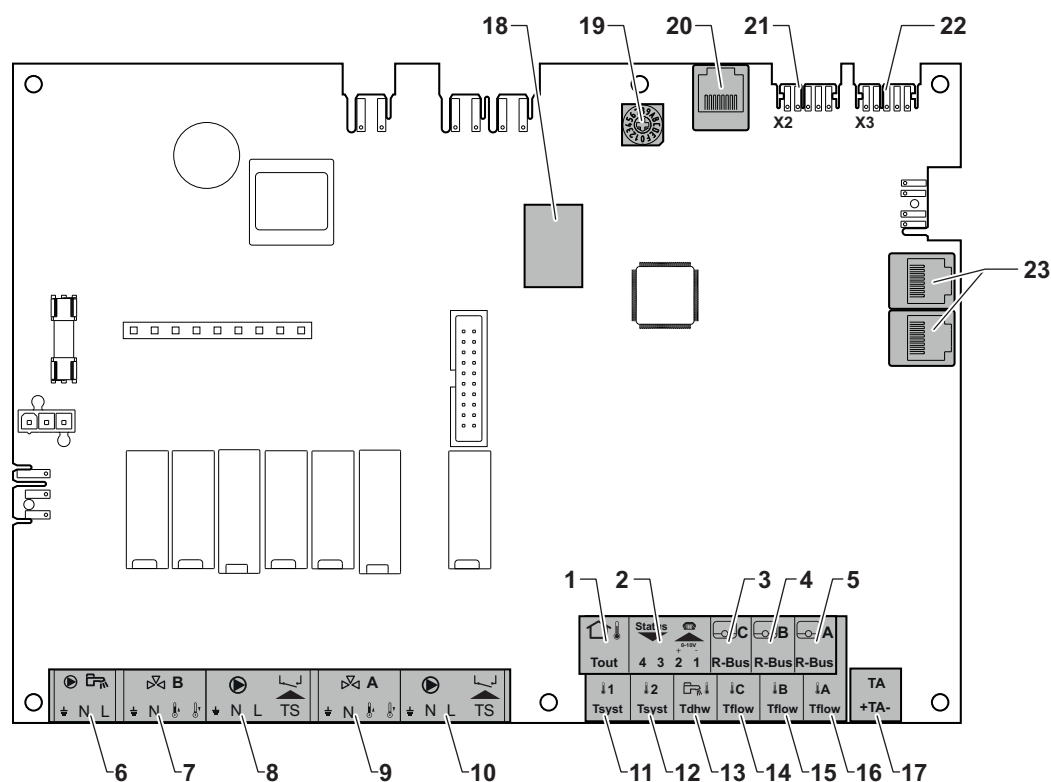
5.6.5 The SCB-10 expansion PCB

The SCB-10 has the following features:

- Control of 2 (mixing) zones
- Control of a third (mixing) zone via an optional PCB
- Control of one domestic hot water (DHW) zone
- Cascade layout

Expansion PCBs are automatically recognised by the control unit of the boiler. If expansion PCBs are removed, the boiler will show an error code. To resolve this error, an auto-detect must be carried out after removal.

Fig.53 SCB-10 PCB



AD-3001210-01

- | | |
|---|---|
| 1 Outdoor temperature sensor | 13 Domestic hot water sensor |
| 2 Programmable and 0-10 V input | 14 Flow sensor - circuit C |
| 3 Room temperature sensor - circuit C | 15 Flow sensor - circuit B |
| 4 Room temperature sensor - circuit B | 16 Flow sensor - circuit A |
| 5 Room temperature sensor - circuit A | 17 Impressed current anode |
| 6 Domestic hot water tank pump | 18 Modbus connectors |
| 7 Mixing valve - circuit B | 19 Coding wheel, selects the generator number in the cascade in Mod-Bus |
| 8 Pump and safety thermostat - circuit B | 20 S-BUS connector |
| 9 Mixing valve - circuit A | 21 End connector for L-BUS connection |
| 10 Pump and safety thermostat - circuit A | 22 L-BUS connector |
| 11 System sensor 1 | 23 S-BUS connector |
| 12 System sensor 2 | |

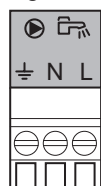
■ Connecting a domestic hot water (DHW) pump

Connecting a domestic hot water (DHW) pump. The maximum power consumption is 300 VA.

Connect the pump as follows:

- ⏏ Earth
- N Neutral
- L Phase

Fig.54 DHW pump connector

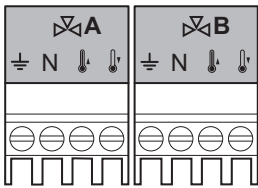


AD-4000123-01

■ Connecting a mixing valve

Connecting a mixing valve (230 VAC) per zone (group).

Fig.55 Mixing valve connectors

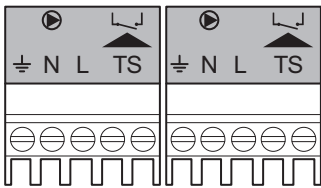


AD-4000002-01

Connect the mixing-way valve as follows:

- Earth
- N Neutral
- Open
- Close

Fig.56 Pump with protection thermostat connector



AD-4000001-02

■ Connecting the pump with a protection thermostat

Connecting a pump with a protection thermostat, e.g. for underfloor heating. The maximum pump power consumption is 300 VA.

Connect the pump and the protection thermostat as follows:

- Earth
- N Neutral
- L Phase
- TS protection thermostat (remove bridge)

Fig.57 Tout connector



AD-4000006-03

■ Connecting an outdoor temperature sensor

An outdoor temperature sensor can be connected to the **Tout** connector. Always connect the sensor to the PCB that controls the zones. For example: when the zones are controlled by an SCB-10, connect the sensor to that PCB.

1. Connect the two-wire cable to the **Tout** connector.

Use below mentioned sensors, or sensors with identical characteristics. Set parameter **AP056** to the installed outdoor temperature sensor type.

- AF60 = NTC 470 Ω /25°C
- QAC34 = NTC 1000 Ω /25°C

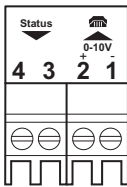
When an on/off thermostat is also connected, the boiler will control the temperature with the set point from the internal heating curve. **OpenTherm** controllers can also use the outdoor temperature sensor. In that case, the desired heating curve must be set on the controller.

■ Connecting the input/output connector

The input/output connector can be used to connect a remote control, a 0–10 V analogue input or as a status output.

The 0–10 V signal controls the boiler flow temperature in a linear way. This control modulates on the basis of flow temperature. The output varies between the minimum and maximum value on the basis of the flow temperature setpoint calculated by the controller.

Fig.58 Input/output connector

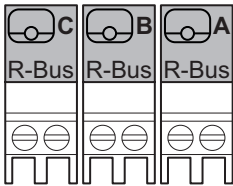


AD-4000004-02

Connect the input/output connector as follows:

- 1 + 2 0–10 V / status input
- 3 + 4 status output

Fig.59 R-bus connectors



AD-4000003-01

■ Connecting room thermostats per zone

The SCB-10 is fitted with three **R-Bus** connectors. They can be used to connect room thermostats per zone. The **R-bus** connectors are related to the other zone-specific connectors on the SCB-10. The **R-Bus** connector supports the following types:

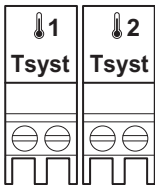
- **R-Bus** thermostat (for example, the **eTwist**)
- **OpenTherm** thermostat
- **OpenTherm Smart Power** thermostat
- **On/off** thermostat

The software recognizes which type of thermostat is connected.

■ Connecting system sensors

Connecting system sensors (NTC 10k Ohm/25°C) for circuits (zones).

Fig.60 System sensor connectors

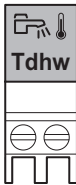


AD-4000008-02

■ Connecting the domestic hot water (DHW) sensor

Connecting the domestic hot water (DHW) sensor (NTC 10k Ohm/25°C).

Fig.61 DHW sensor

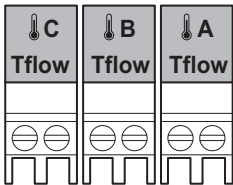


AD-4000009-02

■ Connecting contact temperature sensors

Connecting contact temperature sensors (NTC 10k Ohm/25°C) for system flow, DHW temperatures or zones (groups).

Fig.62 Contact temperature sensor connectors



AD-4000007-02

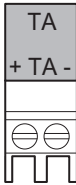
■ Connecting the calorifier tank anode

Connecting a TAS anode (Titan Active System) for a calorifier tank.

Connect the anode as follows:

- + Connection on the calorifier tank
- Connection on the anode

Fig.63 Anode connector



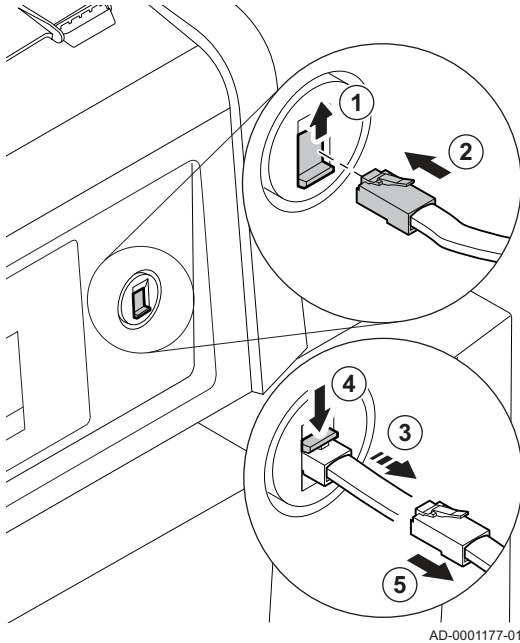
AD-4000005-02

**Caution**

If the calorifier tank does not have a TAS anode, connect the simulation anode (= accessory)

5.6.6 Connecting a PC/laptop

Fig.64 Connecting an interface connector



There is a **Service** connector next to the control panel. A **Recom** interface can be used to connect a PC, laptop or a Smart Service Tool here. Using the **Recom** PC/laptop service software, you can enter, change and read out various boiler settings.

Connecting an interface connector:

1. Move the Service connector slide upwards.
2. Push the interface connector into place. It should snap shut with a click.
⇒ Disconnect the interface connector again:
3. Maintain slight tension on the interface connector
4. Push the slide downwards. The interface connector will now be released.
5. Pull the interface connector from the connector.

6 Before commissioning

6.1 Checklist before commissioning

6.1.1 Filling the system

**Important**

In order to be able to read off the water pressure from the control panel, the boiler must be switched on. If the water pressure is too low, the boiler or the boiler pump will not start.

1. Fill the central heating system with clean tap water.

**Important**

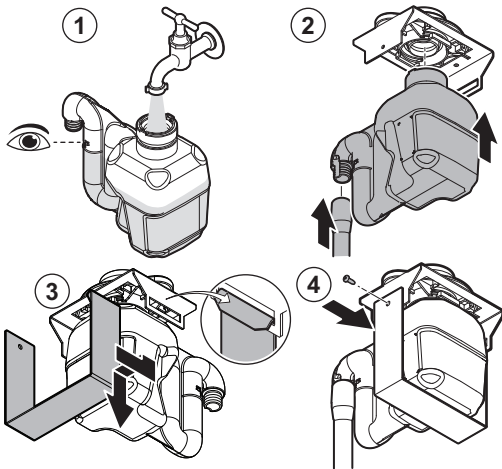
The recommended water pressure is between 1.5 and 2 bar.

2. Check the water-side connections for tightness.

6.1.2 Filling the condensate trap

The condensate trap and flexible plastic drain hose are supplied unassembled. Fit the trap behind the cover underneath the boiler.

Fig.65 Fill the condensate trap



AD-4100153-02

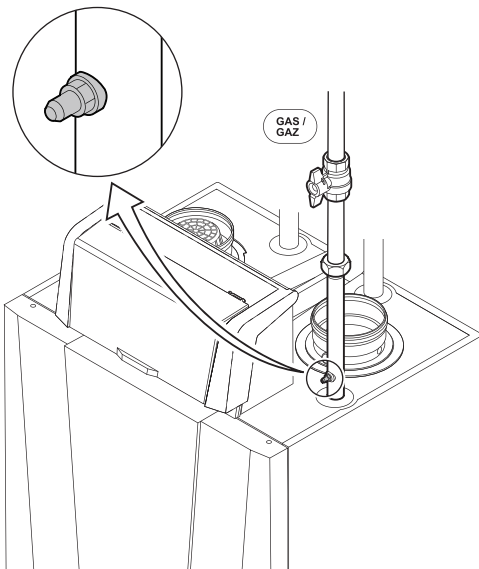
**Danger**

The trap must always be sufficiently filled with water. This prevents flue gases from entering the room.

1. Fill the trap with water up to the mark.
2. Push the trap firmly into the designated opening and connect the trap hose.
3. Hook the bracket onto the base.
4. Fasten the screw on the side of the bracket.

6.1.3 Gas circuit

Fig.66 Gas measuring point



AD-0001178-01

**Warning**

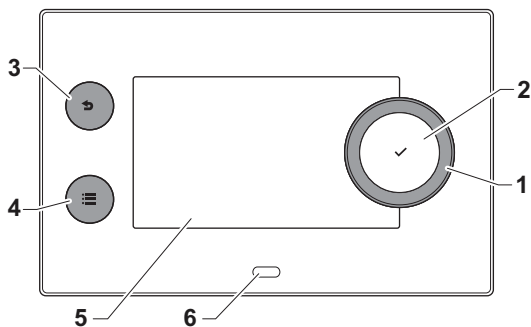
Ensure that the boiler is disconnected from the power supply.

1. Open the main gas tap.
2. Open the boiler gas tap.
3. Check the gas inlet pressure at the measuring point on the gas pipe.
4. Vent the gas supply pipe by unscrewing the measuring point.
5. Tighten the measuring point again when the pipe has been fully vented.
6. Check all connections for gas tightness. The maximum allowable test pressure is 60 mbar.

6.2 Control panel description

6.2.1 Control panel components

Fig.67 Control panel components





AD-3000932-02

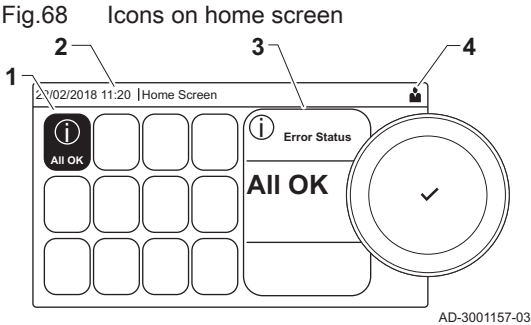
- 1 Rotary knob to select a tile, menu or setting
- 2 Confirm button to confirm the selection
- 3 Back button :
 - **Short button press:** Return to the previous level or previous menu
 - **Long button press:** Return to home screen
- 4 Menu button to go to the main menu
- 5 Display
- 6 Status LED

6.2.2 Description of the home screen

This screen is shown automatically after start-up of the appliance. The control panel automatically enters standby mode (black screen) if the buttons are not used for 5 minutes. Press one of the buttons on the control panel to activate the screen again.


You can navigate from any menu to the home screen by pressing the back button  for several seconds.

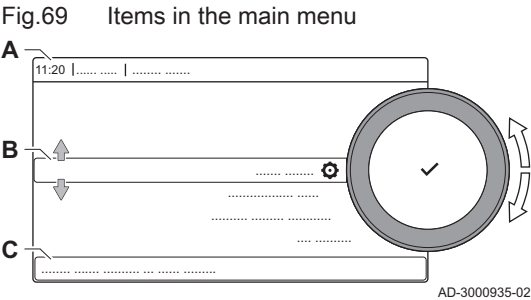
The tiles on the home screen provide quick access to the corresponding menus. Use the rotary knob to navigate to the desired item and press the button  to confirm the selection.




- 1 Tiles: the selected tile is highlighted
- 2 Date and time | Name of the screen (actual position in the menu)
- 3 Information about the selected tile
- 4 Icons indicating navigation level, operating mode, errors and other information.




6.2.3 Description of the main menu


You can navigate from any menu directly to the main menu by pressing the menu button . The number of accessible menus depends on the access level (user or installer).










- A Date and time | Name of the screen (actual position in the menu)
- B Available menus
- C Brief explanation of the selected menu

Tab.60 Available menus for the user 



Description	Icon
Enable installer access	
System Settings	
Version Information	

Tab.61 Available menus for the installer 

Description	Icon
Disable installer access	
Installation Setup	
Commissioning Menu	
Advanced Service Menu	
Error History	
System Settings	
Version Information	

6.2.4 Description of the icons in the display

Tab.62 Icons

Icon	Description
	User menu: user-level parameters can be configured.
	Installer menu: installer-level parameter can be configured.

Icon	Description
	Information menu: read out various current values.
	System settings: system parameters can be configured.
	Error indicator.
	Gas boiler indicator.
	Domestic hot water tank is connected.
	The outdoor temperature sensor is connected.
	Boiler number in cascade system.
	The solar calorifier is on and its heat level is displayed.
	Burner output level (1 to 5 bars, with each bar representing 20% output).
	The pump is running.
	Three-way valve indicator.
	Display of the system water pressure.
	Chimney sweep mode is enabled (forced full load or low load for O ₂ /CO ₂ measurement).
	Energy-saving mode is enabled.
	DHW boost is enabled.
	Timer program is enabled: The room temperature is controlled by a timer program.
	Manual mode is enabled: The room temperature is set to a fixed setting.
	Temporary overwrite of the timer program is enabled: The room temperature is changed temporarily.
	The holiday program (including frost protection) is active: The room temperature is reduced during your holiday to save energy.
	Frost protection is enabled: Protect the boiler and installation from freezing in winter.
	Service notification: service needed. Installer contact details are displayed or can be filled in.

Tab.63 Icons - On/off

Icon	Description	Icon	Description
	CH operation is enabled.		CH operation is disabled.
	DHW operation is enabled.		DHW operation is disabled.
	The burner is on.		The burner is off.
	Bluetooth enabled and connected (icon is non-transparent).		Bluetooth enabled and disconnected (icon is transparent).
	Heating enabled.		
	Cooling enabled.		
	Heating/cooling enabled.		Heating/cooling disabled.

Tab.64 Icons - Zones

Icon	Description
	All zones (groups) icon.
	Living room icon.
	Kitchen icon.
	Bedroom icon.
	Study icon.
	Cellar icon.

7 Commissioning

7.1 Commissioning procedure



Warning

- Initial commissioning must be done by a qualified installer.
- If adapting to another type of gas, e.g. propane, the boiler must be adjusted before it is switched it on.

1. Open the main gas tap.
2. Open the boiler gas tap.
3. Switch the power on with the boiler's on/off switch.
 - ⇒ The start-up program will start and cannot be interrupted. During the start-up cycle, all segments of the display are shown briefly.
4. Set the components (thermostats, control) so that heat is demanded.



Important

In the event of an error during the start-up, a message with the corresponding code is displayed. The meaning of the error codes can be found in the error table.

7.2 Gas settings

7.2.1 Factory setting

The factory setting of the boiler is for operation with the natural gas group G20 (H gas).

Tab.65 Factory settings G20 (H gas)

Code	Display text	Description	Adjustment range	160	200	250	300
DP003	Abs max fan DHW	Maximum fan speed on Domestic Hot Water	1000 - 8500 Rpm	6700	4650	5700	5800
GP007	Fan RPM Max CH	Maximum fan speed during Central Heating mode	1000 - 8500 Rpm	6700	4650	5700	5800
GP008	Fan RPM Min	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 - 8500 Rpm	1900	1450	1550	1650
GP009	Fan RPM Start	Fan speed at appliance start	900 - 5000 Rpm	2200	2200	2200	2200

7.2.2 Adjusting to a different gas type



Warning

Only a qualified installer may carry out the following operations.

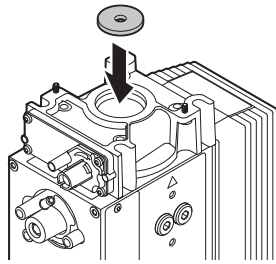


Important

If the boiler is adapted to another gas type, this must be stated on the sticker supplied. This sticker must be affixed next to the data plate.

Before operating with a different type of gas, carry out the following steps.

Fig.70 Installing gas conversion restrictor



AD-3000835-02

■ Adjusting to a different gastype

1. Install the correct gas conversion restrictor in the gas control valve if the boiler is used with G30/G31 (butane/propane):
The required diameters for the restrictors are listed in the tables below. A separate assembly instruction is available for this.



Important

Contact us for more information.

Tab.66 Gas conversion restrictor for G30/G31 (butane/propane)

Gas conversion restrictor for G30/G31 (butane/propane)	Ø (mm)
Gas 220 Ace 160	9.8
Gas 220 Ace 200	12.0
Gas 220 Ace 250	12.0
Gas 220 Ace 300	14.0

Tab.67 Gas conversion restrictor for BREEAM with G30/G31 (butane/propane)

Gas conversion restrictor for BREEAM with G30/G31 (butane/propane)	Ø (mm)
Gas 220 Ace 160	9.8
Gas 220 Ace 200	-
Gas 220 Ace 250	-
Gas 220 Ace 300	14.0

■ Adjusting to a different gas type

1. Adjust the fan speed (if necessary) for the gas type used according to the table below.
If a boiler is not suitable for a certain gas type, it is indicated with "-" in the table.

Tab.68 Adjustment for BREEAM with gas type G20 (H gas)

Code	Display text	Description	Adjustment range	160	200	250	300
DP003	Fan RPM Max CH	Maximum fan speed on Domestic Hot Water	1000 - 8500 Rpm	7000	4700	6000	6100
GP007	Fan RPM Max CH	Maximum fan speed during Central Heating mode	1000 - 8500 Rpm	7000	4700	6000	6100
GP008	Fan RPM Min	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 - 8500 Rpm	1900	1400	1550	1600
GP009	Fan RPM Start	Fan speed at appliance start	900 - 5000 Rpm	2200	2200	2200	2200

Tab.69 Adjustment for gas type G30/G31 (butane/propane)

Code	Display text	Description	Adjustment range	160	200	250	300
DP003	Abs max fan DHW	Maximum fan speed on Domestic Hot Water	1000 - 8500 Rpm	6400	4400	5400	5550
GP007	Fan RPM Max CH	Maximum fan speed during Central Heating mode	1000 - 8500 Rpm	6400	4400	5400	5550
GP008	Fan RPM Min	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 - 8500 Rpm	2150	1400	1550	1700
GP009	Fan RPM Start	Fan speed at appliance start	900 - 5000 Rpm	3000	2200	2200	2200

Tab.70 Adjustment for BREEAM with gas type G30/G31 (butane/propane)

Code	Display text	Description	Adjustment range	160	200	250	300
DP003	Abs max fan DHW	Maximum fan speed on Domestic Hot Water	1000 - 8500 Rpm	6850	-	-	5950
GP007	Fan RPM Max CH	Maximum fan speed during Central Heating mode	1000 - 8500 Rpm	6850	-	-	5950
GP008	Fan RPM Min	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 - 8500 Rpm	2150	-	-	1700
GP009	Fan RPM Start	Fan speed at appliance start	900 - 5000 Rpm	3000	-	-	2200

2. Check the setting of the gas/air ratio.

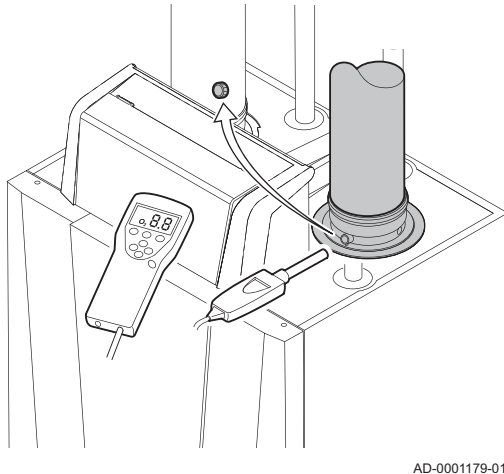


Important

Make sure to apply the O₂/CO₂ values specified for BREEAM.

7.2.3 Checking and setting the gas/air ratio

Fig.71 Flue gas measuring point



The flue gas analyser must have a minimum accuracy of $\pm 0.25\%$ O₂/CO₂.

1. Unscrew the cap from the flue gas measuring point.
2. Insert the probe for the flue gas analyser into the measurement opening.



Warning

Fully seal the opening around the sensor during measurement.

3. Measure the percentage of O₂/CO₂ in the flue gases. Take measurements at full load and at part load.



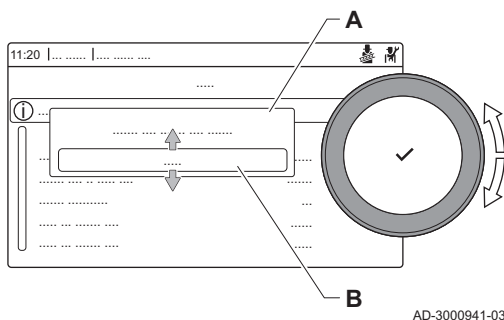
Important

- This appliance is suitable for category I_{2H} containing up to 20% Hydrogen gas (H₂). Due to variations in the H₂ percentage, the O₂/CO₂ percentage can vary over time. (For example: a percentage of 20% H₂ in the gas can lead to an increase of 1,5% of O₂ in the flue gasses)
- A significant adjustment of the gas valve may be needed. Adjustment can be done using the standard O₂/CO₂ values of the gas used.

■ Performing the full load test

1. Select the tile [👤].
⇒ The **Change load test mode** menu appears.
2. Select the test **Medium power**.
A Change load test mode
B Medium power
⇒ The full load test starts. The selected load test mode is shown in the menu and the icon 👤 appears in the top right of the screen.
3. Check the load test settings and adjust if necessary.
⇒ Only the parameters shown in bold can be changed.

Fig.72 Full load test



■ Checking/setting values for O₂/CO₂ at full load

1. Measure the percentage of O₂/CO₂ in the flue gases.
2. Compare the measured value with the checking values in the table.

Tab.71 Checking/setting values for O₂/CO₂ at full load for G20 (H gas)

Values at full load for G20 (H gas)	O ₂ % ⁽¹⁾	CO ₂ % ⁽²⁾
Gas 220 Ace 160	4.8 - 5.2 ⁽¹⁾	8.8 ⁽²⁾ - 9.0
Gas 220 Ace 200	4.8 - 5.2 ⁽¹⁾	8.8 ⁽²⁾ - 9.0
Gas 220 Ace 250	4.8 - 5.2 ⁽¹⁾	8.8 ⁽²⁾ - 9.0
Gas 220 Ace 300	4.8 - 5.2 ⁽¹⁾	8.8 ⁽²⁾ - 9.0
(1) Nominal value (2) Nominal value		

Tab.72 Checking/setting values for O₂/CO₂ at full load for BREEAM with G20 (H gas)

Values at full load for G20 (H gas)	O ₂ % ⁽¹⁾⁽²⁾	CO ₂ % ⁽³⁾⁽⁴⁾
Gas 220 Ace 160	6.1 - 6.5 ⁽¹⁾	8.1 ⁽³⁾ - 8.3
Gas 220 Ace 200	4.8 - 5.2 ⁽¹⁾	8.8 ⁽³⁾ - 9.0
Gas 220 Ace 250	5.2 - 5.6 ⁽¹⁾	8.6 ⁽³⁾ - 8.8
Gas 220 Ace 300	5.7 - 6.1 ⁽¹⁾	8.3 ⁽³⁾ - 8.5
(1) Nominal value (2) These values are only applicable when the fan speeds have been set for BREEAM. (3) Nominal value (4) These values are only applicable when the fan speeds have been set for BREEAM.		

Tab.73 Checking/setting values for O₂/CO₂ at full load for G30/G31 (butane/propane)

Values at full load for G30/G31 (butane/propane)	O ₂ % ⁽¹⁾	CO ₂ % ⁽²⁾
Gas 220 Ace 160	5.1 - 5.4 ⁽¹⁾	10.2 ⁽²⁾ - 10.4
Gas 220 Ace 200	5.2 - 5.5 ⁽¹⁾	10.1 ⁽²⁾ - 10.3
Gas 220 Ace 250	5.2 - 5.5 ⁽¹⁾	10.1 ⁽²⁾ - 10.3
Gas 220 Ace 300	5.2 - 5.5 ⁽¹⁾	10.1 ⁽²⁾ - 10.3
(1) Nominal value (2) Nominal value		

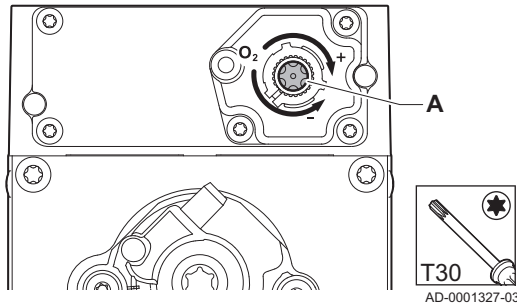
Tab.74 Checking/setting values for O₂/CO₂ at full load for BREEAM with G30/G31 (butane/propane)

Values at full load for G30/G31 (butane/propane)	O ₂ % ⁽¹⁾⁽²⁾	CO ₂ % ⁽³⁾⁽⁴⁾
Gas 220 Ace 160	6.6 - 6.9 ⁽¹⁾	9.2 ⁽³⁾ - 9.4
Gas 220 Ace 200	-- ⁽¹⁾	-- ⁽³⁾ --
Gas 220 Ace 250	-- ⁽¹⁾	-- ⁽³⁾ --
Gas 220 Ace 300	6.8 - 7.1 ⁽¹⁾	9.1 ⁽³⁾ - 9.3
(1) Nominal value (2) These values are only applicable when the fan speeds have been set for BREEAM. (3) Nominal value (4) These values are only applicable when the fan speeds have been set for BREEAM.		

**Caution**

- The O₂ values at full load must be lower than the O₂ values at low load.
- The CO₂ values at full load must be higher than the CO₂ values at low load.

Fig.73 Location of adjusting screw A



3. If the measured value is outside of the values given in the table, correct the gas/air ratio.
4. Use adjusting screw **A** to set the percentage of O_2/CO_2 to the nominal value, for the gas type being used. This must always be between the highest and lowest setting limit.

**Important**

The gas control valve differs per boiler type. Refer to the illustration for the location of adjusting screw **A** for full load.

5. Check the flame through the inspection glass. The flame must not blow off.
6. Measure the CO value in the flue gasses. If the CO level is above 400 ppm perform the following actions:

**Important**

The CO-concentration in the flue gasses must always comply with the installation regulations of the country in which the boiler is installed.

- 6.1. Check if the flue gas discharge system is installed correctly.
- 6.2. Check if the used gas type matches with the boiler settings.
- 6.3. Check the burner for damage and clean the burner.
- 6.4. Recheck the gas/air ratio setting.
- 6.5. Contact your supplier if the CO level is still above 400 ppm.

**Danger**

If the CO level is above 1000 ppm, switch off the boiler and contact your supplier.

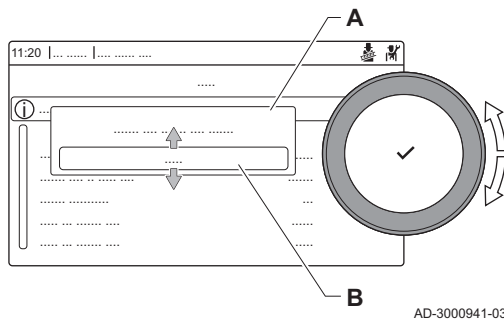
■ Performing the low load test

1. If the full load test is still running, press the ✓ button to change the load test mode.
2. If the full load test was finished, select the tile [👤] to restart the chimney sweep menu.

A Change load test mode**B Low power**

3. Select the **Low power** test in the menu **Change load test mode**.
⇒ The low load test starts. The selected load test mode is shown in the menu and the icon 👤 appears in the top right of the screen.
4. Check the load test settings and adjust if necessary.
⇒ Only the parameters shown in bold can be changed.
5. End the low load test by pressing the ⏏ button.
⇒ The message **Running load test(s) stopped!** is displayed.

Fig.74 Low load test



■ Checking/setting values for O_2/CO_2 at low load

1. Measure the percentage of O_2/CO_2 in the flue gases.
2. Compare the measured value with the checking values in the table.

Tab.75 Checking/setting values for O_2/CO_2 at low load for G20 (H gas)

Values at low load for G20 (H gas)	O_2 % ⁽¹⁾	CO_2 % ⁽²⁾
Gas 220 Ace 160	5.2 ⁽¹⁾ - 5.6	8.6 - 8.8 ⁽²⁾
Gas 220 Ace 200	5.2 ⁽¹⁾ - 5.6	8.6 - 8.8 ⁽²⁾
Gas 220 Ace 250	5.2 ⁽¹⁾ - 5.6	8.6 - 8.8 ⁽²⁾
Gas 220 Ace 300	5.2 ⁽¹⁾ - 5.6	8.6 - 8.8 ⁽²⁾
(1) Nominal value		
(2) Nominal value		

Tab.76 Checking/setting values for O₂/CO₂ at low load for BREEAM with G20 (H gas)

Values at low load for G20 (H gas)	O ₂ % ⁽¹⁾⁽²⁾	CO ₂ % ⁽³⁾⁽⁴⁾
Gas 220 Ace 160	6.5 ⁽¹⁾ - 6.9	7.9 - 8.1 ⁽³⁾
Gas 220 Ace 200	5.2 ⁽¹⁾ - 5.6	8.6 - 8.8 ⁽³⁾
Gas 220 Ace 250	5.6 ⁽¹⁾ - 6.0	8.4 - 8.6 ⁽³⁾
Gas 220 Ace 300	6.1 ⁽¹⁾ - 6.5	8.1 - 8.3 ⁽³⁾
(1) Nominal value (2) These values are only applicable when the fan speeds have been set for BREEAM. (3) Nominal value (4) These values are only applicable when the fan speeds have been set for BREEAM.		

Tab.77 Checking/setting values for O₂/CO₂ at low load for G30/G31 (butane/propane)

Values at low load for G30/31 (butane/propane)	O ₂ % ⁽¹⁾	CO ₂ % ⁽²⁾
Gas 220 Ace 160	5.4 ⁽¹⁾ - 5.7	10.0 - 10.2 ⁽²⁾
Gas 220 Ace 200	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽²⁾
Gas 220 Ace 250	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽²⁾
Gas 220 Ace 300	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽²⁾
(1) Nominal value (2) Nominal value		

Tab.78 Checking/setting values for O₂/CO₂ at low load for BREEAM with G30/G31 (butane/propane)

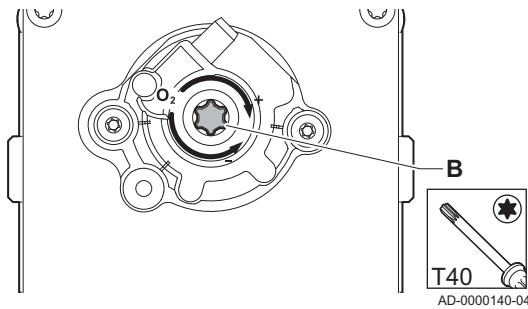
Values at low load for G30/31 (butane/propane)	O ₂ % ⁽¹⁾⁽²⁾	CO ₂ % ⁽³⁾⁽⁴⁾
Gas 220 Ace 160	6.9 ⁽¹⁾ - 7.2	9.0 - 9.2 ⁽³⁾
Gas 220 Ace 200	_(1) _ _	_ _ _ ⁽³⁾
Gas 220 Ace 250	_(1) _ _	_ _ _ ⁽³⁾
Gas 220 Ace 300	7.1 ⁽¹⁾ - 7.4	8.9 - 9.1 ⁽³⁾
(1) Nominal value (2) These values are only applicable when the fan speeds have been set for BREEAM. (3) Nominal value (4) These values are only applicable when the fan speeds have been set for BREEAM.		

**Caution**

- The O₂ values at low load must be higher than the O₂ values at full load.
- The CO₂ values at low load must be lower than the CO₂ values at full load.

3. If the measured value is outside of the values given in the table, correct the gas/air ratio.

Fig.75 Location of adjusting screw B



- Use adjusting screw **B** to set the percentage of O₂/CO₂ to the nominal value, for the gas type being used. This must always be between the highest and lowest setting limit.

i Important

The gas control valve differs per boiler type. Refer to the illustration for the location of adjusting screw **B** for low load.

- Check the flame through the inspection glass. The flame must not blow off.
- Repeat the full load test and the low load test as often as necessary until the correct values are obtained.
- Measure the CO value in the flue gasses. If the CO level is above 400 ppm perform the following actions:

i Important

The CO-concentration in the flue gasses must always comply with the installation regulations of the country in which the boiler is installed.

- Check if the flue gas discharge system is installed correctly.
- Check if the used gas type matches with the boiler settings.
- Check the burner for damage and clean the burner.
- Recheck the gas/air ratio setting.
- Contact your supplier if the CO level is still above 400 ppm.



Danger

If the CO level is above 1000 ppm, switch off the boiler and contact your supplier.

7.3 Final instructions

- Remove the measuring equipment.
- Screw the cap on to the flue gas measuring point.
- Seal the gas valve unit.
- Put the front casing back.
- Heat up the central heating system to approximately 70°C.
- Switch the boiler off.
- Vent the central heating system after approx. 10 minutes.
- Turn on the boiler.
- Check the water pressure. If necessary, top up the central heating system.
- Fill in the following data on the sticker included, and attach it next to the data plate on the appliance.
 - The gas type, if adapted to another gas;
 - The gas supply pressure;
 - The flue type, if set to overpressure application;
 - The parameters modified for the changes mentioned above;
 - Any fan speed parameters modified for other purposes.
- Optimise the settings as required for the system and user preferences.



See

For more information; Settings, page 59 and User instructions, page 81.

- Save the commissioning settings on the control panel, so they can be restored after a reset.
- Instruct the user in the operation of the system, boiler and controller.
- Inform the user of the maintenance to be performed.
- Hand over all manuals to the user.

Fig.76 Example filled-in sticker

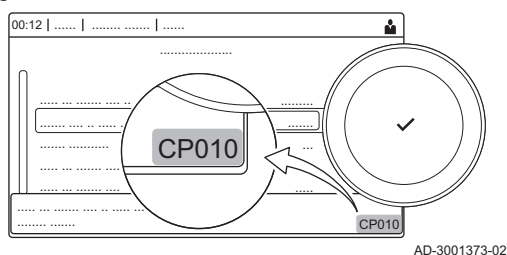
Adjusted for / Réglée pour / Ingesteld op / Eingestellt auf / Regolato per / Ajustado para / Ρυθμιζόμενο για / Nastawiony na / настроен для / Reglat pentru / настроен за / ayarlanmıştır / Nastavljen za / beállítva/ Nastaveno pro / Asetettu kaasulle / Justert for/ indstillet til/ ل طبعض :	Parameters / Paramètres / Parameter / Parametri / Parámetros / Παράμετροι / Parametry / Параметри / Parametrii / Параметри / Parametreler / Paraméterek / Parametrit / Parametere / Parametre / شامل عمل :
<input checked="" type="checkbox"/> Gas <u>G20</u> <u>20</u> mbar	<u>DP003 - 3300</u> <u>GP007 - 3300</u> <u>GP008 - 2150</u> <u>GP009 -</u>
<input checked="" type="checkbox"/> C _{(10)3(X)} <input type="checkbox"/> C _{(12)3(X)} <input type="checkbox"/>	

AD-3001124-01

8 Settings

8.1 Introduction to parameter codes

Fig.77 Code on a HMI T-control



The controls platform makes use of an advanced system to categorise parameters, measurements and counters. Knowing the logic behind these codes, makes it easier to identify them. The code consists of two letters and three numbers.

Fig.78 First letter

CP010

AD-3001375-01

The first letter is the category the code relates to.

- A** Appliance: Appliance
- C** Circuit: Zone
- D** Domestic hot water: Domestic hot water
- E** External: External options
- G** Gas fired: Gas-fired heat engine
- P** Producer: Central heating

Category D codes are appliance controlled only. When the domestic hot water is controlled by an SCB, it is handled like a circuit, with C-category codes.

Fig.79 Second letter

CP010

AD-3001376-01

The second letter is the type.

- P** Parameter: Parameters
- C** Counter: Counters
- M** Measurement: Signals

Fig.80 Number

CP010

AD-3001377-01

The number is always three digits. In certain cases, the last of the three digits relates to a zone.

8.2 Searching the parameters, counters and signals

You can search and change data points (Parameters, counters, signals) of the appliance, connected control boards and sensors.

▶▶ ≡ > **Installation Setup** > **Search datapoints**

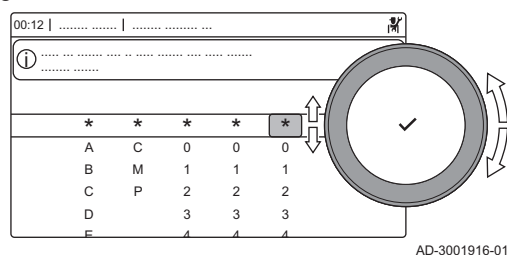


Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.

1. Press the ≡ button.
2. Select **Installation Setup**.
3. Select **Search datapoints**.

Fig.81 Search

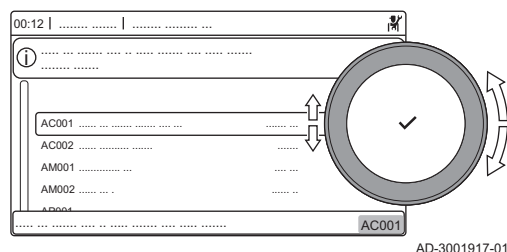


4. Select the search criteria (code):
 - 4.1. Select the first letter (datapoint category).
 - 4.2. Select the second letter (datapoint type).
 - 4.3. Select the first number.
 - 4.4. Select the second number.
 - 4.5. Select the third number.



The * symbol can be used to indicate any character within the search field.

Fig.82 List of datapoints



⇒ The list of datapoints appears in the display. Only the first 30 results are shown when searching.

5. Select the desired datapoint.

8.3 List of parameters

8.3.1 CU-GH06c control unit parameters

All tables show the factory setting for the parameters.



Important

The tables also list parameters that are only applicable if the boiler is combined with other equipment.

Tab.79 Navigation for basic installer level

Level	Menu path
Basic installer	≡ > Installation Setup > FSB-WHB-HE-150-300 > Submenu ⁽¹⁾ > Parameters, counters, signals > Parameters > General
(1) See the column "Submenu" in the following table for the correct navigation. The parameters are grouped in specific functionalities.	

Tab.80 Factory settings at basic installer level

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
AP016	CH function on	Enable central heating heat demand processing	0 = Off 1 = On	Commercial boiler	1	1	1	1
AP017	DHW function on	Enable domestic hot water heat demand processing	0 = Off 1 = On	Commercial boiler	1	1	1	1
AP081	Device short name	Shortname of the device		System Functionality	CU6	CU6	CU6	CU6
CP080 CP081 CP082 CP083 CP084 CP085	User T.Room Activity	Room setpoint temperature of the user zone activity	5 - 30 °C	CH	16 20 6 21 22 20	16 20 6 21 22 20	16 20 6 21 22 20	16 20 6 21 22 20
CP200	Manu ZoneRoomTempSet	Manually setting the room temperature setpoint of the zone	5 - 30 °C	CH	20	20	20	20
CP320	OperatingZoneMode	Operating mode of the zone	0 = Scheduling 1 = Manual 2 = Off	CH	1	1	1	1
CP550	Zone, fire place	Fire Place mode is active	0 = Off 1 = On	CH	0	0	0	0

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
CP570	ZoneTime- Prog Select	Time Program of the zone selected by the user	0 = Schedule 1 1 = Schedule 2 2 = Schedule 3	CH	0	0	0	0
CP660	Icon display zone	Choice icon to display this zone	0 = None 1 = All	CH	1	1	1	1

Tab.81 Navigation for installer level

Level	Menu path
Installer	≡ > Installation Setup > FSB-WHB-HE-150-300 > Submenu ⁽¹⁾ > Parameters, counters, signals > Parameters > General
(1) See the column "Submenu" in the following table for the correct navigation. The parameters are grouped in specific functionalities.	

Tab.82 Factory settings at installer level

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
AP001	BL function	BL input function selection	1 = Full blocking 2 = Partial blocking 3 = User reset locking	Commercial boiler	1	1	1	1
AP006	Min water pressure	Appliance will report low water pressure below this value	0 - 7 bar	Commercial boiler	0.7	0.7	0.7	0.7
AP008	Release wait time	Waiting time after closing the release contact to start the heat generator.	0 - 255 Sec	Commercial boiler	0	0	0	0
AP009	Service hours	Number of heat generator operating hours for raising a service notification	24 - 51000 Hours	Commercial boiler	17400	17400	17400	17400
AP010	Service notification	Select the type of service notification	0 = None 1 = Custom notification 2 = ABC notification	Commercial boiler	2	2	2	2
AP011	Service hours mains	Hours powered to raise a service notification	24 - 51000 Hours	Commercial boiler	17400	17400	17400	17400
AP073	Summer Winter	Outdoor temperature; Upper limit for heating	1.5 - 60 °C	Outdoor temperature	22	22	22	22
AP074	Force summer mode	The heating is stopped, Hot water is maintained, Force summer mode	0 = Off 1 = On	Outdoor temperature	0	0	0	0
AP079	Building Inertia	Inertia of the building used for heat up speed	0 - 255	Outdoor temperature	0	0	0	0
AP080	Frost min out temp	Outside temperature below which the antifreeze protection is activated	-32 - 32 °C	Outdoor temperature	0	0	0	0
AP102	Boiler Pump function	Configuration of the boiler pump as zone pump or system pump (feed lowloss header)	0 = No 1 = Yes	Commercial boiler	0	0	0	0
AP110	2nd return sensor	Parameter to activate the 2nd return sensor	0 = Inactive 1 = Active	Commercial boiler	0	0	0	0
CP000	MaxZoneT-FlowSetpoint	Maximum Flow Temperature setpoint zone	0 - 90 °C	CH	90	90	90	90
CP010	Tflow setpoint zone	Zone flow temperature setpoint, used when the zone is set to a fixed flow setpoint.	0 - 90 °C	CH	90	90	90	90
CP020	Zone Function	Functionality of the zone	0 = Disable 1 = Direct	CH	1	1	1	1

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
CP060	Room T holiday	Wished room zone temperature on holiday period	5 - 20 °C	CH	6	6	6	6
CP070	MaxReducedRoomT.Lim	Max Room Temperature limit of the circuit in reduced mode, that allows switching to comfort mode	5 - 30 °C	CH	15	15	15	15
CP210	Zone HCZP Comfort	Comfort footpoint of the temperature of heat curve of the circuit	15 - 90 °C	CH	15	15	15	15
CP220	Zone HCZP Reduced	Reduced footpoint of the temperature of heat curve of the circuit	15 - 90 °C	CH	15	15	15	15
CP230	Zone Heating Curve	Heating curve temperature gradient of the zone	0 - 4	CH	2.5	2.5	2.5	2.5
CP340	TypeReducedNight-Mode	Type of reduced night mode, stop or maintain heating of circuit	0 = Stop heat demand 1 = Continue heat demand	CH	0	0	0	0
CP470	Zone screed drying	Setting of the screed drying program of the zone	0 - 30 Days	CH	0	0	0	0
CP480	ScreedStart-Temp	Setting of the start temperature of the screed drying program of the zone	20 - 50 °C	CH	20	20	20	20
CP490	ScreedStop-Temp	Setting of the stop temperature of the screed drying program of the zone	20 - 50 °C	CH	20	20	20	20
CP750	MaxZone Pre-heat time	Maximum zone preheat time	0 - 65000 Min	CH	0	0	0	0
CP780	Control strategy	Selection of the control strategy for the zone	0 = Automatic 1 = Room temp based 2 = Outdoor temp based 3 = Outdoor & room based	CH	1	1	1	1
DP003	Abs max fan DHW	Maximum fan speed on Domestic Hot Water	1000 - 8500 Rpm	Commercial boiler	6700	4650	5700	5800
DP010	Hysteresis DHW	Temperature hysteresis for the heat generator to start on domestic hot water production	0 - 60 °C	Commercial boiler	7	7	7	7
DP011	Stop offset DHW	Temperature offset to stop heat generator on domestic hot water production	0 - 60 °C	Commercial boiler	5	5	5	5
EP014	SCB func 10V PWMIn	Smart Control Board function 10 Volt PWM input	0 = Off 1 = Temperature control 2 = Power control	0-10 volt input	0	0	0	0
GP007	Fan RPM Max CH	Maximum fan speed during Central Heating mode	1000 - 8500 Rpm	Commercial boiler	6700	4650	5700	5800
GP008	Fan RPM Min	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 - 8500 Rpm	Commercial boiler GVC Pneumatic	1900	1450	1550	1650
GP009	Fan RPM Start	Fan speed at appliance start	900 - 5000 Rpm	Commercial boiler GVC Pneumatic	2200	2200	2200	2200
GP010	GPS Check	Gas Pressure Switch check on/off	0 = No 1 = Yes	Commercial boiler	0	0	0	0

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
GP021	Temp diff Modulating	Modulate back when delta temperature is larger than this threshold	5 - 25 °C	Commercial boiler	25	25	25	25
GP022	Tfa Filter Tau	Tau factor for average flow temperature calculation	0 - 255	Commercial boiler	1	1	1	1
GP024	VPS Check	Valve Proofing System check on / off	0 = No 1 = Yes	Commercial boiler GVC Pneumatic	0	0	0	0
PP007	Min anti-cycle time	Minimum heat generator holding time that can be reached after a stop	0 - 20 Min	Commercial boiler	3	3	3	3
PP012	Stabilization time	Stabilization time after heat generator start for central heating	5 - 180 Sec	Commercial boiler	30	30	30	30
PP015	CH Pump postrun time	Central heating pump post run time	1 - 99 Min	Commercial boiler	1	1	1	1
PP016	Max CH pump speed	Maximum central heating pump speed (%)	20 - 100 %	Commercial boiler	100	100	100	100
PP018	Min CH pump speed	Minimum central heating pump speed (%)	20 - 100 %	Commercial boiler	20	20	20	20
PP023	CH Hysteresis	Temperature hysteresis for the generator to start on central heating	1 - 25 °C	Commercial boiler	10	10	10	10

Tab.83 Navigation for advanced installer level

Level	Menu path
Advanced installer	≡ > Installation Setup > FSB-WHB-HE-150-300 > Submenu ⁽¹⁾ > Parameters, counters, signals > Parameters > Advanced
(1) See the column "Submenu" in the following table for the correct navigation. The parameters are grouped in specific functionalities.	

Tab.84 Factory settings at advanced installer level

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
AP002	Manual Heat Demand	Enable manual heat demand function	0 = Off 1 = With setpoint 2 = Outdoor temp based	Commercial boiler	0	0	0	0
AP026	Setpoint manual HD	Flow temperature setpoint for manual heat demand	7 - 90 °C	Commercial boiler	40	40	40	40
AP056	Outdoor sensor	Enable outdoor sensor	0 = No outside sensor 1 = AF60	Outdoor temperature	1	1	1	1
AP089	Installer name	Name of the installer		Mandatory bus master				
AP090	Installer phone	Telephone number of the installer		Mandatory bus master	6	6	6	6
CP040	Postrun zone pump	Pump post runtime of the zone	0 - 20 Min	CH	0	0	0	0
CP240	ZoneRoomUnitInfl	Adjustment of the influence of the zone room unit	0 - 10	CH	3	3	3	3
CP250	CalSon-deAmbZone	Calibration of Zone Room Unit	-5 - 5 °C	CH	0	0	0	0

Code	Display text	Description	Adjustment range	Submenu	160	200	250	300
CP290	ConfigZone-PumpOut	Configuration of Zone Pump Output	0 = Zone output 1 = CH mode 2 = DHW mode 3 = Cooling mode 4 = Error report 5 = Burning 6 = Service flag 7 = System error 8 = DHW looping	CH	0	0	0	0
CP510	Temporary Room Setp	Temporary room setpoint per zone	5 - 50 °C	CH	20	20	20	20
GP030	Flue Gas Temp Max	Maximum flue gas temperature	20 - 200 °C	Commercial boiler	120	120	120	120
GP048	Fan PWM Min	Minimum Pulse Width Modulation for the fan controller	0 - 100 %	GVC Pneumatic	10	5	5	5
GP050	Power Min	Minimum power in kilo Watt for RT2012 calculation	0 - 300 kW	Commercial boiler	5.3	12.5	19	15.6
GP056	Grad 1 power reduct	Factor of power reduction when temperature gradient > parHeDThMaxLevel1 is detected	0 - 1000	Commercial boiler	1	1	1	1
PP017	ChPump-SpeedMax-Factor	Maximum central heating at minimum load as percentage of max pump speed	0 - 100 %	Commercial boiler	30	30	30	30

9 Maintenance

9.1 Maintenance regulations



Important

The boiler must be maintained by a qualified installer in accordance with local and national regulations.



Important

Adjust the frequency of inspection and service to the conditions of use. This applies especially if the boiler is:

- In constant use (for specific processes).
- Used with a low supply temperature.
- Used with a high ΔT .



Caution

- Replace defective or worn parts with original spare parts. Not doing so will void warranty.
- During inspection and maintenance work, always replace all gaskets on the parts removed.
- Check whether all gaskets have been positioned properly (absolutely flat in the appropriate groove means they are gas, air and water tight).
- During the inspection and maintenance work, water (drops, splashes) must never come into contact with the electrical parts.



Warning

Always wear safety goggles and a dust mask during cleaning work (involving compressed air).



Danger of electric shock

Ensure that the boiler is switched off.

9.2 Maintenance message

The boiler display will clearly indicate that a service is required at the appropriate time. Use the automatic maintenance message for preventive maintenance, to keep faults to a minimum. The service messages show which service kit must be used. These service kits contain all parts and gaskets that are required for the relevant service. These service kits (A, B or C) put together by Remeha are available from spare parts suppliers.



Important

Maintenance messages must be followed up within 2 months.



Important

If the eTwist modulating thermostat is connected to the boiler, this thermostat can also display the maintenance message. Consult the thermostat manual.



Caution

Reset the maintenance message following every service.

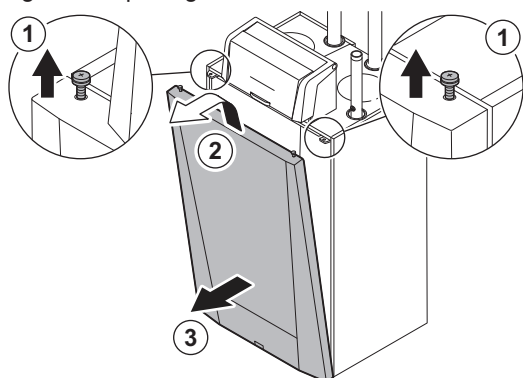


See

The service manual of the boiler.

9.3 Opening the boiler

Fig.83 Opening the boiler



AD-3002120-01

1. Remove the two screws at the top of the front panel.
2. Tilt and lift the front panel.
3. Remove the front panel.

9.4 Disposal and recycling

Fig.84



MW-3000179-03



Important

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

To remove the boiler, proceed as follows:

1. Cut the power supply to the boiler.
2. Shut off the gas supply.
3. Shut off the water supply.
4. Drain the system.
5. Remove the trap.
6. Remove the air supply/flue gas outlet pipes.
7. Disconnect all pipes on the boiler.
8. Remove the boiler.

10 Troubleshooting

10.1 Error codes


The Gas 220 Ace is fitted with an electronic regulation and control unit. The heart of the control is a **e-Smart** microprocessor, which controls and also protects. In the event of an error, a corresponding code is displayed.

Tab.85 Error codes are displayed at three different levels

Code	Type	Description
A .00.00 ⁽¹⁾	Warning	The controls continue to operate, but the cause of the warning must be investigated. A warning can change into a blocking or lock-out.
H .00.00 ⁽¹⁾	Blocking	The controls will stop normal operation, and will check with set intervals if the cause of the blocking still exists. ⁽²⁾ Normal operation will resume when the cause of the blocking has been rectified. A blocking can become a lock-out.
E .00.00 ⁽¹⁾	Lock out	The controls will stop normal operation. The cause of the lock-out must be rectified and the controls must be reset manually.

(1) The first letter indicates the type of error.
(2) For some blocking errors, this checking interval is ten minutes. In those cases, it may seem that the controls do not start automatically. Wait ten minutes before resetting.

The meaning of the code can be found in the various error code tables.





Important
The error code is needed to find the cause of the error quickly and correctly and for any support from Remeha.

10.1.1 Display of error codes

When an error occurs in the installation, the control panel will show the following:

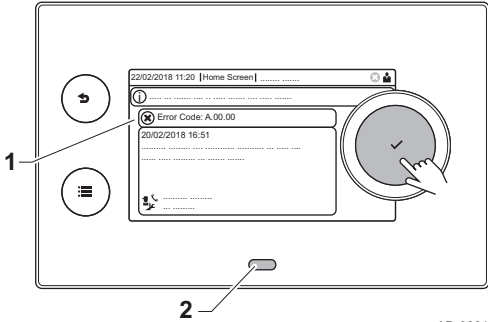
- 1 The display will show a corresponding code and message.
- 2 The status LED of the control panel will show:
 - Continuous green = Normal operation
 - Flashing green = Warning
 - Continuous red = Blocking
 - Flashing red = Lock out

When an error occurs, proceed as follows:

1. Press and hold the  button to reset the appliance.
⇒ The appliance starts up again.
2. If the error code reappears, correct the problem by following the instructions in the error code tables.
- 

Important
Only qualified professionals are authorised to work on the appliance and system.
⇒ The error code remains visible until the problem is solved.
3. Note the error code when the problem cannot be solved and contact your installer.


Fig.85 Error code display on HMI T-control



AD-3001379-01

10.1.2 Warning

Tab.86 Warning codes

Code	Display text	Description	Solution
A.00.32	TOutside Open	Outside temperature sensor is either removed or measures a temperature below range	Outdoor temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
A.00.33	TOutside Closed	Outside temperature sensor is either shorted or measures a temperature above range	Outdoor temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
A.00.34	TOutside Missing	Outside temperature sensor was expected but not detected	Outdoor sensor not detected: <ul style="list-style-type: none"> • Outdoor sensor is not connected: Connect the sensor • Outdoor sensor is not connected correctly: Connect the sensor correctly
A.01.21	Dhw Temp GradLevel3	Maximum Dhw Temperature Gradient Level3 Exceeded	Temperature warning: <ul style="list-style-type: none"> • Check the flow.
A.02.06	Water Press Warning	Water Pressure Warning active	Water pressure warning: <ul style="list-style-type: none"> • Water pressure too low; check the water pressure
A.02.18	OBD Error	Object Dictionary Error	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2 <div>  See The data plate for the CN1 and CN2 values. </div>
A.02.37	Uncritic device lost	Uncritical device has been disconnected	SCB not found: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty SCB: Replace SCB
A.02.45	Full Can Conn Matrix	Full Can Connection Matrix	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
A.02.46	Full Can Device Adm	Full Can Device Administration	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
A.02.49	Failed Init Node	Failed Initialising Node	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
A.02.76	Memory full	The reserved space in memory for custom parameters value is full. No more user changed possible	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2 • Faulty CSU: Replace CSU • Replace the CU-GH
A.03.17	Safety check	Periodically safety check ongoing	Safety check procedure active: <ul style="list-style-type: none"> • No action
A.10.33	SDhwTopZoneD Open	Domestic Hot Water tank top temperature sensor Zone DHW open	Domestic hot water top temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor

Code	Display text	Description	Solution
A.10.34	SDhwTopZoneD Closed	Domestic Hot Water tank top temperature sensor Zone DHW Closed	Domestic hot water top temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
A.10.45	RoomTempZoneA miss	Measure of Room Temperature Zone A is missing	Room temperature sensor not detected in zone A: <ul style="list-style-type: none"> • Room temperature sensor is not connected: connect the sensor • Room temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor
A.10.46	RoomTempZoneB miss	Measure of Room Temperature Zone B is missing	Room temperature sensor not detected in zone B: <ul style="list-style-type: none"> • Room temperature sensor is not connected: connect the sensor • Room temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor
A.10.47	RoomTempZoneC miss	Measure of Room Temperature Zone C is missing	Room temperature sensor not detected in zone C: <ul style="list-style-type: none"> • Room temperature sensor is not connected: connect the sensor • Room temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor
A.10.50	T_DHW top D miss	Domestic Hot Water temperature sensor top zone DHW is missing	Domestic hot water temperature sensor not detected in zone DHW: <ul style="list-style-type: none"> • Domestic hot water temperature sensor is not connected: connect the sensor • Domestic hot water temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor
A.10.54	Temp zone DHW miss	Temperature sensor Zone DHW is missing	Temperature sensor not detected in zone DHW: <ul style="list-style-type: none"> • Temperature sensor is not connected: connect the sensor • Temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor
A.10.56	T_DHW Zone AUX miss	Domestic Hot Water temperature sensor Zone AUX is missing	Domestic hot water temperature sensor not detected in zone AUX: <ul style="list-style-type: none"> • Domestic hot water temperature sensor is not connected: connect the sensor • Domestic hot water temperature sensor is not connected correctly: connect the sensor correctly • Faulty sensor: replace the sensor

10.1.3 Blocking

Tab.87 Blocking codes

Code	Display text	Description	Solution
H.00.36	T 2nd Return Open	Second return temperature sensor is either removed or measures a temperature below range	Second return temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
H.00.37	T 2nd Return Closed	Second return temperature sensor is either shorted or measures a temperature above range	Second return temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
H.00.69	TbufferTankOpen	Buffer Tank temperature sensor is either removed or measures a temperature below range	Buffer tank temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.00.70	TbufferTankClosed	Buffer Tank temperature sensor is either shorted or measures a temperature above range	Buffer tank temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.00.71	TbufferTankTopOpen	Buffer Tank top temperature sensor is either removed or measures a temperature below range	Buffer tank top temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.00.72	TbufferTankTopClosed	Buffer Tank top temperature sensor is either shorted or measures a temperature above range	Buffer tank top temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.00.74	TBufferTankMissing	Buffer Tank temperature sensor was expected but not detected	Buffer tank temperature sensor not detected: <ul style="list-style-type: none"> • Buffer tank temperature sensor is not connected: Connect the sensor • Buffer tank temperature sensor is not connected correctly: Connect the sensor correctly • Faulty sensor: replace the sensor
H.00.75	TBufferTankTop Miss	Buffer Tank Top temperature sensor was expected but not detected	Buffer tank top temperature sensor not detected: <ul style="list-style-type: none"> • Buffer tank top temperature sensor is not connected: Connect the sensor • Buffer tank top temperature sensor is not connected correctly: Connect the sensor correctly

Code	Display text	Description	Solution
H.00.76	TcascadeFlow Open	Cascade Flow temperature sensor is either removed or measures a temperature below range	Cascade flow temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.00.77	TcascadeFlow Closed	Cascade Flow temperature sensor is either shorted or measures a temperature above range	Cascade flow temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.00.78	TcascadeFlow missing	Cascade Flow temperature sensor was expected but not detected	Cascade flow temperature sensor not detected: <ul style="list-style-type: none"> • Cascade flow temperature sensor is not connected: Connect the sensor • Cascade flow temperature sensor is not connected correctly: Connect the sensor correctly • Faulty sensor: replace the sensor
H.01.00	Comm Error	Communication Error occurred	Communication error with the security kernel: <ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH
H.01.06	Max Delta TH-TF	Maximum difference between heat exchanger temperature and flow temperature	Maximum difference between heat exchanger and flow temperature exceeded: <ul style="list-style-type: none"> • No flow or insufficient flow: <ul style="list-style-type: none"> - Check the circulation (direction, pump, valves). - Check the water pressure. - Check the cleanliness of the heat exchanger. - Check that the installation has been de-aired. - Check water quality according to supplier's specifications. • Sensor error: <ul style="list-style-type: none"> - Check that the sensors are operating correctly. - Check that the sensor has been fitted properly.
H.01.07	Max Delta TH-TR	Maximum difference between heat exchanger temperature and return temperature	Maximum difference between heat exchanger and return temperature exceeded: <ul style="list-style-type: none"> • No flow or insufficient flow: <ul style="list-style-type: none"> - Check the circulation (direction, pump, valves). - Check the water pressure. - Check the cleanliness of the heat exchanger. - Check that the installation has been correctly vented to remove air. • Sensor error: <ul style="list-style-type: none"> - Check that the sensors are operating correctly. - Check that the sensor has been fitted properly.

Code	Display text	Description	Solution
H.01.08	CH temp grad level3	Maximum CH temperature gradient level3 exceeded	<p>Maximum heat exchanger temperature increase has been exceeded:</p> <ul style="list-style-type: none"> • No flow or insufficient flow: <ul style="list-style-type: none"> - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - Check that the central heating system has been correctly vented to remove air • Sensor error: <ul style="list-style-type: none"> - Check that the sensors are operating correctly - Check that the sensor has been fitted properly
H.01.09	Gas Pressure Switch	Gas Pressure Switch	<p>Gas pressure too low:</p> <ul style="list-style-type: none"> • No flow or insufficient flow: <ul style="list-style-type: none"> - Make sure that the gas valve is fully opened - Check the gas supply pressure - If a gas filter is present: Make sure that the filter is clean • Wrong setting on the gas pressure switch: <ul style="list-style-type: none"> - Make sure that the switch has been fitted properly - Replace the switch if necessary
H.01.13	Max THeat Ex	Heat Exchanger temperature has exceeded the maximum operating value	<p>Maximum heat exchanger temperature exceeded:</p> <ul style="list-style-type: none"> • Check the circulation (direction, pump, valves). • Check the water pressure. • Check that the sensors are operating correctly. • Check that the sensor has been fitted properly. • Check the cleanliness of the heat exchanger. • Check that the central heating system has been correctly vented to remove air.
H.01.14	Max Tflow	Flow temperature has exceeded the maximum operating value	<p>Flow temperature sensor above normal range:</p> <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • No flow or insufficient flow: <ul style="list-style-type: none"> - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger
H.01.15	Max Tflue Gas	Flue gas temperature has exceeded the maximum operating value	<p>Maximum flue gas temperature exceeded:</p> <ul style="list-style-type: none"> • Check the flue gas outlet system • Check the heat exchanger to ensure that the flue gas side is not clogged • Faulty sensor: replace the sensor
H.02.00	Reset In Progress	Reset In Progress	<p>Reset procedure active:</p> <ul style="list-style-type: none"> • No action
H.02.02	Wait Config Number	Waiting For Configuration Number	<p>Configuration error or unknown configuration number:</p> <ul style="list-style-type: none"> • Reset CN1 and CN2
H.02.03	Conf Error	Configuration Error	<p>Configuration error or unknown configuration number:</p> <ul style="list-style-type: none"> • Reset CN1 and CN2
H.02.05	CSU CU mismatch	CSU does not match CU type	<p>Configuration error:</p> <ul style="list-style-type: none"> • Reset CN1 and CN2

Code	Display text	Description	Solution
H.02.09	Partial block	Partial blocking of the device recognized	Blocking input active or frost protection active: <ul style="list-style-type: none"> • External cause: remove external cause • Wrong parameter set: check the parameters • Bad connection: check the connection
H.02.10	Full Block	Full blocking of the device recognized	Blocking input is active (without frost protection): <ul style="list-style-type: none"> • External cause: remove external cause • Wrong parameter set: check the parameters • Bad connection: check the connection
H.02.12	Release Signal	Release Signal input of the Control Unit from device external environment	Waiting time release signal has elapsed: <ul style="list-style-type: none"> • External cause: remove external cause • Wrong parameter set: check the parameters • Bad connection: check the connection
H.02.16	Int CSU Timeout	Internal CSU Timeout	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2 • Replace the PCB
H.02.36	Funct device lost	Functional device has been disconnected	Communication error with the SCB PCB: <ul style="list-style-type: none"> • Bad connection with BUS: check the wiring. • No PCB: reconnect PCB or retrieve from memory using auto-detect.
H.02.40	Function unavailable	Function unavailable	Contact your supplier
H.02.45	Full Can Conn Matrix	Full Can Connection Matrix	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
H.02.46	Full Can Device Adm	Full Can Device Administration	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
H.02.55	Inval or miss SerNR	Invalid or missing device serial number	Replace the CU-GH PCB
H.02.61	Unsupported function	Zone A doesn't support the selected function	Zone A function setting is not correct or is not allowed on this circuit: <ul style="list-style-type: none"> • Check the setting of parameter CP020.
H.02.62	Unsupported function	Zone B doesn't support the selected function	Zone B function setting is not correct or is not allowed on this circuit: <ul style="list-style-type: none"> • Check the setting of parameter CP021.
H.02.63	Unsupported function	Zone C doesn't support the selected function	Zone C function setting is not correct or is not allowed on this circuit: <ul style="list-style-type: none"> • Check the setting of parameter CP023.
H.02.64	Unsupported function	Zone D doesn't support the selected function	Zone C function (DHW) setting is not correct or is not allowed on this circuit: <ul style="list-style-type: none"> • Check the setting of parameter CP022.
H.02.65	Unsupported function	Zone E doesn't support the selected function	Zone E function (AUX) setting is not correct or is not allowed on this circuit: <ul style="list-style-type: none"> • Check the setting of parameter CP024.
H.02.66	TAS not connected	The anti corrosion protection (TAS) of the Domestic Hot Water tank is not connected	Corrosion protection anode (TAS) not detected: <ul style="list-style-type: none"> • Anode is not connected: Connect the anode • Anode is not connected correctly: Connect the anode correctly
H.02.67	TAS short-circuit	The anti corrosion protection (TAS) of the Domestic Hot Water tank is shortend	Corrosion protection anode (TAS) missing or short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor

Code	Display text	Description	Solution
H.02.79	Appliance lost S Bus	There is no appliance present on system bus (cascade).	S-Bus connector devices missing: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted connectors: check that the connectors has been correctly fitted • End connectors (with resistor) are missing or badly connected: check wiring and connectors • Check if connected devices are activated
H.03.00	Parameter Error	Safety parameters level 2, 3, 4 are not correct or missing	Parameter error: security kernel <ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH
H.03.01	CU to GVC data error	No valid data from CU to GVC received	Communication error with the CU-GH: <ul style="list-style-type: none"> • Restart the boiler
H.03.02	Flame loss detected	Measured ionisation current is below limit	No flame during operation: <ul style="list-style-type: none"> • No ionisation current: <ul style="list-style-type: none"> - Vent the gas supply to remove air - Check that the gas valve is fully opened - Check the gas supply pressure - Check the operation and setting of the gas valve unit - Check that the air supply inlet and flue gas outlet are not blocked - Check that there is no recirculation of flue gases
H.03.05	Internal blocking	Gas Valve Control internal blocking occurred	Security kernel error: <ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH
H.10.00	T Flow Zone A Open	Flow temperature sensor Zone A Open	Flow temperature sensor zone A open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.01	T Flow Zone A Closed	Flow temperature sensor Zone A Closed	Flow temperature sensor zone A short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.02	T DhW Zone A Open	Domestic Hot Water temperature sensor Zone A Open	Domestic hot water temperature sensor zone A open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.03	T DhW Zone A Closed	Domestic Hot Water temperature sensor Zone A Closed	Domestic hot water temperature sensor zone A short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor • When using thermostat instead of sensor: parameter CP500 must be set to off (=disable)

Code	Display text	Description	Solution
H.10.04	TSwimmPoolZoneA Open	Swimming Pool Temperature Sensor Zone A Open	Swimming pool temperature sensor A open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.05	TSwimmPoolZoneA- Close	Swimming Pool Temperature Sensor Zone A Closed	Swimming pool temperature sensor zone A short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.09	T Flow Zone B Open	Flow temperature sensor Zone B Open	Flow temperature sensor zone B open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.10	T Flow Zone B Closed	Flow temperature sensor Zone B Closed	Flow temperature sensor zone B short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.11	T Dhw Zone B Open	Domestic Hot Water Temperature Sensor Zone B Open	Domestic hot water temperature sensor zone B open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.12	T Dhw Zone B Closed	Domestic Hot Water temperature sensor Zone B Closed	Domestic hot water temperature sensor zone B short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor • When using thermostat instead of sensor: parameter CP501 must be set to off (=disable)
H.10.13	TSwimmPoolZoneB Open	Swimming Pool Temperature Sensor Zone B Open	Swimming pool temperature sensor B open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.14	TSwimmPoolZoneB- Close	Swimming Pool Temperature Sensor Zone B Closed	Swimming pool temperature sensor zone B short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor


Code	Display text	Description	Solution
H.10.18	T Flow Zone C Open	Flow temperature sensor Zone C Open	Flow temperature sensor zone C open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.19	T Flow Zone C Closed	Flow temperature sensor Zone C Closed	Flow temperature sensor zone C short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.20	T Dhw Zone C Open	Domestic Hot Water Temperature Sensor Zone C Open	Domestic hot water temperature sensor zone C open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.21	T Dhw Zone C Closed	Domestic Hot Water temperature sensor Zone C Closed	Domestic hot water temperature sensor zone C short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor • When using thermostat instead of sensor: parameter CP503 must be set to off (=disable)
H.10.22	TSwimmPoolZoneC Open	Swimming Pool Temperature Sensor Zone C Open	Swimming pool temperature sensor C open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.23	TSwimmPoolZoneC-Close	Swimming Pool Temperature Sensor Zone C Closed	Swimming pool temperature sensor zone C short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.27	T Flow Zone DHW open	Flow temperature sensor Zone DHW open	Flow temperature sensor zone DHW open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.28	Sens zone DHW closed	Flow temperature sensor Zone DHW closed	Flow temperature sensor zone DHW short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor

Code	Display text	Description	Solution
H.10.29	Sensor Zone DHW open	Temperature sensor Zone DHW open	Domestic hot water temperature sensor zone DHW open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.30	T Zone DHW closed	Domestic Hot Water temperature sensor Zone DHW closed	Domestic hot water temperature sensor zone DHW short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor • When using thermostat instead of sensor: parameter CP502 must be set to off (=disable)
H.10.36	Sensor Zone AUX open	Flow temperature sensor Zone AUX open	Flow temperature sensor zone AUX open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.37	Sens zone AUX closed	Flow temperature sensor ZoneAUX closed	Flow temperature sensor zone AUX short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
H.10.38	T Dhw Zone AUX open	Domestic Hot Water temperature sensor Zone AUX open	Domestic hot water temperature sensor zone AUX open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Sensor is not present. • Faulty sensor: replace the sensor
H.10.39	Sens zone AUX closed	Domestic Hot Water temperature sensor Zone AUX closed	Domestic hot water temperature sensor zone AUX short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor • When using thermostat instead of sensor: parameter CP504 must be set to off (=disable)

10.1.4 Locking codes

Tab.88 Locking codes

Code	Display text	Description	Solution
E.00.00	TFlow Open	Flow temperature sensor is either removed or measures a temperature below range	Zone flow temperature sensor open: <ul style="list-style-type: none"> • Sensor is not present. • Wrong Zone Function setting: check the setting of parameter CP02x. • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: make sure that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
E.00.01	TFlow Closed	Flow temperature sensor is either shorted or measures a temperature above range	Zone flow temperature sensor short-circuited: <ul style="list-style-type: none"> • Sensor is not present. • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
E.00.04	TReturn Open	Return temperature sensor is either removed or measures a temperature below range	Return temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
E.00.05	TReturn Closed	Return temperature sensor is either shorted or measures a temperature above range	Return temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
E.00.08	THeat Ex Open	Heat exchanger temperature sensor is either removed or measures a temperature below range	Heat exchanger temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
E.00.09	THeat Ex Closed	Heat exchanger temperature sensor is either shorted or measures a temperature above range	Heat exchanger temperature sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
E.00.40	WaterPressureOpen	Water pressure sensor is either removed or measures a temperature below range	Hydraulic pressure sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.
E.00.41	WaterPressureClosed	Water pressure sensor is either shorted or measures a temperature above range	Hydraulic pressure sensor short-circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Incorrectly fitted sensor: check that the sensor has been correctly fitted. • Faulty sensor: replace the sensor.

Code	Display text	Description	Solution
E.01.04	5x Flame Loss Error	5x Error of unintended Flame Loss occurrence	Flame loss occurs 5 times: <ul style="list-style-type: none"> • Vent the gas supply to remove air • Check that the gas valve is fully opened • Check the gas supply pressure • Check the operation and setting of the gas valve unit • Check that the air supply inlet and flue gas outlet are not blocked • Check that there is no recirculation of flue gases
E.01.12	Return Higher Flow	Return temperature has a higher temperature value than the flow temperature	Flow and return reversed: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Water circulation in wrong direction: check the circulation (direction, pump, valves) • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Malfunctioning sensor: check the Ohmic value of the sensor • Faulty sensor: replace the sensor
E.02.04	Parameter Error	Parameter Error	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2 <div>  See The data plate for the CN1 and CN2 values. </div>
E.02.13	Blocking Input	Blocking Input of the Control Unit from device external environment	Blocking input is active: <ul style="list-style-type: none"> • External cause: remove external cause • Wrong parameter set: check the parameters
E.02.15	Ext CSU Timeout	External CSU Timeout	CSU time out: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty CSU: Replace CSU
E.02.17	GVC CommTimeout	Gas Valve Control unit communication has exceeded feedback time	Communication error with the security kernel: <ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH
E.02.35	Safety device lost	Safety critical device has been disconnected	Communication fault <ul style="list-style-type: none"> • Carry out an auto-detect
E.02.47	Failed Conn Funct Gr	Failed Connecting Function Groups	Function group not found: <ul style="list-style-type: none"> • Carry out an auto-detect • Restart the boiler • Replace the CU-GH
E.02.48	Funct Gr Conf Fault	Function Group Configuration Fault	SCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect.
E.02.52	Gvc Burner Prof Err	Gvc Burner Profile Error	-
E.04.00	Parameter error	Safety parameters Level 5 are not correct or missing	Replace the CU-GH.
E.04.01	TFlow Closed	Flow temperature sensor is either shorted or measuring a temperature above range	Flow temperature sensor short circuited: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Incorrectly fitted sensor: check that the sensor has been correctly fitted • Faulty sensor: replace the sensor
E.04.02	TFlow Open	Flow temperature sensor is either removed or measuring a temperature below range	Flow temperature sensor open: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty sensor: replace the sensor

Code	Display text	Description	Solution
E.04.03	Max Flow temp	Measured flow temperature above safety limit	No flow or insufficient flow: <ul style="list-style-type: none"> • Check the circulation (direction, pump, valves) • Check the water pressure • Check the cleanliness of the heat exchanger
E.04.06	Max Flue temp	Measured flue temperature above limit	-
E.04.07	TFlow Sensor	Deviation in flow sensor 1 and flow sensor 2 detected	Flow temperature sensor deviation: <ul style="list-style-type: none"> • Bad connection: check the connection • Faulty sensor: replace the sensor
E.04.08	Safety input	Safety input is open	Air pressure differential switch activated: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Pressure in flue gas duct is or was too high: <ul style="list-style-type: none"> - Non-return valve does not open - Trap blocked or empty - Check that the air supply inlet and flue gas outlet are not blocked - Check the cleanliness of the heat exchanger
E.04.10	Unsuccessful start	5 Unsuccessful burners starts detected	Five failed burner starts: <ul style="list-style-type: none"> • No ignition spark: <ul style="list-style-type: none"> - Check the wiring between the CU-GH and the ignition transformer - Check the ionisation/ignition electrode - Check breakdown to earth - Check the condition of the burner cover - Check the earthing - Replace the CU-GH • Ignition spark but no flame: <ul style="list-style-type: none"> - Vent the gas pipes to remove air - Check that the air supply inlet and flue gas outlet are not blocked - Check that the gas valve is fully opened - Check the gas supply pressure - Check the operation and setting of the gas valve unit - Check the wiring on the gas valve unit - Replace the CU-GH • Flame present, but ionisation has failed or is inadequate: <ul style="list-style-type: none"> - Check that the gas valve is fully opened - Check the gas supply pressure - Check the ionisation/ignition electrode - Check the earthing - Check the wiring on the ionisation/ignition electrode.
E.04.11	VPS	VPS Gas Valve proving failed	Gas leakage control fault: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Gas leakage control VPS faulty: Replace the valve proving system (VPS) • Gas valve unit faulty: Replace the gas valve unit
E.04.12	False flame	False flame detected before burner start	False flame signal: <ul style="list-style-type: none"> • The burner remains very hot: Set the O₂ • Ionisation current measured but no flame should be present: check the ionisation/ignition electrode • Faulty gas valve: replace the gas valve • Faulty ignition transformer: replace the ignition transformer

Code	Display text	Description	Solution
E.04.13	Fan	Fan speed has exceeded normal operating range	Fan fault: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors. • Fan operates when it should not be operating: check for excessive chimney draught • Faulty fan: replace the fan
E.04.14	Combustion Error	The burner temperature and setpoint differ more than 60s regarding GVC configuration	-
E.04.15	FlueGas Pipe Blocked	The flue gas pipe is blocked	Flue gas outlet is blocked: <ul style="list-style-type: none"> • Check that the flue gas outlet is not blocked • Restart the boiler
E.04.17	GasValve Driver Err.	The driver for the gas valve is broken	Gas valve unit fault: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty gas valve unit: Replace the gas valve unit
E.04.23	Internal Error	Gas Valve Control internal locking	<ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH
E.04.250	Internal error	Gas valve relay error detected	Internal error: <ul style="list-style-type: none"> • Replace the PCB.
E.04.254	Unknown	Unknown	Unknown error: <ul style="list-style-type: none"> • Replace the PCB.

10.2 Error history

The control panel has an error history that stores the last 32 errors. Specific details are stored for each error, for example:

- Status
- Sub-status
- Flow temperature
- Return temperature

These details and others can contribute to the error solution.

10.2.1 Reading out and clearing the error history

You can read out the errors on the control panel. The error history can also be cleared.

▶▶ ≡ > **Error History**

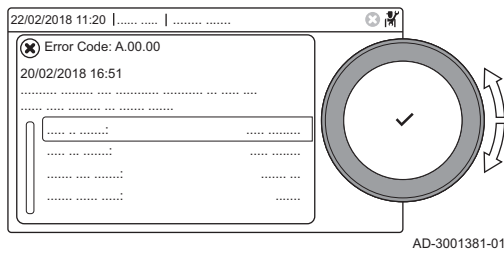


Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.

1. Press the ≡ button.
 2. Select **Error History**.
Enable installer access if **Error History** is not available.
 - 2.1. Select **Enable installer access**.
 - 2.2. Use code **0012**.
- ⇒ A list up to 32 most recent errors is displayed with:
- The error code.
 - A short description.
 - The date.

Fig.86 Error details



3. Select the error code you want to investigate.
⇒ The display shows an explanation of the error code and several details of the appliance when the error occurred.
4. To clear the error memory, press and hold the ✓ button.

11 User instructions

11.1 Start-up

Start up the boiler as follows:

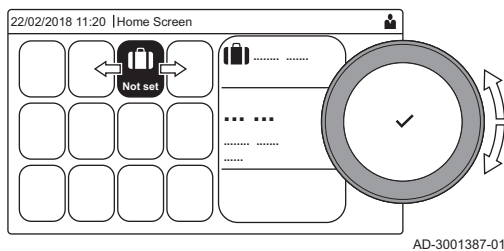
1. Open the boiler gas tap.
2. Power up the boiler.
3. Check the water pressure of the system. If necessary, top up the system.

The current operating condition of the boiler is shown on the display.

11.2 Accessing the user level menus

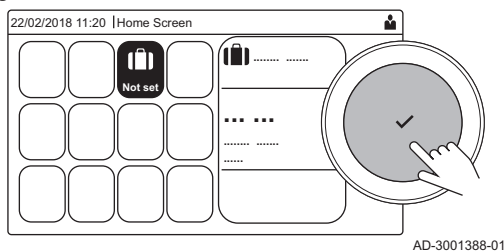
The tiles on the home screen provide quick access for the user to the corresponding menus.

Fig.87 Menu selection



1. Use the rotary knob to select the required menu.

Fig.88 Confirm menu selection













2. Press the ✓ button to confirm the selection.
⇒ The available settings of this selected menu appear in the display.
3. Use the rotary knob to select the desired setting.
4. Press the ✓ button to confirm the selection.
⇒ All options for change will appear in the display (if a setting cannot be changed, **Cannot edit read-only datapoint** will appear in the display).
5. Use the rotary knob to change the setting.
6. Press the ✓ button to confirm the selection.
7. Use the rotary knob to select the next setting or press the ↩ button to return to the home screen.

11.3 Home screen

The tiles on the home screen provide quick access to the corresponding menus. Use the rotary knob to navigate to the menu of your choice and press the ✓ button to confirm the selection. All options for change will appear in the display (**Cannot edit read-only datapoint** will appear in the display if a setting cannot be changed).

Tab.89 Selectable tiles for the user

Tile	Menu	Function
	Information menu.	Read out various current values.
	Error indicator.	Read out details about the current error. With some errors the  icon will appear with installer contact details (when filled in).
	Holiday Mode.	Set the start and end date of your holiday to lower the room and domestic hot water temperatures of all zones.
	Operating mode.	Change whether your appliance is set to heating, cooling, both or off.
	Gas boiler indicator.	Read out burning details of the boiler and switch the heating function of the boiler on or off.
	Water pressure indicator.	Shows the water pressure. Top up the installation when the water pressure is too low.
	Heating circuit set-up.	Configure the settings per heating circuit.
	DHW setup.	Configure the domestic hot water temperatures.
	Outdoor sensor setup.	Configure the temperature regulation using the outdoor sensor.

11.4 Activating holiday programs for all zones

If you go on holiday, the room temperature and domestic hot water temperature can be reduced to save energy. With the following procedure you can activate the holiday mode for all zones and domestic hot water temperature.









Use the rotary knob to navigate.

Use the  button to confirm your selection.

1. Select the tile .
2. Select **Start date holiday**.
3. Configure the start date.
4. Select **End date holiday**.
⇒ The day after the start date of your holiday is displayed.
5. Configure the end date.
6. Select **Wished room zone temperature on holiday period**.
7. Configure the temperature.

You can reset or cancel the holiday program by selecting **Reset** in the holiday mode menu.

11.5 Heating circuit configuration

For every heating circuit there is a quick user settings menu available. Select the heating circuit you want to configure by selecting the tile , , , ,  or .

Tab.90 Menu to configure domestic hot water

Menu	Function
Set heating temperatures	Set the temperatures for the timer program.
Operating mode	Set the operating mode.
Time programs heating	Set and configure the time programs used when in operating mode Scheduling .
Zone configuration	Configure the settings of the zone circuit.

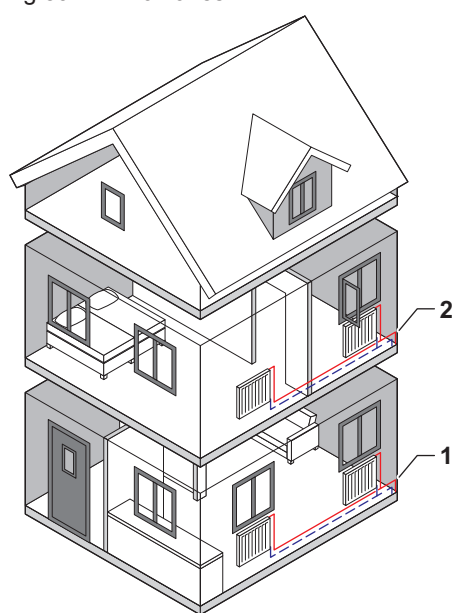
Tab.91 Extended menu to configure a heating circuit **Zone configuration**

Menu	Function
Short temperature change	Change the room temperature temporarily, if required.
OperatingZoneMode	Select the heating operating mode: Scheduling, Manual.
Manu ZoneRoomTempSet	Set the room temperature manually to a fixed setting.
Holiday Mode	Set the start and end date of your holiday and the reduced temperature for this zone.
Zone friendly Name	Create or change the name of the heating circuit.
Icon display zone	Select the icon of the heating circuit.

11.6 Changing the heating temperature of a zone

11.6.1 Definition of zone

Fig.89 Two zones



AD-3001404-01

Zone is the term given to the different hydraulic circuits CIRCA, CIRCB and so on. It designates several areas of a building served by the same circuit.

Tab.92 Example of two zones

	Zone	Factory name
1	Zone 1	CIRCA
2	Zone 2	CIRCB

11.6.2 Changing the name and symbol of a zone

The zones have a factory set symbol and name. Depending on your appliance you can change the symbol and name for the zones, not all appliances and zone types will support changing the symbol and name.

- Select zone > **Zone configuration** > **Zone friendly Name** or **Icon display zone**
 Installer access enabled: Select zone > **Zone friendly Name** or **Icon display zone**



Use the rotary knob to navigate.
 Use the ✓ button to confirm your selection.

1. Select the tile of the zone you want to change.
2. Select **Zone configuration**



This menu will not appear if you have installer access enabled, continue to the next step.

3. Select **Zone friendly Name**
 ⇒ A keyboard with letters, numbers and symbols (characters) is shown.
4. Change the name of the zone (20 characters maximum):

Fig.90 Letter selection

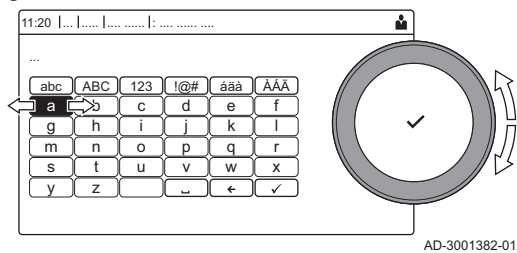
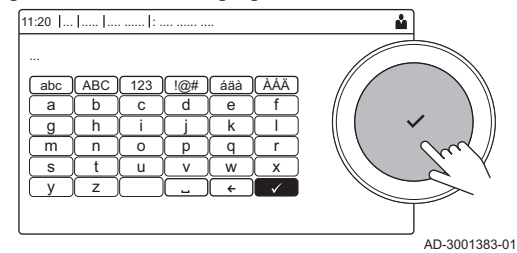


Fig.91 Finish changing the zone name



- 4.1. Use the top row to change between capitalization, numbers, symbols or special characters.
- 4.2. Select a character or action.
- 4.3. Select to delete a character.
- 4.4. Select to add a space.

- 4.5. Select to finish changing the zone name.
- 5. Select **Icon display zone**.
⇒ All available icons appear in the display.
- 6. Select the desired icon of the zone.

11.6.3 Changing the operating mode of a zone

To regulate the room temperature of the different areas of the house, you can choose from 5 operating modes:

▶▶ Select zone > **Operating mode**

Use the rotary knob to navigate.
Use the button to confirm your selection.

- 1. Select the tile of the zone you want to change.
- 2. Select **Operating mode**
- 3. Select the desired operating mode:

Tab.93 Operating modes

Icon	Mode	Description
	Scheduling	The room temperature is controlled by a timer program
	Manual	The room temperature is set to a fixed setting
	Short temperature change	The room temperature is changed temporarily
	Holiday	The room temperature is reduced during your holiday to save energy
	Antifrost	Protect the boiler and installation from freezing in winter

11.6.4 Time program to control the zone temperature

■ Creating a timer program

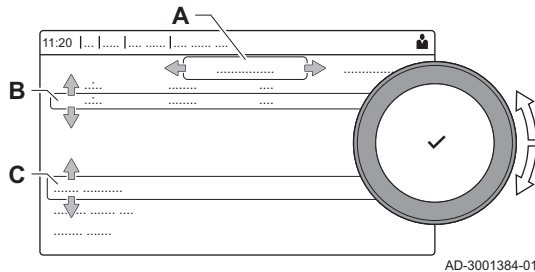
A timer program allows you to vary the room temperature per hour and per day. The room temperature is linked to the activity of the timer program. You can create up to three timer programs per zone. For example, you can create a program for a week with normal working hours and a program for a week when you are at home most of the time.

▶▶ Select zone > **Time programs heating**

Use the rotary knob to navigate.
Use the button to confirm your selection.

- 1. Select the tile of the zone you want to change.
- 2. Select **Time programs heating**.

Fig.92 Weekday



3. Select the timer program you want to modify: **Schedule 1**, **Schedule 2** or **Schedule 3**.

⇒ Activities scheduled for Monday are displayed. The last scheduled activity of a day is active until the first activity of the next day. At initial start-up, all weekdays have two standard activities; **Home** starting at 6:00 and **Sleep** starting at 22:00.

4. Select the weekday you want to modify.

- A Weekday
- B Overview of scheduled activities
- C List of actions

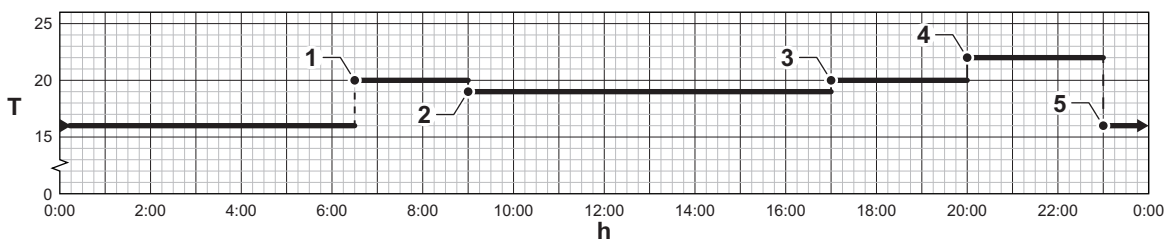
5. You can perform the following actions:

- 5.1. Select scheduled activity to edit the time this activity will start, change the temperature or to delete the selected activity.
- 5.2. **Add time and Activity** to add a new activity to the scheduled activities.
- 5.3. **Copy to other day** to copy the scheduled activities of the weekday to other days.
⇒ The activities including the configured time and temperature will be copied to the selected days.
- 5.4. **Set activity temperatures** to change the temperature.

■ Definition of activity

Activity is the term used when programming time slots in a timer program. The timer program sets the room temperature for different activities during the day. A temperature setpoint is associated with each activity. The last activity of the day is valid until the first activity of the next day.

Fig.93 Activities of a timer program



Tab.94 Example of activities

	Start of the activity	Activity	Temperature setpoint
1	6:30	Morning	20 °C
2	9:00	Away	19 °C
3	17:00	Home	20 °C
4	20:00	Evening	22 °C
5	23:00	Sleep	16 °C

■ Changing the name of an activity

You can change the names of the activities in the timer program.

► ► ≡ > **System Settings > Set Heating Activity Names**



Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.

1. Press the ≡ button.
2. Select **System Settings** ⚙️.

3. Select **Set Heating Activity Names**.
⇒ A list of 6 activities and their standard names is shown:

Activity 1	Sleep
Activity 2	Home
Activity 3	Away
Activity 4	Morning
Activity 5	Evening
Activity 6	Custom

4. Select an activity.
⇒ A keyboard with letters, numbers and symbols is shown.
5. Change the name of the activity (20 characters maximum):
- 5.1. Use the top row to change between capitalization, numbers, symbols or special characters.
 - 5.2. Select a letter, number or action.
 - 5.3. Select ← to delete a letter, number or symbol.
 - 5.4. Select ␣ to add a space.
 - 5.5. Select ✓ to finish changing the activity name.

Fig.94 Letter selection

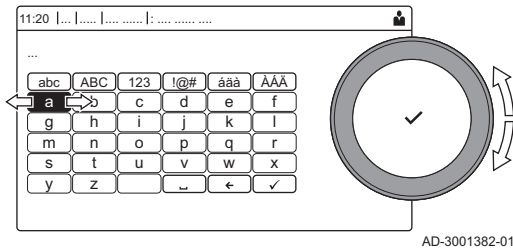
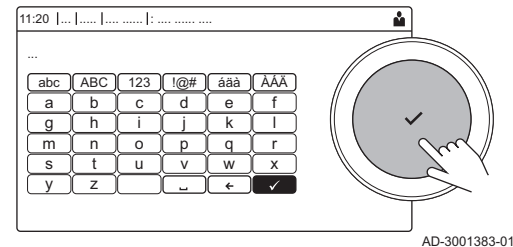


Fig.95 Confirm sign



■ **Activating a timer program**

In order to use a timer program, it is necessary to activate the operating mode **Scheduling**. This activation is done separately for each zone.

- ▶▶ Select zone > **Operating mode** > **Scheduling**

💡 Use the rotary knob to navigate.
Use the ✓ button to confirm your selection.

- 1. Select the tile of the zone you want to change.
- 2. Select **Operating mode**.
- 3. Select **Scheduling**.
- 4. Select the timer program **Schedule 1**, **Schedule 2** or **Schedule 3**.

11.6.5 Changing the heating activity temperatures

You can change the heating temperatures of each activity.

- ▶▶ Select zone > **Set heating temperatures**

💡 Use the rotary knob to navigate.
Use the ✓ button to confirm your selection.

- 1. Select the tile of the zone you want to change.
- 2. Select **Set heating temperatures**.
⇒ A list of 6 activities and their temperatures is shown.
- 3. Select an activity.
- 4. Set the heating activity temperature.

11.6.6 Changing the room temperature temporarily

Regardless of the operating mode selected for a zone, it is possible to change the room temperature for a short period. After this period has elapsed, the selected operating mode resumes.

▶▶ Select zone > **Operating mode** > **Short temperature change**




Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.



The room temperature can only be adjusted in this way if a room temperature sensor/thermostat is installed.

1. Select the tile of the zone you want to change.
2. Select **Operating mode**
3. Select  **Short temperature change**.
4. Set the duration in hours and minutes.
5. Set the temporary room temperature.

11.7 Changing the domestic hot water temperature

11.7.1 Domestic hot water configuration

Configure the domestic hot water settings by selecting the tile .

Tab.95 Menu to configure domestic hot water

Menu	Function
Domestic Hot Water Setpoints	Set the DHW temperatures for the timer program.
Operating mode	Set the operating mode.
Time programs	Set and configure the time programs used when in operating mode Scheduling .
DHW configuration	Configure the settings of the DHW circuit.

Tab.96 Extended menu to configure the domestic hot water circuit **DHW configuration**

Menu	Function
Hot water boost	Change the DHW temperature temporarily.
Holiday Mode	Set the start and end date of your holiday.
DHW mode	Select the DHW operating mode: Scheduling, Manual.

11.7.2 Changing the domestic hot water operating mode

You can change the operating mode for hot water production. You can choose from 5 operating modes.

▶▶  > **Operating mode**



Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.






1. Select the tile .
2. Select **Operating mode**



This option is not available when installer access is enabled.

3. Select the desired operating mode:

Tab.97 Operating modes



Icon	Mode	Description
	Scheduling	The domestic hot water temperature is controlled by a timer program
	Manual	The domestic hot water temperature is set to a fixed setting
	Hot water boost	The domestic hot water temperature is increased temporarily
	Holiday	The domestic hot water temperature is reduced during your holiday to save energy
	Antifrost	Protect the appliance and installation from freezing.


11.7.3 Time program to control the DHW temperature


■ Creating a timer program

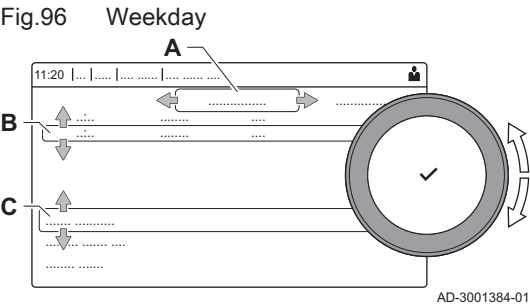
A timer program allows you to vary the domestic hot water temperature per hour and per day. The hot water temperature is linked to the activity of the timer program.

▶▶  > Operating mode

 Use the rotary knob to navigate.
Use the  button to confirm your selection.

 You can create up to three timer programs. For example, you can create a program for a week with normal working hours and a programme for a week when you are at home most of the time.



1. Select the tile .
2. Select **Time programs**.
3. Select the timer program you want to modify: **Schedule 1**, **Schedule 2** or **Schedule 3**.
⇒ Activities scheduled for Monday are displayed. The last scheduled activity of a day is active until the first activity of the next day. The scheduled activities are shown. At initial start-up, all weekdays have two standard activities; **Comfort** starting at 6:00 and **Reduced** starting at 22:00.
4. Select the weekday you want to modify.
 - A Weekday
 - B Overview of scheduled activities
 - C List of actions
5. You can perform the following actions:
 - 5.1. **Select scheduled activity** to edit the time this activity will start, change the temperature or to delete the selected activity.
 - 5.2. **Add time and Activity** to add a new activity to the scheduled activities.
 - 5.3. **Copy to other day** to copy the scheduled activities of the weekday to other days.
 - 5.4. **Set activity temperatures** to change the temperature.




■ Activating a DHW timer program

In order to use a DHW timer program, it is necessary to activate the operating mode **Scheduling**. This activation is done separately for each zone.

▶▶  > Operating mode > Scheduling

 Use the rotary knob to navigate.
Use the  button to confirm your selection.

1. Select the tile .
2. Select **Operating mode**.
3. Select **Scheduling**.

4. Select the DHW timer program **Schedule 1**, **Schedule 2** or **Schedule 3**.

11.7.4 Changing the comfort and reduced hot water temperature


You can change the comfort and reduced hot water temperature for the time program.

▶▶  > **Domestic Hot Water Setpoints**



Use the rotary knob to navigate.

Use the  button to confirm your selection.

1. Select the tile .
2. Select **Domestic Hot Water Setpoints**.
3. Select the setpoint you want to change:
 - **DHW comfort setpoint**: The temperature when the hot water production is switched on.
 - **DHW reduced setpoint**: The temperature when the hot water production is switched off.
4. Set the desired temperature.

11.7.5 Increasing the domestic hot water temperature temporarily

Regardless of the operating mode selected for domestic hot water production, it is possible to increase the domestic hot water temperature for a short period. After this period the hot water temperature decreases to the **Reduced** setpoint. This is called a hot water boost.

▶▶  > **Operating mode > Hot water boost**





Use the rotary knob to navigate.

Use the  button to confirm your selection.



Important

The domestic hot water temperature can only be adjusted in this way if a domestic hot water sensor is installed.

1. Select the tile .
2. Select **Operating mode**.
3. Select  **Hot water boost**.
4. Set the duration in hours and minutes.
 - ⇒ The temperature is increased to the **DHW comfort setpoint** for the duration of the boost.

11.8 Switching the central heating on or off

You can switch off the central heating function to save energy.




When an outdoor sensor is connected to the installation, it's also possible to use the summer mode function for switching the central heating on or off.

▶▶  > **CH function on**



Use the rotary knob to navigate.

Use the  button to confirm your selection.

1. Select the tile .
2. Select **CH function on**.

3. Select the following setting:
 - **Off** to switch off the central heating function.
 - **On** to switch on the central heating function.

**Caution**

Frost protection is not available when the central heating function is switched off.

11.9 Switching the summer mode on or off

You can use summer mode to switch off the central heating function. While summer mode is active central heating will be turned off but hot water remains available.





The summer mode function is only available when an outdoor sensor is connected to the installation.



 > **Force summer mode**




Use the rotary knob to navigate.
Use the  button to confirm your selection.






1. Select the tile .
2. Select **Force summer mode**.
3. Select the following setting:
 - **On** to switch on summer mode.
 - **Off** to switch off summer mode.

11.10 Changing the operating mode

You can set the operating mode of your appliance. The modes available may vary per appliance.



Use the rotary knob to navigate.
Use the  button to confirm your selection.

1. Select the tile .
2. You can choose between the following operating modes:
 -  **Off** Disable the appliance, does not affect hot water production.
 -  **Heating (auto)** Enable heating.
 -  **Forced cooling** Enable cooling.
 -  **Heating/cooling (auto)** Enable both heating and cooling.

⇒ The operating mode tile will update to reflect the selected operating mode.


11.11 Changing the control panel settings



You can change the control panel settings within system settings.



 > **System Settings**



Use the rotary knob to navigate.
Use the  button to confirm your selection.

1. Press the  button.
2. Select **System Settings** .

3. Perform one of the operations described in the table below:

Tab.98 Control panel settings

System Settings menu	Settings
Set Date and Time	Set the current date and time
Select Country and Language	Select your country and language
Daylight Saving Time	Enable or disable daylight saving time. When enabled daylight saving time will update the systems internal time to correspond with summer and winter time.
Installer Details	Read out the name and phone number of the installer
Set Heating Activity Names	Create the names for the activities of the timer program
Set Screen Brightness	Adjust the brightness of the screen
Set click sound	Enable or disable the click sound of the rotary knob
License Information	Read out detailed license information from the device platform application

11.12 Reading the installer's name and phone number

The installer can set his name and phone number in the control panel. You can read this information when you want to contact the installer.

▶▶ ≡ > **System Settings > Installer Details**



Use the rotary knob to navigate.

Use the ✓ button to confirm your selection.

1. Press the ≡ button.
2. Select **System Settings** ⚙️
3. Select **Installer Details**.
⇒ The installer's name and phone number is shown.

11.13 Shut-down

Shut-down the boiler as follows:

1. Turn off the boiler using the on/off switch.
2. Shut off the gas supply.
3. Keep the installation frost-free.

Do not shut-down the boiler if the installation can't be kept frost-free.

11.14 Frost protection



Caution

- Drain the boiler and central heating system if you are not going to use your home or the building for a long time and there is a chance of frost.
- The frost protection does not work if the boiler is out of operation.
- The built-in boiler protection is only activated for the boiler and not for the system and radiators.
- Open the valves of all the radiators connected to the system.

Set the temperature control low, for example to 10°C.

If the temperature of the central heating water in the boiler drops too low, the built-in boiler protection system is activated. This system works as follows:

- If the water temperature is lower than 7°C, the pump switches on.
- If the water temperature is lower than 4°C, the boiler switches on.
- If the water temperature is higher than 10°C, the burner shuts down and the pump continues to run for a short time.

To prevent the system and radiators freezing in frost-sensitive areas (e.g. a garage), a frost thermostat or, if feasible, an outdoor sensor can be connected to the boiler.

11.15 Cleaning the casing

1. Clean the outside of the appliance using a damp cloth and a mild detergent.

12 Technical specifications

12.1 Homologations

12.1.1 Certifications

Tab.99 Certifications

CE identification number	PIN 0063CQ3781
Class NOx ⁽¹⁾	6
Type of flue gas connection	B _{23P} ⁽²⁾ C ₁₃ , C ₃₃ , C ₅₃ , C ₆₃ , C ₉₃
(1) EN 15502-1 (2) When installing a boiler with connection type B _{23P} , the IP rating of the boiler is lowered to IP20.	

12.1.2 BREEAM compliance

The Gas 220 Ace complies with the BREEAM emission requirements. In order to meet these requirements, some boiler parameter values need to be changed.



Important

Refer to the chapter for the boiler's BREEAM settings.

12.1.3 Unit categories

Tab.100 Unit categories

Country	Category ⁽¹⁾	Gas type	Connection pressure (mbar)
Great Britain	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30-50
(1) This appliance is suitable for category I _{2H} containing up to 20% Hydrogen gas (H ₂).			

12.1.4 Directives

In addition to the legal requirements and guidelines, the supplementary guidelines in this manual must also be followed.

Supplements or subsequent regulations and guidelines that are valid at the time of installation shall apply to all regulations and guidelines specified in this manual.

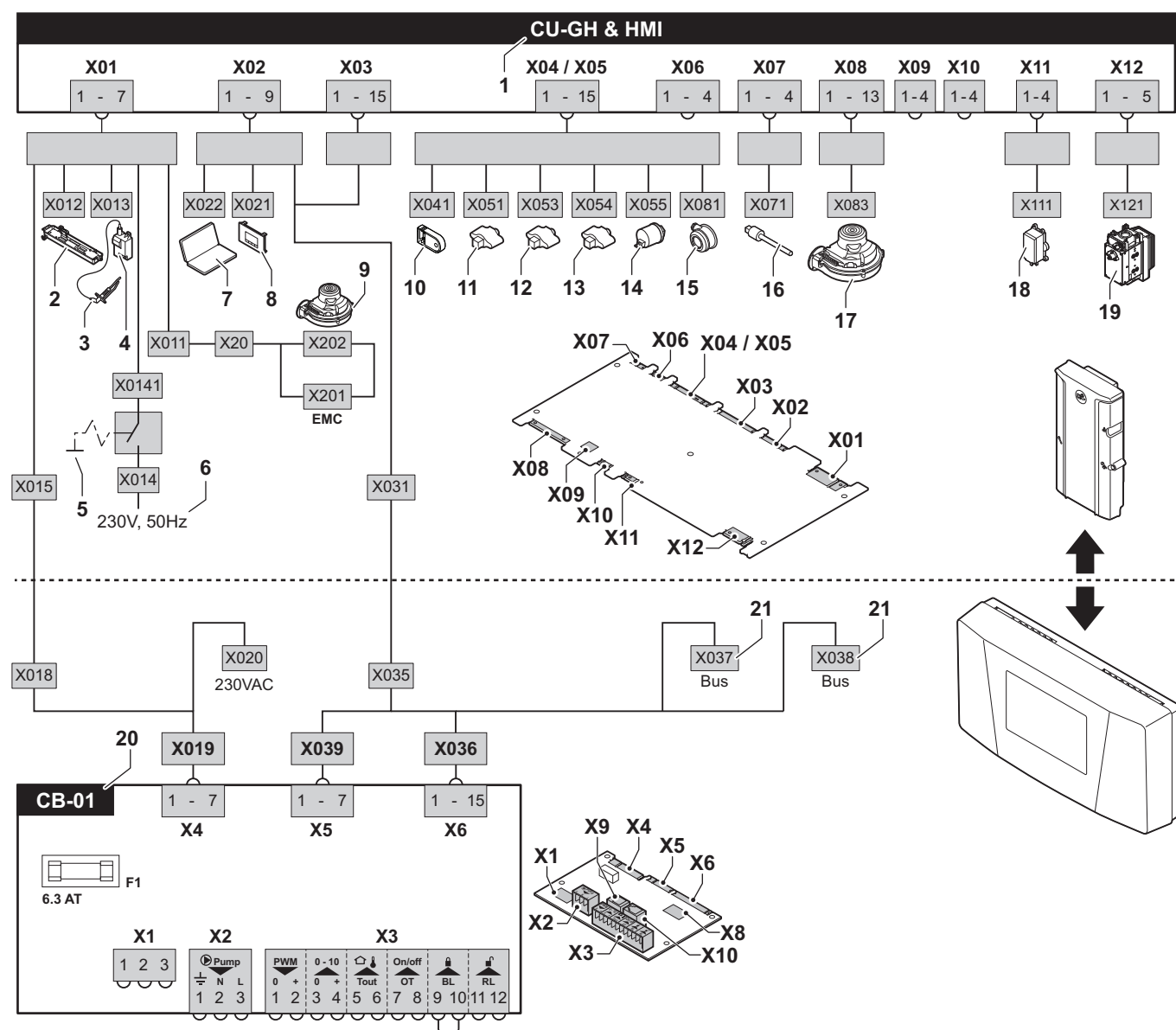
12.1.5 Factory test

Before leaving the factory, each boiler is optimally set and tested for:

- Electrical safety.
- Adjustment of O₂/CO₂.
- Water tightness.
- Gas tightness.
- Parameter setting.

12.2 Electrical diagram

Fig.97 Electrical diagram

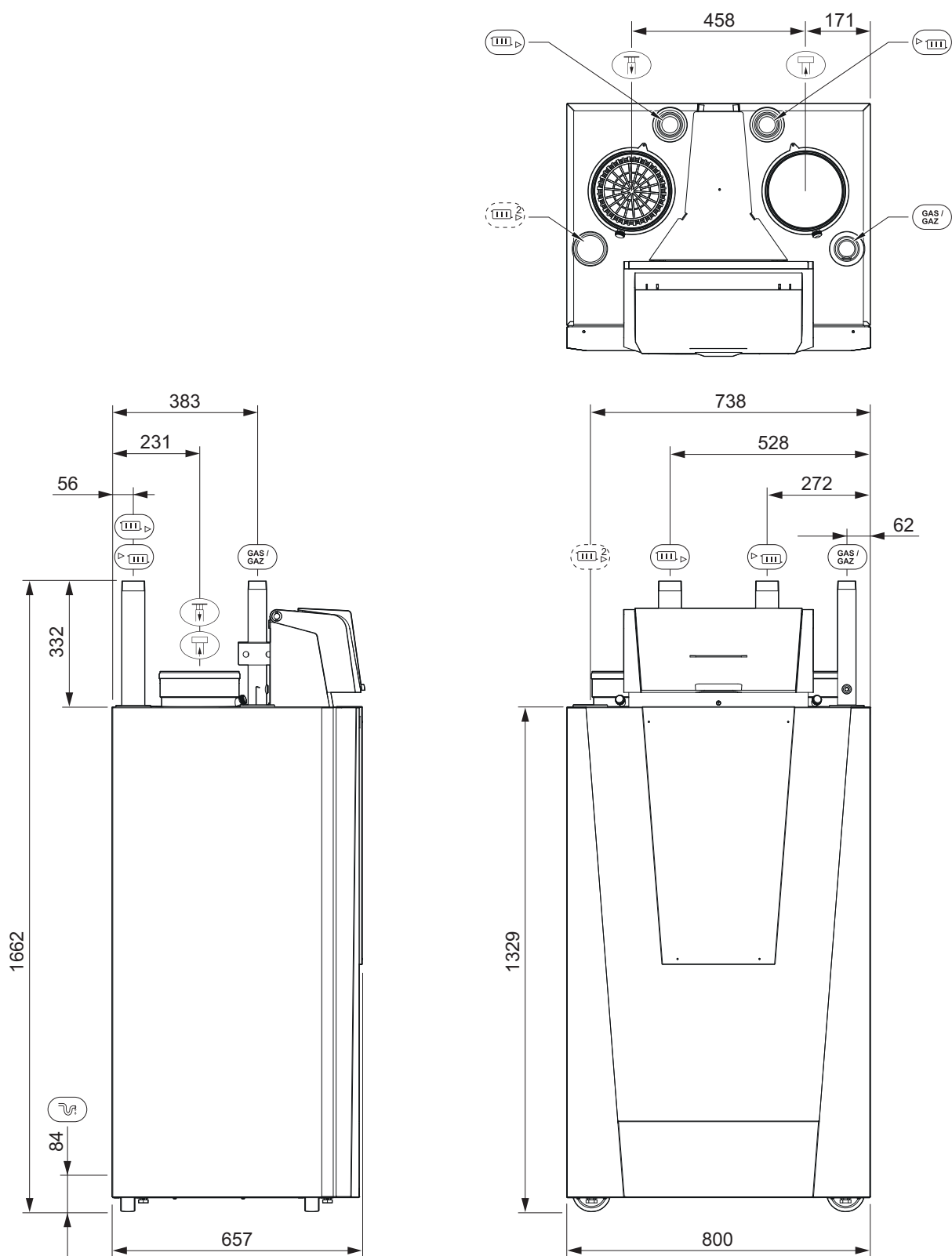


AD-0001189-02

- | | |
|--|--|
| 1 Boiler control unit | 12 Heat exchanger temperature sensor (HEs) |
| 2 Lighting | 13 Return temperature sensor (RTs) |
| 3 Ionisation/ignition electrode (E) | 14 Hydraulic pressure sensor (WPs) |
| 4 Ignition transformer (IT) | 15 Air pressure differential switch (PS) |
| 5 On/Off switch (AU) | 16 Flue gas sensor (FGs) |
| 6 Power supply (P) | 17 Fan control (PWM) |
| 7 Service connector/computer connection (PC) | 18 Gas pressure switch GPS |
| 8 Control panel (HMI) | 19 Gas valve |
| 9 Fan supply (P) | 20 Standard PCB |
| 10 Storage parameter (PSU) | 21 L-Bus connections for additional control PCBs |
| 11 Flow sensor (FTs) | (depending on boiler model) |

12.3 Dimensions and connections

Fig.98 Dimensions



AD-3000809-01



Connecting the flue gas outlet;

Gas 220 Ace 160; Ø 150 mm



Gas 220 Ace 200 - 250 - 300; Ø 200 mm

Connecting the air supply;

Gas 220 Ace ; Ø 150 mm

GAS/
GAZ

Gas 220 Ace 200 - 250 - 300; Ø 200 mm

Gas connection;




Gas 220 Ace ; R 1 inch male thread


Gas 220 Ace 200 - 250 - 300; R 1 1/2 inch male thread



Flow connection;







Gas 220 Ace ; R 1 1/4 inch male thread

-  Gas 220 Ace 200 - 250 - 300; R 2 inch male thread
 Central heating return connection;
 Gas 220 Ace ; R 1¼ inch male thread
 Gas 220 Ace 200 - 250 - 300; R 2 inch male thread
 Second central heating return connection (option);

- Gas 220 Ace ; R 1¼ inch male thread
 Gas 220 Ace 200 - 250 - 300; R 2 inch male thread
 Siphon connection

12.4 Technical data

Tab.101 General

Gas 220 Ace			160	200	250	300
Nominal output (P_n) for central heating operation (80/60 °C)	min - max  (1)	kW	31.5 - 152.1 152.1	39.4 - 194.4 194.4	49.2 - 243.3 243.3	59.0 - 290.9 290.9
Nominal output (P_n) for central heating operation (50/30 °C)	min - max  (1)	kW	34.7 - 161.6 161.6	43.2 - 209.8 209.8	54.1 - 261.0 261.0	65.0 - 310.7 310.7
Nominal load (Q_n) central heating operation (H_i) G20 (H gas)	min - max  (1)	kW	32.0 - 156.0 156.0	40.0 - 200.0 200.0	50.0 - 250.0 250.0	60.0 - 299.0 299.0
Nominal load (Q_n) central heating operation (H_i) G31 (propane)	min - max	kW	40.0 - 156.0	40.0 - 200.0	50.0 - 250.0	70.0 - 299.0
Nominal load (Q_n) central heating operation (H_s) G20 (H gas)	min - max  (1)	kW	35.6 - 173.3 173.3	44.4 - 222.2 222.2	55.6 - 277.8 277.8	66.7 - 332.2 332.2
Nominal load (Q_n) central heating operation (H_s) G31 (propane)	min - max	kW	43.5 - 169.6	43.5 - 217.4	54.3 - 271.7	76.1 - 325.0
Reduced input (Q_{Y20h}) central heating operation (H_i) G20 (H gas)	min - max  (1)	kW	29.8 - 145.1 145.1	37.2 - 186.0 186.0	46.5 - 232.5 232.5	55.8 - 278.1 278.1
Reduced input (Q_{Y20h}) central heating operation (H_s) G20 (H gas)	min - max  (1)	kW	33.1 - 161.2 161.2	41.3 - 206.6 206.6	51.7 - 258.4 258.4	62.0 - 308.9 308.9
Full load central heating efficiency (H_i) (80/60 °C) (92/42/EEC)		%	97.5	97.2	97.3	97.3
Full load central heating efficiency (H_i) (50/30 °C) (EN15502)		%	103.6	104.9	104.4	103.9
Part load central heating efficiency (H_i) (return temperature 60 °C)		%	98.4	98.4	98.4	98.4
Part load central heating efficiency (92/42/EEC) (return temperature 30 °C)		%	108.5	108.0	108.2	108.4

(1) Factory setting.

Tab.102 Gas and flue gas data

Gas 220 Ace			160	200	250	300
Gas inlet pressure G20 (H gas)	min - max	mbar	17 - 25	17 - 25	17 - 25	17 - 25
Gas inlet pressure G31 (propane)	min - max	mbar	37 - 50	37 - 50	37 - 50	37 - 50
Gas consumption G20 (H gas)	min - max	m³/h	3.4 - 16.5	4.2 - 21.2	5.3 - 26.5	6.4 - 31.6
Gas consumption G31 (propane)	min - max	m³/h	1.4 - 6.3	1.6 - 8.2	2.1 - 10.2	2.8 - 12.2
BREEAM NO _x annual emissions G20 (H-gas) (EN 15502)		mg/kWh	22	40	38	35
BREEAM NO _x annual emissions G31 (propane) (EN 15502)		mg/kWh	23	-	-	-
BREEAM		Credits	2	-	-	-
Flue gas quantity ⁽¹⁾	min - max	kg/h g/s	57 - 277 16 - 77	71 - 355 20 - 99	89 - 444 25 - 123	107 - 531 30 - 148
Flue gas temperature	min - max	°C	32 - 66	29 - 63	30 - 63	31 - 64
Maximum counter pressure		Pa	200	150	150	150

(1) min = part load with Tr = 30 °C / max = full load with Tr = 60 °C

Tab.103 Central heating circuit data

Gas 220 Ace			160	200	250	300
Water content		l	17.0	33.0	33.0	33.0
Water operating pressure	min	bar	0.8	0.8	0.8	0.8
Water operating pressure (PMS)	max	bar	5.0	6.0	6.0	6.0
Water temperature	max	°C	110.0	110.0	110.0	110.0
Operating temperature	max	°C	90.0	90.0	90.0	90.0
Hydraulic resistance ($\Delta T=20K$)		mbar	190	100	150	200

Tab.104 Electrical data

Gas 220 Ace			160	200	250	300
Supply voltage		V~/Hz	230/50	230/50	230/50	230/50
Power consumption	max	W	275.0	204.0	323.0	343.0
Power consumption – part load	min	W	47.0	57.0	57.0	48.0
Power consumption – standby	min	W	5.3	11.0	11.0	9.0
Electrical protection index		IP	IPX1B	IPX1B	IPX1B	IPX1B
Fuses	CB-01 CU-GH06c	A A	6.3 1.6	6.3 1.6	6.3 1.6	6.3 1.6

Tab.105 Other data

Gas 220 Ace			160	200	250	300
Total weight (including packaging)		kg	235	275	275	275
Boiler weight		kg	205	245	245	245
Average acoustic level at a distance of one metre from the boiler		dB(A)	58.7	59.7	63.8	63.8

Tab.106 Technical parameters

Gas 220 Ace			160	200	250	300
Condensing boiler			Yes	Yes	Yes	Yes
Low-temperature boiler ⁽¹⁾			No	No	No	No
B1 boiler			No	No	No	No
Cogeneration space heater			No	No	No	No
Combination heater			No	No	No	No
Rated heat output	P_{rated}	kW	152	194	243	291
Useful heat output at nominal heat output and high temperature operation ⁽²⁾	P_4	kW	152.1	194.4	243.3	290.9
Useful heat output at 30% of rated heat output and low temperature regime ⁽²⁾	P_1	kW	50.8	64.8	81.2	97.2
Seasonal space heating energy efficiency	η_s	%	-	-	-	-
Useful efficiency at rated heat output and high temperature regime ⁽²⁾	η_4	%	87.8	87.6	87.7	87.7
Useful heat output at 30% of rated heat output and low temperature regime ⁽²⁾	η_1	%	97.8	97.3	97.5	97.7
Auxiliary electricity consumption						
Full load	el_{max}	kW	0.275	0.204	0.323	0.343
Part load	el_{min}	kW	0.047	0.057	0.057	0.048
Standby mode	P_{SB}	kW	0.005	0.011	0.011	0.009
Other items						
Standby heat loss	P_{stby}	kW	0.191	0.267	0.267	0.267
Ignition burner power consumption	P_{ign}	kW	-	-	-	-
Annual energy consumption	Q_{HE}	kWh GJ	-	-	-	-

Gas 220 Ace			160	200	250	300
Sound power level, indoors	L_{WA}	dB	67	68	72	72
Emissions of nitrogen oxides	NO _x	mg/kWh	35	40	45	50
(1) Low temperature means 30 °C for condensing boilers, 37 °C for low temperature boilers and 50 °C (at heater inlet) for other heating appliances. (2) High temperature operation means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.						

**See**

Refer to the back cover for contact details.

13 Appendix

13.1 ErP information

13.1.1 Product fiche

Tab.107 Product fiche

Remeha - Gas 220 Ace		160	200	250	300
Seasonal space heating energy efficiency class		-	-	-	-
Rated heat output (<i>Prated</i> or <i>Psup</i>)	kW	152	194	243	291
Seasonal space heating energy efficiency	%	-	-	-	-
Annual energy consumption	GJ	-	-	-	-
Sound power level L_{WA} indoors	dB	-	-	-	-

**See**

For specific precautions in relation to assembly, installation and maintenance: Safety, page 6

13.2 EC Declaration of conformity

This appliance complies with the standard type described in the EC declaration of conformity. It has been manufactured and commissioned in accordance with European and British directives.

The original declaration of conformity is available from the manufacturer.

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